Advances in Materials Science and Engineering

Special Issue on

Metamaterials and Smart Structures in a Big Data Era

CALL FOR PAPERS

The safety of advanced engineering materials and structures used in aerospace, mechanical, and civil engineering is always a critical issue in our society and research community. To handle this issue, next-generation materials and structures have been envisioned as being engineered with smart features and abilities to monitor their own integrity through a comprehensive sensor network in either passive or active ways, which could be able to evaluate structural integrity and provide maintenance/management recommendations. Wide technical possibilities are opened by the design of new metamaterials in sound and vibration control, biomechanics, nanotechnology, and extreme mechanics.

Nowadays, there is no doubt that we have been into the big data era. Under such a circumstance, developing future smart materials and structural systems is largely dependent on big data analysis. This offers not only opportunities to help engineers improve the safety and maintainability of critical structures, but also new challenges which required further advances in fundamental research and applied technologies. Metamaterials have been designed to perform with expected mechanical properties. On the other hand, novel sensors have been developed together with new ways of integrating them into structural systems. Significant experience has been gathered in managing the existing structural health monitoring systems.

Based on the above considerations, we would like to invite researchers to contribute original research papers as well as review papers for this special issue which is aimed to serve a research milestone that summarizes the most recent progress in the field of metamaterials and smart structures.

Potential topics include, but are not limited to:

- Sensor development
- Design of metamaterials
- Big data processing and data fusion/integration
- Bioinformatics for the development of advanced biomaterials
- Structural health monitoring and damage identification
- Numerical modelling and simulations of smart materials and structures
- Case studies on practical applications in real world problems

Authors can submit their manuscripts via the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/amse/mssb/.

Lead Guest Editor
Ying Wang, University of Surrey, Surrey, UK
ying.wang@surrey.ac.uk

Guest Editors
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francesco.dellisola@uniroma1.it

Tiejun Liu, Harbin Institute of Technology, Shenzhen, China
liutiejun@hit.edu.cn

Chunhui Yang, University of Western Sydney, Penrith, Australia
r.yang@westernsydney.edu.au

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