

Preface

2012 International Conference on Nano Materials and Electric Devices (ICNMED 2012) in Hong Kong, December 19-20, 2012. The objective of ICNMED 2012 is to provide a forum for researchers, educators, engineers, and government officials involved in the general areas of Nano Materials and Electric Devices to disseminate their latest research results and exchange views on the future research directions of these fields.

Nanomaterials is a field that takes a materials science-based approach to nanotechnology. It studies materials with morphological features on the nanoscale, and especially those that have special properties stemming from their nanoscale dimensions. Nanoscale is usually defined as smaller than a one tenth of a micrometer in at least one dimension, though this term is sometimes used for even smaller materials. An important aspect of nanotechnology is the vastly increased ratio of surface area to volume present in many nanoscale materials, which makes possible new quantum mechanical effects. One example is the “quantum size effect” where the electronic properties of solids are altered with great reductions in particle size. This effect does not come into play by going from macro to micro dimensions. However, it becomes pronounced when the nanometer size range is reached. A certain number of physical properties also alter with the change from macroscopic systems. A novel mechanical property of nanomaterials is a subject of nanomechanics research. Catalytic activities also reveal new behaviour in the interaction with biomaterials.

The ICNMED 2012 conference provides a forum for engineers and scientists in academia, industry, and government to address profound issues including technical challenges, safety, social, legal, political, and economic issues, and to present and discuss their ideas, results, work in progress and experience on all aspects of Nano Materials and Electric Devices.

We hope that this book will contribute to further progress in the field of Nanomaterial and Electric Devices.

Tingting Wang

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