Monday 26 August, 2024

KEYNOTE : 40 min incluant 8 mon discussion

ORAL: 20 min incluant 4 min discussion

Short Oral & Poster: 5 min ORAL + Poster

Poster : Format A0 (841 x 1189 millimeters or 33.1 x 46.8 inches)

Session 1 – Metals

8h30 — **Introductory remarks (DM, FW)**

Chairs: **Frank Witte & Diego Mantovani**
AV support: **tbd**

9h00-9h40 — 131-5R6U-315 — K1

Moments of Inertia
B. Wiese[1], F. Witte[2], P. Maier[3,4], **Norbert Hort[1,5]**
[1] Helmholtz-Zentrum Hereon, Geesthacht, Germany [2] Charité Universitätsmedizin, Berlin, Germany [3] University of Applied Sciences Stralsund, Stralsund, Germany [4] Lund University, Lund, Sweden [5] Leuphana University Lüneburg, Lüneburg, Germany

9h40-10h00 — 131-G9ss-145 — O1

Hall-Petch effect in ultrafine-grained bioresorbable Zn
Martin Balog[1], P Krížik[1], A Školáková[2], P Švec Jr[3], J Kubásek[4], J Pinc[2], M Takáčová[5], M M de Castro[1], R Figueiredo[6]
[1] Institute of Materials and Machine Mechanics, SAS, Slovakia [2] Institute of Physics, ASCR, Czech Rep. [3] Institute of Physics, Slovak Academy of Sciences, Slovakia [4] University of Chemistry and Technology, Czech Rep. [5] Biomedical Research Center, Institute of Virology, SAS, Slovakia [6] Universidade Federal de Minas Gerais, Brazil

10h00-10h20 — 131-9jfp-315 — O2

Unique microstructural transformations during laser processing of a dual-phase Mg-Li alloy
Francesco D'Elia[1], G Szakács[2], N Hort[2,3], C Persson[1]
[1] Division of Biomedical Engineering, Department of Materials Science and Engineering, Uppsala University, Uppsala, Sweden [2] Institute of Metallic Biomaterials, Department of Functional Magnesium Materials, Helmholtz-Zentrum Hereon, Geesthacht, Germany [3] Institute of Product Technology and Systems, Leuphana University Lüneburg

10h20-10h40 — 131-NXnd-284 — O3

Microstructure design strategy for biodegradable magnesium alloys based on mechanical and corrosion properties
Guangyin Yuan[1]
[1] School of Materials Science & Engineering, Shanghai Jiao Tong University, Shanghai China

10h40-11h10 — **Break**

11h10-11h30 — 131-GxWy-315 — O4

Additive manufacturing of a biodegradable MgZnCa alloy using Powder bed fusion - Laser beam
Giulio Pietro Cavaliere[1], Francesco D'Elia[1], Cecilia Persson[1]
[1] Division of Biomedical Engineering, Department of Materials Science and Engineering, Uppsala University, Uppsala, Sweden

11h30-12h30 — 131-iRCW-76

INSPIRATIONAL LECTURE - Controversies and challenges of long standing biological and physiological dogmas
Yannis Missirlis[1] - Emeritus Professor
[1] University of Patras, Greece

12h30 - 16h30 — **Lunch & Free Time**

Chairs: Marta Multigner & Jorg Loffler
AV support: tbd

16h30-16h50 131-yGiM-275 O5
Electroformed Fe-Mn alloys for biodegradable implant application
Vinicius Sales[1,2], C. Paternoster[1,2], G. Kolliopoulos[2], D. Mantovani[1,2]
1Laboratory for Biomaterials and Bioengineering CRC-I, Research Center of CHU de Quebec, Canada; 2Department of Min-Met-Materials Engineering, Laval University, Canada.

16h50-17h10 131-fq4v-165 O6
Machine-Learning driven accelerated determination of structure-property relationship in Mg alloys
Sreenivas Raguraman[1], Maitreyee Sharma Priyadharshini[1], Adam Griebel[2], Paulette Clancy[1], Timothy P. Weihs[1]
[1] Johns Hopkins University, [2] Fort Wayne Metals

17h10-17h30 131-E8bP-135 O7
Electroforming Fe-Co binary alloys for biodegradable tiny implants
Carlos H. M. Beraldo[1], C. Paternoster[1] and D Mantovani[1]
[1] Laboratory for Biomaterials and Bioengineering, CRC-I, Department of Min-Met-Materials Eng., & University Hospital Research Center, Regenerative Medicine, Laval University, QC, Canada.

17:30-18:00 **Break**

18:00-18:20 131-JFfF-315 O8
Development of Mg-2Y-1Zn(Gd, Ag, Ca) alloys with LPSO phase for degradable implant applications
Domonkos Tolnai[1], DCF Wieland[1], B Wiese[1], H Helmholz[1], J Bohlen[2], M Nienaber[2], G Garcés[3]
[1] Institute of Metallic Biomaterials, Helmholtz-Zentrum Hereon, Max-Planck Strasse 1, 21502 Geesthacht, DE, [2] Institute of Material and Process Design, Helmholtz-Zentrum Hereon, MaxPlanck Strasse 1, 21502 Geesthacht, DE, [3] Departament of Physical Metallurgy, National Center for Metallurgical Research, CENIM-CSIC, Avda. Gregorio del Amo 8, Madrid, 28040, SP

18:20-18:25 131-1Eyj-225 SOP 1
Additively manufactured Zn-2Mg alloy porous scaffolds with customizable biodegradable performance and enhanced osteogenic ability
Aobo Liu[1], Peng Wen[1]
[1] State Key Laboratory of Clean and Efficient Turbomachinery Power Equipment, Department of Mechanical Engineering, Tsinghua University, Beijing, China

18:25-18:30 131-GikG-126 SOP 2
3D-printing of bioresorbable Zinc-Magnesium for critical-size bone defects
Max Voshage[1], F. Fischer[1], L. Jauer[1], S. Pöstges[2], A. Kopp[2], J.H. Schleifenbaum[1]
[1] Chair for Digital Additive Production DAP, RWTH University, Aachen, Germany [2] Meotec GmbH, Aachen, Germany

18:30-18:35 131-n5ME-146 SOP 3
Combination of biodegradable Zn- and Mg-based alloys using multi-material Additive Manufacturing: challenges and opportunities
Simon Pöstges[1], T Poel[1], J Molina[2], J Llorca[2], A Kopp[1]
[1] Meotec GmbH, Aachen, Germany [2] IMDEA Materials Institute, Getafe, Spain

18:35-18:40 131-vGmE-305 SOP 4
Effect of PEO-coatings in hybrid Zn-Mg alloys processed through high-pressure torsion
J Salinas[1], N Mollae[2], CJ. Boehlert[1], J Llorca, Monica Echeverry-Rendón[2]
[1] Michigan State University, USA [2] IMDEA Materials Institute, Spain

