

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Leopold Bauer Leopold Bauer. Heretik moderní architektury

obor: AL

Identifikátor: **RIV/60461071: /15:#0000439!RIV16-GA0-60461071**

Id: 781

Předkladatel výsledku do Pilíře II.:

**IČO: 60461071 Vysoká škola umělecko-průmyslová v Praze, Rektorát
(Školní knihovna)**

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100 %

Odůvodnění předkladatele:

This extensive publication is an outstanding editorial achievement and an excellent art historical work. The book has been nominated for several prestigious awards (Magnesia Litera 2016 Prize, Academia publishing 2015, F. X. Šalda 2015 Prize). By elaborating such an extensive monograph on Leopold Bauer's architectural work in the Czech Republic professor Vybíral has contributed to a deeper understanding of the architectural scene of the turn of the century in the political, cultural and social context of the work of the architect Leopold Bauer, its importance and benefits for Czech architecture. Leopold Bauer (1872-1938) was one of leading representatives of modern architecture in Central Europe around 1900. He was known as the creator of the first modern house in the Habsburg monarchy and the first author of a philosophical-theoretical reflection of modern architecture in the region. Later, however, he denied his initial positions and moved to the new historicism. Monography of his architectural and design production is based on a study of Bauer's extensive personal documentation in Vienna's Albertina and on a systematic field research of architect's realizations in the Czech Republic and Austria. The result is not only an analysis of more than three hundred Bauer's projects and realizations, but also a contribution to redefine modern architecture. Author Jindřich Vybíral belongs to the most internationally recognized experts in the field of art history specializing in the history of central European architecture of the 19th and early 20th century

Odůvodnění panelu:

6 A Monumentální monografie jednoho z nejvýznamnějších středoevropských architektů, jehož dílo výrazně přispělo k podobě architektury v českých zemích. Na práci je třeba vyzdvihnout také metodologickou přínosnost autorova přístupu k programově retrospektivní komponentě Baureova architektonického stylu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Dějiny československého komiksu 20. století

obor: AJ

Identifikátor: RIV/68378068: /14:00440564!RIV15-GA0-68378068

Id: 327

Předkladatel výsledku do Pilíře II.:

IČO: 68378068 Ústav pro českou literaturu AV ČR, v. v. i.

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

This entire project has been implemented in collaboration with the CAS Institute of Czech Literature and the Faculty of Arts at Palacký University in Olomouc. Both project-management centres have been represented by the same work (with two staff members). The chief project manager of the associated grant project and subsequently the editor-in-chief for the book (Mgr. Pavel Kořínek) was and is a core staff member at the CAS Institute of Czech Literature.

Odůvodnění předkladatele:

This extensive monograph comprising two large volumes and an accompanying index booklet is the most detailed and comprehensive map to date of the history of the illustrated serial strip in former Czechoslovakia. This work based on several years of source research into Czech and Slovak periodicals has fundamentally expanded our awareness of the development of comics in the domestic environment and it demonstrably disrupts the theory which was until recently predominant that the emergence of the illustrated serial strip was rather discontinuous and accidental. This extensive exposition aims to find the developmental contexts and identify the primary formal and genre trends, without neglecting the marginalia, thus providing a three-dimensional image of the Czech comics landscape, elaborated in contextualizing chapters on published translations and the reception of comics in this country. However, it also plays a reference role: nearly all of the 3,500 illustrated serial strips recorded are accompanied by specific bibliographical references (and approximately 550 picture reproductions). The monograph has received several awards including the Gold Ribbon in the theory and criticism of literature and art for children and young adults category, and the Muriel award for its contribution to Czech comics, while also ranking (8th - 13th) in the Lidové noviny Book of the Year poll and proceeding to the final nominations for the Magnesia Litera and Most Beautiful Book of the Year awards. The broad acclaim of reviewers throughout the nationwide audiovisual and press media has come alongside a number of positive responses in the specialist journals (Host, Česká literatura, Mediální studia and Slovo a smysl).

Odůvodnění panelu:

6 A Monumentální a objevné dílo zpracovávající detailně a s vědeckou erudicí velice aktuální téma. Je třeba vyzdvihnout, že odborná práce je zpracována tak, aby oslovila i laické publikum. Kniha měla kladný ohlas v odborné obci i v médiích určených nejširší veřejnosti.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Poodhalené tváře anglického práva

obor: AG

Identifikátor: **RIV/00216208:11220/13:10145673!RIV14-MSM-11220**

Id: 1046

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Právnická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Charles University, Faculty of Law 100 %

Odůvodnění předkladatele:

This book is the first comprehensive analysis of the basic issues of English law published as a Czech scholarly monograph. The book is based upon a long-term study of sources and literature in British archives and libraries. A reader becomes acquainted with the sources of English law and its basic branches from their historical roots to the most recent developments. Special attention is paid to legal studies and legal professions. The book is divided into four parts and individual chapters. Part One focuses on the characteristics of English law including the influence of church law. It particularly analyzes the sources upon which English law is traditionally based. Part Two concentrates on the development of the English Parliament along with the development of constitutional law of England and later of Great Britain. Part Three deals with selected branches of English law, such as penal law, law of torts, business law and contracts, social security law, labour law and legislation regulating procedure before courts. The final part describes the modes and outcomes of transformation of English law after WWII with a special regard to constitutional changes and implementation of the law reform. The book is an indispensable and helpful aid for everyone who intends to acquire essential knowledge of the English constitution and English law.

Odůvodnění panelu:

6 AVynikající kniha, která netradičním způsobem uvádí českého čtenáře do anglického práva od počátků jeho vývoje.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Kalevala Eliase Lönnrota a Josefa Holečka v moderní kritické perspektivě

obor: AJ

Identifikátor: **RIV/00216208:11210/14:10291746!RIV15-MSM-11210**

Id: 742

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Filozofická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Charles University 100%

Odůvodnění předkladatele:

This book translation including a critical commentary has been repeatedly suggested for nomination in the year of 2016 due to the fact that it has been awarded The Epic Award of the Kalevala Society in 2015 and due to its remarkable contribution to expanding of knowledge of Finnish mythology. The nuclear part of this scholarly monograph is Jan Čermák's revision and analysis, with a large commentary organised in footnotes, of Josef Holeček's translation (1894) of The Kalevala (1849), the sole rendering of the Finnish national epic (22,795 lines of alliterative verse) into Czech to date. Other parts of the book, accompanied by illustrations of Aksel Gallen-Kallela, the most renowned of The Kalevala's painters, include Jan Čermák's in-depth study of the epic's birth, structure and diction in comparative perspective as well as an analysis of its literary, historical and cultural background. The text of the epic is accompanied by Jan Čermák's detailed commentary that brings our understanding of The Kalevala up to date with contemporary research into its philological, religious and anthropological aspects. In 2015, this monograph won two awards: the Eepospalkinto ("Epic Prize"), awarded by the Kalevalaseura ("Kalevala Society"), Helsinki, and the Cena ministryně školství, mládeže a tělovýchovy za mimořádné výsledky výzkumu, experimentálního vývoje a inovací ("The Minister of Education Prize for Outstanding Results of Scientific Research").

Odůvodnění panelu:

6A Překlad epochálního díla v kontextu českých i evropských studií.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

V obecném zájmu: cenzura a sociální regulace literatury v moderní české kultuře 1749 -2014

obor: AJ

Identifikátor: RIV/68378068: /15:00447074!RIV16-GA0-68378068

Id: 1457

Předkladatel výsledku do Pilíře II.:

IČO: 68378068 Ústav pro českou literaturu AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

All the authors are either core employees at the Institute of Czech Literature or they have signed an employment contract to draw up case studies, making the text an ICL employee work.

Odůvodnění předkladatele:

This monograph deals with censorship in the Czech lands from the mid-18th century to the present. The depth of the archive research and the timescale involved makes this an exceptional achievement both on a Czech and a European level. A team of specialists has worked on this book using a number of previously unpublished sources while looking at the subject of censorship from a fresh angle to reflect the contemporary development of literary thought. Eight general chapters attempt to describe the way the censorship system worked during a particular period, while the case studies focus on specific authors and works in conflict with various types of (self-)regulation. The authors do not restrict their attention to historically canonized literary work, but they also take into account popular literature, period journalism and prose writing in German. The book does not merely provide an overview of the history of censorship, but it also opens up a far broader range of issues, e.g. what is the relationship between censorship and resultant forms of work? What means can be used to get round censorship? In which circumstances can the public protest against censorship or there again, when do they call for it themselves? This monograph has received several prestige awards – the Academia Publishing House Award in the original scholarly work category, the Josef Hlávka Award for scholarly literature, and third and fourth place in the Lidové Noviny Book of the Year poll). In addition to acclaim in the daily press and cultural magazines, on the radio and television, the book has also been positively reviewed in specialist literature, e.g. Česká literatura, Sociologický časopis and Canadian Slavonic Papers.

Odůvodnění panelu:

6ADůležitá, záslužná a komplexní publikace, mnoho významných cen. Zlomové dílo. Rozsáhlé dvousvazkové týmové dílo. Iniciační pokus, s nímž se budou kriticky vyrovnávat další generace badatelů v oblasti cenzury.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Češi, Němci, Židé? Češi, Němci, Židé? Národní identita Židů v Čechách 1918-1945

obor: AB

Identifikátor: RIV/68378114: /13:00399755!RIV14-AV0-68378114

Id: 315

Předkladatel výsledku do Pilíře II.:

IČO: 68378114 Ústav pro soudobé dějiny AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The output was fully researched by a research fellow of submitter.

Odůvodnění předkladatele:

Czechs, Germans, Jews? National Identity and the Jews of Bohemia is the first and so far the only comprehensive study on the history of the Jews in Bohemia in the era of the first Czechoslovak Republic. The phenomenon of national identities, always a key issue in the modern history of Bohemian Jewry, was particularly complex because of the marginal differences that existed between the available choices. Considerable overlap was evident in the programs of the various national movements and it was possible to change one's national identity or even to opt for more than one such identity without necessarily experiencing any far-reaching consequences in everyday life. Based on many hitherto unknown archival sources from the Czech Republic, Israel and Austria, the author's research reveals the inner dynamic of each of the national movements and maps out the three most important constructions of national identity within Bohemian Jewry – the German-Jewish, the Czech-Jewish and the Zionist. This book provides a needed framework for understanding the rich history of German- and Czech-Jewish politics and culture in Bohemia and is a notable contribution to the historiography of Bohemian, Czechoslovak and central European Jewry. Its English edition (2012) received the award of Choice Outstanding Academic Title.

Odůvodnění panelu:

5AVýsledek výzkumné práce, který je mezioborový, dlouhodobý. Impozantní výsledky. Mezinárodně srozumitelné a srovnatelné. Autorka se na základě otázky, zda Jsou Židé národem, osudovým společenstvím nebo pouhým vyznáním snaží ze všech těchto hledisek postihnout postavení Židů za první ČSR.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Sons of Sun: Rise and Decline of the Fifth Dynasty

obor: AB

Identifikátor: **RIV/00216208:11210/14:10285852!RIV15-MSM-11210**

Id: 1222

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Filozofická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Charles University 100%

Odůvodnění předkladatele:

This monography has been repeatedly suggested for nomination in the year of 2016 due to the fact that it has been included between the first and the second position on the list of the most remarkable Charles University monographs and due to its significant contribution to the field of Egyptology. The monograph deals with the so far unclear decline of the 4th and the legend-clouded rise of the new royal family, the Fifth Dynasty and the reign of individual kings of this dynasty and their efforts to cope with the growing power of the bureaucracy and develop principal state institutions. It also deals with their pyramid complexes of these kings and administration and economy of their mortuary cults in the light of the Abusir papyrus archives. Special attention is paid to the great archaeological challenges of this period of Egyptian history namely, the so far in many respects mysterious sun temples and meret-shrines built by these kings.

Odůvodnění panelu:

5AZásadní příspěvek k počátkům egyptského státu od předního světového odborníka na danou problematiku, které vzbudilo zaslouženě příznivou odezvu v mezinárodní vědecké obci.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Václav II. Král na stříbrném trůnu 1283 -1305

obor: AB

Identifikátor: **RIV/00216224:14210/15:00085898!RIV16-MSM-14210**

Id: 1460

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Filozofická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Know-how of the book is completely provided by the author – employee of the Masaryk University.

Odůvodnění předkladatele:

Author corrects a number of stereotypical opinions of earlier historiography. He rejects the assumed efforts to restore the estates of Přemysl Otakar II in the Austrian lands, which is usually attributed to the king's father Záviš of Falkenstein, and critically judges the characteristics of the latter and his presupposed statesmanlike dimension. He corrects the opinions of the earlier Polish historiography on the German character of Wenceslas's rule in the individual Polish lands, as well as the order of Wenceslas's captains (Polish starosta). Chapters of the second part of the book are devoted to the mechanisms of Wenceslas's reign, composition of the court, chancellery, supreme offices and the sovereign domain, as well as the circumstances of the striking of the Prague groschen. Naturally, it also deals with chivalric and courtly cultures, tournaments, knighthood ceremony, and minnesang. The book is not a merely temporally delimited view into Czech history; on the contrary, it offers a very broad thematic spectrum embracing essentially the complete history of Central Europe from the end of the 13th and very beginning of the 14th centuries. It undoubtedly addressed the professional public in today's CR, SR, Austria, Germany, Poland and Hungary, because in many regards it concerns the history of the medieval states, which were located on their territories. It is suitable material for a comparative study with the development of the monarchy in Western Europe and weighty contribution for clarification of the role of the individual in historical development. It is the result of approximately fifteen years of research, which took place also thanks to study stays in the mentioned countries. The publication can be considered as a fundamental contribution of Czech medieval studies based on known but also forgotten sources with the use of earlier and modern secondary literature published in several languages.

Odůvodnění panelu:

5APublikace je výsledkem mnohaletého archivního výzkumu v tuzemských a zahraničních archivech. Výklad není pouhým životopisem významného přemyslovského panovníka, ale fakticky podává široký vhled do politických a společenských proměn střední Evropy na přelomu 13. a 14. století a překonává některé zažité stereotypy v pojmání osobnosti a vlády Václava II.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Český jazykový atlas. Dodatky

obor: AI

Identifikátor: RIV/68378092: /11:00369126!RIV12-AV0-68378092

Id: 313

Předkladatel výsledku do Pilíře II.:

IČO: 68378092 Ústav pro jazyk český AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

All authors are employees of the Institute of the Czech Language of the Czech Academy of Sciences.

Odůvodnění předkladatele:

This is the final part of a six-volume edition, the compilation of which began in the 1960s. It makes the Czech Language Atlas (CLA) accessible as a whole; in addition to the lexical, word-formational, morphological, phonological and syntactic portrait of Czech dialects, the Appendices also include a full registry of dialectal examples, the questionnaires used for research on vernaculars, a list of researched municipalities with their characteristics, and a bibliography of Czech dialectology since 1968. An overview of the Czech dialects is accompanied by a list of the main features of individual dialects and by an extensive and unique collection of vernacular recordings on two CDs (70 samples) from Bohemia (1) and Moravia and Silesia (2). These CDs contain transcripts, linguistic analysis, and an up-to-date description of Czech vernacular dialects. The CLA concludes the research efforts in Czech dialectal studies and significantly enriches our understanding of the national language, adding a new spatial dimension. It offers a profound view of the geographical variation of Czech dialects and common speech, covering the main tendencies in their development. As such, it represents an important data source for the study of Czech as a national language. However, its impact extends beyond the field of linguistics, making it applicable to other areas in the humanities and to the general public. The CLA is the result of extensive research conducted over the whole region where the Czech national language is used under a unified research program covering all language levels. New ethnographic research was conducted in selected municipalities by trained specialists, enabling us to capture the current state of the local vernacular in its most recent version. Therefore, the material presented in the CLA is of irreplaceable historical value. In 2008, the CLA won a Jury Award for the best monolingual dictionary (see Appendix) in the 'Dictionary of the Year' competition.

Odůvodnění panelu:

5A Jde o stěžejní dílo české dialektologie, které vycházelo mnoho let a teď bylo ukončeno. Bylo vypracováno nejlepšími odborníky a metodologicky se pohybuje ve špičce mezinárodní dialektologie.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Přeměny obchodních korporací

obor: AG

Identifikátor: **RIV/49777513:23320/15:43925714!RIV16-MSM-23320**

Id: 1096

Předkladatel výsledku do Pilíře II.:

IČO: 49777513 Západočeská univerzita v Plzni, Fakulta právnická

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100 % - The book has only one author.

Odůvodnění předkladatele:

The work is a detailed scientific monographic analysis of legislation concerning business corporations' transformations according to the Act No. 125/2008 Coll. the Act on Transformations of Commercial Companies and Cooperatives, as applicable. A core of the work lies in detailed analysis of effective legislation, whereas legal issues are dealt with as crucial. However, where there is need in regards to exact description of the topic, the accounting issues are also introduced. The current and also usable older literature sources are used in their maximum extent, and the same counts for jurisprudence, which is used not only for the current legislation, but also for the former legislative acts. The whole text is not omitting to set up the appropriate framework of the legal system of the Czech Republic as well as its commitments to the European Union and therefore any presented analysis is well places in herein referred framework. The significance of this publication is underlined by the fact, that it is the first monograph on the topic of transformations of business corporations after the recodification of Czech civil law, which become effective since 1. 1. 2014.

Odůvodnění panelu:

4A Předložený výstup spočívá v detailním rozboru platné právní úpravy přeměn obchodních korporací podle zákona č. 125/2008 Sb. Zvláštní pozornost autor věnuje obecné i zvláštní právní úpravě přeshraničních přeměn. Monografie zohledňuje veškeré změny právní úpravy, které přinesla rekodifikace občanského a obchodního práva.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Akademický atlas českých dějin

obor: AB

Identifikátor: RIV/67985963: /14:00428304!RIV15-AV0-67985963 Id: 81

Předkladatel výsledku do Pilíře II.:

IČO: 67985963 Historický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **63 %**

Popis podílu předkladatele:

The publication was initiated by the IH CAS scientific workers. The Atlas of the Czech Lands is the result of broad collaboration of all experts in the Institute of History, Czech Academy of Sciences, Faculty of Civil Engineering, Czech Technical University in Prague, other institutions and an interdisciplinary discussion. The historical themes are grasped from less known perspectives and supplemented with a critical apparatus and explanation. It seeks to capture the development of the Czech society in all spectrums of historical research. The individual topics respect the landscape composition as regards the captured processes and events. The advance of methodology, factual documentation and cartographic formulation is evident in the study of many issues on the Czech history. The atlas reflects the latest trends of contemporary cartographic work and modern techniques used in historiography, historical geography, geography and many related spheres. The atlas has got the following awards: Magnesia Litera 2015, The Book of the Year 2014 (Academia Publishing House), The Map of the Year 2014 (The Cartography Society of the Czech Republic), The Josef Hlívka's Award 2014.

Odůvodnění předkladatele:

Research activities of the Czech historical geographers occupy an important position within the European context. Now, their most significant work to day, the monumental Academic Atlas of the Czech History, has been published. It presents a collection of selected, hierarchically arranged accomplishments of modern Czech historiography on maps, cartographic models, illustrations, charts and cartograms. They concern post-1989 Czech and Czechoslovak history with links to the European and, in particular, central-European space. The three dominant issues, i.e. the man, space and time, mingle together. The atlas is a scholarly work that captures the Czech and Czechoslovak history within international circumstances in the form of well arranged maps and partial probes. This type of atlas has been published after almost fifty years (the Atlas of Czechoslovak History was published in 1965), though in a completely new concept.

Odůvodnění panelu:

4A Výsledek výzkumné práce, který je mezioborový, dlouhodobý. Impozantní výsledky. Mezinárodně srozumitelné a svojí koncepcí a způsobem zpracování originální propjení slova, map a obrazové přílohy.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Bez hranic. Umění Krušnohoří mezi gotikou

obor: AL

Identifikátor: RIV/44555601:13410/15:43887483!RIV16-MK0-13410

Id: 171

Předkladatel výsledku do Pilíře II.:

**IČO: 44555601 Univerzita Jana Evangelisty Purkyně v Ústí nad Labem,
Filozofická fakulta**

Podíl předkladatele na výsledku: **23 %**

Popis podílu předkladatele:

The proposer/submitter and his home makers were an integral part of the team participating in the creation of the book. They acted in the team not only as the authors of introductory scientific papers but also as the authors of entries.

Odůvodnění předkladatele:

The book is a fundamental contribution to the understanding of history and culture in north-western Bohemia before the mid-16th century. It is the first comprehensive analysis based on a full account of the heritage funds of all types of arts. Thanks to it, the book has become one of the cornerstones of future knowledge and to understanding medieval art and culture in the context of the whole of Central Europe, consisting of closely interrelated and yet specific artistic regions. The research presents the results of a long-range stage of a concentrated interdisciplinary study which was conducted by more than thirty specialized scholars and many other collaborators. Hopefully, it will facilitate further specialist research and will become its factual bases as well as an incentive for the scholarly public to explore and interpret the surprising artistic wealth of the region of north-western Bohemia and the Ore Mountains. The resurrection of the cultural and spiritual memory of this badly devastated and the partially no longer extant historical landscape, which in the past century was forcefully industrialized and ruthlessly exploited, has now been opened and prepared for the following generations of historians, archivists and art historians.

Odůvodnění panelu:

4A Předložená publikace představuje komplexní zhodnocení výtvarné kultury v severozápadních Čechách a saské části Krušnohoří od středověku do poloviny 16. století. Jedná se o výsledek mezioborové spolupráce.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Bez hranic. Umění Krušnohoří mezi gotikou

obor: AL

Identifikátor: **RIV/00023281: /15:#0000806!RIV16-MK0-NARODNIG** Id: 172

Předkladatel výsledku do Pilíře II.:

IČO: 00023281 Národní galerie v Praze

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

The National Gallery in Prague was the organizer of the exhibition "Without borders. Art in the Ore Mountains between the gothic and the renaissance" and the Editorial Department of the National Gallery in Prague issued the presented scientific catalog. Scientific secretary of the National Gallery in Prague Jan Klípa was one of two chief editors of the publication and he participated as an author on the two of the introductory monographical essays. "Domestic authors" (i.e. employees) of the National Gallery in Prague worked up 37 complex passwords of this scientific catalogue.

Odůvodnění předkladatele:

Monumental scholarly catalogue evaluates and presents to the public the scientific results of many years of comprehensive interdisciplinary research of culture heritage and monuments of art of the region, extending on both sides of the provincial border in the foothills of the Ore Mountains in the 14th to 16th century. The book is conceived as a series of monographic essays of a synthetic nature, which focus on specific donator and cultural entities, such as the royal cities (Most, Chomutov), significant monasteries (Kadan, Osek) or aristocratic families (Fitztums, Schliks, Vartemberks). Within them, then presents the development of a scale of forms of patronage in the late Middle Ages. Special thematic line focuses on the importance of cultural and artistic exchanges between the Czech and Saxon Ore Mountains. The authors of the publication are leading experts on the respective fields of research. The book is also characterized by a high level of graphic design and by hundreds of quality color photographs of art works that are often published for the first time.

Odůvodnění panelu:

4A Předložená publikace představuje komplexní zhodnocení výtvarné kultury v severozápadních Čechách a saské části Krušnohoří od středověku do poloviny 16. století. Jedná se o výsledek mezioborové spolupráce.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Adam z Veleslavína, Daniel: Nomenclator quadrilinguis Boemico-Latino-Graeco-Germanicus (2015)

obor: AI

Identifikátor: **RIV/68378092: /15:00452466!RIV16-AV0-68378092**

Id: 63

Předkladatel výsledku do Pilíře II.:

IČO: 68378092 Ústav pro jazyk český AV ČR, v. v. i.

Podíl předkladatele na výsledku: **40 %**

Popis podílu předkladatele:

Alena M. Černá initiated the project of the dictionary edition (the book as well as its electronic version) and worked as the head of the group of editors. She edited the Czech part of the dictionary, its transcription and transliteration. In cooperation with professor Berger she also wrote the introductory study on the importance of Veleslavín's quadrilingual nomenclator for Czech lexicography. Boris Lehečka prepared the manuscript for copy-editing. He developed a software for the authors to tag language forms in the manuscript of the dictionary in order to style them appropriately for copy-editing and print. The tagging is also used for smart search of the content of the CD.

Odůvodnění předkladatele:

The new edition of Daniel Adam of Veleslavín's Nomenclator Quadrilinguis from 1598 is historically the first critical edition of a humanistic dictionary. The new edition is intended for philologists as well as students. The book contains the dictionary with its original prefaces, detailed editorial principles, and an introductory study on the Nomenclator's impact and its sources. The book also includes a CD with a search tool, containing not only all the book's texts, but also the original indices of Czech and Latin words, and copies from the old printed version.

Odůvodnění panelu:

4A Jedná se bezesporu o záslušnou edici významného díla české renesanční kultury, které zásadním způsobem ovlivnilo českou lexikografii.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Inclusion before Exclusion or Vice Versa: What the Qualification Directive and the Court of Justice Do (Not) Say

obor: AG

Identifikátor: **RIV/00216224:14220/13:00067478!RIV14-MSM-14220**

Id: 676

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Právnická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The author is the only author of this article, which implies an essential role of the Masaryk University in creation of this output.

Odůvodnění předkladatele:

This article addresses the question whether the assessment of the inclusion clause must precede the application of the exclusion clauses under the 1951 Convention relating to the Status of Refugees (CSR51) and the Qualification Directive. Albeit this issue is a recurring theme in many jurisdictions, it has not been sufficiently analyzed in the wake of the emerging Common European Asylum System. This article shows that the jurisprudence of the top national courts shifted decisively in favor of the 'exclusion before inclusion' position. Subsequently, it looks for guidance at the Qualification and Procedures Directives and argues that although it is generally assumed that the European Asylum Acquis left this issue untouched, it endorses the 'exclusion before inclusion' position and it does so even more overtly than the CSR51. However, this article also argues that the Qualification Directive taken in conjunction with the Procedures Directive creates an obligation for the EU Member States that goes beyond the CSR51, namely to address inclusion in the interview with the applicant even in cases when the refugee adjudicators plan to apply the exclusion clause. This article thus puts forth a novel and original argument that significantly advances the field of refugee law. It is also timely and particularly relevant, as in the wake of 9/11 and recent terrorist attacks in Europe the adjudicators will have to grapple with the exclusion clauses more often than in the 1990s. This article also includes the most updated overview of the relevant case law from European, Canadian, Australian and New Zealander courts, which is of particular use for practitioners. For those reasons, this article was cited in virtually all key publications in the field of asylum and refugee law.

Odůvodnění panelu:

4A Výborný článek v prestižním zahraničním časopise, který již byl v řadě dalších prací citován.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Praslovanština a jazykový kontakt

obor: AI

Identifikátor: RIV/68378092: /14:00428570!RIV15-AV0-68378092

Id: 1062

Předkladatel výsledku do Pilíře II.:

IČO: 68378092 Ústav pro jazyk český AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The author is an employee of the Institute of the Czech Language of the Czech Academy of Sciences.

Odůvodnění předkladatele:

The book is the first synthesis of its kind on Proto-Slavonic and language contact. It combines current perspectives on Proto-Slavonic phonology and grammatical changes that, according to individual authors, were caused by the contact of Proto-Slavonic language with other languages (Iranian, Thracian, Celtic, Germanic, Romanic, Uralic, Altaic and Baltic). These changes are explained using modern theories of language contact, making this book the first to view the interaction between the Proto-Slavonic language and other languages through the lens of contemporary contact linguistics. In turn, contact linguistics benefits from Slavic data and a discussion on the possibilities of contact between undocumented, merely reconstructed languages. On the whole, this book is an original contribution to two disciplines: historical Slavic studies and contact linguistics. The former is enriched by a new methodological view, the latter by new empirical findings helping to extend the discipline's theoretical underpinnings. The book is also interdisciplinary in that it allows several fields to intersect: since language contact in language development is related to how the language functions in a society, parts of the research in this book draw on the humanities, and, in the case of reconstructed languages specifically, on history and archeology. These two fields then benefit from the linguistic findings, which provide supporting materials. This results in a deeper understanding of the early Slavic languages, and the oldest history of the Slavs and their culture. The book has received praise not only from historians of Slavonic, but also archeologists and general historians. Currently, one international review is in press (J. Nuorluoto, *Slovo: Journal of Slavic Languages, Literatures and Cultures*, Uppsala). So far, the book has been cited nine times and five more works citing it are in press. Most of these citations are in international publications (Germany, Poland, Italy, USA).

Odůvodnění panelu:

4A Mimořádné dílo autora, představující výrazný krok v celé generaci lingvistů, protoslavistů. Výlučné dílo, na něž lze dále navazovat, s nímž je nezbytné se i v dalších generacích kriticky vyrovnat.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Proměna českých zemí ve středověku

obor: AB

Identifikátor: **RIV/00216208:11210/12:10112422!RIV13-GA0-11210**

Id: 1086

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Filozofická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Charles University 100%

Odůvodnění předkladatele:

The book offers a key to several important chapters of the history of Czech lands, firmly anchoring them in a broad European context. The Medieval transformation that impacted the Czech lands mostly in the 13th century is seen as a broad cultural change in which domestic preconditions encountered a system of innovations already evolved in West Central Europe. The main topics analysed are the onset of landed nobility, the transformation of the rural milieu, and the early history of towns. The analysis draws on every source category, including written testimony, archaeological findings, and architectural monuments. Inspired by microhistorical methodology, it does not indulge in general schemes but studies carefully chosen samples of the transformation and its natural differentiations. English edition of the book: - 2012: The Czech Lands in Medieval Transformation. Brill Leiden - Boston. Early Slavic Studies Association Book Prize 2012 (The Ohio State University)

Odůvodnění panelu:

4A Anglické vydání knihy. Evropský rozměr. Prestižní nakladatelství.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Průvodce kulturním děním a životním stylem v českých zemích v letech 1948-1967

obor: AB

Identifikátor: RIV/47813059:19240/11:#0003893!RIV12-MSM-19240

Id: 1094

Předkladatel výsledku do Pilíře II.:

IČO: 47813059 Slezská univerzita v Opavě, Filozoficko-přírodovědecká fakulta v Opavě

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

50% - Participation of the institution has been determined in accordance with the methodology

Odůvodnění předkladatele:

viz příloha/see the attachment

Odůvodnění panelu:

4A Průvodce stylem života a kulturního dění v českých zemích v letech 1948- 1967 představuje hutný popisný text faktografického rázu, který je založen na sekundárních pramenech a na výsledcích orální historie.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

A Frequency Dictionary of Czech

obor: AI

Identifikátor: **RIV/00216208:11210/11:10103867!RIV12-MSM-11210**

Id: 30

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Filozofická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Charles University 100%

Odůvodnění předkladatele:

This academic dictionary is one of the most remarkable recent publications in the research field of "The Czech National Corpus: research infrastructure for empirical language-oriented inquiry". The dictionary became the primary resource for the development of the program PROGRES 9: Czech National Corpus. Due to its significant contribution to the field and due to the fact that it has been recently included in the list of primary literature for the preliminary course of the Czech language at the University of Oxford, the dictionary has been repeatedly suggested for nomination in the year of 2016. The dictionary provides the 5000 most frequently used words in the Czech language in a detailed frequency-based list, as well as alphabetical and part of speech indexes. All entries in the rank frequency list feature the English equivalents, a sample sentence with English translation and an indication of register variation. The dictionary also contains thematically organised and frequency-ranked lists of words on a variety of topics. It is the only Czech frequency dictionary based on a balanced selection of both written and authentic spoken sources (corpora) that constitute the individual text registers (spoken, fiction, non-fiction, newspapers). Dispersion of the individual entries within the text registers is also accounted for with the main goal to make the dictionary ranking as close as possible to the real language use.

Odůvodnění panelu:

3A Vydání slovníku v prestižním nakladatelství Routledge lze považovat za velký úspěch české jazykovědy v mezinárodním kontextu. Výsledek mimořádného badatelského projektu. Slovník včleněn do evropského výzkumu. Mezioborové dílo.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Señorita Franco a Krvavý pes. Malíř, karikaturista a ilustrátor Antonín Pelc (1895-1967)[Señorita Franco and the Bloody Hound. The Painter, Cartoonist and Illustrator Antonín Pelc (1895-1967).

obor: AL

Identifikátor: RIV/68378033: /15:00443309!RIV16-AV0-68378033

Id: 1182

Předkladatel výsledku do Pilíře II.:

IČO: 68378033 Ústav dějin umění AV ČR, v. v. i.

Podíl předkladatele na výsledku: 45 %

Popis podílu předkladatele:

Four of eight chapters of the book are written by research workers from the Institute of Art History of the Czech Academy of Sciences.

Odůvodnění předkladatele:

The book is aimed at detailed presenting the life and work of artist Antonín Pelc (1895–1967). It is the first critical monograph on him. It focuses on interpreting Pelc in a wider context, while emphasis is laid on following an artist's role in society and understanding the relation between art work and politics and ideology. Antonín Pelc – a painter, caricaturist and illustrator – was a distinguished personality of Czech inter-war and post-war art. His work in the field of caricature has significantly influenced the development of this genre not only in Czechoslovakia but also in the international context due to Pelc's activities in the United States. He lived in New York from 1941 to 1946, creating many paintings and anti-Fascist caricatures there. The artist published them in the American periodicals. In 1943, they were exhibited along with the works by Adolf Hoffmeister in the prestigious New York Museum of Modern Art as well as in other galleries on the American continent. Besides caricatures and paintings Pelc focused on film and promotion posters, prints, and illustrated dozens books. He also held several offices through which he influenced the developments in official fine arts of the socialist republic after 1948. He received many awards including the title “national artist”. The structure of the book has several layers designated by the intertwining microscopic and macroscopic approaches. Its main chapters are supplemented by brief point entries explaining the context or the significant circumstances of the individual subjects. The visual supplement contains not only Pelc's works but also comparative works by other Czech and foreign artist and extensive documentation material. The book also contains biography, list of books designed by Pelc, bibliography, index of names, and English summary. The book was reviewed by Tomáš Pospiszyl (in Art/Umění LXIII, 2015, č. 6, s. 505–506) and by Jiří Šetlík (Art and Antiques 2015, č. 6 (červen), s. 54–5).

Odůvodnění panelu:

3A Mimořádně kvalitní publikace zabývající se specifickým uměním karikatury a jejího vztahu k malbě v konkrétním případě Antonína Pelce.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Obscurity and Memory in Late Medieval Manuscript Culture: The Case of the Summarium Bible

obor: AB

Identifikátor: **RIV/00216208:11210/12:10128196!RIV13-AV0-11210**

Id: 957

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Filozofická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Charles University 100%

Odůvodnění předkladatele:

The book is a contribution to the dynamic discourse on the fascinating textual and manuscript culture of the Latin Middle Ages. Focused on the subject of obscurity, it enters an especially fragile world where the lack of evidence is particularly painful and it is hard not to mix our present day ideas of the obscure with the medieval ones. For this reason, before moving to the discussion of the active application of obscurity within the late medieval culture of memory, the volume opens with an overview of the two explicit medieval discourses on the subject of obscurity, the scriptural and rhetoric-poetical discourse. The actual focus of this study, the case of the biblical mnemonic aid Summarium Bible, is emblematic: during the Middle Ages it was an extremely popular (even omnipresent) text which is, at the same time, very obscure to us, making its practical usability already in the Middle Ages questionable today. The tension between its assumed limits as a textual tool and its actual most favorable medieval reception is precisely what leads to a careful re-consideration of the medieval approach to obscurity, which is the subject of this book. The book was very favorably reviewed by Stephen Mossman from the University of Manchester (<http://scholarworks.iu.edu/journals/index.php/tmr/article/view/19981/26120>). It is held by a number of libraries in the world and has been included in major bibliographic databases in medieval studies. It has been viewed over 300 times on academia.edu, and quoted at least 20 times.

Odůvodnění panelu:

3A Latinská a středoevropská studia. Základní dílo, reflektované jako výlučné zahraničními knihovnami a badatelskými centry.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Česká činohra 19. a začátku 20. století Osobnosti

obor: AL

Identifikátor: **RIV/00023205: /15:#0000357!RIV16-MK0-INSTITUT** Id: 310

Předkladatel výsledku do Pilíře II.:

IČO: 00023205 Institut umění - Divadelní ústav

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The lexicon originated in the context of long-term research project Czech Theatre Encyclopedia, which has been implemented by the Arts and Theatre Institute, Prague since 1998, with the support of Ministry of Culture, Czech Republic. For the implementation of such an extensive and voluminous publication project, the systematic and long term support was crucial. Individual entries generated by the full-time and affiliated collaborators were thoroughly and repeatedly edited and broadened with a variety of other information, and completed according to the editorial rules. Two-part compendium was prepared by the Department for Czech Theatre Studies of the Arts and Theatre Institute under the leadership of Eva Šormová and the team of editors – Barbara Topolová and Markéta Trávníčková. The most important person, who stands behind the concept, implementation and successful completion of the presented publication, was the longstanding employee of the Department for Czech Theatre Studies Eva Šormová, Czech theatre historian who specializes in the Czech theatre history of the 19th and 20th centuries and recently concentrates on the lexicographical work. In 2000, she published an encyclopedia Czech Theatres. Encyclopedia of Czech Theatre Companies. As an author, she contributed to the Czech and foreign encyclopedias, and is a chief editor of Czech Theatre Encyclopedia. In 2016, the publication received the Honorable Recognition Award by the Union of Interpreters and Translators, it was nominated for the Theatre News Award 2016 and received a special recognition of the F. X. Šalda Award committee in 2015.

Odůvodnění předkladatele:

The presented lexicon Czech Drama-Theatre of the 19th and Early 20th century: Personalities is the sixth volume of Czech Theatre Encyclopaedia and the third volume of its biographic lexicons. It consists of 510 entries that introduces personalities who formed the Czech Drama Theatre in the era of the national revival (19th century). This volume presents people of all professions who co-created the theatre art, i.e. directors, actors, set designers, playwrights, translators, theatre managers. The entries contain data about their lives, information on their artistic activities, and examine their significance. The text includes reproductions of pictures and theatre documents, as well as the name index. Based on the complex research, each entry provides the information about life, artistic activities and works of respective personalities and includes detailed bibliography. The volume focuses on the 19th century which represents the key period for the modern Czech theatre. Despite this fact, Czech theatre historiography lacked such a broad encyclopedic work. The structure of the book corresponds with the previous volumes, but thematically fully focuses on the Czech-speaking theatre that represents a key phenomenon in the development of theatre culture in the Czech lands during the revivalist era. Individual entries and summary mediate an image of the Czech drama theater, which – in accordance with the cultural, economic and political development of the 19th century Czech society – marked a remarkable boom in both the original Czech drama and translation activities, as well as in the stage art. Simultaneously, Czech drama theatre achieved its full professionalization and acquired its own institutions, including the representative scene – the National Theatre. The book, which documents life and art of theatre artists, offers an insight into the facts and events whose recognition may be particularly encouraging and cleansing nowadays.

Odůvodnění panelu:

3A Jde o výjimečný a několika grémii oceňovaný počín a výsledek dlouhodobého badatelského úsilí v oblasti českého divadla 19. a 20. století.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Struggle by pen

obor: AB

Identifikátor: RIV/68378009: /15:00452799!RIV16-AV0-68378009

Id: 1270

Předkladatel výsledku do Pilíře II.:

IČO: 68378009 Orientální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The author created 100 percent

Odůvodnění předkladatele:

The monograph explores the emergence of national consciousness and nationalist ideology of Uyghurs in Xinjiang from c. 1900-1949. Drawing from texts written by modern Uyghur intellectuals, politicians and propagandists throughout this period, the author identifies four types of Uyghur discourse on the nation and national interest, and traces the emergence and construction of modern Uyghur national identity. The author demonstrates that the modern Uyghur intelligentsia regarded political emancipation and social modernization as the two most important interests of their nation, and that they envisaged Uyghurs as citizens of a modern republican state founded on the principles of representative government. Using new sources, this study presents a new perspective on Uyghur intellectual history and on Republican Xinjiang in the crucial period of construction of modern Uyghur nation, and contributes to scholarship on national movements and on modern China. It received a positive acceptance by the leading scholars of Uyghur history and Xinjiang politics.

Odůvodnění panelu:

3A Výborná kniha v angličtině byla vydána v prestižním nakladatelství. Pojednává o ujugurském sebeuvědomování se a je tedy významným příspěvkem k ujugurskému pojetí národa. Autor analyzuje četné mandarínské a ujugurské texty a přispívá tak k autentickému poznání historie Ujgurů.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Rukopisy královéhradecký a zelenohorský a česká věda /1817-1885/

obor: AJ

Identifikátor: RIV/68378068: /14:00439307!RIV15-AV0-68378068

Id: 1167

Předkladatel výsledku do Pilíře II.:

IČO: 68378068 Ústav pro českou literaturu AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

This publication came about as part of a long-term ICL project on the reception of the Manuscripts. In accordance with the plan the team of authors are carrying on with a book on the reception of the Manuscripts in Czech literature and art. Miroslav Novák (Institute of Chemical Technology) also contributed to the publication with a two-page subchapter.

Odůvodnění předkladatele:

The Králův Dvůr and Zelená hora manuscripts (1817, 1818) and other associated literary hoaxes were one of the key phenomena behind the creation of modern-era national society in the Czech lands during the 19th century. Representing the original Slav Czechs and their cultural and not least their legal values, both discoveries became the subject of extensive national disputes, which went far beyond the issue of their authenticity. This collective monograph, together with anthologies of the texts and other material, attempts to examine the relevant broader contexts under the prism of the formation of Czech science and scholarship during the 19th century, while expanding on the political, institutional and methodological etc. factors and reviewing the work of those who had dealt with both manuscripts in the Czech lands in their broader European context before they were decisively criticized and decanonized in 1886 (e.g. J. Dobrovský, J. Kopitar, J. Grimm and F. Palacký). A standpoint that links the manuscripts and their reception to discussions over other relics of the oldest national epics in 19th century Europe, whether authentic or forged, primarily expands the general idea of the bivalency of the dispute involved, presenting the breadth and depth of positions in the exposition of these "findings", together with factors that led the majority population to an increasingly uncritical and politically biased faith in the authenticity of the manuscripts and their role in the definition of Czechness. This collective monograph in dialogue with the latest American and European research into romantic nationalism prepares the foundations for further research into the opaque phenomenon of the Manuscripts beyond the traditional intra-Czech framework.

Odůvodnění panelu:

3A Návrat k jedné ze "záhad" české literatury, kulturního i politického života nejen v Čechách. Metodologická jednota autorského kolektivu, erudice zvládnout tak rozsáhle v literatuře zpracovávaný problém, povyšuje tuto knihu na událost.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Politická práva

obor: AG

Identifikátor: **RIV/00216224:14220/14:00076412!RIV15-MSM-14220**

Id: 1039

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Právnická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The author is the only author of this book, which implies an essential role of the Masaryk University in creation of this output.

Odůvodnění předkladatele:

The Political Rights is the second volume of a series of books by Pavel Molek focused on fundamental rights, and thus actually a "loose sequel" to the book The Right to a Fair Trial. Its structure is based on the author's perception of political rights. He sees them as rights that enable individuals to interact with other members of their community, for example, by communicating with them through their actions (Chapter 2), by associating with them temporarily (Chapter 4) or more permanently (Chapter 5), and of course, by participating in the management of public affairs, whether by petitions (Chapter 3), in elections (Chapter 6), or in other forms (Chapter 7), or even, if democracy is threatened, by civil resistance (Chapter 8). Concepts such as democratic society, social contract, pluralism and free competition of political forces as well as the question whether it possible to exercise political rights in the 21st century go through all the chapters of the book. The book (and also the entire series) is innovative as it connects, unlike the existing legal production, different levels of human rights protection (the universal, regional, and European ones, that of the Charter of Fundamental Rights and Freedoms, and the legislative one) and at the same time it interweaves the analysis of their establishment in legislation with extensive analyses of the case law of the Constitutional court, the European Court of Human Rights and other international and foreign decision-making bodies. The book has enjoyed a favorable reception in various reviews, and it is widely cited, too.

Odůvodnění panelu:

3A Poutavě psaná monografie využívající řady zdrojů, zejména judikatury.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Pragmatics of Tense and Time. From Canonical Headlines to Online News Texts

obor: AI

Identifikátor: **RIV/00216224:14210/14:00074857!RIV15-MSM-14210**

Id: 1060

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Filozofická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Know-how of the book is completely provided by the author – employee of the Masaryk University.

Odůvodnění předkladatele:

Citations: 6 (Google Scholar) This book provides the first comprehensive account of temporal deixis in English printed and online news texts. Linking the characteristic usage of tenses with the projection of deictic centres, it notes how conventional tenses, particularly in headlines, are affected by heteroglossia arising from various accessed voices. The resulting tense shifts are interpreted pragmatically as a conventional reader-oriented strategy that creates the impression of temporal co-presence. It is argued that since different tense choices systematically correlate with the three main textual segments of news texts, the function of tense needs to be viewed in a close connection with its local context. Traditional news texts are also contrasted with online news, particularly as far as the effect of hypertextuality on the coding of time is concerned. A two-level structural framework for the analysis of online news is proposed in order to account for their increased textual complexity. The publication adopts an innovative multidisciplinary approach that provides a complex perspective on the genre of traditional news texts as well as their modifications in the online sphere. The book falls within the scope of linguistic pragmatics, discourse analysis and stylistics but it is also highly relevant for mass media studies and the theory of communication. The monograph marks the culmination of the author's research into modern media discourse analysis over the past 15 years.

Odůvodnění panelu:

3A Anglickojazyčná publikace využívající inovativní metodologii, u níž lze předpokládat relativně velký mezinárodní dosah a relevanci. Vydáno v zahraničním nakladatelství, završení mnohaletého výzkumu, multidisciplinární přístup. Aktuálně zásadní téma výzkumu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Word-Class Flexibility in Classical Chinese. Verbal and Adverbial Uses of Nouns

obor: AI

Identifikátor: **RIV/00216208:11210/11:10098853!RIV12-MSM-11210**

Id: 1496

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Filozofická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Charles University 100%

Odůvodnění předkladatele:

This monography belongs to the most notable publications in the research field of Sinology for 21st century, and therefore, it has been repeatedly suggested for nomination in the year of 2016. The monograph belongs to the few books by Czech orientalists published by a prestigious Western publishing house in last decades. It deals with one of the most conspicuous and apparently puzzling phenomena in Classical Chinese (the language of classical Chinese philosophy) - word-class flexibility. The issue of word classes and word-class flexibility is absolutely crucial for any theory of Classical Chinese grammar, however quite surprisingly it has been studied mostly only superficially, attracting many misconceptions both about Chinese language and, more generally, Chinese thinking. The present book addresses most of these problems on the background of contemporary general theories of language and with a clear emphasis on cross-linguistic comparison and typological perspective, aiming at the reader from the field of general linguistics as much as on the sinologist. The introductory chapters represent the most extensive and theoretically sophisticated account of nature of word classes in Classical Chinese and of the principles of their delineation to the date, apart from a careful summary of previous research in the field both in the West and in China. The very analysis and detailed description of noun-verb and noun-adverb flexibility are based on voluminous material of practically all major transmitted texts of the classical period (ca. 500-200 BC), including also some pieces of literature assembled in the early post-classical era (200-100 BC). The monograph-length study will certainly be indispensable for any future research on related topics.

Odůvodnění panelu:

3A Publikace vnímána i v mezinárodním kontextu, zahraničními sinology jako zcela výjimečná.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Václav Chaloupecký, hledání dějin

obor: AB

Identifikátor: **RIV/00216208:11610/14:10316840!RIV16-MSM-11610**

Id: 1459

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Ústav dějin Univerzity Karlovy a archiv Univerzity Karlovy

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Institute of the History of Charles University and Archive University : 100

Odůvodnění předkladatele:

The book about Václav Chaloupecký, professor of Czechoslovak history at the Komenský University in Bratislava and Charles University in Prague, is not a classical biography only, but a successful attempt at contextual biography. The primary aim of its author was to analyze life and work of Professor Chaloupecký within the net of professional and generation relations in context of Czech, Czechoslovak, and European historiography, respectively. The book can be read in several layers: history of historiography (namely mediaeval studies), history of intellectual milieu of several generations of Czech and Slovak scholars, institutional history, history of Czech-Slovak relations, among others. A uniqueness of author's access to the topic results in the fact that he focuses not only on (limited) successes of the scholar, but also puts an impact on polemical aspects of his personality and activities, limits of his interpretations, roots of his mistakes, controversies initiated by his original concepts, and eventually fruitful results of these controversies for further developments of historiography. Author's analysis (or deconstruction) of the Chaloupecký's works in context of Czech and Slovak historiography enables to challenge some stereotypes, traditionally linked to evaluation of Chaloupecký's importance. The book is based on admirable good knowledge of primary and secondary sources and clear methodology, described in an inspirative chapter. Broad and deep erudition of the author is evident both in fundamental questions, relevant for the biography, and in marginal topics linked with Chaloupecký's diverse activities. As far as the formal and stylistical aspects are concerned, the text is characterized both by systematic nature and content constriction on one hand, and indisputable literary values on the other hand. The book is naturally equipped with full scientific apparatus, i. e. references, illustrations, bibliography, and indexes.

Odůvodnění panelu:

3A První monografické zpracování životního běhu a profesní kariéry významného českého historika V. Chaloupeckého, působícího delší čas i na Komenského univerzitě v Bratislavě.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Cizinci ve vlastní zemi. Dějiny a současnost národnostních napětí.

obor: AG

Identifikátor: **RIV/00216208:11220/12:10130385!RIV14-GA0-11220**

Id: 233

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Právnická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Charles University, Faculty of Law 100 %

Odůvodnění předkladatele:

The book examines major European disputes concerning minorities (primarily nationalities) in the past and present. It posits that such conflicts are often deeply rooted in ancient times, going back thousands of years. Adopting an original legal and historical approach, the book explores not only historical facts, but also the legal regulation which is placed in a wider context of the legal system. The author drew on his earlier publications, particularly the following books: Minorities in Interwar Czechoslovakia, Minorities in Communist Czechoslovakia, and Minorities and Law in the Czech Republic, which provided analyses of some of the issues and facilitated a synthesis in this book. The book presents comprehensively the development of the minority policy in Europe, focusing on the 20th century, when nationality disputes lay at the centre of international politics, particularly in the interwar period. Czechoslovakia was in the middle of the vast region seething with minority conflicts, i.e. the extensive area between Germany and Russia and the adjacent Balkans, and Prague often played a major role in minority politics. Research undertaken in the Czech archives thus provides a very original insight into politics and diplomacy. Regrettably, minority conflicts (in particular nationality conflicts) are still of great relevance in Europe; therefore, current nationality issues have been discussed as well. The book can be valuable not only in the field of history and politology, but also in legal science.

Odůvodnění panelu:

3A Výborně koncipovaná kniha, založena na hlubokém studiu a rozsáhlých znalostech odborníka na národnostní menšiny.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Společenstvo hrdinů ,Válka a reprezentční strategie českomoravská aristokracie 1550-1750

obor: AB

Identifikátor: **RIV/00216275:25210/15:39899210!RIV16-MSM-25210**

Id: 1232

Předkladatel výsledku do Pilíře II.:

IČO: 00216275 Univerzita Pardubice, Fakulta filozofická

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The author represents the University of Pardubice.

Odůvodnění předkladatele:

The book is the first Czech attempt to link hitherto poorly reflected international methodology (New military history, culture-military history) and the domestic tradition of research into the history of the aristocracy. Methodologically, the text is largely conceived on the foreign theoretical base anchor what makes it a significant overlap and indicate that war as a cultural phenomenon can be study in the Czech Republic to study as well as anywhere else, and that this often neglected topic touches seemingly unrelated areas of research, such as history early modern aristocracy in Bohemia and Moravia. The book shows that the local aristocracy was still firmly anchored at war and the military, if not longer in daily practice, so surely in her collective mythology. This mythology represented a significant constitutive element of social exclusiveness of the nobility and its aristocratic ethos. The book has become a winner of traditional questionnaire among professional historians "A historical book of the year 2015", organized by the magazine Dějiny a současnost – see Dějiny a současnost 2016, nr. 5-6. „Fellowship of the Heroes“ is also positively evaluated in scholarly reviews. Three of them are published already, the other two are in press: Ivana Čornejová, Marginalia Historica 2014, nr. 2, pp. 161-163. Vít Vlnas, Dějiny a současnost 2016, nr. 6, p. 54; František Koreš, Opera historica 17, 2016, nr. 1, pp. 131-133. Jiří Hutečka and Petr Wolhmuth, Dějiny – teorie – kritika 2016, in press.

Odůvodnění panelu:

2A Publikace se zabývá problematikou reprezentace české a moravské šlechty v období raného novověku. Stěžejní téma pak představuje fenomén válečnictví, vojenské úspěchy a hrdinství.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Reviving Ancient Chinese Mathematics

obor: AB

Identifikátor: **RIV/00216208:11210/14:10287369!RIV15-MSM-11210**

Id: 1154

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Filozofická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Charles University 100%

Odůvodnění předkladatele:

This monography has been repeatedly suggested for nomination in the year of 2016 due to its remarkable contribution to the field of Chinese literature and the field of mathematics. This book is the first English-language scholarly monograph on the history of Chinese mathematics in the 20th century. Its central character is Wu Wen-Tsun (born 1919), one of the most prominent Chinese mathematicians of recent decades. His work spans two radically different periods of activity: In the 1950s, he was at the forefront of research on algebraic topology while studying in France, and introduced the subject to China upon his return. Starting from the 1970s, he turned his attention to mechanized theorem-proving and solution of algebraic equations, claiming to draw inspiration from traditional Chinese mathematics. His interest in traditional Chinese mathematics started during the Cultural Revolution period (1966-1976), when normal mathematical research was impossible. Wu subsequently became a highly visible promoter of traditional Chinese mathematics. This monograph analyzes Wu Wen-Tsun's views and mathematical work against the background of ideological and political development of China's tumultuous twentieth century. It was published in the Needham Research Institute Series, run by a Cambridge, UK institute specializing in the study of East Asian science and technology.

Odůvodnění panelu:

2A Základní dílo o dějinách čínské vědy ve 20. století, které bylo vydané anglicky v prestižním zahraničním nakladatelství a vyvolalo velice příznivý ohlas v mezinárodní vědecké komunitě.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Pojem osoby v právu : (osoba, morální osoba, právnická osoba)

obor: AG

Identifikátor: **RIV/00216208:11220/12:10120759!RIV13-MSM-11220**

Id: 1036

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Právnická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Charles University in Prague, Faculty of Law 100 %

Odůvodnění předkladatele:

This monograph describes the evolution of the term person at law from his ancient beginnings until today. With reference to the genesis of the abstract term person in a legal sense the author considers the term moral person as highly important. This, in his opinion, represents the key to understand the evolution of the term person or, more precisely, the evolution during which the term moral person was separated from the term natural person in order to be subsequently replaced by the term juristic person. The conception of the juristic person is understood to be another milestone in the abstract view on the person. In order to clarify this term the author is first dealing with the so-called "classical theories" developed throughout the 19th century. He assumes that those theories form in fact the basis followed by most contemporary theorists. The author pays particular attention to legal normativism which, in his opinion, represents the fundamental turning point in the conception of the person in a legal sense. Then, he follows up with the contemporary foreign approach to the person, especially to the juristic person. Namely, he looks onto the conception developed by Rolf Ostheim, Fritz Rittner, Gunther Teubner, Thomas Raiser, Jerzy Wróblewski or by other authors associated with postmodernism in legal science. In the last chapter the author expresses his view on the cotemporary conception of the person formed by analysing its elements in applicable law. In the competition of high quality monographs that Charles University in Prague published in 2012 it ranked as the best monograph of the Law Faculty of Charles University, and ranked 8th -11th in the ranking of all monographs published at Charles University in Prague. <http://www.cuni.cz/UK-5767.html> ;

Odůvodnění panelu:

2A Předložená právně filozofická publikace byla již několikrát velmi pozitivně hodnocena, zvláště v rámci Univerzity Karlovy. Jde o teoretickou práci zabývající se vývojem pojetí osoby v právním slova smyslu od nejstarších dob do současnosti. Věnuje pozornost pojmu právnická osoba a pojmu morální osoba .

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

1. Skull shape asymmetry and the socioeconomic structure of an early medieval central European society

obor: AC

Identifikátor: RIV/00023272: /13:#0002041!RIV14-MK0-00023272

Id: 1206

Předkladatel výsledku do Pilíře II.:

IČO: 00023272 Národní muzeum

Podíl předkladatele na výsledku: **25 %**

Popis podílu předkladatele:

The study is based on the collections of the Department of Anthropology of National Museum. The co-author, Petr Velemínský, selected studied material according to anthropological and archaeological data and he participated in the preparation of the manuscript. The laboratory evaluation of the skeletons as well as their demographical determination was conducted in the Department of Anthropology of the National Museum, Prague. The work was financially supported by Ministry of Culture of the Czech Republic (DKRVO, National Museum).

Odůvodnění předkladatele:

The contribution of this study is the new methodological approach to the evaluation of socioeconomic structure of an early medieval society from the settlement of Mikulčice (Czech Republic) which was studied on the basis of fluctuating (FA) and directional asymmetry (DA) of skulls. The study was developed in a broad collaboration of mathematics, bioarcheology and 3D virtual anthropology. In a previous study it has been shown that DA reflects biomechanical loading and FA environmental stress and variability, and therefore we expected that craniofacial asymmetry should reflect socioeconomic status between the samples. The observed craniofacial asymmetry was consistent with the expected socioeconomic differences between castle and sub-castle inhabitants. The differences were more marked in females than in males and to some extent suggest difference in socioeconomic status. Dietary differences between the socioeconomic groups were illustrated by the DA of the upper face and vault. Mikulčice sub-castle had to withstand higher levels of biomechanical stress, albeit nonsignificantly, which affected the upper face and vault. This effect was compounded by the grittier and more solid foods, such as cereals, in contrast with Mikulčice castle, where the diet comprised a greater proportion of meat. We have not found differences in FA between castle and sub-castle in males, whereas for females the differences were significant, with the castle females tending to have higher values of asymmetry. They exhibited FA values similar to the highly stressed control sample. We expect that the higher variability among castle females compared with the other samples could be connected with the phenomenon of patrilocality in Great Moravian societies. At the same time, the higher values of FA could help to identify lower socio-economic status, as at the Mikulčice castle many highly environmentally stressed females were buried. Journal in Q1 in Anthropology, IF 2,379 (Rank in category 8/84).

Odůvodnění panelu:

Výsledek byl v H15 předložen jiným předkladatelem a označen jako "A". (Participace 25%)

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

2. From the Gospel to the Gospels. History, Theology and Impact of the Biblical Term 'euangelion'

obor: AA

Identifikátor: **RIV/00216208:11270/13:10210067!RIV14-AV0-11270**

Id: 543

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Evangelická teologická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |The book was created exclusively by author from Protestant Theological Faculty, Charles University of Prague.

Odůvodnění předkladatele:

This is a philological and literary-critical monograph in the field of early Christian literature, dealing with the basic foundations of Christian culture and civilisation. It was written as part of the project "The Narrative Gospels. Reasons for their Genesis, Function, and Impact on the Shaping of Christian Culture" of the Grant Agency of the Academy of Sciences of the Czech Republic (IAA 901830902). The methodology is based on an investigation of the semantics, literary function, and historical role of the Greek term Gospel (euangelion) in relation to its Hebrew equivalents. Three basic meanings of the term are analysed: (a) Jesus' announcement of the "kingdom of God", (b) the post-Easter proclamation of the Christian faith by his followers, and (c) literary forms. The author shows that these three meanings follow on from one another and connect together (a) Jesus' "historical ministry", (b) his re-interpretation in the movement of his followers, and (c) his systematic presentation in the form of writings in a specific literary genre. The author analyses this process and traces it up to the establishment of the canonical gospels and the emergence of the Christian canon of Scripture. The most significant result of this investigation is the fact that the genesis of the literary gospels (the return to the historical Jesus) gave rise to a reaction in the emerging Christian movement that prevented an uncontrolled development of post-Easter enthusiasm and established Jesus' words and standpoints as the permanent yardstick for all Christian activity. The book was one of the most highly rated academic monographs at Charles University for the year 2015. In 2014 and 2015 it was reviewed in detail in three international scholarly journals. In 2016 it was published in a reworked form in Czech (Od evangelia k evangeliím, Praha: Academia 2016, 225).

Odůvodnění panelu:

Jedná se o publikaci mezinárodně uznávaného biblisty. Kniha vychází u prestižního nakladatele de Gruyter, a dočkala se již několika recenzí v prestižních oborových časopisech.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

3. The Far Right in the Balkans

obor: AD

Identifikátor: **RIV/00216224:14230/13:00071017!RIV14-MSM-14230**

Id: 1349

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Fakulta sociálních studií

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Know-how of the book is completely provided by the author – employee of the Masaryk University.

Odůvodnění předkladatele:

The book was published in prestigious British academic editing house. It has been positively reviewed in such distinguished academic journals in the field of political science such as Party Politics and Europe-Asia Studies in the field of area studies. The book was cited by leading experts on political extremism including a citation in the book of Cas Mudde, a leading worldwide respected scholar focusing on political extremism.

Odůvodnění panelu:

Monografie shrnuje výsledky rozsáhlého výzkumu. Publikace byla vydána v prestižním vydavatelství a odkazy na ni lze nalézt v jiných zahraničních publikacích.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

4. Is sex estimation from handprints in prehistoric cave art reliable? A view from biological and forensic anthropology

obor: AC

Identifikátor: **RIV/49777513:23330/14:43922231!RIV15-MSM-23330**

Id: 730

Předkladatel výsledku do Pilíře II.:

IČO: 49777513 Západočeská univerzita v Plzni, Fakulta filozofická

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

This study brings a new insight to the very recent debate about the sex of Palaeolithic artists. According to several authors, the size and shape of handprints left on the walls of Palaeolithic caves around the world suggest that both males and females were involved in ancient symbolic activities. The authors of present study, however, clearly showed that recent efforts to infer the sex of ancient hand-painting artists could be flawed. On the methodological level, authors demonstrated that mathematical functions used to the sex estimation from handprints do not generalise across different populations and time periods.

Odůvodnění předkladatele:

The present study fills the gap between social and natural sciences as it uses biological data (handprints) to infer social phenomena (gender relations in prehistory). Further, it touches a more general question of inferring the past from the present. The study was published in the leading anthropological journal (Journal of Archaeological Science) and got an immediate response from the scientific community. The publication was covered by Nature and National Geographic in their highlight sections.

Odůvodnění panelu:

Studie vychází ve velice prestižním časopise Journal of Archeological Science. Článek představuje zajímavé téma, jež cenným způsobem propojuje přírodní a společenské vědy.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

5. Right for the Wrong Reasons: Reflections on Modern Human Origins in the Post-Neanderthal Genome Era

obor: AC

Identifikátor: **RIV/49777513:23330/14:43923767!RIV16-MSM-23330**

Id: 1155

Předkladatel výsledku do Pilíře II.:

IČO: 49777513 Západočeská univerzita v Plzni, Fakulta filozofická

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

The sequencing of the Neanderthal genome answered once and for all the question of whether these hominins played a role in the origins of modern humans—they did, and a majority of humans alive today retain a small portion of Neanderthal genes. This finding rejects the strictest versions of the Recent African Origin model and has been celebrated by supporters of Multiregional Evolution (MRE). However, we argue that MRE can also be rejected and that other, intermediate, models of modern human origins better represent the means by which modern humans became the only extant human species. We argue this because we reject one of the major tenets of MRE: global gene flow that prevents cladogenesis from occurring. First, using reconstructions of Pleistocene hominin census size, we maintain that populations were neither large nor dense enough to result in such high levels of gene flow across the Old World. Second, we use mammalian divergence and hybridization data to show that the emergence of Homo is recent enough that member species of this genus were unlikely to have been reproductively isolated from each other, even in the absence of the high levels of global gene flow postulated by MRE supporters.

Odůvodnění předkladatele:

This study discusses one of the major topics within evolutionary anthropology, specifically how modern humans evolved and dispersed around the world and how archaic human populations might have contributed to our own origins. Moreover, the study has been published in one of the most prestigious (if not the best) anthropological journals (Current Anthropology).

Odůvodnění panelu:

Studie k významnému tématu neandrtálců jako geneticky částečných předků člověka, která vyšla v jednom z nejprestižnějších antropologických časopisů na světě. (Participace 33%)

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

6. From a rise in B to a fall in C? SVAR analysis of environmental impact of biofuels

obor: AE

Identifikátor: **RIV/49777513:23510/15:43925739!RIV16-MSM-23510**

Id: 539

Předkladatel výsledku do Pilíře II.:

IČO: 49777513 Západočeská univerzita v Plzni, Fakulta ekonomická

Podíl předkladatele na výsledku: **25 %**

Popis podílu předkladatele:

25% University of West Bohemia, co-authors are from Italy and Spain

Odůvodnění předkladatele:

This is the first paper that econometrically estimates the impact of rising Bioenergy production on global CO2 emissions. The authors apply a structural vector autoregression (SVAR) approach to time series from 1961 to 2009 with annual observation for the world biofuel production and global CO2 emissions. They find that in the medium- to long-run biofuels significantly reduce global CO2 emissions: the CO2 emission elasticities with respect to biofuels range between -0.57 and -0.80 . In the short-run, however, biofuels may increase CO2 emissions temporarily. The findings complement those of life-cycle assessment and simulation models. However, by employing a more holistic approach and obtaining more robust estimates of environmental impact of biofuels, the results are particularly valuable for policy makers. The paper was published in prestigious journal *Renewable & Sustainable Energy Reviews* which is ranked in the first decile of journals according to the WoS. (impact factor 2015: 6,798).

Odůvodnění panelu:

Studie se vyznačuje dobře propracovanou metodologií a zpracováním výsledků. Publikována v prestižním časopise (IF 6,798). (Participace 25%)

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

7. Erziehung und Bildung der jüdischen Kinder im Protektorat und im Ghetto Theresienstadt

obor: AM

Identifikátor: RIV/46747885:24510/14:#0001149!RIV15-MSM-24510

Id: 469

Předkladatel výsledku do Pilíře II.:

IČO: 46747885 Technická univerzita v Liberci, Fakulta přírodovědně-humanitní a pedagogická

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The monograph is the result of PhDr. Dana Kasperova's work and is the output of research at the Technical University of Liberec (100 %).

Odůvodnění předkladatele:

The book *Erziehung und Bildung der jüdischen Kinder im Protektorat und im Ghetto Theresienstadt* in Czech version won the 2011 Prize Rector of Charles University for the best book in the pedagogical-didactic field. In 2014, due to many positive reactions, it was published in German in the prestigious educational publishing Klinkhardt. The German version of the book has enjoyed many reviews in prestigious German magazines (*Pädagogische Rundschau* -- prof. R. Mehrign, *socialnet.de* -- prof. M. Brumlik) that have rated the work as "a major and a rare example of an exceptionally factual and yet humanly sensitive and kind" about the Holocaust topic in the field of education and upbringing.

Odůvodnění panelu:

Jedná se o mimořádnou publikaci oceněnou Cenou rektora UK. Kniha se setkala s řadou pozitivních recenzí v prestižních oborových časopisech v Německu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

8. Wittgenstein on Internal and External Relations : Tracing All the Connections

obor: AA

Identifikátor: **RIV/00216224:14210/15:00080635!RIV16-GA0-14210**

Id: 1495

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Filozofická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Know-how of the book is completely provided by the author – employee of the Masaryk University.

Odůvodnění předkladatele:

Jakub Macha's book Wittgenstein on Internal and External Relations: Tracing All the Connections does exactly that: it traces all the connections, some of which have been missed in the past. Macha discusses not only internal and external relations, but shows how they hang together with the notion of grammatical relations and problems of intentionality, rules and applications, mathematics, colours, the standard meter, aspect-seeing and Wittgenstein's account of aesthetics and art. Macha packs all this into one delightful book with a strong thesis. Macha's contribution to Wittgenstein scholarship lies in showing that internal relations do not disappear in the middle period, leading to a completely changed project in the later works, but rather that they transform into grammatical relations. This leads directly to the argument that the internal/external distinction is Wittgenstein's philosophical method. Macha provides a sophisticated reading of the saying/showing distinction that goes hand-in-hand with the internal/external relation dichotomy. His is a real alternative to the resolute claims that expressing internal relations leads to nonsense, or that trying to say what can only be shown has no significance at all. Macha demonstrates that if Wittgenstein's method is applied properly, one can avoid reflexive uses of internal relations, which are the ones that lead to nonsense. Macha's survey gives us a new transcendental picture, not an old one, which is static, but a dynamic new one. A special achievement of Macha's book is to see the way in which grammatical relations are expressed as the future of our conceptual system.

Odůvodnění panelu:

Mimořádná publikaci, která na základě pojmů vnitřních a vnějších vztahů systematizuje filosofii L. Wittgensteina. Kniha u prestižního nakladatele a dočkala se pozitivních recenzí.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

9. Transnational activism of social movement organizations: The effect of European Union funding on local groups in the Czech Republic

obor: AD

Identifikátor: RIV/68378025: /13:00395022!RIV14-AV0-68378025

Id: 1423

Předkladatel výsledku do Pilíře II.:

IČO: 68378025 Sociologický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

The Institute of Sociology carried the analytical work and contributed to the theoretical discussion of empirical findings.

