Special Issue

Fatigue and Wear of Steel Materials: Characterization and Performance Analysis

Message from the Guest Editor

As fatigue and wear have become the predominant failure modes of steel materials during service, increasing attention has been devoted to these phenomena by both researchers and engineers. This Special Issue focuses on the characterization and performance analysis of fatigue and wear in all types of steels, including but not limited to:

- Testing methodologies
- Microstructural characterization
- Mechanical property evaluation
- Theoretical and computational studies

Given the increasingly complex service environments of steel— where temperature fluctuations, corrosive media, and dynamic loading often interact synergistically to influence fatigue and wear behavior—we particularly welcome contributions that explore multi-factor coupling effects on steel performance. Advanced experimental characterization techniques and computational modeling approaches remain key areas of interest, as they provide critical insights for developing more robust research tools and ultimately enhancing the service performance of steel materials.

Guest Editor

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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.

Editor-in-Chief

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