

## **Chapter VI – Remarkable achievements in research, development and innovation in 2005**

This chapter follows in the steps of a similar chapter contained in R&D 2005 Analysis. Besides awards granted by departments supporting research and development from their own budget chapters, other awards are included as well:

- Awards granted in the competition Czech Head (Česká hlava)
- Prize of the Association of Innovative Entrepreneurship of CR
- Prestigious foreign awards granted to Czech research workers in 2005

Data on granted awards (honours) were requested by the Chairman of the Research and Development Council. Data on Czech Head awards were taken from the public documents of the competition organiser Caneton, s.r.o. Data on foreign honours were produced by members of the R&D&I 2006 Analysis working group, who represent the Academy of Sciences of the Czech Republic and the Council of Universities.

The project Czech Head intended to support scientific and technical intelligence was announced in March 2002. It consists of a set of mutually interconnected activities the aim of which is to popularize science and increase social respect for Czech scientists and engineers whose results can have significant impact on the future prosperity of the country. Each year the project culminates in a ceremonial honouring the best Czech “heads” of science and technology. Awards are granted on the basis of a public competition announced by the already mentioned company Caneton s.r.o. and the Czech Head Foundation. The project's reputation has been steadily growing. In 2005, the category National Prize of the Government of CR Czech Head was added.

The National Prize of the Government of CR is awarded as a financial bonus for remarkable achievements in the field of research and development to an individual who attained this achievement. At first, the financial bonus in the amount of CZK 1 million was provided from the Czech Head Foundation funds. Since 2006 the money has been granted from the state budget, from resources allocated to research and development. The decision to award the prize falls under the competence of the Government of the Czech Republic, who do so upon the proposal of the Research and Development Council. Awards in seven other categories are granted within this competition. Details are given in Part VI.2 of this chapter.

The chapter has three parts as follows:

- Part VI.1 – Awards (honours) granted by the Government and individual departments (administrators of budget chapters supporting the research and development). This part includes also the National Prize of the Czech Government Czech Head and Prize for the Innovation of the Year awarded by the Association of Innovative Entrepreneurship of CR.
- Part VI.2 – Other awards granted within the Czech Head competition
- Part VI.3 – Prestigious foreign awards granted to Czech research workers

## VI.1 Awards granted by the Government of CR and its departments

### VI.1.1 Government of the Czech Republic

<p><i>Name of achievement in R&amp;D&amp;I:</i></p> <p><b>Prize to the founder of electron microscopy discipline and initiator of the manufacture of world-competitive electron microscopes. Development of latest microscopy methods and instruments. I highly appreciate this very connection between basic research and market application. Equally, I appreciate your efforts to educate your experts/followers of this discipline, who became successful representatives and implementers of scientific achievements world-wide, thanks to you.</b></p>
<p><i>Brief characteristic of achievement in R&amp;D&amp;I:</i></p> <p>Many years at the world top level in this discipline. Application of basic research results in the manufacture of top instruments being competitive on the most demanding markets. Continuing education of high-level scientific workers. He is most appreciated for his pioneering work in holography, emission electron microscopy and slow electron microscopy. Most recently he has focused on low-voltage scanning microscopy which is applied in biology.</p>
<p><i>Author(s) of achievement in R&amp;D (name, surname, title, institution):</i></p> <p>Prof. Ing. Armin Delong, DrSc., Institute of Scientific Instruments of AS CR</p>
<p><i>Granted award (name):</i></p> <p>National Prize of the Government of the Czech Republic Czech Head</p>
<p><i>Who granted the award:</i></p> <p>Government of the Czech Republic</p>

### VI.1.2 Ministry of Health

<p><i>Name of achievement in R&amp;D&amp;I:</i></p> <p><b>Vaccines against two types (MHC I+ a MHC I-) of tumours induced by E6/E7 HPV16 virus oncogenes</b></p>
<p><i>Brief characteristic of achievement in R&amp;D&amp;I:</i></p> <p>Method of gene therapy of tumours induced by human papilloma virus 16 (HPV-16) oncogenes, construction of a vaccine prepared from dendritic cells and verification of effects.</p>
<p><i>Author(s) of achievement in R&amp;D&amp;I (name, surname, title, institution):</i></p> <p>Prof. MUDr. Jan Bubeník, DrSc., Mgr. Jana Šímová, CSc., RNDr. Marie Indrová, CSc., RNDr. Milan Reiniš, CSc. – Institute of Molecular Genetics of AS CR</p>
<p><i>Granted award (name):</i></p> <p>Prize of the Minister of Health</p>
<p><i>Who granted the award:</i></p> <p>Minister of Health</p>
<p><i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i></p> <p>New therapeutic procedures healing residual disease after surgery and acting to prevent</p>

formation of cervical carcinoma metastases. Reduction in the cervical carcinoma death rates.

