Preface

2013 2nd International Conference on Smart Materials and Nanotechnology in Engineering (SMNE 2013) is to be held on March 26-27, 2013, Hong Kong.

Material is anything made of matter, constituted of one or more substances. Wood, cement, hydrogen, air and water are all examples of materials. Sometimes the term "material" is used more narrowly to refer to substances or components with certain physical properties that are used as inputs to production or manufacturing. In this sense, materials are the parts required to make something else, from buildings and art to stars and computers. Smart materials are designed materials that have one or more properties that can be significantly changed in a controlled fashion by external stimuli, such as stress, temperature, moisture, pH, electric or magnetic fields.

Nanotechnology is the manipulation of matter on an atomic and molecular scale. The earliest, widespread description of nanotechnology referred to the particular technological goal of precisely manipulating atoms and molecules for fabrication of macroscale products, also now referred to as molecular nanotechnology. A more generalized description of nanotechnology was subsequently established by the National Nanotechnology Initiative, which defines nanotechnology as the manipulation of matter with at least one dimension sized from 1 to 100 nanometers. This definition reflects the fact that quantum mechanical effects are important at this quantum-realm scale, and so the definition shifted from a particular technological goal to a research category inclusive of all types of research and technologies that deal with the special properties of matter that occur below the given size threshold. It is therefore common to see the plural form "nanotechnologies" as well as "nanoscale technologies" to refer to the broad range of research and applications whose common trait is size. Because of the variety of potential industrial and military applications, governments have invested billions of dollars in nanotechnology research. Through its National Nanotechnology Initiative, the USA has invested 3.7 billion dollars. The European Union has invested 1.2 billion and Japan 750 million dollars.

SMNE2013 brings together researchers, developers and users from around the world in both industry and academia to discuss emerging issues facing Smart Materials and Nanotechnology in Engineering, which has great impact on the development and innovation of the related fields.

The Proceedings has been divided into three Chapters referring to Material Science and Engineering, Nanoscience and Technology and Mechanical Manufacturing. Some of excellent papers, sharing research findings and latest application are included.

Special thanks to TTP and wish you enjoy yourself in Hong Kong.

Jiang Liangzhong

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