Special Issue

Advances in Corrosion and Fatigue Behavior of High-Performance Steel

Message from the Guest Editors

High-performance steel is widely used in engineering structures. Under the coupling effect of corrosive environment and load, some key structural members or connections are prone to fatigue failure. The damage mechanism of materials under the coupling action of corrosion and fatigue is complex. Several challenges still exist in corrosion fatigue evolution of materials. Moreover, it is still not clarified for the initiation and propagation of fatigue crack in the steel under corrosive condition and complex stress. Multi-scale simulation of structural degradation caused by material damage accumulation needs to be further investigated. This special issue aims to collate research and review articles reported on the advances in the performance evolution of high-performance steel under the influence of corrosive environment and complex load, involving experimental study, numerical simulation of corrosion, corrosion protection, and fatigue modeling.

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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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