

## Special Issue

# Electrochemical Corrosion of Materials: Mechanisms and Protection

### Message from the Guest Editor

Electrochemical corrosion remains a significant challenge in industries such as energy, transportation, and marine engineering, resulting in substantial economic losses and safety risks. Understanding its mechanisms and developing effective protection strategies are essential for enhancing material durability and sustainability. This Special Issue is dedicated to advancing the fundamental understanding of various corrosion mechanisms, spanning the fields of energy, transportation, and engineering. It also seeks to promote innovations in protection technologies, such as advanced coatings, corrosion-resistant alloys, efficient inhibitors, and optimized cathodic protection systems. We invite contributions addressing the following:

- Mechanistic studies: atomistic simulations, electrochemical kinetics, and interfacial processes.
- Advanced protection: smart coatings, efficient inhibitors, self-healing materials, and bio-inspired strategies.
- Environmental impacts: corrosion in extreme conditions (high temperature, H<sub>2</sub>S/CO<sub>2</sub> environments).
- Sustainability: low-toxicity inhibitors and lifecycle assessments of protective systems.

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### Guest Editor

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### Deadline for manuscript submissions

closed (20 January 2026)



## Materials

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### Message from the Editorial Board

*Materials* (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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