

EDITORIAL

National Conference “Sofia Electrochemical Days 2012” (SED2012)

The current issue of the Bulgarian Chemical Communications consist of the papers, presented as lectures and poster at the national conference “Sofia Electrochemical Days” (SED 2012), having international participants present, and held in Sofia in 10 – 13 December 2012.

Following the last three successful conference meetings, Sofia Electrochemical Days has establishing itself as an important national forum for exchanging information on the latest scientific and technical developments in the field of electrochemical science and technology. Sofia Electrochemical Days 2012 (SED2012) brought together both young and experienced Bulgarian and international scientists, engineers, university researchers along with industry and government employees to share results and ideas trough oral presentations, poster and educational sessions, and discussion.

Sofia Electrochemical Days 2012 noted 45 years from the founding of the Academician Evgeni Budevski Institute of Electrochemistry and Energy Systems and 90 years from the birth of the founder of the Bulgarian Electrochemical School Acad. Evgeni Budevski.

SED2012 was co-organized by the Academician Evgeni Budevski Institute of Electrochemistry and

Energy Systems - BAS, the Rostislav Kaishew Institute of Physical Chemistry - BAS and the University of Chemical Technology and Metallurgy. The conference was supported by the Bulgarian Electrochemical Society, the Bulgarian section of the International Society of Electrochemistry, the Bulgarian Hydrogen Society, and the Joint Innovation Centre of the Bulgarian Academy of Sciences.

We would like to thank the SED 2012 participants for their contribution to the conference success as well as for the warm and collaborative atmosphere they created. We express our sincere gratitude to the SED Organizing Committee, as well as to the authors for their incentive presentations, to the referees for their efforts in reviewing the submitted manuscripts and the Editorial Board of the Bulgarian Chemical Communications for the publications in this issue.

Guest Editors:

Antonia Stoyanova

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Half a century of excellence

Founded in 1967 as the Central Laboratory of Electrochemical Power Sources (CLEPS), the Academician Evgeni Budevski Institute of Electrochemistry and Energy Systems (IEES) maintains the traditions of the Bulgarian Physical Chemistry School of Stranski and Kaishev, advancing electrochemical research. For five decades already, IEES successfully applies fundamental electrochemical research in the development of novel electrochemical power sources, provides international expertise in the field of energy systems, and trains highly qualified researchers and scientists.

Ever since the first years of its existence, the Institute solves practical problems of the Bulgarian battery industry:

- separators of unwoven fabrics and the first plastic case for lead-acid batteries, introduced in the Targovishte battery plant, a number of technological enhancements for the Bulgarian and international lead-acid batteries production;
- primary zinc-air batteries, successfully introduced in the Samokov plant, provide power for an electrical vehicle developed by CLEPS six months earlier than General Motors. They power the communication of the First Bulgarian Himalayan Expedition and have been exported continually in Poland and Germany;
- primary lithium batteries, ranking Bulgaria among the first ten countries in the world to adopt this advanced production.

The successful application of zinc-air batteries for electrically driven vehicles continues with the next generation of mechanically rechargeable zinc-air batteries. A world record is achieved in cooperation with a German innovation enterprise in 1997 during a competition in Salt Lake City (USA).

The expertise attained in the field of batteries is efficiently directed towards novel and prospective rechargeable systems. The Institute is an internationally recognized research center for its experience in the development of innovative ideas and technologies.

IEES enters the 21st century with a new priority – green energy and hydrogen energetics. Extensive research is carried out at present on the production, conversion and storage of hydrogen (fuel cells, electrolyzers, metal hydrides).

Recently developed tools for e-science implementation enhance the possibilities for international cooperation and dissemination of the avant-garde electrochemical testing and diagnostic methods developed at the Institute.

IEES has a long-term tradition in intensive international collaboration with other scientific structures and firms. In the last ten years the Institute has over 250 scientific and business partners from 32 countries. More than 20 joint investigations are contracted yearly with other national and international institutions.

IEES started its participation in European Programs in 1994. 14 successful projects have been implemented up to now, five of which in the Seventh Framework Program.

