

PRESENTATION

CIMTEC 2002 - 10th INTERNATIONAL CERAMICS CONGRESS & 3rd FORUM ON NEW MATERIALS was held in Florence, Italy on July 14-18, 2002. This qualitative and comprehensive congressional event, similarly to the previous editions, has been designed to encompass and derive synergism from a broad interdisciplinarity network capable of offering opportunities for identifying and exploring new directions for research and production. The above based on the view that ongoing and future innovations require at an ever increasing extent a complex array of interconnections among scientific research, innovating technology and industrial infrastructure.

CIMTEC 2002 consisted of two major, closely intertwined events: the 10th INTERNATIONAL CERAMICS CONGRESS and the 3rd FORUM ON NEW MATERIALS. The Academy of Ceramics and the International Ceramic Federation (ICF) acted as principal endorsers for the first one, and the International Union of Materials Research Societies (IUMRS) for the FORUM.

The INTERNATIONAL CERAMICS CONGRESS covered major aspects, from fundamental research to industrial technology of the so-called "Advanced Technical Ceramics" (Area A: 11 Sections including 46 Technical Sessions) as well as relevant fundamental and applied research aspects of the so-called "Classical Ceramics" (Area B: two International Symposia, one on Silicate Ceramics and the other on Refractories).

The FORUM ON NEW MATERIALS offered materials researchers and users a valuable opportunity for scientific and technical exchange across the whole spectrum of new materials: polymers, metals, ceramics, glasses and new carbons. It consisted in six International Conferences designed to cover extensively some most demanding, application driven R&D areas where interaction, integration or competition among different materials appear of special attractiveness.

A balanced, high quality programme of invited and contributed papers resulted from some one thousand scientific and technical contributions effectively presented during the four working days to a large international audience coming from about fifty countries throughout the world.

The 12 volumes which constitute the Official Proceedings of the CIMTEC 2002 contain a wide selection of the papers presented. Where appropriate, the chapters of each volume have been organized in such a way to follow the flowsheet of the sessions of the congress.

The six volumes dedicated to the INTERNATIONAL CERAMICS CONGRESS host Invited and Contributed matter given at the eleven Technical Sections involving ATCs (Part A-B-C-D) whereas matter presented at the two International Symposia on Classical Ceramics, have been collected in two separate volumes: "*Science and New Technology for Silicate Ceramics*" and "*Refractories: Trends in Research and Applications*".

Part A includes: *Section A* - Foundations of Structure and Property, Reaction and Unit Processes of Advanced Ceramic Systems, *Section B* - Corrosion and Tribology of Advanced Ceramics, and *Section C* - Ceramic Powders Synthesis and Processing. **Part B** includes: *Section D* - Sintering Science and Technology for Advanced Ceramics, and *Section E* - Non Conventional Routes to Ceramics. **Part C** includes: *Section F* - Surface Engineering with Ceramics, *Section G* - Ceramic Composites, *Section H* - Ceramic Joining, and *Section I* - Structural Ceramics. **Part D** includes: *Section J* - Ceramics for Electrochemical, Chemical, Nuclear and Environmental Applications, and *Section K* - Electrical, Magnetic and Optical Ceramics.

Invited and contributed papers presented at the FORUM ON NEW MATERIALS have been collected in six separated volumes. Volume 1 includes: 2nd International Conference "*Computational Modelling and Simulation of Materials*"; Volume 2 includes: 2nd International Conference "*Mass and Charge Transport in Inorganic Materials: Fundamentals to Devices*"; Volume 3 includes: 4th International Conference "*Science and Engineering of HTC Superconductivity*"; Volume 4 includes: 3rd International Conference "*Diamond and Other Carbon Materials; Fundamental Physical Properties and Electronic Applications*"; Volume 5 includes: 4th International Conference "*Advanced Fiber Composites for Structural Applications*"; Volume 6 includes: 6th International Conference "*Materials in Clinical Applications*".

It is noteworthy pointing out how the attribution of papers to the various sections of the books may having been subject to some shortcoming and uncertainties deriving essentially from the same material or compound possibly involving different functions and uses, or papers containing at the same time aspects linked to structure, processing techniques and properties and their relationships. Where possible the general criterium was adopted to account for

the predominant function performed in the specific context in all those cases where the material by itself might be able to carry out different functions. Likewise, an attempt was made to determine the most appropriate location for those communications where complex relationships among processing, properties and structure (including microstructure) are involved.

It may be supposed that not all may be entirely satisfied with the solutions adopted, being the matter subjective to some extent. Nevertheless it is hoped that, in spite of the above limitations, also deriving from the very large number and variety of the matter dealt with, a satisfactory compromise may have been reached in making these proceedings volumes logically presented and easy to consult.

Most of the papers were written by authors whose mother tongue is not English. Therefore, considerable revision of the original texts was often required. The partial reworking of several papers and sometimes even complete rewriting was necessary to make clear work valid as regards the technical content but difficult to understand because of lack of proficiency in the English language. Even so, in order to allow the scientific and technical community to have access to the proceedings volumes within a reasonable length of time, compromise was necessary in regard to the quality of writing, and papers containing language imperfections were considered acceptable provided that their technical content was adequate and easily understandable.

The Editor, who also acted as the Chairman of CIMTEC 2002, would like to express his sincere appreciation to all the Institutions and Professional Organizations involved in the congress, to the members of the International Advisory Committees, the National Coordinating Committees, the Co-Chairs Prof. Dale E. Niesz for the INTERNATIONAL CERAMICS CONGRESS and Prof. Peter A. Glasow for the FORUM ON NEW MATERIALS, the Lecturers, the technical staffs of Techna and of the International Congress Center of Florence, and to the many others who directly or indirectly contributed to the organization. Indeed it was mainly through the involvement of the above organizations and individuals, and the active participation of most qualified experts from major academic and government research institutes and industrial R&D centers of many countries that a very valuable scientific programme could be arranged, in spite of the difficult international situation aroused from the "Twin Towers" and "Pentagon" terroristic attempts, which failed just at the same time of the "Call for Papers" of CIMTEC 2002. It is therefore expected that the printed output of CIMTEC 2002 - 10th INTERNATIONAL CERAMICS CONGRESS & 3rd FORUM ON NEW MATERIALS will be accepted as an original and valuable contribution to the literature in the field.

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