Special Issue

Material Design and Defect Control for Metal Additive Manufacturing

Message from the Guest Editor

Metal Additive manufacturing (AM) technology plays a significant role in various fields. Currently, the metal AM research mainly focuses on a limited number of alloys due to their availability in powder form. These alloys were designed for casting, forging, rolling, but not for AM. As such, it is essential that new AM-specific alloys need to be designed and evaluated. These alloys should have low cracking susceptibility, less likelihood for residual stress development, and less prone to porosity formation. In addition, the flexibility that AM offers in creating tailored microstructure. Thus, the development of AM technologies is significant to create novel structures tailored for the performance and function required by the application. Furthermore, the AM part quality is greatly influenced by the applied AM processes, deposition methodologies, and post-processing technologies. The studies about microstructure/defects characterization, microstructure/defects–mechanical property relationship and the effect of post-processing treatments are needed to create desired AM parts with enhanced mechanical performances.

Guest Editor

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Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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