



# 15<sup>th</sup> Biometal

AUGUST 21 TO 27, 2023

● ● ● Grand Hôtel San Michele, Cetraro, CS, Italy



## 15<sup>th</sup> International Symposium on Biodegradable Metals

*also know as*

## **Biometal 2023 Vade-Mecum, Program & Abstract Book**

**IMPORTANT CONTACTS TO NOTE OR SAVE IN YOUR PHONE  
BEFORE DEPARTURE**

**Hotel (for communicating travel delays, answer in English) +39 0982 91012**

**Diego – all others - Phone: +1 418 717 0828**

**(what's up, messenger, kakao talk, wechat, and more 😊)**

### **Forward**

This document includes a Vade-Mecum, the program (as of Aug 15, 2023) and the Abstracts of the 15<sup>th</sup> Biometal. After 2 years of global pandemic, we will be happy to welcome you again at the Biometal2023, the 15<sup>th</sup> edition of our famous international symposium leading the global innovation on biodegradable metals. Please read these few pages, we addressed some details for you to know before attending the conference. This was especially conceived for onsite attendees.



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## The spirit of the conference

Biometal is a proven conference, annually held since 2009. The symposium is designed to emphasize its academic-conference-style with **an openly-discursive format continuously all-along the conference**, rather than a lecture and question–answer format. Therefore, attendance of the full event, onsite staying, and full-time presence are what is required for a rewarding full-immersive experience. more than 80% of our attendees are returning every year. This style will be completed by the traditional discussions and the unconventional daily free-time sessions. Consider the Biometal symposium as an Advanced Study Institute, where exchanges and discussions are privileged and stimulated by all the attendees staying in the same hotel, sharing the same dining rooms and social spaces/moments. It is a 5 inclusive day conference where attendees become trusted colleagues. The spirit of this conference includes knowledge deepening in the field of bioresorbable metals for translating ideas into clinics. It is a shared environment between early career and established scientists, industrial and academic researchers, in a stimulating context.

Behind the presentations, this symposium aims to discuss open questions on the session topics, new approaches, background knowledge, and personal views among the participants. Furthermore, discussions at the poster session will focus on specific topics and will encourage the participants to raise critical questions or help each other advancing the field of biodegradable metals.

For those onsite, the historical and pleasant environment of Hotel Alicante Golf at Playa St Juan in Alicante will complete the experience we intend to offer to the attendees. The location was especially selected for bringing the attendees in a new region to explore, know and be inspired from the culture, the weather, the lifestyle, and the surroundings. After two years of pandemic, isolation, and guaranteeing with curfew, the beaches, nautical activities, and under-the-stars cocktails and traditional tapas dining will allow the attendees to regenerate the body and inspire the soul.

For those online, we planned a fully integrated online conference between 8 am and 7 pm.

For all, we hope this will be an enriching experience, as it was for us the time and the energies we dedicated to plan and prepare it!

Have a safe travel, and we will be happy to meet you again soon in Cetraro!

*Arrivederci alla settimana prossima* 😊

Diego, Frank, Mark and Yufeng

**We wish each one and everyone a very enriching, fruitful and pleasant event!**





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## Venue

The 15th Biometal 2023 venue is the:

**Gran Hotel San Michele - Contrada Bosco,30**

**Cetraro, 87022 (Cosenza), Italy**

[Hotel Phone \(for communicating travel delays, answer in English\) +39 0982 91012](tel:+39098291012)

Plan to arrive Wednesday Aug 21, the registration includes 6 nights the hotel from that night.

**Additional nights or additional guests:** Please let us know if you require any additional nights. we have special rate for the hotel.

Cetraro, and especially the Mediterranean Coast of Calabria region, offer a safe, pleasant, touristic, typical Mediterranean-Italian-Calabrese environment for summer holidays. The coast is safe (but use prudence in the night) for walking, relaxing, enjoying the life, and feel out of your comfort zone, ... this is a typical constant in Biometal serie conferences.

The conference dress code is casual sport. Feel comfortable to dress as you prefer, and what make you receptive, and open for scientific discussion, sharing and discussing your point of view in (and out) the field, meet old, and make new, friends!

