

Special Issue

Advanced Surface Technology and Coating Materials

Message from the Guest Editor

Advanced coatings must fulfill dual critical requirements: structural functions and non-structural functions. A thorough understanding of how nano/micro-scale processes govern macroscopic properties—particularly degradation mechanisms in extreme environments—is essential for designing next-generation systems. The aim of this Special Issue, titled “Advanced Surface Technology and Coating Materials”, is to bridge innovative fabrication with real-world performance through multiscale process–structure–property–performance studies. We seek contributions that elucidate the following: (1) linkages between synthesis techniques (e.g., green manufacturing with bio-derived precursors) and microstructural defects; (2) quantitative evaluation of service behavior in simulated extreme environments—both in space (atomic oxygen erosion, thermal cycling from $-180\text{ }^{\circ}\text{C}$ to $+150\text{ }^{\circ}\text{C}$, radiation damage, vacuum outgassing) and terrestrial (high-temperature oxidation $> 1000\text{ }^{\circ}\text{C}$, erosion–corrosion synergy, biofluid aging); and (3) predictive modeling integrating in situ characterization and accelerated life testing to forecast coating reliability in critical applications.

Guest Editor

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Deadline for manuscript submissions

20 September 2026



Materials

an Open Access Journal
by MDPI

Impact Factor 3.7
CiteScore 7.0
Indexed in PubMed



mdpi.com/si/250329

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About the Journal

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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