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Biodegradable Magnesium Alloys 2020

Guest Editor:

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Message from the Guest Editor

For more than a hundred years, magnesium and its alloys were investigated extensively for a variety of biomedical applications, such as orthopedic implants, cardiovascular stents, and tissue engineering scaffolds. The potential of magnesium and its alloys as a temporary device material exceeds that of other materials due to their unique advantages in terms of biocompatibility and biodegradability. Nevertheless, experiments have clearly shown that the corrosion degradation rates of magnesium and its alloys are too high, which results in premature loss of structural integrity of the device and the formation of hydrogen gas bubbles that can cause separation of tissues and, in rare cases, gas embolism. Those problems limit the use of those alloys in practice. This Special Issue aims to present the latest innovative strategies to overcome the current limitations. Topics include, but are not limited to, the development of new alloys, structural and surface modifications for enhanced corrosion resistance, coatings, osseointegration, and in vitro and in vivo biological responses.

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Message from the Editorial Board

Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

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