Special Issue

Design and Process Strategies for Mechanical Reinforcement in Polymer Additive Manufacturing

Message from the Guest Editor

Polymer additive manufacturing (AM) is crucial to producing lightweight, customized, and functional components. Nevertheless, the mechanical properties of polymer-printed parts remain weak in comparison to those of conventionally manufactured materials due to poor interlayer bonding, void formation, and processing anisotropy. This Special Issue focuses on design and process strategies for mechanical reinforcement in polymer AM and related fabrication techniques. Topics of interest include novel material formulations such as fiber- or nanoparticle-reinforced thermoplastics, structural and lattice design optimization, and process parameter control for enhanced interlayer adhesion and strength uniformity. Post-processing approaches, including annealing, surface modification, or infiltration, are also encouraged. We welcome studies employing experimental characterization, finite element analysis, or machine learning-based optimization to predict and improve mechanical behavior. By bridging materials science, design methodology, and process engineering

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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