Special Issue

Microstructure, Deformation and Fatigue Behavior in Metals and Alloys

Message from the Guest Editors

Understanding the intricate relationship between microstructure, deformation mechanisms, and fatigue behavior in metals and alloys is crucial for advancing material performance, particularly in extreme environments. This Special Issue invites contributions that explore the latest developments in this field, emphasizing the interplay between microstructural characteristics and mechanical properties such as strength, ductility, and fatigue resistance. Topics of interest include microstructure evolution during deformation, phase transformations, dislocation dynamics, and the role of inclusions or second-phase particles in fatigue crack initiation and propagation. Of particular interest are studies addressing very high cycle fatigue, thermomechanical fatigue, and fatigue behavior under complex loading conditions. This Special Issue aims to bring together experimental, theoretical, and computational studies that contribute to a deeper understanding of how microstructural engineering can improve fatigue performance across various metallic systems.

Guest Editors

Dr. Yao Chen

Failure Mechanics & Engineering Disaster Prevention, Key Laboratory of Sichuan Province, College of Architecture & Environment, Sichuan University, Chengdu 610065, China

Dr. Haizhou Li

School of Materials Science and Engineering, Southwest Jiaotong University, Chengdu 610031, China

Deadline for manuscript submissions

25 November 2025

Metals

an Open Access Journal by MDPI

Impact Factor 2.5
CiteScore 5.3

mdpi.com/si/219966

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

mdpi.com/journal/metals

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

Prof. Dr. Hugo F. Lopez
Department of Materials Science and Engineering, College of Engineering & Applied Science, University of Wisconsin-Milwaukee, 3200 N. Cramer Street, Milwaukee, WI 53211, USA

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).

MDPI