Special Issue

Additive Manufacturing for Tooling Applications: Materials, Design, Processes & Impacts

Message from the Guest Editor

Additive manufacturing (AM), an alternative to conventional manufacturing processes, is often considered a disruptive production method. However, it can also improve upon conventional manufacturing by providing a better way to produce and repair/remanufacture tools and enhancing their operational performance. Part manufacturers use tooling to make other parts. Tooling incorporates AM into the production chain. This Special Issue focuses on AM for tooling applications. Topics of interest include, but are not limited to:

- Materials;
- Design including generative design, topology optimization, lattice structure and surface optimization, and DfAM;
- Processes from powder atomization and AM to post-processing for toolmaking, tool repair and remanufacture, and tool surface treatment/functionalization, from cyber-physically controlled processes and systems to quality assurance;
- Advantages including shorter lead and cycle times, minimized scrap rate, total cost reduction, faster time to market, lower break-even points, smaller material and energy usage, a circularity in the economy, sustainability, etc.

Guest Editor

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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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