## Travel info

### From Italy, by car (*Diego's choice*)

The Gran Hotel San Michele is on the road between Paola and Diamante, a very charming road that follows the Mediterranean coast. The gate of the entrance of the hotel is shortly after Cetraro on the road for Diamante, in a zone called "Bosco". You will see an entrance with few trees, and the magnificent hotel right at the top of the road. Pay attention to the speed radar, very efficient and always on, speed is limited to 50 km/h. Paola is the biggest city on the coast and is the biggest train terminal in Calabria. It is easily reachable from Cosenza through a high-speed highway, through the charming mountain of Calabria region. Diamante is a charming village, rich in murals, charming and very touristic. ice creams, restaurants, beaches, nice wines and all the alcoholic beverages of Calabria can be found here. If you plan to visit the region, a rental car, even from Rome or Naples, can be a good option. A good highway will bring you to Cosenza, and then in 45 to 60 minutes, you will be in Cetraro.

### From International, by flight

The easiest way to fly from international is to fly on:

- Rome Fiumicino International Airport (code FCO)



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- Naples Capodichino International Airport (code NAP)
- Lamezia Terme International Airport (code SUF)

All three airports offer car rentals from all major companies.

From **Rome** Fiumicino International and from **Naples** Capodichino International Airport we recommend you rent a car (if you are in a group or wish to visit the region, parking is available at the Hotel) **OR** pursue by train to Paola Train Station. Paola train station is the closest train station, at only 24 km from the Gran Hotel San Michele. After landing in Rome or Naples, you can reach Termini Train or Central Train stations in Roma or Naples, easily with a train or a bus in 30-35 (Rome) or 10-15 minutes (Naples). You can reach Paola train station from these stations with a high-speed train (see below, reservation is required, and a ticket must be booked and bought in advance). From Paola train station, a shuttle will bring you to the Gran Hotel San Michele, in Cetraro (30 min approx). Be sure to provide us with the time/number/and name of the train that is supposed to bring you to Paola. We will organize the shuttle waiting for you, for a nominal price of 20€ round trip.

If you land at **Lamezia Terme** International Airport, a shuttle will bring you to the Gran Hotel San Michele, in Cetraro (90 min approx). Lamezia Terme Intl Airport is 90 km from the Gran Hotel San Michele. Be sure to provide us with the company/flight number/and the time that you expect to land in Lamezia Terme. We will organize the shuttle waiting for you, for a nominal price of 40€ round trip.

You will be asked to pay the cost of the shuttle onsite, in cash (no credit card machine available, thanks for your collaboration), at the conference registration desk, at the time your identification badge will be remitted to you. A receipt will be provided.

Our secretariat contacted you asking you to fill a table providing us with your travel details, to guarantee your shuttle. if you will need a shuttle and did not send yet any info about it, please do not expect a shuttle waiting for you in Paola Train Station or Lamezia Terme Airport. Please send it now to [jasmine.lebleu@conferium.com](mailto:jasmine.lebleu@conferium.com).





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## Program at a Glance

The following is the **advanced** program as of Aug 15, 2023. Times and activities will follow the online program.

