Special Issue

Multiscale and Multiphysics Modeling of Heterogeneous Materials and Structures

Message from the Guest Editors

All materials are heterogeneous at small scales. With the development of material science and technology, multiphase media has acquired extensive applications in various engineering fields, especially regarding the emerging biomaterials or smart composites. To circumvent time-consuming and costly full-scale modeling whilst reducing experimental costs, multiscale numerical techniques and homogenization theories are continuously developed to accommodate composite structures of various material systems. In the meantime, the long-term service of engineering structures demands a heterogeneous material integrity, which is difficult to avoid since damages/cracks are usually initiated from micro/nanostructures due to stress concentrations (especially around the interface of heterogeneous constituents) under mechanical loading and in harsh environments. Thus, it is essential to understand the connection between damage/cracks at the constituent level and the macro failure of composite structures to fully exploit the potential of advanced composites. Toward this end, we encourage researchers from the materials mechanics community to make a contribution in the Special Issue.

Guest Editors

Prof. Dr. Guannan Wang

Prof. Dr. Wenqiong Tu

Dr. Zhelong He

Dr. Qiang Chen

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Materials
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
materials@mdpi.com

mdpi.com/journal/materials

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Message from the Editor-in-Chief

Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

Editor-in-Chief

Prof. Dr. Maryam Tabrizian
1. Department of Biomedical Engineering, Faculty of Medicine and Health Sciences, McGill University, Montreal, QC H3A 2B6, Canada
2. Faculty of Dentistry and Oral Health Sciences, McGill University, 3640 Rue University, Montreal, QC H3A 0C7, Canada

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