18:40-19:00 ***SOP Discussion***

19h00 **Discussion & Wrap Up**
19h15 **End of the session**
19h30-21h00 **Dinner**

Tuesday 27 August, 2024

Session 2 – Corrosion

Chairs: Norbert Hort & Magdalena Bieda-Niemiec
AV support: tbd

Assignation Code: K=Keynote; O=Oral presentation; SOP=Short oral presentation; P=Poster

8h30-9h10 | 131-w6hS-265 K2
Cryo-atom probe tomography; quasi-'in situ' analysis of the reactive liquid-solid interface during Mg corrosion
Tim M. Schwarz[1], L. S. Aota[1], E. Woods[1], X. Zhou[1], I. McCarroll[1], B. Gault[1,2]
[1] *Max-Planck-Institute for Sustainable Materials, Germany;* [2] *Imperial College London, UK*

9h10-9h30 | 131-8oom-186 O9
Determination of an in-vitro-in-vivo-correlation-factor (IVIVC) for biodegradable magnesium implants based on outcomes of a tibial plate system trial in sheep
Jan-Marten Seitz[1], S. Habicht[1], M. Behbahani[2], A. Kopp[1], R. C. Schragen[1]
[1] *Medical Magnesium GmbH, Aachen, Germany;* [2] *Aachen University of Applied Sciences, Jülich Campus, Medical Engineering and Technomathematics, Germany*

9h30-9h50 | 131-argA-315 O10
Hybrid coatings to improve corrosion and tribological properties of Mg alloys
Andrea M. Rich[1], J. Cossu[1], W. Rubin[1], T. Akhmetshina[1], L. Berger[1], J. F. Löffler[1]
[1] *Laboratory of Metal Physics and Technology, Department of Materials, ETH Zurich, Switzerland*

9h50-10h10 | 131-Y1eN-225 O11
Mechanical properties, biodegradation and biocompatibility of Mg scaffolds treated by high temperature oxidation and hydrotalcite coating
Bo Peng[1], Ze. Lv[2], X. Weng[2], P. Wen[1]
[1] *State Key Laboratory of Clean and Efficient Turbomachinery Power Equipment, Department of Mechanical Engineering, Tsinghua University, China.;* [2] *Department of Orthopedic Surgery, Chinese Academy of Medical Science and Peking Union Medical College, China.*

10h10-10h15 | 131-srqA-315 SOP 5
Stress corrosion cracking testing as an assessment tool for novel biodegradable Mg alloys
Sochima S. Ezenwajiaku[1], M. V. Manuel[1]
[1] *Department of Materials Science and Engineering, University of Florida, USA*

10h15-10h20 | 131-TnEh-295 SOP 6
Microstructural characterisation and evaluation of mechanical properties of additively manufactured biodegradable Zn-xMg alloys
Himesha Abenayake[1], C. Persson[1], F. D'Elia[1]
[1] *Division of Biomedical Engineering, Department of Materials Science and Engineering, Uppsala University, Sweden*

10h20-10h25 | 131-VrZQ-245 SOP 7
The effect of powder preparation on mechanical properties and degradation behavior of biodegradable Fe-Mn-C sintered alloys for biomedical applications
Abdelhakim Cherqaoui[1], C. Paternoster[1], S. Gélinas[2], C. Blais[2], D. Mantovani[1]
[1] *Laboratory for Biomaterials and Bioengineering CRC-I, Research Center of CHU de Quebec, Canada;* [2] *Department of Min-Met-Materials Engineering, Laval University, Canada.*

10h25-10h40 ***SOP Discussion***

10h40-11h10 **Break**

Chairs: Regina Willumeit-Romer & Alberto Coda
AV support: tbd

11h10-11h30 | 131-vaBt-205 O12
Corrosion morphology influencing residual mechanical performance characterised by µCT and digital image correlation
Petra Maier[1,2], B. Clausius[1], M. Brand[1], T. S. Tegtmeier[1], B. Wiese[3], N. Hort[3,4]
[1] *University of Applied Sciences Stralsund, School of Mechanical Engineering, Germany;* [2] *Lund University, Department of Mechanical Engineering Sciences, Sweden;* [3] *Helmholtz-Zentrum Hereon, Germany;* [4] *Leuphana University Lüneburg, Germany*

11h30-11h50 131-ooRc-315 O13

Mitigating poor corrosion resistance of WE43 Mg alloy lattice structures through optimized structural design

Zaki Alomar[1], P. Minárik[2], C. Persson[1], D. Drozdenko[2], F. D'Elia[1]

[1] *Department of Materials Science and Engineering, Division of Biomedical Engineering, Uppsala University, Sweden;* [2] *Faculty of Mathematics and Physics, Charles University, Czech Republic*

11h50-12h10 131-nRQ3-305 O14

Tuning magnesium degradation by bipolar Plasma Electrolytic Oxidation

Matteo Pavarini[1], C. Alecci[1], M. Castiglioni[1], M. Moscatelli[1], R. Chiesa[1]

[1] *BioSurf lab, Department of Chemistry, Materials and Chemical Engineering "G. Natta", Politecnico di Milano, Italy*

12h10-12h30 131-GxB6-295 O15

Assessment of magnesium wire coatings for absorbable medical devices

Adam J. Griebel[1], C. J. David[1], J. E. Schaffer[1], W. He[2], R. Guillory II[3]

[1] *Fort Wayne Metals Research Products Corp., USA;* [2] *Michigan Technological University, USA;* [3] *Medical College of Wisconsin, USA*

12h30 **Lunch & Free Time**

Chairs: **Edgar Montufar & Petra Maier**
AV support: **tbd**

16h30-16h50 131-S6Ra-305 O16

Towards an accurate prediction of magnesium biocorrosion by closer mimicking the in-vivo environment

Mustafa Yalcinkaya[1], A. Bruinink[1], M. Cihova[1], P. Schmutz[1]

[1] *Laboratory for Joining Technologies and Corrosion, Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland*

16h50-17h10 131-t9aN-96 O17

Investigation of the ultra-structure of bone around Mg implant alloys and the connection to the mechanical properties

D. C. Florian Wieland[1], K. Ishkakova[1,2], B. Zeller-Plumhoff[1], R. Willumeit-Römer[1]

[1] *Institute of Metallic Biomaterials, Helmholtz-Zentrum Hereon, Germany;* [2] *Institute of Catalysis Research and Technology, Karlsruhe Institute of Technology, Germany*

17h10-17h30 131-qgZM-225 O18

Towards a standardized magnesium corrosion method

H. Radisch[1,3], Adam J. Griebel[2,3]

[1] *Pulmair Medical Inc., USA;* [2] *Fort Wayne Metals Research Products Corp., USA;* [3] *ASTM F04.15.03*

17:30-18:00 **Break**

18:00-18:05 131-97N1-225 SOP 8

Effect of medium renewal mode on the degradation behavior of Mg alloys for biomedical applications during the long-term in vitro test