### VI.1.3 Ministry of Agriculture

<p><i>Name of achievement in R&amp;D&amp;I:</i></p> <p><b>Variety of perennial wheat Rheia registered in 2002</b></p>
<p><i>Brief characteristic of achievement in R&amp;D&amp;I:</i></p> <p>Cultivation of new wheat variety Rheia.</p>
<p><i>Author of innovation (name of enterprise, organisation):</i></p> <p>Ing. Václav Šíp, CSc. – Research Institute of Crop Production, Prague 6 - Ruzyně</p>
<p><i>Granted award (name):</i></p> <p>Prize of the Minister of Agriculture for the best applied achievement of research and development in 2006</p>
<p><i>Who granted the award:</i></p> <p>Minister of Agriculture</p>
<p><i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i></p> <p>Rheia wheat is a high-yielding variety responding effectively to various cultivation interventions and showing resistance against major diseases and high resistance to cold. It copes well with conditions of late sowing. It belongs among 5 most widely spread varieties of perennial wheat in the Czech Republic.</p>

  

<p><i>Name of achievement in R&amp;D&amp;I:</i></p> <p><b>Coreus marginatus (Heteroptera: Coreidae) as a natural enemy of Rumex obtusifolius (Polygonaceae)</b></p>
<p><i>Brief characteristic of achievement in R&amp;D&amp;I:</i></p> <p>Possibility of potential use of a squash bug (<i>Coreus marginatus</i>) to regulate biologically the spread of the invasive <i>Rumex obtusifolius</i>.</p>
<p><i>Author(s) of achievement in R&amp;D (name, surname, title, institution):</i></p> <p>Mgr. Martina Hrušková – Research Institute of Crop Production, Prague 6 - Ruzyně</p>
<p><i>Granted award (name):</i></p> <p>Prize of the Minister of Agriculture for young researchers for 2006</p>
<p><i>Who granted the award:</i></p> <p>Minister of Agriculture</p>
<p><i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i></p> <p>Squash bug (<i>Coreus Marginalis</i>) feeds on the seeds of <i>Rumex obtusifolius</i> and is able to damage it very dramatically. This squash bug has a negative impact on the seed quality and potential to be used as a biological control of the spread of invasive Rumex on agriculturally managed lands.</p>

VI.1.4 Ministry of Industry and Trade

<i>Name of achievement in R&amp;D&amp;I:</i> <b>Transport Unit</b>
<i>Brief characteristic of achievement in R&amp;D&amp;I:</i> Design of a transport unit structure and development of a functional sample of the transport unit intended for providing acceptable living conditions for persons and assets inside an object. These transport units are utilisable within the Integrated Rescue System (IRS). By combining several transport units a mobile hospital can be put together. The unit is equipped with an efficient filtration and ventilation systems. It provides ideal living conditions for survival in case of bacteriological and chemical attacks.
<i>Author(s) of achievement in R&amp;D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):</i> Doc. Ing. Václav Nėtek, CSc., NH Zábřeh, a.s.
<i>Granted award (name):</i> IDET News Prize 2005
<i>Who granted the award:</i> IDET 2005
<i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i> The main benefit of the project is that this transport unit can be installed in a relatively short time anywhere in the area attacked by bacteriological and chemical weapons. At the same time, it is also possible to form a mobile point, even a mobile hospital, or another station within IRS by suitable arrangement of these cells.

