

Annual Assembly of the CROATIAN ACADEMY OF ENGINEERING

26th Annual Assembly of the Croatian Academy of Engineering was held in the small hall of the Vatroslav Lisinski Concert Hall on May 17th, 2011 (previous 25th one was held on March, 27th, 2010).

Just before the Assembly, the **Central Ceremony of the 300th Anniversary of the Birth of Ruđer Bošković** was held in the Vatroslav Lisinski Concert Hall. Along with the guests, the celebration was attended by top officials of the Republic of Croatia, president of the Croatian Parliament Mr. Luka Bebić and Croatian President Prof. Ivo Josipović, Ph.D. We are glad and proud that the Croatian Academy of Engineering was one of the main organizers of this favoured and successful event. Special issue of the Bulletin of the Academy Tehničke znanosti/Engineering Power will be dedicated to the celebration of the 300th anniversary of the birth of Ruđer Bošković .

The Assembly was attended by 105 members of the Academy and the distinguished guests of the academic community. The Assembly was opened by Prof. Stanko Tonković, Ph.D., president of the Academy. After the welcoming speech, the Assembly began its work with the most relevant information about events between the two assemblies (all supporting documents are available from the Secretariat of the Academy on the address – hatz@hatz.hr). On May 14th, 2010 the Academy received from the City Office for General Administration of the City of Zagreb, the decision on registration of change of the Statute in the Registry of Associations of the Republic of Croatia and a certificate from the same office. Thus, the new Statute of the Academy, and consequently the Regu-

lations on the Election of Members of the Academy became officially valid. According to the new Statute a new categorization of membership in the Academy was carried out in the summer and autumn of 2010. The most important novelty was the termination of Associate Members of the Academy and the transition of Associate and Full Members into the unique status of the Full Member of the Academy. The procedure was successfully completed, except for a small number of Associate Members whose documentation is expected. During the summer and autumn of 2011 Departments of the Academy (special responsibilities of the Department Secretaries) were expected to perform a very important duty, i.e. review and update the list of each Department, make proposal to transfer Associate Members into the Full Members of the Academy (where there would be room) and propose new Associate Members of the Academy. Upon consideration of proposals submitted to the Governing Board and the adoption of proposals at the Presidency, it was decided to carry out the election procedures and for the Assembly of 2012 to become **elective** for new members and associates. The possibility of electronic voting permitted by the new Statute proved to be extremely effective.

A successful conference entitled “Engineering Ethics and the Croatian Economy” was organized by the Academy at the Faculty of Electrical Engineering and Computing of the University of Zagreb on January 14th, 2011. Academy Awards were presented at the special ceremony of the Assembly (separate report).

Prof. Stanko Tonković, Ph.D.



ACADEMY AWARDS for 2010

Lifetime Achievement Award "THE POWER OF KNOWLEDGE"

Prof. Jasna Franekić, Ph. D.



