

Editorial

The International Conference on Nanoscience and Nanotechnology (ICNN2011) held during July 6-8, 2011 at Coimbatore, India organized by Coimbatore Institute of Technology, India jointly with Centro de Investigacion y de Estudios Avanzados del IPN (CINVESTAV), Mexico City, Mexico provided a dynamic overview of current multidisciplinary research activities on nanostructured materials and development of nanotechnologies with primary focus on establishing good relationship between fundamental science, engineering and technology by bringing together people from universities, government laboratories, academic institutions, private sector research and industry. The main aim of the conference was to assess the current status and make people to exchange and share their experiences and research results about all aspects of Nanoscience and Nanotechnology, and discuss the practical challenges encountered and the solutions adopted. The conference provided an arena for positive in-depth discussion of the presentations made and encouraged new interactions amongst researchers. This special issue of Advanced Materials Research contains the selected papers presented at the conference.

For this special issue about 97 manuscripts were presented and 72 were selected for publication and can be broadly classified into six chapters namely i) preparation and characterization of nanostructured materials ii) structural and optical properties of nanocrystalline materials iii) nanotubes and nanowires iv) nanocrystalline polymer materials v) nanostructured materials for biological applications and vi) sensors and devices using nanostructured materials.

The papers under the chapter I preparation and characterization of nanostructured materials provide new concepts and recent advances used in the preparation of nanocrystalline materials. The papers presented in chapter II under the heading structural and optical properties of nanocrystalline materials describe in terms of stoichiometric point of view the structural evolution and transformation of different materials system and in particular the role played by crystal structures in controlling the properties of nanocrystalline materials. The results presented will definitely stimulate and enhance the progress of research on functional nanocrystalline materials. Also about the characterization of materials using advanced characterization methods with state of the art instrumentation techniques were presented.

In this special issue, we have several contributed papers that are addressing the current status of the fundamental issues related to synthesis and the diverse applications of semiconducting nanowires and nanotubes, which are consolidated and presented as chapter III. The papers related to nanocrystalline polymer materials presented in chapter IV discusses the different aspects associated with the synthesis and properties of polymer materials and provides good scope for researchers to carry out further research on polymer materials. Demonstration about the usage of specific nanocrystalline materials for efficient drug delivery and antimicrobial activities are being discussed in chapter V under the title nanostructured materials for biological applications and will be an impetus for carrying out research in this area. Finally, in the chapter VI papers related to sensors and devices using nanostructured materials give an overview about the fabrication of devices like, field effect transistors, gas sensors and solar cells using nanomaterials.

This special issue with a good collection of research papers will definitely simulate the interest of materials science community to reinforce research activities in the field of nanostructured materials for structural and functional applications.

We acknowledge all the delegates of the conference who presented their work, for providing us with the basis for this special issue. We thank the authors for their contributions, and the reviewers for the insightful suggestions that have helped to enhance the quality of the papers. We will like to greatly acknowledge the significant contribution made by the organizing committee of the conference for making the conference successful.

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