

## Special Issue

# Passivity and Localized Corrosion of Metallic Materials

### Message from the Guest Editor

Several metals, such as Fe, Ni, and Al, are inherently reactive. These metals and their alloys are extensively used in industry because of the formation of a protective oxide/hydroxide film, known as passivity, which considerably affects the kinetics of the corrosion process. However, passive films are not perfect, and under certain conditions, tend to break down, resulting in localized corrosion. Pitting, crevice and stress corrosion cracking (SCC) are the main forms of localized corrosion, which directly or indirectly cause corrosion failures of many industrial assets. This Special Issue aims to give an updated outlook on passivity and localized corrosion of different metals and alloys, with a special interest in the passivity and pitting corrosion of additive manufactured alloys, microstructure/pitting corrosion relationship, analytical methods and theoretical mechanisms of localized corrosion, multiscale modeling for localized corrosion prediction, failure analysis, and corrosion inhibitors. Manuscripts are welcome from both academic research teams and authors from industrial companies involved in the field.

---

### Guest Editor

Dr. Davood Nakhaie

Department of Materials Engineering, The University of British Columbia, Vancouver, BC V6T 1Z4, Canada

---

### Deadline for manuscript submissions

closed (31 May 2024)



## Metals

---

an Open Access Journal  
by MDPI

---

Impact Factor 2.5  
CiteScore 5.3



[mdpi.com/si/142956](https://mdpi.com/si/142956)

*Metals*  
Editorial Office  
MDPI, Grosspeteranlage 5  
4052 Basel, Switzerland  
Tel: +41 61 683 77 34  
[metals@mdpi.com](mailto: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, 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 18.7 days after submission; acceptance to publication is undertaken in 2.7 days (median values for papers published in this journal in the second half of 2025).