Special Issue

Corrosion Behavior and Surface Engineering of Metallic Materials

Message from the Guest Editor

Metallic materials are widely used, especially in engineering, due to their versatility, strength, and recyclability. However, corrosion poses a major challenge, severely impacting their performance and lifespan. For instance, steel is extensively used in applications requiring resistance to extreme conditions, such as heavy loads and high temperatures. Despite its durability, steel and other metals are prone to corrosion, particularly when exposed to industrial fluids, leading to oxidation and reduced functionality. Corrosive fluid flow over metal surfaces, combined with mechanical stresses, accelerates corrosion. The presence of solids or suspended particles further exacerbates material degradation, making corrosion a global concern with significant economic implications. Recent advancements focus on protective coatings to enhance metal properties and preserve integrity under corrosive conditions. These coatings form a barrier, preventing direct exposure to corrosive environments, thereby extending the lifespan of metallic components and reducing maintenance costs.

Guest Editor

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Deadline for manuscript submissions

30 June 2025

Metals

an Open Access Journal by MDPI

Impact Factor 2.5
CiteScore 5.3

mdpi.com/si/222800

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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.

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