
Preface

Synthesis and application of nanoparticles have numerous been reported by researchers belonging to many fields, such as materials science, chemistry, physics, etc. Nanoparticles themselves are well known to give fascinating characters in their application. However, the interest in their improvement and promotion is now turning to the hybridization of organic and/or inorganic nanomaterials. Although nanolevel hybridization is an outstandingly novel and original technique, it involves many difficulties to attain desired natures in industrial application.

On the other hand, not only the combinations of various materials but also their methods surely result in a wonderful variety of hybridized characteristics. However, an integrated and well-classified book on them is not found in any fields of science, since it seems very difficult to abridge them from the interdisciplinary point of view. In this regard, only the researchers in Hybrid Nano-material Research Center (HyNaM), Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, and their colleague, can provide an overall review of such a research field. So, this book will be focused on the synthesis, characterization, and process of nanohybrid materials, including nanoparticles and ultrathin film, and gives a comprehensive survey of achievements by HyNaM.

This book represents the fundamental aspects of nanohybrid materials in synthesis procedure, characterization, and processes with some selected examples, from both the basic science and the applied engineering points of view. This is the first major compilation of new advances which covers current status and topics on new synthetic information of nanohybrid materials composed of organic and/or inorganic ones in nanometer level in one volume. The contributors were selected for their long and continuing expertise in their respective fields. We would like to express our gratitude to all those involved in manuscript preparation and publishing. In particular, we should mention the significant contributions of Dr. J. Kano, for his assistance in preparing the electronic typesetting of this volume.

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