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## Characterization, Analysis, and Defects in Metallic Materials and Their Welds

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### Message from the Guest Editor

There are a wide range of engineering alloys specifically designed for demanding service conditions such as elevated temperatures or corrosive environments depending on applications (e.g., automotive, power generation, aerospace, and oil and gas). It is critical to fundamentally understand the metallurgical stability, mechanical performance, and degradation and failure mechanisms in both base metals and their welds under manufacturing and service conditions for proper materials/fillers selection, life assessment and optimization. This Special Issue invites contributions from both academia and industry to disseminate the recent development trends in characterization, modeling and analysis of microstructures, thermomechanical properties (e.g., thermal fatigue and creep), defect evolution (e.g., stress corrosion cracking and stress relaxation cracking) as well as lifetime prediction methods for engineering alloys (both ferrous and non-ferrous) and their weldments under demanding service conditions.



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# Special Issue



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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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