



PSU Research Review

Special Issue Title: Multiscale Innovative Materials and Structures

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Special Issue Topic:

PSU Research Review is seeking scholarly manuscripts for a special issue on Multiscale Innovative Materials and Structures, scheduled for publication in August 2018.

“A challenging way to manufacture unconventional materials, which are able to fill holes in the to-date material property charts, is to control the architecture of the material, so as to optimally combine material and space, forming ground-breaking composite materials. Lattice structures can be employed at different scales, to form cellular solids; devices; fibres and fabrics; and also building-scale structures. Particularly challenging is the use of lattices with hierarchical structure to form fabrics, fibres and coatings of ground breaking reinforcements for novel composite materials” Feo, Fraternali, and Skelton (2017, p. 1).

Over the last few years there has been a great scientific interest in developing innovative materials in research laboratories, to be proposed, tested and used as novel engineering structures (Dehmous et al., 2017; Feo et al., 2017; Fraternali and Rosato, 2014). This is also due to the increasing variety of novel technologies that allow to produce unconventional materials and structures at different scales (e.g. top down technologies, additive manufacturing, self-assembly and hybrid chemistry approaches, among others). Particularly active are the research areas dealing with nanostructured materials and acoustic and mechanical metamaterials, which are receiving increasing interest from many scientific sectors including acoustics, aerospace, civil and mechanical engineering, medical diagnosis and remote sensing, and sound and heat control, to name just a few examples (Shirinbayan et al., 2017; Singh et al., 2017).

The present special issue brings together high-quality researchers working at the forefront of applied mechanics, material science and engineering to further the current understanding of unconventional materials, which are able to fill holes in the to-date material property charts, by controlling the architecture of the material, so as to optimally combine material and space, at different scales. The covered materials and structures include, but are not limited to: mechanical metamaterials and nanocomposites forming next-generation cellular solids, devices, such as, e.g., advanced bio-inspired composite materials for both civil and mechanical engineering; next-generation biomedical devices; multifunctional and self-healing structured materials to be used in a variety of engineering applications (Mayer-Laigle et al., 2017, in press; Yoshimura, Waas, and Hirano, 2016; Montuori and Muscati, 2017; Feo et al., 2017). Fraternali and Rosato (2014, p. 1) argue that “An ongoing objective of the research enterprise in this area is to establish a link between the mechanical modelling of materials and structures at different time and length scales, spanning the subatomic/atomic to the scale of a



continuum. Within this context, perhaps one of the most interesting issues that is of fundamental importance due to a host of potential practical applications is the development of new materials with targeted design/performance objectives, such as innovative meta-materials, and systems featuring strongly nonlinear behaviour.”

It is our hope that the work reported here will serve as inspiration for new and continued research efforts in the broad area of multi-scale innovative materials and structures.

Submission Procedure:

Submissions to this journal are through the Scholar One submission system here: <http://mc.manuscriptcentral.com/prr>

Please visit the author guidelines for the journal at <http://www.emeraldgrouppublishing.com/services/publishing/prr/authors.htm>

Please ensure you select this special issue from the relevant drop-down menu of the submission process.

Submission Deadline: 30 May 2018.

Important dates:

- Call for Papers: Feb 2018
- Peer review results: June 15, 2018
- Final revised papers due: July 15, 2018
- Notification of final acceptance: July 30, 2018
- Publication: August 2018

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If you have any queries please feel free to discuss your manuscript ideas with the Guest Editors: Professor Luciano Feo, University of Salerno, Italy (l.feo@unisa.it) or Professor Fernando Fraternali, University of Salerno, Italy (f.fraternali@unisa.it).

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