

MASS AND CHARGE TRANSPORT IN INORGANIC MATERIALS DISCUSSED IN JESOLO (VENICE) ITALY

About 220 materials scientists, physicists and chemists convened in Jesolo Lido (Venice, Italy) from May 28 to June 2, 2000 to discuss latest advances in mass and charge transport phenomena in inorganic materials. The conference has been organized in the framework of the renowned CIMTEC series of international meetings and has been endorsed by the international "Academy of Ceramics".

A large number of Countries worldwide were represented, with Japan having the record of delegates (34) just followed by US and Germany (31 delegates each). Other represented Countries were, in decreasing number of delegates: Russia, UK, France, Taiwan, Israel, Italy, Austria, Spain, Korea, Denmark, Latvia, Poland, Sweden,

Portugal, Australia, China, Belgium, Romania, Swiss, Brazil, Holland, Estonia, Ukraine, Slovenia and Singapore.

The conference contents, defined by the Conference Chair Dr. P. Vincenzini, National Research Council, Chairman of Council Academy of Ceramics, with the assistance of Conference Co-Chairs R. Dieckmann (USA), K. Koumoto (Japan), J. Maier (Germany), D.J. Young (Australia) and the International and National Advisory Boards, were designed as to enlighten most recent developments in:

- understanding of microscopic mechanisms of transport in different inorganic materials
- assessing the role of transport in materials reactivity, synthesis and processing

The main meeting hall during the inaugural session. Because of the high number of presentations, the Conference was organised into two parallel sessions. Overall 220 delegates coming from 28 Countries worldwide attended the Conference. Most impressive delegations were from Japan (34 participants) and USA and Germany (31 participants each). All sessions were extremely well attended.



- exploring the transport mechanisms which affect materials properties and behaviour under operating conditions
- exploit the role of transport processes in a number of advanced technologies of current or emerging interest

The above topics have been object of wide discussion both by the five Keynote Speakers (F.M. D'Heurle, USA; G.H. Frischat, Germany; A.G. Merzhanov, Russia, J.B. Goodenough, USA; I. Yamada, Japan) as well as by the about 230 oral and poster presentations included in the conference programme.

Covered were crystalline ionic/covalent materials, metals and metal alloys, intermetallic compounds, semiconductor materials, and amorphous solids, glasses melts and liquids, as well as transport phenomena in the gas/vapour phase and in small confining systems.

"Mass and Charge Transport Mechanisms" has been one of the three Sections in which the conference has been articulated. This section included some 60 oral and 32 poster presentations focused on: Transport in prevalently crystalline materials and magnetotransport phenomena (31 contributions); Transport in metals and intermetallics (12 contributions); Transport in semiconductor materials (9 contributions); Transport in amorphous

solids, melts and liquids (6 contributions); Transport in small confining systems (11 contributions); Defects/transport interaction phenomena (9 contributions); Effects of ion implantation, thermal gradients, magnetic and electric fields, pressure and strain (9 contributions); New techniques for transport studies (5 contributions).

Most interesting talks were given, among others by: H. Iwahara, Japan; K.

Funke, Germany; P.Werner, Germany; R. Dieckmann, USA;

J.H. Harding, UK; E. Rabkin, Israel; A.M. Goldman, USA; Y. Mishin, USA; Th. Wichert, Germany; J. Maier, Germany.

The second section of the conference was devoted to discuss the role of transport on various aspects of materials science such as reactivity, synthesis, processing, microstructure and properties. The overall 89 presentations (57 oral, 32 poster) offered a specialistic overview of current developments in: Solid state reactions, gas solid reactions, liquid state reactions (18 presentations); Nucleation, crystallization, phase separation, phase transformation, solute segregation, amorphization, single crystal growth (18 contributions); Role of transport in materials processing (26 contributions); Role of transport in coating, joining and surface modification (11 contributions); Role of transport in materials properties (16 contributions).

Among the several very interesting subjects treated in this section one can refer to presentations given by M. Martin, Germany; W. Lengauer, Austria;



Conference Chair P. Vincenzini, National Research Council, Italy, Chairman of Council of the "Academy of Ceramics". During his opening talk at the Conference he stressed the scientific and technological importance of the understanding of mass and charge transport processes in materials for the development of innovative technologies.



