

## Special Issue

# Vibrational Behavior of Nanocomposites: Multiscale Simulation and Experimental Studies for Cross-Cutting Developments

### Message from the Guest Editor

This Special Issue focuses on the vibration behaviour of nanocomposites under dynamic loading, combining advanced simulations and experiments to reveal their mechanical response and mechanisms. Currently, the key challenges include unclear multiscale structure–property links, limited understanding of dynamic interfacial effects, and weak integration of simulation and experimental data.

Topics include: [1] **Multiscale simulations:** MD, coarse-grained models, and FEM for predicting vibration responses and assessing filler orientation, dispersion, and interfacial behaviour. [2] **Advanced experiments:** In situ dynamic mechanical analysis, high-frequency tests, and micro/nanoscale vibration monitoring to reveal attenuation and damage evolution. [3] **Performance design:** Data-driven or multiphysics approaches for tailoring damping, vibration isolation, and adaptive control. [4] **Applications:** Flexible devices, structural health monitoring, and acoustic metamaterials. We welcome original research, reviews, and perspectives to advance vibration research in nanocomposites.

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### Guest Editor

Dr. Tianyu Zhao  
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### Deadline for manuscript submissions

20 June 2026



## Nanomaterials

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## About the Journal

### Message from the Editor-in-Chief

Nanoscience and nanotechnology are exciting fields of research and development, with wide applications to electronic, optical, and magnetic devices, biology, medicine, energy, and defense. At the heart of these fields are the synthesis, characterization, modeling, and applications of new materials with lower nanometer-scale dimensions, which we call “nanomaterials”. These materials can exhibit unusual mesoscopic properties and include nanoparticles, coatings and thin films, metal–organic frameworks, membranes, nano–alloys, quantum dots, self-assemblies, 2D materials such as graphene, and nanotubes. Our journal, *Nanomaterials*, has the goal of publishing the highest quality papers on all aspects of nanomaterial science to an interdisciplinary scientific audience. All of our articles are published with rigorous refereeing and open access. We are proud of our increasing impact factor and ability to provide rapid decisions to authors.

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### Editor-in-Chief

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