Prof. Iulian Antoniac (Romania)

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Prof. Iulian Antoniac received the M.E., Ph.D. and Postdoc degrees in Materials Science at University Politehnica of Bucharest. Since 2002, he has been associated with the Medical Engineering program in the Faculty Materials Science and Engineering, University Politehnica of Bucharest, which is focused on biomaterials obtaining and characterization, medical image processing and the development of new implants for medical applications. Dr. Iulian Antoniac is the leader of the Biomaterials Group, head of the Biomaterials & Interface Phenomenon Laboratory, full professor at Faculty Materials Science and Engineering. He was appointed Vice Dean of Faculty Materials Science and Engineering and member of the Senate of University Politehnica of Bucharest in 2016. Professor Antoniac has published widely, with over 200 papers published in peer-reviewed journals and conference proceedings, 9 patents, several books (like *Handbook of Bioceramics and Biocomposites*) and over 50 invited lectures at conferences focused on biomaterials, bioceramics and materials science. He is currently President and Council Member of the Romanian Society for Biomaterials (SRB), Former President and permanent Member of Executive Committee of the International Society for Ceramics in Medicine (ISCM). Research interests include metallic biomaterials, bioceramics, coatings, biocomposites, polymers, retrieval analysis of explants, microscopy techniques for materials characterization, surface modification, interaction tissue-biomaterials, bone regeneration, retrieval and failure analysis of implants.

Bioceramic Coatings on Magnesium Alloys for Medical Application: Trends and Techniques

Magnesium alloys have attracted interest as biomaterials for biodegradable metallic implants due to their biodegradability into the human body, and as their mechanical properties match closer to bones than other biodegradable materials or currently used metals for metallic implants. Metallic implants made by biodegradable magnesium alloys have several advantages over other implantable metals currently in use, such as eliminating both the effects of stress shielding, corrosion and the requirement of a second surgery for implant removal. Unfortunately, the fast degradation rates of magnesium alloys impose some limitations on their clinical applications. This necessitates development of implants with controlled degradation rates to match the kinetics of bone healing. Surface coatings to control biodegradation of magnesium-based alloys offer the flexibility to be easily modified for specific applications and have significantly less investment. Since different bioceramics like hydroxyapatite, calcium phosphate or bioactive glasses are well tolerated by living organisms, they appear to be the excellent candidates for coatings on magnesium alloys. There are several methods that could be used for bioceramics coatings on biodegradable magnesium alloys. The surface design of Mg-based materials should base on their application situations, such as implantation sites, surrounding biological environment and required service duration. After proper surface design and bioceramic coatings, magnesium alloys could be considered a very promising candidate for biodegradable implants used in orthopedics, dentistry, and neurosurgery.