

## **Proceedings of the ‘National Review and Coordination Meeting on Nanoscience and Nanotechnology’, Hyderabad, 2007**

### ***FOREWORD***

Over the past decade, there has been unprecedented global excitement in various aspects of nanoscience and technology both of which are intimately intertwined if the immense possibilities afforded by the nanoscales are to be realized. Nanotechnology is an interdisciplinary field and thus provides tremendous scope for related technology development in a wide range of areas including electronics, biotechnology and materials engineering. Nanotechnology has the potential to transform the current state of art in low cost solar cells and sensors, faster computers with more memory capacity, filters for cleaning contaminated water, cancer killing drug molecules and more.

The Nanoscience and Technology Initiative under the Chairmanship of Prof. C N R Rao was launched by the Department of Science and Technology (DST), Government of India, in October 2001 to strengthen the overall research and development in nanoscience and technology. Under this initiative, about 100 research projects dealing with the synthesis and assembly of nanoparticles, nanotubes, nanowires, nanoporous solids and nanostructured alloys have been supported until March 31, 2007. NSTI has also strived equally to retain a focus on simultaneously granting projects aimed at developing applications, especially in areas related to structural materials, energy, health and environment. It is equally interesting that a large number of Indian industries are showing growing interest in evaluating and adopting nanotechnology, thereby raising the vision of India becoming a globally significant player in the field by translating the research excitement into products of commercial or strategic significance.

The objective of the NSTI Review and Coordination meeting was to provide a forum to bring together all the major research groups working in the field of nanoscience and nanotechnology, those funded under the NSTI programme as well as others, to facilitate strong interaction and provide abundant prospects for networking. The following areas were addressed at the meeting: Synthesis and characterization of nanomaterials, nanocoatings, nanocomposites, nanobiomaterials and nanofunctional materials. The Review and Coordination meeting was organized by the International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad. The response was overwhelming and nearly 90 PIs/Co-PIs of NSTI projects attended the Review and Coordination meeting. A conscious effort was also made to encourage participation of students and young researchers, and about 115 participants in this category took part in the meeting. Over 100 projects including units/centres, major projects, medium projects and smaller projects were reviewed during the meeting. The exhibition held during the meeting was very successful with the participation of 12 companies who exhibited characterization equipment specifically used for research in nanomaterials.

It gives us immense pleasure to bring out the proceedings of this Review and Coordination meeting as a special issue of the Bulletin of Materials Science. Among the many manuscripts submitted, a total of 55 papers including two papers from the authors who received the National Research Awards in Nanoscience and Technology were accepted for publication after peer review. We thank all the authors for their contributions and we would like to express our sincere thanks to the referees for carefully reviewing the manuscripts. We hope this special issue will serve as an archival collection of papers in the rapidly expanding field of nanoscience and nanotechnology. We take this opportunity to thank NSTI of DST for their financial support. The advice provided by the National Advisory Committee is also gratefully acknowledged. Finally, we would like to acknowledge the support provided by the editorial staff of the Bulletin of Materials Science in bringing out this special issue.

**S B Krupanidhi**  
*Editor*

**G Sundararajan**  
**Tata Narasinga Rao**  
*Guest Editors*