Special Issue

Metal Fatigue Failure: Mechanism, Theories and Design

Message from the Guest Editors

Fatigue failure analysis is essential for designing welded components when subjected to cyclic loadings. Real-world engineering structures normally involve welded components, which require special consideration in the fatigue analysis process. Therefore, this Special Issue aims to exhibit scientific progress and the most innovative approaches in design methodologies and theoretical aspects related to fatigue assessment, and their most recent evolutions, with the scope of presenting state-of-the-art structural solutions relevant to the design of railway and highway bridges, marine structures, and automotive, piping and pressure vessels industries. This Special Issue is also focused on outlining the fundamental development trends in fatigue analysis, together with the most recent advances in experimental characterization, numerical modelling, validation methods and engineering applications, and all these topics will be addressed by the contributions collected. Scientific contributions will be considered noteworthy if they represent a real element of novelty in fatigue design, as well as in advanced analysis methodologies for effective design solutions.

Guest Editors

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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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