Special Issue

Research on Corrosion Mechanism and Protection of Non-Ferrous Metals

Message from the Guest Editors

Non-ferrous metals (e.g., Mg, Al, Cu, Ti) are strategic materials for modern industries, offering exceptional conductivity, corrosion resistance, and functional properties. They are vital in aerospace, new energy, electronics, and marine engineering. However, corrosion in complex environments causes global economic losses exceeding 2.5 trillion USD annually. Understanding corrosion mechanisms and developing efficient protection technologies are crucial for material safety, equipment longevity, and sustainable development. Non-ferrous metals primarily fail due to galvanic, chemical, and localized corrosion. Protection technologies, evolving since the 18th century, now include surface modification, alloying design, corrosion inhibitors, and cathodic protection. This Special Issue focuses on multi-scale corrosion modeling, material-environment interaction prediction, and eco-friendly protection systems, aiming to achieve whole-life-cycle corrosion control and advance high-tech manufacturing alongside green, low-carbon technologies. We welcome contributions to advance this critical field.

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Message from the Editor-in-Chief

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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