Odůvodnění předkladatele:

The paper offers a systematic study of the impact of EU funding on advocacy/social movement organizations (SMOs) in the Czech Republic. As a result, it presents a theoretically-relevant contribution to the debate on transnational influences in domestic politics. The paper shows what the level of transnationalization of SMOs is, what types of transnational strategies SMOs employ, and what explains these choices. Specifically, the article examines the effect the EU had on Czech SMOs. The paper is interested in whether EU funding contributed to their de-radicalization and co-optation by the political elite, or rather empowered them to engage in transnational protest. The results of our analysis support the empowerment hypothesis, which challenges the received wisdom in this research field. The paper has been published in a top journal in the field of Political Science, which had an impact factor of 2.036 and ranking 9/157 in Political Science on the Web of Science in 2013 (the year of publication). In the three years since its publication, the article has received 6 citations via the Web of Science (without self-citations). see more in Appendix

Odůvodnění panelu:

Empirický výzkum publikovaný v časopise s vysokým IF. Důležité téma, slušný mezinárodní citační ohlas ve WoS i ve Scopus. (Participace 50%)

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

10. Philosophy of Social Science : a contemporary introduction

obor: AA

Identifikátor: **RIV/62690094:18460/14:50002812!RIV15-MSM-18460**

Id: 1022

Předkladatel výsledku do Pilíře II.:

IČO: 62690094 Univerzita Hradec Králové, Filozofická fakulta

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

Thus 50% part of the fact that the publication was written belongs to the UHK.

Odůvodnění předkladatele:

The text was written during the author's stay at the University of Hradec Králové supported by the Fulbright Scholarship and as a result of its affiliation to the UHK. Another author's affiliation is Emory University (USA). The text was published in the prestigious publishing house Routledge. The monograph is appreciated by professionals dealing with the philosophy of social sciences. Prof. Lee McIntyre from Boston University (USA) literally wrote that it is „in a fresh way written text (...). What is the most remarkable about this book is that how perfectly it combines an informative point of view and the philosophical depth of the text (...) without having been sacrificed anything major.“ Similarly, the text is positively evaluated by prof. David Henderson of the University of Nebraska, Lincoln (USA). According to him, the book is „a rare combination of erudition, depth and clarity. (...) The text combines a breadth of perspective and current approaches.“ This publication has been cited twelve times since it was released.

Odůvodnění panelu:

Monografie vydaná prestižním nakladatelstvím Routledge, vykazující za necelé 3 roky slušný citační ohlas. (Participace 50%)

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

11. Peregrin, Jaroslav. Inferentialism. Why rules matter

obor: AA

Identifikátor: RIV/67985955: /14:00431368!RIV15-AV0-67985955 Id: 1015

Předkladatel výsledku do Pilíře II.:

IČO: 67985955 Filosofický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

This book was written by the author at the Institute of Philosophy of the CAS without participation of other institutions.

Odůvodnění předkladatele:

The term "inferentialism", coined by Robert Brandom, has become a trademark of a certain position in the philosophy of language which claims that meanings identify with inferential roles - a radical departure from more traditional semantic approaches. Independently of this, the term is now cropping up in logic, in connection with positions prioritizing proof-theory over model theory and approaching meaning in logical, especially proof-theoretical terms. The book brings these two strands together: it reviews and critically assesses the foundations of Brandomian inferentialism, it proposes upgrades, and it clarifies its relationship to inferentialism in logic. Emphasis is laid on clearly articulating the general assumptions on which inferentialism rests, thus elucidating its foundations, followed by discussing the consequences of this standpoint, and then dealing with the most intensive objections raised against the standpoint.

Odůvodnění panelu:

Mezinárodně významná a citovaná práce k tématu filosofie jazyka. Jedna ze základních monografií k teorii inferencialismu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

12. Frühmittelalterliche Siedlungen in Mitteleuropa. Eine vergleichende Strukturanalyse durch Archäologie und Geophysik

obor: AC

Identifikátor: **RIV/00216224:14210/14:00073925!RIV15-MSM-14210**

Id: 545

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Filozofická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Know-how of the book is completely provided by the author – employee of the Masaryk University.

Odůvodnění předkladatele:

The book presents a large-scale overview of the archaeology of the 6th-10th century AD of unfortified rural settlements in the territories of present-day Germany, the Netherlands, Poland, the Czech Republic, Slovakia, Austria and Hungary. It includes a research of the functional classification of buildings, forms and development of settlements as well as economic and social organization of early medieval rural population. Special attention is paid to a comparison of 'Slavic' populations from the eastern territories with 'Germanic' settlement areas from the western territories. An integral part of the work is the analysis and assessment of applications of non-destructive geophysical methods in the research of medieval rural settlements. The book collects, structures and analyses an immense amount of information and is destined to become a much-used reference work in this research field.

Odůvodnění panelu:

Jedná se o publikaci velkého významu a značného rozsahu. Kniha vychází u prestižního německého nakladatele.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

13. Seasonality of Gravettian sites in the Middle Danube Region and adjoining areas of Central Europe

obor: AC

Identifikátor: RIV/68081758: /13:00368951!RIV15-AV0-68081758

Id: 1174

Předkladatel výsledku do Pilíře II.:

IČO: 68081758 Archeologický ústav AV ČR, Brno, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

(100% Miriam Nývltová Fišáková) The study was entirely compiled by researchers of the Institute of Archaeology of the CAS, Brno, using the method elaborated and applied at this workplace. The analysis made extensive use of the find collection from the Institute's own survey work (Dolní Věstonice, Předmostí u Přerova 2006, Boršice, Spytihněv, Jarošov, Petřkovice).

Odůvodnění předkladatele:

The seasonality or permanent settlement of important Central European Gravettian localities is a question that has long been discussed in Palaeolithic archaeology. Studying the season in which animals died helps to make a better palaeoecological assessment of the archaeological situation and gives an insight into the socio-economic relations amongst hunter-gatherer cultures. Knowledge of the a the hunting season allows derivation of information about hunting and settlement strategies, i.e., why and when the site was used by humans. The seasonality of Upper Palaeolithic settlements can be followed based on the eruption sequence and the abrasion of the crowns of teeth from hunted animals, or by the epiphysis closure sequence in the postcranial skeleton. Abrasion of the crowns, however, only indicates the relative age. The most reliable way to determine the age of an animal is to analyse the microstructures of increments of tooth cement. This more time-consuming procedure can also be used to determine the season in which the animal in question was killed. Based on the age of the teeth and the hunting season, it is possible to ascertain whether the teeth belonged to one or more animals. Seasonality data of 16 Gravettian sites from the Middle Danube Region and adjoining areas of Central Europe are presented in this study for the first time. The analysis of tooth cement increments confirmed the existence of several large localities inhabited all year round (Krems-Hundssteig, Krems-Wachtberg, settlement complex Dolní Věstonice-Pavlov, Přerov-Předmostí, Moravany-Lopata II) with a large number of seasonally occupied small camps between them. The Lubná I site in Bohemia was found to be a seasonal camp. There is no evidence of perennial settlement in the interior of Bohemia to date. The work present a unique dataset for a variety of UP sites studied. The 5-year IF for Quaternary International is 2.383. Currently 11 times cited (WoS), 17 times cited (Scopus).

Odůvodnění panelu:

Studie se vyznačuje originálními metodologií, byla publikována v prestižním zahraničním časopise (IF 2.383) a je citována (WoS – 11; Scopus – 17).

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

14. An Early Upper Palaeolithic decorated bone tubular rod from Pod Hradem Cave, Czech Republic

obor: AC

Identifikátor: **RIV/00216224:14310/14:00075122!RIV15-MSM-14310**

Id: 91

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **57 %**

Popis podílu předkladatele:

The presented contribution is one of the results of a two-year research project (L. Nejman, Middle-Upper Palaeolithic transition in Central Europe, SIGA 489, 2011-2013) investigated at the Department of Anthropology, Faculty of Science, Masaryk University, with an international team of specialists. The most up-to-date methods of on-site archeological research were used, extensive interdisciplinary cooperation was instituted and integrated results of several scientific specializations gave origin to this scientific paper.

Odůvodnění předkladatele:

Times Cited: 3 Category Normalized Citation Impact: 1,90 Percentile in Subject Area: 17,75 Journal Impact Factor: 1,678 The study presents the documentation process, analysis and interpretation of one of the oldest examples of decorative items found in Central Europe (approximately 40,000 years old; BP) providing evidence of complex symbolic thinking. So far, the study is cited in a methodical paper published in a world-class archeological journal (Journal of Archaeological Science) and two other archeological studies. With regard to the rarity of the aforementioned artifact and scientific field specifics, a more pronounced impact is expected in the future.

Odůvodnění panelu:

Studie je výsledkem interdisciplinárního výzkumu, metodologie je na vynikající úrovni. Publikováno v prestižním časopise s vysokým impakt-faktorem. (Participace 57%)

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

15. The framing of unconventional natural gas resources in the foreign energy policy discourse of the Russian Federation

obor: AD

Identifikátor: **RIV/00216224:14230/14:00075675!RIV15-MSM-14230**

Id: 1350

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Fakulta sociálních studií

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Know-how of the paper is completely provided by the authors – employees of the Masaryk University.

Odůvodnění předkladatele:

Times Cited: 3Category Normalized Citation Impact: 0,44Percentile in Subject Area: 46,58Journal Impact Factor: 3,045The advent of unconventional resources of natural gas has altered the order on global as well as continental gas markets. With rising liquidity, the position of established dominant suppliers is eroding. We focus on the initial response of Russia, the leading supplier of natural gas to Europe, to the new situation, building the research on unit-level constructivism and discourse analysis. We use frame analysis to reveal what image of unconventional resources was constructed in Russian foreign energy policy discourse (FEPD) in the period between 2009 and 2011, when the "unconventional revolution" did not yet have any sharp contours. We conclude that in Russian FEPD the unconventional resources are considered as a distinctive and inferior source of energy compared to conventional natural gas. Emphasis is put on their economic irrationality and environmental hazards. The bottom line of the discourse is the idea that there is a choice between conventional and unconventional sources, with this choice being framed as one between good and bad, or right and wrong.

Odůvodnění panelu:

Článek řeší vysoce aktuální problematiku v dané vědní oblasti, byl uveřejněn v časopise s vyšším IF a vykazuje několik zahraničních citací.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

16. Do the variable charges really increase the effectiveness and economy of waste management? A case study of the Czech Rep

obor: AE

Identifikátor: RIV/61384399:31110/13:00041697!RIV14-GA0-31110

Id: 383

Předkladatel výsledku do Pilíře II.:

IČO: 61384399 Vysoká škola ekonomická v Praze, Fakulta financí a účetnictví

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

The authors are faculty staff

Odůvodnění předkladatele:

The paper uses 3E methodology to analyse the effectiveness and efficiency of variable instruments in fees for waste collection. It shows that with the proper settings the greater effectiveness does not have to have a negative impact on the economy. It contributes to intensive discussions on the subject in international journals using data from the Czech Republic.

Odůvodnění panelu:

Článek řeší vysoce aktuální téma, je publikován v časopise s vyšším IF a má standardní citační ohlas včetně zahraničních citací. (Participace 50%)

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

17. Population genomics of Bronze Age Eurasia

obor: AC

Identifikátor: **RIV/00216224:14210/15:00080950!RIV16-GA0-14210**

Id: 1047

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Filozofická fakulta

Podíl předkladatele na výsledku: **10 %**

Popis podílu předkladatele:

Jan Kolář zajišťoval informace k vzorkům odebraným z jedinců z českých lokalit. Jeho úkol byl tedy dodat antropologické informace k individuům a archeologická data ke kontextům a lokalitám, ze kterých pocházely. Autor byl plnohodnotným členem mezinárodního výzkumného týmu.

Odůvodnění předkladatele:

Times Cited: 65 Category Normalized Citation Impact: 23,52 Percentile in Subject Area: 0,12 Journal Impact Factor: 38,14 Highly Cited Paper The Bronze Age of Eurasia (around 3000–1000 BC) was a period of major cultural changes. However, there is debate about whether these changes resulted from the circulation of ideas or from human migrations, potentially also facilitating the spread of languages and certain phenotypic traits. We investigated this by using new, improved methods to sequence low-coverage genomes from 101 ancient humans from across Eurasia. We show that the Bronze Age was a highly dynamic period involving large-scale population migrations and replacements, responsible for shaping major parts of present-day demographic structure in both Europe and Asia. Our findings are consistent with the hypothesized spread of Indo-European languages during the Early Bronze Age. We also demonstrate that light skin pigmentation in Europeans was already present at high frequency in the Bronze Age, but not lactose tolerance, indicating a more recent onset of positive selection on lactose tolerance than previously thought. The paper was published in one of the leading scientific journals. Numerous international research team contributed to the publication. Because of its significance regarding the prehistoric population dynamics, spread of lactose tolerance and possibly also Indo-European languages, the paper got attention worldwide (e.g. New York Times, Die Welt).

Odůvodnění panelu:

Studie byla zveřejněna v jednom z nejprestižnějších světových vědeckých časopisů (IF 42.351). Práce vyvolala velký zájem mezi odborníky po celém světě i v Čechách. (Participace 10%)

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

18. The Nubian Complex of Dhofar, Oman. An African Middle Stone Age Industry in Southern Arabia

obor: AC

Identifikátor: RIV/67985912: /11:00369541!RIV12-AV0-67985912

Id: 1371

Předkladatel výsledku do Pilíře II.:

IČO: 67985912 Archeologický ústav AV ČR, Praha, v. v. i.

Podíl předkladatele na výsledku: **18 %**

Popis podílu předkladatele:

The author of the Institute of Archaeology CAS, Prague created 18,2 percent.

Odůvodnění předkladatele:

The article describes the recent archaeological findings in Southern Oman resembling a specific Middle Stone Age African industry known as the Nubian Complex. This culture was known previously only from the northeast and east Africa where flourishing during MIS 5 so 128,000 – 74,000 years ago. The optically stimulated luminescence dates place the Nubian Complex findings in Omani site Aybut Al Auwal at around 106,000 years ago. These findings indicate very ancient demographic exchange across the Red Sea maybe related with the first out of Africa spread of the anatomically modern humans. This paper, published in prestigious interdisciplinary-research journal PLoS ONE, achieved a great acclaim numbering 72 citations so far, one of the highest score ever achieved by Archaeological Institute CAS, Prague, v.v.i. This also illustrates the importance and international renown of the archaeogenetic laboratory of the Archaeological Institute CAS, Prague, v.v.i.

Odůvodnění panelu:

Jedná se o studii vydanou ve velice prestižním časopise, která se dočkala již 72 citací ve WoS. (Participace 18%)

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

19. Age-related changes in body composition in a sample of Czech women aged 18-89 years: a cross-sectional study

obor: AC

Identifikátor: **RIV/61989592:15510/14:33143803!RIV15-MSM-15510**

Id: 75

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Fakulta tělesné kultury

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The share of the Faculty of Physical Culture on the result is 100%.

Odůvodnění předkladatele:

This study, as the first of its kind, brings reference data of body composition (body fat mass, fat-free mass, body fat percentage, and visceral adipose tissue) of Czech women aged 18-89 years. The uniqueness of this study is further supported by the relatively extensive research sample (n = 1970) and methods used for assessing body composition (direct segmental multi-frequency bioelectrical impedance analysis). These body composition data are important and can be used for comparison, intervention, and evaluation purposes. The authors also analyzed anthropometric characteristics of study participants and developed age-specific percentile curves for body composition parameters. The study was published in a prestigious journal.

Odůvodnění panelu:

Studie prezentuje výsledky originálního výzkumu , který vyvolal odbornou diskusi. Byla publikována v prestižním časopise IF 3.239, zaznamenáno 31 citací článku.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

20. Europe and the Care of the Soul. Jan Patočka's Conception of the Spiritual Foundations of Europe

obor: AA

Identifikátor: **RIV/61989592:15260/14:33150366!RIV15-MSM-15260**

Id: 476

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Cyrilometodějská teologická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% contribution of authors from Palacký University, Olomouc.

Odůvodnění předkladatele:

The book offers an original interpretation of Jan Patočka's conception of the spiritual foundations of Europe in terms of the formation, transformation, and crisis of the idea of the care of the soul. The author situates this conception at the center of the overall context of Patočka's thought. The unity of that thought, he argues, lies in Patočka's persistent investigation of what constitutes truthful human existence. Since the idea of the care of the soul originates in the thought of Socrates and Plato, special attention is given to Patočka's interpretation of these two thinkers. Among other themes, the interpretation incorporates Patočka's account of the Renaissance and of the Enlightenment as two periods in which the spiritual style marked by the care of the soul gradually dissolves. The last chapter of the book focuses on Patočka's reflections about both the dangers and the positive possibilities of modern science and technology. As emphasized by the reviewer, the book stands out particularly "for the analytical reading of some of Patočka's unpublished manuscripts conserved at the Jan Patočka Archive of Prague. Therefore, the volume offers non Czech-reading scholars the possibility to retrace the whole evolution of Patočka's analysis of the two questions that give the book its title. For this reason, this work could be considered to be the deepest research to date on Patočka's idea on Europe and, consequently, as the necessary starting point of any new research project or didactic activity devoted to this subject" (R. Paparusso, in Journal of the British Society for Phenomenology 46/4, 2015, 342–344).

Odůvodnění panelu:

Publikace vydaná v zahraničí, citovaná dalšími autory a přibližující uceleně myšlenky filozofa Jana Patočky.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

21. Avoiding Paralysis: The Eastern Enlargement and the Council of the European Union

obor: AD

Identifikátor: **RIV/00216208:11230/15:10297827!RIV16-MSM-11230**

Id: 154

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Fakulta sociálních věd

Podíl předkladatele na výsledku: **84 %**

Popis podílu předkladatele:

84% | Charles University - Faculty of Social Sciences 84%.

Odůvodnění předkladatele:

The study addresses the politically and academically highly relevant issues of the functioning of the core European Union institutions under stress, in this specific case under the pressure induced by the grand European enlargement of 2004. Building on a rationalist framework and on a large original dataset covering several thousand EU legislative acts, it seeks the explanation of how the key decision-making institution of the Union - the Council of the European Union - 'survived' the enlargement, or avoided the paralysis that was expected to result from the dramatic increase in EU membership size and diversity. It explains and shows empirically that the survival of the Council and of its relatively smooth operation was helped by the additional transfer of decision-making from politicians - the ministers in the Council - to bureaucrats, the member states' permanent representatives in Brussels. We argue that the study stands out at least in two respects. First, based on a rigorous analysis of considerable empirical evidence, it sheds light on a major phenomenon that had remained virtually untouched, in spite of its political and academic salience. It offers a positive explanation for the outcome few expected before the Eastern enlargement, namely relatively smooth continuing operation of the Council decision-making. At the same time, second, it shows that this, in principal positive, finding has important and so far unaddressed normative implications, namely the possible increased bureaucratisation of EU politics. Rather interestingly, however, this bureaucratisation does not lead to increased power of EU bureaucracies as such - for instance of the European Commission - but to increased power of national bureaucracies, namely the permanent representatives of the member states in Brussels, forming together the Committee of Permanent Representatives (COREPER).

Odůvodnění panelu:

Stat' je relevantním příspěvkem do debaty o fungování evropských institucí, v respektovaném zahraničním časopise a s argumentem založeným na robustní kvantitativní analýze.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

22. Das Sollen und das Böse in der Philosophie Immanuel Kant.: Zum Zusammenhang zwischen kategorischem Imperativ und dem Hang zum Bösen

obor: AA

Identifikátor: **RIV/60076658:12260/15:43889883!RIV16-MSM-12260**

Id: 318

Předkladatel výsledku do Pilíře II.:

IČO: 60076658 Jihočeská univerzita v Českých Budějovicích, Teologická fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The share of the Faculty of Theology on the result is 100%.

Odůvodnění předkladatele:

see the enclosed document

Odůvodnění panelu:

Přínosná monografie k tématu, které bývá velmi odlišně vykládáno. Předností práce je spojení morálně filosofické stránky Kantovy filosofie s filosofií náboženství.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

23. Internal Diversification of Mitochondrial Haplogroup R0a Reveals Post-Last Glacial Maximum Demographic Expansions in South Arabia

obor: AC

Identifikátor: RIV/67985912: /11:00352786!RIV11-AV0-67985912

Id: 711

Předkladatel výsledku do Pilíře II.:

IČO: 67985912 Archeologický ústav AV ČR, Praha, v. v. i.

Podíl předkladatele na výsledku: **17 %**

Popis podílu předkladatele:

The author of the Institute of Archaeology CAS, Prague created 16,7 percent.

Odůvodnění předkladatele:

This study shows that the time after Last Glacial Maximum was the most significant period in the formation of the extant genetic diversity of Southern Arabia. Several demographical expansions can be detected within the internal diversification of widespread mitochondrial haplogroup R0a. The paper presents resolved phylogenetic tree of 89 whole mitochondrial genomes (71 being newly presented here) belonging to R0a. Age estimates of the most recent common ancestor of these lineages corresponds with the earliest archaeological evidence for seafaring activity of the Arabian peninsula in the sixth millennium BC. With the impact factor of 5.550, this article represents one of the highest IF ever achieved at Institute of Archaeology CAS, Prague. It is important to stress that only quality interdisciplinary studies, here represented by laboratory of archaeogenetics, have a potential to publish in high impact journals.

Odůvodnění panelu:

Empirická studie s originální metodologií, precizním zpracováním, výsledek bádání mezinárodního týmu, publikována v prestižním časopise (IF 5.550). (Participace 17%)

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

24. Oborové didaktiky: vývoj-stav-perspektivy

obor: AM

Identifikátor: **RIV/60076658:12410/15:43889503!RIV16-MSM-12410**

Id: 956

Předkladatel výsledku do Pilíře II.:

IČO: 60076658 Jihočeská univerzita v Českých Budějovicích, Pedagogická fakulta

Podíl předkladatele na výsledku: **20 %**

Popis podílu předkladatele:

The monograph has two editors : Iva Stuchlíková and Tomáš Janík. Iva Stuchlíková is a professor of psychology and the Head of the Department of Pedagogy and Psychology of the Faculty of Education of the University of South Bohemia. Apart from editing, the Faculty of Education is represented by several authors or co-authors, see in bold: Jiří Vaníček and Miroslava Černochová: Didaktika informatiky na startu (str. 159-184)Miroslav Papáček, Věra Čížková, Milan Kubiátko, Jan Petr a Radka Závodská: Didaktika biologie: didaktika v rekonstrukci (str. 225-252)Iva Stuchlíková, Tomáš Janík, Jan Slavík, Michaela Píšová, Zdeněk Beneš, Hana Čtrnáctová, Leoš Dvořák, Ondřej Hník, Miroslav Papáček, Dana Řezníčková, Antonín Staněk, Martina Šmejkalová, Jiří Vaníček a Nad'a Vondrová: Oborové didaktiky: bilance a perspektivy (str. 423-449)

Odůvodnění předkladatele:

Subject methodologies (didactics) are research disciplines dealing with subject specific dimensions of teaching and learning both in and out of school. They cover a wide area from stating the aims of teaching and learning particular subjects over the choice and didactic transformation of the content up to structuring of teaching processes. One of the problems of our education is that subject methodologies have been, for various reasons, neglected and thus did not have a chance to develop in a systematic way. In spite of that, they have developed into relatively independent disciplines as can be seen from this book. Its aim is to provide an overview of the development and current state of subject methodologies in the Czech Republic and discuss the perspectives of their future development. It is the first monograph in our country devoted to the detailed explanation of methodologies of most subjects from natural sciences to languages. The reviewers of the book stress that all the chapters are clearly based on research, which pinpoints their clear aiming at scientific profiles. They do not represent only the ideas of individual authors but they are based on a wider consensus that has developed in the working group for subject methodologies in the Accreditation Board of the Czech government. Another reason why we have decided to nominate this book is that it deals with issues which are and should always be crucial for any faculty of education providing both pre-service and in-service teacher education. This monograph has been awarded the Rector's prize (Rector of the University of South Bohemia) in 2015 and also the prize of the Czech Association of Pedagogic Research for the best state of the art publication of 2015/16.

Odůvodnění panelu:

Jde o obsáhlou publikaci mapující nové trendy v oblasti oborových didaktik. Přestože jde o publikaci z r. 2015, již má zřetelnou citační stopu v databázích WoS a Scopus. (Participace 20%)

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Efficient allocations in dynamic private information economies with persistent shocks: a first-order approach

obor: AH

Identifikátor: RIV/67985998: /13:00394674!RIV14-AV0-67985998

Id: 431

Předkladatel výsledku do Pilíře II.:

IČO: 67985998 Národohospodářský ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

The Economics Institute of the Czech Academy of Sciences 50%

Odůvodnění předkladatele:

This paper studies efficient allocations in a dynamic private information economy with a continuum of idiosyncratic shocks that are persistent. The key methodological advancement lies in developing a first-order approach for this environment and showing that the problem has a simple recursive structure with only a small number of state variables, making the problem tractable. The key finding is that persistent shocks create a new tradeoff where the social planner decreases the informational rent of the agent today at the cost of providing higher insurance in the future. The article represents a fundamental contribution to the theory of dynamic mechanism design that seeks to find optimal policies in environments where economic agents have private information unknown to the social planner. The optimal mechanisms, widely used in optimal taxation, are, however, very complex and hence difficult to identify and analyze in dynamic environments. The first-order approach developed here substantially simplifies optimal mechanisms: recursive with only a small set of state variables. It can also be applied to external problems otherwise very difficult to solve. Review of Economic Studies belongs to the top 5 most respected journals in economics. The article has 9 citations in WoS, 12 citations in Scopus, and 47 citations in Google Scholar, all counts excluding auto-citations. It was cited e.g. 3 times in another top 5 journal (Econometrica and American Economic Review), 3 times in a prestigious field journal Journal of Economic Theory, in a widely used text for public finance courses, The New Dynamic Public Finance, by N. Kocherlakota, and in a book chapter by Golosov and Tsyvinski, top experts in the field of optimal taxation from Princeton and Yale University. According to AIS from the WoS, the journal ranks among top 1% of journals in ECONOMICS category. It counts for the tenure decisions at any top university worldwide. In the relevant year IF was 3.235 and AIS was 7.848.

Odůvodnění panelu:

Výsledek prenesený z minulého kola

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Correlations between biofuels and related commodities before and during the food crisis: A taxonomy perspective

obor: AH

Identifikátor: **RIV/00216208:11230/12:10124462!RIV13-MSM-11230**

Id: 293

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Fakulta sociálních věd

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

33% | Charles University - Faculty of Social Sciences 33%.

Odůvodnění předkladatele:

The result was already evaluated other organization grade A. Our faculty attaches to this result. In this paper, we analyze the relationships between the prices of biodiesel, ethanol and related fuels and agricultural commodities with a use of minimal spanning trees and hierarchical trees. We utilize a straightforward methodology of taxonomy standardly used in networks and complex systems analysis for clear identification of relationships between components of the system. For the first time here, we apply the methodology on the system of biofuels and related agricultural and fuel commodities. We quantify these relationships over different market phases and time dimensions using a graphical display of price transmission network. In this way, we contribute to important policy discussion about impact of biofuels and energy prices on food prices. To distinguish between short-term and medium-term effects, we construct these trees for different frequencies (weekly and monthly). We find that in short-term, both ethanol and biodiesel are very weakly connected with the other commodities. In medium-term, the biofuels network becomes more structured. The system splits into two well separated branches -- a fuels part and a food part. Biodiesel tends to the fuels branch and ethanol to the food branch. When the periods before and after the food crisis of 2007/2008 are compared, the connections are much stronger for the post-crisis period. This is the first application of this methodology on the biofuels systems.

Odůvodnění panelu:

Výsledok prenesený z minulého kola

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Visual preferences for wind turbines: location, numbers and respondent characteristics

obor: AP

Identifikátor: RIV/60460709:41330/12:#0000106!RIV16-MSM-41330

Id: 1475

Předkladatel výsledku do Pilíře II.:

IČO: 60460709 Česká zemědělská univerzita v Praze, Fakulta životního prostředí

Podíl předkladatele na výsledku: **91 %**

Popis podílu předkladatele:

The submitter's share was calculated in accordance with the rules of the Methodology for evaluating the results of research organizations and the evaluation of results of completed programmes.

Odůvodnění předkladatele:

The article, focusing on design principles specific to the landscapes of energy, was published in a leading energy journal Applied Energy (IF2015 = 5.746) to maximize its impact in the planning practice. Thanks to this, the article has been cited in a wide range of top journals (31 citations at WOS, 77 at Google Scholar). The presented study is the first to comprehensively evaluate the visual impact of wind turbines in various landscapes with regard to the key attributes in wind farm design, aiming to objectify the factors that determine how people evaluate wind farms. We tested the visual quality of landscapes in which these structures are to be placed, the number of structures and their distance from the viewer, and various characteristics of our respondents. We found that the physical attributes of the landscape and wind turbines influenced the respondents' reactions far more than socio-demographic and attitudinal factors. One of the most important results of our study is the sensitivity of respondents to the placement of wind turbines in landscapes of high aesthetic quality, and, on the other hand, a relatively high level of acceptance of these structures in unattractive landscapes. Wind turbines also receive better acceptance if the number of turbines in a landscape is limited, and if the structures are kept away from observation points, such as settlements, transportation infrastructure and viewpoints. The most important characteristic of the respondents that influenced their evaluation was their attitude to wind power. On the basis of these results, recommendations are presented for placing wind turbines and for protecting the character of the landscape within the planning and policy making processes.

Odůvodnění panelu:

Výsledok vo vedeckom časopise s najvyšším IF z hodnotených výsledkov, má 31 citácií vo WoS, 77 citácií v Google Scholar. Zaujímavá a medzinárodne relevantná téma, rigorózne spracovaná a s výsledkami aplikovateľnými pri tvorbe politík.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Rational Inattention to Discrete Choices: A New Foundation for the Multinomial Logit Model

obor: AH

Identifikátor: [RIV/00216208:11640/15:00455363!RIV16-MSM-11640](#)

Id: 1120

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Centrum pro ekonomický výzkum a doktorská studia

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

33% | Charles University in Prague, Center for Economic Research and Graduate Education, 33%

Odůvodnění předkladatele:

This article studies a new model of choice under cognitive limitations - it combines insights of behavioral economics together with approaches of classical economics. The limitations take a form of inability to digest all available information, yet the decision maker can choose what exactly to get informed about. What emerges is a user-friendly model that delivers a more realistic, imperfect behavior of a form of optimal heuristics. The authors show that the decision maker's optimal strategy results in choosing probabilistically in line with a generalized multinomial logit model, which depends both on the actions' true payoffs as well as on prior beliefs. This is a breakthrough and very convenient finding because the standard multinomial logit is a work-horse model in empirical literature (McFadden 1974, who received a Nobel prize for introducing this approach). Providing a novel connection of this model to cognitively-limited behavior will also lead to more insightful future empirical work. The article substantially improves our understanding of economic decisions of real humans and provides tools for more informed design of public policies tailored for cognitively-limited people. American Economic Review (AER) belongs to the top 5 most respected journals in economics. The article was published only in 2015 and has already recorded 13 citations in WoS, 14 citations in Scopus, and 113 citations in Google Scholar, all counts excluding auto-citations. Most of the citations are in top quality economics journals, three of them are also in the top 5 journals in economics (2 in AER and 1 in Review of Economic Studies). The developed model has been so far applied to study behavioral features of choice, international trade, product markets, optimal taxation, herding, and macroeconomic dynamics. The article has already been included in Economics' graduate course syllabi at leading universities (MIT, Princeton, NYU, U of Chicago, UC Berkeley, Northwestern, Columbia etc.).

Odůvodnění panelu:

Výsledok vo vedeckom časopise ktorý patrí k top 5 v ekonómii, od roku 2015 už má 13 citácií vo WoS, 113 citácií v Google Scholar. Potenciálne otvára nové možnosti výskumu vo svojej oblasti, ale aj v spoločenskovedných disciplínach používajúcich predmetnú metodológiu na analýzu dát. Dôsledne spracovaný článok so skutočne veľkým potenciálom na silný medzinárodný ohlas.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Accuracy of National Stereotypes in Central Europe: Outgroups Are Not Better than Ingroup in Considering Personality Traits of Real People

obor: AN

Identifikátor: RIV/68081740: /14:00425106!RIV15-GA0-68081740

Id: 57

Předkladatel výsledku do Pilíře II.:

IČO: 68081740 Psychologický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The authors cooperated on all parts of the study, including updates of the text during the peer-review process.

Odůvodnění předkladatele:

The article was published in an outstanding personality-psychology outlet with IF 3.989 and was seven times cited according to Web of Science. Our research covered a cutting-edge topic in current personality psychology – the accuracy of national stereotypes. We present results of a large study in five central European countries. In general, stereotype accuracy can be examined from the ingroup and outgroup perspective, depending on whether participants rate stereotypical characteristics of own ingroup or outgroups that they do not belong to. While previous studies only employed ingroup ratings, we examined the accuracy of national stereotypes from both ingroup and outgroup perspectives. A novel in our study was that, we examined not only convergence between ratings of real people living in the given country (the so-called accuracy criterion) with stereotypical ratings of a typical own country representative but also with stereotypical ratings of typical representatives of neighboring countries. Another original approach employed in our research was the full ingroup-outgroup design where participants from the studied countries rated stereotypes of all other countries – not only stereotypes of one dominant neighbor as was the case of past research. Based on the data from five countries, we were the first to establish that stereotypes rated from the outgroup perspective – by nationals of other countries – are not more accurate than stereotypes rated from the ingroup perspective – by nationals of the given country – as hypothesized by Krueger and Wright (2006). The findings of our research significantly contributed to discussion on accuracy of national stereotypes in particular and group stereotypes in general. In the situation of intergroup comparison represented by ratings of ingroup and outgroup national stereotypes, participants exaggerated differences between the countries under study in order to satisfy their need for distinctiveness. However, the comparison of cha

Odůvodnění panelu:

Výsledok vo vedeckom časopise s jedným z najvyšších impakt faktorov medzi hodnotenými výsledkami. 7 citácií vo WoS, rigorózne spracovaná komparatívna analýza vysoko relevantnej témy, prinášajúca inovatívne myšlienky a prispievajúca aj k teoretickému uchopeniu problematiky.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Bystanders' Support of Cyberbullied Schoolmates

obor: AN

Identifikátor: **RIV/00216224:14230/13:00065977!RIV14-MSM-14230**

Id: 202

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Fakulta sociálních studií

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The article is based on data from unique research conducted by researchers from Masaryk University which addressed the responses of bystanders in cyberbullying. It is one of the first studies utilizing data from real bystanders as opposed to common approach of other researchers who utilize hypothetical scenarios.

Odůvodnění předkladatele:

Times Cited: 28 Category Normalized Citation Impact: 5,09 Percentile in Subject Area: 1,66 Journal Impact Factor: 1,568 This article is one of the first studies providing deeper insight into behavioural responses of bystanders in cyberbullying. It identified important factors affecting bystanders' responses, and provided substantive research questions which have been followed by international studies on this increasingly important topic, as is apparent in its growing number of citations in WoS and Scopus.

Odůvodnění panelu:

Výsledok v excelentnom vedeckom časopisei. 30 citácií vo WoS dokumentuje významný medzinárodný dopad. Veľmi relevantná, priamočiara spracovaná analýza na vysoko relevantnú tému.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Chinese graduate students and U.S. scientific productivity

obor: AH

Identifikátor: **RIV/00216208:11640/13:00423395!RIV14-MSM-11640**

Id: 655

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Centrum pro ekonomický výzkum a doktorská studia

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

33% | Charles University in Prague, Center for Economic Research and Graduate Education 33%

Odůvodnění předkladatele:

The article studies one of the most important recent skilled-labor migration episodes - the migration of young Chinese scientists to undertake graduate studies in U.S. universities. Using a unique, self-collected data set covering around 16,000 Ph.D. graduates in 161 U.S. chemistry departments, the authors show that Chinese students' scientific output significantly exceeds that of other students by about 20%. In fact, conditional on acceptance into the same Ph.D. programs, Chinese students perform about as well as the awardees of the National Science Foundation doctoral fellowship program. The key methodological advancement is that the authors are first to compare the scientific output of immigrants and natives at the individual (student) level. The article extends the substantial literature on the economic impact of migration by shedding new light on the benefits of student migration for scientific productivity of destination countries. It has attracted policy interest, for instance in the form of an invited presentation at the Brookings Institution, Washington D.C., one of the most prestigious world think tanks, and by the authors broader research agenda on tracking careers of foreign-born scientist in the U.S. being cited in *The Economist*. The article has 9 citations in Web of Science, 13 citations in Scopus, and 29 citations in Google Scholar, all counts excluding auto-citations. This is an increase by four and five citations in WoS and Scopus respectively since March 2016. It was cited for instance in a respected general interest journal *Economics Letters* and twice in a high-impact policy and management journal *Research Policy*. According to the Article Influence Score from the WoS, *Review of Economics and Statistics* ranks among top 20 (top 5%) of journals in ECONOMICS category and it counts for the tenure decisions at any top university worldwide. The impact factor in the year this article was published was 2.718 and article influence score was 5.378.

Odůvodnění panelu:

Výsledok vo vedeckom časopise s vysokým impakt faktorom, má 9 citácií vo WoS. Medzinárodne relevantná téma, s dôležitými implikáciami pre spoločnosť.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Effect of moisture content on heat and moisture transport and storage properties of thermal insulation materials

obor: JN

Identifikátor: **RIV/68407700:21110/12:00194297!RIV13-GA0-21110**

Id: 412

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta stavební

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

This paper resulted from the research work performed at the Department of Materials Engineering and Chemistry, Faculty of Civil Engineering, Czech Technical University in Prague.

Odůvodnění předkladatele:

Computational models of heat and moisture transport are frequently used in calculating energy gains and losses in buildings. However, any model can provide reliable information only in the case that the quality of input data is adequate. This is not always true because the standard lists of thermal and hygric parameters given by the producers as well as the material databases included in the simulation tools are usually far from complete. In this paper, we present the measurements of complete sets of heat and moisture transport and storage parameters of selected thermal insulation materials in dependence on moisture content. Two common thermal insulation materials, namely hydrophobic mineral wool and expanded polystyrene, are selected as reference materials. Two types of hydrophilic mineral wool and an autoclaved-aerated-concrete thermal insulation board are the representatives of prospective materials which appeared on the market within the last couple of years. The studied material parameters include bulk density, matrix density, porosity, saturation moisture content, thermal conductivity, specific heat capacity, moisture diffusivity, water vapor diffusion coefficient, sorption isotherm, and water retention curve. The paper received considerable attention in the scientific community and has been cited 39 times in the Web of Science database.

Odůvodnění panelu:

A high-quality paper presenting a set of experimental results on parameters of moisture and heat transport of several insulation materials which can be very useful for reliable assessment of energy gains and losses of buildings. Published in a top-ranked journal. Impact proved by a high number of hetero-citations registered by WoS.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Premium quality renewable diesel fuel by hydroprocessing of sunflower oil

obor: JT

Identifikátor: **RIV/60461373:22320/11:43891975!RIV12-MSM-22320**

Id: 1069

Předkladatel výsledku do Pilíře II.:

IČO: 60461373 Vysoká škola chemicko-technologická v Praze, Fakulta technologie ochrany prostředí

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

50% |Research conception was proposed in the cooperation of the result submitter (UCT Prague, Šimáček, Pospíšil, Chudoba) and cooperating organization (UniCRE, Kubička, Kubičková, Homola). The experiments were carried out at the workplace of cooperating organization (UniCRE). Development and optimization of the analytical methods used, analytical evaluation of products, interpretation of results, and writing of the publication were carried out mainly by researchers of the result submitter.

Odůvodnění předkladatele:

The article is focused on a highly topical issue of advanced biofuels. Hydrotreating of vegetable oils produces high quality hydrocarbon biocomponent that is used in diesel production. This biocomponent is non-aromatic, have excellent cetane number and excellent thermo-oxidative stability. This biofuel can be combusted in standard diesel engines in pure form or in a mixture with mineral diesel of any composition. Moreover, lower emissions are produced from combustion of this biofuel compared to mineral diesel. The article was published in a journal with a high IF (2011 IF 3.248). Relevance of the topic and quality of the results obtained are documented by citation of the article (50 citations according to WoS and 75 citations according to Google Scholar until November 2016).

Odůvodnění panelu:

An excellent original paper on advanced biofuels. A new method for hydroprocessing of sunflower oil is described and supported by an extensive set of convincing experimental data. Published in a well-ranked journal. Substantial impact demonstrated by a significant number of hetero-citations registered by WoS.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Local refractive index sensitivity of plasmonic nanoparticles

obor: JA

Identifikátor: RIV/67985882: /11:00367832!RIV12-AV0-67985882

Id: 797

Předkladatel výsledku do Pilíře II.:

IČO: 67985882 Ústav fotoniky a elektroniky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **70 %**

Popis podílu předkladatele:

The Optical Biosensors Team at the Institute of Photonics and Electronics developed an optical platform allowing determination of refractive index sensitivity of plasmonic nanostructures and performed simulations using the finite-difference time-domain method. The Austrian partner University of Graz was responsible for the fabrication the plasmonic nanostructures using electron beam lithography.

Odůvodnění předkladatele:

In this paper we presented a new approach to the characterization of the sensitivity of localized surface plasmons (LSP) to local changes in the refractive index on the nanometer scale. This approach is based on the use of a polymer mask covering different well-defined areas of metal nanoparticles prepared using electron beam lithography. We demonstrated that the experimental sensitivity data correspond well with the results of simulations carried out using the finite-difference time-domain method. The paper has been published in OPTICS EXPRESS, one of the high-ranking journals in the field of optics (ranked 14 of 90 in optics according to WOS). To date the paper has generated 35 citations.

Odůvodnění panelu:

An impressive result on the recently very popular topic of surface plasmons published in a top ranking journal with good impact in the field. Among 15% of most cited papers on the theme of surface plasmons in 2011.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Building modeling as a crucial part for building predictive control

obor: BC

Identifikátor: RIV/68407700:21230/13:00198374!RIV14-GA0-21230

Id: 201

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta elektrotechnická

Podíl předkladatele na výsledku: **67 %**

Popis podílu předkladatele:

4 of 6 authors are from FEE CTU in Prague. At the time of publications, all four were with the Department of Control Engineering.

Odůvodnění předkladatele:

In past few years the subject of intelligent buildings has become one of the most popular topics in the world of technology. With growing emphasis put on energy consumption the crucial part of such a building is represented by a cost effective heating and ventilation system which cannot be made without an advanced optimal controller which in turn cannot be designed without a suitable model. The article was published in the leading journal in the field of energy effective buildings: IF = 2.88, the first decile D1 (5 of 59) in CONSTRUCTION & BUILDING TECHNOLOGY and the first decile D1 (6 of 125) in ENGINEERING, CIVIL. It represents a really pioneering work exploring suitability of different models of the buildings from the control point of view that is proved by 37 citations (without self-citations) registered in Web of Science. The authors show that the very detailed models resulting from the commonly used building simulation software packages are not suitable for predictive control and propose a new methodology that combines the building energy performance simulation tools and statistical identification. The efficiency of the proposed methodology is verified on heating of real buildings including a large office building in Munich (20 000 m², six above-ground floors). Later, this method was applied to control other buildings as well, e.g. in Leuven, Belgium (within a joint project with KU Leuven) and in Prague, CVUT FEL main building in Technická 2, Praha 6, Dejvice, which resulted in 20% savings in heating expenditures, as evidenced by the faculty registrar. The method is now commercialized via solutions provided by the authors spin off company Feramat Cybernetics s.r.o.

Odůvodnění panelu:

An excellent applied research result on complex building modeling. A crucial step that opens the door to sophisticated control-theoretical methods implementation to operate large buildings in an energy and cost efficient manner with only a small retrofitting requirements. A leading-edge result in this application area. An excellent paper published in a top journal with the burgeoning reputation that received a significant number of citations. Commercialized through a spin-off company with a documented industrial impact. Implemented and used for years in several buildings around EU with proven energy savings.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Conclusions from Experimental Testing of Blast Resistance of FRC and RC Bridge Decks

obor: JM

Identifikátor: **RIV/68407700:21110/13:00205264!RIV14-GA0-21110**

Id: 274

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta stavební

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The paper was prepared at the Faculty of Civil Engineering of the Czech Technical University in Prague.

Odůvodnění předkladatele:

According to recent publications, from 2005 to 2008 there were more than 13,000 terrorist attacks around the world, which took more than 73,000 human lives. The dataset changes over time, nevertheless, the issue remains unchanged. The attacks were targeted mainly on the technical and civic infrastructure, such as governmental buildings and bridges, etc. It is a crucial issue to study blast performance of commonly used building materials and to provide new solutions with enhanced performance under blast loading. Due to improved ductility, fiber-reinforced concrete (FRC) shows better performance under blast and impact loading compared to conventionally reinforced concrete. Field tests of FRC and reinforced concrete specimens were performed in cooperation with the Czech Army corps and Police of the Czech Republic in the military training area Boletice. The tests were performed using real scale reinforced concrete precast slabs with varying fiber content and concrete strength class and 25 kg of TNT charges placed in a distance from the slab for better simulation of real in-situ conditions. This paper presents conclusions from two sets of tests (2010 and 2011) and results of their numerical evaluation. The tests are unique because of the used full-scale which enables complex numerical evaluation and further studies, see number of citations below. The paper was published in the International Journal of Impact Engineering, which is the most prestigious journal in the field of blast engineering. Currently, 3 years after publication, the paper has 27 citations in Web of Science.

Odůvodnění panelu:

Excellent work combining experiments with simulations. Relevant data presented on the blast resistance of fiber reinforced concrete specimens. Published in a well-ranked journal with a high citation response registered in WoS. High industrial relevance.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

High-resolution biosensor based on localized surface plasmons

obor: JA

Identifikátor: RIV/67985882: /12:00374560!RIV13-AV0-67985882

Id: 612

Předkladatel výsledku do Pilíře II.:

IČO: 67985882 Ústav fotoniky a elektroniky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

The Optical Biosensors Team at the Institute of Photonics and Electronics developed a laboratory prototype of the sensor based on an array of gold nanorods and the total internal reflection imaging in polarization contrast, carried out the functionalization of the nanorod arrays with DNA probes, and performed the DNA detection experiments. The Austrian partner - University of Graz - was responsible for the fabrication of the gold nanorod arrays using electron beam lithography.

Odůvodnění předkladatele:

The paper presents a new optical biosensor based on localized surface plasmons using an array of gold nanorods and total internal reflection imaging in polarization contrast. In model biodetection experiments, we have demonstrated that the biosensor is able to detect short DNA molecules with a limit of detection of 100 pM, which corresponds to less than one DNA molecule per nanoparticle on average. The paper has been published in OPTICS EXPRESS, one of the high-ranking journals in the field of optics (ranked 14 of 90 in optics according to WOS). To date the paper has generated 47 citations.

Odůvodnění panelu:

A new biosensor invented with localized surface plasmons based on an array of gold nanorods and the total internal reflection imaging in polarization contrast. Its sensitivity is characterized, and a model detection of DNA hybridization is carried out. Compared with conventional surface plasmon resonance biosensor, the result delivers the same performance but significantly lower surface densities of interacting molecules. Presented in a highly cited paper published in a good journal.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

A highly-deformable composite composed of an entangled network of electrically-conductive carbon-nanotubes embedded in elastic polyurethane

obor: JB

Identifikátor: RIV/67985874: /12:00378733!RIV13-AV0-67985874

Id: 33

Předkladatel výsledku do Pilíře II.:

IČO: 67985874 Ústav pro hydrodynamiku AV ČR, v. v. i.

Podíl předkladatele na výsledku: **30 %**

Popis podílu předkladatele:

The contribution involves the analysis of tests of highly deformable composite composed of a network of conductive entangled carbon nanotubes embedded in elastic polyurethane. Moreover, description of longitudinal deformation based on the Weibull fiber strength statistics as well as the analysis of composite testing in biomechanical applications, namely, the measurement of human knee flexion and its cyclic movement.

Odůvodnění předkladatele:

We have introduced and analyzed a highly deformable composite composed of a network of electrically-conductive entangled carbon nanotubes embedded in elastic polyurethane. The composite is prepared by taking a non-woven polyurethane filtering membrane, enmeshing it with carbon nanotubes and melding them into one. This innovative procedure eliminates the laborious process that is usually used, i.e. peeling off the nanotube network from the common micro-porous (polycarbonate, nylon) filter followed by the network polymeric impregnation to increase its compactness. Testing has shown the material can be extended as much as 400 % during which its electrical resistance increases more than 270 times. The evaluated sensitivity of the composite in terms of the gauge factor increases linearly with strain from values around 4 at the start of deformation to nearly 69 at the strain 403 %. This is a substantial increase, which put the composite among ranges the materials and strain gauges with the highest sensitivity of electrical resistance measurement. The illustrative use of the composite as a strain sensor to measure human knee flexion and its cyclic movement suggests application in orthopedics and rehabilitation. However, the favorable combination of mechanical and electrical properties of the composite indicates a possible further uses as, for instance, a strain-electric signal transducer, electromagnetic field shielding and lightning protection.

Odůvodnění panelu:

An excellent article on preparation and characterization of novel nanocomposite material with very promising characteristics for strain sensing. Published in a Q1 journal. Impact demonstrated by high citation response.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Gwyddion: an open-source software for SPM data analysis

obor: JC

Identifikátor: **RIV/00216224:14740/12:00057079!RIV13-MSM-14740**

Id: 590

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Středoevropský technologický institut

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

Even though the development of Gwyddion is nowadays an international effort with 30+ contributors from 12+ countries, it was started in 2003 by two MU graduates. David Nečas, who is still employed at MU today, continues to be the lead developer of the project. Petr Klapetek, currently employed at the Czech Metrology Institute, collaborates with MU closely.

Odůvodnění předkladatele:

Times Cited: 396 Category Normalized Citation Impact: 32,55 Percentile in Subject Area: 0,10 Journal Impact Factor: 0,948 The paper describes the architecture, data organisation and selected features of open-source scientific software, Gwyddion. Hence the citations of the paper reflect primarily the impact of this software on the field of scanning probe microscopy (SPM). Gwyddion freed scientists using SPM from depending on often arbitrary and always difficult to verify collections of data analysis tools provided by SPM software of individual manufacturers. Thanks to the wide coverage of the various data formats (100+ different file formats supported), data acquired using different instruments can be now treated using the same procedures and thanks to its open-source nature, all data processing methods can be examined at the source code level. This verifiability is crucial for quantitative analysis of data obtained by novel scanning modes, such as fast point spectroscopy and imaging, and further progress to standardisation in nanometrology. The uniqueness lay also in presence of an uncertainty and calibration framework, possibility to generate artificial data and perform a measurement simulation.

Odůvodnění panelu:

A modular, multi-platform, open-source software for processing data for scanning probe microscopy. A unique work that has accrued with high interest from the research community. An enormous number of citations although published in a low impact factor journal.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Total Recall II: Query Expansion Revisited

obor: JD

Identifikátor: RIV/68407700:21230/11:00187110!RIV12-MSM-21230

Id: 1414

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta elektrotechnická

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100%

Odůvodnění předkladatele:

The paper was published at the Conference on Computer Vision and Pattern Recognition (CVPR), which is highly selective and has the highest impact among conference in computer vision and third in computer science according to Microsoft Academic Search (of about 3500 CS conferences). CVPR conf. papers are long enough and attract such attention that an extended version of the papers was never published in a journal. The work triggers a series of papers that build on the novel concept of image search that shifts from the nearest neighbour search to search of a sequence of relevant images, linking and retrieving images that have no chance being matched directly. This is reflected in the number of citations of the publication. To understand the novelty of the approach, imagine trying to locate a gargoyle on St. Vitus cathedral in a view of the Prague castle taken from Vysehrad. The gargoyle will be smaller than a pixel and the task is impossible. But in a large database of images it is usually possible to find a sequence of matching images, "zooming toward the target", so that, by chaining the transformation, the gargoyle is found. The generalization of the retrieval problem has numerous applications and an implementation of the method was licensed to Samsung in 2012 for 40 000 US and to a Singapore based start-up iQnect for 40 000 EUR in 2015.

Odůvodnění panelu:

A very well done work on an actual and utilizable topic. Published at good reputation conference series, really high impact registered in WoS. The developed software is extremely popular. Successful commercialization declared by presenting institution although not proved.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Chitosan-based synthesis of magnetically-driven nanocomposites with biogenic magnetite core, controlled silver size, and high antimicrobial activity

obor: JM

Identifikátor: **RIV/61989592:15310/12:33140852!RIV13-MSM-15310**

Id: 658

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **88 %**

Popis podílu předkladatele:

The first, the last and the corresponding author from UP - principal home-made paper.

Odůvodnění předkladatele:

This work presents synthesis and application of magnetically active nanocomposite containing biogenic magnetic core and silver nanoparticles on the surface. Synthesis, characterization as well as antimicrobial testing were performed at Palacký University in Olomouc

Odůvodnění panelu:

The work is very complex merging various areas from material science and biochemistry. The excellent original result on the hot topic of magnetically driven biocompatible nanocomposites with antibacterial and antifungal functions prepared via green procedures. Published in a highly-ranked journal with a high citations response.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Extensions of Recurrent Neural Network Language Model

obor: JC

Identifikátor: RIV/00216305:26230/11:PU96087!RIV12-MSM-26230

Id: 505

Předkladatel výsledku do Pilíře II.:

IČO: 00216305 Vysoké učení technické v Brně, Fakulta informačních technologií

Podíl předkladatele na výsledku: **96 %**

Popis podílu předkladatele:

The paper was written by Tomas Mikolov during his PhD studies at BUT, with the help of another graduate student Stefan Kombrink. Tomas was co-supervised by Lukas Burget and Jan Cernocky (BUT) and Sanjeev Khudanpur (Johns Hopkins).

Odůvodnění předkladatele:

Language models (LM) are important parts of systems for machine translation (MT), automatic speech recognition (ASR) and optical character recognition (OCR). For many years, LMs were based on counting the n-grams. In 2010, Tomas Mikolov changed completely the LM field with his paper “Recurrent neural network based language model” presented at Interspeech, where he showed RNN LMs to clearly outperform the classical n-gram models. RNN LM ideas had been around for several decades, but he was the first to manage (by careful research and engineering) to make them actually work. The 2011 paper elaborates on RNNLMs and brings several advances for their practical usability, mainly the factorization of the output layer into classes and efficient ways of training the RNN through modifications of the back-propagation through time (BPTT) algorithm. The paper was accompanied with a RNN LM toolkit allowing everyone to test the investigated approaches and making a strong case for open research initiative. The paper has gathered a significant amount of citations: 83 according to the Web of Science (typically conservative for IT-related works) and 367 according to Google Scholar. The 2010 and 2011 papers sparked an enormous interest in RNN LMs, the models started to be routinely used in both academic labs and industrial applications. After defending his PhD thesis in 2012, Tomas was immediately hired to Google Research, where he continued his work on low-dimensional representations (word embeddings) leading to word2vec algorithm, that has been since massively used in disambiguation, syntactic and semantic analysis, bioinformatics and many others. His 2013 paper “Distributed representations of words and phrases and their compositionality” has incredible 2723 citation in Google Scholar. Since 2014, he is with Facebook AI Research lab and continues to work and publish on text analysis and on general issues of artificial intelligence.

Odůvodnění panelu:

The paper provides the first published results when using recurrent neural network trained by back-propagation through time in the context of statistical language modeling. An exceptionally well-received piece of work that continues to have a dramatic impact on the community.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Nanoindentation Characteristics of Alkali-activated Aluminosilicate Materials

obor: JJ

Identifikátor: **RIV/68407700:21110/11:00172683!RIV12-GA0-21110**

Id: 918

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta stavební

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The paper was prepared at the Faculty of Civil Engineering of the Czech Technical University in Prague.

Odůvodnění předkladatele:

In this paper, we present a pioneering work in the characterization of the main reaction product of the low calcium ground fly ash and metakaolin activated with a sodium-silicate solution. This new class of materials excels in durability and chemical stability compared to ordinary cementitious systems. Elastic properties of the main reaction product, the N-A-S-H gel, as well as of other material phases were quantified for the first time by means of nanoindentation. Massive grid indentation and statistical deconvolution technique was applied to derive the mature N-A-S-H gel and other phases' properties. It was found that the N-A-SH gel Young's modulus equals to 17-18 GPa irrespective of the curing procedure and activated material, i.e. the fly ash or metakaolin. The paper was published in a renowned international journal Cement & Concrete Composites with the impact factor = 3.330. Number of total citations of the paper is in WoS: 28, in Scopus: 45.

Odůvodnění panelu:

An excellent paper reporting on the extensive characterization of alkali-activated fly ash and metakaolin by nanoindentation and by nuclear magnetic resonance and electron microscopy. It presents valuable experimental data extending knowledge borders in the field of cement materials in a well-ranked journal with a good number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Quantitative acoustic measurements for characterization of speech and voice disorders in early untreated Parkinson's disease

obor: JD

Identifikátor: **RIV/68407700:21230/11:00177209!RIV12-MSM-21230**

Id: 1105

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta elektrotechnická

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

This interdisciplinary research consists of technical and neurological part and was performed in joint collaboration of the Department of Circuit Theory, Faculty of Electrical Engineering, Czech Technical University in Prague (CTU) and the Department of Neurology and Centre of Clinical Neuroscience, First Faculty of Medicine, Charles University in Prague (CUNI). The first two of four authors (Jan Rusz and Roman Čmejla) are CTU employees and CTU thus contributed by 50% to the article. Major part of effort has been undertaken at CTU. CTU carried out the theoretical part, developed signal processing methods, realized analyses, and wrote the paper. CUNI represented by the authors Hana Růžicková and Evžen Růžička has been responsible for recruitment and investigation of Parkinsonian patients, which is essential for such interdisciplinary research.

Odůvodnění předkladatele:

This research discovered for the first time that speech impairment is present in majority of newly diagnosed drug-na?ve patients with Parkinson's disease. Using a high end pattern analysis and innovative digital speech signal processing algorithms developed by our team, we were able to capture with high accuracy speech disorders in early stages of Parkinson's disease. Therefore, this study opened new opportunities for automated speech assessment to revolutionize the diagnostic process and screen large population for the risk to develop Parkinson's disease. Identifying early markers of Parkinson's disease is essential for development of neuroprotective therapy, which provides one of the greatest challenges of 21st century. (1) The article was published in the most respected and internationally recognized journal in the field of acoustics. JASA is consistently ranked as the top journal (1/30) in the WoS by Eigenfactor score.(2) The article has 98 citations according to the Google Scholar, 70 citations according to the Scopus and 56 according to the WoS. It is the 3th most cited article among 833 papers published by JASA in 2011 according to the WoS.(3) Jan Rusz (first author) was internationally awarded for the core idea of the paper at EFNS 2011 Congress by European Federation of Neurological Societies Investigator Award Winner in Movement Disorders panel.(4) The article has helped to establish new prospective scientific team aimed on motor speech disorders and resulted in rich international collaboration (e.g. Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany and Ruhr-University of Bochum, Germany), as reflected by further articles by authors.

Odůvodnění panelu:

This nice interdisciplinary research discovered for the first time that speech impairment is present in the majority of newly diagnosed drug-na?ve patients with Parkinson's disease. Using a high-end pattern analysis and innovative digital speech processing algorithms, the team was able to capture with high accuracy speech disorders in early stages of Parkinson's disease. The paper appeared in a moderate journal, but citation rate is high.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Flight model of the Space Application of Timepix Radiation Monitor (SATRAM)

obor: JV

Identifikátor: **RIV/68407700:21670/13:00216790!RIV14-MSM-21670**

Id: 524

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Ústav technické a experimentální fyziky ČVUT

Podíl předkladatele na výsledku: **65 %**

Popis podílu předkladatele:

Majority of authors of this result are from IEAP CTU in Prague. Our estimate for the IEAP share is 65%. This number can be supported by a detailed analysis.

Odůvodnění předkladatele:

see the attachment "PilirII_216790_2016_KV04.pdf"

Odůvodnění panelu:

Fascinating work resulting in space mission. Original semiconductor pixel detectors Timepix (or variants called Medipix) are original and excellent devices by design and construction reaching superb parameters in spatial resolution, linearity, dynamic range and so forth, which made it perfect for space applications. These devices, produced by the team, have been operating on orbit for over four years as radiation on-line dose monitors of space crew on board the International Space Station (ISS). Also used in a dedicated spacecraft payload Space Application of Timepix Radiation Monitor, which operates for more than three years onboard of the ESA Proba-V satellite. Other implementations shall come in future satellites and spacecraft. They are suitable for various applications in radiography, neutronography, micro-tomography and X-ray dynamic defectoscopy. Based on their extraordinary space performance, they are considered great inventions although they are despite poor documentation.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

PredictSNP: Robust and Accurate Consensus Classifier for Prediction of Disease-Related Mutations

obor: JC

Identifikátor: RIV/00216305:26230/13:PR27527!RIV14-MSM-26230

Id: 1067

Předkladatel výsledku do Pilíře II.:

IČO: 00216305 Vysoké učení technické v Brně, Fakulta informačních technologií

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

Brno University of Technology:(a) construction of validation datasets(b) testing of ensemble-based techniques(c) development of web interface(d) manuscript writingMasaryk University / ICRC:(a) consultancy for construction of the validation datasets(b) selection of computational methods for integration(c) testing of web interface(d) manuscript writing

Odůvodnění předkladatele:

Proteins of every living organism carry mutations which distinguish them from the other individuals. The ability to predict the effects of these mutations on biomolecules' function is a crucial step for the detection of hereditary diseases and prescription of tailor-made medications. PredictSNP1 is an ensemble-based predictor for delineating the effect of amino acid mutations and prioritizing them for experimental characterization. It combines six well-established prediction methods by two-level weighted consensus approach and achieves a significant improvement over the best of them. The weights of integrated methods are derived according to the observed prediction accuracy of tools and their reported scores on a newly constructed dataset of mutations. PredictSNP was published in 2014 in PLoS Computational Biology, a journal with an impact factor of 4.8 ranked in Q1 according to ISI Web of Science. In two years since its publication, PredictSNP web service (<http://loschmidt.chemi.muni.cz/predictsnp1/>) was employed for analysis of over 75,000 mutations in 5,000 distinct protein sequences by more than 1,000 unique users from 50 countries. The already well-developed user community is reflected by positioning of the paper as top 1% most cited paper in the academic field of Biology & Biochemistry according to Web of Science for the year 2014 and ranked as among the top four of 1,594 articles published and cited in 2014 on Medline category "Bioinformatics and Translational Informatics" according to International Medical Informatics Association Yearbook (Web of Science: 59 citations, Google Scholar: 97 citations).

Odůvodnění panelu:

Excellent interdisciplinary research, partly outside of the EP04 scope. An original computational software tool for the prediction of the effects of mutations on protein function for the analysis of single nucleotide variants and their prioritization for experimental characterization. Many computational tools are already widely employed for this purpose. The PredictSNP is a consensus classifier combining six best performing prediction methods to provide more accurate and robust alternative to the predictions delivered by individual integrated tools. Described in high impact paper with numerous citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Real-time scene text localization and recognition

obor: JD

Identifikátor: **RIV/68407700:21230/12:00200346!RIV13-GA0-21230**

Id: 1127

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta elektrotechnická

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100%

Odůvodnění předkladatele:

The paper presents the first real-time, end-to-end method for unrestricted scene text detection and recognition(also called the text-in-the-wild problem or photoOCR). The real-time performance is achieved by formulating the problem in a novel way by posing the character detection as an efficient sequential selection from the set of Extremal Regions (ERs). The ER detector is robust to blur, illumination, color and texture variation and handles low-contrast text.The paper was published at the Conference on Computer Vision and Pattern Recognition (CVPR), which is highly selective and has the highest impact among conference in computer vision and third in computer science according to Microsoft Academic Search (of about 3500 CS conferences). The paper is very highly cited.The breakthrough nature of the paper made L. Neumann, while being a year 2 PhD student, well-known in the community. In consequence, Lukas Neumann received in 2013 the prestigious Google PhD Fellowship as the first researcher from Central & Eastern Europe. According to Google, quoting “the Google Fellowship Programs recognize outstanding graduate students doing exceptional work in computer science, related disciplines, or promising research areas” (more info in English: <http://www.eweek.com/cloud/google-awards-39-ph.d.-fellowships-in-computer-science> ; in Czech: <http://businessworld.cz/novinky/lukas-neuman-z-cvut-ziskal-prestizni-stipendium-google-10844>). He was also invited to give a keynote talk at the International Workshop on Robust Reading, <http://imlab.jp/iwrr2014/>. The source code of the CVUT implementation was sold for 60 000 USD, non-exclusively, to Samsung in 2012. The method has become a reference and it has been independently reimplemented inside the OpenCV 3.0 library in 2014, the most popular computer vision library, see <http://docs.opencv.org/3.0-beta/modules/text/doc/erfilter.html>.

Odůvodnění panelu:

A brand new end-to-end real-time scene text localization and recognition method. Superb real-time performance achieved by posing the character detection problem as an efficient sequential selection from the set of Extremal Regions. Their detector is robust to blur, illumination, color and texture variation and handles low-contrast text. Good paper with serious impact confirmed by numerous citations. Also, it is successfully applied and commercialized.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

On airborne nano/micro-sized wear particles released from low-metallic automotive brakes

obor: JI

Identifikátor: **RIV/61989100:27640/11:86081420!RIV12-MSM-27640**

Id: 971

Předkladatel výsledku do Pilíře II.:

**IČO: 61989100 Vysoká škola báňská - Technická univerzita Ostrava,
Centrum nanotechnologií**

Podíl předkladatele na výsledku: **65 %**

Popis podílu předkladatele:

Design of the study, generation of wear particles, chemical and microscopic characterization of brake wear particles.

Odůvodnění předkladatele:

The study was the first which has come up with detailed information on character of nanoparticulate brake wear emissions and the proof of potential contribution of non-exhaust related emissions to air pollution from road traffic. Since then brake pad manufacturers started to deal with potential environmental risks of their materials, which was manifested by our several research projects for these industrial partners. Moreover, based on this study our team has been invited to participate in the PMP group (http://www.unece.org/trans/main/wp29/meeting_docs_grrf.html, <https://www2.unece.org/wiki/download/attachments/25264603/PMP-35-04%20NEPE%20-%20Working%20Item%203%20Draft%20Final.docx?api=v2>) working on future EU legislation controlling and regulating non-exhaust related emissions from traffic. IF (2015) of the journal Environ. Poll. 4.839.

Odůvodnění panelu:

Well-written paper deals with a crucial and highly innovative experimental work analyzing nanoparticulate brake wear emissions and the proving potential contributions of non-exhaust related emissions to air pollution from road traffic. The reported research is based on a combination of sophisticated chemical and microscopic techniques used for analysis of the micro- and nano-particles produced by low-metallic automotive brake lining composites used in the EU and U.S. markets. Published in a Q1 journal, the paper gained a very high impact in the citation database WOS.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Development and performance evaluation of natural thermal-insulation materials composed of renewable resources

obor: JN

Identifikátor: **RIV/00216305:26110/11:PU93058!RIV12-MSM-26110**

Id: 349

Předkladatel výsledku do Pilíře II.:

IČO: 00216305 Vysoké učení technické v Brně, Fakulta stavební

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Publication was prepared with cooperation with prof. Korjenic from TU Wien, Participation of BUT is 80%.

Odůvodnění předkladatele:

Result contributing to the development of the field of the use of advanced building materials and reducing the energy intensity of building structures.

Odůvodnění panelu:

A very good paper reporting new experimental data on the performance of different insulation materials, natural and artificial, for thermal building insulations. The paper was published in a good journal and has created considerable interest and high citation response.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Critical Aspects of Nano-Indentation Technique in Application to Hardened Cement Paste

obor: JJ

Identifikátor: **RIV/68407700:21110/11:00171624!RIV12-MSM-21110**

Id: 299

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta stavební

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The paper was prepared at the Faculty of Civil Engineering of the Czech Technical University in Prague.

Odůvodnění předkladatele:

Nanoindentation (NI) is a widely used technique for measuring mechanical properties of materials at the micron and submicron levels. In application to highly heterogeneous materials such as cement paste, NI is usually applied in the form of the grid indentation method. The present paper points out certain deficiencies of this traditional approach and develops a new methodology that can substantially improve the quality of results. Several open questions related to the experimental protocol and processing of data acquired by the nano-indentation technique are investigated. The volume fractions of mechanically different phases obtained from statistical NI (SNI) analysis are shown to be different from those obtained by back-scattered electron (BSE) image analysis and X-ray diffraction (XRD) method on the same paste. Judging from transmission electron microscope (TEM) images, the representative volume element of low-density calcium-silicate hydrates (C-S-H) can be considered to be around 500 nm, whereas for high-density C-S-H it is about 100 nm. This raises the question how the appropriate penetration depth for NI experiments should be selected. Changing the maximum load from 1 mN to 5 mN, the effect of penetration depth on the experimental results is studied. As an alternative to the SNI method, a "manual" indentation method is proposed, which combines information from BSE and atomic-force microscopy (AFM), coupled to the NI machine. The AFM allows to precisely indent a high-density C-S-H rim around unhydrated clinkers in cement paste. The results of the present study lead to a new, more accurate methodology for evaluation of mechanical properties of cementitious composites at the microscale and permit a direct assignment of the measured properties to individual phases of the composite material. The paper has received considerable attention in the research community and has been cited 23 times in the Web of Science (without self-citations).

