

Special Issue

Tungsten Composite Materials and New Alloys for Extreme Application

Message from the Guest Editor

Tungsten (W) is the metal for extreme environments as it has the highest melting point. However, tungsten has two main disadvantages: poor oxidation resistance at temperatures above 600 °C as well as a low room temperature (RT) fracture toughness, K_{IQ}, and a brittle-to-ductile transition (BDT) that occurs at high temperatures. This is why tungsten is currently only used as a functional material and not as a structural material, that is, not for safety relevant, pressurized parts. Consequently, thinking about tungsten as a structural material, the question of how to make tungsten ductile and how to decrease the brittle-to-ductile transition temperature (BDTT) arises. The purpose of this special issue is thus to compile the current status of work related to the improvement of the properties of tungsten for applications such as fusion, and other extreme environments, e.g. solar thermal power. Contributions related to the manufacture of new tungsten materials, studies of W-composites, their constituent components as well as modelling and material characterization methods will be accepted.

Guest Editor

Prof. Dr. Jan Willem Coenen

Forschungszentrum Jülich GmbH, Institut für Energie- und Klimaforschung—Plasmaphysik, Partner of the Trilateral Euregio Cluster (TEC), 52425 Jülich, Germany

Deadline for manuscript submissions

closed (31 August 2018)



Metals

an Open Access Journal
by MDPI

Impact Factor 2.5
CiteScore 5.3



mdpi.com/si/11675

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 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).