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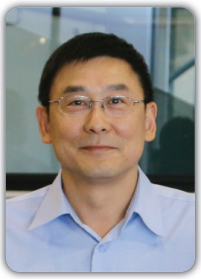
2nd International Conference on

Biomaterials and Nanomaterials &
Materials Physics and Materials Science

May 20-21, 2019 | Vienna, Austria



Yuncang Li

RMIT University, Australia

Biocompatible magnesium alloys for biodegradable implant materials

Magnesium (Mg) based alloys have been extensively considered for their use as biodegradable implant materials. However, controlling their corrosion rate in the physiological environment of the human body is still a significant challenge. One of the most effective approaches to address this challenge is to strategically design new Mg alloys with enhanced corrosion resistance, biocompatibility, and mechanical properties. Our research has developed new series of Mg-zirconium (Zr)-strontium (Sr)-rare earth element (REE) alloys for biodegradable implant applications. Research results indicate that Sr and Zr additions can refine the grain size and enhance the corrosion and biological behaviors of the Mg alloys. Furthermore, the addition of holmium (Ho) and dysprosium (Dy) to Mg-Zr-Sr alloys resulted in enhanced mechanical strength and decreased degradation rate. In addition, less than 5 wt.% Ho and Dy additions to Mg-Zr-Sr alloys led to enhancement of cell adhesion and proliferation of osteoblast cells on the Mg-Zr-Sr-Ho/Dy alloys.

Speaker Biography

Yuncang Li obtained his PhD in materials science engineering from Deakin University in 2004 and then took up a research position in biomaterials engineering at Deakin University until the end of 2014. He joined RMIT University in 2015. He was awarded an Australian Research Council (ARC) Future Fellowship and won several national competitive grants including ARC and Australian National Health and Medical Research Council projects. His research focuses on developing metallic biomaterials for medical applications. He has expertise in microstructure-mechanical property relationships, corrosion, and biocompatibility, surface modification, nanostructured metals and alloys, and metal foams. His research has led to 184 peer-reviewed original publications, with an H index of 31 and over 3180 citations (Google Scholar).

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