

BIO, NANO and MICRO MECHANICS AND MATERIALS

ZHEN CHEN^{1,4}, H. ELIOT FANG², LUMING SHEN³, HONGWU ZHANG⁴
AND ZHUO ZHUANG⁵

¹Department of Civil & Environmental Engineering, University of Missouri
Columbia, MO 65211-2200, USA

Email: chenzh@missouri.edu

²Solid Mechanics Department, Sandia National Laboratories
P.O. Box 5800, MS 0372, Albuquerque, NM 87185-0372, USA

Email: hefang@sandia.gov

³School of Civil Engineering, the University of Sydney
NSW 2006, Australia

Email: L.Shen@usyd.edu.au

⁴Department of Engineering Mechanics, Dalian University of Technology
Dalian 116024, China

Email: zhanghw@dlut.edu.cn

⁵Department of Engineering Mechanics, Tsinghua University
Beijing 100084, China

E-mail: zhuangz@mail.tsinghua.edu.cn

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ABSTRACT

Simulation-Based Engineering Science (SBES) is playing an increasingly important role in the evolution of global economy. In particular, computational efforts in bio nano and micro mechanics and materials have found their way into biomedical and modern engineering applications. The new generation of bio materials has unique structures and properties, and could revolutionize not only the medical practice in particular but also the life science and engineering in general. Understanding the behavior of bio, nano and micro systems is of great scientific interest and technological importance, which requires concurrent development of experiments, theory, modeling, and simulation. The aim of this mini-symposium is to provide an exposition of the current state of the art on model-based simulation of diverse responses of bio, nano and micro systems. We particularly welcome contributions highlighting the integration of modeling, simulations, and experiments in bio, nano and micro mechanics and materials with applications. Presentations are solicited in all the subtopics related to bio, nano and micro mechanics and materials, which include but are not limited to the following:

1. Applications of bio, nano and micro mechanics and materials
2. Energetic nano-composite responses for alternative energy sources
3. Optimization of multiscale microstructures of bio-inspired materials
4. Impact of nanomaterials on human safety and health
5. Multiscale modeling and simulation procedures
6. Nanomechanics of biomaterials and composites
7. Nano and micro scale experiments in life science and engineering
8. Nanomaterials for drug delivery and treatment
9. Reliability of nanomaterials for biomedical applications
10. The interface between bio, nano and micro mechanics
11. Multiscale multiphase interaction in geologic media