Special Issue

Fatigue Life Prediction of Metallic Materials

Message from the Guest Editors

The study of metal fatigue can be traced back to 1870, when a German, August Wöhler, first published his work on the fatigue of iron and steel. In the following decades, the topic attracted significant interest, because fatigue failures are one of the most frequent damage phenomena when structures are exposed to dynamic loading. Despite the significant body of research related to the fatigue of metallic materials, and the fact that polymer materials often replace metals in consumer products, the fatigue-life prediction of metallic materials still remains an interesting research topic. The increased accessibility of high-performance computing, the invention of new metallic alloys or functional materials (e.g., shape-memory alloys), and the development of new production technologies (e.g., additive manufacturing) and joining techniques represent daily challenges for the improvement of existing fatigue-design methods and the development of new and innovative approaches for the effective prediction of the stress–strain response and fatigue life.

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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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