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Enhancing the Mechanical Performance of Metallic Materials Induced by Heterogeneous Nanostructures

Guest Editor:

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Message from the Guest Editor

Metals and their alloys are the major workhorse materials in terms of industrial and structural applications, and—largely because they exhibit high levels of deformability that permit arbitrary changes of shape without cracking—continue to remain irreplaceable even today. Hetero-deformation induced (HDI) strengthening and HDI hardening are responsible for the superior mechanical properties of HS materials, and are major factors determining their mechanical behavior, adding to conventional dislocation-based strengthening and hardening to provide additional enhancements of strength and ductility. In addition, grain boundaries and interphase interfaces in metals have been shown to play a fundamental role in material properties such as strength, fracture resistance, work hardening, and damage evolution. In particular, heterophase interfaces play a crucial role in deformation microstructures and thus govern the mechanical properties of multilayered composites.

The goal of this Special Issue is to collect top-quality contributions in this field. We look forward to receiving your contributions.

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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.

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