

Accepted Manuscript

Review

Recent advances on the development of magnesium alloys for biodegradable implants

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PII: S1742-7061(14)00299-2

DOI: <http://dx.doi.org/10.1016/j.actbio.2014.07.005>

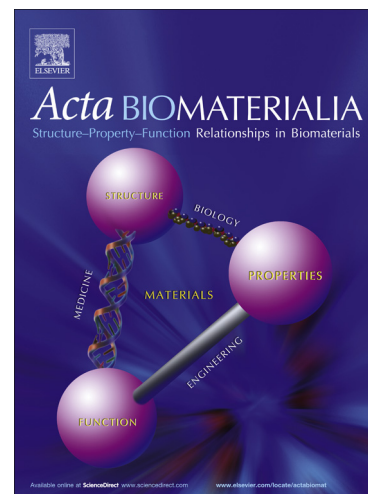
Reference: ACTBIO 3300

To appear in: *Acta Biomaterialia*

Received Date: 29 January 2014

Revised Date: 13 June 2014

Accepted Date: 3 July 2014



Please cite this article as: Chen, Y., Xu, Z., Smith, C., Sankar, J., Recent advances on the development of magnesium alloys for biodegradable implants, *Acta Biomaterialia* (2014), doi: <http://dx.doi.org/10.1016/j.actbio.2014.07.005>

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**Recent advances on the development of magnesium alloys for biodegradable
implants**

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Abstract

In recent years, much progress has been made on the development of biodegradable magnesium alloys as “smart” implants in cardiovascular and orthopedic applications. Mg-based alloys as biodegradable implants have outstanding advantages over Fe-based alloys and Zn-based alloys. However, the extensive applications of Mg-based alloys are still inhibited mainly by their high degradation rates and consequent loss in mechanical integrity. Consequently, extensive studies have been conducted to develop Mg-based alloys with superior mechanical and corrosion performance. This review focuses on the following topics: (1) the design criteria of biodegradable materials, (2) alloy development strategy, (3) *in vitro* performances of currently developed Mg-based alloys, and (4) *in vivo* performances of currently developed Mg-based implants, especially Mg-based alloys under clinical trials.

Keywords: magnesium alloys, design strategy, mechanical properties, corrosion,

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