<i>Name of achievement in R&amp;D&amp;I:</i> <b>Launching the manufacture of CAMEL pneumatic weaving machines</b>
<i>Brief characteristic of achievement in R&amp;D&amp;I:</i> Launching the manufacture of CAMEL pneumatic weaving machines that are unique especially due to their performance being nearly by one third higher in comparison to competitive products.
<i>Author(s) of achievement in R&amp;D name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):</i> Doc. Ing. Josef Dvořák, CSc., Ing. Petr Karel, Ing. Jiří Mlynář, Ing. Zdeněk Volanský – Research Institute for Textile Machines, Liberec a.s.
<i>Granted award (name):</i> Entrepreneurial Project of the Year 2005 Award – Project with the largest innovative potential – 1 <sup>st</sup> place
<i>Who granted the award:</i> Ministry of Industry and Trade (Competition organiser: Investment and Business Development Agency CzechInvest and Association for Foreign Investments – AFI).
<i>Brief reasoning behind the proposal – contribution to the world's science development, potential or</i>

*actual benefits to economy and society of the Czech Republic:*

CAMEL is a radical product innovation. The structural concept of the machine was basically changed, the mass of movable parts reduced, mechanical transmissions removed and replaced by mechatronic elements. None of the world manufacturers has such machine available.

*Name of achievement in R&D&I:*

**Expanding the services – BIC Ostrava, s.r.o.**

*Brief characteristic of achievement in R&D&I:*

Expanding the services of the Business and Innovation Centre (BIC) Ostrava, s.r.o. and providing better conditions for development of innovative environment in the region.

*Author(s) of achievement in R&D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):*

BIC Ostrava, s.r.o.

*Granted award (name):*

Entrepreneurial Project of the Year 2005 Award – Business incubator of the year – 1<sup>st</sup> place

*Who granted the award:*

Ministry of Industry and Trade (Competition organiser: Investment and Business Development Agency CzechInvest and Association for Foreign Investments – AFI)

*Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:*

BIC Ostrava dedicates a special attention to research and development. By expanding the services, the centre for technology transfer and scientific and technology park were established. The area intended for manufacture, research or training was enlarged by another 5,000 square metres by implementation of this project.

#### VI.1.5 Ministry of Defence

*Name of achievement in R&D&I:*

**Protection against C-agens**

*Brief characteristic of achievement in R&D&I:*

Set of new knowledge attained through solution of a research plan "Protection against C-agens" (solution period 2000 to 2004) 19times published in impact factor journals and 40times in non-impact factor journals and presentation of new tested methodology

*Author(s) of achievement in R&D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):*

Plk. Prof. MUDr. Jiří Kassa, CSc. – Faculty of Military Medicine, University of Defence, Brno

*Granted award (name):*

Financial bonus (CZK 80,000) for remarkable achievements in research and development according to Act. No. 130/2002 Coll.

*Who granted the award:*

Ministry of Defence of the Czech Republic
<i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i>
Tested new methodology for prophylaxis and therapy for people exposed to organophosphate compounds; development of new antidotes, their introduction into a special aid kit for those exposed to BCHL, nervous paralytic substances, psychically disabling substances like hallucinogens and Lewisit; introduction of a new preparation against intoxication with Cyclosin; and creation of a database of the most important toxins.

#### VI.I.6 Academy of Sciences of the Czech Republic (AS CR)

<i>Name of achievement in R&amp;D&amp;I:</i>
<b>Analysis, implementation and application of Krylov methods</b>
<i>Brief characteristic of achievement in R&amp;D&amp;I:</i>
Achievement in the field of methods for solution of large numerical linear algebra problems, especially the Krylov methods belonging among the brightest algorithmic ideas of the 20 <sup>th</sup> century
<i>Author(s) of achievement in R&amp;D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):</i>
Prof. Ing. Zdeněk Strakoš, DrSc., Prof. Ing. Miroslav Tůma, CSc., Doc. Ing. Miroslav Rozložník, Dr. – Institute of Informatics of AS CR
<i>Granted award (name):</i>
AS CR Award for Outstanding Scientific Results of Major Significance
<i>Who granted the award:</i>
Academy Council of AS CR
<i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i>
Original solution of several fundamental problems, at least some of the outcomes will be undoubtedly described in textbooks and monographs and will influence many applications world-wide and solutions of some strategic problems of the present.

<i>Name of achievement in R&amp;D&amp;I:</i>
<b>Organized Layers at Polarised Liquid Interfaces</b>
<i>Brief characteristic of achievement in R&amp;D&amp;I:</i>
New procedures were developed for preparation of organized layers (membranes) allowing for selective influencing of charge transfer in electrochemically polarised liquid interfaces.
<i>Author(s) of achievement in R&amp;D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):</i>
Prof. Ing. Vladimír Mareček, DrSc., Prof. RNDr. Zdeněk Samec, DrSc. – J. Heyrovský Institute of Physical Chemistry of AS CR
<i>Granted award (name):</i>
AS CR Award for Outstanding Scientific Results of Major Significance

