Special Issue

The Effect of Microstructure and Strain Rates on the Mechanical Properties of Additively Manufactured Metallics

Message from the Guest Editors

The microstructure of additively manufactured metallics varies as a function of process parameters, types of metallics, cooling rates and post-processing. This in turn impacts their mechanical properties. The mechanical response of additively manufactured metallics is dependent on the imposed strain rates, which affect their dislocation density and microstructure and therefore mechanisms of failure. Metallics' response to AM is a function of the optical, thermal and physical properties of the powder and the melt produced. Whilst most alloys used in AM are prealloyed, there is a growing interest in in situ alloying. The work conducted on in situ alloying highlights some degree of loss of the alloying metals, and partial prealloying is recommended in such cases. This Special Issue will focus on the evolution of different microstructures and resulting mechanical properties of built parts as a function of the AM build process, composition of in situ alloying powders, type and volume fraction of reinforcing phases, post-treatment and imposed strain rates.

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Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal Applied Sciences has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

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