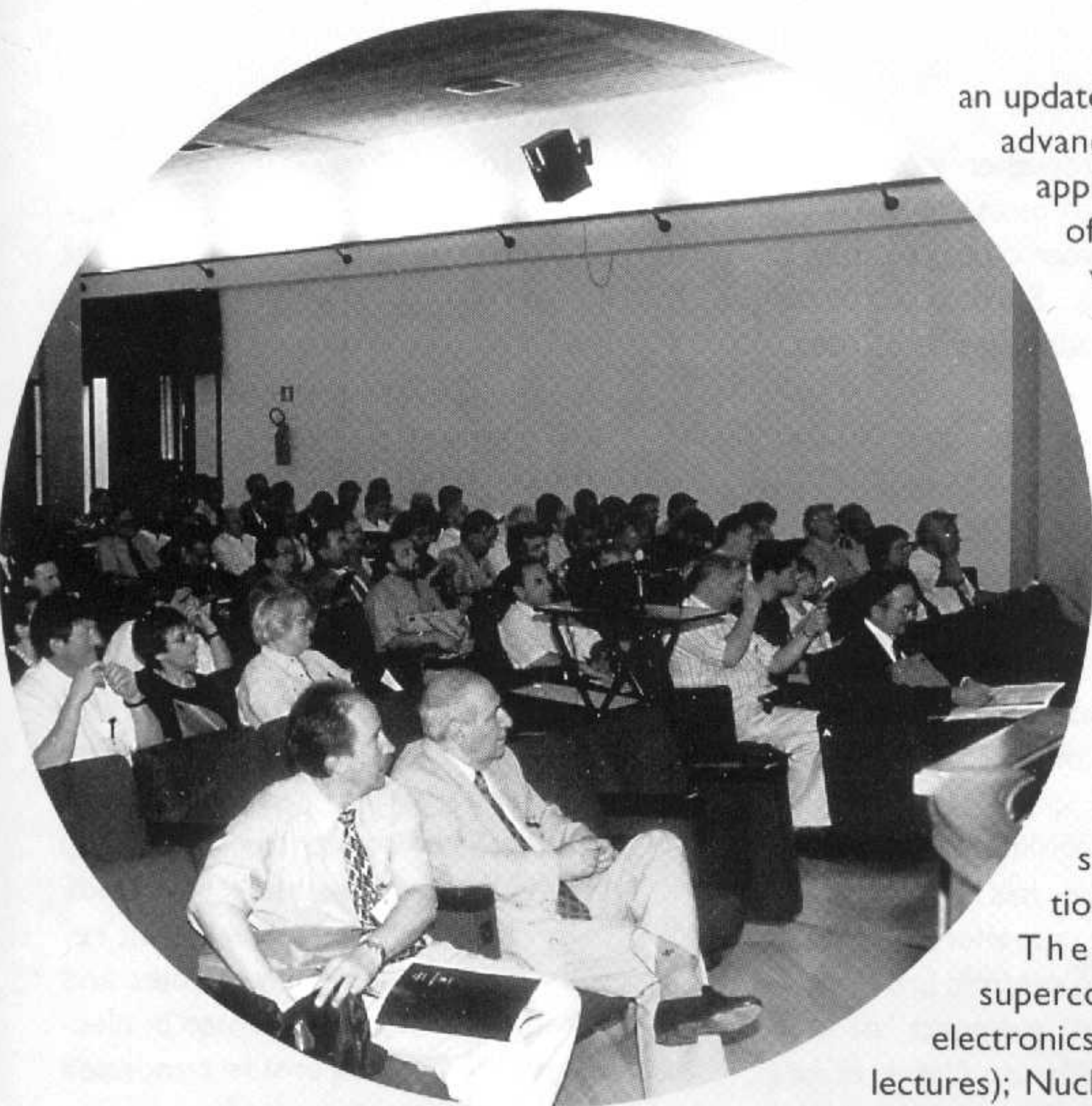
A. Saramin (on the left), representative of Regional Institutions, extends the greetings of the Region to the participants of the Conference.



The delegation coming from the Institut of Structural Macrokinetics (ISMAN, Moscow, Russia), was headed by Prof. A.G. Merzhanov, the "father" of SHS synthesis (second from left). In the photo: Yu. G. Morozov, I. Borovinskaya, A.S. Rogachev and V.I. Yuhvid.

R. Dieckmann, Cornell University, USA, welcomes participants during the inauguration of the Conference. At the Presidential Table, from left to right: K. Koumoto, Nagoya University, Japan, R. Dieckmann, A. Saramin, representative of Regional Institutions, P. Vincenzini, Conference Chair, J. Maier, Max-Planck-Institut, Stuttgart, Germany, D.J. Young, University of New South Wales, Australia. Koumoto, Dieckmann, Maier and Young actively cooperated in the scientific organization of the Conference in their vest of Conference Co-Chairs.

S.L. Kharatyan, Armenia; D.J. Young, Australia; R. Trivedi, USA; V.I. Yuhvid, Russia; K. Koumoto, Japan; Yu.G. Morozov, Russia; B. Buchmayr, Austria; J.L. Routbort, USA.
Theoretical and experimental studies



an updated picture of the advances in some applicational areas of new materials which are critical for the development of new technologies such as: Fuel cells, batteries and supercapacitors (7 lectures); Optical, electro-optical and sensor applications (5 lectures); Thermoelectric, superconducting and electronics applications (5 lectures); Nuclear applications (4 lectures); Chemical processing and related processes (5 lectures).

A number of posters was also included in this section covering the above fields as well as others of industrial interest. Overall the conference was very well attended. Although the nice weather

was tempting to spend some time along the beach (Jesolo Lido is a well known touristic seaside resource) the meeting rooms were always crowd of people. On the other hand, in order to make easier personal contacts among delegates various socials have been organized, including a get-together party, a tour to Venice and the official dinner. And these also were very well attended!

In conclusion, because of the interdisciplinarity of the subject and the appreciable high level of the presentations, the conference founded itself as an excellent opportunity for an integrated exchange of knowledge and experience on present advances and open problems on the subject among experts in physics, chemistry and materials science, and the application engineering community.

The Official Proceeding volumes (2 books) that will include most of the matter presented at the conference are now available.

An informative brochure can be requested to:

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aimed at pinpointing the role of transport in engineered materials and devices for the operation of industrial processes of current or emerging interest and/or at assessing transport-related modification/degradation of materials and devices under working conditions have been the object of scientific presentations at Section C of the conference titled "Application of Transport Studies to Devices and Industrial Problems". A total of 26 oral contributions offered



Group of participants to the excursions to Venice. The Social Programme of the Conference also included a get-together party and a fish-based Official Dinner served in a typical restaurant in Lido di Jesolo.