Meng Yao Liu[1,2], Q. Y. Zhang[1], X. H. Tang[1], C. X. Liu[1], D. Mei[1], L. G. Wang[1], S. J. Zhu[1], M. L. Zheludkevich[2], S. V. Lamaka[2], S. K. Guan[1]

[1] *School of Materials Science and Engineering & Henan Key Laboratory of Advanced Light Alloys, Zhengzhou University, China;* [2] *Institute of Surface Science, Helmholtz-Zentrum Hereon, Germany.*

18:05-18:10 131-DZ1Q-295 SOP 9

Micro-arc oxidation of NiTi and Mg1.2Zn0.5Ca0.5Mn skeletal fixation device

Luis H. Olivas-Alanis[1], D. Cho[1], B. Panton[1], T. Avey[1], Chmielewska[2], M. Sanguedolce[4], A. Luo[1], D. Dean[1,4]

[1] *Department of Material Science and Engineering, The Ohio State University, USA;* [2] *Multidisclipany Research Center, Cardinal Stefan Wyszynski University, Poland;* [3] *Department of Mechanical, Energy and Management Engineering, University of Calabria, Italy;* [4] *Department of Plastic and Reconstructive Surgery, The Ohio State University, USA*

18:10-18:15 131-QwPY-315 SOP 10

New insights into the microstructure of Mg-0.6Ca alloys using electron microscopy and Raman spectroscopy - A correlative characterization

Eshwara Nidadavolu[1], M Mikulics[2], M Wolff[1], T Ebel[1], R Willumeit-Römer[1], J Mayer[2,3], H. Hardtdegen[2]

1 Institute Metallic Biomaterials, Helmholtz-Zentrum Hereon, Geesthacht, Germany 2 Ernst-Ruska-Centre (ER-C-2), Forschungszentrum Jülich, Jülich, Germany 3 Central Facility for Electron Microscopy (GFE), RWTH Aachen University, Aachen, Germany

18:15-18:30 ***SOP Discussion***

18:30-18:35 131-hL8C-296 SOP 11

Corrosion study of Fe20Mn0.5C parts obtained through additive manufacturing

I. Limón[1], **Daniel Valdés[1]**, C. Paternoster[2], M. Multigner[1], M. D. Escalera[1], M. Muñoz[1], B. Torres[1,3], D. Mantovani[2], J. Rams[1,3]

[1] Dpto. Ciencia e Ing. de Materiales, ESCET, Universidad Rey Juan Carlos, Spain; [2] Laboratory for Biomaterials and Bioengineering, CRC-I, Dept Min-Met-Materials Eng. & CHU de Quebec Research Center, Regenerative Medicine, Laval University, Canada; [3] Inst. de Inv. en Tecnologías para la Sostenibilidad, Universidad Rey Juan Carlos, Spain

18:35-18:40 131-A87u-225 SOP 12

Partially bioresorbable Ti-Mg composite dental implant (BIACOM©)

M. Balog[1], **Peter Krížik[1]**, A. M. H. Ibrahim[1], M. Takáčová[2], M. M. de Castro[1], M. Stamborska[1], A. Catic[3], Z. Schauperl[4], J. Skiba[5]

[1] Institute of Materials and Machine Mechanics, Slovak Academy of Sciences, Slovakia; [2] Biomedical Research Center, Institute of Virology, Slovak Academy of Sciences, Slovakia; [3] School of Dental Medicine, University of Zagreb, Croatia; [4] Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb, Croatia; [5] Institute of High Pressure Physics, The Polish Academy of Sciences, Poland.

18:40-18:45 131-UcB9-176 SOP 13

Extruding low-profile semi-finished products from bioabsorbable magnesium alloys for cardiovascular implants – Influence of process parameters

N. Hoevelmann[1], K. Arntz[2], A. Kopp[1], **Max Muether[1]**

[1] Meotec GmbH, Germany; [2] University of Applied Science Aachen, Germany

18:45-18:50 131-1ASu-17 SOP 14

Influence of laser power and scanning speed on performances of LPBF Fe-16Mn-0.7C for bioabsorbable stent applications

Maria Laura Gatto[1], P. Mengucci[1], M. Cabibbo[1], C. Paternoster[2], D. Mantovani[2]

[1] Università Politecnica delle Marche, Italy; [2] Laval University, Canada

18:50-19:10 ***SOP Discussion***

19h10 **Discussion & Wrap Up**

19h30 **End of the session**

19h30-21h00 **Dinner**

21h00-midnight Poster Session

Poster - Metals

P1 131-3tAM-306

Magnetic and thermal characterization of Fe(-Zn)-Mg metastable powders

R. G. Estrada[1,3], **Marcela Lieblich[1]**, P. de la Presa[2], M. Multigner[3]

[1] National Centre for Metallurgical Research, CENIM-CSIC, Spain; [2] Institute of Applied Magnetism-UCM, Spain; [3] Dept. Ciencia e Ing. de Materiales, URJC, Spain.

P2 131-KGNi-205

A novel microstructural engineering based approach to manufacture biodegradable Mg alloys

Prithivirajan Sekar[1,2], S.K.Panigrahi[1,2]

[1] Department of Mechanical Engineering, Indian Institute of Technology Madras, India; [2] Center of Excellence in Applied Magnesium Research for Futuristic Mobility, Indian Institute of Technology Madras, India

P3 131-emCK-306

Hydrothermal processing of metal-ceramic interpenetrating phase composites

C. Oliver-Urrutia[1], L. Drotárová[1], K. Slámečka[1,2], M. Remešová[1], T. Balint[3], M. Schnitzer[3], T. Zikmund[1], L. Čelko[1], E. B. Montufar[1]

[1] Central European Institute of Technology, Brno University of Technology, Czech Republic; [2] Faculty of Mechanical Engineering, Brno University of Technology, Czech Republic; [3] Faculty of Mechanical Engineering, Technical University of Košice, Slovak

P4 131-wBuR-27

Thermodynamic properties of liquid magnesium ternary alloys on the example of Ag-Mg-Ti and Cu-Mg-Ti systems

Weronika Gozdur[1], M. Pęska[2], M. Polański[2], W. Gąsior[1], A. Dębski[1]

[1] Institute of Metallurgy and Materials Science Polish Academy of Sciences, Krakow, Poland; [2] Military University of Technology, Department of Functional Materials and Hydrogen Technology, Warsaw, Poland.