Professor Jasna Franekić, Ph.D. is full time professor with permanent title at the Faculty of Food Technology and Biotechnology (PBF) University of Zagreb. She was born on February 16, 1945 in Čelopek, Republic of Macedonia. She took her A levels at the Zagreb grammar school (II. Gymnasium), her B.Sc. degree from Faculty of Science, University of Zagreb (PMF), Masters degree at School of Medicine at University of Zagreb and Ph.D. degree at Faculty of Science. She has been working as a lecturer at the University of Zagreb Food Technology and Biotechnology Faculty (PBF) since 1972. She has been lecturing on 13 undergraduate and 8 postgraduate courses at PBF and PMF, including the role of the Head of Postgraduate Toxicology studies from 1994 to 2007. Prof. Franekić's research specialty is genetic toxicology whereby she has published 74 scientific articles, of which 34 in CC/SCI scientific journals (impact factor 1.1-4.5). Prof. Franekić led 7 scientific projects of which one is international and participated as researcher on three international ones. She was a visiting researcher at Istituto Superiore di Sanita Roma, Italy in 1986, 1988 and 1990. As mentor, she supervised 19 graduate theses (6 of which received Rector's award), as well as 10 M.A. and 4 PhD thesis. She prepared 255 Technological feasibility studies. Prof. Franekić is a member of numerous scientific societies in some she carries important functions. She is a member of European Environmental Mutagen Society where she was Yugoslavian (1989-1990) and later (2006-2010) Croatian councilor and a member of International Programme Committee (1997) as well as a member of International Union of Microbiological Societies, European Microbiological Societies, European Societies of Toxicology and Federation of European Genetic Societies where she was Croatian representative from 1994-1996. From 2005 to 2007 Prof. Franekić represented Croatian Natural Society at World Conservation Union between 2005 and 2007. 1994 – 1997 she was vice-president of Croatian Biological Society and 1988 – 2002 she acted as its president. From 1991 to 1997 she was secretary of Croatian Genetic Society, its vice-president from 2002 to 2007 and president from 2007-2011. She was collaborating member of Croatian Academy of Engineering (HATZ) from 1994, and as full member since 2010, she was on the Committee for Awards and is currently on the Committee for International Cooperation and acts as secretary in the Bioprocess Engineering Department. From 1998 to 2005 she was a

Member of Matriculate Committee for Biotechnical Science and since 2005 a member of the Natural Science Committee. Since 1993 she has been a member of Committee for toxins (now biocide) of the Ministry of Health of Republic of Croatia. She has been on the Society of Zagreb University Teachers, Scholars and other Scientists Board and president of the Award Committee for young scientists. Among prof. Franekić's numerous tasks at her Faculty, she was vice-dean for education (1997 – 2000) and vice-dean for science (2000- 2002).

Prof. Franekić was a member of Organizing and Scientific Committee at 18 congresses, 4 of which international and 7 with international participation, where she was president. For her long-term contribution on the editorial board of the Nature ("Priroda") journal, she received an award in 1991. In 2000 prof. Franekić received Croatian Natural Society "Zdravko Lorkovic Medal" and Croatian Academy of Engineering Award "Rikard Podhorsky".

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Annual Award "RIKARD PODHORSKY"

Klaudio Pap , Ph. D., Associate professor



Klaudio Pap, Ph.D. is associate professor on the Faculty of Graphic Arts. He was born on March 20, 1963, in Zagreb. After graduating from secondary mathematical school he studied at the Zagreb University Faculty of Electrical Engineering from which he graduated in 1988, in the field of Computer Technique. He defended his Master's degree

in 1997 at the same faculty (today's Faculty of Electrical Engineering and Computer Sciences) in the field of computer sciences where he also defended his Doctor's degree in 2004. In 2004 he was elected with the Zagreb University as a scientific assistant and assistant professor for Computer Typography and Computer graphics courses. In 2005 he becomes assisting member of the Croatian Technical Science Academy. In 2010 he becomes higher scientific associate and associate professor with the Zagreb University. Four (4) of his scientific articles have been published in journals quoted in tertiary publications, thirteen (13) in secondary publications, forty nine (49) scientific articles from international conference proceedings, fifteen (15) scientific articles from domestic conference proceedings, nine (9) chapters in books, and five (5) books. He has taken part and is taking part in five (5) scientific research projects and four (4) technological research development projects of which he is the project manager of one (1) scientific project, and was the project manager of two (2) technological projects. He is the co-writer of lecturing textbook publications, three (3) in

the form of books and one (1) digital textbook. During of his work he takes part in research work, in computer development and application in the field of computer graphics, image and text processing, modeling and simulation with computers, web technology, digital printing and graphic programming languages. He has taken part in introducing new technologies and has respectively held numerous seminars, lectures and courses linked with the topic. He is co-author of five (5) development products and six (6) software packages. He is the co-author of three (3) patents and he has been awarded with thirty two (32) awards, ranging from the diamond award for digital printing in 1996 up to numerous contemporary awards for the "Infradesign".

