

Preface

2013 International Conference on Solid State and Materials will be held on January 30-31, 2013 at Los Angeles, CA, USA. The goal of this conference is to bring together the researchers from academia and industry as well as practitioners to share ideas, problems and solutions relating to the multifaceted aspects of Solid State and Materials.

Solid-state physics is the study of rigid matter, or solids, through methods such as quantum mechanics, crystallography, electromagnetism, and metallurgy. It is the largest branch of condensed matter physics. Solid-state physics studies how the large-scale properties of solid materials result from their atomic-scale properties. Thus, solid-state physics forms the theoretical basis of materials science. It also has direct applications, for example in the technology of transistors and semiconductors.

Solid materials are formed from densely-packed atoms, which interact intensely. These interactions produce the mechanical (e.g. hardness and elasticity), thermal, electrical, magnetic and optical properties of solids. Depending on the material involved and the conditions in which it was formed, the atoms may be arranged in a regular, geometric pattern (crystalline solids, which include metals and ordinary water ice) or irregularly (an amorphous solid such as common window glass).

The bulk of solid-state physics as a general theory and not really a proven form of research is focused on crystals. Primarily, this is because the periodicity of atoms in a crystal — its defining characteristic — facilitates mathematical modeling. Likewise, crystalline materials often have electrical, magnetic, optical, or mechanical properties that can be exploited for engineering purposes.

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.

I express our sincerely acknowledgements to people who contribute to the proceedings and conference. Moreover, my thanks are also due to the sponsors for providing much help for the conference. I would particularly like to thank the authors, who provide us many feedbacks by e-mail during the whole conference.

Finally, I hope the attendees benefit from the conference, and have a happy and meaningful journey in Los Angeles. Thanks!

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