

Special Issue

Advances in Microstructure and Mechanical Properties of Ni-Based Superalloys

Message from the Guest Editors

This Special Issue focuses on advances in understanding the microstructure and mechanical behavior of Ni-based superalloys, as well as the underlying mechanisms governing their strength and toughness. Ni-based superalloys are designed to achieve superior performance through solid solution strengthening, precipitation strengthening, and other strengthening mechanisms enabled by precise melting, forging, and heat treatment processes. These alloys retain stable mechanical properties under high temperatures and pressures and exhibit outstanding resistance to high-temperature oxidation and hot corrosion, along with excellent fatigue performance, fracture toughness, and other comprehensive properties. So, they are widely used in demanding applications. We welcome contributions spanning from material design and processing to applications, as well as studies related to the characterization, evaluation, prediction, and evolution of mechanical properties. We particularly encourage research papers addressing strengthening and toughening mechanisms, fatigue, creep, high-temperature oxidation, and corrosion behavior, which are essential for enhancing the final quality of superalloy components.

Guest Editors

Prof. Dr. Yutian Ding

School of Materials Science and Engineering, Lanzhou University of Technology, Lanzhou 730050, China

Dr. Yubi Gao

School of Materials Science and Engineering, Lanzhou University of Technology, Lanzhou 730050, China

Deadline for manuscript submissions

10 April 2026



Metals

an Open Access Journal
by MDPI

Impact Factor 2.5
CiteScore 5.3



mdpi.com/si/252431

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

[mdpi.com/journal/
metals](https://mdpi.com/journal/metals)





Metals

an Open Access Journal
by MDPI

Impact Factor 2.5
CiteScore 5.3



[mdpi.com/journal/
metals](https://mdpi.com/journal/metals)



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, CAPus / 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).