Prof. Josip Marušić, Ph. D.



Born on February 3, 1943 at Jamena. High school completed in 1961 at Vinkovci. Prof. Marušić got a degree in 1966, obtained M.Sc. title in 1980, and a doctoral degree in 1986 at the Faculty of Civil Engineering University of Zagreb. From 1967 until the April of 1981 worked in a Water Management company "Biđ – Bosut" at Vinkovci. Since

1981 has been working at the Faculty of Civil Engineering University of Zagreb: from 1981 to 1986 as a senior lecturer, until 1991 as assistant professor, as associate professor until 1997., as full professor until 2001 and as full professor in tenure since 2001. He was the mentor to 117 degree and 4 master thesis, and a mentor of 1 and co-mentor of 2 dissertations. Prof. Marušić was the head and lead researcher of 4 and collaborator in 6 scientific projects at the Faculty of Civil Engineering and Faculty of Agriculture, Zagreb. From 1998 to 2002 he was the head of the Department of Water Engineering, and again from 2006 to 2008. From 2002 to 2006 worked as a vice dean of education. An advisor in the matters of water management, a chief coordinator in the projects of Croatian Waters company and the Ministry of Sciences and Technology from 1992 to 2000. He published in total 235 papers: 47 on international level, 22 in the proceedings of HAZU, 26 chapters in books and manuals, 30 in proceedings of domestic conferences with international participation and 29 in domestic scientific journals, and 81 research and professional papers. He is the head of 16 Scientific and Organizational societies and a member of 47 Review committees and Editorial boards in Croatia (35) and abroad (12). Editor – in – chief of the scientific journal "HRVATSKE VODE", since 1992. Since 1971 he has been a member of 7 and the head of 3 professional and scientific societies related to civil engineering and water management. He obtained 41 awards, diplomas, credentials and credits for working in professional and scientific societies, and for publishing papers in Proceedings. Prof. Marušić is a member of international associations ICID, IAH, IWRA, since 1993. Since April of 2002 he is a full member of the Academy of Technical Sciences of Croatia. From October

of 2005 a full member of the Scientific Committee for Traffic of Croatia Academy of Sciences and Arts, a head of Symposium Organization Committee "Water Management in Croatia", organized by HATZ, February 2009. 2009 obtained the Annual award for science for the popularization and promotion of science in the field of engineering, and for scientific work in the water management of the Republic of Croatia.

Award for Young Scientists "VERA JOHANIDES"

Igor Karšaj, Ph. D., Assistant professor



Igor Karšaj, Ph.D. was born on December 22, 1975 in Virovitica, Croatia. He studied at the Faculty of Mechanical Engineering and Naval Architecture (FMENA), University of Zagreb from 1994. For achievements during 1996 he received "Davorin Bazjanac Award" from FMENA. He graduated in 1999 as one of the best students in his generation for what

he received "Medal of FMENA". In 2001 Igor Karšaj, Ph.D. was employed as a young researcher at FMENA. He finished his thesis "Numerical modeling of large strain elastoplastic deformations" in 2006. "Alexander von Humboldt" Foundation covered him costs of four months scientific exchange at *Institut für Baustatik, Universität Karlsruhe*, Germany. In 2005 he received "The Young Researcher Fellowship Award for exemplary research in computational mechanics" from MIT University, USA. Croatian Ministry of Science, Education and Sport awarded him as the best young researcher in 2005. Same year he received Annual award of Society of University Teachers and other Scientists of Zagreb for young researchers. From 2006 he doing research in biomechanical behaviour of soft tissue. Main goal of his work was modeling of formation and growth of abdominal aortic aneurysm. He attended Summer School IUTAM School on Biomechanical Modeling at the Molecular, Cellular and Tissue Levels at International Centre for Mechanical Sciences Italy. In 2008 he was Fulbright Fellow under which he spent ten months at Texas A&M University, USA. From 2009 is Assistant Professor at Department of Engineering Mechanics, FMENA. He already published 9 papers in CC/SCI journals and more than 20 papers at scientific conferences.

