

Special Issue

Design and Mechanical Behavior of Martensitic Alloys

Message from the Guest Editor

Martensitic phases give rise to unique behaviors including but not limited to shape memory, superelasticity, transformation-induced plasticity, and tailorable thermal expansion. Application-directed engineering of martensitic alloys can be achieved via alloying, microstructure design, thermomechanical processing, cycling in external fields, etc. This Special Issue is devoted to the status and recent advancements in the science and technology of alloys for whose function a martensitic phase or a martensitic transformation is of central importance. Of specific interest are the development and use of i) novel synthesis methods including additive manufacturing; ii) advanced characterization techniques revealing the material response on different length and possibly time scales; iii) advanced computational tools including machine learning and artificial intelligence; iv) novel approaches in continuum mechanics, micro mechanics, and thermodynamics. Original research contributions and reviews discussing recent advances and emerging trends in the science, engineering, and technology of martensite-forming alloys are equally welcome for submission to this Special Issue.

Guest Editor

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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.

Editor-in-Chief

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