### Symposium Program at a glance

	Monday, August 21 <sup>st</sup> Arrival	Tuesday, August 22 <sup>nd</sup> Workshop	Wednesday, August 23 <sup>rd</sup> Day 1	Thursday, August 24 <sup>th</sup> Day 2	Friday, August 25 <sup>th</sup> Day 3	Saturday, August 26 <sup>th</sup> Day 4	Sunday, August 27 <sup>th</sup> Departure
08:00							
08:30		7:30 - 08:45 Breakfast	7:00 - 8:00 Breakfast	7:30 - 08:45 Breakfast	7:30 - 08:45 Breakfast	7:30 - 08:45 Breakfast	7:30 - 9:30 Breakfast
09:00		09:00 - 13:00 Workshop	08:15 - 13:00 S1, Metals 1	09:00 - 12:00 Think Tank	09:00 - 13:10 S3, Corrosion	09:00 - 13:10 S5, In Vivo 1	06:00 - 12:00 Departure
09:30							
10:00							
10:30							
11:00							
11:30		10:45 - 11:15 Break	10:40 - 11:10 Break	10:00 - 10:30 Break	10:50 - 11:20 Break	11:00 - 11:30 Break	
12:00							
12:30				12:00 - 19:00 Lunch and Excursions or Free Time			
13:00							
13:30		13:00 - 15:00 Lunch and Free Time	13:00 - 15:00 Lunch and Free Time		13:10 - 15:30 Lunch and Free Time	13:10 - 16:00 Lunch and Free Time	
14:00							
14:30							
15:00							
15:30		15:00 - 19:15 Workshop	15:00 - 19:00 S2, Metals 2		15:30 - 19:15 S4, In Vitro		
16:00	16:00 - 20:00 Registration					16:00 - 18:10 S6, In Vivo 2	
16:30							
17:00		17:00 - 17:30 Break	16:50 - 17:20 Break		17:10 - 17:40 Break	17:20 - 17:50 Break	
17:30							
18:00	18:00 - 20:00 Welcome Cocktail/Dinner					17:50 - 19:00 Discussion & Conclusive Remarks	
18:30							
19:00							
19:30			19:30 - 21:00 Dinner	20:00 - 22:00 Calabrese Dinner	19:30 - 21:00 Dinner	19:30 - 00:30 Dinner and Farewell Party	
20:00		20:00 - 21:00 Dinner					
20:30							
21:00			21:00 - 00:00 Poster Night 1 (even number)		21:00 - 00:00 Poster Night 2 (odd number)		
21:30							
22:00							
22:30							
23:00							
23:30							
00:00							



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## Preliminary Program

During the conference, the detailed **final** program will be available online, at [www.biodegradablemetals.org](http://www.biodegradablemetals.org)

We invite you to review this advanced (but not necessarily final) program of the conference, and especially the information that concerns yourself and your presentation. If you notice any discrepancy, or if you have any ideas, comments or suggestions, please contact Diego ([diego.mantovani@gmn.ulaval.ca](mailto:diego.mantovani@gmn.ulaval.ca)) & Vinicius ([vinicius.de-oliveira-fidelis-sales.1@ulaval.ca](mailto:vinicius.de-oliveira-fidelis-sales.1@ulaval.ca)).

## Tuesday, August 22nd, 2023

### Workshop

9h00                      **Introductory remarks (DM, YZ, FW, CHSH)**

**Chairs:**                      **Frank Witte & Yufeng Zheng**

**AV support:**                      **tbd**

- |                    |    |  |
|--------------------|----|--|
| 9h15-10h00         | W1 | <b>Additive manufacturing anatomical magnesium alloy prosthesis for repairing periarticular fractures: from animal experiments to clinical studies</b><br><u>Yun Tian</u><br><i>Third Hospital of Peking University, China</i> |
| 10h00-10h45        | W2 | <b>Post-pandemic challenges in biomaterial research at KIST (to be confirmed)</b><br><u>Chris Hyung-Seop Han</u><br><i>Korea Institute of Science and Technology, South Korea</i>  |
| <b>10h45-11h15</b> |    | <b>Break</b>   |
| 11h15-12h00        | W3 | <b>Development of reactive oxygen species (ROS) scavenging material for ischemia-reperfusion injury (IRI) therapy</b><br><u>Kwon Hee-Young</u><br><i>Korea Institute of Science and Technology (KIST), South Korea</i>         |
| 12h00-12h30        | W4 | <b>R&amp;D and Commercialization of INNOSYS for Orthopaedic Medical Device</b><br><u>Hwala Chul Jung, R&amp;D Director</u><br><i>Inno-Sys, South Korea</i>   |





