Special Issue

Technological Aspects in Fatigue Design of Metallic Structures

Message from the Guest Editor

Traditional manufacturing processes like casting and welding and modern techniques like additive manufacturing can significantly affect the local material properties of metallic materials. To ensure a safe and reliable operation of engineering components and structures, the knowledge of manufacturing effects on the fatigue performance is of utmost importance. Hence, this Special Issue focuses on the fatigue design of metallic structures considering the influence of technological aspects. Approaches based on local stress or strain as well as fracture-mechanics-based concepts are applicable, considering local manufacturing-process-dependent characteristics such as microstructure, hardness, porosity/defects, surface topography, or residual stress state. Furthermore, advanced methods utilizing the notch stress intensity factor (NSIF) or strain energy density as well as probabilistic approaches are feasible to properly assess the local fatigue strength or life. Research articles and reviews emphasizing technological aspects in the fatigue design of metallic structures incorporating experimental and/or numerical investigations are welcome.

Guest Editor

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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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