<p><i>Who granted the award:</i></p> <p>Academy Council of AS CR</p>
<p><i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i></p> <p>Knowledge was employed to develop e.g. electrochemical model of biological membrane. New methods were introduced for research of dynamics of liquid interfaces based on quasi-elastic light scattering and methods using the confocal fluorescent correlation spectroscopy respectively.</p>

<p><i>Name of achievement in R&amp;D&amp;I:</i></p> <p><b>History of Czech Fine Arts, Part V (1939-1958)</b></p>
<p><i>Brief characteristic of achievement in R&amp;D&amp;I:</i></p> <p>Summary overview of development of various branches of the Czech fine arts under two totalitarian regimes when the Czech art was divided into an official and unofficial branch.</p>
<p><i>Author(s) of achievement in R&amp;D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):</i></p> <p>Prof. PhDr. Rostislav Švácha, CSc., PhDr. Marie Platovská – Institute of Art History of AS CR (editors) and team of 17 authors</p>
<p><i>Granted award (name):</i></p> <p>AS CR Award for Outstanding Scientific Results of Major Significance</p>
<p><i>Who granted the award:</i></p> <p>Academy Council of AS CR</p>
<p><i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i></p> <p>By this extensive work drawing upon basic research of art in the period of Protectorate and describing for the first time ever in detail the subjugation of artistic work by post-February Communist state, the project mapping the development of artistic activity from prehistory to present days is drawing to a close.</p>

#### VI.I.7 Grant Agency of the Czech Republic (GA CR)

<p><i>Name of achievement in R&amp;D&amp;I:</i></p> <p><b>Re-settlement of the Czech borderlands after the World War II</b></p>
<p><i>Brief characteristic of achievement in R&amp;D&amp;I:</i></p> <p>The project solution has resulted in a monograph of synthesizing character providing a comprehensive view of the resettlement issues after 1945.</p>
<p><i>Author(s) of achievement in R&amp;D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):</i></p> <p>Doc. PhDr. František Čapka, CSc. – Pedagogic Faculty of Masaryk University in Brno, Co-investigators: Doc. PhDr. Jaroslav Vaculík, CSc. – Pedagogic Faculty of Masaryk</p>

University in Brno, Doc. PhDr. Lubomír Slezák, CSc. – Institute of History of AS CR in Brno
<i>Granted award (name):</i> Prize of the President of Grant Agency of CR(GA CR)
<i>Who granted the award:</i> President of GA CR, Prof. MUDr. Josef Syka, DrSc.
<i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i> Besides the monograph, the project resulted in a number of partial outcomes being important both for particular development of the discipline and for the possibility to make the broad professional and non-professional public familiar with the project results.

<i>Name of achievement in R&amp;D&amp;I:</i> <b>Simulation of fatigue crack propagation under complicated operating conditions using a finite element method</b>
<i>Brief characteristic of achievement in R&amp;D&amp;I:</i> An original methodology was developed and a model for numerical simulations of fatigue crack growth and rate of their propagation was created to enable more precise determination of lifespan of parts and structures that are cyclically stressed.
<i>Author(s) of achievement in R&amp;D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):</i> Doc. Ing. Vladislav Oliva, CSc. – Faculty of Nuclear Sciences and Physical Engineering of the Czech Technical University in Prague, Co-investigators: Prof. RNDr. Zdeněk Knésl, CSc. – Institute of Physics of Materials of AS CR, Ing. Jiří Plešek, CSc. – Institute of Thermomechanics of AS CR
<i>Granted award (name):</i> Prize of the President of GA CR
<i>Who granted the award:</i> President of GA CR, Prof. MUDr. Josef Syka, DrSc.
<i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i> In this GA CR project the authors have developed knowledge of fracture mechanics in the field of fatigue crack propagation, created original methodology of numerical simulation of fatigue crack growth based on calculation of cyclic plastic deformation prior to the crack and original model of the fatigue crack propagation rate. The project results, which were broadly published in renowned foreign journals, significantly contribute to more precise determination of lifespan of parts and constructions under cyclic stress and will enhance their safety, which means great economic effects.