Marko Mužić, Ph. D., Research assistant



Dr. sc. Marko Mužić was born on January 02, 1976, in Zagreb, Republic of Croatia. He attended high school in Zagreb and graduated in 1994. That same year he enrolled at The Faculty of Chemical Engineering and Technology, University of Zagreb, and graduated in 2001 with the thesis titled "Basic parameters of the gasoil

hydrodesulfurization process" which he completed under the mentorship by dr. sc. Katica Sertić-Bionda, full professor. From 2001 he is employed at The Faculty of Chemical Engineering and Technology as an assistant working on the project "The improvement of ecological parameters of leather production" with the lead researcher dr. sc. Željko Bajza, associate professor. In 2001 he enrolled in postgraduate masters studies in chemical engineering at The Faculty of Chemical Engineering and Technology. From 2004 he is working on the projects "Liquid petroleum fuels with improved environmental parameters" and "Advanced processes of hydrocarbon fuels desulfurization" with the lead researcher dr. sc. Katica Sertić-Bionda, full professor. In 2004 he transferred to the postgraduate doctorate studies in chemical engineering at The Faculty of Chemical Engineering and Technology. In 2006 he successfully attended the Advanced Separation Processes summer school at the TU Berlin, Germany. He earned his Ph. D. degree in chemical engineering in 2009 with the dissertation titled "Advanced process for desulfurization of petroleum fractions". As a coauthor he published a total of 34 scientific papers in journals (14 CC) or conferences.

Goran Molnar, Ph. D., Research assistant



Dr. sc. Goran Molnar was born in Zagreb, Croatia, in 1978. In 1996, he finished mathematical high-school in Zagreb. In 2001, he received the Diploma Engineer degree in electrical engineering from the Faculty of Electrical Engineering and Computing, University of Zagreb, course Industrial electronics. For successful achievements during the study

he received the Josip Lončar bronze medal. The doctoral dissertation entitled *Synthesis of systems with minimum time-domain distortion* he successfully defended on the Faculty of Electrical Engineering and Computing and, accordingly, he received the title of Doctor of technical sciences in the field of electrical engineering. For an outstanding thesis and successful research activities he received the Josip Lončar silver medal. Since 2001, he has been employed at the Department of Electronic Systems and Information Processing of the Faculty of Electrical Engineering and Computing, University of Zagreb. His research interests include analog and digital signal processing especially filter design, software radio receivers, and digital system design. He is the author of 14 scientific papers in the field of synthesis of Hilbert transformers, constant-delay systems, equalizers, and systems with pre-

scribed impulse response. Since 2001, he worked on the projects *Analog and digital system design based on optimization procedures* and *Design and implementation of efficient methods for digital signal processing*, supported by the Ministry of Science, Education, and Sports of the Republic of Croatia, under the leadership of Prof. Mladen Vučić. In 2002, he was a researcher on the project *Implementation of processor cores on programmable gate arrays*, which was also led by Prof. Mladen Vučić.

Anet Režek Jambrak, Ph. D., Assistant professor



Anet Režek-Jambrak, Ph.D. was born on 26th of December, 1980 in Zagreb. She graduated at University of Zagreb, Faculty of Food Technology and Biotechnology (1998-2002). She enrolled to postgraduate study at Faculty of Food Technology and Biotechnology (2004) and defended PhD thesis (2008), title: "*Ultrasonic effect on physical and functional*

