

Special Issue

Additive Manufacturing of High Temperature Alloys

Message from the Guest Editors

High-temperature alloys, such as superalloys, are some of the most commonly employed alloys for metal additive manufacturing and have a wide range of applications in aircraft, gas turbines, turbocharger rotors, and a variety of other energy and aerospace applications. Additive manufacturing (AM) is considered an attractive manufacturing technique for components with complex geometries due to the near-net shape production capability. However, one of the main challenges preventing the widespread use of the AM method for the production of critical parts is the uncertainty in the resultant properties, such as quality, reproducibility, and predictability of mechanical and functional performance. AM process condition optimization and post-processing heat treatments are then often employed to reduce these detrimental effects and enhance the properties. It is our pleasure to invite you to submit contributions that may take into account any of high-temperature alloy aspects involved in additive manufacturing.

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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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