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Structure and Properties of Heterogeneous Materials

Guest Editor:

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Message from the Guest Editor

Dear Colleagues,

Heterogeneous materials (heterogeneous zones with intense variations in mechanical/physical properties) are a new class of materials with excellent mechanical and physical properties that cannot be achieved by traditional homogeneous materials. Synergetic strengthening, long-range internal stress (back stress), controlling the distribution of defects, and the interaction between different zones are hot spots in the study of heterogeneous materials, and are also key to achieving excellent mechanical and physical properties.

Currently, the most studied heterogeneous materials are structural heterogeneous metal materials, including heterogeneous lamella structures, gradient structures, multi-modal structures, and dual/multi-phase structures. Of course, heterogeneous materials still have many problems to be studied and solved urgently, including exploring the interaction between geometrically necessary dislocations (GNDs) and regional boundaries, studying the formation mechanism of shear band and its relationship with GND accumulation, and developing processing technologies that can precisely control heterogeneous structures and have low processing costs.

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Editor-in-Chief

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Message from the Editor-in-Chief

Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

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