

EUCHEM Conference on Molten Salts 1996

The 25th EUCHEM Conference on Molten Salts took place on 15—20 September 1996 in the Congress Centre of the Slovak Academy of Sciences in Smolenice Castle, Slovakia, under the main sponsorship of the European Science Foundation in Strasbourg and under the auspices of the Presidium of the Slovak Academy of Sciences. The conference was organized by the Institute of Inorganic Chemistry of the Slovak Academy of Sciences with Associate Professor *Vladimír Daněk*, DrSc. as chairman, Professor *Niels J. Bjerrum* as co-chairman, and Dr. *Gerard S. Picard* as vice-chairman. Associate Professor Dr. *Marta Chrenková* was the secretary of the conference.

The EUCHEM Conference on Molten Salts is organized every even year and it has a long tradition. The conference is focused on the fundamentals and applications of molten salt systems in different industrial processes. The progress in this area is the central topic of the conference. The continuation of this conference series is beneficial especially to improve and strengthen the collaboration of different groups in the framework of the European Union especially in the Human Capital and Mobility programme and, in particular, to integrate the collaboration with groups from Middle and East European countries. The main benefit of the conference is the establishment of new research contacts and collaborations, immediate flow of information and new ideas. The contact of researchers from different European countries enables the exploitation of a variety of unique experimental techniques and the introduction into the industry of improved and new technologies. On the national level the standard of the postdoctoral education increases due to the intensive contact and exchange of ideas.

The programme of the conference was divided into several sessions consisting of invited lectures and oral as well as poster presentations. In the conference participated 93 scientists from 19 countries all over the world.

The first session, devoted to the structure of molten salts, dealt *e.g.* with the combined study of Raman spectroscopy and vapour pressure of NaF—AlF₃ melts with additions of CaF₂ and MgF₂ (*B. Gilbert*, Liege), the dynamic and structural properties of melts and glasses (*G. Papatheodorou*, Patras), the high-temperature multinuclear NMR study of cryolite (*V. Lacassagne*, Orleans), the high-temperature coordination chemistry in melts (*S. V. Volkov*, Kiev), and the structure and energetics of fluoroaluminate melts (*L. Turi Nagy*, Bratislava).

In the session of the thermodynamics of molten salts mixtures the recent results on the investigation of oxides in melts of interest for Mg-production (*T. Østvold*, Trondheim), the thermochemistry of rare-earth halide melts (*M. Gaune-Escard*, Marseille), the thermodynamic modeling and phase diagram calculation of rare-earth containing halide systems (*Z.-Y. Qiao*, Beijing), the heterogeneous system design by means of molten salts phase boundary models (*V. Lutsyk*, Ulan-Ude) were presented. *Z. Akdeniz* (Istanbul) introduced an ionic model for molecular units in molten aluminium trichloride and alkali chloroaluminates.

The physical and electrochemical properties of molten salt systems were discussed in the third session. *H. A. Øye* (Trondheim) referred on viscosity of molten salts, *W. Freyland* (Karlsruhe) presented results on electronic structure and interfacial phenomena at the metal-molten salts phase boundary, *I. Okada* (Yokohama) referred on the dependence of sizes and masses on cation mobility in some rare-earth(III) chloride melts, and *A. Silný* (Bratislava) on the interfacial tension between aluminium and chloride-fluoride melts.

The problems of aluminium electrolysis were probably the most discussed topic of the conference. The lectures on the content of sodium and lithium in polarized aluminium in contact with cryolite-based melts (*P. Fellner*, Bratislava), on computational chemistry as a help for understanding chemistry in aluminium industrial processes (*G. S. Picard*, Paris), on the influence of preceding chemical reaction upon the kinetics of the anodic reaction on graphite anodes in cryolite melts (*A. Kisza*, Wrocław), on the investigation of inert anodes for aluminium electrolysis (*J. Thonstad*, Trondheim), and on the specificity of anode process on various types of anodes in cryolite-alumina melts (*S. Zuca*, Bucharest) may be mentioned.

In the fifth session, devoted to the theoretical and applied electrochemistry, the lectures on the electrochemistry of molten pyrosulfate and sulfate-containing electrolytes (*N. J. Bjerrum*, Lyngby), on the new developments in the process control and industrial applications in the electrodeposition of refractory metals in molten salts (*P. Taxil*, Toulouse), on the current knowledge and open questions in the niobium electrochemistry in molten salts (*E. Polyakov*, Apatity), on new results on metallic interdiffusion at high temperature determined by electrochemical techniques in molten salts (*M. Chemla*, Paris), and on the simulation of electrochemical processes in fused salt electrometallurgy (*F. Lantelme*, Paris) were the most important ones.

The last session was devoted to the problems of the reactions in molten salts medium. The lectures of *J. E. Enderby* (Bristol) on molten salts as models for liquid semiconductors, of *P. Tomczyk* (Krakow) on physicochemical problems of molten carbonate fuel cells, and of *M. Cassir* (Paris) on analytical approach of nickel behaviour in alkali molten carbonate eutectics used in fuel cells belonged to the most important ones.

Two poster sessions presenting more than 110 contributions with preceding short oral presentations of young scientists enabled the broad basis for valuable discussion. In the round table discussion on progress in molten salts chemistry the requirement for broader possibility for young scientists to participate in the oral presentations and the actual need of informal collaboration and creation of aimed research networks in different topics of molten salt chemistry have been strongly recommended. The participants also highly appreciated the numerous attendance of scientists from Middle and Eastern Europe enabled by grants awarded to them to cover the full conference fee and a part of travel expenses. Selected lectures and poster presentations refereed by the members of the International Organizing Committee will be published in a special issue of the journal *Chemical Papers*. The high scientific level of the conference was properly supplemented by the exhibition of the famous Slovak folk group *Lúčnica* and the ship excursion on the Danube River with the visit of the hydro plant *Gabčíkovo-Nagyymaros*.

The International Organizing Committee decided that the next EUCHEM Conference on Molten Salts would take place in France in 1998 with Dr. *Gerard S. Picard* as chairman, Dr. *Marcelle Gaune-Escard* as co-chairman, and Professor *Niels J. Bjerrum* as vice-chairman. The necessity to keep the conference in the European Research Conferences Programme was stressed.

V. Daněk