Odůvodnění panelu:

A very good paper dealing with nanoindentation techniques for the investigation of cement pastes reported in a well-ranked journal with a good citation response. The paper shows very well the method performance for understanding some of macro- and microstructural properties of such complex materials as cement pastes.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Image-Based Pointing and Tracking for Inertially Stabilized Airborne Camera Platform

obor: BC

Identifikátor: **RIV/68407700:21230/12:00182354!RIV13-MSM-21230**

Id: 666

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta elektrotechnická

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100%

Odůvodnění předkladatele:

This paper describes a novel image-based pointing-tracking feedback control scheme for an inertially stabilized double-gimbal airborne camera platform combined with a computer vision system. The key idea is to enhance the intuitive decoupled controller structure with measurements of the camera inertial angular rate around its optical axis. The resulting controller can also compensate for the apparent translation between the camera and the observed object, but then the velocity of this mutual translation must be measured or estimated. Even though the proposed controller is more robust against longer sampling periods of the computer-vision system than the decoupled controller, a sketch of a simple compensation of this delay is also given. Numerical simulations are accompanied by laboratory experiments with a real benchmark system. The result has been published in the IEEE TRANSACTIONS ON CONTROL SYSTEMS TECHNOLOGY which is the leading scientific journal in the area of control systems applications. By WoS JCR, it is rated Q1 by IF in two categories: AUTOMATION & CONTROL SYSTEMS (9 of 58) and ENGINEERING, ELECTRICAL & ELECTRONIC (36 of 249). It received 10 heterocittaions, which is four times more than the journal IF 2.474. Ultimately the results have been applied in several prototypes of inertially stabilized camera platforms that were developed together with Czech Air Force and Air Defense Technological Institute (VTÚLaPVO), flight-tested on helicopters and are now part of a real product, produced by Air Defense Technological Institute (VTÚLaPVO) and used by Czech Air Force.

Odůvodnění panelu:

A novel, original image-based pointing-tracking feedback control scheme for an inertially stabilized double-gimbal airborne camera platform combined with a computer vision system. The key idea is to enhance the naturally decoupled controller structure with measurements of the camera inertial angular rate around its optical axis. Excellent applied research and sophisticated engineering work. Published in a top applied research journal with relatively high citation impact. Prototyped, tested in flight, then produced and sold by a company, and operated by the Czech Army. A complete result indeed.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Ultrasensitive Broadband Probing of Molecular Vibrational Modes with Multifrequency Optical Antennas

obor: JA

Identifikátor: RIV/67985882: /13:00388841!RIV14-AV0-67985882

Id: 1438

Předkladatel výsledku do Pilíře II.:

IČO: 67985882 Ústav fotoniky a elektroniky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **38 %**

Popis podílu předkladatele:

The Optical Biosensors Team at the Institute of Photonics and Electronics has developed and carried out functionalization of nanoantenna arrays and measured infrared extinction spectra of alkanethiols adsorbed on a flat gold film under grazing illumination.

Odůvodnění předkladatele:

This paper reports on the development of special broadband trapezoidal nanoantennas designed for multispectral surface-enhanced infrared absorption spectroscopy. An experimental proof of the concept was provided in multispectral infrared sensing experiments in which alkanethiol molecules on individual nanoantenna were detected and a substantial SEIRA gain ($10E5$) across a spectral window of 3 μm was demonstrated. The paper has been published in ACS NANO, one of the top journals in the field of nanoscience (ranked 4 of 83 in Nanoscience & nanotechnology according to WOS). To date the paper has generated 41 citations.

Odůvodnění panelu:

Optical antennas represent an enabling technology for enhancing the detection of molecular vibrational signatures at low concentrations and probing the chemical composition of a sample to identify target molecules. A new device is proposed efficiently detecting different vibrational modes providing new opportunities for ultrasensitive broadband detection of molecular species via vibrational spectroscopy techniques. An excellent paper published in a top-ranked journal with substantial citation impact.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Anti-VEGF treatment reduces blood supply and increases tumor cell invasion in glioblastoma

obor: FS

Identifikátor: RIV/68081731: /11:00368977!RIV12-AV0-68081731

Id: 115

Předkladatel výsledku do Pilíře II.:

IČO: 68081731 Ústav přístrojové techniky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **3 %**

Popis podílu předkladatele:

The contribution of our institute to this paper is the development, implementation and application of a new MRI perfusion-analysis method. It falls into the group of MRI perfusion-analysis techniques, called dynamic contrast-enhanced (DCE) MRI. Standard DCE-MRI methods are mostly based on the Tofts pharmacokinetic model and allow estimation of a limited number of perfusion parameters. Our methodology allows estimation of additional perfusion parameters, namely blood flow and vessel permeability-surface product. This allows a unique detailed analysis of DCE-MRI experiments and forms a substantial part of this paper's contribution. To our knowledge this was the first preclinical DCE-MRI study allowing estimation of the complete set of perfusion parameters. Our MRI perfusion-analysis method is based on two major improvements. The first improvement is use of a distributed-capillary adiabatic tissue homogeneity (DCATH) pharmacokinetic model (instead of the standard Tofts model). The DCATH model is known but very rarely used. We have modified it by using a Fourier-domain formulation of the bolus arrival time which allows a fully continuous formulation of the criterion function used in the estimation of perfusion parameters. This increases the robustness of the estimation process. The second improvement was estimation of the local subject-specific arterial input function (AIF). The AIF is a time sequence describing the contrast-agent concentration in an arterial input of the analyzed tissue (here tumor). It is crucial for reliable perfusion-parameter estimation, especially when using a more complicated pharmacokinetic model, as applied here. We have suggested a novel approach based on single-channel blind deconvolution where the AIF estimation is done from the signal acquired in the tissue. We took part in the design of the AIF estimation method (main part done by T. Taxt – coauthor, Norway) and designed, implemented and applied the DCATH model in perfusion analysis.

Odůvodnění předkladatele:

Glioblastomas (GBM) are highly vascularized tumors and therefore represent attractive targets for anti-angiogenic therapies. Despite impressive radiological responses in bevacizumab-treated patients, tumor cell invasion and recurrence remain major challenges. Thus, there is a strong need to improve treatment strategies for GBM and to better understand the mechanisms of failure for the targeted anti-angiogenic therapies. We address these mechanisms by using clinically highly relevant GBM xenografts and by applying a new MRI perfusion analysis technique in addition to standard analysis methods. Recently, it was proposed that anti-angiogenic treatment leads to blood vessel normalization, accompanied by increased blood flow and oxygenation. In contrast, our data demonstrate a reduction in tumor perfusion and oxygenation in the GBM xenografts. Although increased blood flow might occur during a short normalization window, our data suggest that, in GBMs, the long-term effects of anti-VEGF agents are increased hypoxia and invasive potential. Anti-VEGF treatment also strongly increases tumor cell invasion, which may result from increased hypoxia in the tumor microenvironment. These data are of major clinical importance with regard to combination therapies. For example, our data suggest that radiotherapy, partly dependent on the oxygenation level of the tumor, and systemic drug delivery, influenced by vessel permeability and blood flow, may not profit from coadministered antiangiogenic treatment in GBM. We propose that anti-angiogenic therapy could benefit from the adjuvant delivery of drugs targeting the HIF1 α and PI3K/Akt pathways or by directly interfering with the glycolytic metabolism of tumor cells. This result was published in the journal taking the 4th best position among multidisciplinary sciences and its world-class level is justified by almost 49 citations per year (without self-citations from WOS).

Odůvodnění panelu:

Panel EP04, Hodnocení 2016, Pilíř II

Excellent paper synergically combining medical research with advanced magnetic resonance methods. Unequivocally, this is a paper of considerable merit that makes a significant contribution to the discipline. Impact and level of citations are evidence of the quality of the work.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Long-hole distress blasting for rockburst control during deep underground coal mining

obor: DH

Identifikátor: RIV/68145535: /13:00394628!RIV14-AV0-68145535

Id: 798

Předkladatel výsledku do Pilíře II.:

IČO: 68145535 Ústav geoniky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **90 %**

Popis podílu předkladatele:

Full article, including measurement, evaluation and interpretation of the data was created in the workplace UGN. Dr. Singh CIMFR (India) participated mainly in the area of factual recommendations for compilation of this publication, improving the clarity and more accurate of English terminology.

Odůvodnění předkladatele:

This output is a major contribution to new approach for application and the understanding of the effect of distress blasting for rock burst control for underground coal mining. The idea of coupling controlled blasting, seismic monitoring and rock stress measurement and theoretical analyses is innovative and demonstrated to be useful for stress release and rockburst prediction. Valuable are trials of blasting effectiveness estimation supported by energy consideration. Although the results are based primarily on empirical measurements in a specific area of Karvina, they are well supported by rock mechanical and geophysical techniques and can be an inspiration for the world's mining engineers and mining geophysics. The paper is significant effort combining both experiment and theory. The paper was published in a good journal (Q1 in mining & mineral processing) "International Journal of Rock Mechanics and Mining Sciences". It was cited (without self citations) 16 in WoS, 22 in Scopus. During the phase I. of the evaluation of teams of the Czech Academy of Sciences in 2016, the quality of the result was assessed as „ world-leading in terms of originality, significance and rigour“ by the international evaluation panel No. 5 Earth and related environmental sciences.

Odůvodnění panelu:

A very good paper reporting on the original improvement of the distress blasting and its application in a particular mining site Lazy Colliery. Thus, in the field of mining, I evaluate the paper as cutting-edge one pushing the knowledge in the field forward. The paper was published in a well-ranked journal with a very good number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A "Break Our Steganographic System" --- the ins and outs of organizing BOSS

obor: JC

Identifikátor: RIV/68407700:21230/11:00189111!RIV12-MSM-21230

Id: 2

Předkladatel výsledku do Pilíře II.:

**IČO: 68407700 České vysoké učení technické v Praze, Fakulta
elektrotechnická**

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

All three authors did equal ratio of work on this.

Odůvodnění předkladatele:

This work describes the international competition in steganalysis organized by its authors. The competition, which goal was to break a state of the art steganographic algorithm designed by authors, has accelerated the research in steganalysis by stimulating new ideas. The paper describes in detail dataset of 10 000 images, which has been created for the competition and made available for public. This dataset was created and published in such a way, that it allowed to be used by researchers in steganography, steganalysis, and image forensics to compare their algorithms under the same evaluation conditions and therefore enabling reproducible science.

Odůvodnění panelu:

The excellence here is in the organization of an international competition with such high and longtime response. The impact of the contest has been remarkably high. A large number of citations are equivocal although the source is not at the date of publication and neither recently indexed in WoS. Borderline decision.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

A Benchmark for Comparison of Cell Tracking Algorithms

obor: IN

Identifikátor: **RIV/00216224:14330/14:00073448!RIV15-MSM-14330**

Id: 15

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Fakulta informatiky

Podíl předkladatele na výsledku: **60 %**

Popis podílu předkladatele:

Masaryk University authors exclusively prepared the test data, suggested the evaluation methods and protocols, carried out the evaluation, developed the Cell Tracking Challenge supporting software, and collaborated on the publication.

Odůvodnění předkladatele:

Times Cited: 52 Category Normalized Citation Impact: 11,05 Percentile in Subject Area: 0,34 Journal Impact Factor: 5,77 ESI: Highly Cited Paper This paper is a key output of the Cell Tracking Challenge realized at IEEE International Symposium on Biomedical Imaging 2013 in USA. The challenge was co-organized by the Masaryk University. The authors gathered the bioimage informatics community and organized an open competition hosted by a prestigious conference in the field, in 2013, resulting in a novel benchmark for objective and systematic comparison of cell tracking algorithms. The manuscript, published in a top-ranked Bioinformatics journal, lays down the principles of this benchmark and reveals clear differences between the various cell tracking approaches, leading to important practical conclusions for developers and users. This has been demonstrated by receiving 49 citations since the manuscript publication in 2014, yielding the classification of a highly cited paper according to the Web of Science as of December 2016. Although the benchmark was established in collaboration with two other foreign institutions: University of Navarra, Spain and Erasmus University Medical Center Rotterdam, the Netherlands, the manuscript co-authors affiliated with Masaryk University played a vital role in it, being exclusively responsible for the preparation and management of real as well as synthetic image data, design of evaluation measures and protocols, implementation of the supporting software, and evaluation and interpretation of the results, and partly responsible for the benchmark presentation and publication.

Odůvodnění panelu:

The paper presents a new benchmark that has then been widely used. Even though the contribution is not so technically impressive, the experience brought by the many authors has produced a very useful result. The journal is excellent and citation count very high. This paper is a key output of the Cell Tracking Challenge realized at IEEE International Symposium on Biomedical Imaging 2013 in the USA.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Aggregation functions: Construction methods, conjunctive, disjunctive and mixed classes

obor: IN

Identifikátor: RIV/61988987:17610/11:A1100ZKQ!RIV11-MSM-17610

Id: 76

Předkladatel výsledku do Pilíře II.:

**IČO: 61988987 Ostravská univerzita v Ostravě, Centrum excellence
IT4Innovations, divize OU, Ústav pro výzkum a aplikace fuzzy modelování**

Podíl předkladatele na výsledku: **25 %**

Popis podílu předkladatele:

The article has been written by four co-authors, one of them is our member. In accordance with the law, the authors' work is joint and indifferent so, we claim our 0.25 part of the work covered by the authorship of prof. R. Mesiar, who contributed to the text of the article, co-designed main mathematical ideas, participated on formulation of theorems and their proofs.

Odůvodnění předkladatele:

This paper is a second part of the previous overview devoted to means. In this part, the remaining basic classes of aggregation functions are discussed, including an overview of the most significant construction methods. A special stress is given on incorporating weights/importances into aggregation. Paper belongs to basic sources for researchers in several branches of information sciences, in multiple-valued logics, game theory, etc. The paper has been published in one of top (Q1, TOP10%) journals, that is, in its category (COMPUTER SCIENCE, INFORMATION SYSTEMS), on position 8 from 144 journals belonging to the category. Since it has been published, it collected 45 citations in Web of Science (December 2016).

Odůvodnění panelu:

A review of construction methods for aggregation functions and on special classes of aggregation functions, including also the author's original contribution. Special stress is given on incorporating weights into aggregation. Paper belongs to primary sources for researchers in several branches of information sciences, in multiple-valued logics and game theory. Published in a top journal, received a significant number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Negative Evidences and Co-occurences in Image Retrieval: The Benefit of PCA and Whitening

obor: JD

Identifikátor: **RIV/68407700:21230/12:00200571!RIV13-GA0-21230**

Id: 927

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta elektrotechnická

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

The contribution of the authors is equal in all aspects of the work.

Odůvodnění předkladatele:

The paper was published at European Conference on Computer Vision (ECCV), which is the third most impacted conference in computer vision according to Microsoft Academic Search. The paper set new state of the art in image retrieval with short codes, that is suitable for very large image collections. It also provides a theoretical background of previously used methods of dimensional reduction. The paper has attracted a large number of citations (in WoS, the citations are divided into a number of records, all summing to 35 citations).

Odůvodnění panelu:

Excellent conference paper about dimensionality reduction in image retrieval. A lot of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Formaldehyde emission monitoring from a variety of solid wood, plywood, blockboard and flooring products manufactured for building and furnishing materials

obor: JJ

Identifikátor: RIV/60460709:41320/12:54633!RIV13-MSM-41320

Id: 532

Předkladatel výsledku do Pilíře II.:

IČO: 60460709 Česká zemědělská univerzita v Praze, Fakulta lesnická a dřevařská

Podíl předkladatele na výsledku: **67 %**

Popis podílu předkladatele:

The submitter's share was calculated in accordance with the rules of the Methodology for evaluating the results of research organizations and the evaluation of results of completed programmes. The paper is result of the research project financed by FFWS CULS. The main part of the research was done at FFWS CULS.

Odůvodnění předkladatele:

The issue of formaldehyde emissions from furniture products has global significance with regard to the enormous health impacts of formaldehyde on human health. The results of the research published in the Journal of Hazardous Materials uniquely evaluate the effects of production parameters on formaldehyde emissions inside human dwellings. The submitted article was published after 5 years of international cooperation. At the time the results were published, the Journal of Hazardous Materials had an impact factor 3.925, which is 2nd place according to IF in the ENGINEERING, CIVIL category from a total of 122 journals. The submitted paper details the evaluation of formaldehyde emissions from wood and wood-based materials used in interior design and furniture production. Formaldehyde emission was determined using the gas analysis and chamber methods, which mimic realistic indoor conditions to the maximum possible extent during experimental measurements. The influence of various parameters of wood based materials on formaldehyde emissions was assessed, in particular the type of wood, thickness and design of the boards, the used adhesive mixture and chemical substances and surface finish, as well as the mutual interaction of these parameters.

Odůvodnění panelu:

An experimental paper with valuable data on formaldehyde emission from several types of wood and wood products published in a top-ranked journal with a considerable number of citations. Although the methods are not novel, their use in this particular task is suitable, and the results are useful for the community.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Performance Evaluation and Research of Alternative Thermal Insulations based on Sheep Wool

obor: JN

Identifikátor: **RIV/00216305:26110/12:PU97113!RIV13-MSM-26110**

Id: 1018

Předkladatel výsledku do Pilíře II.:

IČO: 00216305 Vysoké učení technické v Brně, Fakulta stavební

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Publication was prepared with cooperation with prof. Korjenic from TU Wien, Participation of BUT is 80%.

Odůvodnění předkladatele:

Result contributing to the development of the field of the use of advanced building materials and reducing the energy intensity of building structures.

Odůvodnění panelu:

A good paper presenting an extensive and superior data set on sheep wool insulation of buildings and showing several advantages of such an insulation. The paper was published in a well-ranked journal with a good citation response registered in WOS.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

The glass fiber-polymer matrix interface/interphase characterized by nanoscale imaging techniques

obor: JI

Identifikátor: **RIV/00216305:26310/13:PU107466!RIV14-GA0-26310**

Id: 1351

Předkladatel výsledku do Pilíře II.:

IČO: 00216305 Vysoké učení technické v Brně, Fakulta chemická

Podíl předkladatele na výsledku: **90 %**

Popis podílu předkladatele:

The result was about 90% reached at the Faculty of Chemistry (Brno University of Technology) using its devices. Dr. Vladimír Cech (Professor) was the principal author who brought the idea, developed and verified it in the modeling and experimental studies, suggested conditions and methods for preparation and analysis of composite interphase, coordinated technological and experimental work, analyzed the results, prepared and submitted the manuscript. Erik Palesch (Ph.D. student) was responsible for AFM measurements.

Odůvodnění předkladatele:

The paper is part of a systematic study about composite interphase and builds on our previous results. Our development of plasma nanotechnology allows preparing polymer composites with controlled interphase formed by functional nanostructures with precisely defined chemical and physical properties. The originality of this paper is based on our experimental and modeling studies, analysis of composite interphase using scanning probe microscopy, which enabled us to eliminate "disruptive" effects, and gain unprecedented high spatial resolution in characterizing the mechanical properties of composite phases using selected modes of atomic force microscopy (AFM) and dynamic nanoindentation. For the first time the acoustic AFM was also used to characterize the interphase. Our results in new findings about interphase are quite rare and even today, three years after publication, not been overcome. The paper was published in journal that is in the first quartile as the journal number one in research category - Materials Science, Composites. The paper has 20 citations (December 7, 2016) without self-citations within 3 years after publication. The significance of the result proved not only by the number of citations, but also invited talks on this issue, e.g., this year at Nanobrücken 2016 (Composite interface / interphase characterized by Modulus Mapping) in Saarbrücken and 4th Dresden Nanoanalysis Symposium (High-resolution mechanical studies of glass fiber composites). Most important, however, was "Keynote lecture" at the 12th Int. Conf. on Plasma Surface Engineering (Plasma Polymers Used for controlled interphase in polymer composites) in Garmisch-Partenkirchen, which is the largest and most important international conferences in the mentioned issue, and last year's invitation of the American Society for Composites to give a lecture "Plasma coating of glass fibers to Improve the Interfacial shear strength in GF / polyester composites" on ASC 30th Technical Conference USA.

Odůvodnění panelu:

The paper uses novel methods to provide insight at the fibre-polymer interface in composite materials. Use of dynamic nanoindentation and particularly acoustic AFM shed light on so far un-accessible properties.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Truncation nonlinear filters for state estimation with nonlinear inequality constraints

obor: BC

Identifikátor: RIV/49777513:23520/12:43897452!RIV13-MSM-23520

Id: 1430

Předkladatel výsledku do Pilíře II.:

IČO: 49777513 Západočeská univerzita v Plzni, Fakulta aplikovaných věd

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The paper was from 100% created by the team of University of West Bohemia

Odůvodnění předkladatele:

Nonlinear state estimation plays a key role in a vast number of technical and non-technical areas. Knowledge of the state, characterizing the history of the system behavior, or its estimate is used to predict future behavior of the system, control its performance, or detect the faults in the system. The paper deals with a recursive state estimation of nonlinear stochastic dynamic systems discrete in time and concentrates on utilization of additional information about the system state behavior. As the state often represents physical quantities, additional knowledge is usually available about it in the form of constraints but the knowledge is often ignored by the standard nonlinear filters. The paper focuses on a design of a conceptually new class of nonlinear filters, which are able to utilize the information about the state constraint given in a general form of a nonlinear inequality. The filter integrates the information into the estimation process itself and allows natural respecting physical characteristics of the state. The designed filters not only respect the constraints and provide high quality estimates in comparison with the standard nonlinear filters but also achieve computationally efficient performance. The paper was published in the journal Automatica which is, together with the IEEE Transaction on Automatic Control, considered to be the most prestigious journals in the area of the automatic control. In 2015 the impact factor of the journal was 3.635. Although, the paper was published in February 2012, it has already been cited 18 times, 22 times, and 30 times according to WOS, Scopus, and Google Scholar databases, respectively. The citing articles either extend the theory of constrained state estimation or apply the results in object tracking, human motion tracking, fault diagnosis, or remaining useful life prediction of system units. The paper belongs into a set of articles which was awarded by the Werner von Siemens Excellence Award 2014 for basic research.

Odůvodnění panelu:

Nonlinear state estimation plays a key role in a vast number of technical and non-technical areas. The estimate can be used to predict future behavior of the system, control, its performance, or detect the faults in the system. The paper brings new results in recursive state estimation of nonlinear stochastic dynamic systems discrete in time and concentrates on the utilization of additional information about the system state behavior. A beautiful and clearly written paper published in the journal Automatica, one of the two most prestigious journals in the area of the automatic control. High citation impact.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Electromagnetic Cellular Interactions

obor: JA

Identifikátor: RIV/67985882: /11:00368045!RIV12-AV0-67985882

Id: 442

Předkladatel výsledku do Pilíře II.:

IČO: 67985882 Ústav fotoniky a elektroniky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **40 %**

Popis podílu předkladatele:

The first author from the Institute of Photonics and Electronics performed the whole analysis and drafted the manuscript. Other two authors helped with the final analysis and co-wrote the paper.

Odůvodnění předkladatele:

This paper analyzes current state-of-the-art of mechanisms how biological cells can generate and detect electromagnetic fields and if the cell-generated electromagnetic field can mediate cellular interaction. The paper gives insights into physical mechanisms of cellular interactions beyond well-known chemical and electrical interactions. This paper published in PROGRESS IN BIOPHYSICS & MOLECULAR BIOLOGY, an important journal in biophysics, and generated 78 citations over 5 years.

Odůvodnění panelu:

A journal (rather review) paper, but with an added value. Its focus is new and it has attracted big attention. Borderline.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Transparent Tetragonal Ytria-Stabilized Zirconia Ceramic: Influence of Scattering Caused by Birefringence

obor: JH

Identifikátor: **RIV/00216305:26210/11:PU96471!RIV12-MSM-26210**

Id: 1424

Předkladatel výsledku do Pilíře II.:

**IČO: 00216305 Vysoké učení technické v Brně, Fakulta strojního
inženýrství**

Podíl předkladatele na výsledku: **30 %**

Popis podílu předkladatele:

The sole Czech author (Martin Trunec) is employee of the Brno University of Technology, Faculty of Mechanical Engineering. The participation of the Czech author in preparation of this scientific results can be estimated at 40%.

Odůvodnění předkladatele:

The correlation between grain size, optical birefringence, and transparency is discussed for tetragonal zirconia (ZrO₂) ceramics using the Mie, Rayleigh, and Rayleigh-Gans-Debye scattering models. Our results demonstrate that at the degree of mean birefringence in the range (0.03-0.04) expected for tetragonal ZrO₂, only the Mie theory provides reasonable results. At small particle size (< 50 nm) the more straightforward Rayleigh approximation correlates with the Mie model. A real in-line transmission of similar to 50% at visible light and 1 mm thickness is expected at a mean grain size < 40 nm and similar to 70% at a mean grain size < 20 nm. At an infrared (IR) wavelength of 5 μm there should not be any scattering caused by birefringence for grain sizes < 200 nm. The simulations were validated with experimental data for tetragonal ZrO₂ (3 mol% Y₂O₃) ceramics made from a powder with an initial particle size of similar to 10 nm by sintering in air and using hot-isostatic pressing. The paper was published in very good Q1 journal having very high impact factor in this field. It has received 24 hetero citations (WoS).

Odůvodnění panelu:

Nanometer particle size leads to unique optical properties of transparent tetragonal Ytria-stabilized Zirconia. The paper combines theory and experiment and significant improve our understanding of scattering caused by birefringence in a transparent ceramic material.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Beton ultravysokých pevností, vyztužený drátky, určený zejména pro prefabrikaci

obor: JN

Identifikátor: **RIV/68407700:21610/15:00227449!RIV16-TA0-21610**

Id: 169

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Kloknerův ústav

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

UHPC = Ultra High Performance Concrete is very new High Strength Cementitious material (strength more than 150 MPa in compression i.e. 3 or 4 x more than ordinary concrete) that is under development now very intensively around the globe. KI take a very important role in development of UHPC production, testing of material properties of UHPC, testing of UHPC structural elements, optimization of UHPC matrix and production of final structure elements. In cooperation with precast company the real structure elements were developed and tested. Final design of each elements (facade panels, bridge beam and others) were optimized during production process. Utility models and patents of these elements were done with cooperation with construction company Skanska and design company Pontex. KI has created main part of methodologies how to design, produce and test UHPC matrix, elements and structures. These are the first documents how to use UHPC in the Czech Republic.

Odůvodnění předkladatele:

The legal protection of research in the field of Ultra High Performance Concrete (UHPC) was done by filling the several Utility model and patents. Application of research in field of UHPC is supported by other legal protection document as: 1) Utility model: Ultra High Performance Concrete reinforced with fibres designed specifically for prefabrication, No. of file: PUV 2014-30178, No. of enrolment: 27 885, in Prague 2th of March 2015 2) Utility model: Panel of lost formwork. No. of file: PUV 2014-30244, No. of enrolment: 27 909, v Prague 10th of March 2015 All research experiences in application of UHPC were collected in 3 national methodologies certified by Ministry of Transport of Czech Republic : 1) Methodology for Design of UHPC and Material Tests 2) Methodology for Design of UHPC Elements . 3) Methodology for Manufacture of UHPC Elements and for Check of their Rendition . These documents are the first base within the Czech Republic for possible applications of cement-based material that in literatures as well as in the worldwide context is called UHPC for building structures. First real applications of UHPC are mentioned in attachment file - PilirII_27885_KV04.pdf.

Odůvodnění panelu:

Application of UHPC saves nearly 2/3 of standard concrete material and it means big reductions in weight and costs. Outstanding result realized home and in abroad. Unfortunately, there is no information on the income for the submitter.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

OOFEM, ver. 2.3

obor: JC

Identifikátor: RIV/68407700:21110/13:00213279!RIV14-MSM-21110

Id: 988

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta stavební

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

Initially, the project has been developed as in-house software (for 8 years), during which the fundamental components have been designed and implemented. Since 2001 the project has been developed by an international community of users, however, the team at Czech Technical University plays major role in further development and maintenance. The anticipated contribution of CTU is 80%.

Odůvodnění předkladatele:

OOFEM (www.oofem.org) is an open source multi-physics parallel finite element code, released under the GNU Lesser General Public License (LGPL) license. This powerful simulation platform has been developed at the Faculty of Civil Engineering of the Czech Technical University in Prague. The code is characterized by a state-of-the-art architecture based on object-oriented and modular design. At present, it can solve nonlinear structural, thermal, and fluid dynamics problems and it has unique capabilities such as 46 material models, mesh adaptivity, and parallel processing. Several OOFEM capabilities are not available in commercial code alternatives. OOFEM is used at many universities and research institutes worldwide and has been utilized in dozens of commercial applications by companies such as ČEZ (long-term prediction of nuclear power plant containment), HILTI (adaptive analysis of fracture), Metrostav (multi-scale analysis of the Oparno Bridge), and Lafarge-Holcim (multi-scale heat transfer and mechanical analysis of concrete blocks used in 15 countries). To date, the original paper describing OOFEM's design (B. Patzák and Z. Bittnar: Design of object oriented finite element code. *Advances in Engineering Software*, 32(10-11):759--767, 2001) has had 98 citations in Web of Science and 182 citations on Google Scholar. The OOFEM forum currently has over 500 registered users, 14 active developers, and the code has over 280,000 lines. According to Open Hub (https://www.openhub.net/p/oofem/estimated_cost), which utilizes the Constructive Cost Model (COCOMO), OOFEM's estimated cost is 4.3 mil. USD. Additional justification is provided in two attached files. One of them contains an overview of OOFEM features, a list of universities and companies that use OOFEM in research and development, and a list of selected publications supported by OOFEM simulations. The other file presents the OOFEM-based ConTemp tool used by Lafarge-Holcim.

Odůvodnění panelu:

The software OOFEM is complex open source multi-physics parallel finite element code. The code allows for solving numerically complex problems arising in nonlinear structural mechanics with coupled thermal and fluid flow effects. The code is used by many individual registered users, universities and research institutes worldwide. It has also been used by a number of private companies to solve problems in civil and aerospace engineering. Papers reporting research supported by the OOFEM code gained high impact in the WOS citation database.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Effect of hydrogen on the properties and fracture characteristics of TRIP 800 steels

obor: JG

Identifikátor: RIV/61989100:27360/11:86081181!RIV12-MSM-27360

Id: 410

Předkladatel výsledku do Pilíře II.:

**IČO: 61989100 Vysoká škola báňská - Technická univerzita Ostrava,
Fakulta metalurgie a materiálového inženýrství**

Podíl předkladatele na výsledku: **90 %**

Popis podílu předkladatele:

The contribution of the submitter – the Faculty of Metallurgy and Materials engineering VŠB – Technical University of Ostrava – was predominant. The whole philosophy of the experiment was prepared by the first author – Mr. Sojka – as a part of a grant project GA106/09/1587 “Hydrogen embrittlement of the TRIP steels”. Furthermore, most of experiments were performed at the Faculty of Metallurgy and Materials engineering VŠB – Technical University of Ostrava. The experiments performed in Ostrava included mainly: manufacturing of one heat of the TRIP steel in laboratory conditions; structure analysis of both studied TRIP steels by means of light microscopy, scanning electron microscopy, transmission electron microscopy on thin foils; X-ray analysis of the phase composition; electrolytic hydrogen charging as well as hydrogen charging using hydrogen sulphide; mechanical testing even on specimens charged in hydrogen, fractographic analysis. In the laboratories of Ecole Centrale Paris, content of hydrogen in the studied TRIP steels was measured. Ecole Centrale Paris also supplied one heat of the TRIP steel from an industrial partner who didn't want to be mentioned in the paper.

Odůvodnění předkladatele:

The paper is one of the first papers dealing with the effect of hydrogen on the behaviour of TRIP steels, very promising materials for the use in automotive industry. The paper correlates resistance of the TRIP steels to hydrogen provoked degradation with various microstructural characteristics, which makes possible to minimize the risk of hydrogen embrittlement in this kind of steel. Corrosion science is a prestigious journal, which is ranked as the second in the field of metallurgy ? metallurgical engineering (immediately after Acta Materialia) and it is not easy to publish there. Up to now (June 2016) the paper has been cited 22 times in WoS, the number of citation in Scopus is 25.

Odůvodnění panelu:

The paper pioneers the effect of hydrogen on the behavior of TRIP steels. The paper correlates resistance of the TRIP steels to hydrogen provoked degradation with various microstructural characteristics, which makes possible to minimize the risk of hydrogen embrittlement in this kind of steel. Although the paper is only experimental-based, it provides important insight into corrosion behavior of prospective steels.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Biomass size reduction machines for enhancing biogas production

obor: JJ

Identifikátor: **RIV/68407700:21110/11:00174092!RIV12-GA0-21110**

Id: 650

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta stavební

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

Czech Technical University in Prague was responsible for nanoindentation tests whereas theoretical derivations were done at University of Pardubice

Odůvodnění předkladatele:

This paper presents formulae for visco-elastic-plastic response to indentation for various indenter shapes and times of loading, and describes a procedure for obtaining parameters of creep compliance function from monotonic load. It includes throughout discussion on the influence of indenter shape, various forms of creep compliance function and the relation between the test duration and the model. The paper was published in a renowned international journal Polymer Testing with the impact factor = 2.24. Number of total citations of the paper is in WoS: 20, in Scopus: 26. University of Pardubice 34% CVUT FSv 33%

Odůvodnění panelu:

Important review with some original results. A good paper with a very high community response. Excellent for this research topic.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Preparation and characterization of photoactive composite kaolinite/TiO₂

obor: JI

Identifikátor: **RIV/61989100:27640/11:86079521!RIV12-MSM-27640**

Id: 1071

Předkladatel výsledku do Pilíře II.:

**IČO: 61989100 Vysoká škola báňská - Technická univerzita Ostrava,
Centrum nanotechnologií**

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

• Preparation of the photoactive composites kaolinite/TiO₂ and the optimization of the preparation process. • Characterization of the prepared composites by using X-ray powder diffraction and diffuse reflectance spectroscopy. • Evaluation of the photodegradation activity of the prepared composites by using discoloration of dye AO7. • Preparation of the final manuscript.

Odůvodnění předkladatele:

The aim of the present work was preparation of the photoactive nanocomposites kaolinite/TiO₂. Combination of the clay matrix (kaolinite) and nanoparticles of TiO₂ offers unique material, which poses no environmental risk and also offers an easy manipulation due to the tight anchoring of the TiO₂ nanoparticles into the silicate matrix, which has particles in micrometric size. In addition, the kaolinite matrix (and/or metakaolinite matrix formed from kaolinite during thermal treatment) is valuable material with latent hydraulic properties which may have wide range of application, e.g. in building industry. IF (2015) of the Journal of Hazardous Materials 4.836.

Odůvodnění panelu:

An excellent original paper on structural investigation of composite photocatalyst kaolinite/TiO₂ and its performance for decomposition of organic dye. The paper was published in a top-ranked Q1 journal (in Engineering, Civil) with a high citation response. The main strength of the paper in the method of catalyst preparation used and the description of photodegradation performance of the calcined material. The paper was submitted by two submitters and shows a well synergic effect of such collaboration.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Preparation and characterization of photoactive composite kaolinite/TiO₂

obor: JI

Identifikátor: RIV/61989100:27360/11:86079521!RIV12-MSM-27360

Id: 1072

Předkladatel výsledku do Pilíře II.:

**IČO: 61989100 Vysoká škola báňská - Technická univerzita Ostrava,
Fakulta metalurgie a materiálového inženýrství**

Podíl předkladatele na výsledku: **10 %**

Popis podílu předkladatele:

• Preparation of the photoactive composites kaolinite/TiO₂ and the optimization of the preparation process. • Characterization of the prepared composites by using X-ray powder diffraction and diffuse reflectance spectroscopy. • Evaluation of the photodegradation activity of the prepared composites by using discoloration of dye AO7. • Preparation of the final manuscript.

Odůvodnění předkladatele:

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PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Cache-efficient graph cuts on structured grids

obor: IN

Identifikátor: RIV/68407700:21230/12:00194222!RIV13-MSM-21230

Id: 204

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta elektrotechnická

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

The first two authors of the three are from FEE CTU. Their contribution is significant, especially in case of O. Jamriska, the first author and the inventor of the key solution of the algorithm. FEE CTU contribution is 80%.

Odůvodnění předkladatele:

(1) The paper was published at the Conference on Computer Vision and Pattern Recognition (CVPR), the highly selective conference with the highest impact in computer vision.(2) The work introduces an extremely efficient solution for max-flow problem on grid-like graph structures. It gains significant speed-up over the previous state-of-the-art solutions. Up-to-now (2016), the method is the fastest in the world. It can be applied in a number of application fields including image processing, computer graphics, simulation, and others. The paper received a number of citations.(3) The method was patented in the U.S. (patent No. 8,533,139, see also <http://www.gridcut.com>). 15 licences were sold to key companies in the field (Samsung, Siemens, Microsoft, Disney, TVPaint Development, etc.) with the overall gain over 60 000 USD.(4) The method was integrated into a professional tool TVPaint Animation Pro 11 which is the most popular production tool for hand-drawn animation. Number of short and feature length movies were created using this method.

Odůvodnění panelu:

The paper presents a new data structure to represent grid-like structures efficiently. This result has an important practical impact and has also led to a patent which brought significant licensing fees. The conference where it was presented (CVPR) is a top one in Computer Science, and the impact is very high compared to the low number of citations acquired by computer science articles.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Process control and optimized preparation of porous alumina ceramics by starch consolidation casting

obor: JH

Identifikátor: **RIV/60461373:22310/11:43891532!RIV12-MSM-22310**

Id: 1080

Předkladatel výsledku do Pilíře II.:

IČO: 60461373 Vysoká škola chemicko-technologická v Praze, Fakulta chemické technologie

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |All this work, including the long-term development of starch-consolidation casting since the year 2000, is done exclusively at the UCT Prague. Eva Gregorová has done the majority of experimental work, Willi Pabst all theoretical calculations. Interpretations have been developed together.

Odůvodnění předkladatele:

Starch consolidation casting is a now well established shaping technique for the fabrication of porous ceramics by casting ceramic suspensions into non-porous molds. The technique has been developed more than 15 years ago and the authors at the UCT Prague (then ICT Prague) were among the pioneers in this development. Although widely used today, the mechanisms and control parameters for this process were not well known until recently. Therefore, in their 2011 paper, the authors tried to elucidate these mechanisms and parameters once and for all. This work concerns details of porosity and pore size control in starch consolidation casting of alumina ceramics using corn starch. In particular, the influence of the solids loading (68?78 wt.% alumina in suspensions with nominal starch contents of 20?50 vol.%) on the porosity, bulk density and shrinkage of alumina ceramics is studied. The results indicate a linear decrease of the linear shrinkage and the bulk density (and a corresponding increase in porosity) as the alumina concentration increases, with slopes that are independent of the starch content. The pore size is characterized via microscopic image analysis, the pore throat size via mercury porosimetry. Relations between the volumetric shrinkage, porosity and the volume fractions of starch and water in the suspensions are discussed, and a new concept, called "affine limit porosity" is proposed to explain the apparently paradoxical finding that the porosity increases with increasing alumina content in the suspension. The findings presented in this paper are based on the authors' long-term experience with starch consolidation casting and define the current state of the art in this field. Therefore the paper has been accepted in the most important journal in the field "Materials Science, Ceramics" (Journal of the European Ceramic Society, IF 2.93, 5-years IF 3.01) and has 35 citations in WoS Databases (China, India, Argentina, Australia, Phillipines).

Odůvodnění panelu:

The starch consolidation casting technique is well-known technique, but paper presents new insights about process parameters of porous alumina. The paper attracted a high number of citations and provided guideline to prepare similar materials by this technique.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Computing Strongly Connected Components in Parallel on CUDA

obor: IN

Identifikátor: RIV/00216224:14330/11:00049681!RIV12-MSM-14330

Id: 271

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Fakulta informatiky

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Know-how of the book is completely provided by the authors – employees of the Masaryk University.

Odůvodnění předkladatele:

Graph algorithms are becoming increasingly important for solving many problems in scientific computing, data mining, social networks, bioinformatics and other domains. As these problems grow in scale, parallel computing resources are required to meet their computational and memory requirements. Parallel decomposition into strongly connected components is a particularly tricky problem. The reason is that the (optimal) serial algorithm strongly relies on the depth-first search post ordering of vertices whose computation is known to be P-complete and thus, difficult to be computed in parallel. In this seminal paper we implemented for the first time a parallel CUDA-aware algorithm for finding strongly-connected components in implicitly given directed graphs and showed that it achieves significant speedup with respect to Tarjan's sequential algorithm, getting thus substantial performance boost on the GPU. The paper has currently (as of dec. 2016) 62 citations according to Google Scholar and 17 non-self citations in Scopus. Unfortunately, similarly as with many other world-top CS conferences, Web of Science does not cover the Proceedings of IEEE International Parallel & Distributed Processing Symposium.

Odůvodnění panelu:

The paper brings a substantial progress into the problem of parallel decomposition into strongly connected components. Namely, this issue belongs to the class of difficult parallelizable challenges, and the authors have shown that using standard graphical processing units they can get a significant speedup as compared to the sequential algorithms.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Induction Motor Diagnosis by Advanced Notch FIR Filters and the Wigner-Ville Distribution

obor: JA

Identifikátor: **RIV/68407700:21260/14:00213385!RIV15-GA0-21260**

Id: 681

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta dopravní

Podíl předkladatele na výsledku: **25 %**

Popis podílu předkladatele:

We have developed algorithms for advanced FIR notch filters. These are crucial tools for providing the time-frequency decomposition of an induction motor signature. Our results, that allow the design of notch filters with very sharp rejection frequencies, have been used to remove the constant frequency components in the stator current. The algorithms were developed in collaboration of Faculty of Transportation Sciences and Faculty of Electrical Engineering. The complete algorithms for designing the highly selective notch FIR filters were published by Zahradník P. and Vlcek M. : Notch Filtering Suitable for Real Time Removal of Power Line Interference in Radioengineering 22(1):186-193, April 2013.

Odůvodnění předkladatele:

During the last years, several time-frequency decomposition tools have been applied for the diagnosis of induction motors, for those cases in which the traditional procedures, such as motor current signature analysis, cannot yield the necessary response. Among them, the Cohen distributions have been widely selected to study transient and even stationary operation due to their high-resolution and detailed information provided at all frequencies. Their main drawback, the cross-terms, has been tackled either modifying the distribution, or carrying out a pretreatment of the signal before computing its time-frequency decomposition. In this paper, a filtering process is proposed that uses advanced notch filters in order to remove constant frequency components present in the current of an induction motor, prior to the computation of its distribution, to study rotor asymmetries and mixed eccentricities. In transient operation of machines directly connected to the grid, this procedure effectively eliminates most of the artifacts that have prevented the use of these tools, allowing a wideband analysis and the definition of a precise quantification parameter able to follow the evolution of their state. The methods give the proper time-frequency information of induction motors during deployment.

Odůvodnění panelu:

A high-quality paper on diagnostics of induction motors published in a top-ranked journal with a relatively good citation response. The paper presents partial improvements of existing approaches. However, similar papers have been more cited. Borderline.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

In-depth proteomic analysis of Varroa destructor: Detection of DWV-complex, ABPV, VdMLV and honeybee proteins in the mite

obor: GJ

Identifikátor: **RIV/00216208:11310/15:10315881!RIV16-MSM-11310**

Id: 680

Předkladatel výsledku do Pilíře II.:

IČO: 00027006 Výzkumný ústav rostlinné výroby, v.v.i.

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

CRI - 80 %

Odůvodnění předkladatele:

This is the first study showing proteomic analysis of the parasitic honeybee mite Varroa destructor. The study is key for understanding interactions between the parasite Varroa, viruses and the host honeybee. Therefore, the results contribute to our understanding cause of honeybee Apis mellifera colonies losses. To analyze the protein sample, we used nanoLC-MS/MS (TripleTOF) and 2D-E-MS/MS instrumentation supplemented with affinity-chromatography to concentrate trace target proteins. The analysis revealed detection of honeybee proteins and three viruses in the mite: the currently uncharacterized Varroa destructor Macula-like virus (VdMLV), the deformed wing virus (DWV)-complex and the acute bee paralysis virus (ABPV). The absence/scarce detection of non-structural viral proteins compared with high-abundance structural proteins suggested that the viruses did not replicate in the mite; hence, virions accumulate in the Varroa gut via hemolymph feeding. The results suggest that the single-amino-acid substitution on virus structural protein can importantly influence virus replication and/or cause escape from antibody neutralization. The advantages of MS-based proteomics for pathogen detection, false-positive pathogen detection, virus replication, posttranslational modifications, and the presence of honeybee proteins in Varroa were discussed in the study. The paper was published in Scientific Reports in 2015 and that year was impact factor of the journal 5.578. Reviewers evaluated the paper as excellent methodical paper. The result contributes to the explanation of the interactions between the host honeybee, exoparasite Varroa destructor and viruses which are transmitted by the mite. The paper was very well accepted by the community studying honeybee health, pathogens, parasites, and colony losses. Large number of citations are expected, the first citation was in Science and 7 citations were after one year

Odůvodnění panelu:

Předložená studie je klíčová pro porozumění vztahů mezi parazitem Varroa, viry a hostující včelou. Proto výsledky výzkumu přispívají k pochopení ztrát včelstev. Velmi kvalitní práce, nejen z hlediska významu vlastní studie ale zejména s ohledem na metodický rozměr práce a jejího zacílení na nové možnosti detekce patogenů na úrovni detekce jejich proteinů a nástroj pro studium interakcí v systému hostitel - patogen.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Nová odrůda třešně Tamara

obor: GE

Identifikátor: RIV/25271121: /12:#0000206!RIV13-MZE-25271121 Id: 946

Předkladatel výsledku do Pilíře II.:

IČO: 25271121 Výzkumný a šlechtitelský ústav ovocnářský Holovousy s.r.o.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Sweet cherry variety Tamara was bred and all selection steps were done in VŠÚO Holovousy.

Odůvodnění předkladatele:

Sweet cherry breeding programme of VŠÚO Holovousy is one of the most successful world wide. Varieties Těchlovan, Vanda or Kordia bred in VŠÚO Holovousy are grown all over the world in millions of planted trees and producers and consumers appreciate the production potential and high fruit quality. The sweet cherry variety 'Tamara' is excellent in the fruit size, fruit attractiveness, high flesh and skin firmness, delicious taste, high juiciness, high sugar content and high fruit set with rich yields. In comparison with above mentioned older varieties is Tamara more than 20 % bigger in fruit size, has better taste, is more attractive and has the high regular yields. The advantage of Tamara is also its partial resistance against damages caused by late spring frosts. Mentioned traits make the 'Tamara' variety requested by the sweet cherry growers world wide. The Variety rights protection of the 'Tamara' variety in the Czech Republic was granted on the 28th of December 2012 by ÚKZÚZ; The Community Plant Variety Right in the European Union was granted on the 8th of April 2013 by CPVO; The Certificate for the grant of plant variety protection in Swiss Confederation was granted on the 31st of December 2013 by FOAG; the Plant Patent Application Publication in the United States of America was granted on the 10th of June 2014 under the commercial name 'Aramat' by the USPTO. The applications for Plant Breeders Rights in Australia, Canada, China, Chile and rest of South America are in the stage of preparation. The licence agreements for commercialization of 'Tamara' variety include countries with the largest production of sweet cherries e.g. EU, USA, Turkey, China, Chile, Australia and all other UPOV signatory countries. There is no other sweet cherry variety bred in the Czech Republic which reached similar results yet.

Odůvodnění panelu:

Výsledek (odrůda) má parametry nadstandardního výsledku s mezinárodním přesahem (registrace v evropských i mimoevropských zemích).

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Deoxynivalenol Oligoglycosides: New

obor: GM

Identifikátor: **RIV/60461373:22330/12:43894813!RIV13-MSM-22330**

Id: 333

Předkladatel výsledku do Pilíře II.:

IČO: 60461373 Vysoká škola chemicko-technologická v Praze, Fakulta potravinářské a biochemické technologie

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |This work was done entirely at UCT Prague by its members, there was no contribution of other parties.

Odůvodnění předkladatele:

The co-occurrence of deoxynivalenol-3-glucoside with its parent toxin, deoxynivalenol, has been recently documented in many cereal-based foods, especially in those produced by enzyme-catalyzed processes. The presence of this masked mycotoxin in the human diet has become an issue of health concern, mainly because of its assumed bioavailability. A selective immunoaffinity-based preconcentration strategy, followed by ultrahigh-performance liquid chromatography coupled with high-resolution orbitrap mass spectrometry, revealed that, in addition to the most common deoxynivalenol-3-glucoside, also oligoglycosylated deoxynivalenols with up to four bound hexose units were present in cereal-based products. The structure, origination, and fate of these deoxynivalenol conjugates during malt/beer production and bread baking have been thoroughly investigated. Special attention has been paid to the changes of deoxynivalenol conjugates enabled by industrial glycosidase-based enzymatic preparations. To the authors' best knowledge, this is the first study documenting the complexity of masked deoxynivalenol issue.

Odůvodnění panelu:

Značně citovaný výsledek (45 WoS) přinášející nové informace o dosud skryté toxické zátěži v některých obilných produktech. Významný potenciální dopad na potravinářství.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Improved wheat grain yield by a new method of root selection

obor: GE

Identifikátor: **RIV/62156489:43210/15:43907981!RIV16-MZE-43210**

Id: 674

Předkladatel výsledku do Pilíře II.:

IČO: 62156489 Mendelova univerzita v Brně, Agronomická fakulta

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

The authors from the Institute of Crop Science, Breeding and Plant Medicine of Mendel University in Brno have developed and described the method used for root system size measurement; have designed the methodology of experiment and evaluation of its results.

Odůvodnění předkladatele:

Plant varieties with a larger root system use soil water and nutrients in dry environments more effectively than varieties with a smaller root system. However, plant roots of majority of most important agricultural crops were not considered in breeding programs due to the lack of an appropriate method. The isolation of intact living root systems from the soil in the field has not yet been performed and appears to be impossible. Progressive „in situ“ method usable for plant breeding for increased root system is measuring of the root system size by its electrical capacity. The method was developed in the last decade and is intensively improving at the Institute of Crop Science, Breeding and Plant Medicine of Mendel University in Brno. The method is suitable for a repeated evaluation of the root system size of the same plant at different developmental stages or the evaluation of many plants in segregated populations – which is important prerequisite for successful practical breeding. The article has shown that the size of the root system was related to grain yield in wheat and selection for the trait was effective. Our results have further shown that the progeny of the plants selected for large roots have larger roots than their parents, also in next generation. The selection process have shown a greater response for larger root system size. Our unique method enables accurate, repeated evaluation and harvest of selected plants. Selection for higher wheat root system size can be easily used to breed for drought tolerance and higher efficiency of water and fertilizer use. In this way, plant breeding could contribute to resolving problems associated with shortages of water for cereal cultivation. The article was published in 2015 in *Agronomy for Sustainable Development* (IF 4.141 in 2015, Q1 in Agronomy). The article was cited seven times in Web of Science Core Collection during the first year after publication.

Odůvodnění panelu:

Výsledek s velkým praktickým potenciálem ve šlechtění obilovin (pšenice) na odolnost vůči suchu a vysokou účinnost při hospodaření rostliny s vodou i hnojivem.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Plant proteome changes under abiotic stress – contribution of proteomics studies to understanding plant stress response

obor: GE

Identifikátor: RIV/00027006: /11:00001830!RIV12-MZE-00027006

Id: 1032

Předkladatel výsledku do Pilíře II.:

IČO: 00027006 Výzkumný ústav rostlinné výroby, v.v.i.

Podíl předkladatele na výsledku: **90 %**

Popis podílu předkladatele:

90%

Odůvodnění předkladatele:

A review manuscript providing a comprehensive summary of plant proteomics papers dealing with plant responses to a wide array of abiotic stresses including low and high temperatures (cold, frost, heat), drought, salinity, waterlogging, oxidative stress (ozone), light stress, imbalances in mineral nutrients (aluminum, boron, copper, iron, nitrogen, zinc), heavy metals (cadmium, mercury,), herbicide treatments, and radioactivity. The phases of plant stress response, proteins affected by stress treatments belonging to different functional groups (signalling, gene expression, energy metabolism, protein metabolism, carbohydrate metabolism, lipid metabolism, phytohormone metabolism, regulatory proteins) and protein isoforms with multiple biological functions depending on their subcellular localizations and interacting partners are discussed. Advancements in major proteomic disciplines such as comparative proteomics, post-translational modifications, and interactomics are discussed. The Review paper provides the most extensive summary of plant abiotic stress Proteomics papers published until 2011 and has become the most cited publication in Journal of Proteomics in the last five years (2011-2016) as well as a highly cited paper in Web of Science database belonging to the top 1% most cited papers of the academic field of Biology and Biochemistry based on a highly cited threshold for the field and publication year. Journal of Proteomics: IF 3.867 (2015); ranking: 106/409 in category Biology and Biochemistry. The Review paper was cited by 221 documents in Web of Science database and by 247 documents in Scopus database (28/11/2016).

Odůvodnění panelu:

Souhrn nejvýznamnějších stresů, působících na rostliny v průběhu vegetace je základem pro výzkum jejich účinků z hlediska zdravotního stavu rostlin. Jedná se o článek typu review.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Deriváty 5-etheru 1-(fenyl)-4-oxo-1,4-dihydropyridazin-3-karboxylové kyseliny a jejich použití jako inhibitorů vývoje pylu

obor: GE

Identifikátor: **RIV/27184145: /15:#0000072!RIV16-MZE-VYZKUMNE** Id: 336

Předkladatel výsledku do Pilíře II.:

IČO: 27184145 Výzkumné centrum SELTON, s.r.o.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100 %. All work was done by SELTON

Odůvodnění předkladatele:

The FAO predicts that major improvements in wheat yields will be critical to ensuring global food security. Demand for wheat in the developing world is projected to increase 60 percent by 2050. Increasing wheat yields will be essential to meet the growing food challenges the world is facing. Over the past decade, wheat yield improvements from conventional crop breeding has tapered off. This stands in contrast to the situation in rice and maize where yield improvements have continued unabated. Hybrid wheats hold the potential to increase yields and will open a range of new breeding opportunities. Presented invention provides effective technology for easy production of novel high yielding hybrid varieties.

Odůvodnění panelu:

Metoda navození pylové sterility mateřských komponent při výrobě hybridního osiva chemickou cestou. Pro hybridní šlechtění zajímavá a perspektivní cesta, která umožní levnější a efektivní výrobu hybridního osiva. Výsledek se zřejmým vysokým komerčním potenciálem.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Chronic toxicity of verapamil on juvenile rainbow trout (*Oncorhynchus mykiss*): Effects on morphological indices, hematological parameters and antioxidant responses

obor: GL

Identifikátor: **RIV/60076658:12520/11:43869803!RIV12-MSM-12520**

Id: 661

Předkladatel výsledku do Pilíře II.:

IČO: 60076658 Jihočeská univerzita v Českých Budějovicích, Fakulta rybářství a ochrany vod

Podíl předkladatele na výsledku: **95 %**

Popis podílu předkladatele:

Implementation of research, which is published in the mentioned scientific paper, was performed and studied mainly by scientific and academic staff of the University of South Bohemia in Ceske Budejovice, Faculty of Fisheries and Protection of Waters, South Bohemian Research Center of Aquaculture and Biodiversity of Hydrocenoses (95 %). Minor contribution was provided by the Yangtze River Fisheries Research Institute, Chinese Academy of Fishery Sciences, Jingzhou, China (5%).

Odůvodnění předkladatele:

One of the first studies focused on risk assessment related to the presence of human pharmaceutical residues in the aquatic environment. In recent years, chemical pollution from residual pharmaceuticals has been increasingly important issue due to its wide presence in the aquatic environment. Verapamil (VRP), a cardiovascular pharmaceutical, is widely prescribed and used for the treatment of supraventricular arrhythmias and coronary heart disease. It has been detected in the aquatic environment especially in the recipients of „treated“ sewage water – e.g. biological ponds often used for aquaculture production. In this study, rainbow trout (*Oncorhynchus mykiss*), a widely used fish model in aquatic toxicology, was exposed to the different concentration of VRP (including environmental relevant concentration) to determine its chronic effects on biochemical and physiological responses. In summary, long term exposure of VRP caused both morphological indices and other biochemical parameters effects in rainbow trout, including hematological parameters and antioxidant responses in different tissues. There was no significant change in all parameters measured in fish exposed to VRP at environmental concentration. With increasing VRP concentration and prolonging the exposure period, the health status of fish was affected seriously. All parameters measured in this study displayed various dependent manners to VRP concentrations and exposure time.. According to results of this present study, the biomarkers measured could provide useful information for evaluating the physiological effects of pharmaceuticals on rainbow trout. Article published in 2011 has already received considerable attention from the multidisciplinary scientific community as reflected by up to date 56 citations. It was published in high ranking journal (Q1_ENGINEERING, CIVIL 2/126, Q1_ENGINEERING, ENVIRONMENTAL 7/50, Q1_ENVIRONMENTAL SCIENCES 19/225) with IF 2011 = 4.173.

Odůvodnění panelu:

Zajímavá studie (neprůkaznost vlivu reálných koncentrací kontaminantu versus vliv extrémně vysokých koncentrací při dlouhodobé expozici) poukazující na rostoucí problém kontaminace vod farmaky.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

The Challenge Presented by Progestins in Ecotoxicological Research: A Critical Review

obor: GL

Identifikátor: **RIV/60076658:12520/15:43888527!RIV16-MSM-12520**

Id: 1354

Předkladatel výsledku do Pilíře II.:

IČO: 60076658 Jihočeská univerzita v Českých Budějovicích, Fakulta rybnářství a ochrany vod

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

The total contribution of the Faculty of Fisheries and Protection of Waters (FFPW) on the study was 50 %. There are two corresponding authors of the article and both have an affiliation to FFPW.

Odůvodnění předkladatele:

This critical review focused on synthetic progestins, a group of chemicals which are suspected to pose a threat to aquatic organisms. Before publishing this article there was only limited number of studies dealing with this highly relevant topic. Therefore, our aim was not only to summarize the state of the art but also to boost research in this area and show possible directions for the future research. We also identified individual chemicals belonging to this group which we should pay special attention to. Even if published recently (2015), this article has already received considerable attention from the scientific community as reflected by a high number of citations. On Web of Science it has a status of a “Highly Cited Paper”. It was published in high ranking journal (Q1 – 14/225; Q1 – 3/50) with IF 2015 = 5.393 and 21 times cited (WOS) during past 2 years. Around 20 synthetic progestins are used today in assisting a range of medical conditions and as an important component of oral contraception. These progestins can bind to a wide range of receptors including progestin, estrogen, androgen, glucocorticoid, and mineralocorticoid receptor, as well as sex hormone and corticosteroid binding globulins. It appears that only five of these progestins have so far been studied in sewage effluent and surface waters. Seven of the progestins have been examined for their effects on aquatic vertebrates (fish and frogs). The greatest concern is associated with levonorgestrel, norethisterone, and gestodene and their ability to reduce egg production in fish at levels of 0.8-1.0 ng/L. Only a few nanograms per liter of ethynodiol diacetate and desogestrel in water would be needed for fish to receive a human therapeutic dose for these progestins according to modelled bioconcentration factors calculated in the present study. The wide range of compounds, diverse receptor targets, and the effect on fish reproduction at sub-nanogram-per-liter levels should prompt further research.

Odůvodnění panelu:

Review na velmi aktuální a moderní téma, dobře citované v prestižním časopise. Význam spočívá v hodnocení dopadů léčiv užívaných lidmi po jejich úniku do aquatických ekosystémů prostřednictvím odpadní vody.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A Šlechtitelské osvědčení *Trifolium pratense* x *Trifolium medium* PRAMEDI

obor: GE

Identifikátor: RIV/26296080: /13:#0000671!RIV14-MZE-26296080

Id: 1300

Předkladatel výsledku do Pilíře II.:

IČO: 26296080 Zemědělský výzkum, spol. s r.o., Zemědělský výzkum, spol. s r.o.

Podíl předkladatele na výsledku: **30 %**

Popis podílu předkladatele:

The result was create from 4 research institutions, authors from Agriculture research has 30 % from total.

Odůvodnění předkladatele:

The Pramedi variety was bred on the basis of interspecies crossbreeding between *Trifolium pratense* L. ($2n = 4x = 28$) and *T. medium* L. ($2n = 8x = 64$). Flow cytometry evaluation of the plants enabled the selection of plants with higher DNA content in comparison with the tetraploid *T. pratense*. The hybrid character was also verified at the cytogenetic level on the basis of an increased number of chromosomes. It was registered in 2012 as the Pramedi variety. Breeding certification is under registration number 69/2012. According to available information, no clover variety of this hybrid type has yet been bred in Europe or anywhere else in the world. It is a completely original result, the obtaining of which was enabled by combining knowledge from basic and applied research, classic plant breeding methods with the application of a cytogenetic method. Pramedi was awarded at the International Agricultural Fair and received Golden Spike Price in 2013. Agriculture Research, Ltd. managed to conclude a royalty agreement with a national and international (USA) partners in 2015. The estimated demand indicates that more than 50 hectares were seeded in 2016. Pramedi has proved to be a successful example of R&D result as it was immediately transferred, begun bringing revenues and therefore will provide capitalization of both public and private investment. Evaluation of traits confirmed large differences between the hybrids and both parents We recommend using the Pramedi as a fodder crop on arable land by itself or in a mixture with grasses, for direct feeding or preservation, and as a component of a clover–grass mixture for establishing or renewing permanent grasslands. A positive ecological effect of the variety is that less nitrogen will be leached out into surface waters and groundwater. Furthermore, cultivating plants of this variety does not depend on nitrogen fertilization because of the natural ability of clover to fix airborne nitrogen.

Odůvodnění panelu:

Registrace odrůdy "Pramedi" (sice již 2012) představující hybrida mezi *Trifolium pratense* a *T. medium*. Vůbec první odrůda vycházející z takového křížení ve světě. Oceněno Zlatým klasem Ministra zemědělství.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Ochrana jádovin v ekologické produkci

obor: GF

Identifikátor: RIV/25271121: /15:#0000709!RIV16-MZE-VYZKUMNY Id: 966

Předkladatel výsledku do Pilíře II.:

IČO: 00027006 Výzkumný ústav rostlinné výroby, v.v.i.

Podíl předkladatele na výsledku: **75 %**

Popis podílu předkladatele:

The CRI designed the content of the publication, organised a highly professional team of authors and took the lead on preparing the manuscript. Co-authors contributed texts based on their specific field of expertise. Vladan Falta from CRI is also an author of a professional design of the publication.

Odůvodnění předkladatele:

The publication is intended for the apple and pear growers involved in organic farming systems as a tool enabling decision process in crop protection throughout the season. It can also be a valuable resource material for IPM growers aimed at low residue programmes. It is the most comprehensive methodological guide of its kind currently available in the Czech Republic. The guide compiles the results of the research project QJ1210209 obtained between the years 2012 – 2015 along with a long-term practical experience of the authors. It builds on a long-term partnership between the researchers and farmers. On more than 200 pages the book offers detailed information on the most important pests and diseases in apples and pears and provides comprehensible recommendations in pest & disease management. The special attention is paid to the pest organisms such as codling moth, leafrollers, pear psylla, apple scab, apple mildew, etc. that play a key role in the volume of pesticide application needed in conventional or IPM systems and having the major influence on the environment. All information is compiled in a highly-professional graphic design with more than 1000 photos and pictures. In addition, the book could be a useful resource for students of agriculture both at the secondary schools and universities. In 2016, the publication has received the Award of the Ministry of Agriculture for the best research result.

Odůvodnění panelu:

Metodická příručka ochrany rostlin pro ekologické pěstitele. Kvalitní odborná publikace, soustředující doposud roztráštěné informace, vhodná jak pro pěstitele, tak zahrádkáře a studenty ovocnictví/rostlinoékařství. O úrovni svědčí i ocenění ministra za vynikající výsledek.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Contribution of domestic production records, Interbull estimated breeding values, and single nucleotide polymorphism genetic markers to the single-step genomic evaluation of milk production (2013)

obor: GI

Identifikátor: **RIV/00027014: /13:#0001778!RIV14-MZE-00027014**

Id: 285

Předkladatel výsledku do Pilíře II.:

IČO: 00027014 Výzkumný ústav živočišné výroby, v.v.i.

Podíl předkladatele na výsledku: **90 %**

Popis podílu předkladatele:

The contribution of the authors from the Institute of Animal Science to the development of database, analyses and paper was 90%.

Odůvodnění předkladatele:

Presented paper methodically follows the advanced methodology of genomic evaluation of animals by single-step procedure ssGBLUP, firstly published in 2009. The mentioned method was verified and partly modified and then used in a regular national genetic evaluation of farm animals (www.Plemdat.cz) in the Czech Republic, as the first country in the world. At the international level, the procedure has been validated by Interbull in a year 2015. Paper describes additional research concerning of genomic evaluation of animals on nation-wide level. It is a worldwide new approach that explores a new method of integration of global Interbull MACE values into domestic genetic evaluation of dairy cattle. Presented method significantly improves reliability of genetic evaluation of young animals. Improvement concerns the conventional as well as genomic breeding values calculated by BLUP-animal model or ssGBLUP-animal model. Genomic evaluation includes large number of genetic marker SNP, originated from genomic chips, usually with density 50K for animal. Paper is cited by many authors that suggest further development of methodology. This paper was 10 times cited according to the Web of Science

Odůvodnění panelu:

Výsledek popisuje využití recentních genomických postupů (SNP markerů generovaných genomickými čipy) pro hodnocení/predikci produkce mléka u mladého mléčného skotu. Kvalitní časopis (IF=2.408), článek z r. 2013; 10 citací na WOS; 90% podíl pracoviště na výsledku. Kvalitní výsledek se zřejmým aplikačním potenciálem.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Occurrence of multiple mycotoxins in European feedingstuffs, assessment of dietary intake by farm animals

obor: GM

Identifikátor: RIV/60461373:22330/14:43898064!RIV15-MSM-22330

Id: 961

Předkladatel výsledku do Pilíře II.:

IČO: 60461373 Vysoká škola chemicko-technologická v Praze, Fakulta potravinářské a biochemické technologie

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

80% |This study was initiated at the Department of Food Analysis and Nutrition at UCT Prague and the major part of work was done at this department by its employees. They were responsible for whole project research plan, conducting all experiments and evaluation and publication of obtained results. Two co-authors, Pospíchalová M. and Florian M. contributed to the research by providing samples for analysis.

Odůvodnění předkladatele:

More than 300 mycotoxins are known today, but only five of them (aflatoxin B1, deoxynivalenol, zearalenone, fumonisins and ochratoxin A) are regulated by EU legislation for animal feed. The current study reflects the requirements of the European Food Safety Authority for gathering the data allowing reliable quantitative exposure assessments. This is the first report combining the data for the occurrence of 56 mycotoxins produced by *Fusarium*, *Alternaria*, *Penicillium*, *Aspergillus*, and *Claviceps* fungi species in 18 classes of non-fermented or fermented feedingstuffs, feedingstuff supplements, and complex compound feeds. For separation and target mycotoxins detection, ultra-performance liquid chromatography coupled to tandem mass spectrometry was employed. In most of the investigated feedingstuff commodities, deoxynivalenol, zearalenone, fumonisins, ochratoxin A, enniatins, beauvericin, *Alternaria* toxins, ergot alkaloids, roquefortine C and mycophenolic acid were quantified, in some cases at concentrations up to thousands of $\mu\text{g}/\text{kg}$, depending on the composition of the particular sample. The broadest spectrum of detected mycotoxins, as well as the highest concentrations, was quantified in dried distillers' grains with solubles. Based on the performed analyses, the dietary intake of particular mycotoxins was estimated considering the feedingstuffs consumption by the respective farm animal. It was found that the most significant exposure of animals occurred after the consumption of 'basic' feedings, i.e. maize silage and complex compound feeds for dairy cattle, complex compound feeds for pigs, and complex compound feeds for chickens and laying hens.

Odůvodnění panelu:

Komplexní studie o mykotoxinech v krmivech rostlinného původu hospodářských zvířat (sledováno 56 mykotoxinů). Postupy analýzy sekundárních metabolitů hub publikované v kvalitním časopise.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

A unique volcanic field in Tharsis, Mars: Pyroclastic cones as evidence for explosive eruptions

obor: DC

Identifikátor: RIV/67985530: /12:00372853!RIV13-AV0-67985530

Id: 51

Předkladatel výsledku do Pilíře II.:

IČO: 67985530 Geofyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

P. Brož as the leading author developed the idea of the research, processed the morphometric analyses and prepared the manuscript.

Odůvodnění předkladatele:

A complex morphologic and morphometric analysis of volcanic features led to interpretation of explosive volcanism coupled with volatile-rich upper crust in the Tharsis region of Mars. This type of volcanism was identified as a relatively widespread feature of old exposed Martian crust, which has significant implications for understanding the development of early atmosphere on Mars.

Odůvodnění panelu:

Indirect reconstruction of a part of the history of Mars formation. Well cited paper.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Aerobic biodegradation of selected polybrominated diphenyl ethers (PBDEs) in wastewater sewage sludge

obor: DK

Identifikátor: **RIV/60461373:22330/15:43899904!RIV16-GA0-22330**

Id: 72

Předkladatel výsledku do Pilíře II.:

IČO: 60461373 Vysoká škola chemicko-technologická v Praze, Fakulta potravinářské a biochemické technologie

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% | This work was done entirely at UCT Prague by its members, there was no contribution of other parties.

