Special Issue

Application of Nanomaterials in Metal Corrosion Resistance

Message from the Guest Editors

The corrosion of metals and alloys remains a major scientific, technological, and economic challenge across energy, transportation, infrastructure, and biomedicine. Traditional protection methods—organic coatings, inhibitors, and surface treatments—suffer from limited long-term stability, environmental impact, and performance under harsh conditions. Nanotechnology offers new avenues by leveraging the unique structure, chemistry, and functionality of nanomaterials. This Special Issue focuses on nanomaterial-based advances in corrosion science and engineering for metallic systems, spanning fundamental insights and practical solutions. We welcome research on nanostructured and multifunctional coatings, nano-enabled inhibitors, self-healing systems, and green nanomaterials for sustainable corrosion control. Contributions on in situ characterization, nanoscale mechanisms, and the integration of nanotechnology with modeling and machine learning are particularly encouraged. Submissions may be short communications, research articles, or reviews.

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Message from the Editor-in-Chief

Nanoscience and nanotechnology are exciting fields of research and development, with wide applications to electronic, optical, and magnetic devices, biology, medicine, energy, and defense. At the heart of these fields are the synthesis, characterization, modeling, and applications of new materials with lower nanometer-scale dimensions, which we call “nanomaterials”. These materials can exhibit unusual mesoscopic properties and include nanoparticles, coatings and thin films, metal–organic frameworks, membranes, nano-alloys, quantum dots, self-assemblies, 2D materials such as graphene, and nanotubes. Our journal, *Nanomaterials*, has the goal of publishing the highest quality papers on all aspects of nanomaterial science to an interdisciplinary scientific audience. All of our articles are published with rigorous refereeing and open access. We are proud of our increasing impact factor and ability to provide rapid decisions to authors.

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