Journal of Nanomaterials

Special Issue on *In Situ* Mechanical Characterization of Low-Dimensional Nanomaterials

CALL FOR PAPERS

Due to their interesting electrical, chemical, magnetic, optical, and mechanical properties, low-dimensional (1D and 2D) nanomaterials, such as carbon nanotubes, metallic/semiconductor nanowires, and graphene/molybdenum disulfide (MoS2) atomic layers, have been extensively investigated in the past decades. However, the ability to achieve the full potential of their fascinating applications is ultimately limited by how these low-dimensional building blocks will behave at relevant length scales, in particular, their mechanical performance and reliability.

Thanks to the recent developments of various *in situ* techniques for testing individual nanostructures inside high-resolution electron microscopes (TEM/SEM), new phenomena and deformation mechanisms have been discovered. Meanwhile, the small sample sizes allow the atomic-scale modeling (such as MD simulation) to capture the experimental findings and validate the underlying mechanisms. Together they shall provide unprecedented details and quantitative insights into how nanomaterials respond to applied load, the "size effects" in mechanical and other physical properties.

The purpose of this special issue is to publish high-quality research papers as well as review articles addressing recent advances on *in situ* mechanical characterization for various low-dimensional nanomaterials. Original, high quality contributions that are not yet published or that are not currently under review by other journals or peer-reviewed conferences are sought.

Potential topics include, but are not limited to:

- Mechanical characterization of nanowires, nanopillars, and nanotubes
- Mechanics of graphene and other 2D materials
- New methodologies developed for quantitative nanomechanical testing
- Advanced *in situ* electron microscopy and AFM techniques
- *In situ* electro/thermomechanical probing and environmental effects
- Time-dependent deformation at nanoscale: fatigue, creep, and strain rate effect
- Experiments and simulations at atomic scale
- Ultra-strength behavior and elastic strain engineering

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