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- 12h30-13h00 W5 **R&D and Regulatory Steps of Biotech Medical Devices**  
[Kimmo Lähteenkorva](#) & [Timo Lehtonen](#)  
*Biotech, Tampere, Finland*
- 13h00 Lunch & Free Time**
- Chairs:** [Guangyin Yuan](#) & [Chris Hyung-Seop Han](#)  
**AV support:** *tbd*
- 15h30-16h15 W6 **Nano-Gel-Nano vaccines for immune modulation to treat cancers**  
[Young-Min Kim](#)  
*Korea Institute of Science and Technology, South Korea*
- 16h15-17h00 W7 **ZnP-coated Zn alloy membrane with excellent mechanical, antibacterial, biocompatible, and osteogenesis properties for biomedical applications**  
[Cuie Wen](#)  
*School of Engineering, RMIT University, Australia*
- 16h30-17h15 W8 **Magnesium Alloy in Implant Dentistry**  
[Han Jianmin](#) & [Chuanbin Guo](#)  
*Peking University School and Hospital of Stomatology, China*
- 17h15-17h45 Break**
- 17h45-18h30 W9 **Current status of R&D and regulatory science on biodegradable metal medical devices in China**  
[Yufeng Zheng](#)  
*Peking University, China*
- 18h30-19h15 W10 **Direct cellular penetration of supramolecular nanomachine via molecular movements**  
[Youngdo Jeong](#)  
*Korea Institute of Science and Technology, South Korea*
- 19h15 Discussion**
- 19h30 End of the UPDATE Workshop at the 15th Biometal 2023**
- 20h00-21h00 Dinner**



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## Wednesday, August 23rd, 2023

### Session 1 – Metals

**Chairs:** Norbert Hort & Magdalena Bieda-Niemiec

**AV support:** tbd

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

#### 8h15-8h30 Introductory remarks (DM, FW)

8h30-9h10 K1 **A novel biodegradable high nitrogen iron alloy**  
[Ke Yang](#)  
*Institute of Metal Research, Chinese Academy of Sciences, China*

9h10-9h30 O1 **Iron-molybdenum composite wires for thin vascular devices**  
[Adam Griebel](#)  
*Fort Wayne Metals, United States of America*

9h30-9h50 O2 **Mechanical properties, in vitro biodegradable behaviour, biocompatibility and osteogenic ability of additively manufactured Zn-0.8Li-0.1Mg alloy scaffolds**  
[Aobo Liu](#)  
*Tsinghua University, China*

9h50-10h10 O3 **Multicomponent zinc alloys with high mechanical performance - challenges and solutions**  
[Magdalena Bieda-Niemiec](#)  
*Institute of Metallurgy and Materials Science of Polish Academy of Sciences, Poland*

10h10-10h15 SOP1/ P2 **Effect of additive manufacturing energy on the evolution of microstructure, mechanical properties, and degradation behavior of porous Fe-Mn-C alloys**  
[Quang Nguyen Cao](#)  
*Laval University, Canada*

10h15-10h20 SOP2/ P4 **Mechanical properties and degradation behavior of sputtered amorphous ZnMgZr thin films for biodegradable devices**  
[Cristiano Poltronieri](#)





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*Université Sorbonne Paris Nord, France*

10h20-10h25	SOP3/ P6	<b>Microstructural evaluation and mechanical properties of bioabsorbable as-cast hypoperitectic Zn-based alloys</b> <a href="#">Ana Laura Ramirez-Ledesma</a> <i>Universidad Nacional Autonoma de Mexico, Mexico</i>
10h25-10h40		<b>SOP Discussion</b>
10h40-11h10		<b>Break</b>
<b>Chairs:</b>		<b>David Dean &amp; Adele Carrado</b>
<b>AV support:</b>		<b>tbd</b>
11h10-11h30	O4	<b>Graphene nanoplatelet-reinforced zinc matrix composites for implant applications</b> <a href="#">Yuncang Li</a> <i>RMIT University, Australia</i>
11h30-11h50	O5	<b>Investigation of the ultra-structure around Mg implant alloys utilising three-dimensional imaging methods</b> <a href="#">Florian Wieland</a> <i>Helmholtz Zentrum Hereon, Germany</i>
11h50-12h10	O6	<b>Effect of high temperature oxidation on WE43 magnesium alloy fabricated by laser powder bed fusion</b> <a href="#">Peng Wen</a> <i>Tsinghua University, China</i>
12h10-12h30	O7	<b>Additively manufactured biodegradable ZnMg alloy</b> <a href="#">Yageng Li</a> <i>University of Science and Technology Beijing, China</i>
12h30-12h35	SOP4/ P8	<b>Electroforming process of Fe-Mn alloys for biomedical application using choline-chloride/urea deep eutectic solvent</b> <a href="#">Vinicius Sales</a> <i>Laval University, Canada</i>
12h35-12h40	SOP5/ P10	<b>Investigation of the microstructure, mechanical properties, and corrosion behavior of a highly oxidized biodegradable FeMnC sintered steel for biomedical applications</b> <a href="#">Abdelhakim Chergaoui</a>



