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Sommario/riassunto	Recently, great attention has been paid to materials that can be used in the human body to prepare parts that replace failed bone structures. Of all materials, Ti-based materials are the most desirable, because they provide an optimum combination of mechanical, chemical, and biological properties. The successful application of Ti biomaterials has been confirmed mainly in dentistry, orthopedics, and traumatology. Titanium biocompatibility is practically the highest of all metallic biomaterials; however, new solutions are being sought to continuously improve their biocompatibility and osseointegration. Thus, the chemical modification of Ti results in the formation of new alloys or composites, which provide new perspectives for Ti biomaterials applications. This book covers broad aspects of Ti-based biomaterials concerning the design of their structure, mechanical, and biological properties. This book demonstrates that the new Ti-based compounds and their surface treatment provide the best properties for biomedical applications.