Special Issue

Microstructural Engineering in Powder Metallurgy and Additive Manufacturing Alloys

Message from the Guest Editors

The microstructural features of alloys fundamentally determine their mechanical, functional, and environmental performance. Recent advances have underscored the transformative role of processing methods such as powder metallurgy and additive manufacturing in engineering superior microstructures that elevate alloy strength, ductility, fatigue resistance, and thermal stability.

Mechanical alloying, sintering methods, and phase transformations in advanced alloys are providing new routes to lightweight, robust, and thermally stable materials. In parallel, the integration of data-driven approaches and machine learning is accelerating alloy design, enabling more efficient prediction and optimization of microstructure–property relationships.

This Special Issue invites but is not limited to contributions across these evolving dimensions: microscopy to property correlations, innovative alloy system development, eco-conscious composite fabrication, and the interplay of modeling and cutting-edge manufacturing routes. We aim to provide a platform that reflects current research trends and helps guide material scientists and technologists toward the next generation of alloy design.

Guest Editors

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Message from the Editor-in-Chief

Welcome to *Crystals*, the journal dedicated to the fascinating world of crystallographic research! Crystals are more than mere decorative elements; they hold the key to understanding the fundamental structure of matter. Our mission is to explore the crucial significance of this research across various fields. From medicine to technology, chemistry to geology, crystals play a vital role. Their structure provides insights into new advanced materials, innovative drugs, and groundbreaking technologies. Through *Crystals*, we delve into the microscopic world to discover solutions that will shape the future. Join us on a journey through the *Crystals*, where science merges with beauty and innovation.

Editor-in-Chief

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