

## PREFACE

Nanotechnology is so pervasive; it has an impact on all research fields. Scientists, engineers, pharmacists, and physicians from all different disciplines, and all branches of physical and life sciences and engineering, are either actively contributing to the rapid progress of the nanotechnology field, or will soon be affected by evolving nanotechnology. There are many archive journals and monographs dedicated to publishing the most recent research progress in nanotechnology with varied focus. Many well-established journals in more traditional disciplines have an increasing coverage of nanotechnology research. Not only are the specialty journals making increasing efforts to keep up with the rapid advancement of nanotechnology, but the popular science journals and books are also keeping up the pace to inform the general population and policymakers. More and more symposia, conferences, and workshops focusing on nanotechnology have been organized. Similarly, more and more short courses and regular courses on nanotechnology are offered to educate both graduate and undergraduate students.

In spite of the broad impact and evolving development of nanotechnology, it is most unlikely its own industry will form. Instead, it penetrates into every sector of industry and technology, and all aspects of mankind's activity. Consequently, there is a constant flux of emerging new research directions in nanotechnology. It becomes obvious that nanotechnologists face great difficulty in keeping themselves embraced with the most recent development in the nanotechnology field. Yet many developments and understanding achieved in different focal areas can be directly applicable to other sub-fields of nanotechnology. Review articles by authority experts in their own sub-fields play a significant role in summarizing the recent development in selected topic areas, and thus serve two vital purposes: (1) to present a comprehensive and coherent description of the state-of-the-art understanding by distilling the most valuable experimental results and theories from otherwise segmented and scattered literature, and (2) to offer critical opinions regarding the challenges, promises, and possible future developing directions. Review

articles are published in most archive journals, and are thus associated with the focal areas that journals are devoted to. This annual review collects excellent review articles authored by the authority experts and their colleagues in various sub-fields of nanotechnology and thus offer easy access of critical opinions of the most recent developments in nanotechnology.

This volume of *Annual Review of Nano Research* includes 13 review articles and offers a concise review detailing recent advancements in a few selected topics in nanotechnology. Topics in this volume consist of inverse opals and macroporous materials, photonic crystals, and molecular electronics. Other areas involving functional nanostructures, oxide nanofibers, carbon nanotubes, and nanocomposites are also covered in great detail. In addition, many different areas related to organic materials, nano-patterned materials, and biological materials are also described extensively.

Dr. Tammy P. Chou has put in many hours and has placed great effort in editing and formatting the review articles published in this volume. Mr. Yeow-Hwa Quek from World Scientific Publishing coordinated a lot of effort to make the publication of this volume possible.

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