Special Issue

Smart Sensing and Artificial Intelligence in Metal Processing and Machining

Message from the Guest Editor

The Special Issue welcomes contributions that investigate the relationships among processing parameters, metal structures, and properties, especially when these aspects are monitored or optimized using intelligent systems. Papers may address topics including, but not limited to, the following:

- intelligent machining and forming of metals;
- AI-based modeling of metal microstructure evolution;
- machine vision for quality inspection of metallic surfaces;
- digital twins for metal processing systems;
- real-time monitoring of wear, tool condition, and surface quality;
- multi-modal sensor fusion in metal manufacturing;
- fata-driven control strategies in metal forming, casting, or additive manufacturing;
- predictive maintenance and diagnostics in metalworking machinery;
- Case studies from industry involving AI in ferrous and non-ferrous metal processing.

The scope of this issue encompasses both theoretical and experimental work, as well as industrial case studies that demonstrate the benefits and challenges of AI integration in metal production environments.

Guest Editor

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About the Journal

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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manuscripts are peer-reviewed and a first decision is provided to authors approximately 18 days after submission; acceptance to publication is undertaken in 2.6 days (median values for papers published in this journal in the first half of 2025).

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