Odůvodnění předkladatele:

Polybrominated diphenyl ethers (PBDEs) are class of chemicals which improve the fire resistance of industrial and commercial products. Due to their widespread occurrence in our surroundings, persistence and ability to bioaccumulate, it is important to clarify their fate in the environment and the options of their elimination. For the first time, this study described the degradation of lower brominated congeners (BDE 28, 47, 49, 66, 85, 99, 100, 153, 154, 183) together with the most abundant decabrominated BDE 209. The aerobic degradation by indigenous microflora studied in two industrially contaminated sewage sludge samples was significantly enhanced by the addition of yeast extract and 4-bromobiphenyl. The total concentrations of all 11 PBDE congeners were lowered and their elimination was detected reaching 62-78% of their initial amounts after 11 months. The degradation of most abundant congener BDE 209 followed the first-order kinetics with constant detected between $2.77 \times 10^{-3} \text{ d}^{-1}$ and $3.79 \times 10^{-3} \text{ d}^{-1}$ and the half-lives of BDE 209 degradation ranged between 6.0 and 8.2 months. This work clearly demonstrates that both lower brominated PBDEs as well as the major representative BDE 209 could be successfully removed from municipally contaminated sludge under aerobic conditions.

Odůvodnění panelu:

Important improvement of methods of removal of PBDEs from our environment. Well cited paper.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Application of nanoscale zero valent iron (NZVI) for groundwater remediation in Europe

obor: DJ

Identifikátor: **RIV/46747885:24620/12:#0000172!RIV14-MSM-24620**

Id: 120

Předkladatel výsledku do Pilíře II.:

IČO: 46747885 Technická univerzita v Liberci, Ústav pro nanomateriály, pokročilé technologie a inovace

Podíl předkladatele na výsledku: **25 %**

Popis podílu předkladatele:

All together 7 authors, but the paper is concern about nanoscale iron application of 15 sites, where 7 are provided by M. Cernik (an author of the Technical university of Liberec, 25 %). The result was achieved in the cooperation with Technology and Society Laboratory, Switzerland, University of Stuttgart, Germany, Golder Associates GmbH, Germany, Alenco Environmental Consult GmbH, Germany and Institute for Environment and Sustainability, Italy.

Odůvodnění předkladatele:

The presented article was published in journal ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH which is very significant in their field (Impact Factor in year 2015 was 2,76). The scientific contribution of the paper is visible from number of citations that makes 80. Review of nanoscale zero-valent iron application in Europe. First paper about this topic in Europe with general information. Most of the sites were in the Czech Republic and therefore the topic of the paper is concerned to Czech Republic.

Odůvodnění panelu:

Very well cited paper. Analysis is made of a new option to the treatment of contaminated soil and groundwater using the nanoscale zero valent iron. Fifteen pilot test sites in four European countries were studied, about half of them were situated in the Czech Republic. Application to Europe is recommended.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Chemical stabilization of metals and arsenic in contaminated soils using oxides - A review

obor: DD

Identifikátor: **RIV/00216208:11310/13:10134048!RIV14-MSM-11310**

Id: 652

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **34 %**

Popis podílu předkladatele:

34% |Charles Universtiy, Faculty of Science 34 %

Odůvodnění předkladatele:

This study has been rated A in the previous round of evaluation. The use of synthetic oxides and their precursors have been extensively studied for in situ stabilization of metals and arsenic in contaminated soils. This remediation option aims at reducing the available fraction of metal(loid)s, notably in the root zone, and thus lowering the risks associated with their leaching, ecotoxicity, plant uptake and human exposure. This work discusses mechanisms involved in the immobilization process and investigates results from laboratory and field experiments, including the subsequent influence on higher plants and aided phytostabilisation. This paper is the first contribution of this kind and provides important suggestions and strategies for future development of this perspective method, which is proven by the high number of citations.

Odůvodnění panelu:

A from previous evaluation

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Chromium isotope variations ($^{53}/^{52}\text{Cr}$) in mantle-derived sources and their weathering products: Implications for environmental studies and the evolution of $^{53}/^{52}\text{Cr}$ in the Earth's mantle over geologic time

obor: DD

Identifikátor: RIV/00025798: /13:00000034!RIV14-MSM-00025798

Id: 660

Předkladatel výsledku do Pilíře II.:

IČO: 00025798 Česká geologická služba

Podíl předkladatele na výsledku: 80 %

Popis podílu předkladatele:

80 %. The study was conceived in the Czech Geological Survey, all data were measured also in the Czech Geological Survey. The paper was written in the Czech Geological Survey (the first five authors work for the Czech Geological Survey). The two co-authors based at Harvard University (US) helped in the early stages of the project by teaching the senior author how to prepare a Cr isotope double spike for mass spectrometry. The one co-author from US Geological Survey helped to set up instrument parameters in our newly open isotope lab.

Odůvodnění předkladatele:

The study of chromium (Cr) isotopes is a relatively new field. Cr isotopes belong to the “non-traditional“ systems studied by a new generation of mass spectrometers capable of ionizing chemical elements with an extremely high ionization energy (multicollector ICP-MS, TIMS). This paper fills in a major gap in our knowledge of Cr isotope systematics on our planet. We sampled rocks and minerals rich in Cr from the Earth's interior (primary mantle- and crust-derived materials), and from the weathering zone (secondary ore-deposits derived minerals). These samples were collected from a number of sites in many countries throughout the world. Chromites and serpeninites, as well as rare secondary minerals, such as stichtite, were analyzed for the Cr-53 to Cr-52 isotope ratios. We have shown that the isotope composition of mantle-derived Cr minerals is extremely homogeneous. There was no difference in Cr isotope composition of samples coming from Europe, Asia, Africa and America. Since the Early Archean times (3.5 billion years before present), the Cr isotope composition of chromites has remained unchanged. We have also shown that alteration processes within mantle derived rocks (hydration, serpentinization) shift delta Cr-53/52 to higher values: The light isotopes of Cr are preferentially removed. Our data are being used by practically all teams that currently study various compartments of solid Earth: Minor Cr isotope variation in specific rock types and/or environmental reservoirs are interpreted in light of the homogeneity of the mantle. In environmental studies, focussing on Cr isotope fractionations during anaerobic reduction of dissolved Cr(VI) to solid Cr(III), we have identified one potential pitfall: The calculation of the percentage of Cr that has been reduced (and whose toxicity has been removed) critically depends on detailed knowledge of the Cr isotope composition of the source rock. WOS: 27 citations

Odůvodnění panelu:

Authors show that Cr isotopes can be used to trace the recycling of altered oceanic lithosphere through subduction zones and that they can be used also for other geophysical/geological purposes. Well cited paper.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Comparison of regional and at-site approaches to modelling probabilities of heavy precipitation

obor: DG

Identifikátor: RIV/68378289: /11:00368553!RIV12-AV0-68378289

Id: 253

Předkladatel výsledku do Pilíře II.:

IČO: 68378289 Ústav fyziky atmosféry AV ČR, v. v. i.

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

J. Kyselý and L. Gaál are from the Institute of Atmospheric Physics (IAP) of the Czech Academy of Sciences (CAS). J. Píček is from the Technical University of Liberec. J. Kyselý prepared the data, designed the study, interpreted most results and wrote the manuscript. L. Gaál carried out large parts of statistical analyses. J. Píček contributed by implementation of advanced statistical methods and testing. All authors provided comments on the draft and participated in manuscript revisions.

Odůvodnění předkladatele:

The study compared several approaches to estimating distributions of precipitation extremes by means of simulation experiments, and illustrated advantages of the regional frequency analysis through applications into observed data. The regional frequency models were shown to lead to estimates with much smaller errors compared to local models, and they efficiently reduce random and climatologically irrelevant variations in the estimates of model parameters and high quantiles. The region-of-influence methodology with a built-in regional homogeneity test was recognized as the most useful approach, with the model based on proximity of sites outperforming the Hosking-Wallis regional frequency analysis. Comparison of estimates of the return period of a heavy precipitation event on June 24, 2009, which triggered a disastrous local flash flood, illustrated that the at-site analysis leads to unrealistic and extremely uncertain estimates that strongly depend on whether or not a single outlying observation is involved in the sample, while all regional methods yield return periods in the same order of magnitude, notwithstanding whether the 2009 data is included in the sample. The region-of-influence method was recommended for modelling probabilities of other meteorological variables, extremes of which are strongly influenced by sampling variability, and it was also proposed as a tool for smoothing random variations in the estimates of model parameters and high quantiles of precipitation in high-resolution regional climate model simulations.

Odůvodnění panelu:

A useful comparison of different advanced methods for heavy rain prediction. Well cited paper.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Competitive Adsorption of Cd(II), Cr(VI), and Pb(II) onto Nanomaghemite: A Spectroscopic and Modeling Approach

obor: DK

Identifikátor: RIV/60460709:41330/15:68310!RIV16-MSM-41330

Id: 257

Předkladatel výsledku do Pilíře II.:

IČO: 60460709 Česká zemědělská univerzita v Praze, Fakulta životního prostředí

Podíl předkladatele na výsledku: **52 %**

Popis podílu předkladatele:

0

Odůvodnění předkladatele:

The wide application of various nanomaterials in environmental applications calls for studies describing their behavior and model their efficiency. Nanozerovalent iron and its oxidation product, nanomaghemite, is currently used in groundwater remediation and its application in soil remediation is emerging. This work proposes models describing and predicting the adsorption of contrasting metals (Cd, Cr(VI) and Pb) onto nanomaghemite and nanomaghemite coated quartz and due to its robustness, it can be used in various environmental settings. The model is backed by advanced spectroscopic analyses, which highlights its mechanistic nature. The paper has been published in ES&T, a highly ranked journal in Engineering, Environmental and Environmental Sciences.

Odůvodnění panelu:

Paper among others highlights the sorption potential of nanomaghemite for metals in complex rock systems. Well cited paper prepared by international team under Czech leadership.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Dayside ionosphere of Mars: Empirical model based on data from the MARSIS instrument

obor: DG

Identifikátor: RIV/68378289: /11:00366436!RIV12-AV0-68378289

Id: 319

Předkladatel výsledku do Pilíře II.:

IČO: 68378289 Ústav fyziky atmosféry AV ČR, v. v. i.

Podíl předkladatele na výsledku: **60 %**

Popis podílu předkladatele:

F. Nemeč was the first author of the manuscript, responsible for all the paper preparation and correspondence, as well as for most of the data analysis. V. Truhlik used his large expertise with the empirical modeling of the Earth's ionosphere to suggest a possible transition function between the photoionization controlled low-altitude region and diffusion controlled high-altitude region.

Odůvodnění předkladatele:

The paper presents a comprehensive empirical model of the dayside ionosphere of Mars at solar zenith angles less than 100 degrees and altitudes above the altitude of the peak electron density. Such a model is crucial for understanding the general behavior of the Martian ionosphere. Moreover, it has been successfully used in further studies focusing on the effects of possible additional controlling parameters. In these studies, the model is used as a reference, which allows to analyze a deviation of the observed electron densities from the normal (model) values. The model is based on a unique data set obtained by the Mars Advanced Radar for Subsurface and Ionosphere Sounding (MARSIS) instrument on board the Mars Express spacecraft. Altogether, 30,283 electron density profiles and more than 200,000 local electron density measurements were used when constructing the model. Importantly, it describes both the low-altitude region controlled primarily by photoionization and the high-altitude region controlled by diffusion. The low-altitude region is described using the Chapman-based theory, while the high-altitude region adopts a simple exponential dependence with the scale height varying as a function of the solar zenith angle. A smooth transition function is used at middle altitudes to connect the two extreme dependencies. The model is extensively used by various research groups both for experimental studies and for comparison with/validation of numerical models of the Martian ionosphere under development.

Odůvodnění panelu:

High Impact Factor journal, very well cited, important and novel results, relatively high Czech authors contributions.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Drought evolution at various time scales in the lowland regions and their impact on vegetable crops in the Czech Republic

obor: DG

Identifikátor: RIV/60460709:41210/12:56195!RIV13-MSM-41210

Id: 388

Předkladatel výsledku do Pilíře II.:

IČO: 60460709 Česká zemědělská univerzita v Praze, Fakulta agrobiologie, potravinových a přírodních zdrojů

Podíl předkladatele na výsledku: **67 %**

Popis podílu předkladatele:

The authors of the Czech University of Life Sciences Prague created 67 percent (by RIV).

Odůvodnění předkladatele:

The paper is primarily focused on studying the exposure of vegetable crops to severe drought (wet) conditions. The response of field-grown vegetables is strongly coupled to the timing of adverse events, the sensitivity of the growth stage of the impacted crop and the management actions that are taken. Our study integrated a newly available historical yield dataset for all highly-marketable vegetables and daily secular climate dataset in the Czech Republic (CR). Our results contribute to a growing number of studies on the impacts of droughts on vegetable yields using modern statistical models. Few examples of such studies exist, especially for vegetables in central European climate conditions. This research was published in prestigious journal (Agricultural and Forest Meteorology, 5-Year Impact Factor: 4.118) due to its contribution to multiscale drought theory in the agro-climatology field, practice in the agriculture field, as well as the uniqueness/originality of its ideas, and the quality of its arguments. This journal is ranked as interdisciplinary in the fields of Agronomy (rank 6/81), Forestry (rank 1/65), Meteorology & Atmospheric science (9/77).

Odůvodnění panelu:

A from previous evaluation

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Droughts in the Czech Lands, 1090-2012 AD

obor: DG

Identifikátor: **RIV/00216224:14310/13:00066283!RIV14-GA0-14310**

Id: 389

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

The paper present scientifically original results based on documentary data and know-how mainly of the authors of Masaryk University (MU). Authors out of MU helped with partial calculation of drought indices and long-term instrumental series obtained during the common project under lead of MU.

Odůvodnění předkladatele:

Times Cited: 15 Category Normalized Citation Impact: 1,18 Percentile in Subject Area: 25,62 Journal Impact Factor: 3,638 The paper has a good potential to be quoted in other related papers. There is recently 7 citations on WoS, mainly with participation of any members of the team (other quotation are in papers published on-line).

Odůvodnění panelu:

Characterisation of droughts in the Czech Lands over 1090-2012. An important contribution to understanding climate and its development in Czech Lands. Reasonably well cited paper.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Fine structure of large amplitude chorus wave packets

obor: DG

Identifikátor: RIV/68378289: /14:00423081!RIV15-AV0-68378289

Id: 521

Předkladatel výsledku do Pilíře II.:

IČO: 68378289 Ústav fyziky atmosféry AV ČR, v. v. i.

Podíl předkladatele na výsledku: **70 %**

Popis podílu předkladatele:

O. Santolík was the first author of the paper, responsible for the manuscript preparation and for the data analysis. Coauthors from the University of Iowa contributed by primary data processing and spacecraft operations.

Odůvodnění předkladatele:

Whistler mode chorus waves in the outer Van Allen belt can have consequences for acceleration of relativistic electrons through wave-particle interactions. New multicomponent waveform measurements have been collected by the Van Allen Probes Electric and Magnetic Field Instrument Suite and Integrated Science's Waves instrument. We detect fine structure of chorus elements with peak instantaneous amplitudes of a few hundred picotesla but exceptionally reaching up to 3 nT, i.e., more than 1% of the background magnetic field. The wave vector direction turns by a few tens of degrees within a single chorus element but also within its subpackets. Our analysis of a significant number of subpackets embedded in rising frequency elements shows that amplitudes of their peaks tend to decrease with frequency. The wave vector is quasi-parallel to the background magnetic field for large-amplitude subpackets, while it turns away from this direction when the amplitudes are weaker.

Odůvodnění panelu:

Paper about details observed in the Van Allen Radiation Belt that surround Earth. Czech scientist lead an international team. Highly cited paper in a high-impact journal.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

High-Ti muscovite as a prograde relict in high pressure granulites with metamorphic Devonian zircon ages (Běstvina granulite body, Bohemian Massif): consequences for the relamination model of subducted crust

obor: DB

Identifikátor: RIV/00025798: /14:00000012!RIV15-GA0-00025798

Id: 615

Předkladatel výsledku do Pilíře II.:

IČO: 00025798 Česká geologická služba

Podíl předkladatele na výsledku: **90 %**

Popis podílu předkladatele:

All the field data were measured and evaluated by the CGS scientists. Our colleague prof. Roger Powell contributed to the thermodynamic modelling. On this occasion we would also like to kindly thank deceased Dr. Jan Košler, with whom we consulted the zircon dating. According to the principles described in Chapter 7 of the Methodology of Evaluation of the Results of Research Organizations and Results of Finished Programmes (2013–2015), the CGS scientists claim a 90 % share of the paper.

Odůvodnění předkladatele:

Recently it has been suggested, that the high-pressure/ultrahigh-pressure kyanite?K-feldspar granulites in the Bohemian massif may represent parts of the subducted Saxothuringian plate that failed to continue to subduct and were spread below the upper plate, now represented by the Moldanubian and the Teplá-Barrandian domains. We give an account of Kutná Hora Crystalline Complex granulites that contain zircon with Devonian metamorphic ages and preserve muscovite, kyanite and rutile in garnet, included on the prograde P?T path and at the metamorphic peak. Their petrology, Zr-in-rutile and ternary-feldspar thermometry, as well as zircon dating, are combined with mineral equilibrium modelling in the Na₂O-CaO-K₂O-FeO-MgO-Al₂O₃-SiO₂-H₂O-TiO₂-ZrO₂ system to infer their P ? T - t path. Modelling of the molar amount of zircon and ZrO₂ in the individual phases along the inferred P ? T path is used to discuss the significance of the zircon ages for the metamorphic evolution of the granulites. Currently, zircon dating in the granulites repeatedly yielded an age around 340 Ma, interpreted as the age of HP metamorphism. Clear zircon rims of KHCC granulites have been dated to 360 Ma and, based on mineral equilibria modelling, are interpreted being as a result of crystallization of zircon from anatectic melt from peak P?T conditions at 19 kbar and 900°C to 13 kbar and 830 °C. The timing of relamination of granulites from the subduction zone occurred before 360 Ma, when the first granulites started to exhume in transpressive shear-zones: this corresponds to at least 20 Ma of thermal incubation at the bottom of the orogenic root before their major buoyancy-driven ascent at 340 M. This study fundamentally improves on our understanding of the timing and evolution of subducted lower crustal rocks and their subsequent exhumation into the upper crustal levels. The paper has been cited 22 x by WOS .

Odůvodnění panelu:

The results support hypothesis that granulites in Bohemian Massif are a part of a subducted plate that failed to continue to subduct and it was spread below the upper plate. Innovative methodology. Well cited paper.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Performance of the standardised precipitation evapotranspiration index at various lags for agricultural drought risk assessment in the Czech Republic

obor: DG

Identifikátor: **RIV/60460709:41210/15:68819!RIV16-MSM-41210**

Id: 1019

Předkladatel výsledku do Pilíře II.:

IČO: 60460709 Česká zemědělská univerzita v Praze, Fakulta agrobiologie, potravinových a přírodních zdrojů

Podíl předkladatele na výsledku: **60 %**

Popis podílu předkladatele:

The authors of the Czech University of Life Sciences Prague created 60 percent (by RIV).

Odůvodnění předkladatele:

In this study we investigated the influence of drought on crop productivity and, in particular, the drought time-scales that affect the growth of eleven agricultural crops (spring wheat, winter wheat, spring barley, winter barley, winter rye, oats, oilseed rape, maize, sugar beet, potatoes, and grapevine) with growth cycles of different lengths in the Czech Republic. The outcome of this study can be used by researchers to assess the recent changes in drought features and their tendency with respect to the expected climate change in central Europe. Despite intensive technological advances within breeding and crop management, drought caused yield fluctuations and reductions. The results obtained in this study will also be useful in the national assessment of the potential consequences of drought patterns on agricultural production and land-use. This paper was selected by editorial board of Agricultural and Forest Meteorology journal for AudioSlides presentation. This journal is ranked as interdisciplinary in the fields of Agronomy (rank 6/81), Forestry (rank 1/65), Meteorology & Atmospheric science (9/77).

Odůvodnění panelu:

Drought during the April-June period becomes a factor explaining a substantial part of the crop yield variability. The result of high practical importance. Well cited paper.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Pharmaceuticals' sorptions relative to properties of thirteen different soils

obor: DF

Identifikátor: RIV/60460709:41210/15:65861!RIV16-GA0-41210

Id: 1021

Předkladatel výsledku do Pilíře II.:

IČO: 60460709 Česká zemědělská univerzita v Praze, Fakulta agrobiologie, potravinových a přírodních zdrojů

Podíl předkladatele na výsledku: **75 %**

Popis podílu předkladatele:

The share was assessed according to the RIV methodology. All experiments, calculations and statistical analysis were performed by members of CULS. Coworkers from University of South Bohemia in České Budějovice did the chemical analyses.

Odůvodnění předkladatele:

It was proved recently that pharmaceuticals contained in sewage waters, sewage sludge, liquid manures, etc. enter water environment including vadose zone. Their mobility in soil and groundwater is determined to a large extent by their sorption on solid particles. This study is therefore focused on the assessment of the sorption of 7 pharmaceuticals on 13 representative soils of the Czech Republic. Behavior of pharmaceuticals in water environment is very complicated mainly because they are not present there only in neutral form, but depending on their dissociation constants and actual pH of the particular environment they can be present in negatively or positively charged forms, and even in both positive and negative form. Their sorption on soil particles is thus influenced not only by the organic matter content (as it is usually supposed for organic pollutants), but also by a number of other soil properties. In this study we derived relationships that can be used for the prediction of the studied substances.

Odůvodnění panelu:

Sorption coefficients predicted in this paper may be used for accessing potential groundwater contamination. Important evaluations of serious and relatively new environmental threats. Well cited paper.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

The use of constructed wetlands for removal of pesticides from agricultural runoff and drainage: a review

obor: DJ

Identifikátor: RIV/60460709:41330/15:64797!RIV16-TA0-41330

Id: 1399

Předkladatel výsledku do Pilíře II.:

IČO: 60460709 Česká zemědělská univerzita v Praze, Fakulta životního prostředí

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The submitter's share was calculated in accordance with the rules of the Methodology for evaluating the results of research organizations and the evaluation of results of completed programmes.

Odůvodnění předkladatele:

Pesticides are used in modern agriculture to increase crop yields, but they may pose a serious threat to aquatic ecosystems. Pesticides may enter water bodies through diffuse and point sources, but diffuse sources are probably the most important. Among diffuse pollution, surface runoff and erosion, leaching and drainage represent the major pathways. The most commonly used mitigation techniques to prevent pesticide input into water bodies include edge-of-field and riparian buffer strips, vegetated ditches and constructed wetlands. The first attempts to use wetland macrophytes for pesticide removal were carried out as early as the 1970s, but only in the last decade have constructed wetlands for pesticide mitigation become widespread. The paper summarizes 47 studies in which removal of 87 pesticides was monitored. The survey revealed that constructed wetlands with free water surface are the most commonly used type and that the highest pesticide removal was achieved for pesticides of the organochlorine, strobilurin/strobin, organosphosphate and pyrethroid groups while the lowest removals were observed for pesticides of the triazinone, aryloxyalkanoic acid and urea groups. The removal of pesticides generally increases with increasing value of KOC but the relationship is not strong. The paper represents the most comprehensive evaluation of the use of constructed wetlands to remove pesticides from agricultural drainage waters. The study includes results from Australia, Brazil, Canada, China, Colombia, France, Norway, Portugal, Spain, South Africa, Suriname, United Kingdom and USA. All evaluated pesticides are used worldwide and therefore, the results and relationships found in the study have worldwide application. Since February 2015, when the paper was released, it has been cited 29x on the Web of Science and it is marked as „Highly cited paper“.

Odůvodnění panelu:

This survey shows effectivity of removal of pesticides, which is important for aquatic ecosystems. Very well cited paper.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Using local archive sources to reconstruct historical landslide occurrence in selected urban regions of the Czech Republic: examples from regions with different historical development

obor: DE

Identifikátor: **RIV/44555601:13440/15:43884115!RIV16-MSM-13440**

Id: 1456

Předkladatel výsledku do Pilíře II.:

IČO: 44555601 Univerzita Jana Evangelisty Purkyně v Ústí nad Labem, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **60 %**

Popis podílu předkladatele:

P. Raška (J. E. Purkyně in Ústí nad Labem) was the first and corresponding author of the paper. He was responsible for the research design, conceptual and methodological matters as well as for the data analyses and discussion in one of the two illustrative cases included in the paper. Jakub Dubišar (J. E. Purkyně in Ústí nad Labem) was responsible for the archival research on the historical records of landslide and rockfall phenomena. The total share of the institution's authors on the paper is 60%.

Odůvodnění předkladatele:

Landslides and rockfalls represent a significant threat to urban systems. Because these systems have undergone dynamic transformations during the past centuries, finding precise information on past landslide and rockfall occurrence is crucial for the reduction of geomorphological risks and for suggesting relevant land use and land management strategies. Presented here is one of the first studies in an international context that focuses explicitly on spatial differences in the availability and character of documentary data used for time-series analyses and for the creation of regional databases of geomorphological hazards (mostly landslides and rockfalls) in an urban environment. While the problems related to availability of documentary data in individual historical periods were addressed in a couple of other previous studies, this study put a prominent emphasis on (i) how specific historical, social and political conditions resulted in the spatial variability of the available documentary data for the research of geomorphologic hazards and (ii) what is the potential of this data for geomorphological hazard research in various territorial contexts. This paper contains broad implications for the research pertaining to land use planning in order to reduce landslide and rockfall risk in an urban environment and it uses two detailed examples to show the practical methodology for urban landslide research. In respect of scientometrics: this paper was published in *Land Degradation and Development* (IF2015 = 8.145), which ranks 1/34 in Soil Sciences and 6/225 in Environmental Sciences. This paper also gained 15 citations and is listed as a "highly cited paper" in its field in the Web of Science (i.e. it is among the top 1% of papers in this field that has gained the highest number of citations).

Odůvodnění panelu:

Analysis of historical landslide activity resulted in finding that the occurrence of historical landslides is only rarely respected in recent land use within both studied urban areas. This is of high practical importance. Paper is well cited.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Zero-valent iron nanoparticles in treatment of acid mine water from in situ uranium leaching

obor: DJ

Identifikátor: **RIV/46747885:24220/11:#0001878!RIV12-MSM-24220**

Id: 1500

Předkladatel výsledku do Pilíře II.:

IČO: 46747885 Technická univerzita v Liberci, Fakulta mechatroniky, informatiky a mezioborových studií

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

Technical University of Liberec participated in the result of 50 % in cooperation with University Palacký Olomouc. Technical university of Liberec represents 3 out of 6 authors (including the first and corresponding author) and was responsible for most of laboratory experiments and half of results interpretation.

Odůvodnění předkladatele:

The presented scientific paper was published in one of the most relevant journal in Environmental sciences CHEMOSPHERE (Impact Factor in year 2015 was 3,698). The scientific contribution of the paper is visible from number of citations that makes 65. Interesting topic on application of nanomaterial or treatment of mine water contaminated by many compound including uranium. Good results for possible remediation.

Odůvodnění panelu:

Acid waters from uranium mines were treated by zero-valent iron nanoparticles; this resulted in significant decrease of concentration of all monitored pollutants. Very well cited paper.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

A framework for robust a posteriori error control in unsteady nonlinear advection-diffusion problems

obor: BA

Identifikátor: **RIV/00216208:11320/13:10159214!RIV14-GA0-11320**

Id: 29

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

50% |Participation of the faculty has been determined in accordance with the methodology

Odůvodnění předkladatele:

This is the first paper which derives a fully computable (without any unknown constant), guaranteed a posteriori error estimate for unsteady, nonlinear, possibly degenerate, advection-diffusion equation. The efficiency and robustness are proved and, supported by numerical experiments. This technique can be applied to any finite element/, finite volume discretization.

Odůvodnění panelu:

The important contribution is providing of a posteriori error control systems of differential equations also in the case of discontinuous Galerkin methods as in the paper of Feistauer and co-authors, which was an earlier contribution and does not contain a posteriori error control. This is an important step forward. It appeared in Siam J. Numer. Anal. An international leading journal in the field. This contribution attracted the interest of the experts and deserves recognition.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Almost free modules and Mittag-Leffler conditions

obor: BA

Identifikátor: RIV/00216208:11320/12:10128135!RIV13-GA0-11320

Id: 85

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **67 %**

Popis podílu předkladatele:

67% |Participation of the faculty has been determined in accordance with the methodology

Odůvodnění předkladatele:

This paper, published in one of the leading journals in pure mathematics, was the first to give bounds for the approximation theory of modules, by showing that the class of all flat Mittag-Leffler modules is deconstructible, only if the underlying ring is perfect. Moreover, it showed that flat Mittag-Leffler modules coincide with the aleph_1 -projective ones. The paper was the starting point of a series of papers expressing these bounds via infinite dimensional tilting theory. Number of citations of the article increased.

Odůvodnění panelu:

This paper is a good example of a successful paper in pure mathematics. Namely, it led to a whole series of other papers applying its results to the study of bounds for the approximation theory of modules and their relations to the infinite-dimensional tilting theory. The paper thus got a respectable number of citations. It is also published in a very prestigious journal, *Advances in Mathematics*. It was the first to give bounds for the approximation theory of modules, by showing that the class of all flat Mittag-Leffler modules is deconstructible only if the underlying ring is perfect. Moreover, it is shown that flat Mittag-Leffler modules coincide with the aleph_1 -projective ones.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Analysis of space-time discontinuous Galerkin method for nonlinear convection-diffusion problems

obor: BA

Identifikátor: **RIV/00216208:11320/11:10103854!RIV12-MSM-11320**

Id: 99

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Participation of the faculty has been determined in accordance with the methodology

Odůvodnění předkladatele:

The paper presents the new theory of the discontinuous Galerkin finite element method for the space-time discretization of a nonlinear nonstationary convection-diffusion initial-boundary value problem. The journal Numerische Mathematik (with IF 1.608), published by the well-known publishing house Springer-Verlag, belongs to most prestigious journals in the area of numerical mathematics. According to the official description of the journal, Numerische Mathematik publishes papers of the very highest quality presenting significantly new and important developments in all areas of numerical mathematics

Odůvodnění panelu:

The paper is devoted to analysis of a space-time discontinuous Galerkin method for solution of problems of convection-diffusion. This is a very important part of numerical methods of solution of partial differential equations, which attracts a lot of attention in the last years. The paper deals with various types of grids and brings new results especially regarding error estimates in various norms. This kind of investigations has proven to be necessary as mathematical base for the numerical algorithms and for their development. It was published in Numer. Mathematik, a renowned journal in numerical methods and their analysis.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Banach Space Theory

obor: BA

Identifikátor: **RIV/68407700:21230/11:00175446!RIV16-MSM-21230**

Id: 161

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta elektrotechnická

Podíl předkladatele na výsledku: **22 %**

Popis podílu předkladatele:

Rating A in 2015 - Credit of the author from CVUT is 22 %.

Odůvodnění předkladatele:

Rating A in 2015 - PilirII_175446_KV04.pdf

Odůvodnění panelu:

This is a substantial contribution in the area of functional analysis. The book is a substantial text (over 800 pages long) that combines an introduction to the basic principles of functional analysis with more advanced topics that lead the reader to the current research in Banach spaces. The book can serve experts in related fields such as Optimization, Partial Differential Equations, Fixed Point Theory, Real Analysis, Topology, and Applied Mathematics, among others. According to the MathSciNet reviewer „ In almost every aspect it is a nice book invaluable both for learning the topic and as a reference. This is definitely a book that anyone interested in Banach space theory or functional analysis should have on his/her desk.“

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Centers and homotopy centers in enriched monoidal categories

obor: BA

Identifikátor: RIV/67985840: /12:00377482!RIV13-AV0-67985840

Id: 223

Předkladatel výsledku do Pilíře II.:

IČO: 67985840 Matematický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

50% M. Markl, the core and full-time researcher of the Institute of Mathematics CAS, is one of the two authors of this result.

Odůvodnění předkladatele:

This influential paper introduces centers in monoidal categories enriched in duoidal ones. Centers in this sense cover new and unexpected examples as the 2-category of categories, Gray categories and, crucially, Tamarkin's 2-category of differential graded categories. It forms a part of a larger project of Markl (with coauthors) focused to centers appearing in various contexts, with the aim of proving a general version of the celebrated Deligne conjecture about their structure. The project successfully culminated in the paper "Operadic categories and duoidal Deligne's conjecture," by M. Batanin and M. Markl, *Advances in Mathematics* 285 (2015), 1630-1687. Achievements of this project were presented to several international forums, most notably to the participants of the trimester "Program on higher structures" organized by Batanin, Kaufmann and Markl in the Winter of 2016 at the Max Planck Institute for Mathematics in Bonn.

Odůvodnění panelu:

This excellent paper is a part of the project in which the authors focus on a general approach to centers occurring in various contexts. They developed a theory of centers and homotopy centers of monoids in monoidal categories which themselves are enriched in duoidal categories. Centers of monoids in this sense include many examples, not only the classical ones. In particular, the 2-category of categories is an example of such a center. The homotopy centers (analogue of the classical Hochschild complex) include the Gray category of 2-categories, 2-functors and pseudonatural transformations and Tamarkin's homotopy 2-category of dg-categories, dg-functors and coherent dg-transformations. The results of the paper have a great influence and the authors made them up by proving a general version of the famous Deligne conjecture about the structure of centers. The achievements of the project were highly appreciated by the community - they were presented to several international forums (e.g., in the Max Planck Institute for Mathematics in Bonn) and published in the prestigious journal *Advances in Mathematics*.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A
Constraint Satisfaction Problems Solvable by Local Consistency Methods

obor: BA

Identifikátor: **RIV/00216208:11320/14:10287268!RIV15-GA0-11320**

Id: 277

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **67 %**

Popis podílu předkladatele:

67% | Participation of the faculty has been determined in accordance with the methodology

Odůvodnění předkladatele:

This paper proves one of the most prominent results in the theory of constraint satisfaction problems over fixed languages., It is published in a top rated computer science journal.

Odůvodnění panelu:

This publication solves a long-standing famous problem in an important area of constraint satisfaction problems. It was published in Journal of the ACM, the most prestigious journal in theoretical computer science and the previous conference version was published in one of the two most selective conferences in the area, FOCS. The result received considerable attention, with more than 100 citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Fréchet Differentiability of Lipschitz Functions and Porous Sets in Banach Spaces

obor: BA

Identifikátor: **RIV/68407700:21230/12:00197338!RIV16-GA0-21230**

Id: 537

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta elektrotechnická

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

50% coauthorship

Odůvodnění předkladatele:

The first-class mathematical monograph in the field of functional analysis. It was published by Princeton University Press in Annals of Mathematics Studies, one of the most respected series in mathematics. This series includes books of von Neumann, Gödel and other world-famous mathematicians. The book makes a significant inroad into the unexpectedly difficult question of existence of Fréchet derivatives of Lipschitz maps of Banach spaces into higher dimensional spaces. Because the question turns out to be closely related to porous sets in Banach spaces, it provides a bridge between descriptive set theory and the classical topic of existence of derivatives of vector-valued Lipschitz functions. The topic is relevant to classical analysis and descriptive set theory on Banach spaces. The book opens several new research directions in this area of geometric nonlinear functional analysis. The new methods developed here include a game approach to perturbational variational principles that is of independent interest. Detailed explanation of the underlying ideas and motivation behind the proofs of the new results on Fréchet differentiability of vector-valued functions should make these arguments accessible to a wider audience. The most important special case of the differentiability results, that Lipschitz mappings from a Hilbert space into the plane have points of Fréchet differentiability, is given its own chapter with a proof that is independent of much of the work done to prove more general results. The book raises several open questions concerning its two main topics.

Odůvodnění panelu:

This monograph covers an important topic of analysis in Banach spaces and is not only highly valuable for experts but all who have to use nonlinear functional analysis in their research and education. Godefroy stated in a review of this book: „More than a century after Lebesgue, our understanding (of differentiation) is not complete. But thanks to the contribution of these three authors, and thanks to this book, we know a fair share of beautiful theorems and challenging problems.“ More than that we also find new ideas and tools to approach own problems.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Geometric Arveson-Douglas conjecture

obor: BA

Identifikátor: RIV/47813059:19610/15:#0000496!RIV16-GA0-19610

Id: 570

Předkladatel výsledku do Pilíře II.:

IČO: 47813059 Slezská univerzita v Opavě, Matematický ústav v Opavě

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

33% - Participation of the institution has been determined in accordance with the methodology

Odůvodnění předkladatele:

In a highly influential paper W. Arveson: Subalgebras of C^* -algebras III. Multivariable operator theory, Acta Math. 181 (1998), 159-228, (having 219 citations), its author laid down a theory of models for commuting tuples of operators on Hilbert space (so-called row contractions). An important piece missing in this theory is the question of commutativity of the model operators modulo the compact operators, which eventually became known as the Arveson-Douglas conjecture. Despite considerable efforts by many authors, in its most general form this conjecture remains open to this day, with only some special cases settled (e.g. for a pair of operators instead of a general n -tuple, under additional hypothesis on the operators, etc.). The current article proves the conjecture, though not yet in the utmost generality. (The conjecture can be restated as an assertion about ideals in certain Hilbert modules of vector-valued functions, and the article gives a proof for the case of radical ideals of scalar-valued functions.) Furthermore, as the main ingredient of the proof, the article develops a machinery which is totally new in the field and has potential for applications to other problems. Although falling short of proving the full conjecture, the paper has been described by O. Shalit as „the biggest step forward on this problem since 2008“ (in his informal announcement from the Oberwolfach workshop where the proof was first presented, <https://noncommutativeanalysis.wordpress.com/2014/05/01/souvenirs-from-the-black-forest/>), and since its publication in April 2015, the article has already earned 6 citations in follow-up papers and preprints. The journal itself (Advances in Mathematics) is one of the top mathematics journals in the world with a long tradition. (The 6 citations of the result, mentioned above, are attached in a separate file.)

Odůvodnění panelu:

The current article proves the conjecture, though not yet in the full generality. As the main ingredient of the proof, the article develops a machinery which is totally new in the field and has potential for applications to other problems. The paper has been described as „the biggest step forward on this problem since 2008“ and since its publication in April 2015 the article has already earned 6 citations in follow-up papers and preprints. The journal itself (Advances in Mathematics) is one of the top mathematics journals in the world with a long tradition.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Inverse rate-dependent Prandtl-Ishlinskii model for feedforward compensation of hysteresis in a piezomicropositioning actuator

obor: BA

Identifikátor: RIV/67985840: /13:00394929!RIV14-AV0-67985840

Id: 721

Předkladatel výsledku do Pilíře II.:

IČO: 67985840 Matematický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

50% P. Krejčí, the core and full-time researcher of the Institute of Mathematics CAS, is one of the two authors of this result.

Odůvodnění předkladatele:

This paper shows that the Kuhnen model for hysteresis and creep in piezoelectric materials is a special case of a rate-dependent Prandtl-Ishlinskii model. The main advantage of the rate-dependent Prandtl-Ishlinskii model among all other hysteresis and creep models used in the literature is that under appropriate modelling assumptions, its inverse admits an explicit analytic representation derived earlier by the same authors. This paper makes use of this property and proposes a new algorithm for compensation of hysteresis and creep in feedforward control of a piezomicropositioning actuator independently of the excitation frequencies without making use of the slow and complex feedback control techniques. This influential paper attracted 30 citations (in WoS) since it was published in autumn 2013. It is written by top experts in the field and was published in top quality journal with impact factor 3.851 (2015). The obtained result has a high application potential, because it provides a new and practical algorithm for compensation of hysteresis and creep in feedforward control of a piezomicropositioning actuator.

Odůvodnění panelu:

The paper brings important results on hysteresis properties of piezoelectric materials. It describes a new algorithm for compensation of a rate dependent hysteresis nonlinearities over different excitation frequencies. It was published in a top journal with a high impact factor and it has been cited more than 30-times since 2013.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Non-absolutely convergent integrals in metric spaces

obor: BA

Identifikátor: RIV/00216208:11320/13:10192138!RIV14-GA0-11320

Id: 936

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Participation of the faculty has been determined in accordance with the methodology

Odůvodnění předkladatele:

In this pioneering paper we study completely new kind of integration. We show that the structure of a metric space suffices for introducing nonabsolutely convergent integral. This paper has been awarded by the "2014 William F. Ames JMAA Best Paper Award".

Odůvodnění panelu:

This paper is a useful contribution to theory of integration with respect to measures on metric spaces. The fact that the authors succeed to prove a version of Stokes theorem in the setting of currents using the introduced non-absolutely convergent integrals, has to be acknowledged. The paper won the 2013 William F. Ames JMAA Best Paper Award.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

On a model in radiation hydrodynamics

obor: BA

Identifikátor: RIV/67985840: /11:00369702!RIV12-AV0-67985840

Id: 970

Předkladatel výsledku do Pilíře II.:

IČO: 67985840 Matematický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **67 %**

Popis podílu předkladatele:

67% Two out of three authors of this paper, namely E. Feireisl and S. Nečasová, are core and full-time employees of the Institute of Mathematics CAS.

Odůvodnění předkladatele:

In this paper, the authors consider a simplified model arising in radiation hydrodynamics based on the Navier-Stokes-Fourier system describing macroscopic fluid motion, and a transport equation modelling the propagation of radiative intensity. They succeed to prove the global-in-time existence for the associated initial-boundary value problem in the framework of weak solutions. The paper introduces principal hypotheses imposed on the constitutive relations and the concept of weak solution. In order to prove the existence of weak solutions, the authors derive uniform bounds imposed on weak solutions by the data, prove the weak sequential stability of a bounded sequence of weak solutions, and construct a suitable approximation scheme. In comparison with the standard Navier-Stokes-Fourier system, the problem features a new principal difficulty due to the apparent discrepancy between the classical (non-relativistic) description of the fluid motion, and the behaviour of photons travelling with the speed of light. In particular, in contrast with the Second law of thermodynamics, the associated entropy equation may contain a negative production term. To handle the problem, the weak continuity of the entropy balance equation is established and τ -averages of the radiative intensity are used. This influential paper, written by top experts in the mathematical theory of fluids, attracted more than 15 citations during 5 years (in WoS) which considerably exceeds citation standards in this field. This paper was published in one of the most prestigious journals within Applied Mathematics. Its impact factor is 2.066 (2015) and it is continuously highly ranked. S. Nečasová was invited to present the results of this paper in plenary talks at the Conference on Partial Differential Equations, Novacella, Italy, 2014 and at the conference entitled Multiscale Simulation Methods for Soft Matter Systems, Mainz, Germany, 2015.

Odůvodnění panelu:

This paper is a very interesting analytic contribution to an important problem: the coupling of fluid dynamics with the radiation, the Navier-Stokes-Fourier System with the radiation- transport equation. The authors formulate a model of motion of a heat-conductive gas with the effect of an internal radiation. They prove the fundamental theorem on existence of a weak solution on a time interval of an arbitrary length. The proof is highly non-trivial due to the presence of many nonlinear terms in the considered equations. The model can be for instance applied to the description of a star formation from a gas cloud. The paper, which is a basic contribution, appeared in Ann. I. H. Poincaré, a very renowned journal.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Smooth Analysis in Banach Spaces

obor: BA

Identifikátor: RIV/67985840: /14:00436754!RIV15-AV0-67985840

Id: 1211

Předkladatel výsledku do Pilíře II.:

IČO: 67985840 Matematický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

The share of the Institute of Mathematics CAS on this monograph is 50 %. P. Hájek was employed in the Institute of Mathematics CAS when he wrote the monograph.

Odůvodnění předkladatele:

This result has been ranked „A“ in the previous round of evaluation. Since P. Hájek was employed in the Institute of Mathematics CAS when the monograph was written, the Institute applies for a share according to Section VII.3 of Metodika 2013.

Odůvodnění panelu:

Finished, this result has been ranked „A“ in the previous round of evaluation, when it was submitted by Charles University, Faculty of Mathematics and Physics. This year submitted by The Czech Academy of Sciences, Mathematical Institute (50%). An important and excellent book in the area of functional analysis. It lays down the foundations of smooth analysis in infinite-dimensional spaces with focus on higher smoothness. It brings together essentially all known tools in this area. Some of the topics are treated for the first time in the book form. It contains many new or recent results and many new or streamlined proofs.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Smooth Analysis in Banach Spaces

obor: BA

Identifikátor: RIV/68407700:21230/14:00222678!RIV16-MSM-21230

Id: 1212

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta elektrotechnická

Podíl předkladatele na výsledku: **25 %**

Popis podílu předkladatele:

Rating A in 2015 - 25% coauthorship

Odůvodnění předkladatele:

This book has been already evaluated and marked "A" in evaluating another institution. This book is about the subject of higher smoothness in separable real Banach spaces. It brings together several angles of view on polynomials, both in finite and infinite setting. Also a rather thorough and systematic view of the more recent results, and the authors work is given. The book revolves around two main broad questions: What is the best smoothness of a given Banach space, and its structural consequences? How large is a supply of smooth functions in the sense of approximating continuous functions in the uniform topology, i.e. how does the Stone-Weierstrass theorem generalize into infinite dimension where measure and compactness are not available?

Odůvodnění panelu:

Finished. Submitted by Czech Technical University in Prague, Faculty of Electrical Engineering (25%). An important and excellent book in the area of functional analysis. It lays down the foundations of smooth analysis in infinite-dimensional spaces with focus on higher smoothness. It brings together essentially all known tools in this area. Some of the topics are treated for the first time in the book form. It contains many new or recent results and many new or streamlined proofs.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A
Sobolev homeomorphism with zero jacobian almost everywhere

obor: BA

Identifikátor: RIV/00216208:11320/11:10099065!RIV12-MSM-11320

Id: 1214

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Participation of the faculty has been determined in accordance with the methodology

Odůvodnění předkladatele:

In this paper we give a surprising construction of a Sobolev homeomorphism of a unit cube onto unit cube which maps a set of full measure one to set of measure zero and the remaining set of measure zero to set of full measure one. This paper attracts a lot of attention (12 citation on MathScinet, 11 citations at ISI Web of Science) and was published in prestigious Journal des Mathematiques Pures et Appliquees with impact factor 1.683. Number of citations of the article increased.

Odůvodnění panelu:

This excellent paper brings a surprising construction of a Sobolev homeomorphism of a unit cube onto unit cube which maps a set of full measure one to set of measure zero and the remaining set of measure zero to set of full measure one. The paper was published in the Journal des Mathématiques Pures et Appliquées, considered one of the best and most prestigious journals within both Mathematics and Applied Mathematics. Soon after publication the paper has attracted a lot of attention within the mathematical community, expressed among others by an increasing number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Centrality Dependence of the Charged-Particle Multiplicity Density at Midrapidity in Pb-Pb Collisions at $\sqrt{s_{NN}} = 2.76$ TeV

obor: BF

Identifikátor: **RIV/68407700:21340/11:00180099!RIV12-MSM-21340**

Id: 226

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta jaderná a fyzikálně inženýrská

Podíl předkladatele na výsledku: **1 %**

Popis podílu předkladatele:

Engineers and physicists from the Faculty of Nuclear Sciences and Physical Engineering of CTU in Prague contributed to the construction of the ALICE Experiment and have participated in the operation of the detector, experimental data acquisition and its evaluation and analysis.

Odůvodnění předkladatele:

Rating A in 2015 - The charged-particle multiplicity density at midrapidity represents a key observable to characterize the properties of the matter created in ultra-relativistic heavy ion collisions. The study of the dependence of the charged particle density on colliding system, center-of-mass energy and collision geometry is important to understand the relative contributions to particle production of hard scattering and soft processes, and may provide insight into the partonic structure of the projectiles. Contrary to early expectation dating back to early 1990 the matter found at RHIC and at LHC is strongly and not weakly interacting and explosive character of its expansion produces too small freeze-out volumes and much smaller number of final state hadrons than originally conceived. Theoretical descriptions of particle production in nuclear collisions fall into two broad categories: two component models combining perturbative QCD processes with soft interactions, and saturation models with various parametrizations for the energy and centrality dependence of the saturation scale. It turns out that predictions for most observables, both for soft and hard probes, demand some parameter fixing which can be related to the charged multiplicity at mid-rapidity. A lower bound comes from the models in which the multiplicity in nuclear collisions is expected to be proportional to the number of participant nucleons. An upper limit can be set by the proportionality to the number of binary nucleon-nucleon collisions, as expected both in models of particle production which suppose a dominance of hard, perturbative processes, and in soft models of particle production in absence of shadowing corrections. Basic result of the paper is the finding that the centrality dependence is similar to that observed at lower collision energies and that theoretical descriptions that include a moderation of the multiplicity evolution with centrality are favored by the data.

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Evidence for the spin-0 nature of the Higgs boson using ATLAS data

obor: BF

Identifikátor: **RIV/00216208:11320/13:10193913!RIV14-MSM-11320**

Id: 226

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **4 %**

Popis podílu předkladatele:

4% |Participation of the faculty has been determined in accordance with the methodology

Odůvodnění předkladatele:

"This result has been already evaluated and marked "A" in evaluating another institution, MFF UK joins to the result. New data obtained by experiment ATLAS enabled detailed investigation of properties of new boson discovered in 2012 by the ATLAS and CMS Collaborations in proton-proton collisions at Large Hadron Collider (LHC) at CERN. The new particle with mass about 125 GeV was excellent candidate for long sought Higgs boson. This particular paper focuses on the particle's spin (J) and parity (P). The results are compatible with spin zero and positive parity ($JP=0+$) and are in agreement with the Standard Model expectations for Higgs boson. Alternative hypothesis studied in this paper, namely some specific $JP=0-;1+;1-;2+$ models, were excluded at confidence level above 97.8%. The data thus provide evidence for the spin-0 nature of the Higgs boson, with positive parity being strongly preferred. Higgs mechanism allows to construct selfconsistent quantum field theory of electroweak forces with massive mediators of electroweak force, intermediate bosons W and Z. Other fundamental elementary particles, like electrons or quarks, obtain their masses through the interaction with the Higgs field as well. Spin-0 for particle involved in the Higgs mechanism is one of the fundamental prediction of the theory. This result is strong support for the Standard Model of particle physics, including the presence of the Higgs vacuum field. The existence and properties of the newly discovered particle may also have consequences beyond the Standard Model itself. Thanks to the experimental confirmation by ATLAS and CMS, the Nobel Prize in Physics 2013 was awarded to P. Higgs and F. Englert "for the theoretical discovery of mechanism that contributes to our understanding of the origin of mass of subatomic particles, and which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider." 484

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC

obor: BF

Identifikátor: **RIV/00216208:11320/13:10193908!RIV14-MSM-11320**

Id: 841

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **4 %**

Popis podílu předkladatele:

4% |Participation of the faculty has been determined in accordance with the methodology

Odůvodnění předkladatele:

This result has been already evaluated and marked "A" in evaluating another institution, MFF UK joins to the result. New data obtained by the experiment ATLAS enabled detailed investigation of properties of new boson discovered in 2012 by the ATLAS and CMS Collaborations in proton-proton collisions at Large Hadron Collider at CERN. This particular paper focuses on Higgs boson production and couplings in the diboson final states. In Standard model, the couplings of Higgs boson are fully specified once the Higgs boson mass is known. It is in the nature of Higgs mechanism and in the nature of interactions of fermionic particle fields (like electrons or quarks) with Higgs field, that the coupling to the Higgs boson is proportional to the mass of the particle. The presented results are consistent with the Standard Model expectations for Higgs boson. They represent important and strong confirmation of Higgs mechanism in the Standard Model, including the presence of vacuum field. The existence and properties of the newly discovered particle may also have consequences beyond the Standard Model itself.

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Evidence for the spin-0 nature of the Higgs boson using ATLAS data

obor: BG

Identifikátor: RIV/68407700:21220/13:00215724!RIV14-MSM-21220

Id: 480

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta strojní

Podíl předkladatele na výsledku: **1 %**

Popis podílu předkladatele:

Rating A in 2015 - The CTU is a founding member of the ATLAS collaboration at CERN. On the ATLAS project actively participate researchers from: Faculty of Mechanical Engineering, Faculty of Transportation Sciences, Faculty of Nuclear Sciences and Physical Engineering and Institute of Experimental and Applied Physics. Engineers and physicists from the CTU in Prague contributed to a construction of the ATLAS Experiment and have participated in the operation of the detector, experimental data acquisition and its evaluation and analysis.

Odůvodnění předkladatele:

Rating A in 2015 - New data obtained by experiment ATLAS enabled detailed investigation of properties of new boson discovered in 2012 by the ATLAS and CMS Collaborations in proton-proton collisions at Large Hadron Collider (LHC) at CERN. The new particle with mass about 125 GeV was excellent candidate for long sought Higgs boson. This particular paper focuses on the particle's spin (J) and parity (P). The results are compatible with spin zero and positive parity ($JP=0^+$) and are in agreement with the Standard Model expectations for Higgs boson. Alternative hypothesis studied in this paper, namely some specific $JP=0^-; 1^+; 1^-; 2^+$ models, were excluded at confidence level above 97.8%. The data thus provide evidence for the spin-0 nature of the Higgs boson, with positive parity being strongly preferred. Higgs mechanism allows to construct self-consistent quantum field theory of electroweak forces with massive mediators of electroweak force, intermediate bosons W and Z. Other fundamental elementary particles, like electrons or quarks, obtain their masses through the interaction with the Higgs field as well. Spin-0 for particle involved in the Higgs mechanism is one of the fundamental prediction of the theory. This result is strong support for the Standard Model of particle physics, including the presence of the Higgs vacuum field. The existence and properties of the newly discovered particle may also have consequences beyond the Standard Model itself. Thanks to the experimental confirmation by ATLAS and CMS, the Nobel Prize in Physics 2013 was awarded to P. Higgs and F. Englert "for the theoretical discovery of mechanism that contributes to our understanding of the origin of mass of subatomic particles, and which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider".

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Evidence for the spin-0 nature of the Higgs boson using ATLAS data

obor: BG

Identifikátor: **RIV/68407700:21340/13:00215724!RIV14-MSM-21340**

Id: 481

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta jaderná a fyzikálně inženýrská

Podíl předkladatele na výsledku: **1 %**

Popis podílu předkladatele:

Rating A in 2015 - The CTU is a founding member of the ATLAS collaboration at CERN. On the ATLAS project actively participate researchers from: Faculty of Mechanical Engineering, Faculty of Transportation Sciences, Faculty of Nuclear Sciences and Physical Engineering and Institute of Experimental and Applied Physics. Engineers and physicists from the CTU in Prague contributed to a construction of the ATLAS Experiment and have participated in the operation of the detector, experimental data acquisition and its evaluation and analysis.

Odůvodnění předkladatele:

Rating A in 2015 - New data obtained by experiment ATLAS enabled detailed investigation of properties of new boson discovered in 2012 by the ATLAS and CMS Collaborations in proton-proton collisions at Large Hadron Collider (LHC) at CERN. The new particle with mass about 125 GeV was excellent candidate for long sought Higgs boson. This particular paper focuses on the particle's spin (J) and parity (P). The results are compatible with spin zero and positive parity ($JP=0^+$) and are in agreement with the Standard Model expectations for Higgs boson. Alternative hypothesis studied in this paper, namely some specific $JP=0^-; 1^+; 1^-; 2^+$ models, were excluded at confidence level above 97.8%. The data thus provide evidence for the spin-0 nature of the Higgs boson, with positive parity being strongly preferred. Higgs mechanism allows to construct selfconsistent quantum field theory of electroweak forces with massive mediators of electroweak force, intermediate bosons W and Z. Other fundamental elementary particles, like electrons or quarks, obtain their masses through the interaction with the Higgs field as well. Spin-0 for particle involved in the Higgs mechanism is one of the fundamental prediction of the theory. This result is strong support for the Standard Model of particle physics, including the presence of the Higgs vacuum field. The existence and properties of the newly discovered particle may also have consequences beyond the Standard Model itself. Thanks to the experimental confirmation by ATLAS and CMS, the Nobel Prize in Physics 2013 was awarded to P. Higgs and F. Englert "for the theoretical discovery of mechanism that contributes to our understanding of the origin of mass of subatomic particles, and which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider".

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Evidence for the spin-0 nature of the Higgs boson using ATLAS data

obor: BG

Identifikátor: RIV/68407700:21260/13:00215724!RIV14-MSM-21260

Id: 482

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta dopravní

Podíl předkladatele na výsledku: **1 %**

Popis podílu předkladatele:

Rating A in 2015 - The CTU is a founding member of the ATLAS collaboration at CERN. On the ATLAS project actively participate researchers from: Faculty of Mechanical Engineering, Faculty of Transportation Sciences, Faculty of Nuclear Sciences and Physical Engineering and Institute of Experimental and Applied Physics. Engineers and physicists from the CTU in Prague contributed to a construction of the ATLAS Experiment and have participated in the operation of the detector, experimental data acquisition and its evaluation and analysis.

Odůvodnění předkladatele:

Rating A in 2015 - New data obtained by experiment ATLAS enabled detailed investigation of properties of new boson discovered in 2012 by the ATLAS and CMS Collaborations in proton-proton collisions at Large Hadron Collider (LHC) at CERN. The new particle with mass about 125 GeV was excellent candidate for long sought Higgs boson. This particular paper focuses on the particle's spin (J) and parity (P). The results are compatible with spin zero and positive parity ($JP=0^+$) and are in agreement with the Standard Model expectations for Higgs boson. Alternative hypothesis studied in this paper, namely some specific $JP=0^-; 1^+; 1^-; 2^+$ models, were excluded at confidence level above 97.8%. The data thus provide evidence for the spin-0 nature of the Higgs boson, with positive parity being strongly preferred. Higgs mechanism allows to construct self-consistent quantum field theory of electroweak forces with massive mediators of electroweak force, intermediate bosons W and Z. Other fundamental elementary particles, like electrons or quarks, obtain their masses through the interaction with the Higgs field as well. Spin-0 for particle involved in the Higgs mechanism is one of the fundamental prediction of the theory. This result is strong support for the Standard Model of particle physics, including the presence of the Higgs vacuum field. The existence and properties of the newly discovered particle may also have consequences beyond the Standard Model itself. Thanks to the experimental confirmation by ATLAS and CMS, the Nobel Prize in Physics 2013 was awarded to P. Higgs and F. Englert "for the theoretical discovery of mechanism that contributes to our understanding of the origin of mass of subatomic particles, and which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider".

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Evidence for the spin-0 nature of the Higgs boson using ATLAS data

obor: BG

Identifikátor: RIV/68407700:21670/13:00215724!RIV14-MSM-21670

Id: 483

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Ústav technické a experimentální fyziky ČVUT

Podíl předkladatele na výsledku: **2 %**

Popis podílu předkladatele:

Rating A in 2015 - The CTU is a founding member of the ATLAS collaboration at CERN. On the ATLAS project actively participate researchers from: Faculty of Mechanical Engineering, Faculty of Transportation Sciences, Faculty of Nuclear Sciences and Physical Engineering and Institute of Experimental and Applied Physics. Engineers and physicists from the CTU in Prague contributed to a construction of the ATLAS Experiment and have participated in the operation of the detector, experimental data acquisition and its evaluation and analysis.

Odůvodnění předkladatele:

Rating A in 2015 - New data obtained by experiment ATLAS enabled detailed investigation of properties of new boson discovered in 2012 by the ATLAS and CMS Collaborations in proton-proton collisions at Large Hadron Collider (LHC) at CERN. The new particle with mass about 125 GeV was excellent candidate for long sought Higgs boson. This particular paper focuses on the particle's spin (J) and parity (P). The results are compatible with spin zero and positive parity ($JP=0^+$) and are in agreement with the Standard Model expectations for Higgs boson. Alternative hypothesis studied in this paper, namely some specific $JP=0^-; 1^+; 1^-; 2^+$ models, were excluded at confidence level above 97.8%. The data thus provide evidence for the spin-0 nature of the Higgs boson, with positive parity being strongly preferred. Higgs mechanism allows to construct selfconsistent quantum field theory of electroweak forces with massive mediators of electroweak force, intermediate bosons W and Z. Other fundamental elementary particles, like electrons or quarks, obtain their masses through the interaction with the Higgs field as well. Spin-0 for particle involved in the Higgs mechanism is one of the fundamental prediction of the theory. This result is strong support for the Standard Model of particle physics, including the presence of the Higgs vacuum field. The existence and properties of the newly discovered particle may also have consequences beyond the Standard Model itself. Thanks to the experimental confirmation by ATLAS and CMS, the Nobel Prize in Physics 2013 was awarded to P. Higgs and F. Englert "for the theoretical discovery of mechanism that contributes to our understanding of the origin of mass of subatomic particles, and which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider".

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC

obor: BG

Identifikátor: **RIV/68407700:21220/13:00214203!RIV14-MSM-21220**

Id: 837

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta strojní

Podíl předkladatele na výsledku: **1 %**

Popis podílu předkladatele:

Rating A in 2015 - The CTU is a founding member of the ATLAS collaboration at CERN. On the ATLAS project actively participate researchers from: Faculty of Mechanical Engineering, Faculty of Transportation Sciences, Faculty of Nuclear Sciences and Physical Engineering and Institute of Experimental and Applied Physics. Engineers and physicists from the CTU in Prague contributed to a construction of the ATLAS Experiment and have participated in the operation of the detector, experimental data acquisition and its evaluation and analysis.

Odůvodnění předkladatele:

Rating A in 2015 - New data obtained by the experiment ATLAS enabled detailed investigation of properties of new boson discovered in 2012 by the ATLAS and CMS Collaborations in proton-proton collisions at Large Hadron Collider at CERN. This particular paper focuses on Higgs boson production and couplings in the diboson final states. In Standard model, the couplings of Higgs boson are fully specified once the Higgs boson mass is known. It is in the nature of Higgs mechanism and in the nature of interactions of fermionic particle fields (like electrons or quarks) with Higgs field, that the coupling to the Higgs boson is proportional to the mass of the particle. The presented results are consistent with the Standard Model expectations for Higgs boson. They represent important and strong confirmation of Higgs mechanism in the Standard Model, including the presence of the Higgs vacuum field. The existence and properties of the newly discovered particle may also have consequences beyond the Standard Model itself. Thanks to the experimental confirmation by ATLAS and CMS, the Nobel Prize in Physics 2013 was awarded to P. Higgs and F. Englert “for the theoretical discovery of mechanism that contributes to our understanding of the origin of mass of subatomic particles”.

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC

obor: BG

Identifikátor: **RIV/68407700:21340/13:00214203!RIV14-MSM-21340**

Id: 838

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta jaderná a fyzikálně inženýrská

Podíl předkladatele na výsledku: **1 %**

Popis podílu předkladatele:

Rating A in 2015 - The CTU is a founding member of the ATLAS collaboration at CERN. On the ATLAS project actively participate researchers from: Faculty of Mechanical Engineering, Faculty of Transportation Sciences, Faculty of Nuclear Sciences and Physical Engineering and Institute of Experimental and Applied Physics. Engineers and physicists from the CTU in Prague contributed to a construction of the ATLAS Experiment and have participated in the operation of the detector, experimental data acquisition and its evaluation and analysis.

Odůvodnění předkladatele:

Rating A in 2015 - New data obtained by the experiment ATLAS enabled detailed investigation of properties of new boson discovered in 2012 by the ATLAS and CMS Collaborations in proton-proton collisions at Large Hadron Collider at CERN. This particular paper focuses on Higgs boson production and couplings in the diboson final states. In Standard model, the couplings of Higgs boson are fully specified once the Higgs boson mass is known. It is in the nature of Higgs mechanism and in the nature of interactions of fermionic particle fields (like electrons or quarks) with Higgs field, that the coupling to the Higgs boson is proportional to the mass of the particle. The presented results are consistent with the Standard Model expectations for Higgs boson. They represent important and strong confirmation of Higgs mechanism in the Standard Model, including the presence of the Higgs vacuum field. The existence and properties of the newly discovered particle may also have consequences beyond the Standard Model itself. Thanks to the experimental confirmation by ATLAS and CMS, the Nobel Prize in Physics 2013 was awarded to P. Higgs and F. Englert “for the theoretical discovery of mechanism that contributes to our understanding of the origin of mass of subatomic particles”.

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC

obor: BG

Identifikátor: RIV/68407700:21260/13:00214203!RIV14-MSM-21260

Id: 839

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Fakulta dopravní

Podíl předkladatele na výsledku: **1 %**

Popis podílu předkladatele:

Rating A in 2015 - The CTU is a founding member of the ATLAS collaboration at CERN. On the ATLAS project actively participate researchers from: Faculty of Mechanical Engineering, Faculty of Transportation Sciences, Faculty of Nuclear Sciences and Physical Engineering and Institute of Experimental and Applied Physics. Engineers and physicists from the CTU in Prague contributed to a construction of the ATLAS Experiment and have participated in the operation of the detector, experimental data acquisition and its evaluation and analysis.

Odůvodnění předkladatele:

Rating A in 2015 - New data obtained by the experiment ATLAS enabled detailed investigation of properties of new boson discovered in 2012 by the ATLAS and CMS Collaborations in proton-proton collisions at Large Hadron Collider at CERN. This particular paper focuses on Higgs boson production and couplings in the diboson final states. In Standard model, the couplings of Higgs boson are fully specified once the Higgs boson mass is known. It is in the nature of Higgs mechanism and in the nature of interactions of fermionic particle fields (like electrons or quarks) with Higgs field, that the coupling to the Higgs boson is proportional to the mass of the particle. The presented results are consistent with the Standard Model expectations for Higgs boson. They represent important and strong confirmation of Higgs mechanism in the Standard Model, including the presence of the Higgs vacuum field. The existence and properties of the newly discovered particle may also have consequences beyond the Standard Model itself. Thanks to the experimental confirmation by ATLAS and CMS, the Nobel Prize in Physics 2013 was awarded to P. Higgs and F. Englert “for the theoretical discovery of mechanism that contributes to our understanding of the origin of mass of subatomic particles”.

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Measurements of Higgs boson production and couplings in diboson final states with the ATLAS detector at the LHC

obor: BG

Identifikátor: RIV/68407700:21670/13:00214203!RIV14-MSM-21670

Id: 840

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Ústav technické a experimentální fyziky ČVUT

Podíl předkladatele na výsledku: **2 %**

Popis podílu předkladatele:

Rating A in 2015 - The CTU is a founding member of the ATLAS collaboration at CERN. On the ATLAS project actively participate researchers from: Faculty of Mechanical Engineering, Faculty of Transportation Sciences, Faculty of Nuclear Sciences and Physical Engineering and Institute of Experimental and Applied Physics. Engineers and physicists from the CTU in Prague contributed to a construction of the ATLAS Experiment and have participated in the operation of the detector, experimental data acquisition and its evaluation and analysis.

Odůvodnění předkladatele:

Rating A in 2015 - New data obtained by the experiment ATLAS enabled detailed investigation of properties of new boson discovered in 2012 by the ATLAS and CMS Collaborations in proton-proton collisions at Large Hadron Collider at CERN. This particular paper focuses on Higgs boson production and couplings in the diboson final states. In Standard model, the couplings of Higgs boson are fully specified once the Higgs boson mass is known. It is in the nature of Higgs mechanism and in the nature of interactions of fermionic particle fields (like electrons or quarks) with Higgs field, that the coupling to the Higgs boson is proportional to the mass of the particle. The presented results are consistent with the Standard Model expectations for Higgs boson. They represent important and strong confirmation of Higgs mechanism in the Standard Model, including the presence of the Higgs vacuum field. The existence and properties of the newly discovered particle may also have consequences beyond the Standard Model itself. Thanks to the experimental confirmation by ATLAS and CMS, the Nobel Prize in Physics 2013 was awarded to P. Higgs and F. Englert “for the theoretical discovery of mechanism that contributes to our understanding of the origin of mass of subatomic particles”.

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Experimental observation of the optical spin-orbit torque

obor: BH

Identifikátor: RIV/68378271: /13:00397427!RIV14-GA0-68378271

Id: 499

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **36 %**

Popis podílu předkladatele:

Joint laboratory of opto-spintronics of the team and of Charles University in Prague was responsible for all aspects of the work including the basic concept, sample growth and fabrication, experiments, and theory.

Odůvodnění předkladatele:

The preparation of high quality nano-scale films of ferromagnetic semiconductors is a formidable challenge. If successful it would inevitably provide unprecedented grounds for exploring new physical phenomena arising from the interaction of photons with magnets and may suggest new means for the manipulation of magnets in opto-electronic devices at sub-picosecond time scales. This work presents the synthesis of prime quality films of ferromagnetic semiconductor (Ga,Mn)As and the discovery of a relativistic effect allowing to manipulate spins in the nano-scale magnet by short laser pulses.

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Room-temperature antiferromagnetic memory resistor

obor: BM

Identifikátor: RIV/00216208:11320/14:10271631!RIV15-GA0-11320

Id: 1162

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **8 %**

Popis podílu předkladatele:

8% |Participation of the faculty has been determined in accordance with the methodology

Odůvodnění předkladatele:

This result has been already evaluated and marked "A" in evaluating another institution, MFF UK joins to the result. Antiferromagnetic materials are magnetic inside, however, their microscopic magnetic moments sitting on individual atoms alternate between two opposite orientations. This antiparallel moment configuration in antiferromagnets, instead of the parallel configuration in ferromagnets, makes the magnetism in antiferromagnets invisible on the outside. It implies that if information was stored in an antiferromagnetic memory it would be insensitive to and would not produce disturbing magnetic fields. This work demonstrates that it is possible to use antiferromagnets to store information.

