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Nota di contenuto

Introduction -- Materials and Methods -- Conventional Processing routes -- 3D printing approach -- Mechanical Testing -- Additive Manufacturing of Meta-materials -- 3D printing of Industrial components -- Challenges and future trends.

Sommario/riassunto

This book presents a unique approach to developing lightweight feedstock material for 3D printing of structural components for weight-sensitive structural applications across aerospace, automobile, and marine regimes. In addition to making wide feedstock materials choices available for AM industry, the content also presents a novel approach of 3D printing of lightweight core sandwich composites, all at once. It discusses the process of fused filament fabrication (FFF) as one of the most widely used additive manufacturing (AM) techniques to fabricate lightweight complex functional parts with zero tooling cost, lower energy, and reduced material consumption. The chapters presented in this book deal with a special class of lightweight feedstock material development, synthesis of the developed filaments, optimization of 3D printing parameters on a commercially available FFF-based printer, mechanical and dynamic property investigations of prints, and finally demonstration of 3D-printed industrial-scale lightweight components. This book guides students, researchers, and industrial professionals in lightweight materials design and development.