P5 131-t3tW-177 **Assessing magnesium alloys anti-thrombogenicity mechanism using in vitro biochemical assays**

Cole Baker[1], J Goldman[2], MT Hinds[1], DEJ Anderson[1]

[1] Department of Biomedical Engineering, Oregon Health & Science University, Portland, OR, USA; [2] Department of Biomedical Engineering, Michigan Technological University, Houghton, MI, USA

P6 131-7DMQ-187 **Processing and characterization of biodegradable magnesium alloys containing Zn and Ga**

A Komissarov[1,3], V Bazhenov[2], S Rogachev[3], A Li[3], D Ten[3], N Redko[1], A Drobyshev[1], **Kwang Seon Shin**[1,4]

[1] Laboratory of Bioresorption and Bioresistance, Department of Maxillofacial and Plastic Surgery, Moscow State University of Medicine and Dentistry A.I. Evdokimova, Moscow, Russia [2] Casting Department, National University of Science and Technology MISIS, Moscow, Russia [3] Laboratory of Hybrid Nanostructured Materials, National University of Science and Technology MISIS, Moscow, Russia [4] Magnesium Technology Innovation Center, Seoul National University, Seoul, Republic of Korea

P7 131-1Eyj-225 **Additively manufactured Zn-2Mg alloy porous scaffolds with customizable biodegradable performance and enhanced osteogenic ability**

Aobo Liu[1], **Peng Wen**[1]

[1] *State Key Laboratory of Clean and Efficient Turbomachinery Power Equipment, Department of Mechanical Engineering, Tsinghua University, Beijing, China*

P8 131-GikG-126 **3D-printing of bioresorbable Zinc-Magnesium for critical-size bone defects**

Max Voshage[1], F. Fischer[1], L. Jauer[1], S. Pöstges[2], A. Kopp[2], J.H. Schleifenbaum[1]

[1] *Chair for Digital Additive Production DAP, RWTH University, Aachen, Germany* [2] *Meotec GmbH, Aachen, Germany*

P9 131-n5ME-146 **Combination of biodegradable Zn- and Mg-based alloys using multi-material Additive Manufacturing: challenges and opportunities**

Simon Pöstges[1], T Poel[1], J Molina[2], J Llorca[2], A Kopp[1]

[1] *Meotec GmbH, Aachen, Germany* [2] *IMDEA Materials Institute, Getafe, Spain*

P10 131-vGmE-305 **Effect of PEO-coatings in hybrid Zn-Mg alloys processed through high-pressure torsion**

J Salinas[1], N Mollae[2], CJ. Boehlert[1], J Llorca, **Monica Echeverry-Rendón**[2]

[1] *Michigan State University, USA* [2] *IMDEA Materials Institute, Spain*

P11 131-qM99-85 **Customization of the property profile of Mg-Zn-Ca for medical applications**

Björn Wiese[1], M. J. Nienaber[2], M. Luczak[1], J. Bohlen[2]

[1] *Helmholtz-Zentrum Hereon, Institute of Metallic Biomaterials, Germany;* [2] *Helmholtz-Zentrum Hereon, Institute of Material and Process Design, Germany*

P12 131-Bmeo-177 **The effect of adding manganese on the deformation behaviour and properties of zinc alloys**

M. Bieda[1], E. Rusinek[1], W. Gozdur[1], M. Gieleciak[1], A. Jarzębska[1], L. Maj[1], L. Rogal[1], J. Skiba[2]

[1] *Institute of Metallurgy and Materials Science of Polish Academy of Sciences, Krakow, Poland;* [2] *Institute of High Pressure Physics, Polish Academy of Sciences, Warsaw, Poland*

P13 131-epYt-247 **Functional coatings on biodegradable magnesium alloys for orthopedic applications**

M. Karaś[1], S. Boczkal[1], Ł. Maj[2], J. Skiba[3], D. Kapinos[1], K. Limanówka[1], A. Jarzębska[2], M. Bieda[2]

[1] *Lukasiewicz Research Network – Institute of Non-Ferrous Metals, Light Metals Division, Poland;* [2] *Institute of Metallurgy and Materials science Polish Academy of Science, Cracow, Poland* [3] *Institute of High Pressure Physics, Polish Academy of Sciences, Warsaw, Poland*

P14 131-UJDx-267 **Biodegradable zinc and zinc-magnesium alloys from a microstructural and mechanical perspective**

M. Gieleciak[1], A. Jarzębska[1], Ł. Maj[1], P. Petrzak[1], M. Kulczyk[2], M. Bieda[1]

[1] *Institute of Metallurgy and Materials Science of Polish Academy of Sciences, Krakow, Poland;* [2] *Institute of High Pressure Physics, Polish Academy of Sciences, Warsaw, Poland*

P15 131-3LjB-237 **Development of bioresorbable Mg-Zn-Ca-Mn and Mg-Zn-Ga alloys for bone implants**

A Komissarov[1,3], V Bazhenov[2], S Rogachev[3], A Li[3], D Ten[3], N Redko[1], A Drobyshev[1], **Kwang Seon Shin**[1,4]

[1] Laboratory of Bioresorption and Bioresistance, Department of Maxillofacial and Plastic Surgery, Moscow State University of Medicine and Dentistry A.I. Evdokimova, Moscow, Russia [2] Casting Department, National University of Science and Technology MISIS, Moscow, Russia [3] Laboratory of Hybrid Nanostructured Materials, National University of Science and Technology MISIS, Moscow, Russia [4] Magnesium Technology Innovation Center, Seoul National University, Seoul, Republic of Korea

Poster - Corrosion

P16 131-wAxi-286 **From corrosion to mechanics: Evaluating novel magnesium alloys for biodegradable wire applications**

Beril Ulugun[1], S. Raj[1], N. B. Osei-Owusu[1], S. Raguraman[1], A. Griebel[2], T. P. Weihs[1]

[1] *Whiting School of Engineering, Johns Hopkins University, USA;* [2] *Fort Wayne Metals, USA*

P17 131-srqA-315 **Stress corrosion cracking testing as an assessment tool for novel biodegradable Mg alloys**

Sochima S. Ezenwajiaku[1], M. V. Manuel[1]

[1] *Department of Materials Science and Engineering, University of Florida, USA*

P18 131-TnEh-295 **Microstructural characterisation and evaluation of mechanical properties of additively manufactured biodegradable Zn-xMg alloys**

Himesha Abenayake[1], C. Persson[1], F. D'Elia[1]

[1] *Division of Biomedical Engineering, Department of Materials Science and Engineering, Uppsala University, Sweden*

P19 131-VrZQ-245 **The effect of powder preparation on mechanical properties and degradation behavior of biodegradable Fe-Mn-C sintered alloys for biomedical applications**

Abdelhakim Cherqaoui[1], C. Paternoster[1], S. Gélinas[2], C. Blais[2], D. Mantovani[1]

[1] *Laboratory for Biomaterials and Bioengineering, Research Center of CHU de Quebec, Canada;* [2] *Department of Min-Met-Materials Engineering, Laval University, Canada.*

P20 131-97N1-225 **Effect of medium renewal mode on the degradation behavior of Mg alloys for biomedical applications during the long-term in vitro test**