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Spin-dependent phenomena and device concepts explored in (Ga, Mn) As

obor: BM

Identifikátor: **RIV/00216208:11320/14:10286210!RIV15-GA0-11320**

Id: 1231

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **13 %**

Popis podílu předkladatele:

13% | Participation of the faculty has been determined in accordance with the methodology.

Odůvodnění předkladatele:

This result has been already evaluated and marked "A" in evaluating another institution, MFF UK joins to the result. Over the past two decades, the research of ferromagnetic semiconductors, with (Ga,Mn)As as a prime example, has led to a deeper understanding of relativistic spin-dependent phenomena in magnetic systems. The work presents a comprehensive review of this active field of condensed matter physics.

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Architectural switch in plant photosynthetic membranes induced by light stress

obor: BO

Identifikátor: **RIV/60076658:12310/12:43884199!RIV13-MSM-12310**

Id: 130

Předkladatel výsledku do Pilíře II.:

**IČO: 60076658 Jihočeská univerzita v Českých Budějovicích,
Přírodovědecká fakulta**

Podíl předkladatele na výsledku: **17 %**

Popis podílu předkladatele:

H.K. designed research; M.H., S.T., C.K., M.V.T., and H.K. performed research; M.H., S.T., C.K., M.V.T., and H.K. analyzed data; and M.H. and H.K. wrote the paper.

Odůvodnění předkladatele:

In this study, unique combinations of confocal laser scanning microscopy (CLSM) and mathematical image analysis were used to study structural changes of the grana arrangement in intact protoplasts induced by highlight (HL) treatment. These structural studies were complemented by compositional analysis of isolated stroma lamellae and protein diffusion measurements by FRAP on isolated grana thylakoids. The results reveal that high light stress induced two main structural changes that work synergistically to improve the accessibility between damaged PSII in grana and its repair machinery in stroma lamellae: lateral shrinkage of grana diameter and increased protein mobility in grana thylakoids. The architectural switch of the thylakoid membrane system is an elegant way of enhancing the multiple diffusion-dependent reactions involved in the PSII repair cycle.

Odůvodnění panelu:

Excellency inherited from the previous evaluations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Nonlinear massive gravity with additional primary constraint and absence of ghosts

obor: BE

Identifikátor: **RIV/00216224:14310/12:00057995!RIV13-MSM-14310**

Id: 938

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Know-how of the article is completely provided by the author – employee of the Masaryk University.

Odůvodnění předkladatele:

This paper provides an important piece in the construction of a long sought Lorentz invariant theory of a massive spin 2 field which is clearly shown by its high citation count which is 52 in the WoS database and 69 in the SLAC-INSPIRE database more commonly used in the high energy physics community. This paper proves that the previously proposed nonlinear Gravity theory indeed provides a consistent Lorentz invariant theory of a massive spin 2 particle.

Odůvodnění panelu:

This important paper proves that the previously proposed nonlinear gravity theory indeed provides a consistent Lorentz invariant theory of a massive spin 2 particle. Crucially it also shows that the number of physical degrees of freedom corresponds to the number of physical modes of massive gravity. Excellency of this result is also manifested by high number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Origin of Long-Lived Coherences in Light-Harvesting Complexes

obor: BE

Identifikátor: **RIV/00216208:11320/12:10127458!RIV13-GA0-11320**

Id: 1001

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **40 %**

Popis podílu předkladatele:

40% |Participation of the faculty has been determined in accordance with the methodology

Odůvodnění předkladatele:

The article explains oscillatory features in coherent 2D spectra of a photosynthetic antenna FMO, which were previously assigned to electronic coherence, by a mechanism of vibronic coupling. The long-lived coherences are assigned to delocalized states with a high involvement of particular localized vibrational states. Vibronic coupling results in an enhancement of coherence amplitude due to transition dipole moment borrowing from electronic transition and in an enhancement of coherence life-time due to the partially vibrational nature of the involved states. The paper has spurred a new research direction in the field of photosynthetic excitation energy transfer. Following our paper, direct involvement of vibrational states in delocalization is now considered in every major theoretical undertaking in the field of photosynthetic excitation energy transfer. The paper has been cited 139 times since 2012 (as of February 2016) and it is marked by Web of Science as highly cited paper (as of October 2015), falling within the first 1% of the most cited papers in its field.

Odůvodnění panelu:

This seminal paper has resolved the long-standing discussions concerning the origin of long-lived coherences in photosynthetic light-harvesting complexes. Its publication has initiated a lot of discussion and literally moved the field a step forward as it is also evidenced by high citation rate.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Seeing through chaos in multimode fibres

obor: BH

Identifikátor: **RIV/00216224:14310/15:00081600!RIV16-GA0-14310**

Id: 1175

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **35 %**

Popis podílu předkladatele:

The co-author from Masaryk University provided the majority of the know-how for the theoretical part of the paper.

Odůvodnění předkladatele:

Times Cited: 21 Category Normalized Citation Impact: 8,27 Percentile in Subject Area: 0,59 Journal Impact Factor: 31,167 The paper provides a key advance towards building a practical endoscope based on a single optical fibre. It has 12 citations after 11 months from publication and was rated as "Highly cited paper" by Web of Science.

Odůvodnění panelu:

This topical paper describes a new method of determination of transformation matrix that was developed in a complex theoretical framework of the light-transport processes within the commercially available multimode fibres. The crucial implications of this method for endoscopy and many other disciplines, including telecommunications, are verified by a high number of citations since 2015.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Three-Dimensional Optical Trapping of a Plasmonic Nanoparticle using Low Numerical Aperture Optical Tweezers

obor: BH

Identifikátor: RIV/68081731: /15:00446101!RIV16-AV0-68081731

Id: 1409

Předkladatel výsledku do Pilíře II.:

IČO: 68081731 Ústav přístrojové techniky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

ISI suggested the experiments, performed the theoretical calculations and analyzed the acquired data.

Odůvodnění předkladatele:

Considering the force interaction between the nanoparticle and the laser light, this result for the first time demonstrates experimentally and theoretically the importance of orientation of the nonspherical nanoparticle with respect to the laser beam polarization and direction of propagation. Even though the particle is much smaller than the laser wavelength, its proper orientation tremendously influences its possibility to be confined in 3D in a single laser beam focused even with as small numerical apertures as 0,2. The result was published in Nature family journal, belonging to Q1 in multidisciplinary sciences, and within 1 year collected respected 15 citations (WOS, without self-citations).

Odůvodnění panelu:

This topical paper demonstrates experimentally (and supports theoretically) confinement of nanoparticles in an optical trap with possible applications in biology and medicine. The rapid increase of citations since 2015 reflects the topicality of the work.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Photoanodes with Fully Controllable Texture: The Enhanced Water Splitting Efficiency of Thin Hematite Films Exhibiting Solely (110) Crystal Orientation

obor: BL

Identifikátor: RIV/68378271: /15:00449088!RIV16-AV0-68378271

Id: 1025

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **40 %**

Popis podílu předkladatele:

The researchers from the Institute of Physics CAS made a complete research of hematite Fe₂O₃ thin films deposition with defined crystal orientation on FTO substrate and fully designed the plasma reactive HIPIMS deposition system with possibility to control texture in these films.

Odůvodnění předkladatele:

Hematite, Fe₂O₃, is promising materials for solar hydrogen water splitting. The electrical conductivity is anisotropic with the highest electron transport along the (110) plane. We have developed a strategy for controlling the crystal orientation of thin hematite films during advanced pulsed reactive magnetron sputtering technique. The texture and properties were monitored by x-ray diffraction, Mössbauer spectroscopy, electron microscopy, photoelectron spectroscopy and photoelectrochemical measurement. The precise control of the deposition conditions allowed us to fabricate hematite photoanodes exhibiting texture along (110) and (104) planes with differences in photocurrents of 0.65 and 0.02 mA cm⁻², respectively.

Odůvodnění panelu:

This topical paper is devoted to the hydrogen production by photo electrochemical water splitting. The paper introduces the prototypic preparation method of hematite thin films with specific structural texture that has a huge impact on the photo efficiency of the water-splitting process.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Organometallic Halide Perovskites: Sharp Optical Absorption Edge and Its Relation to Photovoltaic Performance

obor: BM

Identifikátor: RIV/68378271: /14:00432513!RIV15-AV0-68378271

Id: 998

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **36 %**

Popis podílu předkladatele:

Prague group participated partially on perovskite samples preparation and characterization. The final manuscript was written in EPFL Neuchatel, Prague group was involved in advanced data analysis mainly. The collaboration led also to a paper based on Prague results (M. Ledinský at al., 'Raman Spectroscopy of Organic-Inorganic Halide Perovskites', Journal of Physical Chemistry Letters, 6 (2015) 401–406. DOI: 10.1021/jz5026323).

Odůvodnění předkladatele:

Organometallic halide perovskites emerged as high-performance photovoltaic technology. We measured their absorption spectrum by photothermal deflection and photocurrent spectroscopy and found a high absorption coefficient with particularly sharp onset. Below-gap absorption is exponential over more than four decades with an Urbach energy as small as 15 meV, which suggests a well-ordered microstructure. The results showed why very high open-circuit voltages are reported for perovskite solar cells

Odůvodnění panelu:

This important paper significantly helps to understand the good photovoltaic performance of perovskites which become very popular in the solar cell research. The paper, published in a very good journal, represents a key contribution to this very active research field as it is evidenced by a huge number of citations in less than three years.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

High-energy chemistry of formamide: A unified mechanism of nucleobase formation.

obor: BO

Identifikátor: **RIV/68378271: /15:00442228!RIV16-AV0-68378271**

Id: 608

Předkladatel výsledku do Pilíře II.:

IČO: 61388955 Ústav fyzikální chemie J. Heyrovského AV ČR, v. v. i.

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

JHI team designed and performed the research and wrote the paper. All the FTIR spectra have been measured in JHI spectroscopic laboratory together with the GC-MS biomolecules detection. Theoretical calculations have been conducted by our partner's research team.

Odůvodnění předkladatele:

This Feature Article is part of a series identified by the P.N.A.S. Editorial Board as reporting findings of exceptional significance. The presented work addresses one of the central problems of the origin of life research, i.e., the scenario suggesting extraterrestrial impact as the source of biogenic molecules. Likewise, the results might be relevant in the search of biogenic molecules in the universe.

Odůvodnění panelu:

In this topical paper, the authors simulate, using a high-power laser, the conditions that could occur during an extra-terrestrial impact. The highly cited work shows that such an event might lead to production of crucial biogenic molecules.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

On the nature and origin of dicationic, charge-separated species formed in liquid water on X-ray irradiation

obor: BE

Identifikátor: **RIV/60461373:22340/13:43895777!RIV14-GA0-22340**

Id: 984

Předkladatel výsledku do Pilíře II.:

IČO: 60461373 Vysoká škola chemicko-technologická v Praze, Fakulta chemicko-inženýrská

Podíl předkladatele na výsledku: **22 %**

Popis podílu předkladatele:

22% |The work is the result of long-term collaboration between the Slaviček group at UCT (quantum theory of molecules, quantum dynamics) and the laboratory of Bernd Winter (liquid photoemission spectroscopy). The preparation for the work was relatively long and the contribution of both main authors can be considered as equal. The UCT team was responsible for the theoretical calculations and interpretation of the results.

Odůvodnění předkladatele:

This work reports for the first time on a hitherto unknown mechanism for energy relaxation upon ionization or excitation of core electrons in liquids. When the innermost electron is ejected, the molecule is in an excited state with extremely high energy. The excess energy is primarily released through the so-called Auger decay: the positive core hole is refilled by a valence electron while another valence electron is released. Auger decay has been known for 90 years; yet it was found only in 1990s that such decay can involve two neighboring molecules (so-called Intermolecular Coulombic Decay). In our work, which is result of a cooperation of two scientific groups, we have explored a completely new intermolecular reaction channel that involves both electron dynamics and proton transfer. The theoretical simulations based on ab initio dynamical calculations (UCT Prague) was experimentally confirmed at BESSY synchrotron in Berlin (Helmoltz-Zentrum Berlin). The work has an important impact on radiation chemistry: to understand the radiation toxicity, we first need to understand the whole cascade of events triggered by ionizing radiation. Second, it can be the basis of a novel type of spectroscopy as the intensity of PTM-CS electrons reflect the strength of hydrogen bonding in the investigated liquids. Furthermore, this newly established process can induce new approaches in X-rays reaction control. The PTM-CS process is now further investigated, including exploration of the role of PTM-CS in biomolecules. The work resulted in further publications in high-impact journals. The Nature Chemistry journal is one of the top journals in the field, it has Q1 quartile, the ratio between the number in JCR year 2015/number of references 47.3 and H-index 124. The work was supported by Czech Science Foundation projects Nr.P208/10/1724 and P208/11/0161. The work in the field of interaction of molecules with high-energy radiation continues in Czech Science Foundation project Nr.13_34168S.

Odůvodnění panelu:

In this important paper, a new mechanism is added to the simulation of radiation-chemistry processes at a molecular level. Combined experimental and theoretical study can explain ultrafast-proton dynamics in the first femtoseconds after the X-ray ionization of liquid water. This work has pivotal practical implications because it helps to understand the radiation toxicity.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Beam Energy Dependence of Moments of the Net-Charge Multiplicity Distributions in Au plus Au Collisions at RHIC

obor: BG

Identifikátor: RIV/61389005: /14:00433612!RIV15-AV0-61389005

Id: 165

Předkladatel výsledku do Pilíře II.:

IČO: 61389005 Ústav jaderné fyziky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **15 %**

Popis podílu předkladatele:

Contribution of scientists from the Nuclear Physics Institute (NPI) of the CAS consists in their active participation in experimental data taking during the shifts at the STAR detector in BNL, in monitoring the data quality during the whole BES run and in active participation in the preparation of the paper. Contribution of the NPI team to this paper has been acknowledged by the STAR collaboration by several nominations to important international conferences (Symposium on Hadron Collider Physics: Paris, France, November 14-18, 2011, The European Physical Society Conference on High Energy Physics 18-24 July, 2013, Stockholm, Sweden) where the physics results were presented prior to the journal publication. In addition to that study of charged particle multiplicities has a long tradition in the group dating back to late 80's and later to both the WA98 and CERES/NA45 CERN SPS experiments.

Odůvodnění předkladatele:

The search for the critical point (CP) in the temperature- baryon chemical potential ($T-\mu_B$) phase diagram, where the phase transition between the Quark Gluon Plasma (QGP) and hadron matter changes from the first to the second order one, represents one of the most active fields of contemporary high energy nuclear physics. Signaling the presence of a critical point, large event-by-event fluctuations of conserved quantities such as electric charge or baryon number have been predicted. This publication provides the first measurements of the moments - mean (M), variance (σ^2), skewness (S), and kurtosis (K) - of the net-charge multiplicity distributions at midrapidity in Au+Au collisions at seven energies, ranging from $\sqrt{s_{NN}}=7.7$ to 200 GeV, as a part of the Beam Energy Scan (BES) program at the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory (BNL). The moments are related to the thermodynamic susceptibilities of net charge, and are sensitive to the location of the QCD critical point. Lattice QCD calculations indicate that at vanishing μ_B , the transition from the QGP to a hadron gas is a smooth crossover, while at large μ_B the phase transition is of first order. Therefore, a critical point in the QCD phase diagram is expected at finite μ_B where the first order transition ends. The location of the critical point has been predicted to be accessible at RHIC where the BES program has been ongoing since 2010. Within the present uncertainties, analysed data do not show non-monotonic behavior as a function of collision energy - expected signal of the CP. Nevertheless, these exploratory investigations provide a valuable tool to extract the freeze-out parameters in heavy-ion collisions by comparing them with theoretical models. They can be also used as a starting point for ongoing NA61 experiment at the CERN-SPS and for future high-statistics measurements planned within the phase II of BES program at RHIC and at the future CBM experiment (FAIR Darmstadt).

Odůvodnění panelu:

This important paper is a result of the active and acknowledged participation in the STAR experiment at Brookhaven National Laboratory. It describes exploratory investigations, which provide a valuable tool to extract the freeze-out parameters in heavy-ion collisions by comparing them with theoretical models. The results can be also used as a starting point for future experiments and high-statistics measurements.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Energy Dependence of Moments of Net-Proton Multiplicity Distributions at RHIC

obor: BG

Identifikátor: RIV/61389005: /14:00427148!RIV15-AV0-61389005

Id: 449

Předkladatel výsledku do Pilíře II.:

IČO: 61389005 Ústav jaderné fyziky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **15 %**

Popis podílu předkladatele:

Contribution of scientists from the Nuclear Physics Institute (NPI) of the CAS consists in their active participation in experimental data taking, in monitoring the data quality during the BES run and in active participation in the preparation of the paper. Contribution of the NPI team to this paper has been acknowledged by the STAR collaboration by several nominations to important international conferences (Symposium on Hadron Collider Physics: Paris, France, November 14-18, 2011, The European Physical Society Conference on High Energy Physics 18-24 July, 2013, Stockholm, Sweden) where these results were presented prior to the journal publication.

Odůvodnění předkladatele:

The search for the critical point (CP) in the temperature - baryon chemical potential ($T-\mu_B$) phase diagram, where the phase transition between the Quark Gluon Plasma (QGP) and hadron matter changes from the first to the second order one, represents one of the most active fields of contemporary high energy nuclear physics. A critical point is characterized through the growth of the fluctuations of the order parameter in the scaling region around it. In the thermodynamic limit, these fluctuations diverge at the critical point with a given exponent of the diverging correlation length. Signaling the presence of a critical point, large event-by-event fluctuations of conserved quantities such as electric charge or baryon number have been predicted. This publication reports centrality and energy dependence measurements of the moments - mean (M), variance (σ^2), skewness (S), and kurtosis (K) - of the net-proton multiplicity distributions at midrapidity in Au+Au collisions at seven energies ranging from $\sqrt{s_{NN}}=7.7$ to 200 GeV, as a part of the Beam Energy Scan (BES) phase I program at the Relativistic Heavy Ion Collider (RHIC). These measurements are important for understanding the Quantum Chromodynamic (QCD) phase diagram. The products of the moments, S^2 and $K - 3S^2$, are sensitive to the correlation length of the hot and dense medium created in the collisions and are related to the ratios of baryon number susceptibilities of corresponding orders. The products of moments are found to have values significantly below the Skellam expectation and close to expectations based on independent proton and anti-proton production. These exploratory investigations provide a valuable starting point for future high-statistics measurements planned within the phase II of BES program at RHIC (2019-2020) and at the CBM experiment at currently built Facility for Antiproton and Ion Research (FAIR) in Darmstadt, Germany (after 2024).

Odůvodnění panelu:

This important paper is a result of the active and acknowledged participation in the STAR experiment at Brookhaven National Laboratory. It reports centrality- and energy-dependence measurements of the moments of the net-proton multiplicity distributions at midrapidity in Au+Au collisions at several energies. These exploratory investigations provide a valuable starting point for future experiment at currently built Facility for Antiproton and Ion Research in Darmstadt, Germany.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Experimental estimation of the dimension of classical and quantum systems

obor: BH

Identifikátor: **RIV/61989592:15310/12:33140470!RIV13-MSM-15310**

Id: 493

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **29 %**

Popis podílu předkladatele:

This work is a result of international collaboration between the Institute of Photonic Sciences, Universitat Politècnica de Catalunya and ICREA (Barcelona, Spain), Palacký University Olomouc, and University of Bristol. Michal Mičuda from Palacký University significantly contributed to the experimental implementation of the measurement of dimension witnesses and, together with the other authors, contributed to the writing of the manuscript.

Odůvodnění předkladatele:

Experimental observations are usually described using theoretical models that make assumptions about the dimensionality of the system under consideration. An important question arises, whether it would be possible to assess the dimension of a completely unknown system only from the results of measurements performed on it, without any extra assumption. The concept of a dimension witness answers this question, as it allows bounding the dimension of an unknown system only from measurement statistics. This work, published in Nature Physics, reports on the experimental demonstration of dimension witnesses in a prepare and measure scenario. Photon pairs entangled in polarization and orbital angular momentum are used to generate ensembles of classical and quantum states of dimensions up to 4. A dimension witness is then employed to certify their dimensionality as well as their quantum nature. This work opens new avenues in quantum information science, where dimension represents a powerful resource, especially for device-independent estimation of quantum systems and quantum communications.

Odůvodnění panelu:

This important paper describes an interesting experimental demonstration that the dimension (i.e., the number of relevant and independent degrees of freedom needed to describe it) of an unknown system, classical or quantum, can be estimated experimentally. High-prestige journal, considerable submitter participation and a significant number of citations justify awarding excellency to this result.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Zigzag Magnetic Order in the Iridium Oxide Na₂IrO₃

obor: BM

Identifikátor: **RIV/00216224:14740/13:00068177!RIV14-MSM-14740**

Id: 1501

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Středoevropský technologický institut

Podíl předkladatele na výsledku: **30 %**

Popis podílu předkladatele:

The main findings of the paper - the model phase diagram and the location of honeycomb iridates in it - are obtained by numerical simulations devised and performed by the first author at CEITEC Masaryk University.

Odůvodnění předkladatele:

Times Cited: 109 Category Normalized Citation Impact: 12,15 Percentile in Subject Area: 0,62 Journal Impact Factor: 7,645 Highly Cited Paper By making links between the Kitaev-Heisenberg model possessing a spin-liquid phase and real materials, this paper initiated a large interest of the researchers working in the field of strongly frustrated magnetism, as evidenced by more than 80 citations.

Odůvodnění panelu:

This important paper clarifies the origin of the Zig-Zag magnetic order in iridium oxides using theoretical methods. The used model and considered interactions extraordinarily contribute to the understanding of the magnetism of a broad class of magnetic insulators. Excellency of the work that was published in a prestigious journal is also supported by a large number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Crystallographic computing system JANA2006: General features

obor: BM

Identifikátor: RIV/68378271: /14:00434876!RIV15-AV0-68378271

Id: 302

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

All authors are from IoP CAS

Odůvodnění předkladatele:

JANA2006 is a program for structure determination of standard, modulated and magnetic samples based on X-ray or neutron single crystal powder diffraction or on electron diffraction. The system has been developed for 30 years to a universal program covering standard as well as advanced crystallography. The article describes the basic features of JANA2006 and explains its scope and philosophy. This is the first of a series of publications detailing tools and methods of JANA.

Odůvodnění panelu:

This important review article describes and explains the basic features and philosophy of the worldwide known and used program JANA2006 for determination of crystal and/or magnetic structures of solids by X-ray, neutron and electron diffractions. The undisputed great significance of this program for the standard as well as non-standard structural determination is justified by the extreme number of citations and recent awards.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Dynamic switching of the spin circulation in tapered magnetic nanodisks

obor: BM

Identifikátor: RIV/00216305:26620/13:PU103577!RIV14-MSM-26620

Id: 398

Předkladatel výsledku do Pilíře II.:

IČO: 00216305 Vysoké učení technické v Brně, Fakulta strojního inženýrství

Podíl předkladatele na výsledku: **44 %**

Popis podílu předkladatele:

Researchers from the Faculty of Mechanical Engineering of the Brno University of Technology designed and planned the experiment and took significant part in the other stages of the research: V.U., M.U., J.S. and T.S. performed the experiments, with help from M-Y.I., P.F., N.E. and J.J.K. V.U. and M.U. carried out the micromagnetic simulations, analysed the data and prepared the figures. E.E.F. was involved in experimental planning and analysis of the results. V.U. wrote the manuscript. All authors commented on the manuscript.

Odůvodnění předkladatele:

Magnetic vortices are characterized by the sense of in-plane magnetization circulation and by the polarity of the vortex core. With each having two possible states, there are four possible stable magnetization configurations that can be utilized for a multibit memory cell. Dynamic control of vortex core polarity has been demonstrated using both alternating and pulsed magnetic fields and currents. Here, we show controlled dynamic switching of spin circulation in vortices using nanosecond field pulses by imaging the process with full-field soft X-ray transmission microscopy. The dynamic reversal process is controlled by far-from-equilibrium gyrotropic precession of the vortex core, and the reversal is achieved at significantly reduced field amplitudes when compared with static switching. It was further showed that both the field pulse amplitude and duration required for efficient circulation reversal can be controlled by appropriate selection of the disk geometry. The paper was published in top Q1 journal having very high impact factor. It has received 33 hetero citations (WoS) since 2013.

Odůvodnění panelu:

This seminal paper presents the study of dynamics of magnetic vortices that can be utilized for a multibit memory cell. The proposed, quite ingenious, technique provides a route to independent control of all four vortex states on sub nanosecond timescales. Such a switching of the circulation of magnetic vortices in magnetic nanodisks was shown for the first time.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Synthetic routes contaminate graphene materials with a whole spectrum of unanticipated metallic elements

obor: BM

Identifikátor: RIV/61389005: /14:00433715!RIV15-AV0-61389005

Id: 1298

Předkladatel výsledku do Pilíře II.:

IČO: 61389005 Ústav jaderné fyziky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

Graphite, graphite oxide and graphene materials were analyzed by INAA. The analyses performed yielded information about contents of 25 elements at levels down to ng g⁻¹ (ppb) in the above materials. The information so obtained formed the essence of the publication.

Odůvodnění předkladatele:

Graphene is well-poised to revolutionize many industries because of its multitude of exceptional properties. Current bulk synthesis of graphene materials typically starts with the oxidation of graphite to graphite oxide followed by a reduction step. Many different methods exist for both the oxidation and reduction steps, leading to highly variable types and amounts of metallic contaminations that originate from the reagents themselves. These impurities are able to alter the graphene materials' properties significantly, which impacts the range of potential applications for which these graphene materials are suitable. We show that different combinations of oxidation and reduction introduce varying types as well as amounts of metallic elements into the graphene materials, and their origin can be traced to impurities within the chemical reagents used during synthesis. Thus, proper characterization of metallic contamination is highly important to ensure the suitability of a chosen set of synthetic procedures to the final application of the graphene material. In this work, the quantification of metallic contamination of graphene materials prepared with different methods was performed using instrumental neutron activation analysis (INAA).

Odůvodnění panelu:

This important paper brings methods enabling to check metallic impurities in graphene materials and to trace their origin. It shows that different combinations of oxidation and reduction introduce varying types as well as amounts of metallic elements into the graphene materials, and their origin can be traced to impurities within the chemical reagents used during synthesis. This enables to optimize graphene synthesis, which is crucial for various specific applications of graphene materials.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Tetragonal phase of epitaxial room-temperature antiferromagnet CuMnAs

obor: BM

Identifikátor: RIV/68378271: /13:00397388!RIV15-AV0-68378271

Id: 1320

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **59 %**

Popis podílu předkladatele:

The team members were responsible for the conceptual side of the work, contributed to the preparation of the materials and to experiments, and performed theory analyses.

Odůvodnění předkladatele:

In earlier works the team has initiated a research field of spintronics in which antiferromagnets act as the active component in spintronic devices. This work reports epitaxial growth of a new high-temperature antiferromagnetic material, tetragonal CuMnAs, which exhibits excellent crystal quality, chemical order and compatibility with existing semiconductor technologies. The work demonstrates room-temperature exchange coupling in a CuMnAs/Fe bilayer, suggesting that CuMnAs films are suitable candidate materials for antiferromagnetic spintronics.

Odůvodnění panelu:

This seminal paper, published in a prestigious journal, clearly demonstrates the high potential of the new material (MBE-prepared CuMnAs) for use in the AFM-based spintronic. The functionality of the new compound was verified by theoretical calculations and exchange bias effects in epitaxial AFM/FM bilayers at room temperature.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Trace elemental analysis by laser-induced breakdown spectroscopy - Biological applications

obor: BH

Identifikátor: RIV/62156489:43210/12:00194356!RIV13-MSM-43210

Id: 1418

Předkladatel výsledku do Pilíře II.:

IČO: 00216305 Vysoké učení technické v Brně, Středoevropský technologický institut VUT

Podíl předkladatele na výsledku: **85 %**

Popis podílu předkladatele:

Participating percentage of the presenting institution (Brno University of Technology, CEITEC) was of 85 %.

Odůvodnění předkladatele:

This scientific article brings thorough review on application of Laser-Induced Breakdown Spectroscopy (LIBS) technique to the elemental analysis of surface composition of biological samples. For the high Impact Factor of the peer review journal, US partner and focus on appealing application of LIBS, this review article will certainly have great impact on the LIBS community as well as scientific community of analytical chemistry. The paper was presented in "SURFACE SCIENCE REPORTS", which is top class journal (Q1 - 24 of 144 in Chemistry, Physical and 11 of 67 in Physics Condensed Matter in respective year of publication) with last known impact factor IF 5,95. Since its publication the article gained 37 citations.

Odůvodnění panelu:

This important review paper describes a method called "Laser-Induced Breakdown Spectroscopy", which is a relatively simple optical technique of a fast multi-elemental analysis. Besides technical aspects of the method, vast possibilities of biological applications, which span from analysis of bacteria and plants to analysis of human and animal tissues, are investigated. Crucial potential for cancer diagnostics is envisaged.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Constraints on low-mass WIMP interactions on F-19 from PICASSO

obor: BF

Identifikátor: RIV/68407700:21670/12:00202996!RIV13-MSM-21670

Id: 279

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Ústav technické a experimentální fyziky ČVUT

Podíl předkladatele na výsledku: **5 %**

Popis podílu předkladatele:

Our role in the above mentioned experiment was the following: 1) Monte Carlo simulations of neutron shielding (talk of B. Biskup from IEAP, Optimization of neutron shielding for the PICASSO experiment, AIP Conference Proceedings, volume 1180, 2009, Pages 112–116, Workshop on Calculation of Double-Beta-Decay Matrix Elements, MEDEX '09; Prague; Czech Republic; 15 June – 19 June 2009; B. Biskup, Development of the neutron shielding for the underground experiment PICASSO using Monte-Carlo method, diploma thesis, CTU in Prague, supervisor I. Štekl, 2009); 2) production of mechanical parts of all detection units made of plexiglass and stainless steel (36 pieces); 3) low background measurements by HPGe detector (plexiglass and stainless steel); and 4) measurements of Rn penetration into the detector and Rn suppression. Based on our results extended team of IEAP was invited into newly born collaboration PICO (COUPP and PICASSO common team, USA, Canada, CR, Spain, India) having direct responsibility for Rn suppression and precise HPGe spectroscopy and participating in data processing.

Odůvodnění předkladatele:

The PICASSO (international collaboration headed by Canadian institutions) experiment at SNOLAB was devoted to the spin-dependent WIMP interactions on ^{19}F using the Superheated droplet technique, which is promising detection technique with effective background discrimination. Detection of dark matter (neutralino) is very needed task of physics. No DM signal was found and for WIMP masses around 24 GeV/c² new limits have been obtained on the spin-dependent cross section on ^{19}F of $\sigma(F) = 13.9$ pb (90% C.L.) which was converted into cross section limits on protons and neutrons of $\sigma(p) = 0.16$ pb and $\sigma(n) = 2.60$ pb respectively. The obtained limits on protons restricted interpretations of the DAMA/LIBRA annual modulations in terms of spin-dependent interactions. Active participation of IEAP staff in experiment allows us to develop experimental setups for underground experiments (ultra low background HPGe setup, facility providing radon free air at the level of mBq/m³ and its measurement). IEAP team cooperates with underground laboratories SNOLAB (Canada, dark matter experiment PICO), LSM (France, double beta decay experiments NEMO3 and SuperNEMO) and LNGS (Italy, double beta decay experiment COBRA). Our participation in underground physics allows us also to obtain grant support from Technological agency of CR (TA02010881, Facility providing ultra low concentration of Rn in air) or from Ministry of Education, Youth and Sports (Center of experimental nuclear astrophysics and nuclear physics, 2007–2011). Our participation in non-accelerator underground physics is also proved by regularly organized international conferences MEDEX (matrix elements calculations in double beta decay and dark matter, see eg. <http://medex13.utef.cvut.cz/>). Conference is organized every two years from 1997 and contributions are published by American Institute of Physics (e.g., AIP Proceedings volume 1572, 2013).

Odůvodnění panelu:

This paper presents important results of the search for dark matter, which is one of the main topics of the astroparticle physics. There are many theoretical hypothesis about the origin of the dark matter and about its properties. Though the paper results are negative they eliminated some theoretical predictions. The excellency of the results is manifested by a lot of interest within the astroparticle physics community which has been confirmed by a large number of citations that the article has accumulated so far.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Centrality dependence of π , K, and p production in Pb-Pb collisions at $\sqrt{s(NN)}=2.76$ TeV

obor: BG

Identifikátor: RIV/61389005: /13:00399072!RIV14-AV0-61389005

Id: 225

Předkladatel výsledku do Pilíře II.:

IČO: 61389005 Ústav jaderné fyziky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **10 %**

Popis podílu předkladatele:

Contribution of scientists from the Nuclear Physics Institute (NPI) of the CAS on the presented paper consists first in responsibility for calibration, maintenance and operation of the Inner Tracking System - basic detector used for the tracking of low momentum hadrons, second, in monitoring of the Monte Carlo simulations of the detector response with HIJING and a GEANT3 model performed within the grid environment at the local computing facilities. The NPI ALICE team has also actively participated in the experimental data taking and monitoring of data quality for several months during the measurement of Pb+Pb collisions at the center of mass energy of 2.76 TeV per nucleon pair at the LHC at CERN. Contribution of the NPI team to this paper has been acknowledged by the ALICE collaboration by several nominations to important international conferences (2nd International Conference on Technology and Instrumentation in Particle Physics 2011: Chicago, Illinois, 9-14 Jun 2011, 2012 IEEE Nuclear Science Symposium: 27 Oct - 03 Nov 2012, Anaheim, CA, USA, 50th International Winter Meeting on Nuclear Physics: Bormio, Italy, January 23-27, 2012, 19th International Conference on Computing in High Energy and Nuclear Physics (CHEP 2012) : New York, USA, May 21-25, 2012, 16th International workshop on Advanced Computing and Analysis Techniques in physics (ACAT 14) : Prague, Czech Republic, September 1-5, 2014) where results on ITS performance and grid computing were presented by the team members.

Odůvodnění předkladatele:

The paper presents measurements of π^\pm , K^\pm , p, and p^\pm production at midrapidity ($|y|<0.5$), in Pb-Pb collisions at $\sqrt{s_{NN}}=2.76$ TeV as a function of centrality. The measurement covers the transverse-momentum (p_T) range from extremely low values 100, 200, and 300 MeV/c up to 3, 3, and 4.6 GeV/c for π , K, and p, respectively. The measured p_T distributions and yields are compared to expectations based on hydrodynamic, thermal and recombination models. The spectral shapes of central collisions show a stronger radial flow than measured at lower energies, which can be described in hydrodynamic models. In peripheral collisions, the p_T distributions are not well reproduced by hydrodynamic models. Ratios of integrated particle yields are found to be nearly independent of centrality. The yield of protons normalized to pions is a factor ~ 1.5 lower than the expectation from thermal models. These results provide a valuable input for QCD lattice and hydrodynamical calculations of expanding QGP matter and for estimation of non-dynamical contributions to event-by-event fluctuation measurements of net-particle numbers in relativistic nuclear collisions. They can be also used to determine fundamental property of QCD matter, the shear viscosity. Last but not least, the results presented in the paper are crucial for understanding the phase diagram of strongly interacting matter.

Odůvodnění panelu:

This important paper presents new results of the large international experiment ALICE installed at the collider LHC in CERN, Geneva which are related to the formation of high-dense matter, quark-gluon plasma, in collisions of heavy nuclei. These results has attracted attention of many theory groups worldwide and are referred to in quite a few publications. Excellency is also supported by the publication in a top-ranking journal and a large number of citations it has accumulated so far.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Improved thermooxidation and sedimentation stability of covalently-coated carbonyl iron particles with cholesteryl groups and their influence on magnetorheology

obor: BK

Identifikátor: RIV/67985874: /13:00395196!RIV14-AV0-67985874

Id: 673

Předkladatel výsledku do Pilíře II.:

IČO: 67985874 Ústav pro hydrodynamiku AV ČR, v. v. i.

Podíl předkladatele na výsledku: **30 %**

Popis podílu předkladatele:

Rheological measurements of the studied materials both in absence and presence of magnetic field. Evaluation of magnetorheological effect in dependence on the applied conditions.

Odůvodnění předkladatele:

Magnetorheological (MR) fluids exhibit some shortcomings as particle sedimentation and poorer oxidation stability. Magnetic particles usually settle very quickly, when they are dispersed in the fluid, due to different densities of both media. Oxidation decreases the magnetization saturation of the particles and thus the MR performance. Improvement of the long-term stability can be solved by adding various surfactants, fillers or thixotropic agents or using bidispersed and bimorphic MR fluid. Both shortcomings can be substantially attenuated by compact coating of magnetic particles with low density and non-oxidizing substance. This results in partial decrease in particles density and enhanced mutual compatibility between particles and carrier liquid what reflects in subsequent improvement of MR performance. The aim of this study was to apply such a procedure to the carbonyl iron (CI) particles. First, the CI particles were functionalized with reactive silane, and subsequently the surface of particles was coated with cholesteryl groups. Thermal and sedimentation stability as well as rheological properties of MR fluids based on such modified CI particles were investigated under steady shear flow to document improved MR performance.

Odůvodnění panelu:

This important paper represents a substantial improvement of properties of magnetorheological suspensions of covalently-coated carbonyl iron particles that play a crucial role in their applications. Excellency of the result is supported by a large number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Highly mobile twinned interface in 10 M modulated Ni-Mn-Ga martensite: Analysis beyond the tetragonal approximation of lattice

obor: BM

Identifikátor: RIV/68378271: /11:00365558!RIV12-AV0-68378271

Id: 609

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

The work was the joint effort of Institute of Physics and Institute of Thermomechanics ASCR and Aalto University with contribution from IFW Dresden and Adaptamat Ltd.

Odůvodnění předkladatele:

In this paper, new steps toward a better understanding and utilization of high-pressure high-temperature nanodiamonds (NDs) containing nitrogen-vacancy (NV) centers have been taken. NV-related long-term luminescence of oxygenated particles increased in comparison to plasma hydrogenated NDs' NV- luminescence. The optically detected NV- electron spin resonance process can be also significantly affected by ND termination. For H-terminated ND particles the NV- to NV0 conversion energy is lower than the NV- excitation energy, so that the delocalized triplet electrons can be more easily released from the original positions and drawn to the electron-attracting localities in the material. The final result of this study was application of luminescent NDs in cells, showing the detectability of luminescent NDs in a standard confocal microscope and ND subcellular distribution in the cells by TEM.

Odůvodnění panelu:

The results of extended experimental study of twinning mechanism in the shape-memory magnetic alloys, provided in this important paper, represent a substantial contribution to understanding of the origin of huge strains in alloys. The number of citations of this pivotal work has been increasing for a long time.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

The charge-flipping algorithm in crystallography

obor: BM

Identifikátor: RIV/68378271: /13:00398616!RIV14-AV0-68378271

Id: 1355

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The main and only author is from IoP CAS.

Odůvodnění předkladatele:

The charge flipping algorithm is a relatively new method for solving the phase problem in crystallography. The author is one of the leading personalities in this field and he was therefore invited to write a lead article that summarizes the development of the method since its publication in 2004. The first part of the text focuses on the detailed description of the algorithm and its flavors and puts it in the more general framework of dual space phasing methods. In the second part the applications of the method in various fields of crystallography are summarized, with special emphasis on the applications to powder diffraction data and aperiodic structures.

Odůvodnění panelu:

This important paper presents a funded overview of the state-of-art of iterative algorithms with the relevance for crystallography, including the available software and its application to a solution of the general, modulated and macromolecular structures. It was published as a lead article in a well-known journal.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Investigation of femtosecond collisional ionization rates in a solid-density aluminium plasma

obor: BL

Identifikátor: RIV/68378271: /15:00448506!RIV16-AV0-68378271

Id: 723

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **34 %**

Popis podílu předkladatele:

This work was done in collaboration of several research institutes. Co-authors from IoP AS CR participated in the experiment conducted at the SXR/LCLS (Soft X-ray materials research, Linac Coherent Light Source) station in California (USA). Second part of their contribution resided in rigorous analysis of focused X-ray beam profile which was used to pump and probe warm and dense aluminum plasma, an exotic state of matter rarely studied in laboratory conditions. The retrieved beam profile and energy density distribution served as a real input parameter for the SCFLY collisional-radiative code. This made it possible to accurately model the measured spectra of radiating strongly-coupled plasmas leading to a better understanding of electronic collisional processes in such exotic environments.

Odůvodnění předkladatele:

Warm dense matter is a unique state of matter occurring in stars and giant planets, but not on Earth. Nevertheless, for a short period of time, it can be created and probed in laboratory conditions with use of femtosecond high-power X-ray lasers, namely, free-electron lasers. This allows to study physical properties of such exotic environments with possible benefits not only for strongly-coupled plasma physics, but also for astrophysics and inertial-confinement fusion. In this particular case, the collisional ionization rates in strongly coupled plasmas were experimentally measured for the first time at the Linac Coherent Light Source (California, USA). A significant discrepancy between theoretical predictions based on standard semi-empirical models and measured collisional ionization rates has been found. This points to a necessity to reconsider old models which are nowadays used in many plasma-dynamics codes.

Odůvodnění panelu:

This topical paper presents an interesting and potentially pivotal contribution to the plasma research with astrophysical and astrochemical implications. Published in a high-prestige journal with considerable Czech involvement, the work contributes substantially to understanding of collision processes in dense plasmas.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Molecular Basis for Coordinating Transcription Termination with Noncoding RNA Degradation

obor: BO

Identifikátor: **RIV/00216224:14740/14:00073613!RIV15-MSM-14740**

Id: 894

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Středoevropský technologický institut

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

Significant part of the know-how is on the side of MU. Czech co-author from MU had a very important role in idea formation, experiment design and writing of the paper.

Odůvodnění předkladatele:

Times Cited: 27 Category Normalized Citation Impact: 3,44 Percentile in Subject Area: 3,46 Journal Impact Factor: 13,958 The study has been cited in prestigious journals such as NATURE REVIEWS MOLECULAR CELL BIOLOGY (IF = 38,602), Molecular Cell, Cell Report, Genome Research etc.

Odůvodnění panelu:

In this well-cited paper, published in a high-ranking journal, the authors resolved two structural forms of the NNS complex that is important for RNA degradation. High number of citations in just two years after publication shows that the results have significant impact on the research field.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

X-ray Nanodiffraction on a Single SiGe Quantum Dot inside a Functioning Field-Effect Transistor

obor: BM

Identifikátor: **RIV/00216208:11320/11:10103789!RIV12-MSM-11320**

Id: 1497

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **13 %**

Popis podílu předkladatele:

13% |Participation of the faculty has been determined in accordance with the methodology

Odůvodnění předkladatele:

In this work we have determined local elastic strains in a FET transistor fabricated in a single Si/Ge quantum dot, using high-resolution diffraction of nm-sized fully coherent x-ray beam. The paper demonstrates the capability of investigating of elastic strains in a single very small nano-volume. The strain distribution in the conducting channel in a FET transistor affects substantially the effective mass of charge carriers and hence influences their mobility and maximum working frequency of the transistor. Number of citations of the article increased.

Odůvodnění panelu:

This seminal paper presents a successfully applied X-ray nano-diffraction technique as an excellent tool to investigate and to understand the structural properties and the strain states of nanostructures in electronic, optoelectronic, or mechanical nanoscale devices.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Tuning emergent magnetism in a Hund's impurity

obor: BM

Identifikátor: RIV/68378271: /15:00455201!RIV16-AV0-68378271

Id: 1433

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

It was a rather complex study that involved diverse contributions from several research groups. The authors from FZU performed theoretical first-principles modeling of the electronic structure to provide a microscopic understanding of the experimental observations. Due to the decisive role played by the electron-electron correlations, the calculations had to complement the standard density-functional theory with an exact solution of the many-body problem involving the most-relevant degrees of freedom. The calculated electronic structure also provided a backing for a more phenomenological modeling of some of the observed phenomena, which was performed by other members of the author team.

Odůvodnění předkladatele:

Iron atoms deposited on a platinum surface were probed by a scanning tunneling microscope under changing conditions (variations of temperature, presence or absence of hydrogen). It was found that attaching or removing hydrogen, using the tip of the scanning tunneling microscope as a tool, has particularly profound consequences for the electronic properties of the adatoms. Theoretical analysis of the observed magnetic behavior indicates that the deposited atoms behave as the so-called Hund's impurities, that is, their properties are to a large extent determined by Hund's exchange as opposed to the direct Coulomb repulsion characteristic to more conventional strongly correlated systems. The adatoms can therefore be identified as building blocks of a Hund's metal. These metals are intensively studied nowadays since their important representatives are iron-based high-temperature superconductors. In a next step, it is planned to couple many Hund's impurities by moving them closer, again by using the tip of a scanning tunneling microscope as a tool. This would enable a bottom-up assembly of a Hund's metal and its study will hopefully give relevant insight for the targeted development of novel high-temperature superconducting materials.

Odůvodnění panelu:

This topical paper investigates the smallest possible realization of a Hund's metal, a Hund's impurity, realized by a single magnetic impurity strongly hybridized to a metallic substrate. The comparison of the measured temperature and magnetic-field dependent spectral functions to advanced many-body theories provides crucial input for applications to non-Fermi liquid transport, complex magnetic order, or unconventional superconductivity.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

eta-nuclear bound states revisited

obor: BE

Identifikátor: RIV/61389005: /13:00397830!RIV14-AV0-61389005

Id: 472

Předkladatel výsledku do Pilíře II.:

IČO: 61389005 Ústav jaderné fyziky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

The author from NPI Rez contributed significantly to this work, the position of all members of the collaboration is equal and the role of each member is indispensable. The NPI author participated in all stages of the research: formulated a model of in-medium eta-baryon interactions, derived an eta-nucleus potential, performed calculations, analyzed results and summarized them in the article.

Odůvodnění předkladatele:

The strong energy dependence of the s-wave eta-nucleon scattering amplitude at and below threshold is included self consistently in eta-nuclear bound state calculations. This procedure is found to impose stronger constraints than ever on the onset of eta-nuclear binding. No bound state is found in 4He for any of the models considered, in agreement with recent experimental searches, and none of the models is close to reproducing the ${}^{25}\text{Mg}_{\{\eta\}}$ bound state candidate from a recent COSY experiment.

Odůvodnění panelu:

This important paper presents a new calculation of the eta-nuclear bound state, which are in very good agreement with experimental results. Excellency of these results is supported by its publication in a top-ranking journal and a large number of citations it has accumulated so far.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Resonance saturation in the odd-intrinsic parity sector of low-energy QCD

obor: BE

Identifikátor: **RIV/00216208:11320/11:10105317!RIV12-MSM-11320**

Id: 1148

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Participation of the faculty has been determined in accordance with the methodology

Odůvodnění předkladatele:

First systematical study of resonance saturations in the odd-intrinsic parity sector of quantum chromodynamics. It combines both theoretical and phenomenological aspects of this sector. It is important for the corresponding class of processes and is thus a vital tool for some on-going and future experiments. Number of citations of the article increased.

Odůvodnění panelu:

This seminal paper reports on construction of the most general odd-intrinsic parity sector of the Lagrangian of resonance chiral theory and demonstrates relevant applications of the Lagrangian. After setting few input parameters using experimental data further predictions can be made, which allow to test the low-energy QCD in this sector. The work represents an important tool for on-going and future experiments, e.g. within Belle and BABAR collaborations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Dark Matter Search Results from the PICO-2L C3F8 Bubble Chamber

obor: BF

Identifikátor: **RIV/68407700:21670/15:00233357!RIV16-MSM-21670**

Id: 317

Předkladatel výsledku do Pilíře II.:

IČO: 68407700 České vysoké učení technické v Praze, Ústav technické a experimentální fyziky ČVUT

Podíl předkladatele na výsledku: **3 %**

Popis podílu předkladatele:

Our role in the PICO collaboration is data processing and background suppression. However, given that we were part of the PICASSO experiment and this work uses a refurbished COUPP detector, our role in this publication was a participation in data reduction and analysis. We also participated in the scientific interpretation of the obtained data and in the writing of the paper.

Odůvodnění předkladatele:

The realization that nearly 85% of the matter in the Universe is in a form that is completely unknown today has made the search for, and an understanding of, the origins of dark matter one of the highest priority research questions in physics today. The PICO collaboration formed just three years ago as a merger between the largely Canadian PICASSO (of which Czech team was a member), and USA-based COUPP collaborations. The joint collaboration searches for dark matter in the form of a weakly interacting massive particle (WIMP) using highly sensitive bubble chambers. We are running two detectors (PICO-2L and larger PICO-60) at the SNOLAB underground laboratory in Sudbury, Canada. This publication presents the results from the first run of PICO-2L between 2013 and 2014. This run was a tremendous success not only from the technical point of view, proving an excellent performance of our bubble chambers, but led to a limit on the WIMP nucleon SD cross-section that was the best direct detection limit available at the time, surpassed only by the second run of PICO-2L and the first run of PICO-60 (see attached publications). This was the first result of our continuing search for dark matter, which established our collaboration as the world leaders in the SD sector of WIMP search.

Odůvodnění panelu:

This topical paper is a result of the active participation in the joint collaboration that searches for dark matter in the form of a weakly interacting massive particle using highly sensitive bubble chambers. The measurement proved an excellent performance of the bubble chambers and led to a limit on the WIMP nucleon SD cross-section that was the best direct detection limit available at the time.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Methods for carbon nanotubes synthesis-review

obor: BL

Identifikátor: **RIV/00216305:26220/11:PU93497!RIV12-GA0-26220**

Id: 317

Předkladatel výsledku do Pilíře II.:

IČO: 00216305 Vysoké učení technické v Brně, Fakulta elektrotechniky a komunikačních technologií

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

The result was created in a close cooperation of three institutions. Participating percentage of the presenting institution (Brno University of Technology, Faculty of Electrical Engineering and Communication) was of 80 %.

Odůvodnění předkladatele:

Since their discovery by Ijima in 1991, carbon nanotubes have been under the scientific investigation more than twenty-five years because of their unique properties that predestine them for many potential applications. The field of nanotechnology and nanoscience push their investigation forward to produce carbon nanotubes with the suitable parameters for future applications. In this paper we reviewed history, types, structure and especially the different synthesis methods for carbon nanotubes preparation including arc discharge, laser ablation and chemical vapor deposition. Moreover, we mentioned some rarely used ways of arc discharge deposition which involves arc discharge in liquid solutions in contrary to standard used deposition in a gas atmosphere. In addition, the methods for uniform vertically aligned carbon nanotubes synthesis using lithographic techniques for catalyst deposition as well as a method utilizing a nanoporous anodized aluminum oxide as a pattern for selective carbon nanotubes grown are reported too. The importance of the paper is reflected in a high number of citations (146 according to Web of Science). It has got the "Highly Cited Paper" award from Web of Science, where in July/August 2016, this paper received enough citations to be placed in the top 1% of the academic field of Materials Science based on a highly cited threshold for the field and publication year. The paper was presented in "Journal of Materials Chemistry", which is high rank (Q1) journal with last known impact factor IF 6.626 (2013)." 859

Odůvodnění panelu:

This important review paper provides a very useful overview of types and structures of the carbon nano-tubes. It was published in a highly impacted journal and has received a large number of citations since.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Electric control of spin Hall effect by intervalley transitions

obor: BM

Identifikátor: RIV/68378271: /14:00434186!RIV15-AV0-68378271

Id: 436

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **46 %**

Popis podílu předkladatele:

The team members were responsible for the conceptual side of the work and performed theory analyses

Odůvodnění předkladatele:

Controlling spin-related material properties by electronic means is a key step towards future spintronic technologies. The spin Hall effect has become increasingly important for generating and detecting spin currents. This work reports a discovery of electrical means to dramatically enhance the spin Hall effect in one of the most common semiconductors GaAs to amplitudes reaching the so far favorable heavy metals.

Odůvodnění panelu:

The beautiful experiments, presented in this important paper, showed room-temperature electric control of the spin-Hall effect in bulk GaAs that had not been reported before. The observed extraordinary changes of the effect induced by external electric field offer new functional possibilities for future spintronics devices.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Transmission electron microscopy investigation of dislocation slip during superelastic cycling of Ni-Ti wires

obor: BM

Identifikátor: RIV/68378271: /11:00358977!RIV12-AV0-68378271

Id: 1422

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **75 %**

Popis podílu předkladatele:

The article was jointly written by PhD student R. Delville and P. Sittner who lead this research in frame of prestigious FP6 Marie-Curie RTN MULTIMAT European project. B. Mallard worked as a postdoc in FZU, J. Pilch, the PhD student in FZU who developed the FTMT-EC method and D. Schryvers, the coordinator of MULTIMAT network.

Odůvodnění předkladatele:

Dislocation generation during superelastic deformation of thin NiTi wires with controlled microstructures was systematically investigated by mechanical tests combined with in-situ electric resistometry and transmission electron microscopy. The role of dislocation slip in superelastic deformation discussed in this work laid background to later investigations of functional degradation of NiTi due to combined martensitic transformation and plasticity. The application of the patented FTMT-EC heat treatment of NiTi wires by short pulses of electric current, developed by the team was essential for obtaining the special microstructures. It was shown that dislocation slip accompanying martensitic transformation during superelastic cycling is responsible for the observed irreversible strains, cyclic instability and degradation of functional properties of NiTi.

Odůvodnění panelu:

This highly cited paper presents a detailed study of functional properties of Ni-Ti nanowires under cycling loads. The relation of controlled nanograined structure and stability of properties is established. These results are very important for numerous applications in medicine and engineering fields.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

The Pierre Auger Cosmic Ray Observatory

obor: BF

Identifikátor: RIV/68378271: /14:00451754!RIV16-AV0-68378271

Id: 1377

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: 7 %

Popis podílu předkladatele:

The Institute of Physics made key contributions to the overall design of the Pierre Auger Observatory. Most importantly, the groups in the Institute designed, produced, installed and aligned mirrors for 15 out of 27 fluorescence telescopes that are deployed at the Pierre Auger Observatory. For many years the coordinators of the operation of the fluorescence detectors are from the Czech group and belong to management team of the Observatory. Institute employees regularly participate in the operation shifts of the fluorescence detectors. Besides this, the Czech group is deeply involved in data analysis and in the monitoring of the atmosphere above the array. The robotic telescope FRAM and All-sky cameras that monitor the actual atmospheric conditions are devices made and operated by the team from the Institute. The Czech Republic has also a main role in the management of Grid Virtual Organization that provides a necessary computational power for the interpretation of measured events. Within the Czech Republic the close collaboration among the Institute, the Charles University and the Palacky University is established.

Odůvodnění předkladatele:

This is the main reference paper regarding the design, the hardware setup and the performance of the Pierre Auger Observatory. The Observatory, located on a high plain in western Argentina, is the world's largest cosmic ray observatory. The objectives of the Observatory are to probe the origin and characteristics of cosmic rays above 10^{17} eV and to study the interactions of these, the most energetic particles observed in nature. The Auger design features an array of 1660 water-Cherenkov particle detector stations spread over 3000 km^2 overlooked by 24 air fluorescence telescopes. In addition, three high elevation fluorescence telescopes overlook a 23.5 km^2 , 61 detector infill array. The Observatory makes use of the atmosphere as a giant calorimeter. This motivated the selection of a site with generally good viewing conditions and the implementation of an extensive program to monitor the troposphere above the site. Besides a huge aperture (volume of atmosphere available for shower detection), the uniqueness of the Pierre Auger Observatory lies in the simultaneous observation of cosmic-ray showers with two different detection techniques. The so-called hybrid reconstruction based on fluorescence detector data with additional timing information from the surface detector provides a very precise reconstruction of shower properties during clear moonless nights. Additional to that, the signal of the surface detector that is proportional to the shower energy is calibrated with the precise hybrid data. This allows to collect unprecedented statistic of events at ultra-high energies. The Observatory has been in successful operation since completion in 2008 and has recorded data from an exposure exceeding $40,000 \text{ km}^2 \text{ sr yr}$. This paper describes the design and performance of the detectors, related subsystems and infrastructure that make up the Auger Observatory.

Odůvodnění panelu:

This topical paper is the main reference regarding the design, the hardware setup, and the performance of the Pierre Auger Observatory, the world's largest cosmic-ray observatory. The objectives of the Observatory are to probe the origin and characteristics of high-energy cosmic rays and to study the interactions of these. The groups in the Czech Institute of Physics designed, produced, installed and aligned mirrors for 15 out of 27 fluorescence telescopes that are deployed at the Pierre Auger Observatory

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Angular dispersion of oblique phonon modes in BiFeO₃ from micro-Raman scattering

obor: BM

Identifikátor: RIV/68378271: /11:00359003!RIV12-AV0-68378271

Id: 102

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **67 %**

Popis podílu předkladatele:

S.K. and I.R. (external) were responsible for the sample. J.H. and J.P. (Dept. of Diel.) made the Raman experiment and the analysis of the data. All authors contributed to the manuscript. J.H is first and corresponding author of the article.

Odůvodnění předkladatele:

For the first time, we succeeded to provide consistent assignment of all TO and LO Raman active phonon modes in a model multiferroic material. It explained previous misunderstandings related to ferroelectric twinning. Moreover, we developed a completely new method for recording oblique mode dispersions.

Odůvodnění panelu:

This important paper provides, for the first time, consistent assignment of all TO and LO Raman active phonon modes in a model multiferroic material allowing thus to explain previous misunderstandings related to ferroelectric twinning. A completely new method for recording oblique mode dispersions is also presented. Excellency of this results is also manifested by a large number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Unraveling the Perplexing Structure of the Zeolite SSZ-57

obor: BM

Identifikátor: RIV/68378271: /11:00365564!RIV12-AV0-68378271

Id: 1448

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

The co-author from the Institute of Physics made a key contribution to the work by finding a structure model using superspace formalism.

Odůvodnění předkladatele:

This work elucidated what is probably the most intriguing zeolite structure known to date. It was shown that the special catalytic properties of this zeolite arise due to partially ordered faults in the structure, which give rise to large cavities in the structure. This work used a combination of cutting-edge experimental techniques (synchrotron x-ray diffraction on a microcrystal, new generation of pixel detectors) with complex data analysis and fitting (superspace description of the average structure, modelling of diffuse scattering). Without the combination of these techniques the understanding of the structure and hence of the properties of this material would not be possible.

Odůvodnění panelu:

In this important paper, the combination of high-tech experimental methods and complex data analysis enabled to establish the structure of zeolite and understanding its unique catalytic properties. Excellency of this results is also manifested by the publication in a top-ranking journal.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Electrochemistry of nucleic acids

obor: BO

Identifikátor: RIV/68081707: /12:00383502!RIV13-AV0-68081707

Id: 441

Předkladatel výsledku do Pilíře II.:

IČO: 68081707 Biofyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Both authors are members of the Institute of Biophysics.

Odůvodnění předkladatele:

E. Paleček (EP, who almost 60 years ago founded electrochemistry of nucleic acids which is now a booming scientific field with >1000 papers/year) was invited to write a paper for Chemical Reviews. This paper (published with his student M. Bartošík) summarizes the history of this field and discusses the present state of the nucleic acid electrochemistry and its orientation to the development of sensor for DNA hybridization and DNA damage. The EP group have been for many years among the world leaders in electrochemistry of nucleic acids. The paper appeared in June 2012 and was recently evaluated by WoS as a highly cited paper.

Odůvodnění panelu:

This important review paper, published in a top-ranking journal, describes the actual state of electrochemistry of nucleic acids and its application in sensors for DNA hybridization and DNA damage. Its usefulness is evidenced by a very high citation rate.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Multibrane solutions in open string field theory

obor: BF

Identifikátor: RIV/68378271: /12:00388030!RIV13-AV0-68378271

Id: 905

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav Akademie věd ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The work, supported by EURYI grant through Czech Funding Agency was performed at the Institute of Physics AS CR by Schnabl and a Murata, then visiting student from Kyoto University. The work was originally announced at a conference on String Field Theory and Related Aspects 2010 in Kyoto and appeared in the proceedings in 2011, followed by the detailed extended version in JHEP few months later.

Odůvodnění předkladatele:

The classical solutions of open string field theory are solitonic extended objects whose fluctuation spectra are described by open strings. At the turn of the millennium, Ashoke Sen discovered that tachyonic modes lead to instabilities of these solitonic objects and that there are classical solutions describing various endpoints with the expected properties, and among them a solution with no soliton. A group of researchers at MIT speculated that reverse phenomenon might occur, namely that there can be classical solutions describing multiple xerox copies of the original soliton. In this paper, first strong evidence for such a speculation was provided by constructing analytic solution with the desired properties. The result sheds a new light on why there is a color, i.e. non-abelian gauge symmetry, in particle physics.

Odůvodnění panelu:

This important paper presents a further step in the development of the string field theory, the goal of which is to create a unified theory of all particle interactions including gravity. In this paper, the first strong evidence for a speculation that there can be classical solutions describing multiple xerox copies of the original soliton was provided by constructing analytic solution with the desired properties. The result sheds a new light on why there is a colour, i.e. non-abelian gauge symmetry, in particle physics. Excellency of this result is supported by its publication in a top-ranking journal and a large number of citations it has accumulated so far.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Measurement of the inclusive jet cross section in pp collisions at $\sqrt{s}=1.96$ TeV

obor: BF

Identifikátor: RIV/68378271: /12:00379938!RIV13-AV0-68378271

Id: 834

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: 2 %

Popis podílu předkladatele:

Institute of Physics CAS was one of the institutional members of the experiment, and particularly for this paper one of the physicists from our institute (A. Kupco) significantly contributed to the paper and analysis. He was one of the three primary authors of the paper. He was responsible for determination of jet energy calibration which is the dominant experimental systematic uncertainty, including the determination of uncertainty correlations across jet transverse momenta and rapidities. New method, reported in the paper, was developed to improve the in-situ calibration of the D0 calorimeter for the most energetic jets. This significantly improved the discovery potential of the measurement as new physics is expected to show at large energy scales. Precise energy calibration, in 1-2% range in very wide kinematic region, allowed achieving the most accurate measurement of jet production up to that time. The information on correlation is important for determining the proton structure, as it defines the significance of the data in the global fits of proton's parton distribution functions.

Odůvodnění předkladatele:

To investigate properties of matter at extremely small distances we need a collision processes with extremely large momentum transfers. Before LHC, the largest collider was Tevatron. It was providing antiproton – proton collisions at 1.96 TeV centre-of-mass energy. Protons and antiprotons interact most often via strong nuclear force and it is this interaction that produces the largest momenta transfers. Partons (constituents of protons – gluons or quarks) are kicked out from proton with large transverse momenta and they produce hadronic showers that show up in the detector as strongly collimated jets of particles. Measured frequency of jet production is in a good agreement with theoretical predictions of the quantum chromodynamics, even for jets with transverse momenta higher than 600 GeV. From the measurement, we can conclude that our understanding of matter properties is valid also on distances thousand times smaller than the proton dimension. Data also bring new information about proton structure, namely about the gluon content at large values of fractional longitudinal momenta.

Odůvodnění panelu:

This important paper presents very precise measurements carried out by the experiment D0 at Fermi lab which were compared with the theoretical calculations of quantum chromodynamics. One of the Czech co-authors was the principal author of the publication, who proposed the concept of the article, organized the data processing and data analysis and especially participated in the paper writing.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Nanostructured three-dimensional thin μm silicon solar cells with very high efficiency potential

obor: BM

Identifikátor: RIV/68378271: /11:00364090!RIV12-AV0-68378271

Id: 921

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: 88 %

Popis podílu předkladatele:

Authors from FZU defined the idea of the paper, M.V. wrote the paper and the patent application, based on it. His PhD students O.B. and N.N. made preparation of nanostructured substrate glass/ZnO, A.P. and A.Po did the Monte Carlo optical modeling of these solar cells, J.H. made the optoelectrical measurement of the absorber materials and Z.R. performed measurement and calculation of absorption loss in a differently doped ZnO. Cells were deposited and measured in Oerlikon Solar (M.M. and U.K.).

Odůvodnění předkladatele:

We report on the experimental realization of amorphous/microcrystalline silicon tandem solar cells (Micromorph) based on our three-dimensional design. An enhancement is reached in the short-circuit current by 40%, with an excellent open-circuit voltage of 1.41V and a fill factor of 72%. We have used nanoholes or microholes dry etched into the ZnO front contact layer. Monte Carlo optical modeling shows that stable efficiency of amorphous silicon p-i n solar cells in over 12% range is possible. For the Micromorph cells, efficiency over 15% with the thickness of amorphous Si below 200 nm and of microcrystalline Si around 500 nm is possible.

Odůvodnění panelu:

This top-level paper describes challenging efforts for designing three dimensional nanocolumnar solar cells showing the experimental realization of amorphous/microcrystalline silicon tandem solar cells. Excellency of this results is proved by a large number of citations it has accumulated so far.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Submillimeter Array/Plateau de Bure Interferometer Multiple Line Observations of the Nearby Seyfert 2 Galaxy NGC 1068: Shock-related Gas Kinematics and Heating in the Central 100 pc?

obor: BN

Identifikátor: RIV/67985815: /11:00374194!RIV12-AV0-67985815

Id: 1275

Předkladatel výsledku do Pilíře II.:

IČO: 67985815 Astronomický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **20 %**

Popis podílu předkladatele:

The paper is a result of an international collaboration of observers and theorists. The Astronomical Institute ASCR contributed to the data interpretation, using its custom-made numerical code, which simulates the structure and kinematics of central galactic regions. The project is part of the active research focusing on the AGN structure and interplay with host galaxies using multispectral domains pursued at the Astronomical institute.

Odůvodnění předkladatele:

The role of active galactic nuclei (AGN) in galaxy evolution is one of the unresolved questions of present-day astrophysics. To understand the interplay between large and small galactic scales, detailed observations of geometry and kinematics are necessary. The paper presents high-resolution interferometric observations in the (sub-)millimeter domain mapping cold gas in the prototypical AGN NGC 1068. It illustrates how energy from the AGN is deposited into the host galaxy through outflows.

Odůvodnění panelu:

This top-level paper by an impressive EU-US collaboration team describes a very complex study of circumnuclear gas dynamics in galaxy NGC 1068. It uses the most modern observational techniques of mm to cm radioastronomy combined with very complex modelling efforts. Results show spectacular dynamical details about the gas flow near the nucleus of this galaxy.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Complex rotational dynamics of multiple spheroidal particles in a circularly polarized, dual beam trap

obor: BH

Identifikátor: RIV/68081731: /15:00446099!RIV16-AV0-68081731

Id: 262

Předkladatel výsledku do Pilíře II.:

IČO: 68081731 Ústav přístrojové techniky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

ISI authors proposed the experiments, performed the theoretical calculations and analyzed the acquired data. The co-author personally participated at the experiments as ISI employee and contributed to the writing the paper after leaving ISI.

Odůvodnění předkladatele:

The rotational dynamics of spheroidal particles in an optical trap comprising counter-propagating Gaussian beams of opposing helicity was determined. Experimental results are supported by numerical calculations. For the first time the behaviour of optically bound rotating spheroidal objects was reported and explained. The introduction of additional particles leads to yet more complex behaviour. The result was published in Q1 journal in optics and has collected 10 WOS citations within one year.

Odůvodnění panelu:

In this topical paper, the rotational dynamics of micro-particles confined optically by dual beam trap was studied experimentally and supported by numerical calculations. A crucial understanding of the induced complex motion could facilitate the design of optically actuated micro-robotic devices.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Measurement of $W+W-$ production in pp collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector and limits on anomalous WWZ and $WW\gamma$ couplings

obor: BG

Identifikátor: RIV/68378271: /13:00424578!RIV14-AV0-68378271

Id: 835

Předkladatel výsledku do Pilíře II.:

IČO: 68378271 Fyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: 4 %

Popis podílu předkladatele:

Institute of Physics ASCR is one of the founding members of the ATLAS Collaboration. The collaboration was founded in 1992. Currently, it consists out of about 3000 researchers from 175 research institutions from 38 countries. Detector ATLAS, constructed and operated by the ATLAS Collaboration, was designed to analyze proton-proton collisions provided by LHC and to maximize discovery potential of the collider. Our physicists and engineers contributed in the development, construction, maintenance and operation of tracking and calorimeter detectors. The Institute of Physics also contributes to this world-wide effort by providing appropriate means for large scale data processing which is necessary in order to analyze enormous amount of the data produced by the LHC experiments. The institute operates computing farm that serves as a Tier2 center in the CERN LHC grid computing network. Physics behind anomalous vector bosons coupling, and precise measurement of this possible phenomenon is one of the key interests of our ATLAS group. O. Kepka, J. Hejbal, and M. Zeman contributed significantly to the published measurement. They were responsible for data processing, background correction, and unfolding procedure. Intermediate vector boson production was also the subject of the Zeman's thesis which he successfully defended in 2014.

Odůvodnění předkladatele:

Measurements of intermediate vector boson production represent important tests of the Standard Model as the production mechanism is interlocked with the Higgs mechanism. The paper reports the measurement of the $W+W-$ production cross section by the ATLAS Collaboration at Large Hadron Collider in proton-proton collisions at $\sqrt{s} = 7$ TeV. The result 51.9 ± 2.0 (stat) ± 3.9 (syst) ± 2.0 (lumi) pb is compatible with the Standard Model prediction of $44.7^{+2.1}_{-1.9}$ pb. The reconstructed transverse momentum distributions of the leading lepton were used to put new constrains on anomalous WWZ and $WW\gamma$ couplings.

