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Sommario/riassunto

Concise, practical guide presenting skills to integrate porous structure design with additive manufacturing requirements Part of Wiley's Additive Manufacturing Skills in Practice series and written with the industry practitioner in mind, Advanced Techniques in Porous Structure Design for Additive Manufacturing addresses the growing integration of porous structures and additive manufacturing, essential for applications in the biomedical, aerospace, and automotive fields in which porous structures are crucial due to their ability to deliver top-notch performance alongside lightweight characteristics. This book covers all areas of the subject and concludes with a series of specialized chapters devoted to simulation software, case studies, and future trends and emerging technologies. Each chapter features a design problem that presents an open-ended scenario to prompt readers to think through the real-world applications of the concepts and theories discussed and connect them to their own job roles. Topics discussed in Advanced Techniques in Porous Structure Design for Additive Manufacturing include: Fundamentals of additive manufacturing, covering processes, materials, and design considerations Mathematical modeling, covering optimization techniques and the finite element method Multiscale topology optimization, shape optimization methods, and post-processing techniques Software utilization in porous structure design, with information on how to program simulations Porous structures in soft robotics, porous heat sinks, porous plates, and porous mechanical support structures With a blend of theoretical understanding and hands-on expertise in an emerging domain, Advanced Techniques in Porous Structure Design for Additive Manufacturing is an essential reference for industry professionals, researchers, and postgraduate students in universities, particularly those specializing in mechanical design and additive manufacturing.