

Preface

To the Memory of Professor Yuanxian Gu (1954 - 2005)

Nanoscience and nanotechnology are rapidly changing the daily life of the human being in the global economy. With the advancement in understanding nanostructures and nanomaterials, multi-scale analysis is playing an increasingly important role in mechanics and materials engineering. Since the 1st Sino-US Joint Symposium on Multi-Scale Analysis in Material Sciences and Engineering was held in Beijing, China, during 17-20 June 2002, much research has been conducted in different areas of mechanics and materials in both US and China. Under the joint support by the US National Science Foundation (USNSF), the Chinese National Natural Science Foundation (CNSF) and Dalian University of Technology (DUT), the US-China Workshop on Multi-Scale Model-Based Simulation in Mechanics and Materials Engineering was held at DUT during 3-5 September 2004. This international workshop is monitored and guided by Professor Ken P. Chong at the USNSF.

With both invited and contributed speakers, the workshop consists of sessions in different subtopics of multi-scale modeling and simulation in mechanics and materials, which include but are not limited to the following:

1. Industrial applications of multiscale modeling and simulation
2. Integrated education and research in nanoscience and nanotechnology
3. Mathematical theory of multiscale modeling and simulation
4. Mechanics of nanostructured multifunctional materials
5. Mechanics of nanophase electronic materials
6. Model-based simulation of multi-physics problems
7. Multiscale modeling and simulation of thin film and MEMS fabrication
8. Nano-mechanics of biomaterials and composites
9. Nano-scale experiments in materials engineering
10. Optimization of multiscale microstructures
11. Parallel computing with multiscale methods
12. Probabilistic multiscale modeling of random microstructures

Both invited and contributed abstracts have been published in the workshop proceedings and posted on the workshop website (<http://sail.dlut.edu.cn/US-China-Workshop>). This special issue is a collection of the full papers selected based on a peer-reviewed process.

We hope that this US-China workshop could promote the international collaboration in research and education, and make an immediate contribution to the progress of nanoscience and nanotechnology by disseminating the new findings and integrating different team efforts among active researchers and educators.

We would also like to thank the authors for their excellent contributions, the reviewers for their discerning comments on the papers, and the publisher for making this special issue possible.

Workshop Co-Chairs:

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