Odůvodnění panelu:

This important paper presents results of the experiment ATLAS which are related to the search for the deviations of the experimental data from predictions of the theoretical Standard model of the particle interactions which could reveal new physics. The submitter authors participated in the running and maintenance of the ATLAS detector complex and their main contribution to the results lies in the data analysis and in the overall concept. They were charged to write the article by the ATLAS physics community and are therefore the main authors of the publication. Excellency of these results is supported by its publication in a top-ranking journal and a large number of citations it has accumulated so far.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Directional Roll-up of Nanomembranes Mediated by Wrinkling

obor: BM

Identifikátor: **RIV/00216208:11320/11:10105889!RIV12-MSM-11320**

Id: 369

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Matematicko-fyzikální fakulta

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

33% |Participation of the faculty has been determined in accordance with the methodology

Odůvodnění předkladatele:

We investigated the relaxation of rectangular wrinkled thin films intrinsically containing an initial strain gradient. A preferential rolling direction, depending on wrinkle geometry and strain gradient, was theoretically predicted and experimentally verified. In contrast to typical rolled-up nanomembranes, which bend perpendicular to the longer edge of rectangular patterns, we found a regime where rolling parallel to the longer edge of the wrinkled film is favorable. A nonuniform radius of the rolled-up film was well reproduced by elasticity theory and simulations of the film relaxation using a finite element method.

Odůvodnění panelu:

In this seminal paper, the authors theoretically investigated the roll up of nanomembranes formed by releasing wrinkled rectangular films. The introduction of wrinkles can be used to control the preferential rolling direction of strained films as confirmed experimentally by depositing and releasing strained metallic alloys on sinusoidal/steplike photoresist patterns. Given the abundance of fabrication methods and applications of wrinkled and folding films across length scales (from conventional thin films down to graphene), the work will be very useful for realizing novel 3D tubular structures with well-controlled geometry.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Carborane-Based Carbonic Anhydrase Inhibitors

obor: CA

Identifikátor: RIV/68378050: /13:00422652!RIV14-AV0-68378050

Id: 211

Předkladatel výsledku do Pilíře II.:

IČO: 61388980 Ústav anorganické chemie AV ČR, v. v. i.

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

The team from Institute of Inorganic Chemistry AS ČR, v.v.i. (IIC) performed design of inhibitors based on previous experience in carborane chemistry, developed successful synthetic methods leading to several structurally different types of effective carborane-based inhibitors of CA-IX enzyme. This contribution included planning and performing all experiments in respect to design of synthetic intermediates, their use in the synthesis of active species, isolations and characterizations of all compounds by NMR, MS and other methods. The leader of the team from IIC was also involved in formulation of the paper, particularly parts dealing with synthesis and activity of inhibitors depending on their molecular structures. Groups at the Institute of Organic Chemistry and Biochemistry AS ČR, v.v.i. and Institute of Molecular Genetics AS ČR, v.v.i. are responsible for in vitro activity tests, interaction and structural studies of the enzyme-inhibitor complexes.

Odůvodnění předkladatele:

The zinc containing metalloenzyme Carbonic Anhydrase CA-IX is expressed on the surface of the cell of solid tumors and responsible for exchange of CO₂ in their tissues. Therefore, this isoform has been recently validated as a target for pharmacological intervention in cancer treatment. However, until recently, the most of inhibitors composed typically of aromatic ring scaffold lack selectivity for this isoenzyme compared to widespread cytosolic isoform CA-II. This pilot study demonstrated that carborane-based compounds are promising lead structures for the development of effective inhibitors of tumor-associated CA-IX. The experiments have shown that various types of hydrophobic, space-filling carboranes can be accommodated in the CA active site and the substitution with an appropriately attached sulfamide group and other substituents leads to compounds with low micromolar in vitro activity against cancer-specific CAIX and high selectivity for this isoenzyme over the widespread cytosolic CAII isozyme. The binding mode was supported by X-ray structures of CA-II enzyme-carborane complexes. The results reported in the paper opened up new directions in design of new, inorganic types of inhibitors for cancer treatment and triggered an additional effort, which led new families of these compounds with significantly improved activity and selectivity.

Odůvodnění panelu:

Hodnoceno v minulém kole

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Cell Differentiation within a Yeast Colony: Metabolic and Regulatory Parallels with a Tumor-Affected Organism

obor: CE

Identifikátor: **RIV/61388971: /12:00379058!RIV13-AV0-61388971**

Id: 221

Předkladatel výsledku do Pilíře II.:

IČO: 61388971 Mikrobiologický ústav AV ČR, v. v. i., xx

Podíl předkladatele na výsledku: **95 %**

Popis podílu předkladatele:

Almost 100 %; all the authors are either staff members or PhD students carrying out their work at the IM CAS.

Odůvodnění předkladatele:

Nutrient sensing and metabolic reprogramming are crucial for metazoan cell aging and tumor growth. Here, we identify metabolic and regulatory parallels between a layered, multicellular yeast colony and a tumor-affected organism. During development, a yeast colony stratifies into U and L cells occupying the upper and lower colony regions, respectively. U cells activate a unique metabolism controlled by the glutamine-induced TOR pathway, amino acid-sensing systems (SPS and Gcn4p) and signaling from mitochondria with lowered respiration

Odůvodnění panelu:

Hodnoceno v minulém kole

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Vinylsulfonamide and Acrylamide Modification of DNA for Cross-linking with Proteins

obor: CC

Identifikátor: **RIV/00216208:11310/13:10159263!RIV14-MSM-11310**

Id: 1473

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **8 %**

Popis podílu předkladatele:

8% |Charles University, Faculty of Science 8%

Odůvodnění předkladatele:

This study has been rated A in the previous round of evaluation. Novel nucleoside triphosphates modified by Michael acceptors were prepared and their polymerase incorporations to DNA was developed. The resulting reactive DNA probes specifically react with cysteine or cysteine-containing peptides or proteins to form covalent cross-link. The proof-of-principle has been showed on covalent cross-linking of DNA probe with transcription factor p53. The specific reactivity of such DNA probes has promising potential in construction of irreversible inhibitors of DNA-binding proteins and for pull-down analysis and selection of unknown proteins binding to certain DNA sequences.

Odůvodnění panelu:

Hodnoceno v minulem kole

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Coulomb explosion during the early stages of the reaction of alkali metals with water

obor: CF

Identifikátor: RIV/61388963: /15:00443646!RIV16-AV0-61388963

Id: 294

Předkladatel výsledku do Pilíře II.:

IČO: 61388963 Ústav organické chemie a biochemie AV ČR, v. v. i.

Podíl předkladatele na výsledku: 75 %

Popis podílu předkladatele:

0

Odůvodnění předkladatele:

Alkali metals can react explosively with water and it is textbook knowledge that this vigorous behaviour results from heat release, steam formation and ignition of the hydrogen gas that is produced. Here we suggest that the initial process enabling the alkali metal explosion in water is, however, of a completely different nature. High-speed camera imaging of liquid drops of a sodium/potassium alloy in water reveals submillisecond formation of metal spikes that protrude from the surface of the drop. Molecular dynamics simulations demonstrate that on immersion in water there is an almost immediate release of electrons from the metal surface. The system thus quickly reaches the Rayleigh instability limit, which leads to a 'coulomb explosion' of the alkali metal drop. Consequently, a new metal surface in contact with water is formed, which explains why the reaction does not become self-quenched by its products, but can rather lead to explosive behaviour.

Odůvodnění panelu:

This excellent paper represents fundamental study of old known reaction of alkali metal with water using present methods. Authors using high-speed cameras and molecular simulations suggest that the early stage of the vigorous dissolution of a Na/K alloy drop in water is driven by a coulomb explosion. This process is initiated by electrostatic repulsion within a layer of alkali cations formed at the surface. The excellent results obtained by authors enrich the fundamental knowledges in chemistry.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Mechanism of photoprotection in the cyanobacterial ancestor of plant antenna proteins

obor: CE

Identifikátor: **RIV/60076658:12310/15:43888683!RIV16-MSM-12310**

Id: 846

Předkladatel výsledku do Pilíře II.:

**IČO: 60076658 Jihočeská univerzita v Českých Budějovicích,
Přírodovědecká fakulta**

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

The laboratory at Faculty of Science designed the experiments and carried out all spectroscopic studies including the data analysis, while isolation, purification and biochemical characterization of Hlip was carried out at Institute of Microbiology.

Odůvodnění předkladatele:

Plants collect light for photosynthesis using light-harvesting complexes which are able to reversibly switch from harvesting to energy dissipation mode to prevent damaging of the photosynthetic apparatus. Yet the molecular basis of photoprotection is still a matter of a considerable debate. This paper characterizes a small high-light inducible protein (Hlip) complex from cyanobacteria, which is believed to be an ancestor of plant antenna proteins. Using femtosecond spectroscopy we unequivocally demonstrated that the energy dissipation in this protein is achieved via direct energy transfer from chlorophyll to a β -carotene nearby. The results provide the first demonstration of such mechanism and also shed light on the photoprotective role of Hlips and evolution of photoprotection in photosynthetic antennae. In Nat. Chem. Biol. the paper was selected for the cover picture and also commented in the News&Views section. The paper is currently marked as “highly-cited” in WoS.

Odůvodnění panelu:

This is undoubtedly a work essential significance since it elucidates, by using femtosecond spectroscopy, the mechanism plants photoprotection by switching from energy harvesting to dissipation mode to prevent the damage of photosynthetic system. The mechanism based on energy transfer from chlorophyll to beta-carotene is demonstrated on protein complex of cyanobacteria. Understanding these phenomena is of vital importance for any attempts to simulate the photosynthesis process in artificial systems.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

A Bambusuril Macrocycle that Binds Anions in Water with High Affinity and Selectivity

obor: CC

Identifikátor: **RIV/00216224:14310/15:00080729!RIV16-MSM-14310**

Id: 14

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Title compounds originally invented at the Masaryk University show exceptional binding affinities towards many anions.

Odůvodnění předkladatele:

Times Cited: 37 Category Normalized Citation Impact: 8,04 Percentile in Subject Area: 1,12 Journal Impact Factor: 11,709 Highly Cited Paper Applications in many areas such as sensing, analysis, materials science, etc. are expected.

Odůvodnění panelu:

Innovative work producing compounds with exceptional binding affinities towards many anions. Such synthetic receptors functioning in water facilitate important for the qualitative and quantitative detection of anions, which may act as pollutants in the environment or play important roles in biological processes. Thus the work impacts on analytical chemistry. Relatively high-prestige journal, extensive number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Unraveling the Complex Nature of the Hydrated Electron

obor: CF

Identifikátor: RIV/61388963: /12:00381404!RIV13-AV0-61388963

Id: 1447

Předkladatel výsledku do Pilíře II.:

IČO: 61388963 Ústav organické chemie a biochemie AV ČR, v.v.i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

All done by IOCB

Odůvodnění předkladatele:

The study selected by Science as Editor's Choice (Science 2012, 338, 583) aims at providing an "authoritative answer" to the question concerning structure of a key intermediate in water radiolysis – the solvated electron. This study concludes a five year research project performed in Prague in collaboration with the University of Southern California and ETH Zurich. It has been aimed at computational and experimental description of ultrafast processes following photoionization of water leading to formation of OH radicals and solvated electrons. The former play a crucial role in indirect DNA damage during radiative cancer treatment, while the latter represent a dangerous reactant in nuclear waste storage. If the solvated electrons are not efficiently neutralized, they can react in the acidic environment of aqueous nuclear waste with protons forming a potentially explosive hydrogen gas. The present computational study, performed solely at IOCB, provides a detailed view on the structure and dynamics of the solvated electron. Thanks to a state-of-the-art methodology combining quantum chemistry and molecular dynamics techniques we were able to solve a 40-year old riddle about how an electron "dissolves" in water.

Odůvodnění panelu:

This original paper answers, for the first time, the question as to how an electron "dissolves" in water. It combines state-of-the-art experimental methods with quantum chemistry and molecular dynamics calculations. It provides computational and experimental descriptions of the ultrafast processes that follow photoionization of water, producing OH radicals and solvated electrons. The former play a crucial role in indirect DNA damage during radiative cancer treatment, while the latter represent a dangerous reactant in nuclear waste storage. High-prestige journal, substantial number of citations

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

An Ultimate Stereocontrol in Asymmetric Synthesis of Optically Pure Fully Aromatic Helicenes

obor: CC

Identifikátor: RIV/61388963: /15:00446394!RIV16-AV0-61388963

Id: 96

Předkladatel výsledku do Pilíře II.:

IČO: 61388963 Ústav organické chemie a biochemie AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The IOCB group: I.S. and I.G.S. planned the project and designed the compounds. M.Š. and S.C. performed the synthesis and characterisation of products. J.R. performed analyses of the nonracemic compounds. J.V.C. and J.V. performed the quantum chemical calculations. I.S. and I.G.S. supervised the experiments and wrote the manuscript.

Odůvodnění předkladatele:

The role of the helicity of small molecules in enantioselective catalysis, molecular recognition, self-assembly, material science, biology, and nanoscience is much less understood than that of point-, axial-, or planar-chiral molecules. To uncover the envisaged potential of helically chiral polyaromatics represented by iconic helicenes, their availability in an optically pure form through asymmetric synthesis is urgently needed. We provide a solution to this problem present since the birth of helicene chemistry in 1956 by developing a general synthetic methodology for the preparation of uniformly enantiopure fully aromatic [5]-, [6]-, and [7]helicenes and their functionalized derivatives. [2 + 2 + 2] Cycloisomerization of chiral triynes combined with asymmetric transformation of the first kind (ultimately controlled by the 1,3-allylic-type strain) is central to this endeavor. The point-to-helical chirality transfer utilizing a traceless chiral auxiliary features a remarkable resistance to diverse structural perturbations.

Odůvodnění panelu:

A general synthetic methodology for the preparation of enantio-pure fully aromatic helicenes and their functionalized derivatives was developed. This result opens a way to a systematic study of helicity of small molecules in enantioselective catalysis, molecular recognition, self-assembly, material science, biology, and nanoscience.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

A Fully Size-Resolved Perspective on the Crystallization of Water Clusters

obor: CF

Identifikátor: **RIV/60461373:22340/12:43894062!RIV13-GA0-22340**

Id: 31

Předkladatel výsledku do Pilíře II.:

IČO: 60461373 Vysoká škola chemicko-technologická v Praze, Fakulta chemicko-inženýrská

Podíl předkladatele na výsledku: **20 %**

Popis podílu předkladatele:

20% |This work in a highly-ranked Science journal resulted from a long-term (and still ongoing) collaboration between the Slaviček group (UCT) and the group of Thomas Zeuch (Göttingen University). The idea of IR-CIPI spectroscopy resulted from theoretical simulations on the temperature dependence of photoionization spectra. Petr Slaviček has significantly contributed to the interpretation of the results and formulation of the Science report.

Odůvodnění předkladatele:

This work provided the first molecular view of the onset of crystallization. It is known that small aggregates of water cannot form a crystalline state. What is the critical size for molecules to become bulk? We have found that for water it requires several hundred molecules. Such a question might seem as purely curiosity-driven; yet knowledge of small particles aggregation underlies for example qualified modeling of atmospheric processes. In addition, the paper introduces a novel spectroscopy technique for investigation of molecular aggregates, infrared (IR) excitation modulated-chemical ionization assisted photoionization spectroscopy (IR-CIPI). Its development nicely illustrates the close collaboration of theory and experiment. At first, the Slaviček group investigated the formation of a solvated electron from alkali atoms on the surface of molecular clusters. They showed that the ionization potential of the cluster sensitively depends on the cluster temperature. This phenomenon was subsequently used in the IR-CIPI technique developed in the group of Dr. Zeuch and Prof. Buck in Göttingen. Science magazine is one of the top journals in the field, it has Q1 quartile, the ratio between the number in JCR year 2015/number of references 36.7 and H-index 915. The work was supported by Czech Science Foundation project P208/11/0161. The work in the field of interaction of molecules with high-energy radiation continues in Czech Science Foundation project Nr.13_34168S.

Odůvodnění panelu:

A very nice example of clever combination of high-tech experiments and theory. It provides important insight into the transition from a liquid to crystalline state of water.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Ferrate(VI)-Induced Arsenite and Arsenate Removal by In Situ Structural Incorporation into Magnetic Iron(III) Oxide Nanoparticles

obor: CF

Identifikátor: **RIV/61989592:15310/13:33145707!RIV14-MSM-15310**

Id: 516

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **92 %**

Popis podílu předkladatele:

The first, the last and the corresponding author from UP - principal home-made paper.

Odůvodnění předkladatele:

This work addresses the issue of arsenic removal by a new strategy employing ferrate(VI) as strong oxidation agent. Two mechanisms of removal were identified, i.e., sorption and embedding. The incorporation of arsenic into the crystal structure of γ -Fe₂O₃ nanoparticles as reaction products of ferrate(VI) in water represents an impressive way to firmly trap pollutants from aqueous media avoiding leaching back to the environment. In addition, complete removal is achieved at a ratio of Fe:As = 2:1, much lower than in the case of sorbents commonly used for arsenic removal. The study was designed and conducted by workers of RCPTM.

Odůvodnění panelu:

This excellent paper reports the new original method of arsenite and arsenate removal from water. Authors demonstrated the capability to trap arsenic into the crystal structure of iron(III) oxide nanoparticles that are in situ formed during treatment of arsenic-bearing water with ferrate(VI). The As-containing iron(III) oxide nanoparticles are strongly magnetic allowing their simple separation from the environment by application of an external magnet. The excellent results obtained by authors enrich the knowledge in the field of environment protection.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

How insulin engages its primary binding site on the insulin receptor

obor: CE

Identifikátor: RIV/61388963: /13:00391760!RIV14-AV0-61388963

Id: 629

Předkladatel výsledku do Pilíře II.:

IČO: 61388963 Ústav organické chemie a biochemie AV ČR, v.v.i.

Podíl předkladatele na výsledku: **17,3 %**

Popis podílu předkladatele:

IOCB scientists have designed, synthesized and characterized a series of 5 insulin analogues, which were used in co-crystallization experiments with insulin receptor fragments.

Odůvodnění předkladatele:

Insulin and insulin receptor signaling have a central role in mammalian biology, regulating cellular metabolism, growth, division, differentiation and survival. Defects in insulin secretion or signaling cause serious disease, diabetes mellitus. The action of insulin is mediated by its binding to a specific cell membrane tyrosine kinase receptor. Despite more than three decades of investigation, the three-dimensional structure of the insulin–insulin receptor complex has proved elusive, confounded by the complexity of producing the receptor protein and by dynamics of interaction. The collaborative effort of four international teams from Australia, United States, United Kingdom and Czech Republic resulted in the preparation and analysis of crystals of a complex of insulin with insulin receptor and in the first view of the interaction of insulin with its primary binding site on the insulin receptor. The scientists from IOCB contributed by a development of highly active insulin analogs, which facilitated co-crystallization process. The elucidation of insulin-receptor interaction provided an explanation for a wealth of biochemical data from the insulin receptor and IGF-1 receptor systems and may assist in the development of more effective therapies for treating diabetes.

Odůvodnění panelu:

The paper presents collaborative effort of four international teams from Australia, United States, United Kingdom and Czech Republic resulted in the first view of the interaction of insulin with its primary binding site on the insulin receptor. The article has been published in the one of the best journal Nature (IF 41), has been extensively cited, and potentiality can influence further development in the discipline.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Reactivity of Fluorographene: A Facile Way toward Graphene Derivatives

obor: CF

Identifikátor: **RIV/61989592:15310/15:33156431!RIV16-MSM-15310**

Id: 1125

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The work was exclusively designed and conducted at UP.

Odůvodnění předkladatele:

We demonstrated facile reactivity of fluorographene under ambient conditions with nucleophiles. The considerable reactivity of FG indicates that it is a viable precursor for the synthesis of graphene derivatives and cannot be regarded as a chemical counterpart of Teflon. This work opened new doors for synthesis of graphene derivatives. The paper receives attention and it has been 13 times cited.

Odůvodnění panelu:

Very sound research proposing a new ways to synthesise various graphene derivatives. Potential for future applications, obviously attracted attention

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Thiofluorographene-Hydrophilic Graphene Derivative with Semiconducting and Genosensing Properties

obor: CA

Identifikátor: **RIV/61989592:15310/15:33154798!RIV16-MSM-15310**

Id: 1407

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **82 %**

Popis podílu předkladatele:

The work was designed and dominantly conducted in Olomouc. The first, the last and the corresponding author from UP.

Odůvodnění předkladatele:

We presented efficient grafting of –SH groups to graphene through nucleophilic substitution of fluorine in a polar solvent. The resulting thiographene-like, 2D derivative was hydrophilic with semiconducting properties and bandgap between 1 and 2 eV depending on F/SH ratio. Thiofluorographene can be applied in DNA biosensing. The paper resonates in the community and received 15 citations.

Odůvodnění panelu:

Novel method for efficient grafting of –SH groups to graphene through nucleophilic substitution of fluorine in a polar solvent. Impinges on DNA biosensing, for which the produced thiofluorographene can be applied.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Describing Noncovalent Interactions beyond the Common Approximations: How Accurate Is the "Gold Standard," CCSD(T) at the Complete Basis Set Limit?

obor: CF

Identifikátor: RIV/61388963: /13:00394196!RIV14-AV0-61388963

Id: 338

Předkladatel výsledku do Pilíře II.:

IČO: 61388963 Ústav organické chemie a biochemie AV ČR, v.v.i.

Podíl předkladatele na výsledku: 100 %

Popis podílu předkladatele:

All done by IOCB.

Odůvodnění předkladatele:

In this paper, we have quantified the effects of approximations usually made even in accurate CCSD(T)/CBS calculations of noncovalent interactions, often considered as the "gold standard" of computational chemistry. We have investigated the effect of excitation series truncation, frozen core approximation, and relativistic effects in a set of 24 model complexes. The final CCSD(T) results at the complete basis set limit with corrections to these approximations are the most accurate estimate of the true interaction energies in noncovalent complexes available. The average error due to these approximations was found to be about 1.5% of the interaction energy.

Odůvodnění panelu:

This paper is a compilation of results, aimed at validating a popular method/approximation in quantum chemistry, CCSD(T)/CBS, for noncovalent interactions. It is a highly useful paper and very well cited

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Direct observation of the collapse of the delocalized excess electron in water

obor: CF

Identifikátor: RIV/61388963: /14:00432523!RIV15-AV0-61388963

Id: 367

Předkladatel výsledku do Pilíře II.:

IČO: 61388963 Ústav organické chemie a biochemie AV ČR, v. v. i.

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

0

Odůvodnění předkladatele:

It is generally assumed that the hydrated electron occupies a quasi-spherical cavity surrounded by only a few water molecules in its equilibrated state. However, in the very moment of its generation, before water has had time to respond to the extra charge, it is expected to be significantly larger in size. According to a particle-in-a-box picture, the frequency of its absorption spectrum is a sensitive measure of the initial size of the electronic wavefunction. Here, using transient terahertz spectroscopy, we show that the excess electron initially absorbs in the far-infrared at a frequency for which accompanying ab initio molecular dynamics simulations estimate an initial delocalization length of ~ 40 Å. The electron subsequently shrinks due to solvation and thereby leaves the terahertz observation window very quickly, within ~ 200 fs.

Odůvodnění panelu:

This excellent paper represents fundamental study of hydrated electron using transient terahertz spectroscopy. Experimental results show that the excess electron initially absorbs in the far-infrared frequency and molecular dynamics simulations estimate an initial delocalization length. The excellent results obtained by authors enrich the fundamental knowledge in chemistry.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Optically Transparent Cathode for Dye-Sensitized Solar Cells Based on Graphene Nanoplatelets

obor: CG

Identifikátor: RIV/61388955: /11:00358445!RIV12-AV0-61388955

Id: 992

Předkladatel výsledku do Pilíře II.:

IČO: 61388955 Ústav fyzikální chemie J. Heyrovského AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The JHI contribution is 100% (other institution is foreign partner).

Odůvodnění předkladatele:

A particularly active counterelectrode was developed for dye sensitized solar cell (DSC) with the I₃⁻/I⁻ redox couple in the electrolyte. For the first time, a strikingly higher activity was found in ionic-liquid electrolyte and simple relations was found between optical transparency and electrochemical impedance. The solar conversion efficiencies of our DSCs are larger by a factor of about two compared to those in earlier reports on DSCs with graphene-based cathode. This paper shows a strategy how to replace both Pt and F-doped SnO₂ in DSC cathodes.

Odůvodnění panelu:

Innovative work with technological implications: Development of a particularly active counterelectrode for dye sensitized solar cells (DSC). The new device produces a strikingly higher activity in ionic-liquid electrolyte, it gives rise to simple relations between optical transparency and electrochemical impedance, and solar conversion efficiencies larger by a factor of about two compared to those in earlier reports on DSCs with graphene-based cathode

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Photoluminescence effects of graphitic core size and surface functional groups in carbon dots: COO- induced red-shift emission

obor: CF

Identifikátor: **RIV/61989592:15310/14:33151727!RIV15-MSM-15310**

Id: 1026

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **95 %**

Popis podílu předkladatele:

The first, the last and the corresponding author from UP - principal home-made paper.

Odůvodnění předkladatele:

This paper represents an important brick in our understanding of the origin of photoluminescence of lipophilic/hydrophilic photoluminescent carbon dots (CDs). Depending on the gallic acid derivative used, CDs with different alkyl groups (methyl, propyl, lauryl) on the surface were shown to be obtainable by isothermal heating. This precursor-derived approach allowed not only the control of lipophilicity but the control over both the size and photoluminescence (PL) of the prepared CDs in agreement with TD-DFT calculations.

Odůvodnění panelu:

Original, interesting paper contributing to the understanding of the origin of photoluminescence of lipophilic/hydrophilic photoluminescent carbon dots, an area of substantial current interest. Journal of some prestige, respectable number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Polyacrylate-Assisted Size Control of Silver Nanoparticles and Their Catalytic Activity

obor: CF

Identifikátor: **RIV/61989592:15310/14:33151890!RIV15-MSM-15310**

Id: 1042

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The first, the last and the corresponding author from UP - principal home-made paper.

Odůvodnění předkladatele:

In this work original simple one-step method of silver nanoparticles (NPs) preparation with controlled size in the wide range from 28 nm to 77 nm was introduced. The prepared silver NPs were proved as efficient catalysts for redox reactions fulfilling the Langmuir-Hinshelwood model of heterogeneous catalysis.

Odůvodnění panelu:

A novel, original, and simple one-step method to prepare silver nanoparticles (NPs) with controlled sizes in the wide range from 28 nm to 77 nm has been developed. Impinges on catalysis.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Quaternized Carbon Dots Modified Graphene Oxide for Selective Cell Labelling – Controlled Nucleus and Cytoplasm Imaging

obor: CF

Identifikátor: **RIV/61989592:15310/14:33151741!RIV15-MSM-15310**

Id: 1107

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **91 %**

Popis podílu předkladatele:

The first, the last and the corresponding author from UP - principal home-made paper.

Odůvodnění předkladatele:

This work presents a novel tool for a selective labeling of cell nucleus using a combination of cationic quaternized carbon dots (QCDs) and anionic graphene oxide sheets (GO). The selectivity of the labeling is achieved via a gradual loading of QCDs on a graphene oxide sheet. Moreover, this work was promoted as cover art.

Odůvodnění panelu:

This excellent paper represents a novel tool for a selective labeling of cell nucleus using a combination of cationic quaternized carbon dots and anionic graphene oxide sheets. The selectivity of the labeling is achieved via a gradual loading of QCDs on a graphene oxide sheet. The excellent results obtained by authors enrich the knowledge in application of graphene materials

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Refinement of the Cornell et al. Nucleic Acids Force Field Based on Reference Quantum Chemical Calculations of Glycosidic Torsion Profiles

obor: CF

Identifikátor: **RIV/61989592:15310/11:10224678!RIV12-MSM-15310**

Id: 1135

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **62 %**

Popis podílu předkladatele:

The first, the last and the corresponding author from UP - principal home-made paper.

Odůvodnění předkladatele:

In this work we present a new empirical parameters for RNA simulations, which overcome problem of formation of artificial senseless structural motifs, which appeared in RNA molecular dynamics simulations. This force field modification is today recommended as a standard force field for RNA simulations and has been adopted to the standard AMBER force fields ff10 and ff12. In Web Of Science - referenced as "highly cited paper"

Odůvodnění panelu:

An important paper in the field of molecular dynamics simulation. The authors reparametrized AMBER force field for RNA structures on the basis of quantum chemical calculations. This reparametrization helped to resolve certain problems suffered by the previous force fields. The new parametrization is broadly used in the MD community dealing with RNA simulations as evidenced by high citation rate.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Surface Effects on Aggregation Kinetics of Amyloidogenic Peptides

obor: CF

Identifikátor: **RIV/00216224:14740/14:00073857!RIV15-MSM-14740**

Id: 1282

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Středoevropský technologický institut

Podíl předkladatele na výsledku: **70 %**

Popis podílu předkladatele:

Major part of the work on this article has been performed at MU as indicated by Robert Vacha being at the same time the first and corresponding author.

Odůvodnění předkladatele:

Times Cited: 29 Category Normalized Citation Impact: 2,27 Percentile in Subject Area: 10,92 Journal Impact Factor: 13,038 The article bridges the fields of life sciences and nanotechnology and the importance of the findings is demonstrated by 18 citations within 1.5 years from publication in journals including Nature Communications, Nanoscale, Angewandte Chemie, or Small. The explanation of the mechanism of protein aggregation in presence of surfaces or nanoparticles is useful for applications in medicine (Alzheimer and Parkinson diseases) and nanotechnology (nanosensors).

Odůvodnění panelu:

Elucidation of the mechanism for protein aggregation in the presence of surfaces or nanoparticles with implications for medicinal research and nanotechnology. Substantial contribution, high-prestige journal, respectable number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

A General Approach to Optically Pure [5]-, [6]-, and [7]Heterohelicenes

obor: CC

Identifikátor: RIV/61388963: /12:00377080!RIV13-AV0-61388963

Id: 32

Předkladatel výsledku do Pilíře II.:

IČO: 61388963 Institute of Organic Chemistry and Biochemistry AS CR, v.v.i.

Podíl předkladatele na výsledku: **90,9 %**

Popis podílu předkladatele:

I.S. and I.G.S. planned the project and designed the compounds. J.Ž., A.J., A.A. and M.Š. performed the synthesis and characterisation. J.V.C. and J.V. performed the quantum chemical calculations. I.S. and I.G.S. supervised the experiments and wrote the manuscript.

Odůvodnění předkladatele:

We have developed a general methodology for the preparation of optically pure helically chiral heterohelicenes for the first time. It is based on a cobalt- or nickel-catalysed diastereoselective cycloisomerisation of chiral triynes to deliver helicenes comprising two heterocyclic units. The major advantages of this methodology are that the stereochemical outcome (uniformly 100:0) depends neither on the helicene length nor the functional group(s) present. Moreover, the synthesized short pentahelicene derivatives exist as single helices even at higher temperature (in contrast to the parent pentahelicene that racemises at room temperature) and both enantiomers of the key chiral building block are commercially available. Finally, the helicity of the products can be easily predicted computationally. The modified helicenes might widely be applied to, e.g., enantioselective catalysis.

Odůvodnění panelu:

Novel synthetic approach providing defined chirality of the final products belonging to helicenes, rather general and robust strategy. Target compounds have high potential as catalysts. Top journal, highly cited result.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Deactivation of HDS catalysts in deoxygenation of vegetable oils

obor: CC

Identifikátor: RIV/62243136: /11:#0000184!RIV12-MPO-62243136 Id: 322

Předkladatel výsledku do Pilíře II.:

IČO: 62243136 Unipetrol výzkumně vzdělávací centrum, a.s., Unipetrol výzkumně vzdělávací centrum, a.s.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The publication was fully created by researchers of Research Institute of Inorganic chemistry, which was renamed to Unipetrol výzkumně vzdělávací centrum (English: Unipetrol Centre for Research and Education) at the beginning of the year 2016. Catalytic conversion of rapeseed oils in various purity were carried out in our reactors of experimental facilities. Experiments were controlled by our operators. Experiments were fully designed and prepared by our employees. Balancing and data proceeding from continuous experiments were completely performed by the article's authors, which were both our employees in the time of paper preparing and publishing. Products characterization was completely performed in our analytical laboratories.

Odůvodnění předkladatele:

The article is focused on the detailed study of a deactivation of HDS catalysts in deoxygenation of vegetable oils. Several rapeseed oils with different degree of upgrading were used as feedstocks for deoxygenation over sulfided CoMo/ -Al₂O₃ catalyst. The rapeseed oil samples differed in the concentration of inorganic impurities, water, free fatty acids and phospholipids. The catalytic experiments were carried out in a fixed bed reactor at constant reaction conditions (310 °C, WHSV=2h⁻¹, hydrogen pressure 3.5 MPa). Refined rapeseed oils were converted to hydrocarbons more efficiently than neat rapeseed oil, trap grease and waste oil. The high concentration of phospholipids in trap grease was the most likely cause of catalyst deactivation by coking. Decomposition of phospholipids as well as oligomerization of rapeseed oil by phosphoric acid at 310 °C was confirmed by separate laboratory experiments. This is of key importance for the potential industrial application of the vegetable oils hydroprocessing that is considered as the key technologies for introducing renewable raw materials into the current fuels pool. Hence, the article has provided very important information for the scientific community on a correlation between the chemical composition of starting feedstock and catalyst properties. The article has been 69 times cited according to Web of science.

Odůvodnění panelu:

Contribution in good journal (IF=4) achieved very high number of citations (74) considering the relevant branch of chemistry. The scope of research - catalytic conversion of rapeseed oil products with elucidation of the role and effects of sulfur-containing compounds will contribute to the current interest in production of fuel additives of biological origin.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Engineering Enzyme Stability and Resistance to an Organic Cosolvent by Modification of Residues in the Access Tunnel

obor: CE

Identifikátor: **RIV/00216224:14310/13:00066682!RIV14-MSM-14310**

Id: 453

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **90 %**

Popis podílu předkladatele:

Concept and design of experiments was carried out by authors from Masaryk University. Co-authors contributed by specialized analytical technique.

Odůvodnění předkladatele:

Times Cited: 26 Category Normalized Citation Impact: 1,77 Percentile in Subject Area: 15,68 Journal Impact Factor: 11,709 In this article we demonstrate that mutations targeting as few as four residues lining the access tunnel extended enzyme's half-life in 40% dimethyl sulfoxide from minutes to weeks (4,000-fold) and increased its melting temperature by 19 °C. The broad applicability of this concept was verified by analyzing twenty six proteins with buried active sites from all six enzyme classes. The concept described in this article is accompanied also by an international patent.

Odůvodnění panelu:

No universal engineering strategy for protein stabilization in solvents is currently available. The authors developed a concept identifying structural features of the enzymes possessing buried active sites governing their stability and resistance to organic cosolvents. *Angewandte Chemie Int. Ed.* 2013 (IF 12.1) cited 28x

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Observation of Paramagnetic Raman Optical Activity of Nitrogen Dioxide

obor: CF

Identifikátor: RIV/61388963: /14:00434058!RIV15-AV0-61388963

Id: 958

Předkladatel výsledku do Pilíře II.:

IČO: 61388963 Ústav organické chemie a biochemie AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

0

Odůvodnění předkladatele:

Raman optical activity (ROA) detects the intensity difference between right and left circularly polarized scattered light, and thus brings about enhanced information about the molecules under investigation. The difference is quite small and the technique is mostly constrained to the condensed phase. For NO₂ in the presence of a static magnetic field, however, the ROA signal with high ROA/Raman intensity ratio was observed. The signal is so strong owing to molecular paramagnetism and a pre-resonance signal enhancement. The spectral shape was explained on the basis of the Fermi golden rule and rotational wave functions expanded to a spherical top basis. The results indicate that the technique can be immediately used to obtain information about molecular properties, such as polarizability components. It also has a potential to detect other paramagnetic gases and discriminate among them.

Odůvodnění panelu:

This article presents the excellent study of NO₂ using the Raman optical activity spectroscopy in comparison with quantum chemical computations. Authors were explained the spectral shape on the basis of the Fermi golden rule. The results indicate that the technique can be immediately used to obtain information about molecular properties, such as polarizability components. These new results obtained by authors enrich the fundamental knowledges of chemistry.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Probing Isomers of the Benzene Dication in a Low-Temperature Trap

obor: CC

Identifikátor: **RIV/00216208:11310/14:10271745!RIV15-MSM-11310**

Id: 1078

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Charles University 100%

Odůvodnění předkladatele:

This is the first paper, where we demonstrated using of our helium tagging infrared photodissociation (IRPD) spectroscopy for the investigation of isomeric ions. We have studied the structure of doubly ionized benzene. It was theoretically predicted that the structure should correspond to the pyramidal isomer with a C₅H₅ base and CH at the apex. We have experimentally showed that the double ionization of benzene yields primarily high-energy dications with a six-membered-ring structure. Nevertheless, the dications subsequently undergo rearrangement to the more stable pyramidal isomer. We were able to measure the IRPD spectra of the classical and pyramidal dications separately by using two-color irradiation scheme. Hence, this is the first experimental evidence of the predicted pyramidal benzene-dication structure.

Odůvodnění panelu:

Highly interesting contribution in an area of substantial current interest. High-prestige journal

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Reaction Intermediates Kinetics in Solution Investigated by Electrospray Ionization Mass Spectrometry: Diaurated Complexes

obor: CC

Identifikátor: **RIV/00216208:11310/15:10315862!RIV16-MSM-11310**

Id: 1123

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% | Charles University, Faculty of Science 100%

Odůvodnění předkladatele:

A new method to investigate the reaction kinetics of intermediates in solution by electrospray ionization mass spectrometry is presented. The method, referred to as Delayed Reactant Labeling, allows investigation of a reaction mixture containing isotopically labeled and unlabeled reactants with different reaction times. It is shown that we can extract rate constants for the degradation of reaction intermediates and investigate the effects of various reaction conditions on their half-life. This method directly addresses the problem of the relevance of detected gaseous ions towards the investigated reaction solution. It is demonstrated for geminally diaurated intermediates formed in the gold mediated addition of methanol to alkynes. Delayed Reactant Labeling allows us to directly link the kinetics of the diaurated intermediates with the overall reaction kinetics determined by NMR spectroscopy. It is shown that the kinetics of protodeauration of these intermediates mirrors the kinetics of the addition of methanol demonstrating they are directly involved in the catalytic cycle. Formation as well as decomposition of diaurated intermediates can be drastically slowed down by employing bulky ancillary ligands at the gold catalyst; the catalytic cycle then proceeds via monoaurated intermediates. The reaction is investigated for 1-phenylpropyne (Ph-CC-CH₃) using [AuCl(PPh₃)]/AgSbF₆ and [AuCl(IPr)]/AgSbF₆ as model catalysts. Delayed Reactant Labeling is achieved by using a combination of CH₃OH and CD₃OH or Ph-CC-CH₃ and Ph-CC-CD₃.

Odůvodnění panelu:

A new sophisticated method for analysis of complex reaction kinetics in solutions including intermediates is presented. It is based on investigation of a reaction mixture containing isotopically labeled and unlabeled reactants at different reaction times by electron spray mass spectrometry and link the kinetics of intermediates with the overall reaction kinetics followed by NMR.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

The Dominant Role of Chalcogen Bonding in the Crystal Packing of 2D/3D Aromatics

obor: CA

Identifikátor: RIV/61388963: /14:00434589!RIV15-AV0-61388963

Id: 1334

Předkladatel výsledku do Pilíře II.:

IČO: 61388980 Ústav anorganické chemie AV ČR, v. v. i.

Podíl předkladatele na výsledku: **25 %**

Popis podílu předkladatele:

On the basis of the project idea and subsequent contribution to writing up the paper, 25 % of the overall contribution sounds adequate.

Odůvodnění předkladatele:

Chalcogen bond observed is a nonclassical noncovalent interaction between three-dimensional aromatic thiaboranes of the icosahedral shape and two-dimensional aromatic benzene. The phenyl-substituted thiaborane, synthesised and crystalized in this study forms such sulphur...? chalcogen bond that is stronger than in organic molecules. The existence of a highly positive σ -hole on the positively charged sulphur atom accounts for it, which has high impact in crystal engineering and drug design.

Odůvodnění panelu:

The chalcogen bond belongs to the less-known sigma-hole interactions that influence of packing in the solid state and also is important in medicinal chemistry. In this paper authors indicated this interaction in thiaboranes, harboring a sulfur heteroatom in the icosahedral cage. It is the first example of such interaction in Borane chemistry.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Synthesis of Strongly Fluorescent Graphene Quantum Dots by Cage-Opening Buckminsterfullerene

obor: CA

Identifikátor: **RIV/60461373:22310/15:43899749!RIV16-MSM-22310**

Id: 1296

Předkladatel výsledku do Pilíře II.:

IČO: 60461373 Vysoká škola chemicko-technologická v Praze, Fakulta chemické technologie

Podíl předkladatele na výsledku: **61 %**

Popis podílu předkladatele:

61% |The synthesis, purification and chemical modification of graphene quantum dots was performed at UCT Prague. A majority of the characterization was performed at UCT Prague (XPS, photoluminescence, Raman and FT-IR spectroscopy, MALDI-TOF, DLS), HR-TEM measurements were performed at Institute of Inorganic Chemistry (Rez by Prague) as well as at Nanjiang Technological University. The manuscript was prepared by UCT Prague and Nanjiang technological university.

Odůvodnění předkladatele:

The manuscript reports a novel unique method of the synthesis of graphene quantum dots with uniform size and high luminescence intensity. The developed methods of chemical modifications allowed to tune the luminescence wavelength. This offers a broad potential for biosensing, detection, optoelectronic and other applications. The manuscript was published in a highly ranked journal and received a relatively high number of citations within the short period of time since its publication (it has been ranked among 1 per cent of the mostly cited publications worldwide according to WoS).

Odůvodnění panelu:

An influential paper in the research field of fluorescent graphene quantum dots. The authors presented ways how to modify the wavelengths of fluorescence, making their graphene quantum dots potentially interesting for various applications of nanomaterials. Published in a prestigious journal, highly cited.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

7-Aryl-7-deazaadenine 2'-Deoxyribonucleoside Triphosphates (dNTPs): Better Substrates for DNA Polymerases than dATP in Competitive

obor: CC

Identifikátor: RIV/61388963: /14:00430922!RIV15-AV0-61388963

Id: 12

Předkladatel výsledku do Pilíře II.:

IČO: 61388963 Ústav organické chemie a biochemie AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

0

Odůvodnění předkladatele:

A series of 7-substituted 7-deazaadenine and 5-substituted cytosine 2'-deoxyribonucleoside triphosphates(dNTPs) were tested for their competitive incorporations (in the presence of dATP and dCTP) into DNA by several DNA polymerases by using analysis based on cleavage by restriction endonucleases. 7-Aryl-7-deazaadenine dNTPs were more efficient substrates than dATP because of their higher affinity for the active site of the enzyme, as proved by kinetic measurements and calculations

Odůvodnění panelu:

Novel artificial deoxyribonucleotides tested for incorporation to DNA during synthesis by polymerases. Comprehensive evaluation of affinities to different polymerases, including model of binding in the active site of the enzyme. Potential for labeling of DNA, perhaps also application in DNA manipulation techniques. Top journal, reasonably high number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Electromembrane extraction of amino acids from body fluids followed by capillary electrophoresis with capacitively coupled contactless conductivity detection

obor: CB

Identifikátor: RIV/68081715: /11:00362901!RIV12-AV0-68081715

Id: 443

Předkladatel výsledku do Pilíře II.:

IČO: 68081715 Ústav analytické chemie AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% Institute of Analytical Chemistry of the CAS, v. v. i.

Odůvodnění předkladatele:

Pretreatment of amino acids by means of electromembrane extraction (EME) is hampered by zwitterionic character of the analytes and by the fact that amino acids are poorly transferred across SLMs commonly used in EMEs. In this work, operational parameters of EME were optimized to achieve efficient sample clean-up and preconcentration of amino acids from human body fluids. A short segment of porous polypropylene hollow fiber was impregnated with an organic solvent (supported liquid membrane – SLM) and constituted a low cost, single use, disposable extraction unit. Optimization of SLM composition involved addition of a suitable ion-carrier (bis-(2-ethylhexyl)phosphonic acid) to the liquid membrane (1-ethyl-2-nitrobenzene). It has been demonstrated that application of this tailor-made SLM enables efficient EMEs of zwitterionic compounds. Amino acids were transferred as cations from acidified body fluids into acidified acceptor solutions and their transfer was obtained in 10 min extraction time. Interfering matrix components, such as blood particulate matter, blood proteins and small inorganic salts were efficiently eliminated from EME transfer. The resulting acceptor solutions were measured directly by capillary electrophoresis with contactless conductivity detection (CE-C4D). CE-C4D serves as a fast, cheap, robust and precise analytical method with no need for additional amino acid derivatization. Finally, EME-CE-C4D was applied to determination of endogenous and clinical concentrations of essential amino acids in various body fluids, such as urine, plasma, serum and whole blood. The method was also suitable for simple and rapid determination of elevated concentrations of selected markers of inborn metabolic disorders (e.g. phenylalanine for phenylketonuria and branched chain amino acids for maple syrup urine disease) in clinical blood samples.

Odůvodnění panelu:

The authors describe new method suitable for simple and rapid determination of selected markers of inborn metabolic disorders in clinical blood samples. It presents systematically performed and well described analytical work with potential of practical applications. The paper was published in a top analytical journal, is highly-cited having a clear significant impact on the research field.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Intramolecularly Coordinated Organotin Tellurides: Stable or Unstable?

obor: CA

Identifikátor: **RIV/00216275:25310/12:39895353!RIV13-MSM-25310**

Id: 718

Předkladatel výsledku do Pilíře II.:

IČO: 00216275 Univerzita Pardubice, Fakulta chemicko-technologická

Podíl předkladatele na výsledku: **71 %**

Popis podílu předkladatele:

The contribution of the authors from University of Pardubice to realization of this paper was 71,4%.

Odůvodnění předkladatele:

Increasing interest in the chemistry of organotin chalcogenides arises in part from their intriguing chemical and physical properties, providing possible technological applications such as semiconductivity, photoconductivity, or nonlinear optics. In this particular paper, easy step-wise process of oxidation of lowest valent organotin(I) compound dimer to organotin(II) tellurides with both terminal and bridging Sn-Te bonds. Upon addition of further equivalent of elemental tellurium, unprecedented mixed valent tin(II)-tin(IV) telluride is identified, followed by isolation of tin(IV) telluride. All the complexes were identified by the X-ray analysis as well as NMR spectroscopy in solution. Moreover, several side products were also identified supporting thus the reaction mechanisms which are also followed by theoretical methods. The main breakthrough of this paper is the description of all steps of unusual tin complex oxidation by elemental chalcogen which will surely appear in textbooks of advanced inorganic and organometallic chemistry not only because of interest in fundamental reactivity and bonding motifs, but also potential use of some of the products as single source precursors for advanced photo-electronic materials. The excellence of the work is demonstrated by the quality of the journal: *Angewandte Chemie-International Edition* (last IF = 11.709), is a top-ranked journal in the field of Chemistry, Multidisciplinary (rank no. 11 of 163, quartile in category Q1).

Odůvodnění panelu:

Important basic research. It demonstrates that tin(II) tellurides are interesting building blocks for further controlled oxidative diversification to heavy-atom analogs of carboxylic acids and related compounds.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Quantification of the Interaction Forces between Metals and Graphene by Quantum Chemical Calculations and Dynamic Force Measurements under Ambient Conditions

obor: CF

Identifikátor: **RIV/61989592:15310/13:33147756!RIV14-MSM-15310**

Id: 1103

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **61 %**

Popis podílu předkladatele:

The first, the last and the corresponding author from UP - principal home-made paper.

Odůvodnění předkladatele:

In this work we combined atomic force microscopy (AFM) based dynamic force measurements and density functional theory calculations to quantify the interaction between metal-coated AFM tips and graphene under ambient conditions.

Odůvodnění panelu:

The application of graphene based materials in nanoelectronics necessitates their combination with metals. This excellent work reveals the nature of metal-graphene interactions by applying AFM in Peakforce tapping mode complemented by DFT calculations involving all necessary ingredients (hybrid GGA+HF+VdW functional). The obtained affinity of metals to graphene surface nicely scales the experimental results which is essential for the construction of advanced graphene based electronic devices.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

The Orientation and Charge of Water at the Hydrophobic Oil Droplet - Water Interface

obor: CF

Identifikátor: RIV/61388963: /11:00364507!RIV12-AV0-61388963

Id: 1372

Předkladatel výsledku do Pilíře II.:

IČO: 61388963 Ústav organické chemie a biochemie AV ČR, v.v.i.

Podíl předkladatele na výsledku: **14,3 %**

Popis podílu předkladatele:

Molecular dynamics simulations of aqueous interfaces made by IOCB

Odůvodnění předkladatele:

The molecular origin of the exceptional stability of oil emulsions in water was investigated and the earlier explanation in terms of strong interfacial adsorption of hydroxide ions was challenged. Vibrational sum frequency scattering experiments show that the orientation of water molecules can be followed on the oil droplet/water interface. The water orientation on a neat oil droplet/water interface is practically the same as the water orientation on a negatively charged interface. pH dependent experiments show, however, that there is no sign of selective adsorption of hydroxide ions. Molecular dynamics simulations point to a different explanation of the negative interfacial charge, namely, charge transfer between water molecules. Due to a lack of balance between the number of donating and accepting hydrogen bonds of water molecules in the interfacial layer, these water molecules become partially charged. This can account for the negative surface charge that is found in experiments.

Odůvodnění panelu:

The article brings new knowledge on molecular origin of the exceptional stability of oil emulsions in water. The study was published in a highly prestigious journal. Results were interesting for research community as documented by high number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Far-Red-Absorbing Cationic Phthalocyanine Photosensitizers: Synthesis and Evaluation of the Photodynamic Anticancer Activity and the Mode of Cell Death Induction

obor: CC

Identifikátor: **RIV/00216208:11160/15:10297694!RIV16-MSM-11160**

Id: 510

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Farmaceutická fakulta v Hradci Králové

Podíl předkladatele na výsledku: **95 %**

Popis podílu předkladatele:

95% |Main part of the publication (95 %) was performed by Faculty of Pharmacy scientists and the role of Charles University, Faculty of Pharmacy in this project was 100 % in the intellectual (ideas and protocols) and at least 90 % in practical (synthesis, characterization, biological evaluation and data analysis) aspects. C.A., N.V., S.V., M.Miletin., K.R. and Z.P. were responsible for the synthesis and photophysical characterization of the compounds. M.Machacek, and R.E. (Faculty of Medicine in Hradec Kralove) performed biological experiments - R.E. contributed in subcellular localization studies and autophagy assessment (5 % overall contribution in this publication). Contribution of Š.T. was essential in biological protocols design and later phases of manuscript preparation.

Odůvodnění předkladatele:

Philosophy of photodynamic therapy (PDT) of tumors is based on a combination of three basic elements, which are non-toxic per se - molecular oxygen, light, photosensitizer (PS). One of the main goals of current research in this area is to develop PSs, which display minimal toxicity in the absence of activating light, but at the same time are able to maintain a high photodynamic activity after irradiation. In this publication, we present synthetic routes to substances derived from phthalocyanines, which are capable of very effective destruction of tumor cells after irradiation in vitro. Very low inherent toxicity (which ranks among the lowest reported for any PS to this date) renders them as exceptional compounds important for further study and design of new PS. Important findings were obtained from experiments focused on gradual deterioration of individual cellular organelles after activation of intracellularly localized PSs by a light. This latter study is unique in the literature by its concept and contributed to a deeper understanding of the fundamental principles of PDT. This work has been published in the Journal of Medicinal Chemistry, which is 3rd of 59 journals in the field of medical chemistry (Journal Citation Reports), and its importance is documented also by a number of citations (13 in WoS since 2015).

Odůvodnění panelu:

Very important contribution. Phthalocyanine dyes for photodynamic therapy absorbing at red light, which penetrates tissues the deepest. The zinc complexes have a very good profile of high quantum yield, submicromolar phototoxicity, but low dark toxicity. the cellular localization and their mechanism of action was determined.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Acute and Chronic Toxicity Effects of Silver Nanoparticles (NPs) on *Drosophila melanogaster*

obor: CA

Identifikátor: RIV/61989592:15310/11:33118640!RIV12-MSM-15310

Id: 62

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **88 %**

Popis podílu předkladatele:

The first, the last and the corresponding author from UP - principal home-made paper.

Odůvodnění předkladatele:

The exclusivity of this work is based on the presentation of the first study of chronic toxicity of silver NPs against *Drosophila* which showed adaptability of this organism to the silver NPs exposure. The long-term exposure of flies at low concentration of silver NPs (5 mg/L of cultivation media - acute toxic effect (LC50) was observed at concentration equal to 20 mg/L) influenced the fertility of during the first three filial generations, nevertheless the fecundity of flies in subsequent generations consequently increased up to the level of the flies from the control sample.

Odůvodnění panelu:

Interesting insight into toxicologic properties of nanoparticle; actual theme connected with growing use of nanoparticles; published in prestigious environmental focused journal; adequate citation response

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Carboxylate-assisted C-H activation of phenylpyridines with copper, palladium and ruthenium: a mass spectrometry and DFT study

obor: CC

Identifikátor: **RIV/00216208:11310/15:10311963!RIV16-MSM-11310**

Id: 212

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% | Charles University, Faculty of Science 100%

Odůvodnění předkladatele:

The C-H activation of 2-phenylpyridine, catalyzed by copper(II), palladium(II) and ruthenium(II) carboxylates, was studied in the gas phase. ESI-MS, infrared multiphoton dissociation spectroscopy and quantum chemical calculations were combined to investigate the intermediate species in the reaction. Collision induced dissociation (CID) experiments and DFT calculations allowed estimation of the energy required for this C-H activation step and the subsequent acetic acid loss. Hammett plots constructed from the CID experiments using different copper carboxylates as catalysts revealed that the use of stronger acids accelerates the C-H activation step. The reasoning can be traced from the associated transition structures that suggest a concerted mechanism and the key effect of the carbon-metal bond pre-formation. Carboxylates derived from stronger acids make the metal atom more electrophilic and therefore shift the reaction towards the formation of C-H activated products.

Odůvodnění panelu:

The common features and significant differences of the three different metal complexes in the directed C-H insertion of phenylpyridine derivatives are revealed by this study. The results point to a concerted process. Theoretical investigations support the mechanisms.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Enhancing Sensitivity of Surface Plasmon Resonance Biosensors by Functionalized Gold Nanoparticles: Size Matters

obor: CB

Identifikátor: RIV/67985882: /14:00436358!RIV15-AV0-67985882

Id: 457

Předkladatel výsledku do Pilíře II.:

IČO: 67985882 Ústav fotoniky a elektroniky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The Optical Biosensors Team at the Institute of Photonics and Electronics carried out the whole study.

Odůvodnění předkladatele:

In this paper we investigated how the size of gold nanoparticles (AuNPs) influences their ability to enhance the response of optical biosensors based on surface plasmon resonance (SPR). We have developed a theoretical model that relates the enhancement generated by the AuNPs to their composition, size, and concentration, thus allowing for accurate predictions regarding the SPR sensor response to various AuNPs. The effect of the AuNP size was also investigated experimentally in a model experiment in which detection of a cancer biomarker - carcinoembryonic antigen - was performed. The paper has been published in a high-ranking journal - Analytical Chemistry (Impact Factor: 5.886; ranked 4th of 75 in Analytical chemistry according to WOS). To date the paper has generated 22 citations.

Odůvodnění panelu:

Functionalized gold nanoparticles increase the performance of surface-plasmon resonance based biosensors depending on their size. A theoretical model explaining the observed effects and the prediction of optimal biosensors has been developed and validated.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Explosive Backpacks in Old Termite Workers

obor: CC

Identifikátor: RIV/61388963: /12:00380212!RIV13-AV0-61388963

Id: 503

Předkladatel výsledku do Pilíře II.:

IČO: 61388963 Ústav organické chemie a biochemie AV ČR, v.v.i.

Podíl předkladatele na výsledku: **63,4 %**

Popis podílu předkladatele:

IOCB employees JS, RH, ZD, JP, MM, JC and JK contributed significantly (or entirely) to all aspects of the study and the resulting publication, i.e. study design (JS, RH), anatomical study (JS), behavioural bioassays and statistics (RH), biochemical and mass spectrometric characterization of the BP76 protein (ZD, JP, MM, JK and JC) and writing of the text (JS, RH).

Odůvodnění předkladatele:

By nature, defensive behavior is risky. In social insects, it sometimes becomes suicidal. Our findings emphasize the extreme outcome of kin selection, i.e., the suicidal self-sacrifice of termite workers through kamikaze combat in the Neotropical termite *Neocapritermes taracua*. The described defensive mechanism is exceptional by its nature and mode of action, involving a blue copper-containing protein stored in a "backpack" outside the body, which interacts with compounds from the salivary glands during suicidal body rupture. Furthermore, consistent with theory predicting self-sacrificial behavior to be performed by otherwise least useful individuals, both the weaponry and the readiness to use it develop gradually during the worker's life along with the decline of its working ability. To the best of our knowledge, such an intricate and spectacular defensive adaptation has not yet been described in social insects.

Odůvodnění panelu:

This paper gets an A for originality and for offering a welcome relief from long chemical formulas! Also it is in a super-prestigious journal! And I am fascinated by the idea of kamikaze termites!

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

High ionic liquid content polymeric gel membranes: Preparation and performance

obor: CD

Identifikátor: RIV/67985858: /11:00353630!RIV11-AV0-67985858

Id: 605

Předkladatel výsledku do Pilíře II.:

IČO: 67985858 Ústav chemických procesů AV ČR, v. v. i.

Podíl předkladatele na výsledku: **30 %**

Popis podílu předkladatele:

(30%) The team from E. Hála Laboratory of Separation Processes of the Institute of Chemical Process Fundamentals of Czech Academy of Science contributes to this article by the idea of putting ionic liquids into the polymer, measuring of the transport properties, and also writing the article.

Odůvodnění předkladatele:

The article demonstrates the potential of gel membranes with ionic liquid for mix gas separation. The gas permeability strongly rises with the ionic liquid concentration and the transport of larger and more condensable species is favored over that of the smaller molecules. The separation thus changes from a diffusion-controlled process to a solubility controlled one. The CO₂/H₂ selectivity is unusually high for this reason, offering perspectives for application of these membranes in environments where carbon dioxide must be separated from hydrogen while the latter remains at high pressure.

Odůvodnění panelu:

The article demonstrates the potential of gel membranes with ionic liquid for mix gas separation. The unusually high CO₂/H₂ selectivity offers perspectives for application of these membranes for natural gas treatment or for CO₂ sequestration. The paper presents several important results, which are thoroughly discussed, carefully interpreted and clearly explained.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Molecular simulation of aqueous electrolyte solubility. 2. Osmotic ensemble Monte Carlo methodology for free energy and solubility calculations and application to NaCl

obor: CF

Identifikátor: **RIV/44555601:13440/11:43878333!RIV12-MSM-13440**

Id: 897

Předkladatel výsledku do Pilíře II.:

**IČO: 44555601 Univerzita Jana Evangelisty Purkyně v Ústí nad Labem,
Přírodovědecká fakulta**

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

At that time, there were only four papers in literature dealing with the solubility of electrolytes and their results were even contradicting. The same applied to simulations to determine the chemical potential. With respect to the expertise of the three Czech postdocs (Ph.D. in Computer Modeling and Physical Chemistry), professor Smith suggested that they develop a general method to efficiently compute the chemical potential by molecular simulations. He also provided CPU time on the Canadian computing network. The Czech senior researchers were guiding the postdocs through discussions both on the spot and via emails. The postdocs did all the technical work. Professor Smith then participated in the final stage of assessing and summarizing the results, writing the paper and preparing presentations for various meetings.

Odůvodnění předkladatele:

Chemical potential is the key quantity characterizing the properties of mixtures. However, for aqueous solutions of electrolytes its evaluation from molecular simulations is quite a formidable task with only a handful of, and even contradicting, results available. The authors developed a new and computationally efficient methodology and were able to determine the chemical potential over the entire concentration range, and hence also solubility. A novel and general scaling scheme for the coupling parameter was also proposed which can be applied not only to nonpolarizable pairwise additive force fields but also to polarizable ones. The approach is readily extended to involve other solvents, multiple electrolytes, and species complexation reactions. This paper, along with subsequent papers, aroused increased activity in the field and recent studies from other researchers have proved the correctness and efficiency of the proposed approach that has now been adopted also by other laboratories.

Odůvodnění panelu:

This excellent paper represents fundamental study of molecular simulation of aqueous electrolyte solubility. Authors presented a novel molecular simulation tool, the osmotic ensemble Monte Carlo (OEMC) method, for the computationally efficient calculation of the properties of aqueous electrolyte solutions, particularly those involving free energy. The excellent results obtained by authors enrich the fundamental knowledge in chemistry.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Rapid Access to Dibenzohelicenes and their Functionalized Derivatives

obor: CC

Identifikátor: RIV/61388963: /13:00398780!RIV14-AV0-61388963

Id: 1116

Předkladatel výsledku do Pilíře II.:

IČO: 61388963 Ústav organické chemie a biochemie AV ČR, v.v.i.

Podíl předkladatele na výsledku: **81,8 %**

Popis podílu předkladatele:

I.S. and I.G.S. planned the project and designed the compounds. A.J., J.R. and K.C. performed the synthesis and characterisation. J.V.C. and J.V. performed the quantum chemical calculations. I.S. and I.G.S. supervised the experiments and wrote the manuscript.

Odůvodnění předkladatele:

We have developed a general approach to dibenzohelicenes as well as their functionalised derivatives. These helically chiral aromatics can be synthesised within a few steps in good overall yields by employing a short sequence of reliable processes such as Sonogashira coupling, Suzuki-Miyaura coupling, desilylation and alkyne cycloisomerisation. There are only scattered examples of dibenzohelicenes described in the literature and this study on their preparation and properties is so far the most comprehensive. Dibenzohelicenes have the advantage over the parent helicenes in the simplicity of their nonphotochemical preparation and, therefore, they have a potential to mimic or even substitute parent helicenes in the envisaged applications to enantioselective catalysis, chiroptical devices or other areas of nanoscience. Moreover, we have demonstrated one of the highest enantiocontrol in the asymmetric synthesis of helicenes by transition metal-catalysed alkyne cycloisomerisation and manifested a straightforward approach to the optically pure paradigmatic helicenes.

Odůvodnění panelu:

Novel, general approach to the synthesis of dibenzohelicenes and their functionalised derivatives. The method has exceptionally high enantiocontrol in the asymmetric synthesis of helicenes by transition metal-catalysed alkyne cycloisomerisation and constitutes a straightforward approach to the optically pure paradigmatic helicenes.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Remotely Controlled Diffusion from Magnetic Liposome Microgels

obor: CI

Identifikátor: **RIV/60461373:22340/13:43895499!RIV14-MSM-22340**

Id: 1142

Předkladatel výsledku do Pilíře II.:

IČO: 60461373 Vysoká škola chemicko-technologická v Praze, Fakulta chemicko-inženýrská

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% | 100 %

Odůvodnění předkladatele:

This is the first work that introduces the concept of remotely controlled dosing of reactants into a reaction environment from within microscopic biodegradable reservoirs. The ability to control the local concentration gradients at sub 50 μ m length-scales by releasing exact quantities of an encapsulated chemical payload using radiofrequency signals opens the door for a number of scientific and technological areas such as controlled drug delivery, fundamental research of reaction-diffusion processes, investigation of cellular response to chemical signalling, or direct interfacing between portable electronic devices and chemistry. Thanks to a breakthrough in several previously unrelated areas, namely formulation of liposomes, colloidal stabilisation of magnetic nanoparticles, and fabrication of microgels by drop-on-demand inkjet printing, this work became the first that demonstrates a functional device controllable remotely by radio-frequency signals that is fully compatible with its chemical and biological milieu and whose fabrication is wholly based on colloidal self-assembly. Furthermore, the ability to release the encapsulated chemical payload in an arbitrary ON-OFF sequence, to immobilise additional components such as enzymes into the microgel, and to functionalise its surface by targeting moieties has made it possible to implement the first remotely controllable device for 'point-of-use' synthesis of short-lived species such as ROS in the physiological environment. The paper was published in Langmuir (IF 3.993), a multi-disciplinary journal that belongs to Q1 in six different disciplines and to the top 10% in Colloid and Interface Science. The work was cited 22 times as of December 2016 (WoS) and resulted in multiple funded projects including a 1m contract with a biotechnology start-up.

Odůvodnění panelu:

Very smart concept of controlled release of liposome content from hybrid particles consisting of liposomes carrying the load, microgel environment and magnetite. The last component allows to realize magnetic field stimulated release in the place of interest. Good journal (IF 4) with moderate number of citations (22), but the idea is quite good and high potential for future developments, e.g. specific targeting using surface immobilized antibodies.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Strategies for Stabilization and Activation of Biocatalysts in Organic Solvents

obor: CE

Identifikátor: **RIV/00216224:14310/13:00067016!RIV14-GA0-14310**

Id: 1252

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Know-how is completely under MU arrangement

Odůvodnění předkladatele:

Times Cited: 100 Category Normalized Citation Impact: 7,19 Percentile in Subject Area: 1,12 Journal Impact Factor: 9,307 One of the major barriers to the use of enzymes in industrial biotechnology is their insufficient stability under processing conditions. The use of organic solvent systems instead of aqueous media for enzymatic reactions offers numerous advantages, such as increased solubility of hydrophobic substrates or suppression of water-dependent side reactions. For example, reverse hydrolysis reactions that form esters from acids and alcohols become thermodynamically favorable. However, organic solvents often inactivate enzymes. Industry and academia have devoted considerable effort into developing effective strategies to enhance the lifetime of enzymes in the presence of organic solvents. The strategies can be grouped into three main categories: (i) isolation of novel enzymes functioning under extreme conditions, (ii) modification of enzyme structures to increase their resistance toward nonconventional media, and (iii) modification of the solvent environment to decrease its denaturing effect on enzymes. Here we discuss successful examples representing each of these categories and summarize their advantages and disadvantages. Finally, we highlight some potential future research directions in the field, such as investigation of novel nanomaterials for immobilization, wider application of computational tools for semirational prediction of stabilizing mutations, knowledge-driven modification of key structural elements learned from successfully engineered proteins, and replacement of volatile organic solvents by ionic liquids and deep eutectic solvents.

Odůvodnění panelu:

Influential and highly cited paper that is clearly important for use of biocatalysts in biotechnology. Published in a very good journal in the field

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

The control of graphene double-layer formation in copper-catalyzed chemical vapor deposition

obor: CG

Identifikátor: RIV/61388955: /12:00384497!RIV13-AV0-61388955

Id: 1331

Předkladatel výsledku do Pilíře II.:

IČO: 61388955 Ústav fyzikální chemie J. Heyrovského AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The head of the team (the first and corresponding author of the manuscript) contributed by designing and performing the experiments. The interpretation of results and the preparation of the manuscript was realised equally by all co-authors.

Odůvodnění předkladatele:

Graphene is a new material, which attracted a lot of attention because of its interesting properties and promising potential applications. Consequently, procedures for industrial scale production of graphene must be developed. The chemical vapour deposition method is one of the most promising approaches to obtain graphene on a large scale. However, the quality of graphene is crucial for advanced application in nanoelectronic devices. One of the obstacles often encountered during the chemical vapour deposition process is the formation of small bilayer regions. The presence of bilayers changes locally the electronic structure of graphene, which then becomes detrimental for applications of this material in nanoelectronics. In our work we developed a new approach, which results in a bilayer-free graphene. The method is based on the hydrogen etching of the graphene add-layers directly during the chemical vapour deposition, and consequently no additional treatment of the sample is required. The etching is realized by increasing hydrogen concentration at the final stage of the growth process. The proposed approach is thus very clean and does not require additional agents to be introduced into the reaction mixture. We believe that our work paves the way to the large-scale production of the high-quality graphene.

Odůvodnění panelu:

New original method potentially opening an avenue to large-scale production of high-quality graphene. This work is of high current interest and has possible technological applications. High-prestige journal, respectable number of citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Thermoresponsive polymer micelles as potential nanosized cancerostatics

obor: CE

Identifikátor: RIV/61389013: /15:00447192!RIV16-AV0-61389013

Id: 1406

Předkladatel výsledku do Pilíře II.:

IČO: 61389013 Ústav makromolekulární chemie AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The results described in the presented paper have been achieved solely by our team from the Institute of Macromolecular Chemistry CAS, no other subject has been involved. Our scientific team designed and synthesised all described micellar systems and performed all the physico-chemical and biological characterisation mentioned in the paper.