<i>Name of achievement in R&amp;D&amp;I:</i> <b>Dynamics of magnetospheric and ionospheric processes and its correlation with solar activity</b>
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<i>Brief characteristic of achievement in R&amp;D&amp;I:</i>
An original knowledge of the response of the Earth's atmosphere to changes in solar activity was acquired on the basis of satellite data and advanced mathematical modelling.
<i>Author(s) of achievement in R&amp;D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):</i>
Prof. RNDr. Zdeněk Němeček, DrSc. – Faculty of Mathematics and Physics of Charles University in Prague, Co-investigators: Ing. Jan Šmilauer, CSc. – Institute of Atmospheric Physics of AS CR, RNDr. Marek Vandas, DrSc. – Astronomical Institute of AS CR
<i>Granted award (name):</i>
Prize of the President of GA CR
<i>Who granted the award:</i>
President of GA CR, Prof. MUDr. Josef Syka, DrSc.
<i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i>
The chain of processes through which the solar wind acts on the Earth's atmosphere influences the quality of radio communications (satellite connection, GPS positioning, navigation). Results at the top international level will enhance the quality of space weather forecasts.

#### VI.1.8 Ministry of Education, Youth and Sport

<i>Name of achievement in R&amp;D&amp;I:</i>
<b>Results publish in the work “Introduction to Shape Optimization (Theory, Approximation and Computation)”</b>
<i>Brief characteristic of achievement in R&amp;D&amp;I:</i>
The book deals with theoretical and numerical aspects of shape optimization problems and selected industrial applications. It provides a complex view of this issue ranging from theoretical analysis to numerical processing. It was published by prestigious publishing house SIAM (Society for Industrial and Applied Mathematics). It is written to be understood by the broadest, which means also non-mathematical, public.
<i>Author(s) of achievement in R&amp;D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):</i>
Prof. RNDr. Jaroslav Haslinger, DrSc. – Faculty of Mathematics and Physics of Charles University in Prague
<i>Granted award (name):</i>
Award of the Minister of Education, Youth and Sport for Research
<i>Who granted the award:</i>
Minister of Education, Youth and Sport
<i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i>
The publication deals with shape optimization issues mostly from theoretical point of view and focuses on tasks controlled by variational non-equations The aim of shape optimization

is to enhance quality of a certain product by selecting suitable geometry. This issue has an immediate application character and can be used in a number of industrial sectors (automobile and aerospace industry, power engineering, etc.).

<i>Name of achievement in R&amp;D&amp;I:</i>
<b>Monograph “Weighted Inequalities of Hardy Type“</b>
<i>Brief characteristic of achievement in R&amp;D&amp;I:</i>
The work summarises results attained in the field of weighted inequalities, results attained when searching for criteria for the validity of Hardy-type inequality and their generalisation, and describes the state of research at the beginning of 2003. The book was published by World Scientific Publishing Company in Singapore in 2003.
<i>Author(s) of achievement in R&amp;D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):</i>
Prof. RNDr. Alois Kufner, DrSc. – Mathematical Institute of AS CR
<i>Granted award (name):</i>
Prize of the Minister of Education, Youth and Sport for Research
<i>Who granted the award:</i>
Minister of Education, Youth and Sport
<i>Brief reasoning behind the proposal – contribution to the world’s science development, potential or actual benefits to economy and society of the Czech Republic:</i>
The book summarises results attained when searching for criteria for the validity of Hardy-type inequality and their generalisation, and describes the state of research at the beginning of 2003. It provides a complex overview and has already served as a starting point for further research. Results can be applied to the theory of elliptic differential equations with degeneration or singularity.

<i>Name of achievement in R&amp;D&amp;I:</i>
<b>Work in audiology and work dealing with lateralisation of brain functions</b>
<i>Brief characteristic of achievement in R&amp;D&amp;I:</i>
The author contributed to understanding of the function and changes in the auditory system due to exposure to the noise and aging. He then applied the results attained from animal testing studies, especially under accelerated aging condition, in clinical medicine and described the changes in auditory function over the course of adolescence and aging, thus contributing to enhancement of the diagnostics of auditory defect.
<i>Author(s) of achievement in R&amp;D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):</i>
Prof. MUDr. Josef Syka, DrSc. – Institute of Experimental Medicine of AS CR
<i>Granted award (name):</i>
Prize of the Minister of Education, Youth and Sport for Research
<i>Who granted the award:</i>
Minister of Education, Youth and Sport

*Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:*

The author made merit in understanding how the auditory information is processed in nervous circuits of the auditory system, especially the feedback bundles existing in the auditory system. These are especially the downward pathways from the auditory crust to the under-crust cores and following downward pathways terminated by olivocochlear bundle (OCB) in the inner ear at the base of capillaceous receptor cells. He found a remarkable relationship between the occurrence of the so called spontaneous otoacoustic emissions and worsened perception of high frequency sounds by adolescents and teenagers.