Meng Yao Liu[1,2], Q. Y. Zhang[1], X. H. Tang[1], C. X. Liu[1], D. Mei[1], L. G. Wang[1], S. J. Zhu[1], M. L. Zheludkevich[2], S. V. Lamaka[2], S. K. Guan[1]

[1] *School of Materials Science and Engineering & Henan Key Laboratory of Advanced Light Alloys, Zhengzhou University, China;* [2] *Institute of Surface Science, Helmholtz-Zentrum Hereon, Germany.*

P21 131-DZ1Q-295 **Micro-arc oxidation of NiTi and Mg1.2Zn0.5Ca0.5Mn skeletal fixation device**

Luis H. Olivas-Alanis[1], D. Cho[1], B. Panton[1], T. Avey[1], Chmielewska[2], M. Sanguedolce[4], A. Luo[1], D. Dean[1,4]

[1] *Department of Material Science and Engineering, The Ohio State University, USA;* [2] *Multidisclipany Research Center, Cardinal Stefan Wyszynski University, Poland;* [3] *Department of Mechanical, Energy and Management Engineering, University of Calabria, Italy;* [4] *Department of Plastic and Reconstructive Surgery, The Ohio State University, USA*

P22 131-QwPY-315 **New insights into the microstructure of Mg-0.6Ca alloys using electron microscopy and Raman spectroscopy - A correlative characterization**

Eshwara Nidadavolu[1], M Mikulics[2], M Wolff[1], T Ebel[1], R Willumeit-Römer[1], J Mayer[2,3], H. Hardtdegen[2]

1 Institute Metallic Biomaterials, Helmholtz-Zentrum Hereon, Geesthacht, Germany; 2 Ernst-Ruska-Centre (ER-C-2), Forschungszentrum Jülich, Jülich, Germany; 3 Central Facility for Electron Microscopy (GFE), RWTH Aachen University, Aachen, Germany

P23 131-hL8C-296 **Corrosion study of Fe20Mn0.5C parts obtained through additive manufacturing**

I. Limón[1], **Daniel Valdés**[1], C. Paternoster[2], M. Multigner[1], M. D. Escalera[1], M. Muñoz[1], B. Torres[1,3], D. Mantovani[2], J. Rams[1,3]

[1] *Dpto. Ciencia e Ing. de Materiales, ESCET, Universidad Rey Juan Carlos, Spain;* [2] *Laboratory for Biomaterials and Bioengineering, CRC-I, Dept Min-Met-Materials Eng. & CHU de Quebec Research Center, Regenerative Medicine, Laval University, Canada;* [3] *Inst. de Inv. en Tecnologías para la Sostenibilidad, Universidad Rey Juan Carlos, Spain*

P24 131-A87u-225 **Partially bioresorbable Ti-Mg composite dental implant (BIACOM©)**

M. Balog[1], **Peter Krížik**[1], A. M. H. Ibrahim[1], M. Takáčová[2], M. M. de Castro[1], M. Stamborska[1], A. Catic[3], Z. Schauperl[4], J. Skiba[5]

[1] *Institute of Materials and Machine Mechanics, Slovak Academy of Sciences, Slovakia;* [2] *Biomedical Research Center, Institute of Virology, Slovak Academy of Sciences, Slovakia;* [3] *School of Dental Medicine, University of Zagreb, Croatia;* [4] *Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb, Croatia;* [5] *Institute of High Pressure Physics, The Polish Academy of Sciences, Poland.*

P25 131-UcB9-176 **Extruding low-profile semi-finished products from bioabsorbable magnesium alloys for cardiovascular implants – Influence of process parameters**

N. Hoevelmann[1], K. Arntz[2], A. Kopp[1], **Max Muether**[1]

[1] *Meotec GmbH, Germany;* [2] *University of Applied Science Aachen, Germany*

P26 131-1ASu-17 **Influence of laser power and scanning speed on performances of LPBF Fe-16Mn-0.7C for bioabsorbable stent applications**

Maria Laura Gatto[1], P. Mengucci[1], M. Cabibbo[1], C. Paternoster[2], D. Mantovani[2]

[1] *Università Politecnica delle Marche, Italy;* [2] *Laval University, Canada*

P27 131-S6Ra-305 **Towards an accurate prediction of magnesium biocorrosion by closer mimicking the in-vivo environment**

Mustafa Yalcinkaya[1], A. Bruinink[1], M. Cihova[1], P. Schmutz[1]

[1] *Laboratory for Joining Technologies and Corrosion, Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland*

P28 131-w6hS-265 **Cryo-atom probe tomography; quasi-'in situ' analysis of the reactive liquid-solid interface during Mg corrosion**

Tim M. Schwarz[1], L. S. Aota[1], E. Woods[1], X. Zhou[1], I. McCarroll[1], B. Gault[1,2]

[1] *Max-Planck-Institute for Sustainable Materials, Germany;* [2] *Imperial College London, UK*

Poster - In vitro

P29 131-qs9o-315 **In vitro degradation analysis of 3D printed Mg-5Gd alloy scaffolds**

Katherine P. Zapata[1], E. Nidadavolu[1], M. Wolff[1], T. Ebel[1], R. Willumeit-Römer[1]

Institute of Metallic Biomaterials, Helmholtz-Zentrum Hereon GmbH, Germany

P30 131-tQwf-315 **Advanced biodegradation imaging with novel correlative 3D X-ray and electronmicroscopy workflow - ZX00 case study**

Tatiana Akhmetshina[1], R. E. Schäublin[1,2], A. M. Rich[1], L. Berger[1], P. Zeng[2], I. Rodriguez-Fernandez[3,4], N. W. Phillips[3], J. F. Löffler[1]

[1] *Laboratory of Metal Physics and Technology, Department of Materials, ETH Zurich, Switzerland;* [2] *Scientific Center for Optical and Electron Microscopy (ScopeM), ETH Zurich, Switzerland;* [3] *Paul Scherrer Institute, Villigen PSI, Switzerland;* [4] *Institute for Biomedical Engineering, University and ETH Zurich, Switzerland*

P31 131-MSTd-196 **Properties and characterization of magnetron sputtering coatings for biomedical resorbable applications**

M. Shekargoftar[1], S. Ravanbakhsh[1], V. S. Oliveira[1], G. Barucca[2], P. Mengucci[2], M. Cabibbo[3], S. S. Parapari[4], S. Šturm[4], A. Sarkissian[5], F. Witte[6], **Carlo Paternoster[1]**, D. Mantovani[1]

[1] Laboratory for Biomaterials and Bioengineering, CRC-I, Department of Min-Met-Materials Eng., & University Hospital Research Center, Regenerative Medicine, Laval University, Canada; [2] Department of Materials, Environmental Sciences and Urban Planning, Università Politecnica delle Marche, Italy; [3] Department of Industrial Engineering and Mathematical Sciences, Università Politecnica delle Marche, Italy; [4] Jozef Stefan Institute, Slovenia; [5] Plasmionique Inc, Canada; [6] Department of Prosthodontics, Geriatric Dentistry and Craniomandibular Disorders, Charité

