

Foreword

This special issue contains the selected papers presented at the Xth International Conference on “Frontiers of Polymers and Advanced Materials: *Emerging Technologies and Business Opportunities*” held in Santiago de Chile, Chile, September 28 – October 2nd, 2009. The conference was a sequel to the very successful series of international meetings held in Krakow (Poland, 2007), Cancun (Mexico, 2005), Bucharest (Romania, 2003), Pernambuco (Brazil, 2001), Poznan (Poland, 1999), Cairo (Egypt, 1997), Kuala Lumpur (Malaysia, 1995), Jakarta (Indonesia, 1993) and in New Delhi (India, 1991).

The conferences focused on the most recent and important progress in the field of advanced materials, their science and technology and in new business opportunities resulting from the recent technological developments. Similarly to the preceding meetings the conference held in Krakow benefited of a wide international attendance, gathering around 300 participants coming from 29 countries, representing almost all continents.

The main conference objectives were:

- To highlight advances and new findings in polymers and advanced materials and their impact on new technologies;
- To facilitate technology transfer and new business opportunities by bringing together representatives from academia, research centers, industries and business;
- To foster international collaborations and joint ventures;
- To facilitate the growth of private sector business in Chile and in Latin America;
- To promote the growth of scientific and technical infrastructure in the field of polymers and advanced materials technologies.

The presentations at the conference were split into 6 symposia:

- (i) General and tutorial lectures on New Materials and Advanced Technologies (Chairs: Prof. K. S. Lee (Hannam University, Korea), Prof. E. Vogel (University L Frontera, Temuco, Chile), Prof. P. Gómez-Romero (ICN-CSIC, Spain));
- (ii) New Generation Nanostructured Materials, Hybrid Materials, Magnetic Materials, Glass and Ceramic, Dental Materials, Exotic Materials (Chairs: Prof. J. Mark (University of Cincinnati, OH, USA), Prof. C. Sanchez (Université Pierre et Marie Curie, France), Prof. K. Nielsch (Max Planck Institute of Microstructure Physics, Germany));
- (iii) Natural Fibres, Composites and Environmentally Friendly Materials (Chairs: Prof. M. I. Aranguren (National University of Mar del Plata, Argentina), Prof. R. Kozłowski (Institute of Natural Fibres, Poznan, Poland), Prof. A. Pawlicka (University of Sao Paulo at Sao Carlos, Brazil), Prof. R. M. Rowell (USDA Forest Service, Madison, WI, USA));
- (iv) Polymeric Materials and Composites for Plastic Electronics and Solar Energy Conversion (Chairs: Prof. A. Pron (CEA Grenoble, France), Prof. J. Zagal

- (University of Santiago, Chile), Prof. M. Zagorska (Warsaw University of Technology, Warsaw, Poland));
- (v) Advanced Materials and Composites for Photonics, Nano- and Biophotonics (Chairs: Prof. F. Díaz (Catholic University of Chile, Santiago), Prof. I. C. Khoo (The Pennsylvania State University, Park, USA), Prof. C. Sotomayor (Catalan Institute for Research and Advanced Studies, Spain));
 - (vi) Biomaterials and Biotechnology (Chairs: Prof. J. A. Asenjo (University of Chile, Santiago), Dr. G. Bidan (CEA Grenoble, France), Prof. I. Rau (POLITEHNICA University of Bucharest, Romania), Prof. M. Rosenblatt, (Life Science Foundation, Santiago, Chile)).

Two poster sessions were organized. In total, during the oral sessions, about 200 papers: keynote, plenary, invited and contributed and almost the same number of poster contributions were presented. Invited plenary lectures on interdisciplinary topics were given by distinguished scientists and representatives of U.S. Air Force, European and Asian research institutions and speakers representing industry.

This book is a collection of selected and refereed papers presented at the conference. The typical presentation is multidisciplinary, containing a blend of chemistry, physics, materials processing and technology applications. The result is a comprehensive overview of polymer-related topics including innovative synthetic techniques, nanostructured materials for photonics and optics, multi-functional polymers, new composite, exotic, hybrid materials, sol-gels, device applications and environmental friendly materials and technologies. Both review and research papers are included. The review papers should assist in the cross-fertilization of different areas and training of young researchers, while the research papers will serve as useful reference materials summarizing the current status of individual topics and projecting future developments and future trends.

We wish to thank the various institutions, agencies and corporations which provided support for the conference: University of Chile, the conference organizer and, in alphabetic order: Basal Financing Program for Scientific and Technological Centers of Excellence; CONICYT “Center for Development of Nanoscience and Nanotechnology”; Chilean Chemical Society; Chilean National Commission for Scientific and Technological Research; Chilean Nuclear Energy Commission; International Union for Pure and Applied Chemistry; Metropolitan Technological University; Millennium Science Nucleus “Basic and Applied Magnetism”; Office of Naval Research Global (London); US Air Force South American Office of Aerospace Research and Development (Santiago, Chile); University Austral of Chile; and University Andres Bello.

We would like to warmly thank the conference Honorary Chair Prof. Paras N. Prasad from University of Buffalo, USA, who started this series of conferences and previously organized very successful meetings for his continuous interest, support and help in its organization. Thanks are also due to the conference co-chairs: Prof. A. Ikushima from Tokyo Institute of Technology; Prof. K.-S. Lee, Hannam University, Taejon, Korea; Prof. J. E. Mark, Univ. of Cincinnati, USA; International Coordinator Dr. J. Grote from Wright Patterson Labs, USA; members of the International Program Committee, chaired by Prof. R. Rowell, USDA Forest Service, USA; and the International Advisory Committee, chaired by Prof. A. Meghea from University POLITEHNICA of Bucharest, for all helpful suggestions, selection of keynote and invited speakers as well as oral and poster contributions.

The success of this conference is to be put on their credit. The next conference will take place in 2011 in South Africa.

Guest Editors:

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