*Name of achievement in R&D&I:*

**Scientific monograph in the field of constitutional law**

*Brief characteristic of achievement in R&D&I:*

Mr. Blahož dealt with fundamental scientific problems of comparative constitutional law, especially the experiences and nature of the US state system, concept of judicial control over constitutionality world-wide, fundamental human and civil rights in various constitutional systems and “national” protection of human rights and fundamental freedoms.

*Author(s) of achievement in R&D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):*

Doc. JUDr. Josef Blahož, DrSc. – Institute of State and Law of AS CR

*Granted award (name):*

Prize of the Minister of Education, Youth and Sport for Research

*Who granted the award:*

Minister of Education, Youth and Sport

*Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:*

Within the context of ongoing integration of the Czech Republic into EC/European Union, the author has significantly contributed to development of the concept of human rights as contained in the system of the Council of Europe and European Union.

#### VI.I.9 State Office for Nuclear Safety (SÚJB)

*Name of achievement in R&D&I:*

**Protective Transport Unit**

*Brief characteristic of achievement in R&D&I:*

Protective transport unit to transport injured and contaminated persons into specialised healthcare facilities when excluding the spread of chemical contamination and biological agents among other population and intervening units of Integrated Rescue System (IRS).

*Author(s) of achievement in R&D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):*

MUDr. Stanislav Brádka et col. – National Institute for Nuclear, Chemical and Biological Protection (SÚJCHBO), Příbram – Kamenná, Milín

*Granted award (name):*

Extraordinary award
<i>Who granted the award:</i> Chairman of the State Office for Nuclear Safety (SÚJB)
<i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i> This protective transport system enables fundamental treatment of injured persons and stabilising of their vital life functions while maintaining a sufficient level of protection of the intervening persons and medical personnel even during transport.

<i>Name of achievement in R&amp;D&amp;I:</i> <b>Catalogue of source members</b>
<i>Brief characteristic of achievement in R&amp;D&amp;I:</i> This is a set of procedures and action cards to recommend protective measures on the territory of the Czech Republic in case of a nuclear power plant accident in Europe.
<i>Author(s) of achievement in R&amp;D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):</i> Ing. Peter Čarný – ABmerit, Trnava, SR
<i>Granted award (name):</i> Extraordinary award
<i>Who granted the award:</i> Chairman of the State Office for Nuclear Safety (SÚJB)
<i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i> A unique catalogue was made (in both electronic and paper form) of the so called source members represented by the European nuclear power plants. The catalogue serves to SÚJB crisis staff as a basis for issuing recommendations on introduction of protective measures in case of emergency involving leakage of radioactive material into the environment.

#### VI.I.10 Association of Innovative Entrepreneurship of CR

<i>Name of achievement in R&amp;D&amp;I:</i> <b>ELISA set and panel of monoclonal antibodies for detection of HLA-G antigens</b>
<i>Brief characteristic of achievement in R&amp;D&amp;I:</i> Set and panel of monoclonal antibodies to detect HLA-G antigens – panel of 4 antibodies against HLA-G antigen (MEM-G/1, MEM-G/4, MEM-G/9, MEM-G/11) and 4 antibodies against HLA-E antigen (MEM-E/02, MEM-E/06, MEM-E/07, MEM-E/08), which are fully characterised and supplied in purified form and in a form directly labelled with FITC. The combination of antibodies enables detection of antigens bound to cell membrane, as well as antigens soluble in body liquids.
<i>Author(s) of achievement in R&amp;D (name, surname, title, institution); Implementer(s) of innovation (name of enterprise, organisation):</i> Vladimír Viklický

EXBIO Praha a.s.
<i>Granted award (name):</i> Innovation of the Year 2005 Award
<i>Who granted the award:</i> Association of Innovative Entrepreneurship of CR
<i>Brief reasoning behind the proposal – contribution to the world's science development, potential or actual benefits to economy and society of the Czech Republic:</i> Antibodies to be used in fluorescence microscopy, in basic and applied research and in clinical studies; unique antibodies used worldwide as reference antibodies.

## VI.2 Awards granted in the competition Czech Head in 2006

The National Prize of the Government of CR Czech Head, which was awarded for the first time in 2005, is mentioned in Part VI.1 on the first place.

