

Special Issue

Tribological Analysis and Predictive Modeling of Advanced Materials

Message from the Guest Editor

The past two decades have witnessed remarkable progress in understanding mechanical wear mechanisms and the development of predictive modeling approaches for advanced materials. The advancement of computational modeling techniques, particularly finite element analysis and molecular dynamics simulations, has revolutionized our ability to predict wear behavior and optimize material performance. The integration of machine learning and artificial intelligence with traditional wear modeling has opened new possibilities for predictive maintenance and real-time wear monitoring systems. Contemporary challenges in mechanical wear analysis focus on developing comprehensive models that account for multiple wear mechanisms, environmental effects, and material degradation under complex loading conditions. The need for accurate wear prediction in extreme environments, such as space applications and high-temperature systems, drives the development of advanced modeling frameworks. This Special Issue will compile cutting-edge research in tribological analysis and predictive modeling of advanced materials.

Guest Editor

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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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