



Deformation and Failure Behavior of Metastable Metallic Materials

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Message from the Guest Editor

Metastable metallic materials exhibit a local minimum of Gibb's free energy, meaning that under specific conditions the materials will transform spontaneously into a more stable structure. Besides the temperature, a monotonic and/or cyclic loading belongs to the most important conditions, which provide a driving force for such transformation. Consequently, during mechanical loading a complex change in microstructure associated with formation and rearrangement of dislocations, formation of stacking faults, twinning and phase transformation takes place. These microstructure-based mechanisms not only influence the physical properties but also the deformation and failure behavior of metastable metallic materials.

For this special issue, we welcome manuscripts presenting experimental and theoretical studies, which address the deformation, phase transformation and failure behavior of the different types of metastable metallic materials mentioned above. Scientific works focused on understanding of cross effects like magneto-mechanical or magnetic-temperature interaction as well as reviews of fundamental metal physics are also warmly welcomed.





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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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