Odůvodnění předkladatele:

Conjugates of nanosized polymer carriers with chemotherapeutics are considered to be a very promising drug delivery system intended for the treatment of neoplastic diseases. The major benefit is in their high ability for passive accumulation in solid tumors due to the enhanced permeability and retention (EPR) effect, while causing minimal damage to healthy tissues. However, the clinical application of the majority of the nanoparticle-based carriers encounters obstacles related to their relatively laborious preparation, high tendency to aggregate, limited drug loading, and complicated long-term storage. Therefore, we focused on the development of novel thermoresponsive polymer carriers characterized by relatively easy and reproducible preparation, precisely defined chain structure with multiple binding sites along the polymer backbone enabling covalent attachment of drugs, an adjustable unimer/micelle transition temperature, and long-term stability. We demonstrated that the conjugates of thermoresponsive diblock copolymers based on poly[N-(2-hydroxypropyl) methacrylamide]-block-poly[2-(2-methoxyethoxy)ethyl methacrylate] with cancerostatic drug pirarubicin, linked to the hydrophilic block of the copolymer through the hydrolytically degradable hydrazone bonds, could meet the clinical application criteria. The conjugates showed spontaneous pH-driven hydrolysis of the hydrazone bonds, where pirarubicin release proceeded much faster at pH 5.5, corresponding to the intracellular environment than at pH 7.4, corresponding to the blood circulation. Furthermore, the conjugates showed significantly lower cytotoxicity than the free drug and demonstrated the ability to effectively penetrate the cell membrane of model cancer cell lines thereby damaging them. Based on these encouraging results, we believe that the studied conjugates have a great potential to become efficacious in vivo pharmaceuticals.

Odůvodnění panelu:

The anticancer drug pirarubicin was covalently bound and encapsulated in thermoresponsive diblock copolymers as a drug delivery vehicle. The conjugates penetrate the cell membrane and thermally induced conformational changes of the polymer backbone lead to exposure of the drug to hydrolysis. Moreover the polymer conjugates associate with the nuclear membrane thus hindering transport through it. Therefore the conjugates display very good potential for applications

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Enhancement of Activity and Selectivity in Acid-Catalyzed Reactions by Dealuminated Hierarchical Zeolites

obor: CF

Identifikátor: RIV/61388955: /13:00420720!RIV14-AV0-61388955

Id: 454

Předkladatel výsledku do Pilíře II.:

IČO: 61388955 Ústav fyzikální chemie J. Heyrovského AV ČR, v. v. i.

Podíl předkladatele na výsledku: **0 %**

Popis podílu předkladatele:

The work was done mainly by the members of the Department of Structure and Dynamics in Catalysis. HR TEM was obtained in cooperation with J. Jakubec (Institute of Inorganic Chemistry); some of the catalytic data were provided by V. Parvulescu (University Bucharest).

Odůvodnění předkladatele:

Diffusion limitations due to restricted access and slow transport to/from the active site decrease catalyst efficiency and support further transformations of desired products. These facts represent a major drawback in industrial reactions catalysed by zeolites, in hydrocarbon cracking, (hydro)isomerisation, alkylation, and transalkylations. In this study, we demonstrated the feasibility of creation of micro-mesoporous zeolites with protonic sites located exclusively in the shape-selective environment of micropores, easily accessible through mesopores. Micro-mesoporous zeolite catalysts with the enhanced access to the active sites located in the inner part of the crystal provide significantly enhanced activity and selectivity in acid catalysed reactions. The suggested approach opens a new way for elucidation of fundamental aspects of governance of active sites in acid-catalysed reactions, as well as for tailoring properties of zeolite based catalyst for obtaining enhanced functionality.

Odůvodnění panelu:

This excellent paper represents study in the field of zeolite chemistry. Authors demonstrated the feasibility of creation of micro-mesoporous zeolites with protonic sites located exclusively in the shape-selective environment of micropores. The presented approach opens a new way for tailoring properties of zeolite based catalyst for obtaining enhanced functionality. The excellent results obtained by authors enrich the experimental and fundamental knowledge in material chemistry.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Exploiting chemically selective weakness in solids as a route to new porous materials

obor: CF

Identifikátor: **RIV/61388955: /15:00443519!RIV16-AV0-61388955**

Id: 502

Předkladatel výsledku do Pilíře II.:

IČO: 61388955 Ústav fyzikální chemie J. Heyrovského AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The work was done mainly by the members of the Department of Synthesis and catalysis; cooperation with University in St. Andrews (prof. R.E. Morris).

Odůvodnění předkladatele:

We have developed a new synthetic approach for preparation of zeolites (called ADOR) starting from individual zeolitic layers. They can be shifted with a help of proper organic molecules and further connected to form new zeolites. This synthesis protocol opens unbelievable opportunities in zeolite synthesis not achievable by classical solvothermal synthesis. Zeolites contain odd-ring channels and were assumed as „unfeasible“ due to a high energie of the frameworks.

Odůvodnění panelu:

Novel, innovative synthetic method ADOR for preparation of zeolites. Appears to open - in an almost revolutionary manner - new avenues in zeolite synthesis. 100% Czech participation, high-prestige journal, many citations.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

A proposed unified framework for biological invasions

obor: EH

Identifikátor: RIV/00216208:11310/11:10107767!RIV12-MSM-11310

Id: 41

Předkladatel výsledku do Pilíře II.:

IČO: 67985939 Botanický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **20 %**

Popis podílu předkladatele:

20 %. Czech co-authors based at both Charles University in Prague and Institute of Botany CAS, particularly prof. Petr Pyšek, had a very important role in the idea formation and as well as in the writing of the paper.

Odůvodnění předkladatele:

Received grade A in 2015 Pillar II Evaluation of Results of Research Organizations. A mature understanding of the field of biological invasions has been hampered because invasion biologists concerned with different taxa and different environments have largely adopted different model frameworks for the invasion process, resulting in a confusing range of concepts, terms and definitions. We proposed a unified framework for biological invasions that reconciles and integrates the key features of the most commonly used invasion frameworks into a single conceptual model that can be applied to all human-mediated invasions. The unified framework combines previous stage-based and barrier models, and has been published in one of the most influential journals in the field of ecology and evolutionary biology. Over five years since publication, the paper has accumulated over 370 citations in Web of Science, and over 500 on Google Scholar, and has become a standard in the classification of species invasion status. It is ISI Highly Cited Paper.

Odůvodnění panelu:

Tento výsledek byl hodnocen jako excelentní v předchozích letech. Letošní členové panelu EP10 se k němu tedy nevyjadřovali a jeho hodnocení zůstalo nezměněno.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Ecological impacts of invasive alien plants: a meta-analysis of their effects on species, communities and ecosystems

obor: EF

Identifikátor: **RIV/00216208:11310/11:10107770!RIV12-MSM-11310**

Id: 403

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **15 %**

Popis podílu předkladatele:

15% |Charles University, Faculty of Science 15%

Odůvodnění předkladatele:

This study has been rated A in the previous round of evaluation. A global meta-analysis of impacts of invasive plants on resident species, communities and ecosystems revealed that the magnitude and direction of the impact varied both within and between different types of impact. Abundance and diversity of the resident species decreased in invaded sites, whereas primary production and several ecosystem processes were enhanced. Important signal is the fact that by the time changes in nutrient cycling are detected, major impacts on plant species and communities are likely to have already occurred. The paper attracted enormous attention from the research community, gaining over 490 citations on WoS Core Collection years since publication, and has the status of a 'Highly Cited Paper'.

Odůvodnění panelu:

Tento výsledek byl hodnocen jako excelentní v předchozích letech. Letošní členové panelu EP10 se k němu tedy nevyjadřovali a jeho hodnocení zůstalo nezměněno.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Paratrypanosoma Is a Novel Early-Branching Trypanosomatid

obor: EB

Identifikátor: **RIV/60076658:12310/13:43885298!RIV14-MSM-12310**

Id: 1009

Předkladatel výsledku do Pilíře II.:

**IČO: 60076658 Jihočeská univerzita v Českých Budějovicích,
Přírodovědecká fakulta**

Podíl předkladatele na výsledku: **13 %**

Popis podílu předkladatele:

A collaborative effort with two labs in Moscow, Charles University lab of P. Volf and the Archibald lab at Dalhousie University, Halifax. The Lukeš lab has first three shared authors (TS is a PhD student) and the corresponding author and we implemented and lead the project. The collaborators helped with sequencing, sharing the costs and advised on analyses

Odůvodnění předkladatele:

We have discovered a new trypanosomatid, Paratrypanosoma confusum, that constitutes a distinct branch between free-living and obligatory parasitic clades. Individual protein phylogenies plus analyses of concatenated alignments show that P. confusum represents a missing link between ancestral free-living bodonids and derived parasitic trypanosomatids. Further analysis of the P. confusum genome should provide insight into the emergence of parasitism in medically important trypanosomatids.

Odůvodnění panelu:

Tento výsledek byl hodnocen jako excelentní v předchozích letech. Letošní členové panelu EP10 se k němu tedy nevyjadřovali a jeho hodnocení zůstalo nezměněno.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

The impact of an invasive plant changes over time

obor: EH

Identifikátor: **RIV/00216208:11310/13:10191365!RIV14-MSM-11310**

Id: 1357

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **10 %**

Popis podílu předkladatele:

10% |Charles University, Faculty of Science 10%

Odůvodnění předkladatele:

This study has been rated A in the previous round of evaluation. Previous research showed that invasive plants can reduce native biodiversity locally, but their effects become less obvious at larger spatial scales. Dostál et al. (2013) demonstrated that the time-scale can be important, equally as the spatial resolution, when the impacts of exotic organisms are evaluated. Specifically, the authors studied plant communities invaded by *Heracleum mantegazzianum* (giant hogweed) for different time periods and found native species richness to be most reduced at sites invaded for ~30 years. However, native communities largely recovered at sites invaded for a longer period. A complementary experiment indicated that decreasing invader's performance is most likely due to accumulation of specialist soil pathogens over time. The study is thus remarkable not only for showing time-dependent invader's impact, but also for identifying the underlying mechanism. It is a rare empirical demonstration of stabilizing processes promoting the coexistence of species differing in competitive ability. The study has also possible practical implications for the management of the giant hogweed and other noxious invaders. The results were published in the top-ranked ecological journal and were also highlighted by Faculty of 1000 and by "Science for Environment Policy" of the European Commission.

Odůvodnění panelu:

Tento výsledek byl hodnocen jako excelentní v předchozích letech. Letošní členové panelu EP10 se k němu tedy nevyjadřovali a jeho hodnocení zůstalo nezměněno.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Calcium Influx Rescues Adenylate Cyclase-Hemolysin from Rapid Cell Membrane Removal and Enables Phagocyte Permeabilization by Toxin Pores

obor: EE

Identifikátor: **RIV/00216208:11310/12:10118951!RIV13-MSM-11310**

Id: 205

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **20 %**

Popis podílu předkladatele:

20% | Charles University 20%

Odůvodnění předkladatele:

The adenylate cyclase toxin-hemolysin (CyaA, ACT) is a key virulence factor of *Bordetella pertussis*, a gram-negative pathogenic bacterium responsible for whooping cough. CyaA targets myeloid phagocytes expressing the complement receptor 3 and translocates an adenylate cyclase (AC) enzyme into their cytosol. In parallel, CyaA acts as a cytolysin that forms cation-selective pores in target membranes. The interplay between these two activities of CyaA together with the ion fluxes of calcium and potassium ions induced by CyaA obviously control the effect of CyaA, the virulence of *Bordetella* and whooping cough pathogenesis. In this paper we explained the roles of the two putative conformers of CyaA that 1) either induce calcium efflux from cells, relocate into lipid rafts where they translocate the adenylate cyclase (AC) part of the toxin or 2) those which form cation-selective pores that permeabilize phagocyte membrane for efflux of cytosolic potassium. We showed that the calcium-conducting activity of CyaA of the first conformer controls the path and kinetics of endocytic removal of toxin pores from phagocyte membrane formed by the second conformer which enables CyaA to enhance its deleterious effect on the target cell. We described the positive feedback loop where the efflux of cellular potassium induces decreased toxin pore removal from cell membrane and this further enhances cell permeabilization and potassium efflux. The findings important for understanding of the pathogenesis of whooping cough and in vaccinology were obtained in a competitive area of research (IF=7.56) in collaboration with the laboratory of Peter Šebo from the Institute of Microbiology AV ČR. The authors from the Charles University contributed by development of the essential methodology, performing the experiments and writing the paper by Radovan Fišer and by ideological support by Jan Černý and Ivo Konopásek. The work is already included in the list of excellent results of other institutions.

Odůvodnění panelu:

Tento výsledek byl hodnocen jako excelentní v předchozích letech. Letošní členové panelu EP10 se k němu tedy nevyjadřovali a jeho hodnocení zůstalo nezměněno.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

MYB transcriptionally regulates the miR-155 host gene in chronic lymphocytic leukemia

obor: EB

Identifikátor: **RIV/00064165: /11:10277!RIV12-MZ0-00064165** Id: 913

Předkladatel výsledku do Pilíře II.:

IČO: 00064165 Všeobecná fakultní nemocnice v Praze

Podíl předkladatele na výsledku: **14 %**

Popis podílu předkladatele:

Results of the paper Vargova K et al., 2011 were in the main done at 1st Faculty of Medicine in Prague and General University Hospital in Prague. Namely, design of all experiments provided in the paper, patient sample collection, handling of samples, storage and further RNA/DNA extraction and qRT-PCR performance; all routine work with cell lines (freezing, thawing and culturing). Experiments as transfections, immunoblotting, chromatin immunoprecipitation and sample preparation for microarray were also done at 1. Faculty of Medicine in Prague, Department of Pathological Physiology. Data collection, analysis (GSEA analysis and statistics) and writing of paper were done at 1. Faculty of Medicine in Prague, at the Department of Pathological Physiology. At the Medical Faculty, Masaryk University, Brno, Czech Republic was collected 1/3 of patient samples and proceeded the RNA extraction and qRT-PCR measurement with this part of samples. At the New York University Cancer Institute and Center for Health Informatics and Bioinformatics, New York University Langone Medical Center, New York, was performed the microarray profiling.

Odůvodnění předkladatele:

Chronic lymphocytic leukemia (CLL) represents the most frequent leukemia in Western world. It is very heterogeneous disease, characterized by accumulation of non-functional B cells in peripheral blood, spleen, lymph nodes and bone marrow (Hallek M, 2013). By the most used prognostic markers of CLL belong: ZAP-70, CD38 and mutational status of IgVH (Chiorazzi N, 2012). Nevertheless, measurement of these markers is not sufficient. Therefore, in our work, we focused on searching for proper and reliable molecular prognostic/progression markers of CLL. In the last decade, plenty of research groups aim to understand the role of small non-coding miRNA in the process of leukemogenesis. We found out that increased expression of oncogenic miR-155 in patient samples with CLL is due to direct binding of transcriptional factor MYB (v-myeloblastosis viral oncogene) into its binding site at the miR-155 host gene. The main function of miRNAs lies in negative regulation of target gene expression. In leukemic B cells, the increased expression of miR-155 inhibit the key hematopoietic transcription factor PU.1 production. Described model of increased expression of MYB, miR-155 and decreased expression of PU.1 we described in our unfavorable group of patient samples with CLL. Conclusions: Expression of MYB, miR-155 and PU.1 in CLL differs in their expression in normal healthy controls. There exists clinical importance of overexpression of MYB, miR-155 and down-regulation of PU.1 in CLL. Global gene expression profile of CLL patient samples unrolled deregulation of MYB and miR-155 target genes. In vitro changes at levels of MYB, miR-155 and PU.1 showed on tight relationship between these molecules in CLL. Our results could help in evaluation of CLL patients prognosis, namely by measurement of expression profile MYB, miR-155 and PU.1 in their peripheral blood.

Odůvodnění panelu:

Tento výsledek byl hodnocen jako excelentní v předchozích letech. Letošní členové panelu EP10 se k němu tedy nevyjadřovali a jeho hodnocení zůstalo nezměněno.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

The Planar Cell Polarity Pathway Drives Pathogenesis of Chronic Lymphocytic Leukemia by the Regulation of B-Lymphocyte Migration

obor: ED

Identifikátor: **RIV/00216224:14310/13:00065763!RIV14-MSM-14310**

Id: 1378

Předkladatel výsledku do Pilíře II.:

IČO: 68081707 Biofyzikální ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **30 %**

Popis podílu předkladatele:

This study was entirely performed in the Bryja labs (Institute of Biophysics and Masaryk University) in collaboration with the team of local clinicians from the Brno Faculty Hospital.

Odůvodnění předkladatele:

This study for the first time identified the critical role of non-canonical Wnt pathway (also referred to as planar cell polarity (PCP) pathway) in the pathogenesis of chronic lymphocytic leukemia (CLL). Wnt/PCP pathway components are upregulated in B cells of CLL patients and their level increases with CLL progression. Wnt/PCP pathway controls migration and chemotaxis of CLL cells, which subsequently affect the distribution of CLL cells in the patient body and disease development. This study opens a new avenue for diagnostics and treatment of CLL.

Odůvodnění panelu:

Tento výsledek byl hodnocen jako excelentní v předchozích letech. Letošní členové panelu EP10 se k němu tedy nevyjadřovali a jeho hodnocení zůstalo nezměněno.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Horizontal gene transfer from diverse bacteria to an insect genome enables a tripartite nested mealybug symbiosis

obor: EB

Identifikátor: RIV/60076658:12310/13:43885410!RIV14-GA0-12310

Id: 623

Předkladatel výsledku do Pilíře II.:

**IČO: 60076658 Jihočeská univerzita v Českých Budějovicích,
Přírodovědecká fakulta**

Podíl předkladatele na výsledku: 7 %

Popis podílu předkladatele:

FH performed all the genomic, transcriptomic and phylogenetic analyses and wrote the paper together with JM. Other authors participated in provision in preparation of mealybug samples, smaller-scale experiments and manuscript revisions. FH started to work on this project during his 3-month-stay in the JM lab.

Odůvodnění předkladatele:

Genome and transcriptome sequencing revealed 22 expressed horizontally transferred genes from multiple diverse bacteria to the mealybug genome. They likely complement genes missing from the mealybug bacterium-within-bacterium symbiotic system, but none of them was acquired from the current symbionts, but rather from insect reproductive manipulators frequently infecting insect oocytes. The results indicate an unprecedented path to genetic and metabolic mosaicism in multicellular eukaryotes.

Odůvodnění panelu:

Tento výsledek byl hodnocen jako excelentní v předchozích letech. Letošní členové panelu EP10 se k němu tedy nevyjadřovali a jeho hodnocení zůstalo nezměněno.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Ligand-binding properties of a juvenile hormone receptor, Methoprene-tolerant

obor: EB

Identifikátor: **RIV/60076658:12310/11:43882689!RIV12-MSM-12310**

Id: 788

Předkladatel výsledku do Pilíře II.:

**IČO: 60076658 Jihočeská univerzita v Českých Budějovicích,
Přírodovědecká fakulta**

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

The work presented in this article was supervised by Marek Jindra at the Institute of Entomology; Jan Rynes was a graduate student and Keiko Takaki was a postdoctoral fellow in the Jindra laboratory. The French and Australian colleagues were responsible for hormone-binding assays and structural modeling

Odůvodnění předkladatele:

This article (now cited 83 times) effectively identifies the long-sought receptor for the insect juvenile hormone. By introducing specific amino acid replacements into the Methoprene-tolerant (Met) protein, the study defines the hormone-binding pocket of Met and establishes the requirement of juvenile hormone binding for the assembly of the receptor complex by the mutually interacting Met and Taiman proteins

Odůvodnění panelu:

Tento výsledek byl hodnocen jako excelentní v předchozích letech. Letošní členové panelu EP10 se k němu tedy nevyjadřovali a jeho hodnocení zůstalo nezměněno.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Mechanistic basis of infertility of mouse intersubspecific hybrids

obor: EB

Identifikátor: RIV/68378050: /13:00397570!RIV14-AV0-68378050

Id: 848

Předkladatel výsledku do Pilíře II.:

IČO: 67985904 Ústav živočišné fyziologie a genetiky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **10 %**

Popis podílu předkladatele:

The lab of Dr. Anger participated on the life cell imaging experiments of oocytes and on preparation of the manuscript.

Odůvodnění předkladatele:

The focus of this paper was to elucidate the hybrid sterility, which is one of the mechanisms of postzygotic sterility in mammals. This phenomenon is essential for speciation in mammals. We have used closely related subspecies of mice and studied molecular processes, which might be responsible for sterility of resulting hybrids. Our experiments revealed that early meiotic events and preparation of chromosomes for meiotic divisions are impaired in those animals, in both males and females. This study brought a new piece of information about the origin of species in mammals and therefore it is crucially important for advancing our knowledge in biology as well as for crossbreeding of animals in farm production. IF: 9,809, cit.:42

Odůvodnění panelu:

Tento výsledek byl hodnocen jako excelentní v předchozích letech. Letošní členové panelu EP10 se k němu tedy nevyjadřovali a jeho hodnocení zůstalo nezměněno.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Aerobic kinetoplastid flagellate *Phytomonas* does not require heme for viability

obor: EB

Identifikátor: **RIV/60076658:12310/12:43883524!RIV13-MSM-12310**

Id: 73

Předkladatel výsledku do Pilíře II.:

**IČO: 60076658 Jihočeská univerzita v Českých Budějovicích,
Přírodovědecká fakulta**

Podíl předkladatele na výsledku: **35 %**

Popis podílu předkladatele:

Our lab has first, third (PhD student), fifth and corresponding authorship. By my (Lukeš) estimate, more than 80% of experiments were performed in our lab, while some specialized measurements of heme concentration and the activity of complex II were done by our collaborators.

Odůvodnění předkladatele:

We present a discovery that proves that some aerobic organisms can live without heme, as is here the case of the protozoan *Phytomonas*. This is substantial, since so far heme was considered essential for all known forms of life. Moreover, this discovery may contribute to the development of more effective drugs against leishmaniasis, a serious tropical disease that causes the related parasite *Leishmania*, which has striking similarities with *Phytomonas*, when heme pathway is considered.

Odůvodnění panelu:

Tento výsledek byl hodnocen jako excelentní v předchozích letech. Letošní členové panelu EP10 se k němu tedy nevyjadřovali a jeho hodnocení zůstalo nezměněno.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Common and distinct roles of juvenile hormone signaling genes in metamorphosis of holometabolous and hemimetabolous insects

obor: EB

Identifikátor: RIV/60076658:12310/11:43882690!RIV12-MSM-12310

Id: 247

Předkladatel výsledku do Pilíře II.:

**IČO: 60076658 Jihočeská univerzita v Českých Budějovicích,
Přírodovědecká fakulta**

Podíl předkladatele na výsledku: **34 %**

Popis podílu předkladatele:

This study was supervised and written by Marek Jindra at the Institute of Entomology. Experiments were performed by two graduate students of the Jindra laboratory, Barbora Konopova and Vlastimil Smykal.

Odůvodnění předkladatele:

This article (now cited 63 times) identifies the juvenile hormone (JH) receptor Met and its immediate target gene Kr-h1 as the evolutionarily conserved core of the JH signalling pathway that controls metamorphosis in all winged insects. It presents the first evidence that the advanced complete metamorphosis (holometaboly, as in beetles or butterflies) and the primitive hemimetaboly (as in true bugs or cockroaches) rely on the same molecular mechanism.

Odůvodnění panelu:

Tento výsledek byl hodnocen jako excelentní v předchozích letech. Letošní členové panelu EP10 se k němu tedy nevyjadřovali a jeho hodnocení zůstalo nezměněno.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Gain-of-function mutations of PPM1D/Wip1 impair the p53-dependent G1 checkpoint

obor: EB

Identifikátor: RIV/00064165: /13:10192709!RIV14-MZ0-00064165

Id: 558

Předkladatel výsledku do Pilíře II.:

IČO: 00064165 Všeobecná fakultní nemocnice v Praze

Podíl předkladatele na výsledku: **5 %**

Popis podílu předkladatele:

Major part of this project was performed in the Laboratory of Cancer Cell Biology at IMG including identification and functional characterization of PPM1D mutations in cancer cell lines. Libor Macurek designed all experiments, coordinated collaboration between research teams and wrote the manuscript. Life cell imaging and FACS analysis of HCT116 cells was performed at Division of Cell Biology, NKI, Amsterdam. Analysis of breast cancer patients was done at Institute of Biochemistry and Experimental Oncology, Charles University in Prague. Histological analysis of one sample was done at Institute of Pathology, Charles University in Prague and General University Hospital.

Odůvodnění předkladatele:

Here we have identified novel mutations in exon 6 of the PPM1D gene that result in production of an enzymatically active C-terminally truncated Wip1 phosphatase. Truncation of Wip1 increases its protein stability and impairs the ability of cells to activate the tumor-suppressor protein p53. This results in suppressed ability to activate the G1 checkpoint and allows replication in the presence of damaged DNA. We have found these truncating mutations in the PPM1D gene in selected cancer cell lines and in a subset of breast cancer patients. Truncating mutations in PPM1D represent a newly identified genetic defect predisposing the mutation carriers to cancer development. Future studies are needed to explore the intriguing possibility that truncated Wip1 might be a suitable target for personalized cancer therapy.

Odůvodnění panelu:

Tento výsledek byl hodnocen jako excelentní v předchozích letech. Letošní členové panelu EP10 se k němu tedy nevyjadřovali a jeho hodnocení zůstalo nezměněno.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Centromeres Off the Hook: Massive Changes in Centromere Size and Structure Following Duplication of CenH3 Gene in Fabaeae Species

obor: EB

Identifikátor: RIV/60077344: /15:00449763!RIV16-AV0-60077344

Id: 227

Předkladatel výsledku do Pilíře II.:

IČO: 60077344 Biologické centrum AV ČR, v. v. i.

Podíl předkladatele na výsledku: **93 %**

Popis podílu předkladatele:

All authors were BC employees, one of them (Z.P.) had a double affiliation as a PhD student.

Odůvodnění předkladatele:

In most eukaryotes, centromere is determined by the presence of the centromere-specific histone variant CenH3. Two types of chromosome morphology are generally recognized with respect to centromere organization. Monocentric chromosomes possess a single CenH3-containing domain in primary constriction, whereas holocentric chromosomes lack the primary constriction and display dispersed distribution of CenH3. Recently, metapolycentric chromosomes have been reported in *Pisum sativum*, representing an intermediate type of centromere organization characterized by multiple CenH3-containing domains distributed across large parts of chromosomes that still form a single constriction. In this work, we show that this type of centromere is also found in other *Pisum* and closely related *Lathyrus* species, whereas *Vicia* and *Lens* genera, which belong to the same legume tribe Fabaeae, possess only monocentric chromosomes. We observed extensive variability in the size of primary constriction and the arrangement of CenH3 domains both between and within individual *Pisum* and *Lathyrus* species, with no obvious correlation to genome or chromosome size. Search for CenH3 gene sequences revealed two paralogous variants, CenH3-1 and CenH3-2, which originated from a duplication event in the common ancestor of Fabaeae species. The CenH3-1 gene was subsequently lost or silenced in the lineage leading to *Vicia* and *Lens*, whereas both genes are retained in *Pisum* and *Lathyrus*. Both of these genes appear to have evolved under purifying selection and produce functional CenH3 proteins which are fully colocalized. The findings described here provide the first evidence for a highly dynamic centromere structure within a group of closely related species, challenging previous concepts of centromere evolution.

Odůvodnění panelu:

Vynikající experimentální práce ve vynikajícím časopise. Menší počet citací lze odůvodnit nedávným publikováním teprve v červenci 2015.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Sex is a ubiquitous, ancient, and inherent attribute of eukaryotic life

obor: EB

Identifikátor: RIV/61988987:17310/15:A1601EYR!RIV16-GA0-17310

Id: 1186

Předkladatel výsledku do Pilíře II.:

IČO: 61988987 Ostravská univerzita v Ostravě, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **45 %**

Popis podílu předkladatele:

The paper is co-authored by one worker of the University of Ostrava, Marek Eliáš, who is at the same time one of the two corresponding authors. Together with the first author (D. Speijer) he designed the paper, drafted a half of the text, performed the bioinformatic analyses of HAP3 and GEX1 proteins, and prepared two of the three figures.

Odůvodnění předkladatele:

This paper is an invited contribution to a special issue of PNAS devoted to the evolution and significance of clonality. The paper is a combination of a synthesis of published literature concerning evidence of the presence of sexual reproduction across the phylogenetic diversity of eukaryotes with and an original bioinformatic analysis of genomic data providing hints for the presence of sex in eukaryotic groups where such an evidence was previously unavailable. The paper thus provides key new data for the on-going debate on the evolutionary origin and significance of sexual processes in eukaryotes. The significance of the paper is attested also by the fact that in the period of less than 1.5 years since its publication it was cited 16 times according to the WoS database (21 times according to Google Scholar).

Odůvodnění panelu:

Velice kvalitní práce s významným podílem české instituce. Přestože tato práce byla publikována v roce 2015, již v současnosti byla 20x a vzbuzuje pozornost mezinárodní komunity.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Dissection of vertebrate hematopoiesis using zebrafish thrombopoietin

obor: EB

Identifikátor: RIV/68378050: /14:00436400!RIV15-GA0-68378050

Id: 372

Předkladatel výsledku do Pilíře II.:

IČO: 68378050 Ústav molekulární genetiky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **90 %**

Popis podílu předkladatele:

The study was performed jointly in the Laboratory of Cell Differentiation at IMG, AS CR (identification, cloning and expression of recombinant cytokines, in vitro and in vivo assays) and the Department of Cellular and Molecular Medicine, University of California, San Diego, La Jolla, CA, USA (in vivo assays). OS and SDL share co-first authorship. Molecular modelling was performed by JB (Laboratory of Structural Biology at IMG AS CR).

Odůvodnění předkladatele:

In nonmammalian vertebrates, the functional units of hemostasis are thrombocytes. Thrombocytes are thought to arise from bipotent thrombocytic/erythroid progenitors (TEPs). TEPs have been experimentally demonstrated in avian models of hematopoiesis, and mammals possess functional equivalents known as megakaryocyte/erythroid progenitors (MEPs). However, the presence of TEPs in teleosts has only been speculated. Our findings strongly suggest that mammalian megakaryocytes are homologs of non-mammalian thrombocyte progenitors and evolved from them during the course of vertebrate evolution.

Odůvodnění panelu:

Kvalitní experimentální práce ve výborném časopise. Majoritní podíl domácího pracoviště.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Gastrointestinal Autoimmunity Associated With Loss of Central Tolerance to Enteric alpha-Defensins

obor: EB

Identifikátor: RIV/68378050: /15:00446217!RIV16-AV0-68378050

Id: 563

Předkladatel výsledku do Pilíře II.:

IČO: 68378050 Ústav molekulární genetiky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

The design, metodological approaches and execution of all experiments was performed in the Laboratory of Immunobiology at IMG, AS CR. Three other collaborating laboratories supplied serum samples from APECED patients for our testing.

Odůvodnění předkladatele:

In this paper we have shown that the physiological role of enteric α -defensin production in the thymus is critical for the maintenance of central tolerance in the small intestine. These molecules, expressed by Paneth cells in the crypts of small intestine, are also expressed by a sizable fraction of medullary thymic epithelial cells (mTECs) where their expression is dependent on the Autoimmune regulator (AIRE) transcription factor. The immunological consequences of defective enteric α -defensin expression in the thymus were confirmed by the presence of anti-HD5 autoantibodies in the sera of APECED patients who are deficient in AIRE function. Moreover, our new mouse model of APECED demonstrated that self-reactive enteric α -defensin-recognizing T cells alone are sufficient to drive the process of initiation of Paneth cell destruction, leading to intestinal microbiome dysregulation and enhanced Th17 responses which further amplify inflammatory autoimmunity in the intestine. Thus, this study describes the novel mechanism of immune destruction of Paneth cells and its impact on the complex functional gut phenotype of patients with APECED disease.

Odůvodnění panelu:

Výborná práce ukazující, že produkce α -defensinů v thymu je klíčová pro udržování celkové imunologické tolerance v tenkém střevě.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Extracellular Adenosine Mediates a Systemic Metabolic Switch during Immune Response

obor: ED

Identifikátor: **RIV/60076658:12310/15:43888707!RIV16-MSM-12310**

Id: 506

Předkladatel výsledku do Pilíře II.:

**IČO: 60076658 Jihočeská univerzita v Českých Budějovicích,
Přírodovědecká fakulta**

Podíl předkladatele na výsledku: **95 %**

Popis podílu předkladatele:

The whole work was produced at the Faculty of Science in the laboratory of the principal investigator except one particular metabolic measurement at the Biological Centre ASCR

Odůvodnění předkladatele:

Our work represents the first experimental evidence for the recently articulated theoretical concept of “selfish immune system” which explains insulin resistance as a way of immune system to usurp energy during immune response. While this behavior is crucial for effective response, it could also be found behind various metabolic syndromes (as diabetes, obesity etc.) during chronic immune activation. While this concept offers explanation for many human pathologies, it is very difficult to experimentally test this idea. Our model of *Drosophila* larva infection by parasitoid wasps offered such experimental system. Dr. Rainer Straub, the author of the concept, wrote: „Now, I had the chance to read your paper: I was very much impressed by the perfect and extensive work. It is fantastic because it exactly confirms the theory.” Our work also identifies a molecular mechanism for the selfish behavior of immune system which opens new avenues to analyze this mechanism in human where it is most likely conserved. PLoS Biology, where our work was published, represents the top journal for the “Open Access” publishing, it accepted our work without revision with one of the reviewers writing: “To my knowledge this is the best paper of this kind and it is certainly the best paper of this kind in the *Drosophila* immunity literature.

Odůvodnění panelu:

Velmi dobrá práce publikovaná českými pracovníky v prestižním časopise.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

SART3-Dependent Accumulation of Incomplete Spliceosomal snRNPs in Cajal Bodies

obor: EB

Identifikátor: RIV/68378050: /15:00442411!RIV15-AV0-68378050

Id: 1172

Předkladatel výsledku do Pilíře II.:

IČO: 68378050 Ústav molekulární genetiky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **60 %**

Popis podílu předkladatele:

This is fully our project, we planned and performed all experiments except 2-hybrid assay performed at the Institute of Chemical Technology.

Odůvodnění předkladatele:

Pre-mRNA splicing is one of the crucial steps of the gene expression pathway when information stored in DNA is translated into protein structure and function. Splicing is catalysed by a set of RNA-protein complexes named small nuclear ribonucleoprotein particles (snRNPs). Each particle is composed of short non-coding RNA and several proteins. In this work we analyzed quality control mechanism that surveillances proper snRNP assembly. We showed that defective particles are sequestered in cell nuclear structures called Cajal bodies and that protein SART3 is important for discrimination between properly formed and misassembled particles. This is the first work that shows how cells control final steps of snRNP biogenesis and prevent defective particles to enter splicing reaction.

Odůvodnění panelu:

Výborná práce v oblasti sestřihu hnRNA.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Temporal and spatial regulation of translation in the mammalian oocyte via the mTOR-eIF4F pathway

obor: EB

Identifikátor: RIV/00027162: /15:#0001287!RIV16-MSM-00027162

Id: 1315

Předkladatel výsledku do Pilíře II.:

IČO: 67985904 Ústav živočišné fyziologie a genetiky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **90 %**

Popis podílu předkladatele:

The study was mainly (90%) undertaken at the Laboratory of Biochemistry and Molecular Biology of the Germ Cells. Five out of eleven contributors were members of the Laboratory of Biochemistry and Molecular Biology of the Germ Cells and all molecular. Moreover eight authors were from IAPG. Author contributions A.S. and M.K. designed the experiments, carried out the data analysis and planned the project. A.S., D.J., R.C., T.T. and J.S. carried out most of the experiments; A.D. and M.A. carried out live-cell imaging; M.S.C. and J.S.O. performed experiments that contributes intellectually but did not result in figures; R.M. carried out Dual-luciferase assays; A.S. and M.K. wrote the manuscript.

Odůvodnění předkladatele:

The study significantly contributes to the mostly unknown translational process in the female mammalian germ cell. The findings are largely intriguing showing translational gradient in the oversized cell. Moreover, the paper explains how the translational gradient is formed at the initiation of the meiotic cell cycle. The findings also show significant contribution of the specific signaling mTOR pathway for regulation of translation within specific area in the cell, as well as the effects of downregulation of this pathway leading to massive chromosome segregation errors in the mammalian egg. Therefore, the study brings new concept describing protein synthesis polarity and its contribution to the errors in the chromosome segregation. The knowledge that might be extrapolated also to the human physiology, where errors in the chromosome segregation are major problem in the human reproductive medicine. IF: 11,329, cit.: 3

Odůvodnění panelu:

Detailní studie na významné téma v buněčné biologii, která byla publikovaná v prestižním časopise a se zásadním příspěvkem českých autorů.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Differential freshwater flagellate community response to bacterial food quality with a focus on Limnohabitans bacteria

obor: EH

Identifikátor: RIV/60077344: /13:00394406!RIV14-AV0-60077344

Id: 361

Předkladatel výsledku do Pilíře II.:

IČO: 60077344 Biologické centrum AV ČR, v. v. i.

Podíl předkladatele na výsledku: **64 %**

Popis podílu předkladatele:

The first author and his team applied a sophisticated new experimental design for testing the food quality of planktonic bacteria for natural predator communities of heterotrophic flagellates. They set up and conducted the whole experiment in HBI, quantified all microbes and their feeding activities using a fluorescence in situ hybridization (FISH) technique applied directly in flagellate food vacuoles in combination with flow cytometry. Most bacterial strains used were provided by our own world-wide unique collection of the representative strains of the Limnohabitans genus established by the co-author, V. Kasalický. The first author wrote the paper and was fully responsible for the final data processing and publishing process. The strain of Actinobacteria was provided by Doc. Martin Hahn (Research Institute for Limnology, University of Innsbruck, Mondsee, Austria). Pyrosequencing of eukaryotic small subunit rRNA amplicons used to assess time-course changes in flagellate community composition and the following bioinformatics processing were performed by the team of Prof. J. Boenigk (General Botany, University of Duisburg-Essen, Germany). Thus approximately 85% of research activities related to this article, selected as a Featured Article in the August issue of ISME Journal (IF = 9.328), were conducted by the team of K. Šimek. These research activities were largely funded by a project of GA CR under the research grant 13-00243S awarded to K. Šimek.

Odůvodnění předkladatele:

Interactions between bacterial prey and their predators in freshwater ecosystems are highly complex. It is well known that prey-selective grazing of small heterotrophic flagellates on bacteria has significant effects on bacterioplankton community composition. In contrast, considerably less is known about impacts of bacterioplankton community composition (“potential prey food quality effects”) on the predator community composition. Notably, different bacterial strains can have different nutritional value as food for flagellates, thus modulating their growth and in turn also the overall carbon flow to higher trophic levels. Using pure isolated bacterial strains belonging to key freshwater bacterioplankton groups, we proposed a new experimental design to examine the influence of prey food quality on growth parameters and community composition of natural flagellate communities. In our study, one Polynucleobacter and four Limnohabitans strains yielded significant growth of flagellate community from a freshwater reservoir, but in highly prey-specific fashions, while an actinobacterial strain did not support any predator growth. Sequence data characterizing the flagellate communities showed that different bacterial prey items induced highly significant differences in the resulting community composition of flagellates, usually dominated by phylotypes from Pedospumella or Spumella-like subclusters (Chrysophyceae). This study is the first one clearly documenting strong prey-specific effects of even closely related bacteria on a flagellate predator community. Notably, this is an ecological aspect that has been long time under debate but without any direct evidence concerning natural flagellate assemblages. Our experimental approach could provide important insights regarding the question which bacterial strains are active in carbon transfer to the grazer food chain in a particular aquatic system, and which flagellate groups are the key players in the trophic transfer.

Odůvodnění panelu:

Zajímavá práce v kvalitním časopisu analyzující potravní strategie fytoplanktonu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

The evolution of parental cooperation in birds

obor: EG

Identifikátor: **RIV/61989592:15310/15:33157255!RIV16-MSM-15310**

Id: 1346

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **33 %**

Popis podílu předkladatele:

70% of contribution of UP author (VR). Data collected by all authors, all extensive analyses performed and outputs prepared by VR, manuscript written by VR with contributions from other authors.

Odůvodnění předkladatele:

This is the first work testing all hypotheses for the evolution of cooperation between parents at once. Moreover, the largest analysis so far on the higher number of species. Surprisingly strong effects of sexual selection and weak effects of species ecology were revealed. This work will provide strong impetus for follow-up studies.

Odůvodnění panelu:

Kvalitní práce publikovaná v prestižní časopise, která s vysokou pravděpodobností povede k dalším navazujícím studiím.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Mitochondrial Genome Acquisition Restores Respiratory Function and Tumorigenic Potential of Cancer Cells without Mitochondrial DNA

obor: EB

Identifikátor: RIV/86652036: /15:00440852!RIV15-AV0-86652036

Id: 878

Předkladatel výsledku do Pilíře II.:

IČO: 86652036 Biotechnologický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **28 %**

Popis podílu předkladatele:

Seven authors and corresponding Co-author are from the Institute of Biotechnology AS CR (28%). This results confirm the new pathophysiological processes for overcoming mtDNA damage and document the high plasticity of malignant cells.

Odůvodnění předkladatele:

Authors report that tumor cells without mitochondrial DNA (mtDNA) show delayed tumor growth, and that tumor formation is associated with acquisition of mtDNA from host cells. This leads to partial recovery of mitochondrial function in cells derived from primary tumors grown from cells without mtDNA and a shorter lag in tumor growth. Cell lines from circulating tumor cells showed further recovery of mitochondrial respiration and an intermediate lag to tumor growth, while cells from lung metastases exhibited full restoration of respiratory function and no lag in tumor growth. Stepwise assembly of mitochondrial respiratory (super)complexes was correlated with acquisition of respiratory function. Our findings indicate horizontal transfer of mtDNA from host cells in the tumor microenvironment to tumor cells with compromised respiratory function to reestablish respiration and tumor-initiating efficacy. These results suggest pathophysiological processes for overcoming mtDNA damage and support the notion of high plasticity of malignant cells.

Odůvodnění panelu:

Zajímavá studie, která popisuje vztah mezi buněčnou respirací, funkcí mitochondrií a tumorogenezí.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

The Mismatch-Binding Factor MutS? Can Mediate ATR Activation in Response to DNA Double-Strand Breaks

obor: EB

Identifikátor: RIV/68378050: /15:00455784!RIV16-AV0-68378050

Id: 1367

Předkladatel výsledku do Pilíře II.:

IČO: 68378050 Ústav molekulární genetiky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **70 %**

Popis podílu předkladatele:

The vast majority of experiments in this study were carried out at the Institute of Molecular Genetics, AS CR. The original observation of the requirement of the mismatch repair proteins MSH2 and MSH3 for efficient DSB repair by homologous recombination was made in the laboratory of Dr. Pavel Janscak at the Institute of Molecular Cancer Research of the University of Zurich, where also DNaseI footprinting and pulsed-field gel electrophoresis experiments were performed.

Odůvodnění předkladatele:

Ataxia telangiectasia and Rad3-related (ATR) protein kinase is a master regulator of the cellular response to stalled replication forks and DNA-double strand breaks. It is activated by its physical recruitment to RPA-coated single stranded DNA (ssDNA) generated at DNA damage sites. In this study, we have identified the mismatch-binding protein MutS?, a heterodimer of MSH2 and MSH3, as a key player in this process. MSH2 and MSH3 form a complex with ATR and its regulatory partner ATRIP, and their depletion compromises the formation of ATRIP foci and phosphorylation of ATR substrates in cells responding to replication-associated DSBs. Purified MutS? binds to hairpin loops persisting in RPA-ssDNA complexes and promotes ATRIP recruitment. Mutations in the mismatch-binding domain of MSH3 abolish the binding of MutS? to DNA hairpin loops and its ability to promote ATR activation by ssDNA. These results suggest that hairpin loops might form in ssDNA generated at sites of DNA damage and trigger ATR activation in a process mediated by MutS?. Our study provides new insights into the molecular mechanism of ATR activation at sites of DNA damage, a process that triggers a signalling cascade controlling cell-cycle transitions, DNA replication, DNA repair and apoptosis. ATR is an emerging target for cancer therapy because of its synthetic lethality with the ATM-p53 pathway. Therefore detailed understanding of the mode of ATR action is a key for development of highly selective ATR inhibitors for treatment of p53-deficient tumours. Our findings have also implications for the development of novel therapeutic strategies for treatment of colorectal cancers associated with loss of MutS? function.

Odůvodnění panelu:

Kvalitní práce s dominantním podílem českých autorů.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Homologous recombination and its regulation

obor: EB

Identifikátor: **RIV/00216224:14110/12:00057915!RIV13-MSM-14110**

Id: 622

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Lékařská fakulta

Podíl předkladatele na výsledku: **70 %**

Popis podílu předkladatele:

Know-how is significantly under MU arrangement

Odůvodnění předkladatele:

Times Cited: 168 Category Normalized Citation Impact: 10,34 Percentile in Subject Area: 0,55 Journal Impact Factor: 9,202 Homologous recombination (HR) is critical both for repairing DNA lesions in mitosis and for chromo-somal pairing and exchange during meiosis. However, some forms of HR can also lead to un-desirable DNA rearrangements. Multiple regulatory mechanisms have evolved to ensure that HR takes place at the right time, place and manner. Several of these impinge on the control of Rad51 nucleofilaments that play a central role in HR. Some factors promote the formation of these structures while others lead to their disassembly or the use of alternative repair pathways. In this article, we review these mechanisms in both mitotic and meiotic environments and in different eukaryotic taxa, with an emphasis on yeast and mammal systems. Since mutations in several proteins that regulate Rad51 nucleofilaments are associated with cancer and cancer-prone syndromes, we discuss how understanding their functions can lead to the development of better tools for cancer diagnosis and therapy.

Odůvodnění panelu:

Práce sice není experimentální povahy, nicméně s obrovským dopadem pro obor samotný. Práce byla 183x citována a je hodnocena jako "highly cited" dle databáze WoS. Navíc je v ní majoritní podíl českého pracoviště.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Multivariate analysis of ecological data using Canoco 5

obor: EH

Identifikátor: **RIV/60076658:12310/14:43887068!RIV15-MSM-12310**

Id: 910

Předkladatel výsledku do Pilíře II.:

**IČO: 60076658 Jihočeská univerzita v Českých Budějovicích,
Přírodovědecká fakulta**

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

We are the sole authors of this work

Odůvodnění předkladatele:

This is a thoroughly revised second edition of the successful book of the same authors (Lepš and Šmilauer 2003) which became a standard references for community ecology data analysis (more than 2000 citations). The new edition is considerably broadened (from 269 to 376 pp), and introduces novel analyses based on species traits, new designs for the analyses of experimental data, particularly of repeated measurements in manipulative experiments, hierarchical decomposition of community variation or explicit modelling of spatial variation. The new edition gradually replaces the old one (recently, slightly less than two citations of the new one against four of the old one per week) both in the research and teaching. We believe that the second edition, in line with the success of the first edition, already continues to increase the correct use of multivariate analyses by field ecologists, and also broadens the range of these methods, particularly in the field of experimental ecology. We also believe that the new edition manages to persuade the experimental ecologists that the multivariate analyses of community data are not merely a descriptive tool for exploratory data analysis, but an excellent toolbox for hypothesis testing in manipulative ecological experiments.

Odůvodnění panelu:

Nové rozšířené vydání vysoce citované monografie.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A
The More the Merrier: Recent Hybridization and Polyploidy in
Cardamine

obor: EF

Identifikátor: RIV/00216224:14740/13:00066729!RIV14-MSM-14740

Id: 1369

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Středoevropský technologický institut

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

The original know-how belongs to MU (corresponding author is MA Lysak).

Odůvodnění předkladatele:

Times Cited: 20 Category Normalized Citation Impact: 1,99 Percentile in Subject Area: 7,41 Journal Impact Factor: 8,538 This is an important contribution demonstrating how the synergy of different methodologies can solve a long-lasting scientific controversy. Mandáková et al. (2013), using original approaches, documented how polyploidization and hybridization may lead to the origin of a new plant taxon combining three different parental genomes. The paper was presented at several scientific meetings and conferences, raising a lot of interest among the leading researchers in the polyploidy research field.

Odůvodnění panelu:

Dobrá a zajímavá práce, která originálním přístupem ukazuje, jak polyploidie a hybridizace může vést ke vzniku nových rostlinných druhů.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Live-cell imaging of phosphatidic acid dynamics in pollen tubes visualized by Spo20p-derived biosensor

obor: EB

Identifikátor: RIV/61389030: /14:00429592!RIV15-AV0-61389030

Id: 794

Předkladatel výsledku do Pilíře II.:

IČO: 61389030 Ústav experimentální botaniky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **70 %**

Popis podílu předkladatele:

This work lead by the corresponding author M. Potocký was largely done at the Inst. of Exp. Botany, ASCR. Part of the initial cloning work was done during MP post-doc work in the laboratory of prof. Benedikt Kost at the University in Erlangen. Prof. N.Vitale from the University in Strassbourg provided the yeast SPO20 phosphatidic acid binding protein domain. Contribution of IEB 70%.

Odůvodnění předkladatele:

Life processes are emerging from the reciprocal interplay of many different classes of molecules among which membrane lipids are characterized by extraordinary speed of their dynamics making their analyses very challenging task. It is therefore not surprising that in comparison with genetically encoded proteins membrane lipids are much less studied despite the known crucial structural, regulatory and signalling roles. In animals the most attention in this respect is paid to the phosphatidylinositolbisphosphate (PIP2), membrane phospholipid known to be precursor of the famous phospholipase C signalling pathway and the interactor of many important peripheral membrane proteins. In recent years, and by significant contribution of the Laboratory of cell biology of the IEB ASCR, it is acknowledged that many functions mediated in animals by PIP2 are to different degree also supported by PA in plant cells, which is still often considered simply as a stress membrane lipid. Study of membrane lipids dynamics is fully dependent on the creation of reliable fluorescent markers – mostly based on the specific-lipid binding domains of membrane proteins. There existed no established PA marker useful to study this membrane lipid in plant cells. In this work we prepared and tested successfully first PA fluorescent marker for plant cells based on the PA binding domain of yeast SNARE protein SPO20. Using this marker specific compartmentalization of PA was observed in pollen tubes with the maximum in the subapical region. This tool facilitates new possibilities to study PA dynamics in plant cells in vivo.

Odůvodnění panelu:

Excelentní práce, která patří do top20% v českých biologických vědách.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Matrix-Assisted Laser Desorption Ionization-Time of Flight (MALDI-TOF) Mass Spectrometry for Detection of Antibiotic Resistance Mechanisms: from Research to Routine Diagnosis

obor: EE

Identifikátor: **RIV/00216208:11140/13:10126489!RIV14-MSM-11140**

Id: 827

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Lékařská fakulta v Plzni

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

80% |The article was prepared by employees of Faculty of Medicine in Plzen, Charles University in Prague, fully financed by the grants mentioned in the acknowledgements.

Odůvodnění předkladatele:

In the last decade, matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS) became an important tool for taxonomical identification of bacteria and fungi in clinical microbiology. We were one of the first research group showing that this methodology can be also used for detection of antibiotic resistance. In this review, we described currently published methods for rapid detection of antibiotic resistance, including functional assays - detection of enzymes degrading antibiotics, classical proteomic approach, detection of specific MALDI-TOF MS profiles. We also predicted other fields in microbiology (determination of resistance mechanisms) that can be successfully influenced by MALDI-TOF MS. To our knowledge, this is the first review focused on antibiotic resistance detection by MALDI-TOF MS. The article was published in Clinical Microbiology and Infection which is ranked as a second journal in Microbiology. Since this time, it has been cited 76 times (Web of Science) ranking this article in the group of "Highly cited papers".

Odůvodnění panelu:

Review článek, ale s ohlasem, který zanechává značně přesahuje běžný standard. Navíc tento článek i shrnuje dosavadní poznatky autorů v dané oblasti.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

RepeatExplorer: a Galaxy-based web server for genome-wide characterization of eukaryotic repetitive elements from next-generation sequence reads

obor: EB

Identifikátor: RIV/60077344: /13:00392350!RIV14-AV0-60077344

Id: 1145

Předkladatel výsledku do Pilíře II.:

IČO: 60077344 Biologické centrum AV ČR, v. v. i.

Podíl předkladatele na výsledku: **89 %**

Popis podílu předkladatele:

Most of the work was done by BC employees; J.S. contributed with 10% as a Bsc student of informatics.

Odůvodnění předkladatele:

This work describes development of RepeatExplorer, a collection of software tools for characterization of repetitive elements in eukaryotic genomes, which is accessible via web interface. A key component of the server is the computational pipeline using a graph-based sequence clustering algorithm to facilitate de novo repeat identification without the need for reference databases of known elements. Because the algorithm uses short sequences randomly sampled from the genome as input, it is ideal for analyzing next-generation sequence reads. Additional tools are provided to aid in classification of identified repeats, investigate phylogenetic relationships of retroelements and perform comparative analysis of repeat composition between multiple species. The server allows to analyze several million sequence reads, which typically results in identification of most high and medium copy repeats in higher plant genomes. Since its launch in 2013, RepeatExplorer proved to be efficient in repeat analysis in plant, insect and mammalian genomes.

Odůvodnění panelu:

Je to sice zejména software, který je ale rozsáhle využíván i jinými po celém světě.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

ATPaseTb2, a unique membrane-bound FoF1-ATPase component, is essential in bloodstream and dyskinetoplastic trypanosomes

obor: EE

Identifikátor: RIV/60077344: /15:00451335!RIV16-AV0-60077344

Id: 145

Předkladatel výsledku do Pilíře II.:

IČO: 60077344 Biologické centrum AV ČR, v. v. i.

Podíl předkladatele na výsledku: **83 %**

Popis podílu předkladatele:

The presented study was conceived and designed by Alena Ziková and Brian Panicucci, members of the Laboratory of Functional Biology of Protists at the Institute of Parasitology, Biology Centre. The experiments were done solely by Karolína Šubrtová, a Phd student working in the same laboratory. Data analysis and manuscript preparation were done collectively by all three co-authors.

Odůvodnění předkladatele:

The presented study uncovers unique function and composition of the mitochondrial complex FoF1 –ATP synthase from the parasitic protist *Trypanosoma brucei*. *T. brucei* is an unicellular parasite causing sleeping sickness in humans and cattle. Unfortunately, the available treatment is not adequate and prospects of vaccine are non-existing. For these reasons, there is a substantial effort to characterize druggable enzymes and design new potent inhibitors. FoF1-ATP synthase represents very promising drug target since its function differs from the homologous complex in the human mitochondria. Furthermore, FoF1-ATP synthase is essential for the parasite and its inhibition kills the parasitic cell within a few hours. Our study characterizes in details function and structural position of a novel FoF1-ATP synthase subunit, Tb2 and provides important information for future studies in regards of drug discovery. In addition, using mutant *T. brucei* cells that lack mitochondrial DNA we specified a mechanism by which the FoF1 ATPase complex is crucial for maintaining mitochondrial membrane potential in these cells. Mitochondrial DNA codes for essential mitochondrial proteins which are important for proper mitochondrial function. Since mutations and deletion of mitochondrial DNA are responsible for numerous important human diseases our model enables us to get better insight into the mitochondrial bioenergetics of cells without mitochondrial DNA. Thus, this study is important not only for the field of molecular parasitology but also for more general field of mitochondrial bioenergetics and physiology.

Odůvodnění panelu:

Tato práce se zabývá unikátní funkcí mitochondriální FOF1 ATPázy *Trypanosoma brucei*. Práce byla publikovaná v renomované časopise a s významným podílem českých autorů.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Distribution, biological activities, metabolism, and the conceivable function of cis-zeatin-type cytokinins in plants

obor: ED

Identifikátor: RIV/61389030: /11:00365271!RIV12-AV0-61389030

Id: 376

Předkladatel výsledku do Pilíře II.:

IČO: 61389030 Ústav experimentální botaniky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **70 %**

Popis podílu předkladatele:

Predominant part of this work was done by co-authors from the Institute of Experimental Botany of the AS CR (Gajdošová, Spíchal, Kamínek, Hoyerová, Novák, Dobrev, Klíma, Gaudinová, Žižková, Hanuš, Pešek, Vaňková, Strnad, Motyka - the corresponding author) who formulated the working hypothesis, designed and guided the study, predominantly contributed to the experimental work as well as participated on evaluation/interpretation of the data, and wrote and edit the manuscript. Contribution of IEB 70%.

Odůvodnění předkladatele:

This paper represents as yet the most comprehensive characterization of rather overlooked and ignored cytokinin forms, cis-zeatins. It demonstrates the abundance of cis-zeatins throughout the plant kingdom, their biological activities in cytokinin bioassays as well as their uptake, accumulation and metabolic pathways in plants. It also hypothesizes the conceivable function of cis-zeatins as delicate regulators of cytokinin responses in plants under growth-limiting conditions.

Odůvodnění panelu:

Velmi dobrá práce v oblasti rostlinné biologie.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Rad51 Paralogs Remodel Pre-synaptic Rad51 Filaments to Stimulate Homologous Recombination

obor: EB

Identifikátor: **RIV/00216224:14110/15:00080948!RIV16-GA0-14110**

Id: 1110

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Lékařská fakulta

Podíl předkladatele na výsledku: **10 %**

Popis podílu předkladatele:

Know-how is significantly under MU arrangement.

Odůvodnění předkladatele:

Times Cited: 12 Category Normalized Citation Impact: 2,38 Percentile in Subject Area: 8,86 Journal Impact Factor: 28,71 Repair of DNA double strand breaks by homologous recombination (HR) is initiated by Rad51 filament nucleation on single-stranded DNA (ssDNA), which catalyzes strand exchange with homologous duplex DNA. BRCA2 and the Rad51 paralogs are tumor suppressors and critical mediators of Rad51. To gain insight into Rad51 paralog function, we investigated a heterodimeric Rad51 paralog complex, RFS-1/RIP-1, and uncovered the molecular basis by which Rad51 paralogs promote HR. Unlike BRCA2, which nucleates RAD-51-ssDNA filaments, RFS-1/RIP-1 binds and remodels pre-synaptic filaments to a stabilized, "open," and flexible conformation, in which the ssDNA is more accessible to nuclease digestion and RAD-51 dissociation rate is reduced. Walker box mutations in RFS-1, which abolish filament remodeling, fail to stimulate RAD-51 strand exchange activity, demonstrating that remodeling is essential for RFS-1/RIP-1 function. We propose that Rad51 paralogs stimulate HR by remodeling the Rad51 filament, priming it for strand exchange with the template duplex.

Odůvodnění panelu:

Zajímavá práce publikovaná v prestižním časopise v daném oboru.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Constraints on host choice: why do parasitic birds rarely exploit some common potential hosts?

obor: EG

Identifikátor: **RIV/61989592:15310/11:33119830!RIV13-MSM-15310**

Id: 278

Předkladatel výsledku do Pilíře II.:

IČO: 61989592 Univerzita Palackého v Olomouci, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **36 %**

Popis podílu předkladatele:

The conceptual foundation of the paper was fully developed by the first (and, at the same time, corresponding) author. The data were analyzed by P. Samaš (UP) and manuscript was written by T. Grim (UP). The majority of data were collected in the Czech Republic by Czech members of the author team (T. Grim, P. Samaš).

Odůvodnění předkladatele:

The most extensive experimental study of brood parasite-host coevolution performed so far (n = 1 211 experiments in 12 populations of 4 species of Turdus thrushes). Using a novel combination of comparative and experimental approaches the study provided an answer to a long-standing enigma of coevolutionary studies: why does the brood parasitic European cuckoo avoid the most common and easily accessible potential hosts? The majority of data were collected in the Czech Republic by Czech members of the author team. The conceptual foundation of the paper was fully developed by the first (and, at the same time, corresponding) author. In Web Of Science - referenced as "highly cited paper"

Odůvodnění panelu:

Výborná a vysoce citovaná práce (highly cited dle WoS).

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Decrease in Abundance of apurinic/aprimidinic Endonuclease Causes Failure of Base Excision Repair in Culture-Adapted Human Embryonic Stem Cells

obor: EB

Identifikátor: **RIV/00216224:14110/13:00065577!RIV14-MZ0-14110**

Id: 325

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Lékařská fakulta

Podíl předkladatele na výsledku: **90 %**

Popis podílu předkladatele:

All experimental work in this study was done as a joint effort of researchers from the Faculty of Medicine, Faculty of Science of Masaryk University, and the University hospital in Brno. The study is based on long standing experience of the researchers from the Faculty of Medicine in DNA repair mechanisms and on their long standing experience with pluripotent stem cells and in particular with human embryonic stem cells.

Odůvodnění předkladatele:

Times Cited: 8 Category Normalized Citation Impact: 0,76 Percentile in Subject Area: 33,15 Journal Impact Factor: 5,902 Human embryonic stem cells (hESC) are promising source of cells for future regenerative medicine but, unfortunately, they tend to accumulate mutations during their in vitro cultivation. This study describes for the first time and in detail how one of the major pathways safeguarding the genomic stability of hESC, the base excision repair is failing in cultured cells. This study identifies the APE1 as both the useful marker as well as the possible molecular target for future intervention to assess and possibly improve quality of cultured hESC. The impact of this work on the scientific community in the field of the genomic stability of the pluripotent stem cells is illustrated by a commentary titled „Sources of ESC Genomic Instability Uncovered“, published by Stem Cells correspondent Stuart P. Atkinson on Stem Cell Portal on April 18th, 2013 (<http://www.stemcellportal.com/content/source-esc-genomic-instability-uncovered>), summarizing the major results of the article as the important source of genomic instability of the hESC.

Odůvodnění panelu:

Významná práce v oblasti lidských kmenových buněk zabývající se zejména genomovou stabilitou pluripotentních kmenových buněk.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Global exchange and accumulation of non-native plants

obor: EH

Identifikátor: **RIV/00216208:11310/15:10312676!RIV16-MSM-11310**

Id: 577

Předkladatel výsledku do Pilíře II.:

IČO: 67985939 Botanický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **20 %**

Popis podílu předkladatele:

20%. The two Czech authors are among the eight members of the core team who compiled the unique GloNAF database, contributed the rationale, processed the paper and invited other coauthors who contributed with some data. Petr Pyšek is a senior author on the paper, Jan Pergl is the 4th author in the first group of core team members.

Odůvodnění předkladatele:

The erosion of biogeographical barriers by human activities facilitated the dispersal of species into new regions, where they can naturalize and cause ecological, economic and social damage. In this paper we present the first comprehensive analysis of the global accumulation and exchange of alien plant species between continents, based on a unique global database on the occurrences of naturalized alien plant species in 481 mainland and 362 island regions. In total, 13,168 plant species, corresponding to 3.9% of the extant global vascular flora, or approximately the size of the native European flora, have become naturalized somewhere on the globe as a result of human activity. North America has accumulated the largest number of naturalized species, whereas the Pacific Islands show the fastest increase in species numbers with respect to their land area. Continents in the Northern Hemisphere have been the major donors of naturalized alien species to all other continents. Our results quantify for the first time the extent of plant naturalizations worldwide, and illustrate the urgent need for globally integrated efforts to control, manage and understand the spread of alien species. The paper was published in Nature (JIF 38.138) and its importance was reflected in extensive media coverage, and in that it quickly became ISI Highly Cited Paper, receiving 38 citations on WoS and 68 on Google Scholar within the first year from publication, and achieving status among the top 5% of all research outputs (<https://www.altmetric.com/details/4413494>).

Odůvodnění panelu:

Jedná se o publikaci v časopise Nature, "Highly Cited" dle databáze WoS, s autorem z české instituce na posledním místě autorského kolektivu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

On the decline of biodiversity due to area loss

obor: EH

Identifikátor: **RIV/00216208:11620/15:10315209!RIV16-MSM-11620**

Id: 979

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Centrum pro teoretická studia

Podíl předkladatele na výsledku: **80 %**

Popis podílu předkladatele:

80% |Charles University (Center for Theoretical Study): 80 % (Petr Keil 50 %, David Storch 30 %)

Odůvodnění předkladatele:

The paper, published in the third most important journal in the world by impact factor in science, introduces fundamental results that change the way we understand biodiversity loss due to loss of natural habitats. The paper lays down theory on the relationship between extinction rates and the shape of habitat that was lost. Further, it presents both theory and empirical evidence that show how phylogenetic and functional diversities are lost with loss of habitat. The results clearly show that loss of habitat at the periphery is always more harmful to biodiversity than loss of equivalent area in the center. They also show that phylogenetic and functional diversity are always lost at a lower rate than species richness. All of these findings are crucial for the design of nature reserves, for designing the least harmful ways to reduce natural habitats, as well as for other informed decisions in conservation biology. The findings have attracted the attention of the media, including a live BBC interview with Petr Keil. Further, the leading author was invited to present the results at UC Berkeley, and at major ecological conferences. Finally, based on these results, the leading author was awarded a 2-year position as a scientist at the University of Leipzig.

Odůvodnění panelu:

Elegantní práce publikovaná v kvalitním časopise pro daný obor.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Srs2 mediates PCNA-SUMO-dependent inhibition of DNA repair synthesis

obor: EB

Identifikátor: **RIV/00216224:14110/13:00066406!RIV14-MSM-14110**

Id: 1240

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Lékařská fakulta

Podíl předkladatele na výsledku: **70 %**

Popis podílu předkladatele:

This study originates from MU laboratory. Significant part of the know-how is on the side of MU.

Odůvodnění předkladatele:

Times Cited: 21 Journal Impact Factor: 9,643 This study, which originates from MU laboratory, represents major breakthrough by discovering a novel and unexpected role of Srs2 helicase in negatively regulating recombination. This new mechanism that is described in details is very important for elimination of toxic cross-over recombination products. Completion of DNA replication needs to be ensured even when challenged with fork progression problems or DNA damage. PCNA and its modifications constitute a molecular switch to control distinct repair pathways. In yeast, SUMOylated PCNA (S-PCNA) recruits Srs2 to sites of replication where Srs2 can disrupt Rad51 filaments and prevent homologous recombination (HR). We report here an unexpected additional mechanism by which S-PCNA and Srs2 block the synthesis-dependent extension of a recombination intermediate, thus limiting its potentially hazardous resolution in association with a cross-over. This new Srs2 activity requires the SUMO interaction motif at its C-terminus, but neither its translocase activity nor its interaction with Rad51. Srs2 binding to S-PCNA dissociates Pol delta and Pol eta from the repair synthesis machinery, thus revealing a novel regulatory mechanism controlling spontaneous genome rearrangements. Our results suggest that cycling cells use the Siz1-dependent SUMOylation of PCNA to limit the extension of repair synthesis during template switch or HR and attenuate reciprocal DNA strand exchanges to maintain genome stability.

Odůvodnění panelu:

Velmi kvalitní práce v nadstandardním časopise a relevantním počtem citací.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Graphene oxide immobilized enzymes show high thermal and solvent stability

obor: EI

Identifikátor: **RIV/60461373:22310/15:43899655!RIV16-MSM-22310**

Id: 581

Předkladatel výsledku do Pilíře II.:

IČO: 60461373 Vysoká škola chemicko-technologická v Praze, Fakulta chemické technologie

Podíl předkladatele na výsledku: **60 %**

Popis podílu předkladatele:

60% |Soňa Hermanová: the proposal of research topic, experimental work, paper writing Zdeněk Sofer: the proposal of research topic, experimental work, paper writing Daniel Bouša: experimental work

Odůvodnění předkladatele:

The thermal and solvent tolerance of enzymes is highly important for their industrial use. We show here that immobilized enzymes show potential with polar solvents, which have technological advantages such as low toxicity, low boiling points, low costs and the possibility of using polar substrates for novel reactions. Our findings, showing enhanced thermal stability and solvent tolerance of graphene oxide immobilized enzyme, will have a profound impact on practical industrial scale uses of enzymes for the conversion of lipids into fuels. Manuscript is highly cited after the first year its publication.

Odůvodnění panelu:

Vysoce citovaná práce provedena českými autory, která patří mezi horní pětinu toho, co se v České republice ve vědě odehrává.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Structure of the immature HIV-1 capsid in intact virus particles at 8.8Å resolution

obor: EE

Identifikátor: **RIV/60461373:22330/15:43897365!RIV16-GA0-22330**

Id: 1267

Předkladatel výsledku do Pilíře II.:

IČO: 60461373 Vysoká škola chemicko-technologická v Praze, Fakulta potravinářské a biochemické technologie

Podíl předkladatele na výsledku: **40 %**

Popis podílu předkladatele:

40% |This work resulted from long-term collaboration between UCT Prague and EMBL Heidelberg. Michaela Rumlová and Tomáš Ruml co-designed the whole research plan and experiments. The most important task was to prepare immature virus particles that will be suitable for high resolution electron microscopy analysis. Michaela Rumlová prepared these samples. Colleagues from EMBL used their high-tech cryo-electron microscope to analyze prepared particles and generated the 3-D structure model of immature retrovirus particle. Michaela Rumlová and Tomáš Ruml further contributed to analysis of fitted pseudoatomic models of these particles.

Odůvodnění předkladatele:

Besides being published in one of the most prestigious scientific journals - Nature, the importance of this paper lies in the data documenting detailed structure of authentic HIV-1 immature particle (solved by cryo-electron microscopy and tomography in collaboration with colleagues in EMBL, Heidelberg). The image outlining the organization of protein components of the particle demonstrated different arrangement of HIV-1 protein domains from both that published for mature HIV core and also for immature model retrovirus, Mason/Pfizer monkey virus. Thus we show that retroviral capsid proteins, while having conserved tertiary structures, adopt different quaternary arrangements. We explained the transition of immature HIV-1 into the mature and fully infectious virus. This knowledge represents another significant step to rational design of HIV assembly inhibitors.

