



materials



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Material Design and Defect Control for Metal Additive Manufacturing

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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.



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Message from the Editor-in-Chief

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