Special Issue

Mechanical, Crack and Fatigue Properties of Tool Steel, Pipe Steel, and Laser Welded Steel

Message from the Guest Editor

Tool steels, pipe steels, and laser-welded steels, is the main subject of this Special Issue. The application sectors are still being progressively developed to satisfy gradually growing requirements on the mechanical properties, fatigue resistance, as well as the safety and reliability of components and structures, because these components are often used in production chains, where any failure results in high additional costs connected with the interruption of production. This is why material and technological innovations are still needed. Laser-welded steels then represent quite a new technology.

An aspect common for all the three types of steels—namely, intensive fatigue loading, both high- and low-cycle, combined with other loading types like thermal loading in tool steels, and corrosion exposition in some pipes or pipeline sections. Therefore, the thermal fatigue of tool steels, and the corrosion and stress corrosion cracking of pipe steels are also potentially important subjects of the Special Issue. In laser-welded steels, which may contain pores or crack-like defects, theoretical and applied fracture mechanics approaches will be another interesting issue.

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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