Special Issue

Modeling and Simulation of Metal Additive Manufacturing

Message from the Guest Editor

This Special Issue will delve into high-fidelity, multiphysics modeling approaches that capture the core phenomena across the metal additive manufacturing process chain. Its scope encompasses simulations at the meso-scale, including the modeling of material feeding such as powder spreading, powder delivering, or wire feeding to predict the performance of metallic material feeding. A central focus is placed on advanced coupled modeling techniques, specifically the integration of the discrete element method with computational fluid dynamics to resolve the critical interaction between metallic materials and heat source. Furthermore, this Special Issue covers the thermomechanical modeling of the build process for predicting transient and residual stress evolution, plastic deformation, and resultant part distortion. Finally, it includes the simulation of solidification phenomena across scales, from microstructure evolution-modeling dendritic and cellular growth, grain morphology, and phase transformations—to establishing process structure-property relationships for predicting mechanical performance.

Guest Editor

Prof. Dr. Hui Chen

Materials School, Northwestern Polytechnical University, Xi'an 710072, China

Deadline for manuscript submissions

25 April 2026



Metals

an Open Access Journal by MDPI

Impact Factor 2.5 CiteScore 5.3



mdpi.com/si/255446

Metals
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
metals@mdpi.com

mdpi.com/journal/metals





Metals

an Open Access Journal by MDPI

Impact Factor 2.5 CiteScore 5.3



About the Journal

Message from the Editor-in-Chief

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.

Editor-in-Chief

Prof. Dr. Yong Zhang

Beijing Advanced Innovation Center of Materials Genome Engineering, State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, 30 Xueyuan Road, Beijing 100083, China

Author Benefits

High Visibility:

indexed within Scopus, SCIE (Web of Science), Inspec, Ei Compendex, CAPlus / SciFinder, and other databases.

Journal Rank:

JCR - Q2 (Metallurgy and Metallurgical Engineering) / CiteScore - Q1 (Metals and Alloys)

Rapid Publication:

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).

