

Special Issue

Advances in High-Strength Alloys: Microstructure, Phase Change and Properties

Message from the Guest Editors

High-strength alloys are the cornerstone of advanced engineering, critical for applications requiring reliability under extreme conditions in the aerospace, automotive, and energy sectors. The development of next-generation structural materials relies heavily on manipulating microstructural evolution, particularly through precise control of phase changes. This Special Issue, “Advances in High-Strength Alloys: Microstructure, Phase Change and Properties,” aims to present the latest research connecting alloy processing, phase transformation mechanisms, and mechanical performance. We specifically seek contributions that elucidate how phase changes—such as precipitation, martensitic transformation, and order–disorder transitions—govern strength, ductility, and fracture toughness. We invite researchers to submit original research and review articles covering alloy design, advanced characterization of phase evolution, thermodynamic modeling, and mechanical testing. Studies focusing on high-strength steels, titanium alloys, superalloys, high-entropy alloys, aluminum alloys, and magnesium alloys that challenge current property limits are strongly encouraged.

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Message from the Editor-in-Chief

Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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