

Contents

Part I Processing Techniques

1 Additive Manufacturing Technology for Orthopedic Implants	3
Hidetsugu Fukuda	
2 Metal Injection Molding (MIM) Processing	27
Hideshi Miura, Toshiko Osada, and Yoshinori Itoh	
3 Application of Smart Hot Forging Technique in Producing Biomedical Co–Cr–Mo Artificial Implants	57
Yunping Li and Chiba Akihiko	
4 Electroforming as a New Method for Fabricating Degradable Pure Iron Stent	85
Agung Purnama, Afghany Mostavan, Carlo Paternoster, and Diego Mantovani	

Part II Surface Modification

5 Bioactive Ceramic Coatings	103
Hirotaka Maeda and Toshihiro Kasuga	
6 Biofunctionalization of Metals with Polymers	127
Takao Hanawa	
7 Adhesive Strength of Bioactive Surface Layer	143
Noriyuki Hisamori	
8 Surface Improvement for Biocompatibility of Biomedical Ti Alloy by Dealloying in Metallic Melt	153
Masahiro Hirohashi, Kyosuke Ueda, Takeshi Wada, Takayuki Narushima, and Hidemi Kato	

9 Functionally Graded Metallic Biomaterials 181
Yoshimi Watanabe, Hisashi Sato, and Eri Miura-Fujiwara

Part III Applications

10 Metallic Biomaterials in Orthopedic Surgery 213
Manabu Ito, Tomohiro Onodera, and Tadanao Funakoshi

11 Stents: Functions, Characteristics, and Materials 233
Koichi Tsuchiya and Akiko Yamamoto

12 Dental Metallic Materials 251
Masaaki Nakai and Mitsuo Niinomi