1. Record Nr. UNINA9910805573003321

Titolo	Additive Manufacturing of Bio-implants : Design and Synthesis / / edited by Amit Mahajan, Sandeep Devgan, Redouane Zitoune
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2024
ISBN	981-9969-72-7
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (184 pages)
Collana	Biomedical Materials for Multi-functional Applications, , 2731-9709
Disciplina	572.51
Soggetti	Biomaterials Biomineralization Manufactures Biomedical Materials Machines, Tools, Processes
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Chapter 1: Challenges in Additive Manufacturing: Influence of Process Parameters on Induced Physical Properties of Printed Parts -- Chapter 2: Additive Manufacturing Incorporated Carbon Nanotubes (CNTs); Advances in biomedical domain -- Chapter 3: Formation, testing, and deposition of bioactive material using thermal spray additive manufacturing technique -- Chapter 4: Controlled Oxide Deposition Improves Mechanical and Biomedical Applications of Titanium Alloy -- Chapter 5: Instrumentation and Monitoring of Additive Manufacturing Processes for the Biomedical Applications -- Chapter 6: A Concise Study on Tribological Properties of Additive Manufactured Biomaterials -- Chapter 7: Role and Scope of OEE to Improve Additive Manufacturing Processes in Bio-Medical Industries -- Chapter 8: Corrosion Performance of Additively Manufactured Metallic Biomaterials: A Review -- Chapter 9: Emerging Functionally Graded Materials for Bio-Implant Applications- Design and Manufacturing -- Chapter 10: Biomechanical Evaluation of Load Transfer and Stability in a Corrugated Hip Stem: A Comparative Analysis -- Chapter 11: Applications of 3D Printing in Medical, Engineering, Agricultural and Other Sectors.
Sommario/riassunto	This contributed volume presents the latest research on additive

manufacturing (AM) or 3D printing, one of the key techniques of novel medical devices, which can process complicated or customized structures to match the properties of human tissues. AM allows for the fabrication of devices with optimal architectures, complicated morphologies, surface integrity, and regulated porosity and chemical composition. Various AM methods can now consistently fabricate dense products for a variety of materials, comprising steels, titanium alloys, Co-Cr alloys, metal-based composites, and nanocomposites. This book elucidates the chronology of various techniques that are categorized under additive manufacturing. Moreover, the futuristic techniques or advancements in this area are also described. The available literature focuses on the microstructure and various properties of 3D-printed alloys. However, the research on the wear characteristics, corrosion resistance, and biocompatibility of 3D-printedtechnology for biomedical applications is limited. This book comprises the helicopter view of different surface analysis trends of additive manufactured alloys. The book can be a valuable reference for beginners, researchers, and professionals interested in bioimplant manufacturing and allied fields.