Since 2003 IEES is a European Centre of Excellence in “Portable and Emergency Energy Sources”. The institute is a host organization of national and international scientific structures and forums: European Internet Center for Impedance Spectroscopy, publishing a free access electronic peer reviewed journal; Bulgarian Electrochemical Society; Bulgarian section of the International Electrochemical Society; LABAT international conference on lead-acid batteries, Sofia Electrochemical Days – a national forum with international participation; Technical Committee TK64 for standardization in the field of Power Sources.

Today the Institute's staff comprises 90 employees. The academic staff consists of 7 full professors, 5 professors emeritus, 5 honorable professors, 11 associate professors, 30 assistants. The auxiliary scientific staff includes 18 specialists with Master's or Bachelor's degrees. An international consulting board elected by the Scientific Board of the Institute aids by elaboration of the scientific strategy of IEES.

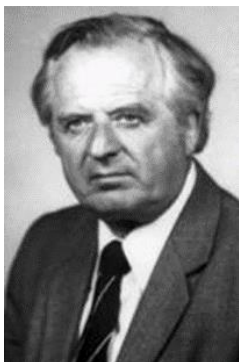
IEES publicity relies on world renowned scientists: Acad. Detchko Pavlov, Acad. Alexander Popov, Prof. Zdravko Stoynov, Prof. Vesselin Bostanov, Prof. Iovka Dragieva, Prof. Raicho Raicheff, Assoc. Prof. Anastasia Kaisheva, Assoc. Prof. Prokopi Andreev, Assoc. Prof. Geno Papazov, Assoc. Prof. Temelaki Rogachev.

I would like to congratulate the people who have been in IEES since the establishment of CLEPS and who are still actively devoted to the prosperity of the Institute: Detchko Pavlov, Zdravko Stoynov, Alexander Popov, Katia Veleva, Geno Papazov, Petar Getmanov, Bogdana Parusheva, Margarita Georgieva.

*Prof. Daria Vladikova,
Director*

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Academician Evgeni Budevski – scientist and mentor



1922 – 2008

Acad. Evgeni Budevski is a founder and the first Director of the Institute of Electrochemistry and Energy Systems (former Central Laboratory of Electrochemical Power Sources).

However, before the establishment of CLEPS, he was already world renowned with his famous dislocation-free single crystal.

The story starts in 1932 when Stranski and Kaischew published their theory of 2-Dimensional growth of “ideal” single crystals. For more than 30 years Acad. Kaischew pushed his assistants to prove his theory experimentally. In 1958 the turn came for the young Evgeni Budevski. He gathered a small interdisciplinary team and finally overcoming numerous obstacles the “perfect” crystal was created at last.

The year was 1965. The theory was proven; the atomically flat single crystal surface became the ideal object for fundamental studies – nucleation and growth, double layer structure, adsorption of inorganic and organic species

But that is not all.... The dislocations problem was of decisive importance in many other fields – Metallurgy, Semiconductor Electronics and Materials Science. Only two years later and after Budevski’s lectures in 15 American universities, the leading Company Texas Instruments modified our method and started to produce dislocation-free silicon single crystals. Thus the highway for microelectronics development was open.

At that time, the Bulgarian government decided to establish the Central Laboratory for Electrochemical Power Sources. The idea of Acad. Pavlov to merge Budevski’s intelligence with the large domestic battery industry was fruitful and strategically sustainable. In just a few years, CLEPS created several innovations adopted in industrial production and soon became highly recognized all over the world.

Being an excellent scientist, Evgeni Budevski was also a careful director. He paid a lot of attention to select gifted young chemists, physicists, engineers and more experienced specialists. He was our mentor – with his university lectures, during everyday research work and in leisure – skiing, camping, sailing and traveling. With his intelligence, experience, and remarkable personality he was the living standard for us. In our eyes Budevski has grown as the perfect international scientist – with hundreds of personal relations worldwide, participating and organizing dozens of international meetings, he was elected as Vice-President of the International Society of Electrochemistry.

Today, celebrating the 45th anniversary of IEES (CLEPS), we are admiring the 90th anniversary of Budevski’s birth, remembering with deep gratitude Evgeni Budevski – our teacher, mentor and friend – as we thank destiny for the chance to know the remarkable scientist, manager, and human being Evgeni Budevski.

Prof. Zdravko Stoynov

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