Special Issue

Artificial Intelligence for Safe-and-Sustainable-by-Design Nanocoatings: Environmental Monitoring, Toxicity Prediction, and Remediation Devices

Message from the Guest Editor

The rapid advancement of nanotechnology is transforming areas like environmental remediation. However, innovative concepts could be harmful to the environment and human health because of their toxicity. The integrated approach of artificial intelligence (AI) and machine learning (ML) offers new possibilities for predictive toxicology and lifecycle optimization. This Special Issue aims to share and promote the latest breakthroughs in AI/ML-driven methods for nanocoatings. We are interested in contributions that address predictive modelling, green synthesis optimization, toxicity and hazard assessment, lifecycle analysis, and the development of nanodevices for environmental protection. Topics of interest for publication include, but are not limited to, the following:

- Machine learning for toxicity, hazard, and environmental fate prediction of nanomaterials and nanocoatings;
- AI/ML support for Safe and Sustainable by Design frameworks in nanocoating development;
- Data-driven green synthesis and low-toxicity design of nanostructured coatings;
- Predictive models for nanomaterial lifecycle impacts;
- Regulatory frameworks and validation challenges for AI/ML-driven SSbD nanomaterials.

Guest Editor

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About the Journal

Message from the Editorial Board

Now more than ever, research is asked to deliver knowledge and technologies to solve the major challenges faced by our society. The development of new materials and devices for (without the ambition to be exhaustive) energy, health and food technology, together with the need for establishing processes that reduce the impact on critical resources and the environment, is indeed in the spotlight of most contemporary research. Surface science and engineering play a key role in this regard, with an incredible potential in delivering new and deep scientific understanding and technical solutions essential to solve most of the major societal challenges.
Coatings is a well-established, peerreviewed, online journal dedicated to the vibrant field of surface science and engineering. Coatings publishes original research articles that report cutting-edge results and review papers that make the point on the hottest research topics.

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