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Hydrogen Embrittlement in Metallic Materials

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Message from the Guest Editors

Hydrogen embrittlement (HE), which corresponds to the abrupt loss of a material's load-bearing capacity in presence of H, is often responsible for catastrophic and unpredictable failure of large-scale engineering structures. This embrittlement phenomenon occurs in many metallic materials. H embrittlement basically threatens any industries that aim to use high-strength alloys to make lightweight structural components, and with that, may set an abrupt halt to some of the pending infrastructures needed for a hydrogen economy. It is thus crucial to understand the mechanisms as well as to explore solutions for improving materials' resistance to H.

This Research Topic aims to cover all experimental and modeling studies associated with H embrittlement. The state-of-the-art research, development, and current challenges in the field of H embrittlement will be highlighted in this Research Topic, which is helpful to guide future research efforts.

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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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