Odůvodnění panelu:

Dva ze sedmi autorů z ČR u publikace v Nature a k tomu 83 citací za dva roky od zveřejnění, to je excellence.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Production of PHA a extracellular lipolytic enzyme

obor: EI

Identifikátor: RIV/00216305:26310/13:PA20905!RIV14-MSM-26310

Id: 1082

Předkladatel výsledku do Pilíře II.:

IČO: 00216305 Vysoké učení technické v Brně, Fakulta chemická

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Technology of polyhydroxyalkanoates production using waste fried oils as substrate was developed at Materials Research Centre, Faculty of Chemistry BUT in Brno. All members participating on the technology development are from Faculty of Chemistry. Authors of invention are 2 senior scientists and 1 junior scientist, the experiments were performed in cooperation with doctoral and master students („Czech Innovation Award 2013“). The invention was licensed at 31. 10. 2013. Patent „Application for PHB production with usage of waste edible oil as a raw “material“ is unique in the world. This technology is fully agreed with Circular Economy concept, it is „Zero Waste producing“, and no competitive with human food chain. The application was filed by FCH BUT. In 2013 industrial partner Nafigate has concluded exclusive license agreement for this patent for the purpose of commercialization. The patent was assigned in the Czech Republic in 2014 and this application is currently in the process of PCT to protect our patent on the Chinese market. In cooperation with industrial partner the technology HYDAL Biotech was introduced. This technology as the only Czech technology was awarded by the "Frost and Sullivan Technology Innovation Award 2014" with the excellent evaluation both of the technology and business strategy. Hydal technology was successfully presented at EXPO 2015 in Milan. The realization team works continuously on development of technology as well as applications. IN connection with PHA technology 1 accepted and 2 applied patents as well as 1 accepted industrial patent were obtained. The key persons in PHA team are academic and research workers of Faculty of Chemistry BUT. Development of technology and applications continues in cooperation with strategic industrial partner – Czech Company Nafigate, a.s., thus, the origin of invention and technology is strongly connected with Czech Republic.

Odůvodnění předkladatele:

The invention relates to a method of producing polyhydroxyalkanoates (PHAs) comprising vegetable oil and/or edible oil and/or waste edible oil, preferably frying oil, on which the bacterial strain *Cupriavidus necator* H16 is grown, converting oil into PHA and at the same time producing extracellular lipolytic enzymes, which are at least partially isolated from the culture medium during the fermentation process before PHA production and isolation has completed. PHAs can be used as fully biodegradable and biocompatible thermoplastic materials usable as biodegradable alternative to petrochemical plastics (polypropylene). PHAs have many applications in medical, industrial and agricultural fields. The invention was licensed and the license was transferred to industry as HYDAL Technology. Hydal BioTech is the first industrial technology in the world that uses 3rd generation feedstock (ie. 100% waste) which is a global surplus and due to its lowest quality there is no other effective implementation. From a global perspective of food supply it is therefore more suitable for the production of plastics to use a waste material than an element of the food chain. The greatest competitive advantage of the project HYDAL is a feedstock excess on a global scale at very low cost, technology independence on energy prices and resources. In 2014 Czech-Chinese JV Suzhou Hydal Biotech Co., Ltd. was established and pilot plant in China is being built. In 2015 was this technology awarded by international "Frost and Sullivan Technology Transfer Award", in 2016 by China High Tech Fair "Finalist Top 10". Presented technology has led to further scientific and industrial projects (1x GAČR, 2x TAČR Gamma, 1x TAČR Delta, 1x MPO - Trio, COST). Till 2013 to 10 scientific publications with summary IF =26,394 and 51 citations in WoS database.

Odůvodnění panelu:

Excelentní výstup biologického výzkumu v ČR založený na mezioborové spolupráci. U tohoto výsledku je i vysoká pravděpodobnost skutečného uplatnění, což by přes dílčí publikace měl být i vyšší smysl vědy a výzkumu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Bacterial proteins pinpoint a single eukaryotic root

obor: EE

Identifikátor: RIV/61988987:17310/15:A1601EYN!RIV16-MSM-17310

Id: 159

Předkladatel výsledku do Pilíře II.:

IČO: 61988987 Ostravská univerzita v Ostravě, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **30 %**

Popis podílu předkladatele:

The paper is co-authored by two workers of the University of Ostrava, Vladimír Klimeš and Marek Eliáš. The former (a PhD student) was responsible for bioinformatic work concerning the assembly and annotation of critical genomic data used in the analyses. M. Eliáš was the principal investigator of a project that generated genome sequence data of two organisms central to the study (a jakobid and malawimonad) and was the main partner of the first author in discussions on the design of the analyses, interpretation of the results, and writing the paper.

Odůvodnění předkladatele:

The paper addresses one of the most fundamental unresolved questions of evolutionary biology, specifically the position of the root of the eukaryotic phylogeny that corresponds to the last eukaryotic common ancestor. Defining the position of the root is a prerequisite for our ability to understand the origin and early evolution of the eukaryotic cell and its features. The paper is based on a unique dataset gathered by the authors analysed with a novel methodology, which together enabled to achieve a surprising, yet robust result providing a new perspective on the highly contentious issue of modern biology. The significance of the paper is attested also by the fact that in the period of less than two years since its publication it was cited 21 times according to the WoS database (27 times according to Google Scholar).

Odůvodnění panelu:

Velmi dobrá a citovaná práce s podstatným podílem autorů z České republiky.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

ER-localized auxin transporter PIN8 regulates auxin homeostasis and male gametophyte development in Arabidopsis

obor: EB

Identifikátor: RIV/61389030: /12:00380680!RIV13-AV0-61389030

Id: 467

Předkladatel výsledku do Pilíře II.:

IČO: 61389030 Ústav experimentální botaniky AV ČR, v. v. i.

Podíl předkladatele na výsledku: **25 %**

Popis podílu předkladatele:

This work was based on broad international collaboration. Co-authors from the Institute of Experimental Botany of the AS CR (Duplákova, Skůpa, Petrášek, Zažímalová and Honys) designed, performed and analysed experiments related to male gametophyte - phenotype and functional characterisation of pin5 and pin8 mutants - and related transport assays. They also participated on interpretation of data and contributed to manuscript writing and editing. Contribution of IEB 25%.

Odůvodnění předkladatele:

This is the „Highly cited paper“ according to Web of Science („As of September/October 2015, this highly cited paper received enough citations to place it in the top 1% of its academic field based on a highly cited threshold for the field and publication year. Data from Essential Science Indicators?“)

Odůvodnění panelu:

Přestože podíl nominující instituce je relativně nízký, jedná se o zajímavou a kvalitní práci. Velký dopad na obor je podpořený citacemi (publikace s označením "highly cited paper" dle WOS).

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Srs2 promotes Mus81-Mms4-mediated resolution of recombination intermediates

obor: EB

Identifikátor: **RIV/00216224:14110/15:00080935!RIV16-GA0-14110**

Id: 1241

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Lékařská fakulta

Podíl předkladatele na výsledku: **56 %**

Popis podílu předkladatele:

This study has been initiated and led by its corresponding author who is residing at the Faculty of Medicine.

Odůvodnění předkladatele:

Times Cited: 5 Category Normalized Citation Impact: 0,76 Percentile in Subject Area: 44,84 Journal Impact Factor: 9,202 This study, initiated and led by its corresponding author who is residing at the faculty, helps to explain the roles of Srs2 and Mus81 enzymes in the resolution of DNA recombination/replication intermediates. The data point to these enzymes as to promising targets for pharmacologic intervention in cancer therapy.

Odůvodnění panelu:

Jedná se o práci, která poskytuje mechanistické vysvětlení studovaných procesů. Práce byla publikována v prestižním časopise.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Cholesterol modulates open probability and desensitization of NMDA receptors

obor: ED

Identifikátor: RIV/67985823: /15:00446418!RIV16-AV0-67985823

Id: 659

Předkladatel výsledku do Pilíře II.:

IČO: 67985823 Fyziologický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

Our study „Cholesterol modulates open probability and desensitization of NMDA receptors“ published in The Journal of Physiology 2015, 593(10):2279-93, was performed at the Institute of Physiology. All experiments (electrophysiology, fluorescence, immunocytochemistry, mass spectroscopy and confocal microscopy), their design, data processing and manuscript preparation were carried out at the Institute of Physiology.

Odůvodnění předkladatele:

Ionotropic glutamate receptors are proteins which are highly expressed in human brain. They play crucial role in the process of memory formation but also in the progress of some neurodegenerative diseases. Glutamate receptors are localized on postsynaptic membranes of neurons where they are activated by glutamate release from presynaptic terminals. Upon activation, they undergo conformational change and their ion channels open for cations, which enter the cell following the potential and concentration gradient. This process is called synaptic transmission and it is the molecular basis of communication between neurons. In our study, we focused on NMDA receptors, which is a subgroup of ionotropic glutamate receptors. Although these receptors are in direct contact with plasma membrane, NMDA receptor membrane interactions are little understood. Since cholesterol is one of the most important components of plasma membrane in neurons, we aimed at characterizing the effect of cholesterol on the ionotropic glutamate receptors. We used cultured rat cerebellar neurons in our study. We found that acute cholesterol depletion almost abolished the ability of NMDA receptors to open their ion channels and the relative degree of receptor desensitization was substantially increased after acute cholesterol depletion. By contrast, the responses mediated by AMPA/kainate receptors, which is another subgroup of ionotropic glutamate receptors, were not affected by cholesterol depletion. The same results were obtained after chronic inhibition of cholesterol biosynthesis by simvastatin (a drug widely used to reduce elevated levels of blood cholesterol in patients). The results of our experiments showed for the first time the essential role of membrane cholesterol for proper function of NMDA receptors. Impact factor(2015)=4,731.

Odůvodnění panelu:

Dobrá práce v oblasti fyziologie. K tomu vysoce citovaná, v kvalitním časopise pro daný obor a zcela provedena českými autory.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Distinct patterns of intratumoral immune cell infiltrates in patients with HPV-associated compared to non-virally induced head and neck squamous cell carcinoma

obor: EC

Identifikátor: **RIV/00064203: /15:10294608!RIV16-MZ0-FAKULTNI** Id: 375

Předkladatel výsledku do Pilíře II.:

IČO: 00064203 Fakultní nemocnice v Motole

Podíl předkladatele na výsledku: **40 %**

Popis podílu předkladatele:

40% |Excellence: The article represents a concise approach, showing, on a substantial cohort of patients with head and neck carcinoma, an importance of a quality of anti-tumor immune response in an individual outcome of these tumors. In an area of head and neck cancer such immune based characteristic of tumor immune response represents a unique view on a characterisation and management of the disease.

Odůvodnění předkladatele:

Abstract: The main approach shown in this article represents a new way how to characterize tumor qualities based on its interaction with an immune system. Immune cell infiltrate was found to be profoundly different in HPV negative and positive tumors. Furthermore, characteristics of immune cells in the tumor contributes significantly to its immune profile that might contribute to staging and therapeutic strategies

Odůvodnění panelu:

Představení výsledku je velmi stručné, kvalita výsledku je však přesvědčivá. Významá práce s dopadem do klinické praxe.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

The Variability of the 16S rRNA Gene in Bacterial Genomes and Its Consequences for Bacterial Community Analyses

obor: EE

Identifikátor: RIV/61388971: /13:00423805!RIV14-AV0-61388971

Id: 1401

Předkladatel výsledku do Pilíře II.:

IČO: 61388971 Mikrobiologický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100 %

Odůvodnění předkladatele:

16S ribosomal RNA currently represents the most important target of study in bacterial ecology. Its use for the description of bacterial diversity is, however, limited by the presence of variable copy numbers in bacterial genomes and sequence variation within closely related taxa or within a genome. Here we use the information from sequenced bacterial genomes to explore the variability of 16S rRNA sequences and copy numbers at various taxonomic levels and apply it to estimate bacterial genome and DNA abundances. In total, 7,081 16S rRNA sequences were in silico extracted from 1,690 available bacterial genomes (1-15 per genome). While there are several phyla containing low 16S rRNA copy numbers, in certain taxa, e. g., the Firmicutes and Gammaproteobacteria, the variation is large. Genome sizes are more conserved at all tested taxonomic levels than 16S rRNA copy numbers.

Odůvodnění panelu:

Možná to není prototypová excelence, ale tato práce vzbudila ohlas v příslušné komunitě a pochází z ČR. S rozšiřování využití sekvenování genů pro 16S rRNA při charakterizaci mikrobiálních společenstev bude její význam pokračovat i nadále.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Complete OATP1B1 and OATP1B3 deficiency causes human Rotor syndrome by interrupting conjugated bilirubin reuptake into the liver

obor: EB

Identifikátor: **RIV/00064165: /12:12889!RIV13-MZ0-00064165** Id: 260

Předkladatel výsledku do Pilíře II.:

IČO: 00064165 Všeobecná fakultní nemocnice v Praze

Podíl předkladatele na výsledku: **9 %**

Popis podílu předkladatele:

In an unbiased approach, scanning the whole genome, we mapped the genomic candidate intervals for RS in 11 RS index subjects from 8 different families, 4 Central European (CE1–CE4), 3 Saudi-Arabian (A1–A3), and 1 Filipino (P1) and detected a homozygous deletion within the SLCO1B3 gene in the R1 haplotype and a homozygous approximately 405-kb deletion encompassing SLCO1B3 and SLCO1B1 and the LST-3TM12 pseudogene in the R2 haplotype. We further revealed predictably pathogenic mutations affecting both SLCO1B3 and SLCO1B1 in each of the family and showed using immunohistochemistry that RS families display deficiencies in SLCO1B1 and SLCO1B3.

Odůvodnění předkladatele:

We analyzed 8 Rotor-syndrome families and found that Rotor syndrome was linked to mutations predicted to cause complete and simultaneous deficiencies of the organic anion transporting polypeptides OATP1B1 and OATP1B3. These important detoxification-limiting proteins mediate uptake and clearance of countless drugs and drug conjugates across the sinusoidal hepatocyte membrane. OATP1B1 polymorphisms have previously been linked to drug hypersensitivities. Using mice deficient in Oatp1a/1b and in the multispecific sinusoidal export pump Abcc3, we found that Abcc3 secretes bilirubin conjugates into the blood, while Oatp1a/1b transporters mediate their hepatic reuptake. Transgenic expression of human OATP1B1 or OATP1B3 restored the function of this detoxification-enhancing liver-blood shuttle in Oatp1a/1b-deficient mice. Within liver lobules, this shuttle may allow flexible transfer of bilirubin conjugates (and probably also drug conjugates) formed in upstream hepatocytes to downstream hepatocytes, thereby preventing local saturation of further detoxification processes and hepatocyte toxic injury. Thus, disruption of hepatic reuptake of bilirubin glucuronide due to coexisting OATP1B1 and OATP1B3 deficiencies explains Rotor-type hyperbilirubinemia. Moreover, OATP1B1 and OATP1B3 null mutations may confer substantial drug toxicity risks. The study was 99 times cited (12. 12. 2016, Web of Science).

Odůvodnění panelu:

Dobrá práce se značným ohlaselem, což ukazuje, že prezentované poznatky ovlivnily dění v daném oboru po celém světě.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Amino acid derivatives as transdermal permeation enhancers

obor: FR

Identifikátor: **RIV/00216208:11160/13:10145630!RIV14-MSM-11160**

Id: 89

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Farmaceutická fakulta v Hradci Králové

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

100% |Scientists from the Charles University, Faculty of Pharmacy designed, funded and performed this study and wrote this publication.

Odůvodnění předkladatele:

This work describes discovery of unique compounds that temporarily decrease skin barrier properties to enable transdermal drug delivery. The compounds were designed as amphiphiles with a biodegradable linkage between the polar head and hydrophobic chain. From the library of synthesized and tested compounds, proline derivatives emerged as the most active - they outperformed all known permeation enhancers. We have also described their mode of action - they form separated liquid ordered phase in the skin barrier lipids and display synergism with enhancer acting on skin protein structures. The toxicity of the most active compounds is comparable to known enhancers, giving much better activity/toxicity ratios. These enhancers were designed to act specifically in the skin barrier; after they reach deeper skin layers, they decompose and their action is terminated. This is extremely advantageous because the skin barrier function would recover shortly after the application of such system. Finally, the activity of the most potent enhancer was also confirmed in vivo in rats. Thus, these results significantly shift the current borders of transdermal drug delivery by overcoming the major obstacle to this application pathway. Such enhanced transdermal drug delivery can improve existing therapies and lead to higher patient compliance. This work has been published in the Journal of Controlled Release, which is a leading journal in the field of drug delivery.

Odůvodnění panelu:

Původní práce autorů z navrhující instituce, velmi dobrý časopis. Podíl navrhující instituce je nezpochybnitelný. Q1 ve dvou oborech, v jednom je v prvním decilu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A
BCL11A deletions result in fetal hemoglobin persistence and neurodevelopmental alterations

obor: FD

Identifikátor: **RIV/00216208:11130/15:10295236!RIV16-MSM-11130**

Id: 163

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, 2. lékařská fakulta

Podíl předkladatele na výsledku: **30 %**

Popis podílu předkladatele:

30% |30% reflects the key role of the first co-author (M. Hancarova) and the rest of 2.LF team.

Odůvodnění předkladatele:

Article demonstrates a unique and equal collaboration with one of the leading research groups in field. Czech co-authors from 2.LF unified their respective expertise of medical genetics and molecular haematology to significantly contribute to the story.

Odůvodnění panelu:

Původní práce, mezinárodní konsorcium, zástupce navrhující instituce je uveden v neabecedním pořadí na méně než 3 místě z více než 5tičlenného seznamu autorů (kromě toho je korespondujícím autorem). V průvodce výsledku je podíl upřesněn, zcela zásadní role autorů navrhující instituce.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Biodegradable stents for the treatment of benign stenoses of the small and large intestines

obor: FE

Identifikátor: RIV/00216208:11150/11:10104515!RIV12-MSM-11150

Id: 178

Předkladatel výsledku do Pilíře II.:

IČO: 00179906 Fakultní nemocnice Hradec Králové

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

The role of Professor Rejchrt and his team of the University Hospital was substantial. They developed new original method of introduction of biodegradable stents into the small bowel, designed and conducted a prospective study in patients with Crohn's disease. They performed all endoscopic procedures with stent insertion and radiological examinations, analysed and interpreted the data and published their results in the most influencing world journal of digestive endoscopy.

Odůvodnění předkladatele:

Professor Rejchrt et al. were the first research group worldwide that published their prospective clinical study on biodegradable stents for the treatment of small intestinal stenoses. Biodegradable stents, which are made of various synthetic polymers, such as polylactide or polyglycolide, or co-polymers, such as polydioxanone, can be used for the treatment of benign refractory stenoses of the gastrointestinal tract. Rejchrt et al. were the first to report patients with stenosing Crohn's disease of the small and/or large intestine. Endoscopic insertion of a biodegradable stent was successful at the first attempt in all patients except one. Subsequent follow-up was for a mean of 16 months, median 17 months, range 12-29 months. Early stent migration (between 2 days and 8 weeks) was seen in three patients. Mucosal overgrowth (epithelial hyperplasia) was not observed in any of the patients during the follow-up period. The high rate of early stent migration might be solved by appropriate tailoring and further improvements in the design of the biodegradable stents.

Odůvodnění panelu:

Původní práce autorů z navrhující instituce, velmi dobrý časopis. Podíl navrhující instituce je nezpochybnitelný. Q1 ve dvou oborech, v jednom je časopis v prvním decilu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Bioresorbable vascular scaffolds in acute ST-segment elevation myocardial infarction: a prospective multicentre study 'Prague 19'

obor: FA

Identifikátor: **RIV/00216208:11110/14:10227291!RIV15-MSM-11110**

Id: 186

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, 1. lékařská fakulta

Podíl předkladatele na výsledku: **10 %**

Popis podílu předkladatele:

10% |The role of the Charles University Prague in this project was the key role from all aspects: intellectually (original idea, study protocol), practically (data collection, analysis and presentation), and also economically (funding exclusively via the CUP). The single author from the Masaryk University Brno just helped with statistics, his role was only marginal. The contribution of both hospitals (FNKV a ÚVN) corresponds to the respective case load in these institutions.

Odůvodnění předkladatele:

This is the world first-in-man study (there was only one similar study running simultaneously in the Netherlands) - the first human use of bioresorbable vascular scaffolds in patients with ongoing acute myocardial infarction. The project was an original academic idea of the authors (realized without any intellectual or financial input from the industry), funded exclusively from the Program for the development of research of the Charles University Prague (PRVOUK nr. P35). The results demonstrated the safety of bioresorbable vascular scaffolds implantation during the acute phase of myocardial infarction with very promising clinical results. IF k publ: 15.203/2014; Aktuální IF: 15.064/2015; WOS citation to 28.11.2016: 66

Odůvodnění panelu:

Původní práce autorů z navrhující instituce, velmi dobrý časopis. Podíl navrhující instituce je nezpochybnitelný. Publikace je v časopise z prvního decilu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Bioresorbable vascular scaffolds in acute ST-segment elevation myocardial infarction: a prospective multicentre study 'Prague 19'

obor: FA

Identifikátor: **RIV/00216208:11120/14:43908242!RIV15-MSM-11120**

Id: 185

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, 3. lékařská fakulta

Podíl předkladatele na výsledku: **65 %**

Popis podílu předkladatele:

65% |The role of the Charles University Prague in this project was the key role from all aspects: intellectually (original idea, study protocol), practically (data collection, analysis and presentation), and also economically (funding exclusively via the CUP). The single author from the Masaryk University Brno just helped with statistics, his role was only marginal. The contribution of both hospitals (FNKV a ÚVN) corresponds to the respective case load in these institutions.

Odůvodnění předkladatele:

This is the world first-in-man study (there was only one similar study running simultaneously in the Netherlands) - the first human use of bioresorbable vascular scaffolds in patients with ongoing acute myocardial infarction. The project was an original academic idea of the authors (realized without any intellectual or financial input from the industry), funded exclusively from the Program for the development of research of the Charles University Prague (PRVOUK nr. P35). The results demonstrated the safety of bioresorbable vascular scaffolds implantation during the acute phase of myocardial infarction with very promising clinical results. IF k publ: 15.203/2014; Aktuální IF: 15.064/2015; WOS citation to 28.11.2016: 66

Odůvodnění panelu:

Původní práce autorů z navrhující instituce, velmi dobrý časopis. Podíl navrhující instituce je nezpochybnitelný. Publikace je v časopise z prvního decilu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

CD2-positive B-cell precursor acute lymphoblastic leukemia with an early switch to the monocytic lineage

obor: FP

Identifikátor: RIV/00064165: /14:10287124!RIV15-MZ0-00064165

Id: 216

Předkladatel výsledku do Pilíře II.:

IČO: 00064165 Všeobecná fakultní nemocnice v Praze

Podíl předkladatele na výsledku: **4 %**

Popis podílu předkladatele:

Z. Zemanova was responsible for the cytogenetics (supported by RVO-VFN64165).

Odůvodnění předkladatele:

Paediatric haematology-focused research group has discovered and described entirely new subgroup of childhood acute leukaemia and published their findings in one of two most prestigious journals in field.

Odůvodnění panelu:

Hodnocení "A" zadáno administrátorem, zřejmě vzhledem k analogickému závěru v předcházejícím kole hodnocení.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

CD2-positive B-cell precursor acute lymphoblastic leukemia with an early switch to the monocytic lineage

obor: FP

Identifikátor: RIV/00064203: /14:10287124!RIV15-MZ0-00064203

Id: 215

Předkladatel výsledku do Pilíře II.:

IČO: 00064203 Fakultní nemocnice v Motole

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

50% |Authorship share for FNM: 50%; the first, senior and corresponding authors all come from our staff.

Odůvodnění předkladatele:

Paediatric haematology-focused research group has discovered and described entirely new subgroup of childhood acute leukaemia and published their findings in one of two most prestigious journals in field. All experiments, including the animal modelling of the disease, were performed by our faculty staff.

Odůvodnění panelu:

Hodnocení "A" zadáno administrátorem, zřejmě vzhledem k analogickému závěru v předcházejícím kole hodnocení.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Circulating serum microRNAs as novel diagnostic and prognostic biomarkers for multiple myeloma and monoclonal gammopathy of undetermined significance

obor: FD

Identifikátor: **RIV/00216224:14110/14:00075513!RIV15-MSM-14110**

Id: 232

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Lékařská fakulta

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

This publication stems fully from the expertise held at the Faculty of Medicine.

Odůvodnění předkladatele:

Times Cited: 27 Category Normalized Citation Impact: 3,85 Percentile in Subject Area: 4,13 Journal Impact Factor: 6,671 This publication falls into highly significant area of research on involvement of miRNAs in pathogenesis of human diseases and utility of such miRNAs in diagnosis and prognosis.

Odůvodnění panelu:

Autoři z předkládající instituce mají dominantní podíl na publikaci, včetně hlavního i korespondenčního autorství. IF časopisu je nad horním decilem oboru.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Circulating serum microRNAs as novel diagnostic and prognostic biomarkers for multiple myeloma and monoclonal gammopathy of undetermined significance

obor: FD

Identifikátor: RIV/65269705: /14:00061545!RIV15-MZ0-65269705

Id: 231

Předkladatel výsledku do Pilíře II.:

IČO: 65269705 Fakultní nemocnice Brno

Podíl předkladatele na výsledku: **43 %**

Popis podílu předkladatele:

This paper was published as a collaborative work of only Czech researchers and clinicians from the Faculty Hospital Brno and Faculty of Medicine of Masaryk University.

Odůvodnění předkladatele:

Circulating microRNA are small noncoding molecules of RNA that are found in various body fluids. Their stability and accessibility make them the perfect biomarkers. Multiple myeloma is the second most common hematological malignancy that is characterized by infiltration of the bone marrow by clonal plasma cells. For diagnosis, painful bone marrow biopsies have to be performed. This paper showed that circulating microRNA from serum of peripheral blood may be used as markers of diagnosis of multiple myeloma as well as its predecessor MGUS (monoclonal gammopathy of undetermined significance) with a sensitivity and specificity of over 89%. This paper also showed that two microRNA (miR-744 and let7e) are connected to survival of multiple myeloma patients.

Odůvodnění panelu:

Autoři z předkládající instituce mají dominantní podíl na publikaci, včetně hlavního i korespondenčního autorství. IF časopisu je nad horním decilem oboru.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Denervace renálního sympatiku pomocí irigačního radiofrekvenčního ablačního katétru pro léčbu hypertenze rezistentní vůč

obor: FA

Identifikátor: RIV/00023884: /12:#0005455!RIV14-MZ0-00023884

Id: 332

Předkladatel výsledku do Pilíře II.:

IČO: 00023884 Nemocnice Na Homolce

Podíl předkladatele na výsledku: **86 %**

Popis podílu předkladatele:

We created 86 percentage

Odůvodnění předkladatele:

This first-in-man prospective non-randomized clinical study with a saline irrigated radiofrequency ablation (RFA) catheter to achieve renal sympathetic denervation (RSDN) was performed in single center fashion in Heart Center Homolka Hospital only. In that time (2010-2011) although these saline-irrigated RFA catheters have been employed widely in the ablation of cardiac chambers and great vessels (aorta, pulmonary artery, pulmonary veins), there were no published data on the safety and efficacy of RSDN with off-the-shelf RFA catheters. This feasibility experience has provided the scientific basis for future randomized controlled trials to address both the scientific question of the safety and effectiveness of RSDN in refractory hypertensive patients in a placebo-controlled blinded manner and the technical question as to relative safety and efficacy of solid-tip and saline-irrigated RFA catheter technology for RSDN without any major complications.

Odůvodnění panelu:

Původní práce, mezinárodní konsorcium, zástupce navrhující instituce je uveden v neabecedním pořadí na méně než 3 místě z více než 5tičlenného seznamu autorů. V průvodce výsledku je podíl upřesněn, zcela zásadní role autorů navrhující instituce.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Detailed analysis of therapy-driven clonal evolution of TP53 mutations in chronic lymphocytic leukemia

obor: FD

Identifikátor: **RIV/00216224:14740/15:00082241!RIV16-MSM-14740**

Id: 341

Předkladatel výsledku do Pilíře II.:

IČO: 00216224 Masarykova univerzita, Středoevropský technologický institut

Podíl předkladatele na výsledku: **70 %**

Popis podílu předkladatele:

The project was done in close cooperation between MU and University Hospital Brno.

Odůvodnění předkladatele:

Times Cited: 24 Category Normalized Citation Impact: 6,49 Percentile in Subject Area: 1,43 Journal Impact Factor: 12,104 The publication had great international impact since our findings influenced the diagnostic procedures and treatment decision making.

Odůvodnění panelu:

Původní práce autorů z navrhující instituce, velmi dobrý časopis. Podíl navrhující instituce je nezpochybnitelný. Q1 ve dvou oborech, časopis v prvním decilu ve dvou oborech.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

DNA Damage Response and Inflammatory Signaling Limit the MLL-ENL-Induced Leukemogenesis In Vivo

obor: FD

Identifikátor: **RIV/00216208:11110/12:12890!RIV13-MSM-11110**

Id: 380

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, 1. lékařská fakulta

Podíl předkladatele na výsledku: **15 %**

Popis podílu předkladatele:

15% | 15 % contribution from 1st Faculty of Medicine, Charles University in Prague.

Odůvodnění předkladatele:

Acute myeloid leukemias (AML), like other cancers, are thought to arise through a multistep process of accumulation of several mutations and/or epigenetic changes. However, although the concept of additional (preceding or subsequent) genetic and/or epigenetic events, that might be necessary for the development of the full AML phenotype caused by a transforming "leukemogenic" oncogene is well accepted (MLL-ENL being a good example), the nature of intrinsic and extrinsic mechanisms that govern the leukemogenic process is not well understood. This study provides novel mechanistic insights into fundamental biology of multistep tumorigenesis, and reports on development and analysis of a new animal model that faithfully mimics human leukemogenesis. Using this mouse model with long latency of mixed-lineage leukemia (MLL) development, we identified DNA damage response as a critical mechanism rate-limiting for malignant transformation by the MLL-ENL oncogene, synergizing with inflammatory factors in checkpoint signaling and senescence, thereby counteracting leukemogenesis. This was the first in vivo model of DNA damage response and inflammatory barriers co-operating in their natural settings, with implications for understanding cancer stem cell evolution and multistep tumorigenesis. This study offers a major conceptual advance in better understanding the stepwise process of AML development in vivo, with a particular focus on the molecular basis and functional impact of the interplay between the cell-intrinsic and tissue environment-dependent fail-safe mechanisms that jointly serve as a barrier that either delays (resulting in a long latency of MLL) or prevents progression to full malignancy.

Odůvodnění panelu:

Hodnocení "A" zadáno administrátorem, zřejmě vzhledem k analogickému závěru v předcházejícím kole hodnocení.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Eating two larger meals a day (breakfast and lunch) is more effective than six smaller meals in a reduced-energy regimen for patients with type 2 diabetes: a randomised crossover study

obor: FB

Identifikátor: **RIV/00216208:11110/14:10292386!RIV15-MSM-11110**

Id: 402

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, 1. lékařská fakulta

Podíl předkladatele na výsledku: **4 %**

Popis podílu předkladatele:

4% [The study was partly supported by the Grant Agency of Charles University - GAUK No 702312.

Odůvodnění předkladatele:

These are the priority results which completely alter the perspective on reduction diet in patients of type 2 diabetes. It is commonly recommended to divide the total energy intake (hypocaloric diet) into several small meals a day, usually 5-6 portions. Our results suggest the improved effect of reducing in the number of portions into two meals per day. The results have already been reflected in the recommendations of the Czech Diabetes Society and are the topic of discussion at international forums.

Odůvodnění panelu:

Hodnocení "A" zadáno administrátorem, zřejmě vzhledem k analogickému závěru v předcházejícím kole hodnocení.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

ERIC recommendations on TP53 mutation analysis in chronic lymphocytic leukemia

obor: FD

Identifikátor: RIV/65269705: /12:#0001654!RIV13-MZ0-65269705

Id: 466

Předkladatel výsledku do Pilíře II.:

IČO: 65269705 Fakultní nemocnice Brno

Podíl předkladatele na výsledku: **35 %**

Popis podílu předkladatele:

The authors of the publication represent seven countries around Europe participating in joint activities studying the role of TP53 in prognostication of chronic lymphocytic leukemia. But the key authors are from the University Hospital Brno (First author Sarka Pospisilova and two co-authors on the 3rd and 4th positions Jitka Malcikova and Martin Trbusek. These three authors had a key and creative role in manuscript preparation (about 70%). In addition, this publication has been built on the previously published work of this team in FN Brno. Prof. Pospisilova and Dr. Malcikova also initiated the activity of introduction of TP53 mutation analysis in CLL into the clinical practice on the international level and as the leading members of the TP53 Network in CLL organize the certification of TP53 mutational analysis worldwide. Certification already passed 72 laboratories from 20 countries. This activity introducing the TP53 mutation analysis into the clinical practice is directly based on the “recommendations” published in this paper.

Odůvodnění předkladatele:

Uvádí se zdůvodnění, proč má být předložený výsledek považován za zvláště významný. Tumor suppressor gene TP53 represents a crucial prognostic and predictive marker in chronic lymphocytic leukemia (CLL). All patients entering treatment should be analyzed for presence of mutations within this gene. In this paper, we took advantage of our long-term experience with TP53 analysis, and summarized importance of TP53 mutations assessment and provided guidelines for proper and reliable TP53 mutational screening. We described detailed instructions which patients should be examined, at which phase of the disease and which methods are available. We presented advantages and shortcomings of each method and discussed the interpretation of the result. Our work contributed to the harmonization of TP53 analysis and awareness of its importance. The publication is very important not only for the CLL community, but also for other fields of cancer research and diagnostics. The significance of the paper is reflected by the high number of citations: 82 citations in WOS, 16.4 citations per year.

Odůvodnění panelu:

Původní práce, mezinárodní konsorcium, zástupce navrhuje instituce je uveden na prvním místě z více než 5tičlenného seznamu autorů (i když není korespondujícím autorem). Důležitá role autorů navrhuje instituce.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Functional inactivation of the rat hippocampus disrupts avoidance of a moving object

obor: FH

Identifikátor: **RIV/00216208:11310/11:10110144!RIV12-MSM-11310**

Id: 550

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Přírodovědecká fakulta

Podíl předkladatele na výsledku: **17 %**

Popis podílu předkladatele:

17% | Charles University, Faculty of Science 17%

Odůvodnění předkladatele:

This study has been rated A in the previous round of evaluation. The work shows that avoidance of a visible moving object (a small robot) relies on the hippocampus, an archicortical brain area considered to be crucial for memory and spatial navigation. Navigation with respect to a stable robot did not require hippocampus. Study was done in an original Enemy avoidance task developed in the laboratory and hippocampus was functionally inactivated by stereotaxic injection of tetrodotoxin. The study represents crucial finding significantly extending the "Cognitive map Theory" of the hippocampus function, which predicted that navigation with respect to visible goal did not require the hippocampus, but did not account for moving goals. The study was published in a high-IF journal (PNAS). The paper in a high-impact renowned journal represents a significant piece of evidence in behavioral neurophysiology. The results of the paper can be nificant extension of the Cognitive Map Theory, proposed by John O'Keefe and Lynn Nadel in 1978 in a book entitled Hippocampus as a Cognitive Map. The paper has steadily rising number of citations, which suggest that i tis becoming to be accepted by neuroscientific community.

Odůvodnění panelu:

Hodnocení "A" zadáno administrátorem, zřejmě vzhledem k analogickému závěru v předcházejícím kole hodnocení.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Gain-of-function mutations of PPM1D/Wip1 impair the p53-dependent G1 checkpoint

obor: FD

Identifikátor: **RIV/00216208:11110/13:10192709!RIV14-MSM-11110**

Id: 557

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, 1. lékařská fakulta

Podíl předkladatele na výsledku: **25 %**

Popis podílu předkladatele:

25% |Major part of this project was performed in the Laboratory of Cancer Cell Biology at IMG including identification and functional characterization of PPM1D mutations in cancer cell lines. Libor Macurek designed all experiments, coordinated collaboration between research teams and wrote the manuscript. Life cell imaging and FACS analysis of HCT116 cells was performed at Division of Cell Biology, NKI, Amsterdam. Analysis of breast cancer patients was done at Institute of Biochemistry and Experimental Oncology, Charles University in Prague. Histological analysis of one sample was done at Institute of Pathology, Charles University in Prague and General University Hospital.

Odůvodnění předkladatele:

Here we have identified novel mutations in exon 6 of the PPM1D gene that result in production of an enzymatically active C-terminally truncated Wip1 phosphatase. Truncation of Wip1 increases its protein stability and impairs the ability of cells to activate the tumor-suppressor protein p53. This results in suppressed ability to activate the G1 checkpoint and allows replication in the presence of damaged DNA. We have found these truncating mutations in the PPM1D gene in selected cancer cell lines and in a subset of breast cancer patients. Truncating mutations in PPM1D represent a newly identified genetic defect predisposing the mutation carriers to cancer development. Future studies are needed to explore the intriguing possibility that truncated Wip1 might be a suitable target for personalized cancer therapy.

Odůvodnění panelu:

Hodnocení "A" zadáno administrátorem, zřejmě vzhledem k analogickému závěru v předcházejícím kole hodnocení.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Gain-of-function mutations of PPM1D/Wip1 impair the p53-dependent G1 checkpoint

obor: EB

Identifikátor: RIV/00064165: /13:10192709!RIV14-MZ0-00064165

Id: 558

Předkladatel výsledku do Pilíře II.:

IČO: 00064165 Všeobecná fakultní nemocnice v Praze

Podíl předkladatele na výsledku: **5 %**

Popis podílu předkladatele:

Major part of this project was performed in the Laboratory of Cancer Cell Biology at IMG including identification and functional characterization of PPM1D mutations in cancer cell lines. Libor Macurek designed all experiments, coordinated collaboration between research teams and wrote the manuscript. Life cell imaging and FACS analysis of HCT116 cells was performed at Division of Cell Biology, NKI, Amsterdam. Analysis of breast cancer patients was done at Institute of Biochemistry and Experimental Oncology, Charles University in Prague. Histological analysis of one sample was done at Institute of Pathology, Charles University in Prague and General University Hospital.

Odůvodnění předkladatele:

Here we have identified novel mutations in exon 6 of the PPM1D gene that result in production of an enzymatically active C-terminally truncated Wip1 phosphatase. Truncation of Wip1 increases its protein stability and impairs the ability of cells to activate the tumor-suppressor protein p53. This results in suppressed ability to activate the G1 checkpoint and allows replication in the presence of damaged DNA. We have found these truncating mutations in the PPM1D gene in selected cancer cell lines and in a subset of breast cancer patients. Truncating mutations in PPM1D represent a newly identified genetic defect predisposing the mutation carriers to cancer development. Future studies are needed to explore the intriguing possibility that truncated Wip1 might be a suitable target for personalized cancer therapy.

Odůvodnění panelu:

Hodnocení "A" zadáno administrátorem, zřejmě vzhledem k analogickému závěru v předcházejícím kole hodnocení.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

H₂O₂-Activated Mitochondrial Phospholipase iPLA₂ gamma Prevents Lipotoxic Oxidative Stress in Synergy with UCP₂, Amplifies Signaling via G-Protein-Coupled Receptor GPR40, and Regulates Insulin Secretion in Pancreatic beta-Cells

obor: FB

Identifikátor: RIV/67985823: /15:00451864!RIV16-AV0-67985823

Id: 591

Předkladatel výsledku do Pilíře II.:

IČO: 67985823 Fyziologický ústav AV ČR, v. v. i.

Podíl předkladatele na výsledku: **100 %**

Popis podílu předkladatele:

The article and related project have been entirely developed by the authors in the Department of Mitochondrial Physiology, Institute of Physiology, for which they employed UCP2 knockout mice and artificially immortalized insulinoma INS1E cells. The world priority results were obtained by silencing of the relevant proteins (UCP2, phospholipase iPLA₂ gamma and GPR40) in combinations with time resolved studies of insulin secretion and the noninvasive cell physiology methods such as confocal microscopy-assisted fluorescent assays of reactive oxygen species, ATP, and other parameters, including the direct visualization of fatty acid diffusion towards the plasma membrane. In conclusion, confocal microscopy facilities for the living cells as well as cooperation within the Krc campus and possibility to breed knockout mice in the neighbor Institute of Molecular Genetics significantly determined the success of this study and the article.

Odůvodnění předkladatele:

The article revealed for the first time a mechanism of fatty acid-stimulated insulin secretion in pancreatic beta cells as follows: upon a redox burst stimulus by the initial fatty acid beta oxidation, the mitochondrial phospholipase iPLA₂ gamma cleaves further fatty acids which diffuse toward the plasma membrane. Consequently, an initial signal is amplified for the GPR40 receptor stimulating KATP channel-insensitive insulin secretion. The article emphasizes as well an antioxidant synergy of the mitochondrial uncoupling protein UCP2 with this mitochondrial phospholipase iPLA₂ gamma. It has been discovered that the phospholipase iPLA₂ gamma is directly activated by H₂O₂ and that resulting cleaved nascent fatty acids (and not the external or cytosolic ones) initiate mild uncoupling mediated by the mitochondrial uncoupling protein UCP2. Such uncoupling decreases superoxide formation in mitochondria, hence reduced oxidative stress. All these results focus on a new relationship between glucose-stimulated and fatty acid-stimulated insulin secretion which undoubtedly will have a great impact for the future translational research on type 2 diabetes etiology. Within the field of diabetology and molecular physiology of pancreatic beta cells these results possess a breakthrough due to the elucidation of fatty acid-stimulated insulin secretion which has not been fully understood until now. Impact factor(2015)= 7,093.

Odůvodnění panelu:

Původní práce autorů z navrhující instituce, velmi dobrý časopis. Podíl navrhující instituce je nezpochybnitelný. Q1 ve dvou oborech, v jednom je časopis v prvním decilu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A
HOTAIR long non-coding RNA is a negative prognostic factor not only in primary tumors, but also in the blood of colorectal cancer patients

obor: FJ

Identifikátor: RIV/00064165: /14:10272352!RIV15-MZ0-00064165

Id: 625

Předkladatel výsledku do Pilíře II.:

IČO: 00064165 Všeobecná fakultní nemocnice v Praze

Podíl předkladatele na výsledku: **5 %**

Popis podílu předkladatele:

a) The study has been predominantly initiated at the institutions in the Czech Republic. Apart from the partners from the 1st Medical Faculty, Charles University, also General University Hospital, Thomayer University Hospital, Masaryk University Hospital in Brno and Teaching Hospital and Medical School in Pilsen were involved. b) The idea, executed work and manuscript entirely originate from the Czech institutions.

Odůvodnění předkladatele:

Since colorectal cancer (CRC) is one of the main causes of death of neoplasia, there is an urgent need for predictive and prognostic markers to revert this trend. Long non-coding RNA HOTAIR (Homeobox Transcript Antisense Intergenic RNA) overexpression in tumors was previously associated with poor prognosis and higher mortality in different carcinomas. In our study we analyzed HOTAIR expression levels in tumor and blood of incident sporadic CRC patients in relation to their overall survival with the aim to evaluate surrogate prognostic marker for sporadic CRC. We have clearly documented for the first time that upregulated HOTAIR relative expression in primary tumors and in blood of CRC patients is associated with unfavorable prognosis. Additionally, our data suggest that HOTAIR blood levels may serve as a potential surrogate prognostic marker in sporadic CRC. The study was 46 times cited (Web of Science, 12. 12. 2016).

Odůvodnění panelu:

Původní práce, role autorů z navrhující instituce je významná, velmi dobrý časopis (Q1).

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A
HOTAIR long non-coding RNA is a negative prognostic factor not only in primary tumors, but also in the blood of colorectal cancer patients

obor: FJ

Identifikátor: **RIV/00669806: /14:10272352!RIV15-MZ0-00669806** Id: 626

Předkladatel výsledku do Pilíře II.:

IČO: 00669806 Fakultní nemocnice Plzeň, Fakultní nemocnice Plzeň

Podíl předkladatele na výsledku: **10 %**

Popis podílu předkladatele:

10% |Faculty Hospital in Pilsen participated on the monitoring one group of patients and on the final evaluation.

Odůvodnění předkladatele:

It is the first use of RNA monitoring as a prognostic factor in colorectal cancer within a multicenter study. This study is a part of the long term research project in order to implement this method into the routine practice.

Odůvodnění panelu:

Původní práce, role autorů z navrhující instituce je významná, velmi dobrý časopis (Q1).

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Intermittent hemodialysis is superior to continuous veno-venous hemodialysis/hemodiafiltration to eliminate methanol and formate during treatment for methanol poisoning

obor: FE

Identifikátor: **RIV/00216208:11110/14:10282875!RIV15-MSM-11110**

Id: 710

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, 1. lékařská fakulta

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

50% |Department of Occupational Medicine, Toxicological Information Center: general conception and study design, study hypothesis and methodology, preparation and distribution of the study protocol, coordination and management of the multi-center blood serum samples and data collection on the technical parameters of dialysis from 10 hospitals in the Czech Republic, prospective collection of clinical and laboratory data on admission, during hospitalization, and on discharge from hospital in 24 patients, analysis of the results of toxicological laboratory investigations (measurements of methanol and formate in blood serum samples), elimination half-life calculations, literary review on the problem, preparation and submission of the manuscript as a first and corresponding author, preparation and submission of revisions during the peer review process. Department of Toxicology, Institute of Forensic Medicine and Toxicology: laboratory measurements of serum methanol and formic acid concentration in blood serum samples of 24 methanol-poisoned patients. Institute of Biophysics and Informatics: statistical analysis of the data, multivariate regression analysis of serum methanol and formate elimination half-lives on different modalities of hemodialysis, cooperation on manuscript preparation, graphs and diagrams.

Odůvodnění předkladatele:

Mass or cluster methanol poisonings represent a challenge for health systems throughout the world, with mortality exceeding 40% and high prevalence of visual and cerebral damage in survivors. During 2000-2012, more than 50 mass poisoning outbreaks with about 5000 poisoned subjects and 2000 fatalities had occurred worldwide. Rapid elimination of methanol and its metabolite formate is crucial for recovery. Despite an established role of hemodialysis, lack of consensus exists regarding the modality of choice. Priority: The study was the first to prove the superiority of intermittent hemodialysis (IHD) over continuous modalities (CVVHD/HDF) in terms of the rate of elimination of both methanol and formate, the latter being especially important in the late-presenting patients. By kinetics data, we proved short 2-hour sessions of IHD are insufficient to eliminate formate and provided recommendations on a minimum duration and optimal technical parameters of dialysis sessions. Scientific benefit: The results were used by International Working Group "Extracorporeal Treatments in Poisoning (EXTRIP)" in Recommendations for the role of extracorporeal treatments in the management of acute methanol poisoning, where IHD was recommended as a modality of choice (Roberts et al., 2015)¹. Economic benefit: The median cost of hospital treatment of one poisoned patient is 2,422 (IQR 1,364-4,748) euros. In our study, application of IHD led to 2.2-time more rapid elimination of methanol and formate. The intensive care unit length of stay and the treatment costs depend on the duration and cost of extracorporeal treatment. Social benefit: optimization of extracorporeal treatment may have both direct (by rapid elimination of causative agent) and indirect (by decreasing the time/dose of systemic anticoagulation during dialysis) effect on the prevalence and severity of health sequelae (brain hemorrhages, basal ganglia necrosis, optic nerve/retinal nerve fibers damage) in survivors.

Odůvodnění panelu:

Hodnocení "A" zadáno administrátorem, zřejmě vzhledem k analogickému závěru v předcházejícím kole hodnocení.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Length of Occlusion Predicts Recanalization and Outcome After Intravenous Thrombolysis in Middle Cerebral Artery Stroke

obor: FH

Identifikátor: **RIV/00669806: /14:10218416!RIV15-MZ0-00669806**

Id: 780

Předkladatel výsledku do Pilíře II.:

IČO: 00669806 Fakultní nemocnice Plzeň, Fakultní nemocnice Plzeň

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

50% |It is a multidisciplinary project performed by the employees from the Faculty Hospital in Pilsen and from the Medical Faculty in Pilsen.

Odůvodnění předkladatele:

This projects is beneficial for the optimal indication of the thrombolytic therapy and for the prediction therapy effect in patients with brain stroke. This study is unique in the Czech Republic from, point of view of the number of the patients enrolled.

Odůvodnění panelu:

Autoři z předkládající instituce mají dominantní podíl na publikaci, včetně hlavního i korespondenčního autorství. IF časopisu je nad horním decilem oboru.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Liposomal paclitaxel formulations

obor: FR

Identifikátor: RIV/00027162: /12:#0000927!RIV13-MZE-00027162 Id: 792

Předkladatel výsledku do Pilíře II.:

IČO: 00027162 Výzkumný ústav veterinárního lékařství, v.v.i.

Podíl předkladatele na výsledku: **75 %**

Popis podílu předkladatele:

Based upon a our research focused on preparation, characterisation and testing of liposomal hydrophobic anticancer drugs.

Odůvodnění předkladatele:

The paper summarised our experience in the field of drug targeting by application of biocompatible nanoparticles, especially liposomes. Anticancer drug paclitaxel belongs to chemotherapeutical armament and is one of the most applied drugs for treatment of cancer, especially ovarian cancer. Formulation of hydrophobic anticancer drugs like paclitaxel is still a problem. With respect of paclitaxel the preparations used in clinic (Taxol®) are not free from side effects and development of new formulations is the task for academic research as well as for pharmaceutical industry. Liposomes are the most appropriate carriers for hydrophobic drugs and we have developed several liposomal formulation for hydrophobic drugs including paclitaxel. We developed unique liposomal preparation with paclitaxel by application of pocket forming lipids to increase encapsulation capacity for paclitaxel and long term stability of this preparation. In mice model of aggressive melanoma (B16F10) we have proved the concept. In comparison to Taxol® (Cremophor EL® based formulation) we were able to increase maximal tolerable dose (MTD) and no adverse effect were observed at doses of 100 mg/kg. This is in great contrast to Taxol®, where MTD is about 20 mg/kg. Therefore, we were able to apply high doses of paclitaxel formulated in liposomes and we were able to suppress significantly melanoma metastases in lungs of mice. Taxol® did not suppress lung metastases at all at highest MTD doses (20 mg/kg). The paper summarised present knowledges of paclitaxel formulation and future prospect in the field. At present the paper reached 80 citation and was awarded by gold cup for the most cited paper in the field of pharmacology and toxicology. Journal of Controlled Release (IF 7.441 2015; IF8.407 5 year) belongs to TOP 10 journals in the field of Pharmacology & Pharmacy (9 of 255).

Odůvodnění panelu:

Přehledová práce autorů z navrhující instituce, velmi dobrý časopis. Podíl navrhující instituce je nezpochybnitelný. Q1 ve dvou oborech, v jednom je časopis v prvním decilu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Long-term follow-up of Wilson Disease: natural history, treatment, mutations analysis and phenotypic correlation

obor: FB

Identifikátor: **RIV/00064165: /11:9741!RIV12-MZ0-00064165** Id: 800

Předkladatel výsledku do Pilíře II.:

IČO: 00064165 Všeobecná fakultní nemocnice v Praze

Podíl předkladatele na výsledku: **20 %**

Popis podílu předkladatele:

The corresponding author (and the others) is from the common workplace of the First Faculty of Medicine and General University Hospital. It is not easy to completely separate the role of these two institutions.

Odůvodnění předkladatele:

The authors present the result of long term follow-up study on patients with Wilson disease. The follow-up interval is more than 40 years and the comparison of survival with general population is also presented. This is one the largest cohort (117 patients) with this rare disease followed for that long period ever described in literature. The comparison of long-term survival data of so large cohort with general population has not been yet published. The main impact of this study lies is the finding that survival of patients with Wilson disease (when appropriate treated) does not different from survival of the general population. The authors also describe of 2 new mutations (till present not described) leading to Wilson disease. Moreover the description of different treatment regimens is presented, giving the instruction for treatment of Wilson patients in daily praxis. On conclusion the study presents data on one of the largest cohort of patients followed for the longest time period ever published in literature. The study was published in journal "Liver International" one of the top world journals in hepatology (IF=3.824). The study was cited 35 times (Web of Science, 25. 11. 2016).

Odůvodnění panelu:

Největší kohorta pacientů poměrně vzácné nemoci, jaká byla kdy studována a publikována, sledování nejdější dobu. Velmi kvalitní kolaborativní studie.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Long-term survival after alcohol septal ablation for hypertrophic obstructive cardiomyopathy: a comparison with general population

obor: FA

Identifikátor: RIV/00159816: /14:00061047!RIV15-MZ0-00159816

Id: 801

Předkladatel výsledku do Pilíře II.:

IČO: 00159816 Fakultní nemocnice u sv. Anny v Brně

Podíl předkladatele na výsledku: **20 %**

Popis podílu předkladatele:

Institution supplied data from 30 % of the enrolled patients (30 % of patients was treated in our institution). The institution participated in the drafting of the manuscript and its revisions.

Odůvodnění předkladatele:

The study refutes the thesis that alcohol septa ablation (ASA) leads to an impairment of the prognosis of diseased with HOCM, it is not achieved a similar reduction in mortality as after a surgical myectomy. This study has potential to fundamentally change treatment of patients with HOCM. Publication obtained 12 citations according Web of Science.

Odůvodnění panelu:

Hodnocení "A" zadáno administrátorem, zřejmě vzhledem k analogickému závěru v předcházejícím kole hodnocení.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Precise assessment of noncompliance with the antihypertensive therapy in patients with resistant hypertension using toxicological serum analysis

obor: FA

Identifikátor: RIV/00064165: /13:10189066!RIV14-MZ0-00064165

Id: 1064

Předkladatel výsledku do Pilíře II.:

IČO: 00064165 Všeobecná fakultní nemocnice v Praze

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

The definition of hypotheses, examination of the subjects, acquisition and analysis of clinical data, the blood sampling, analysis of the results and preparation of the manuscript were performed in a cooperation of the common departments of both (equal contribution) General University Hospital and 1st Faculty of Medicine (3rd Department of Medicine, Department of Endocrinology and Metabolism and Institute of Forensic Medicine and Toxicology, Toxicology), one co-author providing statistical analysis had multiple affiliations beneath of 2nd Dept. Internal medicine so there was a minor contribution of the Institute for Clinical and Experimental Medicine, Prague (IKEM).

Odůvodnění předkladatele:

Our study is one of the first studies done in a large group of patients with resistant hypertension, which supported the great importance of a precise detection of noncompliance to antihypertensive treatment using toxicological serum analysis. Arterial hypertension is one of the most frequent population diseases, which only in Czech Republic affects minimally 1,5 million adults. Resistant hypertension is a common problem in hypertension treatment (with prevalence around 10%) and patients with uncontrolled hypertension are at a high risk of complications (stroke, heart failure and renal failure). The main finding is a surprisingly low compliance with drug treatment in out-patients with resistant hypertension. Therefore, the results of our study support the recommendation to evaluate antihypertensive drugs concentrations as a useful and precise method for assessment of noncompliance with the antihypertensive treatment in patients with resistant hypertension. Detection of noncompliant patients allows to direct our effort to educate these noncompliant patients to start taking medication and so to improve their blood pressure control and decrease risk of serious life-threatening complications of hypertension like stroke, heart and renal failure. It has also a potential impact on healthcare economy - after normalization of blood pressure we can avoid costly diagnostic work up for secondary hypertension or use of interventional treatment methods. There is also a possibility to save money of the Czech social security administration for unneeded sickness leaves and disability pensions. The study has a significant impact in international scientific field, which has been confirmed by rapidly increasing number of citations (up to date 15.12.2016 ...38 citations).

Odůvodnění panelu:

Původní práce, role autorů z navrhující instituce je významná, velmi dobrý časopis, IF v horním decilu. Velmi hojně citovaná práce.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Prognostic significance of low volume sentinel lymph node disease in early-stage cervical cancer

obor: FK

Identifikátor: **RIV/00064165: /12:12354!RIV13-MZ0-00064165** Id: 1083

Předkladatel výsledku do Pilíře II.:

IČO: 00064165 Všeobecná fakultní nemocnice v Praze

Podíl předkladatele na výsledku: **40 %**

Popis podílu předkladatele:

Authors from General University Hospital in Prague and First Faculty of Medicine, Charles University in Prague (80 %) - study design, data collection, contribution to statistical analysis, results interpretation, selection of references, article writing, article submission and communication with reviewers).

Odůvodnění předkladatele:

This international multicenter study under the leadership of our institution for the first time evaluated the impact of micrometastasis in lymph nodes on the prognosis of patients with cervical cancer. On the largest group of over 600 women published until now it showed significantly decreased overall survival associated with the detection of micrometastasis. These results have a direct impact on the management of patients with early stages cervical cancer. The study was cited 38 times (Web of Science, 12. 12. 2016).

Odůvodnění panelu:

Původní práce, spolupráce se zahraničím, role autorů z navrhující instituce je však významná (první a korespondující autor), velmi dobrý časopis - alespoň v jednom oboru je časopis v prvním decilu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Randomized Comparison of Renal Denervation Versus Intensified Pharmacotherapy Including Spironolactone in True-Resistant Hypertension Six-Month Results From the Prague-15 Study

obor: FA

Identifikátor: **RIV/00216208:11110/15:10294656!RIV16-MSM-11110**

Id: 1114

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, 1. lékařská fakulta

Podíl předkladatele na výsledku: **20 %**

Popis podílu předkladatele:

20% |The authors are from common workplace of 1st Faculty of Medicine and General University Hospital and from common workplace of 3rd Faculty of Medicine and University Hospital Kralovske Vinohrady. A minor contribution is from the University Hospital Olomouc and Nemocnice Podlesí, Trinec.

Odůvodnění předkladatele:

This is an extremely important original academic randomized clinical trial investigating the role of catheter-based renal denervation for treatment of severe pharmaco-resistant hypertension. Patients were randomly assigned to group A (catheter-based renal denervation plus optimal medical therapy) versus group B (spironolactone added on top of optimal medical therapy). In other words, the study compared new expensive technology versus old and cheap medication. The negative result of this study significantly contributed to decline of the original international enthusiasm for renal denervation and possibly saved millions euro to health care providers worldwide. The study was 100% academic, fully designed at the Charles University Prague, jointly by the Third Medical Faculty and First Medical Faculty teams. Both teams contributed by 50% to the study design, data collection / analysis and manuscript writing. Furthermore, the study team was awarded twice for this outstanding study: (1) B. Hrozny Prize awarded by the rector of the Charles University and (2) Discovery Award for the Innovative Achievement in Biomedical Science.

Odůvodnění panelu:

Vynikající studie českých autorů z VFN, 1.LF UK a 3.LF UK v prestižním časopisu. 60 citačních ohlasů za 2 roky.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Randomized Comparison of Renal Denervation Versus Intensified Pharmacotherapy Including Spironolactone in True-Resistant Hypertension Six-Month Results From the Prague-15 Study

obor: FA

Identifikátor: **RIV/00216208:11120/15:43909170!RIV15-MSM-11120**

Id: 1113

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, 3. lékařská fakulta

Podíl předkladatele na výsledku: **40 %**

Popis podílu předkladatele:

40% |Third Faculty of Medicine - 40%.

Odůvodnění předkladatele:

This is an extremely important original academic randomized clinical trial investigating the role of catheter-based renal denervation for treatment of severe pharmacoresistant hypertension. Patients were randomly assigned to group A (catheter-based renal denervation plus optimal medical therapy) versus group B (spironolactone added on top of optimal medical therapy). In other words, the study compared new expensive technology versus old and cheap medication. The negative result of this study significantly contributed to decline of the original international enthusiasm for renal denervation and possibly saved millions euro to health care providers worldwide. The study was 100% academic, fully designed at the Charles University Prague, jointly by the Third Medical Faculty and First Medical Faculty teams. Both teams contributed by 50% to the study design, data collection / analysis and manuscript writing. Furthermore, the study team was awarded twice for this outstanding study: (1) B. Hrozny Prize awarded by the rector of the Charles University and (2) Discovery Award for the Innovative Achievement in Biomedical Science.

Odůvodnění panelu:

Vynikající studie českých autorů z VFN, 1.LF UK a 3.LF UK v prestižním časopisu. 60 citačních ohlasů za 2 roky.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Randomized Comparison of Renal Denervation Versus Intensified Pharmacotherapy Including Spironolactone in True-Resistant Hypertension Six-Month Results From the Prague-15 Study

obor: FA

Identifikátor: **RIV/00064165: /15:10294656!RIV16-MZ0-VSEOBECN** Id: 1115

Předkladatel výsledku do Pilíře II.:

IČO: 00064165 Všeobecná fakultní nemocnice v Praze

Podíl předkladatele na výsledku: **20 %**

Popis podílu předkladatele:

The authors are from common workplace of 1st Faculty of Medicine and General University Hospital and from common workplace of 3rd Faculty of Medicine and University Hospital Kralovske Vinohrady. A minor contribution is from the University Hospital Olomouc and Nemocnice Podlesí, Trinec.

Odůvodnění předkladatele:

This is an extremely important original academic randomized clinical trial investigating the role of catheter-based renal denervation for treatment of severe pharmacoresistant hypertension. Patients were randomly assigned to group A (catheter-based renal denervation plus optimal medical therapy) versus group B (spironolactone added on top of optimal medical therapy). In other words, the study compared new expensive technology versus old and cheap medication. The negative result of this study significantly contributed to decline of the original international enthusiasm for renal denervation and possibly saved millions euro to health care providers worldwide. The study was 100% academic, fully designed at the Charles University Prague, jointly by the Third Medical Faculty and First Medical Faculty teams. Both teams contributed by 50% to the study design, data collection / analysis and manuscript writing. Furthermore, the study team was awarded twice for this outstanding study: (1) B. Hrozny Prize awarded by the rector of the Charles University and (2) Discovery Award for the Innovative Achievement in Biomedical Science.

Odůvodnění panelu:

Vynikající studie českých autorů z VFN, 1.LF UK a 3.LF UK v prestižním časopisu. 60 citačních ohlasů za 2 roky.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Renal mechanisms contributing to the antihypertensive action of soluble epoxide hydrolase inhibition in Ren-2 transgenic rats with inducible hypertension

obor: FA

Identifikátor: RIV/00023001: /11:00002481!RIV12-MZ0-00023001

Id: 1144

Předkladatel výsledku do Pilíře II.:

IČO: 00023001 Institut klinické a experimentální medicíny

Podíl předkladatele na výsledku: **90 %**

Popis podílu předkladatele:

The whole study was performed by IKEM research team supported by the own financial support. The international co-authors provided us with the compound and participated in the study design, paper preparation and submission.

Odůvodnění předkladatele:

The formation of cytochrome P450 metabolites is altered in the various models of hypertension, and drugs that target these pathways have been reported to attenuate the development of hypertension and renal injury in the preclinical studies. In this study, a novel therapeutic approach, cis-4-[4-(3-adamantan-1-yl-ureido)-cyclohexyloxy]-benzoic acid (c-AUCB), has been tested in model of malignant form of hypertension. This novel drug was designed for the oral administration to inhibit degradation of epoxyeicosanoids with antihypertensive and renoprotective actions. In addition, the its effects on renal hemodynamics and tubular function were also evaluated in hypertensive model and the pathophysiological mechanisms have been addressed and discussed. These observations provide further evidence evaluating new therapeutic approaches for the treatment of hypertension.

Odůvodnění panelu:

Autoři z předkládající instituce mají dominantní podíl na publikaci, včetně hlavního i korespondenčního autorství. IF časopisu je nad horním decilem oboru.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

Sad mood induction has an opposite effect on amygdala response to emotional stimuli in euthymic patients with bipolar disorder and healthy controls

obor: FL

Identifikátor: **RIV/00023752:** /15:43914664!RIV16-MZ0-NARODNIU Id: 1169

Předkladatel výsledku do Pilíře II.:

IČO: 00023752 Národní ústav duševního zdraví

Podíl předkladatele na výsledku: **90 %**

Popis podílu předkladatele:

This study was carried out at Prague Psychiatric Centre (PCP) which has been transformed to National Institute of Mental Health (NUDZ) in 2015. At NUDZ/PCP, we designed this study, recruit the patients, analyzed the data and prepared the manuscript for submission. Hence, the contribution of NUDZ (formerly PCP) is 90%. Patients were scanned in Institute for Clinical and Experimental Medicine, IKEM (contribution 10%). No other institutions participated on data acquisition, analyses or writing.

Odůvodnění předkladatele:

This fMRI study aimed to answer 2 essential questions related to the pathophysiology and nature of bipolar affective disorder (BAP). First, to test the influence of specific mood conditions on emotion processing in the amygdala, participants (20 patients with remitted BAD and 20 healthy controls) were exposed to a series of emotional faces within periods of sad and normal mood induced by innovative method of autobiographical scripts. Second, we identified the networks responsible for amygdala reactivity to affective stimuli. The sad and normal mood exerted opposite effects on the amygdala response to emotional faces in patients compared with controls. Sad mood amplified the amygdala re-sponse to sad facial stimuli in controls but attenuated the amygdala response in patients. The groups differed in functional connectivity between the amygdala and the inferior prefrontal gyrus of ventrolateral prefrontal cortex (vlPFC). The sad mood challenge increased connectivity during the period of processing sad faces in patients but decreased connectivity in controls. This amygdala-vlPFC hyper-connectivity could be responsible for amygdala dysregulation in patients with BAD. Impact and relevance of this study: i) we developed unique method for emotional processing evaluation (autobiographic script mood challenge in fMRI) in remitted BAP, ii) our finding indicates that BAD, even in remission, could be characterized by specific patterns of interaction between emotional setting (mood) and the processing of current emotional stimuli (affect), iii) our results support the role of the amygdala-vlPFC as the system of dysfunctional contextual affective processing in patients with BD. Opposite amygdala reactivity unmasked by the mood challenge paradigm could represent a trait marker of altered mood regulation in patients with BD. This study received award of Czech Neuropsychopharmacological Society for the best publication in 2015.

Odůvodnění panelu:

Původní práce autorů z navrhující instituce, velmi dobrý časopis. Podíl navrhující instituce je nezpochybnitelný. Q1 ve dvou oborech, v dalším časopise je v prvním decilu.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A
ST-Segment Elevation Myocardial Infarction Treated by Radial
or Femoral Approach in a Multicenter Randomized Clinical Trial

obor: FA

Identifikátor: RIV/00669806: /14:10194514!RIV15-MZ0-00669806

Id: 1271

Předkladatel výsledku do Pilíře II.:

IČO: 00669806 Fakultní nemocnice Plzeň, Fakultní nemocnice Plzeň

Podíl předkladatele na výsledku: **25 %**

Popis podílu předkladatele:

25% |Faculty Hospital in Pilsen was the coordinating instituted of the project and the first author of the study. It is a study following several previous projects. Results of the following study have been currently evaluated and have been already accepted for the publication.

Odůvodnění předkladatele:

This project is beneficial for optimized invasive therapy of myocardial infarction based on the multicenter performance and evaluation of the different approaches for invasive procedure on the coronary vessels.

Odůvodnění panelu:

Původní práce, mezinárodní konsorcium, výborný časopis (první decil alespoň v jednom oboru), zástupce navrhuující instituce je prvním a korespondujícím autorem.

PLNÝ NÁZEV VYBRANÉHO PŘÍSPĚVKU TŘÍDY A

ST-Segment Elevation Myocardial Infarction Treated by Radial or Femoral Approach in a Multicenter Randomized Clinical Trial

obor: FA

Identifikátor: **RIV/00216208:11140/14:10194514!RIV15-MSM-11140**

Id: 1272

Předkladatel výsledku do Pilíře II.:

IČO: 00216208 Univerzita Karlova, Lékařská fakulta v Plzni

Podíl předkladatele na výsledku: **50 %**

Popis podílu předkladatele:

50% |This project was initiated by Faculty of Medicine Pilsen, Charles University Prague as an academic trial and was supported by Charles University Research Fund - project No. P36. By the decision of Czech Society of Cardiology this STEMI-RADIAL trial won in category „ The best from Czech cardiology in 2014“

Odůvodnění předkladatele:

STEMI-RADIAL (ST-Segment Elevation Myocardial Infarction Treated by RADIAL or Femoral Approach) was a national, randomized, multicenter, academic trial. The aim of this trial was to compare radial and femoral approach in patients presenting with ST-elevation myocardial infarction (STEMI) and undergoing primary percutaneous coronary intervention (PCI). Seven hundreds and seven patients referred for STEMI < 12 hours of symptom onset were randomized at four high-volume Czech PCI centers. The primary endpoint was the cumulative incidence of major bleeding and vascular access site complications at 30 days. The net adverse clinical events (NACE) defined as a composite of death, MI, stroke and major bleeding/vascular complications together with intensive care stay, access site crossover, contrast volume and death at 6 months were secondary endpoints. The primary endpoint occurred in 1.4% in the radial group (n=348) and 7.2% in femoral group (n=359), (p=0.0001) and NACE rate was 4.6% vs. 11.0% (p=0.0028). Crossover from radial to femoral approach was 3.7%. Intensive care stay was significantly reduced in radial group (2.5+-1.7 vs. 3.0+-2.9 days, p=0.0016) as well as contrast consumption (170+-71 vs. 182+-60 ml, p=0.01). Mortality in the radial and femoral groups were 2.3% vs. 3.6% (p=0.31) at 6 months. In summary, this Czech multicenter trial, initiated by Faculty of Medicine Pilsen, Charles University Prague, demonstrated is first in the world that radial approach is superior to transfemoral for patients with STEMI < 12 hours treated by primary PCI in high-volume experienced centers.

Odůvodnění panelu:

Původní práce, mezinárodní konsorcium, výborný časopis (první decil alespoň v jednom oboru), zástupce navrhující instituce je prvním a korespondujícím autorem.