EDITORIAL

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Special issue on “Advances in micromechanics of materials”

Received: 5 June 2015 / Published online: 23 July 2015
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Micromechanics of materials is a rapidly growing interdisciplinary field of engineering science. It is developed by specialists in solid mechanics, applied mathematics, and materials science. Micromechanics studies materials that can be generally characterized as multiphase mixtures. Perhaps, the most important type of them can be described as a matrix containing various inhomogeneities, such as pores, microcracks, fibers, and foreign particles. Another example is constituted by polycrystalline aggregates (like metals), consisting of crystallites of diverse orientations. Such materials may be man-made (composites, metals, foams) and may occur in nature (cracked or porous rocks, ice, bones). The goal of micromechanics was to relate the physical behavior (mechanical, conductive, etc.) to the “microstructure”—properties and geometrical arrangement of the constituents.

This special issue contains selected papers presented at International conference “Advances in Micromechanics of Materials” held at Rzeszów, Poland, July 8–11, 2014, where new advances and research results in the fields of analytical, computational, and experimental micromechanics, as well as on various applications of micromechanical modeling to problems of materials science, biomechanics, geomechanics, etc., have been presented. The conference was sponsored by FP7-PEOPLE-2013-IRSES—Marie Curie Action “International Research Staff Exchange Scheme” in the framework of project TAMER: Trans-Atlantic Micromechanics Evolving Research “Materials containing inhomogeneities of diverse physical properties, shapes, and orientations.”

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