

Special Issue

Fatigue and Fracture in Steels

Message from the Guest Editor

The mechanisms of failure in steels comprise an ever-relevant, multifold topic that concerns the design of thermomechanical/shaping routes and the in-service/maintenance conditions of structural and mechanical components. Fatigue failure as a consequence of the damage caused by variable loading and/or fracture occurring under the effect of excessive loads are phenomena that involve the geometry and surface quality of the component, the presence of residual stresses, the cleanliness of the steel, and the microstructure. Particularly, the role of the microstructure in damage generation, crack initiation, and crack propagation is a key factor for consideration during the development of novel steels, either by conventional processes or by other approaches, such as additive manufacturing. Contributions on the influence of microstructures on fatigue and fracture in steels are invited to this Special Issue. Works within the frame of the development of novel steels and/or the use of challenging manufacturing processes, devoted to the study of the hydrogen-embrittlement phenomenon, or aligning with the “infinite-life” philosophy, are encouraged for submission.

Guest Editor

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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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