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Microstructural Evolution and Phase Transformation in TWIP Steel

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Message from the Guest Editor

Twinning-induced plasticity steel (TWIP) is a second-generation advanced high strength steel characterized by a superior combination of strength and ductility. Novel microstructure design to increase the yield strength of TWIP steels is essential. Theoretical studies on stacking fault energy and precipitation are required. Microstructure evolution during deformation of TWIP steels should be systematically studied to understand the role of each deformation mechanism on the strain hardening behavior of the material. The role of carbon on microstructures and deformation mechanisms of TWIP steels is not yet clear. Clear understanding should lead to the development of more reliable micromechanical models on the deformation behavior of TWIP steels. Microstructure evolution during complex forming operations and prediction of formability and fundamental research on hydrogen-delayed fracture mechanisms are also important.

This Special Issue focuses on microstructural evolution and phase transformation in TWIP steels, which will lead to progress in understanding complex microstructure evolution of TWIP steels and the development of novel TWIP steels with superior mechanical properties.

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Message from the Editorial Board

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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