properties of whey proteins", and achieved academic title Doctor of Philosophy, biotechnical sciences, field of food technology. She employed in 2003. at the Faculty of Food Technology and Biotechnology, Department of Food Engineering. She became assistant professor in 2009, and 2011 senior research scientist. In 2005, for the purpose of scientific training she worked at Coventry University, Sonochemistry Centre, UK. In June 2009, she was visiting lecturer and researcher at University of Avignon, France. Topic of researches was novel food processing techniques (ultrasound and microwave). She published 29 scientific papers of which 18 are in CC/SCI databases, 6 papers in secondary databases FSTA, CAB Abstract, 2 papers in congress proceedings and 3 professional papers. She reviewed more than 50 scientific papers in 11 journals and one scientific book. She is member of editorial board of 3 international scientific journals and associate editor of 4 international scientific journals. She is winner of the Annual award from Croatian government for the best young researcher for the year 2008, winner of Annual award of "Biotechnical foundation" for the year 2008. She is winner of the annual award of "The society of university teachers, scholars and other scientists – Zagreb" for the year 2007. She is winner of support of "Biotechnical foundation" for the year 2005.

Each winner has provided for her or his CV proof-reading.

AWARDED MEMBERS OF CROATIAN ACADEMY OF ENGINEERING

State Awards for Science for 2010

Prof. Vilko Žiljak, Ph.D., Full Member of the Croatian Academy of Engineering with his Team



Prof. Vilko Žiljak, Ph.D. and Assoc. Prof. Klaudio Pap, Ph.D. – members of the Croatian Academy of Engineering, as well as Assist. Prof. Ivana Ž. Stanimirović, Ph.D. from the Faculty of Graphic Arts and Assist. Prof. Jana Ž. Vujić, Ph.D. from the Polytechnic of Zagreb are the winners of the Annual State Award for Science for 2010 in

the field of technical sciences for their scientific discovery “Creating Printing Colors for the Visible and Infrared Spectrum.” Vilko Žiljak serves as Vice President of the Academy. This year the same group of authors has been awarded with a dozen of top awards in the world – in Kuala Lumpur/Malaysia, Moscow/Russia, the Republic of Moldova, Pittsburgh/USA, Seoul/South Korea and Taipei/Taiwan. In Croatia they have received following annual awards: “Gold Marten” of the Croatian Chamber of Commerce; the Mayor of Zagreb Award, the Croatian Inventors Association Award and “Eduard Slavoljub Penkala” Award. Following patents have been registered: “Protecting portrait reproduction with safety portrait”, ZRGB device for dual detection and “Infrared printing with process colors”. New security technology has been certified by application in several areas of industry. On the occasion of the INFRAREDESIGN innovation, PIRA – international organization with headquarters in London organized a conference “Security Printing and Alternative Solutions 2011” in Zagreb. International conference “Printing 2011”, organized by the Center for Graphical Engineering of the Croatian Academy of Engineering, has been devoted in large part to the technology of a new proposal on the management of dyes.

City of Zagreb Award for 2011

Prof. Vladimir Medved, Ph.D., Croatian Academy of Engineering member



Member of the Academy of Engineering professor Vladimir Medved, Ph.D. E.E., received the City of Zagreb Award for 2011. Professor Medved was awarded for successful longyear research, teaching and professional activity through which he contributed significantly to the quality of bio-engineering and biomechanics of human locomotion, and to the af-

firmation of the Faculty of Kinesiology, University of Zagreb, also at an international level. He lead numerous research projects on healthy and pathological human locomotion. He is visiting professor at Salerno University, Italy, where a new human movement laboratory facility is being developed, results of which will be applicable both to handicapped persons and in sports. In USA, he published a book *Measurement of Human Locomotion*, in which he synthesized scientific and experimental approach to human movement, applicable in sport science and in medicine alike. He is one among editors of the respectfull journal *Kinesiology* (section *Biomechanics*), and a very active member of the Croatian Medical and Biological Engineering Society and the Croatian Academy of Engineering. In the Academy, professor Medved assumed duties of Secretary of Department of Systems and Cybernetics and of Administrative Secretary-General (in 2006 and 2007), while since 2008 he serves as Chairperson of the Committee for International Cooperation.

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