In this competition following awards were granted:

### VI.2.1 Prize for Inventiveness

This prize is awarded for discovery or remarkable achievement made in recent years  
The Prize went to:

**Prof. RNDr. Blanka Říhová, DrSc., the Director of the Institute Microbiology of AS CR, Prof. Ing. Karel Ulbrich, DrSc., the Director of Institute of Macromolecular Chemistry of AS CR**

for polymer therapeutics with cytostatic and immunomodulative effects

The essence of the honoured work is the development of new generation of anticancer therapeutics having many advantages over the classic chemotherapy. The drug gets mainly into cancer cells thus reducing significantly its undesirable toxic effect on normal tissues and organs. In addition, it can be effective also in patients, who are resistant to classic chemotherapy after having been exposed to it. Remarkable is the fact that this new generation of therapeutics acts at the same time as immunomodulators. When being applied, a resistance is attained in a large percentage.

### VI.2.2 Prize of the Ministry of Industry and Trade

This prize is awarded for the most significant product or technology innovation.  
The Prize went to:

**the company EVEKTOR, s.r.o.**

for development of new VUT 100 Cobra aircraft

VUT 100 is a light single-engine versatile four to five-seat low-wing aircraft intended for both private and corporate use. The aircraft was developed to succeed especially on the US market, where more than two thirds of the total production of aircrafts in price categories from 220,000 to 320,000 US dollars are sold. Its rivals on the market will be aircrafts like Cessna, Piper, Sobota, etc. VUT 100 aircrafts are characterised by high performance, cruising speed,

long flight range and low cost of operation and maintenance. The aircraft has the longest flight range, highest useful load and widest cockpit of its rivals.

#### VI.2.3 Patria, Prize of Unipetrol a. s.

This prize is awarded to a person whose professional or managerial qualities have won him/her recognition in abroad in recent years.

The Prize went to:

**Prof. Josef Michl, dr. h. c. mult.**

Prof. Josef Michl is the world renowned chemist. He was nominated repeatedly for the Nobel Prize for chemistry, elected member of the American Academy of Sciences, and he is an author of 550 scientific publications and five monographs. Particular attention was aroused by present works of Prof. Michl who was one of the first to realize that microelectronics based on silicon chips will soon reach its limits. Therefore, he has tried to build electronic components using the organic and organometallic molecules in the function of rectifiers, transistors, etc. Thus composed molecules can serve as microelectronic components. Prof. Michl, who works at University of Colorado, moved part of his US team to the Czech Republic in November 2005.

#### VI.2.4 Doctorandus

This prize is awarded for the most significant achievement or professional or scientific activity to a student in the doctoral study programme.

The Prize went to:

**Dr. Denisa Bordag**

for her work in the field of experimental psycholinguistics

Psycholinguistics is trying to reveal, describe and understand mechanisms taking part in the production and understanding the human speech. It explores how people get the language abilities, how they use them and how these processes proceed in the brain. Unlike abroad, this discipline has not been developed in the Czech Republic and no institution deals with it in a systematic way. So Denisa Bordag is making her research in Germany. She devotes herself to research of both foreign and mother languages. For the first time, the author makes a psycholinguistic research on Czech language, the language which yet has not been explored in this way neither in Czechia, nor abroad. Great part of her research is dedicated to foreign languages (German, Czech, English), but she has already studied Czech, as well as German, Spanish, Turkish and English as mother languages.

#### VI.2.5 Gaudeamus, Prize of Český Telecom, a. s.

This prize is awarded for the most significant achievement or professional or scientific activity to a student in the Bachelor or Master study programmes.

The Prize went to:

**Mgr. Vít Bubák**

for modelling the Czech capital market using methods of high-frequency timelines.

At the time of getting the award, Mgr. Vít Bubák studied the Institute of Economic Studies of the Faculty of Social Sciences of Charles University in Prague. His main long-term

involvement is the applied economy. In the period of his Master's degree studies in 2003 he took part in a grant project dealing with the analysis of the capital structure of the Czech non-finance sector. His work has been already presented at international conferences. His research confirmed that the intra(daily) price behaviour of shares traded on the Czech capital market is in many respects comparable with that of shares tradable on Western capital markets.

#### VI.2.6 Prize of Hope

This prize is awarded for the most significant achievement or professional or scientific activity to a secondary school student.