P32 131-ZYjd-166 **Investigating biocompatibility and cell growth on the surface of additively manufactured Zn1Mg specimens**

Florian Fischer[1], Q. Zhao[2], M. Voshage[1], M. Praster[2], L. Jauer[1], A. Kopp[3], E. Balmayor[2], J. Greven[4], J.H. Schleifenbaum[1]

[1] Chair for Digital Additive Production DAP, RWTH University, Germany; [2] Experimental Orthopaedics and Trauma Surgery, Department of Orthopaedics, Trauma and Reconstructive Surgery, University Hospital RWTH Aachen, Germany; [3] Meotec GmbH, Germany; [4] Department of Thoracic and Cardiovascular Surgery, Medical Faculty, RWTH Aachen, University Hospital Aachen, Germany

P33 131-ZZsx-305 **Characterisation and assessment of corrosion rate of HfO2-PDLGA coated WE43 produced by atomic layer deposition for cardiovascular stent applications**

Clara G. Hynes[1], Z. Ghaferi[2], S. Malinov[1], A. Flanagan[2], F. Buchanan[1], A. Lennon[1]

[1] School of Mechanical and Aerospace Engineering, Queen's University Belfast, UK; [2] Boston Scientific Ltd., Ireland

P34 131-M8FT-25 **Surface characterization and biocompatibility evaluation of electropolished pure magnesium for biomedical applications**

Jessica Kloiber[1,2], H. Helmholz[3], R. Willumeit-Römer[3], H. Hornberger[1,2]

[1] Biomaterials Laboratory, Faculty of Mechanical Engineering, Ostbayerische Technische Hochschule (OTH), Germany; [2] Regensburg Center of Biomedical Engineering (RCBE), Ostbayerische Technische Hochschule (OTH) and University of Regensburg, Germany; [3] Institute of Metallic Biomaterials, Helmholtz Zentrum Hereon, Germany

P35 131-s9kK-315 **Exploring the biocompatibility and corrosion properties of a novel Mg-Ca-Zn-Y-Mn... Personne-ressource : Martinez, Diana**

Diana C. Martinez[1], A. Dobkowska[1], A. Paradiso[1], D. Drozdenko[2], A. Farkas[2], K. Mathis[2], K. Pucia[3], A. Kaminski[3], Y. Kawamura[4], W. Swieszkowski[1]

[1] Biomaterials Group, Faculty of Materials Science and Engineering, Warsaw University of Technology, Poland; [2] Department of Physics of Materials, Faculty of Mathematics and Physics, Charles University, Czech Republic; [3] Laboratory of Experimental Animals, Medical University of Warsaw, Poland. [4] Magnesium Research Center, Kumamoto University, Japan.

Poster - In vivo

P36 131-WqRE-315 **Long-term in vivo assessment of magnesium-based biodegradable screw-plate implants in a large-animal cranio-maxillofacial defect model**

Wolfgang Rubin[1], T Akhmetshina[1], AM Rich[1], J Ross[2], D Toneatti[3], K Nuss[2], B Schaller[3], JF Löffler[1]

1 Laboratory of Metal Physics and Technology, Department of Materials, ETH Zurich, Switzerland 2 Musculoskeletal Research Unit (MSRU), University of Zurich, Switzerland 3 Department of Cranio-Maxillofacial Surgery, University Hospital, Inselspital Bern, Switzerland

P37 131-xF4C-315 **Evaluation of iron based bioresorbable flow diverters in the rabbit elastase induced aneurysm model**

Alexander Oliver[1,2], C Bilgin[1], J Cortese[1], EA Bayraktar[1], YH Ding[1], D Dai[1], M Connon[3], KD Carlson[2], AJ Griebel[4], JE Schaffer[4], D Dragomir-Daescu[2], R Kadirvel[5], RJ Guillory II[3], DF Kallmes[1]

1 Radiology 2 Physiology and Biomedical Engineering 5 Neurosurgey, Mayo Clinic, Rochester, MN. 3 Biomedical Engineering, Medical College of Wisconsin, Milwaukee, WI. 4 Fort Wayne

Wednesday 28 August, 2024

Session 3 – In vitro

Chairs: Sviatlana Lamaka & Berit Zeller-Plumhoff
AV support: tbd
Assignation Code: K=Keynote; O=Oral presentation; SOP=Short oral presentation; P=Poster

8h30-9h10 | 131-VW7n-315 | K3

Revisiting oxygen reduction during magnesium degradation
C. Wang[1,2], M. L. Zheludkevich[1,3], **Sviatlana V. Lamaka[1]**
[1] Institute of Surface Science, Helmholtz-Zentrum Hereon, Germany; [2] School of Materials Science and Engineering & Jiangsu Key Laboratory for Advanced Metallic Materials, Southeast University, China; [3] Institute of Materials Science, Faculty of Engineering, Kiel University, Germany

9h10-9h30 | 131-iX1G-183 | O19

Construction of cell sheet in vitro evaluation model for magnesium alloy
Liangwei Chen[1], C. Guo[1]
[1] Department of Oral and Maxillofacial Surgery, Perking University School and Hospital of Stomatology, China

9h30-9h50 | 131-6gJW-65 | O20

In-silico studies on the early bone healing potential of Mg based alloys
Gargi Shankar Nayak[1], M. Roland[1], B. Wiese[2], N. Hort[2,3], S. Diebels[1]
[1] Chair of Applied Mechanics, Saarland University, Germany; [2] Institute of Metallic Biomaterials, Helmholtz-Zentrum Hereon, Germany; [3] Leuphana University Lüneburg, Institute of Product and Process Innovation, Universitätsallee 1, Germany

9h50-10h10 | 131-s9kK-315 | O21

Exploring the biocompatibility and corrosion properties of a novel Mg-Ca-Zn-Y-Mn alloy for orthopedic implant materials
Diana C. Martinez[1], A. Dobkowska[1], A. Paradiso[1], D. Drozdenko[2], A. Farkas[2], K. Mathis[2], K. Pucia[3], A. Kaminski[3], Y. Kawamura[4], W. Swieszkowski[1]
[1] Biomaterials Group, Faculty of Materials Science and Engineering, Warsaw University of Technology, Poland; [2] Department of Physics of Materials, Faculty of Mathematics and Physics, Charles University, Czech Republic; [3] Laboratory of Experimental Animals, Medical University of Warsaw, Poland. [4] Magnesium Research Center, Kumamoto University, Japan.

