Special Issue

Additive Manufacturing of Architected Metallic Materials

Message from the Guest Editors

Metal additive manufacturing (AM, also known as 3D printing) is used for the fabrication of three-dimensional materials made from metals and their alloys. The layer-upon-layer nature of AM techniques makes it possible to create metallic structures with complex cellular architectures, which are often to some extent similar to those found in natural materials. The free-form competence of AM techniques, when combined with printing of multiple materials at the same time, provides a unique opportunity for the fabrication of architected materials with tailor-made functionalities and (mechanical) properties. Such architected metallic materials have numerous high-tech applications in high added value industries, such as healthcare and mobility. This Special Issue, therefore, aims to present the latest research related to the design and fabrication of 3D-printed architected metallic materials. It also covers the advances in their characterization, (post-)processing, computational modeling (e.g., topology optimization, failure analysis), and applications particularly in the area of biomedical engineering (e.g., orthopedic implants).

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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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