

Special Issue "Modeling of materials with nano/microstructure"

keywords: composite, microstructure, homogenization, heterogenous media, functionally graded material, thermal barriers, wear reduction layers, coatings

Deadline for manuscript submissions: **December 31, 2022**

Special Issue Editors

Prof. [Stanisław J. Matysiak](#), Guest Editor

Faculty of Geology, University of Warsaw, Poland

e-mail: s.j.matysiak@uw.edu.pl

tel.: +48 22 55 40 507

Interests: composite mechanics, solid mechanics, fracture mechanics, homogenized model, heat transfer, FGM

Dr. [Dariusz M. Perkowski](#), Guest Editor

Faculty of Mechanical Engineering, Białystok University of Technology, Poland

e-mail: d.perkowski@pb.edu.pl

tel.: +48 571 443 034

Interests: mechanics of composite materials, homogenized models, heat transfer, FGM, theory of elasticity, contact mechanics, temperature dependent properties

Special Issue Information

Dear Colleagues,

Modern materials are of key importance for engineering advanced structures and devices in various industries. One type of such materials are composites, in particular composites with functionally graded properties (FGM), which are required to assure variable thermal and mechanical properties, especially near external/internal surfaces of the artefacts of interest, which might be exposed to corrosive environments, heat, fire, localized mechanical loads, UV light, and water.

The functionally graded composites (FGM) are characterized by mechanical, thermal and chemical properties which change in continuous or step-wise manner as a function of some spatial variable. The needed properties of FGM materials can be achieved via a proper gradation of the chemical composition or materials microstructure, for example by grading the porosity. Examples of functionally graded materials already widely used in industry are thermal barriers (TBC) and surface engineered elements with increased wear resistance.

The aim of this Special Issue is provide to the interested readers state-of-the-art in the processing and modelling of FGM with special focus on FG composites. To this end we invite papers on the effect of graded structures on properties, among other mechanical or thermal ones.

We welcome contributions addressing advantages of modelling based approach to design of FGM, as well as experimental studies presenting properties of such materials. Authors are encouraged to present new models, constitutive laws and measuring/monitoring techniques to provide a complete framework on these ground-breaking materials and facilitate their applications.

*Prof. Stanisław J. Matysiak and Dr. Dariusz M. Perkowski,
Guest Editors*

Manuscript Submission Information

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