

Preface

Nanotechnology and materials science are becoming increasingly important in the modern world. This book presents eight selected reviews from the 2013 international conference on Manufacturing, Optimization, Industrial and Material Engineering, held in Bandung, Indonesia, from 9 to 10 March 2013. The chapters focus on new advances and research results in the fields of Nanotechnology and Materials Science. The reviews were selected for their high quality and in order to cover a range representative of the conference themes; the selected areas mainly concern experimental studies, characterization, and synthesis of micro- and nanoscale materials, studies of their properties, and how they relate to various applications.

The following topics are covered: Surface hardness and wear resistance of carbon steel related to the surface microstructure; ZnO/SnO₂ nanocomposites prepared on ZnO coated glass using chemical vapor deposition with applications in humidity sensing; nano-magnesium oxide synthesis: the effect of MgO nano-filler loading on the dielectric layer properties of nano-MgO films; production of nanozeolite by wet milling: a study of their advantages over conventional micron-sized materials; the performance of solid-state dye sensitized solar cells fabricated from CuI thin films deposited using a novel mist-atomization method; impedance tube sound absorption measurements on date palm fiber panels made from the natural waste of date palms; work hardening and tensile strength properties in AZ31 and AZ61 Al-Zn magnesium alloys investigated with quasi-static tensile tests at various strain rates; nanomechanical surface properties of stainless steel, investigated using field emission scanning electron microscopy, universal scanning probe microscopy, and nanoindentation.

These articles will provide a good source of reference material and new ideas for those working in these areas and encourage further exploration. They will also be useful to newcomers to these fields who wish to be informed of some of the latest developments.

Recent Trends in Nanotechnology and Materials
Science

Selected Review Papers from the 2013 International
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