Advances in Materials Science and Engineering

Hindawi

Special Issue on

Advances in Microstructural Observations of Metallic Additively Manufactured Parts

CALL FOR PAPERS

Additive manufacturing technologies for metals are gaining interest because of the tremendous advantages and potentialities that they offer. There are several different technologies (selective laser melting, electron beam melting, selective laser sintering, direct metal deposition, wire arc additive manufacturing, cold spray deposition, etc.) that allow for the manufacturing of complex shaped components made of different alloys (titanium alloys, steels, aluminum alloys, Inconel, etc.). Furthermore, several researchers are studying the feasibility of the additive manufacturing process by using a mix of powders of different metals to "create" tailored new materials. During the printing process, the physical phenomena occurring are extremely complex and to date are not fully understood. The observation of the microstructure of these parts is a key factor to better understand the physical phenomena occurring and to predict the properties of the parts. It is not simple to observe all the different metallurgical features of these parts due to the complexity of their grain structure and texture. Moreover, usually in additively manufactured parts, a two-level microstructure can be observed: the structure of the melting pools and the grain structure within a single melting pool.

This special issue aims to bring together the latest research dealing with the observation of the microstructure of additively manufactured metal parts, referring to all of the additive technologies and metallic alloys used. We welcome both papers reporting the development of new techniques or procedures to observe the microstructure and papers reporting detailed microstructural observations of additively manufactured parts. Review papers are also welcome, and these papers should clearly describe the current state-of-the-art as well as highlighting the areas that deserve further research.

Potential topics include but are not limited to the following:

- New techniques to observe the microstructure of these metallic components
- New sample preparation and etching methodologies
- Microstructures of additively manufactured metallic parts
- Microstructures obtained after the heat treatment of additively manufactured metallic parts
- Study of the metallurgical evolutions occurring during the additive manufacturing processes of metals
- Microstructural observations of the feedstock materials and their influence on the microstructure of the produced parts

Authors can submit their manuscripts through the Manuscript Tracking System at https://mts.hindawi.com/submit/journals/amse/amoo/.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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