Special Issue

Advances in Metal Additive Manufacturing: Process Monitoring, Material Characterization, and Computational Modeling

Message from the Guest Editors

Metal-based additive manufacturing (AM) is considered a promising technology, with many potential applications due to the process's unparalleled design flexibility. AM works by “building up” a part layer by layer, e.g., adding material rather than removing material. As a result, new designs an innovation can be realized that were not possible with traditional manufacturing. However, the full utility of this material fabrication technology remains unrealized due to the lack of reproducibility and reliability in the process and the uncertainty in their structural properties of fabricated parts. To overcome these challenges, it is essential to establish relationships that integrate process parameters, thermal history, solidification, resultant microstructure, and mechanical behavior of parts fabricated by AM processes. In this view, the objective of this special issue is to highlight recent progress in process monitoring, material characterization, and computational modeling methods aimed at advancing the understanding of the processing parameters-structure-property relationships for metal AM materials.

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Deadline for manuscript submissions

closed (20 April 2021)

Crystals

an Open Access Journal by MDPI

Impact Factor 2.4
CiteScore 5.0

mdpi.com/si/62064

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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.

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