10h10-10h15 | 131-qs9o-315 | SOP 15

In vitro degradation analysis of 3D printed Mg-5Gd alloy scaffolds
Katherine P. Zapata[1], E. Nidadavolu[1], M. Wolff[1], T. Ebel[1], R. Willumeit-Römer[1]
Institute of Metallic Biomaterials, Helmholtz-Zentrum Hereon GmbH, Germany

10h15-10h20 | 131-tQwf-315 | SOP 16

Advanced biodegradation imaging with novel correlative 3D X-ray and electronmicroscopy workflow - ZX00 case study
Tatiana Akhmetshina[1], R. E. Schäublin[1,2], A. M. Rich[1], L. Berger[1], P. Zeng[2], I. Rodriguez-Fernandez[3,4], N. W. Phillips[3], J. F. Löffler[1]
[1] Laboratory of Metal Physics and Technology, Department of Materials, ETH Zurich, Switzerland; [2] Scientific Center for Optical and Electron Microscopy (ScopeM), ETH Zurich, Switzerland;

10h20-10h25 | 131-MSTd-196 | SOP 17

Properties and characterization of magnetron sputtering coatings for biomedical resorbable applications
M. Shekargoftar[1], S. Ravanbakhsh[1], V. S. Oliveira[1], G. Barucca[2], P. Mengucci[2], M. Cabibbo[3], S. S. Parapari[4], S. Šturm[4], A. Sarkissian[5], F. Witte[6], **Carlo Paternoster[1]**, D. Mantovani[1]
1Laboratory for Biomaterials and Bioengineering, CRC-I, Department of Min-Met-Materials Eng., & University Hospital Research Center, Regenerative Medicine, Laval University, Canada; 2Department of Materials, Environmental Sciences and Urban Planning, Università Politecnica delle Marche, Italy; 3Department of Industrial Engineering and Mathematical Sciences, Università Politecnica delle Marche, Italy; 4Jozef Stefan Institute, Slovenia; 5Plasmionique Inc, Canada; 6Department of Prosthodontics, Geriatric Dentistry and Craniomandibular Disorders, Charité Universitätsmedizin, Germany

10h25-10h40 ***SOP Discussion***

10h40-11h10 **Break**

Chairs: Ibrahim Hamdy & Sofia Gambaro
AV support: tbd

11h10-11h30 | 131-SkvX-315 | O22
Biofunctionalization of metal oxide thin films to promote rapid endothelial progenitor cells recruitment on endovascular implants
Hugo Level[1,2], D. Mantovani[2], C. Hoesli[1]
[1] Stem Cell Bioprocessing Laboratory, Department of Chemical Engineering, McGill University, Canada; [2] Laboratory for Biomaterials and Bioengineering, CRC-I, Dept Min-Met-Materials Eng & Regenerative Medicine, CHU de Quebec Research center, Laval University, Canada

11h30-11h50 | 131-ZJ4f-285 | O23
Composite coatings on magnesium: In vitro comparative study
V. Patil[1], B. Williams[2], A. Amin[1], A. Navarro[2], T. McGehee[2], M. Elsaadany[2], Hamdy Ibrahim[1]
[1] College of Engineering and computer science, University of Tennessee at Chattanooga, USA; [2] Department of Biomedical Engineering, University of Arkansas, USA

11h50-12h10 | 131-4bdr-315 | O24
Electron microscopy study on WE43 bone explants
Tatiana Akhmetshina[1], N. Zuberbühler[1], R. E. Schäublin[1,2], L. Berger[1], A. M. Rich[1], W. Rubin[1], J. F. Löffler[1]
[1] Laboratory of Metal Physics and Technology, Department of Materials, ETH Zurich, Switzerland; [2] Scientific Center for Optical and Electron Microscopy (ScopeM), ETH Zurich, Switzerland

12h10-12h15 | 131-ZYjd-166 | SOP 18
Investigating biocompatibility and cell growth on the surface of additively manufactured Zn1Mg specimens
Florian Fischer[1], Q. Zhao[2], M. Voshage[1], M. Praster[2], L. Jauer[1], A. Kopp[3], E. Balmayor[2], J. Greven[4], J.H. Schleifenbaum[1]
[1] Chair for Digital Additive Production DAP, RWTH University, Germany; [2] Experimental Orthopaedics and Trauma Surgery, Department of Orthopaedics, Trauma and Reconstructive Surgery, University Hospital RWTH Aachen, Germany; [3] Meotec GmbH, Germany; [4] Department of Thoracic and Cardiovascular Surgery, Medical Faculty, RWTH Aachen, University Hospital Aachen, Germany

12h15-12h20 | 131-ZZsx-305 | SOP 19
Characterisation and assessment of corrosion rate of HfO2-PDLGA coated WE43 produced by atomic layer deposition for cardiovascular stent applications
Clara G. Hynes[1], Z. Ghaferi[2], S. Malinov[1], A. Flanagan[2], F. Buchanan[1], A. Lennon[1]
[1] School of Mechanical and Aerospace Engineering, Queen's University Belfast, UK; [2] Boston Scientific Ltd., Ireland

12:20-12:30 ***SOP Discussion***

12h30 **Lunch & MICE/Sightseeing**

Thursday 29 August, 2024

Session 4 – In Vivo

Chairs: Frank Witte & Deirdre Anderson
AV support: tbd
Assignation Code: K=Keynote; O=Oral presentation; SOP=Short oral presentation; P=Poster

8h30-9h10 | 131-98Wn-166 | K4
Corrosion performance and corrosion rates from in vitro to in humans – Challenges in transferability and interpretation of results
Janin Reifenrath[1]
1 Hannover Medical School, Department of Orthopaedic Surgery, Hannover, Germany

9h10-9h30 | 131-uSxD-76 | O25
Computational modelling of Mg-based implant degradation and bone healing
B Zeller-Plumhoff[1,2], T AlBaraghtheh[1], D Priebe[1], N Pohl[1], S Trostorff[3], R Köhl[2,3], R WillumeitRömer[1,2]
1 Institute of Metallic Biomaterials, Helmholtz-Zentrum Hereon, Germany. 2 Kiel, Nano, Surface, and Interface Science − KiNSIS, Kiel University, Germany 3 Department of Mathematics, Faculty of Mathematics and Natural Sciences, Kiel University, Germany

9h30-9h50 131-NVku-206 O26

How zinc becomes a stent: challenges and technological aspects in the design of new material

Anna Jarzębska[1], M Gieleciak[1], A Bigos[1], Ł Maj[1], K Trembecka[1], Ł Rogal[1], M Bieda[1], J Kawałko[2], D Wojtas[3], A Mzyk[4], J Skiba[5]

1 Institute of Metallurgy and Materials Science, Polish Academy of Sciences, Krakow, Poland, 2 Academic Centre for Materials and Nanotechnology AGH University of Science and Technology, Krakow, Poland, 3 Department of Pathophysiology, Faculty of Medicine, Masaryk University, Brno, Czechia, 4 Department of Health Technology, Danish Technical University, Kongens Lyngby, Denmark, 5 Institute of High Pressure Physics, Polish Academy of Sciences, Warszawa, Poland.

