

EUROMAT 2019 / F: Materials for Healthcare

SYMPOSIUM: F7

Title: Metals in medicine: surface modification, traditional and new alloys, permanent and bioresorbable metals		
Organizer	Institution	Contact email
Regine Willumeit-Römer	Helmholtz-Zentrum Geesthacht	regine.willumeit@hzg.de
Thierry Gloriant	INSA Rennes, ISCR CNRS	Thierry.Gloriant@insa-rennes.fr
Gwendolen Reilly	University of Sheffield	g.reilly@sheffield.ac.uk
Abstract		
Metals in medicine: surface modification, traditional and new alloys, permanent and bioresorbable metals		
<p>Scope:</p> <p>The aim of this symposium is to explore major representatives of metallic biomaterials along with the key existing and emerging strategies for surface and bulk modification including new concepts for advanced manufacturing and nanofabrication to improve biointegration, mechanical response, durability and functional properties of the associated biomedical devices.</p>		
<p>Description:</p> <p>For many decades, metals and alloys play an important role in medicine. They are widely used for the manufacturing of functional medical devices in orthopedics (hip prosthesis, fixation systems...), in dentistry (dental implants, orthodontics...), in vascular surgery (coronary stents...), etc. Therefore one could assume that nothing strikingly new can be found. The opposite is true: because of the increasing demand of secure and dedicated medical devices and with the advancement of our knowledge on how living tissues are interacting with materials, design of new materials and surface modifications become a key feature for implant-tissue interaction. New production technologies, computational material design and better characterization techniques (analytics, in situ technologies, etc.) enable us nowadays to produce patient specific permanent metal implants or even metallic implants which degrade over time.</p>		
<p>Targeted Topics:</p> <ul style="list-style-type: none">• Biocompatible and Bioresorbable alloys• Metallic biomedical devices• Surface modification and coatings for biodegradable metals• Material characterisation and mechanical properties• Computational material design and new manufacturing technologies• Biomechanics, biocorrosion and biological investigations		

- Advanced functionalities (shape memory, superelasticity, MEMS...)