Special Issue

Advances in Development of Composites, Metals, and Alloys for Additive Manufacturing Technologies

Message from the Guest Editors

Additive manufacturing (AM) provides a sustainable alternative to conventional processes by minimizing waste, enabling material reuse, and supporting on-demand production. Its advancement relies on developing tailored materials, including composites, metals, and alloys, which allow complex geometries, lightweight designs, and high performance in aerospace, biomedical, and automotive sectors. This Special Issue focuses on innovations in AM materials, covering their design, characterization, and optimization, and how they influence surface properties, microstructure, and tribological performance. Surface engineering contributes to improved fatigue resistance, wear protection, and corrosion control, while functional properties such as textures or embedded sensors add new capabilities. At the microstructural level, control of grain size, orientation, and phase transformations strengthens reliability and reduces defects like porosity and cracks. Enhancements in friction, wear, and lubrication extend component life and efficiency, especially under mechanical stress. These material advances help transform AM from prototyping to industrial-scale production.

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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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