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

Guest Editors:

Prof. Dr. David Restrepo

Department of Mechanical Engineering, The University of Texas at San Antonio, San Antonio, TX, USA

Prof. Dr. Harry Millwater

University of Texas at San Antonio, San Antonio, United States

Dr. Carl Popelar

Southwest Research Institute, San Antonio, TX, USA

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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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Special Issue



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Editor-in-Chief

Prof. Dr. Alessandra Toncelli

Department of Physics, University
of Pisa, 56126 Pisa, PI, Italy

Message from the Editor-in-Chief

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Contact Us

Crystals Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland

Tel: +41 61 683 77 34
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