The Prize went to:

**Jan Šváb, J. Heyrovský Gymnasium, Prague**

for high-speed optical data link

The optical data link is a device using a beam of light to connect remote computer networks. The principle of this transmission is similar to that by optical fibres, but in this case communication is done only through free air. Data are processed in real time and send by speed of light, which guarantees high speed and low response of the whole connection.

#### VI.2.7 Media, Prize of the Czech Head Foundation

This prize goes to a journalist or media worker who through his/her work contributed most to the promotion of Czech science and technology in the period of last 12 months before the application deadline.

The Prize went to:

**Ing. Eva Babůrková**

**VI.3 Foreign awards granted to Czech research workers**

Name/Surname/Titles	Institution of the Honoured Person	Name of the Award	Awarded by:	Reason for awarding
<b><i>Workers of the Academy of Sciences of the Czech Republic</i></b>				
Prof. Ing. Dr. Pavel <b>Chráska</b> , DrSc.	Institute of Plasma Physics	Fellow of American Society for Materials (ASM)	Board of Trustees of ASM	Considerable contribution to material sciences and material engineering disciplines
Ing. Jiří <b>Homola</b> , CSc.	Institute of Radio Engineering and Electronics	Roche Diagnostics Prize for Sensor Technology	Roche Diagnostics GmbH, Graz	Remarkable achievements in the field of surface plasmon resonance
Prof. Ing. Ladislav <b>Fryba</b> , DrSc.	Institute of Theoretical and Applied Mechanics	EASD Senior Research Prize	European association of Structural Dynamics	Lifelong work and development of fundamental concepts of constructional dynamics and its industrial application
Prof. Ing. Pavel <b>Kratochvíl</b> , DrSc.	Institute of Macromolecular Chemistry	2005 - IUPAC-Samsung Education Prize	International Union on Pure and Applied Chemistry, Polymer Division Samsung Fund Committee	High standard and effective teaching of foreign students in polymer chemistry
Prof. PhDr. František <b>Šmahel</b> , DrSc.	Institute of Philosophy	European Academy of Science and Arts, active Member of Class I - Humanities	European Academy of Science and Arts, Salzburg	Lifelong work
MUDr. Jan <b>Bureš</b> , DrSc.	Institute of Physiology	Honourable Doctorate	Toyama Medical and Pharmaceutical University, Japan	Long-term collaboration of Laboratory for the Neurophysiology, FGÚ, with Japanese science, training of young scientific workers, joint publications.



<b>Workers of the Universities</b>				
H.E.S.S. experiment team, Prof. MFF RNDr. Ladislav <b>Rob</b> , DrSc. for the Charles University	Faculty of Mathematics and Physics, Charles University in Prague (UK)	Descartes Prize for Research and Science Communications (competition finalist)	European Commission – Research Directorate	Implementation of H.E.S.S. stereoscopic Cherenkov telescope system leading to the discovery of cosmic radiation sources and understanding of extreme properties of space
Prof. RNDr. Ivan <b>Netuka</b> , DrSc.	Faculty of Mathematics and Physics, Charles University in Prague (UK)	Austrian Merit Cross 1 <sup>st</sup> Class for Science and the Arts	President of the Republic of Austria	The highest Austrian honour given for systematic generally recognised remarkable creative achievements in science or arts.
Prof. PhDr. Jiří <b>Kuthan</b> , DrSc.	Faculty of Philosophy; Catholic Theological Faculty, UK	Herder-Preis	University of Vienna	Prestigious award in the fields of culture, art and humane sciences. It is awarded to personalities who contribute in an exemplary way towards preservation and augmentation of the European cultural heritage aimed at peaceful understanding between nations.
Ing. Martin <b>Drahanský</b> , Ph.D.	Faculty of Information Technologies, University of Technology in Brno	Fraunhofer Patent Award	INI-GraphicsNet, Fraunhofer Gesellschaft, Darmstadt	Patent “Verfahren und Vorrichtung zum Erfassen biometrischer Merkmale“
Doc. PhDr. Naděžda <b>Sieglová</b> , CSc.	Pedagogical Faculty of Masaryk University, Brno	Honourable Plaque of Ludmila Podjavorinská	Slovak section of IBBY BIBIANA International House of Art for Children and Slovak IBBY section	The highest Slovak honour in the field of research in the children's and youth literature awarded for a long-term successful research work in this field and for promotion of the children's and youth literature worldwide