



Metal Plasticity and Fatigue at High Temperature

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Message from the Guest Editors

The presence of high temperatures usually induces some material plasticity in the most stressed region of the system, which, combined with cyclic loading variation, may lead to low-cycle fatigue failure. In order to estimate the component fatigue life in such demanding operative conditions, a complete characterization of the high-temperature material behavior under cyclic loading should be performed. Moreover, a reliable structural durability approach, which includes experimental results in numerical and/or predictive models, needs to be developed as well. The choice of the most appropriate material model to be used in simulations, or even calibrating the model to experimental data, often represents the most critical step in the whole design approach. Experimental techniques and modeling have to be properly managed to guarantee the reliability of the estimated fatigue life.

The purpose of this Special Issue is to collect papers aimed at providing state-of-the-art knowledge on the topic of metal plasticity and the fatigue strength of metals operating at high temperatures, with an emphasis on both experimental characterization and the numerical modeling of material behavior.





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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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