Special Issue

Nanostructured Protective Coatings and Surface Engineering for Advanced Materials

Message from the Guest Editors

Surface degradation caused by wear, corrosion, oxidation, and extreme environments significantly limits the reliability and service life of engineering components. In recent years, nanostructured surface protective materials have attracted extensive attention due to their remarkable ability to enhance mechanical, tribological, and chemical stability. Various coating and surface modification technologies have been developed to fabricate nanostructured protective layers, including physical vapor deposition (PVD), chemical vapor deposition (CVD), atomic layer deposition (ALD), thermochemical treatments such as nitriding and carburizing, as well as advanced additive or cladding techniques such as laser cladding and thermal spraying. This Special Issue aims to present recent advances in the design, fabrication, characterization, and applications of nanostructured surface protective materials. Original research articles and comprehensive reviews focusing on fundamental mechanisms, advanced fabrication methods, and emerging applications are welcome.

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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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