Special Issue

Embrittlement of High Strength Structural Steels

Message from the Guest Editors

High-strength steels (HSSs) have been widely used in engineering structures, especially in pressure vessels, offshore structures, building and bridge structures, etc. However, some manufacturing processes or service conditions, such as welding or irradiation, could result in the embrittlement of HSSs. Their embrittlement would severely affect their performance in engineering practice, and thus, embrittlement in HSS is always a hot topic in steel research. This Special Issue will focus on investigations into embrittlement in all types of high-strength structural steels, such as pressure vessel steels, boiler steels, and pipe steels. Manuscripts regarding the following areas in HSS will be considered in the Special Issue: grain boundary segregation; grain boundary precipitation; embrittlement under thermal conditions; embrittlement under irradiation conditions; combined hardening and non-hardening embrittlement; embrittlement of coarse-grained heat affected zones in welding; effect of impurities or grain boundary precipitation on hot ductility; and modeling or simulation of embrittlement.

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Deadline for manuscript submissions

closed (31 December 2021)

Metals

an Open Access Journal by MDPI

Impact Factor 2.5
CiteScore 5.3

mdpi.com/si/86030

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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.

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