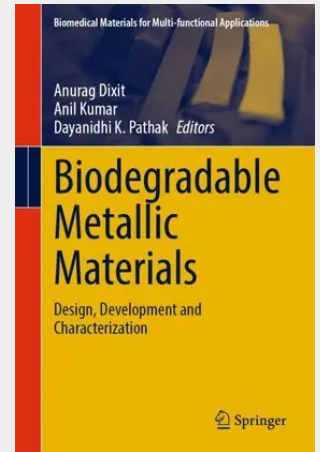


Biodegradable Metallic Materials

Design, Development and Characterization

This book explores the use of biodegradable metals for biological applications in the developing field of Biomaterials research. Iron, Magnesium and zinc are the most common biodegradable metals that have been discussed here. With an excellent mechanical integrity, adequate biocompatibility, and intrinsic biodegradability, these metals are suitable for implants, and have led to multiple studies on the creation of new alloys for degradable biological applications. The book begins with an introductory chapters to introduce the basics of metals and has three main sections. The first section provides readers with an overview of iron-based metallic biomaterials, unveils the current state of biodegradable metal technology, and discusses its potential applications for bio-implants. The second section discusses a paradigm shift from iron to magnesium-based metallic biomaterials, from material discovery and testing to implant production. This section provides an example of biodegradable metals from idea to application. Biomaterials based on magnesium have the potential to be utilized as next-generation biodegradable metals. Since magnesium (Mg) dissolves in bodily fluids, implanted Mg may deteriorate during the healing process; provided, however, that degradation is regulated, no debris will remain once healing is completed. Therefore, there may be no need for a second surgical procedure (or procedures) to remove the implant. This section demonstrates a thorough analysis that gathers, evaluates, and critically examines the most recent research on the crucial facets of magnesium-based biomaterials. This book is expected to be a fundamental resource for research in biodegradable metallic materials, fabrication of implants, tissue engineering, and biomedical engineering. A viewpoint on the application of biodegradable metals for biomedical purposes in the tissue engineering age closes the book.

1. Introduction to Biodegradable Metallic Materials in Biomedical Applications.- Composition and Design Strategies for Iron-Based Biodegradable Alloys.- Fabrication Techniques and characterization for Iron-Based Biodegradable Implants.- Clinical Translation, Regulatory Considerations, and Future Perspectives, Challenges in Iron-Based Biodegradable Materials for Biomedical Applications.- Composition and Design Strategies for Magnesium-Based Biodegradable Alloys.- Fabrication Techniques and characterization for Magnesium-Based Biodegradable Implants.- Clinical Translation, Regulatory Considerations, and Future Perspectives, Challenges in Magnesium-Based Biodegradable Materials for Biomedical Applications.- Composition and Design Strategies for Zinc-Based Biodegradable Alloys.- Fabrication Techniques and characterization for Zinc-Based Biodegradable Implants.- Clinical Translation, Regulatory Considerations, and Future Perspectives, Challenges in Zinc-Based Biodegradable Materials for Biomedical Applications.- Biodegradable Metallic Materials: Recent Advances, Futuristic Opportunities and Challenges.



192,59 €

179,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9789819524006

Medium: Buch

ISBN: 978-981-952400-6

Verlag: Springer

Erscheinungstermin: 09.11.2025

Sprache(n): Englisch

Auflage: Erscheinungsjahr 2025

Serie: Biomedical Materials for Multi-functional Applications

Produktform: Gebunden

Gewicht: 574 g

Seiten: 256

Format (B x H): 160 x 241 mm

