Special Issue

Advances in Field-Assisted Processing of Metallic Materials: Experiments and Simulations

Message from the Guest Editors

Researchers around the world are exploring various novel energy-efficient processes, such as electropulsing, electrically assisted deformation, electromagnetic processing, electrically assisted annealing/heat treatment, and field-assisted (electric/magnetic/microwave) sintering. Besides experimental studies, coupled multiphysics models have been developed to simulate the interplay between thermal, electrical, magnetic, and mechanical effects.

This Special Issue is dedicated to presenting advances in the experimentation and simulation of these novel energy-efficient processes in order to provide and share new insights and practical findings in this field. Potential manuscripts may address, but are not limited to, the following topics:

Microstructure evolution (grain size, grain boundaries, texture/microtexture, twinning, etc.);
Phase trans/formation and control (intermetallics, precipitation, etc.);
Property optimization (strength, nano/microhardness, electrical/thermal conductivity, magnetic, etc.);
Process optimization (forming, machining, sintering, heat treatment, deposition, coating, additive manufacturing, etc.).

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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.

Editors-in-Chief

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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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