Special Issue

Hydrogen Embrittlement of Metallic Materials

Message from the Guest Editor

Hydrogen embrittlement is a widely diffused problem in a lot of industry sectors and material manufacturing: from the steelmaking to the stamping processes and from the oil and gas to the aerospace and automotive industries. With this in mind, the aim of this Special Issue is to update the state of the art of this important topic, with particular attention and focus on mechanical tests (such as slow strain rate tests, four-point bending tests, and innovative approach tests) coupled with measurement techniques able to define the critical concentration of the diffusible and trapped hydrogen causing material degradation. The main topics for this Special Issue include the following:

- Hydrogen embrittlement;
- Stress corrosion cracking;
- Hydrogen degradation;
- Hydrogen-assisted cracking;
- Hydrogen diffusion;
- Hydrogen trapping;
- Hydrogen effect on the plasticity and mechanical properties of the materials.

Guest Editor

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About the Journal

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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manuscripts are peer-reviewed and a first decision is provided to authors approximately 18 days after submission; acceptance to publication is undertaken in 2.6 days (median values for papers published in this journal in the first half of 2025).

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