



metals



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Mesoscale Simulations for AM Alloys

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Message from the Guest Editor

The special issue will focus on advances in computational approaches, data-driven approaches, and the use of high-performance computing platforms to address the challenges involved in simulating processing-microstructure-property linkages in AM alloys. Specifically, this topic will focus on the following topics: (1) simulating the solidification microstructures and solid-state phase transformations that occur under thermal conditions typical of AM processes for structural, multi-component alloys using either laser or e-beam sources using realistic AM process thermal boundary conditions, (3) post-process heat treatments to optimize structure for meeting specific property requirements, and (4) mesoscale simulations of mechanical response of AM microstructures using crystal plasticity based approaches. The overall goal is to quantify how changes in AM process parameters and/or changes in local cross-sections in an AM component can affect the local microstructure and the local mechanical properties.



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Special Issue



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Message from the Editorial Board

Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

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