9h50-10h10 131-ZxFf-315 O27

Progression of the acute in vivo inflammatory response towards engineered bioabsorbable mg-al implants

M Connon[1], S Raguraman[2], TP Weihs[2], **Roger J Guillory II**[1]

1 Medical College of Wisconsin & Marquette University, Joint Department of Biomedical Engineering, 2 Johns Hopkins University, Department of Materials Science and Engineering,

10h10-10h30 131-j8ih-135 O28

Understanding the thrombogenicity of magnesium alloys for use in biodegradable cardiovascular stent applications

Deirdre Anderson[1], CA Baker[1], J Johnson[1], J Goldman[2], MT Hinds[1]

1 Department of Biomedical Engineering, Oregon Health & Science University, Portland, OR, USA 2 Department of Biomedical Engineering, Michigan Technological University, Houghton, MI, USA.

10h30-11h10 **Break**

Chairs: **Charles Sfeir & Guangyin Yuan**
AV support: **tbd**

11h10-11h30 131-G48V-176 O29

Pre-Clinical and Early Clinical Experiences on a New Fully Bioabsorbable Magnesium Pin for Dental Applications

Alexander Kopp[1], K Melcher[1], M Müther[1], L Silva[2], P Köcher[3], S Fuest[4], L Matthies[3], R Smeets[3]

1 Meotec GmbH, Aachen, DE 2 Porto University School of Dentistry, Porto, PT 3 University Medical Center Hamburg-Eppendorf, Department of Oral and Maxillofacial Surgery 4 Division of Regenerative Orofacial Medicine), Hamburg, DE.

11h30-11h50 131-fM4c-315 O30

Biocompatibility behaviour of surface mechanical attrition treated Mg5Zn0.2Ca magnesium alloy

Nilesh Kumbhar[1], Shubham Parihar[1], Santosh S Hosman[i1], Akiko Yamamoto[2]

1 Indian Institute of Technology Indore, Indore, 453552, India, 2 National Institute for Materials Science, Namiki 1-1, Tsukuba, Ibaraki, Japan

11h50-12h10 131-JejY-295 O31

Can growth disturbances be avoided?

RL Marek[1], **Ilona Mertelseder**[1], B Okutan[1], NG Sommer[1], AM Weinberg[1]

1 Department of Orthopaedics and Traumatology, Medical University of Graz, Graz, Austria.

12h10-12h30 131-mxas-196 O32

Two Years of mm.X in the market – Are there still influences on bioabsorption we do not understand?

Kilian Reuß[1], M Müther[2], C Ptock[2], J Seitz[1], M Gertig[1], C Kösters[3], A Kopp[1]

1 Medical Magnesium GmbH, Aachen, 2 Meotec GmbH, Aachen, DE, 3 Maria-Josef-Hospital, Greven DE

12h30 - 16h30 **Lunch & Free Time**

Chairs: **Roger Guillory & Janin Reifenrath**
AV support: **tbd**

16h30-16h50 131-SGnR-295 O33

Preclinical characterization of Mg-Zn-Ca implants biomechanics, by using ovine tibia model

O Suljevic[1], C Stahle[2], **Valentin Weigl**[1,3], F Warchomicka[3], AM Weinberg[1]

1 Department of Orthopaedics and Traumatology, Medical University of Graz, Graz, Austria.2 Bioretec Ltd., Tampere, Finland. 3 Institute of Material Science, Graz Technical University, Austria

16h50-17h10 131-wC8G-315 O34

In-vivo evaluation of performance and degradation of molybdenum temporary epicardial pacing wires in a rat model

Christian Redlich[1], M.-E. Prieto Jarabo[2], A. Schauer[3], C. Guder[1], G. Poehle[1], T. Weissgaerber[1,4], V. Adams[3], U. Kappert[5], A. El-Armouche[6], A. Linke[2], M. Wagner[2]

1 Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM, Dresden Branch 2 Clinic for Internal Medicine and Cardiology, Heart Center Dresden, Technical University Dresden 3 Laboratory of Experimental and Molecular Cardiology, Heart Center Dresden, Technical University Dresden 4 Chair of Powder Metallurgy, Institute of Materials Science, Technical University Dresden 5 Clinic for Cardiac Surgery, Heart Center Dresden, Technical University Dresden 6 Institute of Pharmacology and Toxicology, Technical University Dresden

17h10-17h30 131-tjiA-315 O35

A review of the resorbable magnesium scaffold program of Biotronik

Okechukwu Anopuo[1], A. Krause[1]

1 Cortronik GmbH, Rostock Germany.

17h30-18h00 **Break**

18:00-18:20 131-t4ua-305 O36

Stiffness-matched, Multimaterial (Resorbable and Inert) Skeletal Fixation

D Dean[1,2], L Olivas[1], D Cho[1], A Zhang[1], A Chmielewska[3], T Snyder[4], H Emam[5], J Lozier[6], K VanKoevering[7], R Skoracki[2], A Luo[1]

1 Materials Science & Engineering, 2Plastic & Reconstructive Surgery, 5Oral & Maxillofacial Surgery, 6 Veterinary Clinical Sciences,7 Otolaryngology—Head & Neck Surgery, 4 Center for Design and Manufacturing Excellence, The Ohio State University, Columbus, OH USA. 3 Multidisciplinary Research Center, Cardinal Stefan Wyszynski University, Warsaw, Poland

18h20-18h25 131-WqRE-315 SOP 20

Long-term in vivo assessment of magnesium-based biodegradable screw-plate implants in a large-animal cranio-maxillofacial defect model

Wolfgang Rubin[1], T Akhmetshina[1], AM Rich[1], J Ross[2], D Toneatti[3], K Nuss[2], B Schaller[3], JF Löffler[1]

1 Laboratory of Metal Physics and Technology, Department of Materials, ETH Zurich, Switzerland 2 Musculoskeletal Research Unit (MSRU), University of Zurich, Switzerland 3 Department of Cranio-Maxillofacial Surgery, University Hospital, Inselspital Bern, Switzerland

18h25-18h30 131-xF4C-315 SOP 21

Evaluation of iron based bioresorbable flow diverters in the rabbit elastase induced aneurysm model

Alexander Oliver[1,2], C Bilgin[1], J Cortese[1], EA Bayraktar[1], YH Ding[1], D Dai[1], M Connon[3], KD Carlson[2], AJ Griebel[4], JE Schaffer[4], D Dragomir-Daescu[2], R Kadirvel[5], RJ Guillory II[3], DF Kallmes[1]

1 Radiology 2 Physiology and Biomedical Engineering 5 Neurosurgey, Mayo Clinic, Rochester, MN. 3 Biomedical Engineering, Medical College of Wisconsin, Milwaukee, WI. 4 Fort Wayne Metals, Fort Wayne, IN

18:30-19:00 ***SOP Discussion***

19h00 **Discussion & Wrap Up**

19h30 **Conclusive Remarks**

20h00 **Congress Dinner and Farewell Party**