

Special Issue

Molecular and Electrochemical Mechanisms of Metal Corrosion

Message from the Guest Editor

Corrosion remains a critical issue in metal-based systems, impacting structural integrity, performance, and longevity across numerous industrial applications. Recent advances in surface science, molecular-level characterization, and electrochemical analysis have deepened our understanding of corrosion initiation and progression. This Special Issue aims to gather contributions that explore the molecular and electrochemical mechanisms underpinning metal corrosion, with emphasis on interfacial processes, passivation, localized corrosion phenomena, and the role of environmental factors. Topics of interest include, but are not limited to, corrosion inhibition at the molecular level, advanced surface modification strategies, in situ and operando studies, and multi-scale modeling of corrosion behavior. Both experimental and theoretical studies are welcome. By bridging molecular insights with practical corrosion science, this issue seeks to promote innovative approaches toward corrosion prevention and control.

Guest Editor

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Deadline for manuscript submissions

20 August 2026



International Journal of Molecular Sciences

an Open Access Journal
by MDPI

Impact Factor 4.9
CiteScore 9.0
Indexed in PubMed



mdpi.com/si/245694

*International Journal of
Molecular Sciences*
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