

Call for Papers

Journal of Computational and Theoretical Nanoscience

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A Special Issue on

Multiscale and Multiphysics Simulations for Energy Applications

Guest Editors:

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Xu Guo, Dalian University of Technology, China

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Understanding and development of innovative materials and systems used in energy related applications, including energy generation, energy storage, heating and cooling are becoming one globally demanding research area. The phenomena in this area typically involve several atomic/molecular species and thermodynamics forces, across multiple length and time domains. This special issues targets to bring researchers to report new discovery, review the latest achievement, and to prospect the future directions in this general area, namely, multiscale and multiphysics simulations for energy applications. Specifically, the issue focuses on fundamental physics and mathematical models to address the multiphysics interactions, such as coupling between electrical, magnetic, electrochemical, photoelectrical, thermoelectric, piezoelectric, mechanical, and mass transfer, span from nanoscale to microscale. Relevant topics include, but not limited, the following:

- (1) **Energy generation:** to generate energy from various sources, such as static electricity, electromagnetic induction (transforming mechanical energy into electricity), electrochemistry (e.g., battery, fuel cell), photoelectric effect (e.g., solar cells), thermoelectric effect, piezoelectric effect;
- (2) **Energy Storage:** to store energy in useable forms through various methods, such as chemical method (e.g., hydrogen, biofuels), electrochemical method (e.g., batteries, fuel cells), electrical method (e.g., capacitors, supercapacitors), mechanical method (hydroelectric power);
- (3) **Cooling and Heating:** to reduce the energy consumption through various means, such as thermal management in micro and nanoscales (e.g., Peltier devices, thin film heater, air-cycling, pumps, and microfluidic cooling devices).

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Manuscript Submission:

Manuscripts must be prepared following the Journal's guidelines (<http://www.aspbs.com/ctn>). Please submit your manuscripts directly to Prof. Hanqing Jiang (hanqing.jiang@asu.edu) or Prof. Bin Liu (liubin@tsinghua.edu.cn). All papers submitted to this issue will be subject to a strict peer review process to ensure high quality articles. Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere.

Tentative important dates:

Manuscript due: October 2009

Authors' notification: February 2010

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