Preface

It is our pleasure to welcome you to the proceedings of the 2013 International Conference on Applied Mechanics, Fluid and Solid Mechanics (AMFSM 2013), which will be held on November 15-16, 2013, Singapore. The forum aims to bring together researchers, developers, and users from around the world in both industry and academia for sharing state-of-art results, for exploring new areas of research and development, and to discuss emerging issues facing Applied Mechanics, Fluid and Solid Mechanics.

Mechanics is the branch of science concerned with the behavior of physical bodies when subjected to forces or displacements, and the subsequent effects of the bodies on their environment. The scientific discipline has its origins in Ancient Greece with the writings of Aristotle and Archimedes. During the early modern period, scientists such as Galileo, Kepler, and especially Newton, laid the foundation for what is now known as classical mechanics. It is a branch of classical physics that deals with the particles that are moving either with less velocity or that are at rest. It can also be defined as a branch of science which deals with the motion and force of the particular object.

Note that there is also the "theory of fields" which constitutes a separate discipline in physics, formally treated as distinct from mechanics, whether classical fields or quantum fields. But in actual practice, subjects belonging to mechanics and fields are closely interwoven. Thus, for instance, forces that act on particles are frequently derived from fields, and particles generate fields by acting as sources. In fact, in quantum mechanics, particles themselves are fields, as described theoretically by the wave function. Thus the often-used term body needs to stand for a wide assortment of objects, including particles, projectiles, spacecraft, stars, parts of machinery, parts of solids, parts of fluids, etc. Other distinctions between the various sub-disciplines of mechanics, concern the nature of the bodies being described. Particles are bodies with little internal structure, treated as mathematical points in classical mechanics. Rigid bodies have size and shape, but retain a simplicity close to that of the particle, adding just a few so-called degrees of freedom, such as orientation in space. Otherwise, bodies may be semi-rigid, i.e. elastic, or non-rigid, i.e. fluid. These subjects have both classical and quantum divisions of study. For instance, the motion of a spacecraft, regarding its orbit and attitude, is described by the relativistic theory of classical mechanics, while the analogous movements of an atomic nucleus are described by quantum mechanics.

The conference is sponsored by International Materials Science Society, and the proceedings are published by international journal Advanced Materials Research. We would like to thank the organization staff, the members of the Program Committees and the reviewers for their hard work.

The conference was both stimulating and informative with an interesting array of keynote and invited speakers from all over the world. Delegates had a wide range of sessions to choose from. The program consisted of invited sessions, technical workshops and discussions with eminent speakers covering a wide range of topics. This rich program provided all attendees with the opportunity to meet and interact with one another. The selected, peer reviewed paper from AMFSM 2013 focus on three topics: (1) Applied Mechanics, Fluid and Solid Mechanics, (2) Materials Science and Technology, (3) Analysis and Design of Machine Parts and Mechanisms for Industry. We expect that the conference and its publications will be a trigger for further related research and technology improvements in this importance subject.

We hope that all participants and other interested readers benefit scientifically from the proceedings and also find it stimulating in the process. We look forward to seeing all of you at the next AMFSM event.

Jin Tan

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