



metals



Special Issue Reprint

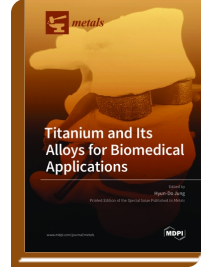
Titanium and Its Alloys for Biomedical Applications

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In recent decades, metals have been considered promising materials in the fields of regenerative medicine and tissue engineering. Metallic bio-materials with excellent mechanical strength can effectively support and replace damaged tissue. Hence, metals have been widely used in load-bearing applications for dentistry and orthopedics. Cobalt-, iron-, and titanium (Ti)-based alloys are representative bio-metals, which are used in various forms, such as vascular stents, hip joints, dental, and orthopedic implants. However, the alloying elements of Co- and Fe-based alloys, Co, Ni, and Cr, induce severe toxicity when ionized in the body, which limits their clinical use. However, Ti and its alloys have been widely used as medical devices and implants, with dental and orthopedic applications due to their excellent bone-regeneration ability, mechanical properties, and corrosion resistance. Even though Ti and its alloys have generally been used for biomedical applications, there are still challenges that must be met to satisfy their clinical application. For example, osseointegration with the surrounding bone tissue at the initial stage of implantation has been pointed to as a major issue. This Special Issue, “Titanium and Its Alloys for Biomedical Applications”, has been proposed to present recent developments in biomedical applications. The nine research articles included in this Special Issue cover broad aspects of Ti-based alloys and composites with respect to their composition, mechanical, and biological properties, as highlighted in this editorial.



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