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Laval University, Canada

12h40-12h50

**SOP Discussion**

13h00

**Lunch & Free Time**

## Session 2 – Metals

**Chairs:**

**Alberto Coda & Lili Tang**

**AV support:**

tbd

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

15h00-15h40

K2

**How accurate does accuracy have to be?**

[Norbert Hort](#)

*Helmholtz Zentrum Hereon, Germany*

15h40-16h00

O8

**Powder bed fusion - laser beam of biomedical Mg alloys: Challenges and possibilities**

[Hanna Nilsson](#)

*Swerim AB, Sweden*

16h00-16h20

O9

**Binder based MIM vs. 3D-printing (FGF) approach of Mg-6Gd for biomedical application**

[Martin Wolff](#)

*Helmholtz Zentrum Hereon, Germany*

16h20-16h25

SOP6/ P12

**Limited input metal balance optimization (LIMBO): how low can you go?**

[Adam Griebel](#)

*Fort Wayne Metals, United States of America*

16h25-16h30

SOP7/ P14

**Additive manufacturing as a means to tailor the texture and mechanical behaviour of a biodegradable magnesium WE43 alloy**

[Francesco D'Elia](#)

*Uppsala University, Sweden*

16h30-16h35

SOP8/ P16

**Nanosized biodegradable powder fabrication by nanosecond pulsed laser ablation for biodegradable metal applications**

[Carlo Paternoster](#)

*Laval University, Canada*





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16h35-16h50

**SOP Discussion**

16h50-17h20

**Break**

**Chairs:**  
**AV support:**

**Heinz Palkowski & Marta Maria Multigner**  
**tbd**

17h20-17h40 O10

**Rotary barrel finishing for magnesium sample preparation**  
[Norbert Hort](#)  
*Helmholtz Zentrum Hereon, Germany*

17h40-18h00 O11

**Magnesium-Based Nanocomposites for Bone Implant Applications**  
[Hamdy Ibrahim](#)  
*University of Tennessee Chattanooga, United States of America*

18h00-18h20 O12

**Application of two new Mg-Li-Y alloy wires in a novel bioresorbable vascular scaffold**  
[Kenneth MacLeod](#)  
*The University of Strathclyde, United Kingdom*

18h20-18h25 SOP9/ P18

**Effect of storage and reuse on powder and bulk specimen properties for powder bed fusion - laser beam of a WE43 magnesium alloy**  
[Giulio Cavaliere](#)  
*Uppsala University, Sweden*

18h25-18h30 SOP10/ P20

**Mechanical assessment of engineered porous WE43 alloy coupons produced by Laser Powder Bed Fusion, a control for bone reconstruction device applications**  
[Luis H. Olivas-Alanis](#)  
*The Ohio State University, United States of America*

18h30-18h35 SOP11/ P22

**Research on grain boundary segregation and partial nanograins in the biodegradable Mg alloy**  
[Wenhui Wang](#)  
*Shanghai Jiao Tong University, China*

18h35-18h40 SOP12/ P24

**Metal-Calcium phosphate biodegradable composites for load-bearing orthopaedic applications**  
[Edgar B. Montufar](#)  
*Brno University of Technology, Czech Republic*



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18h40-19h00

**SOP Discussion**

19h30-21h00

**Dinner**

21h00-midnight

**Poster Session 1 (even numbers)**

## **Metals**

SOP1 / P2	<b>Effect of additive manufacturing energy on the evolution of microstructure, mechanical properties, and degradation behavior of porous Fe-Mn-C alloys</b> <a href="#">Quang Nguyen Cao</a> <i>Laval University, Canada</i>
SOP2 / P4	<b>Mechanical properties and degradation behavior of sputtered amorphous ZnMgZr thin films for biodegradable devices</b> <a href="#">Cristiano Poltronieri</a> <i>Université Sorbonne Paris Nord, France</i>
SOP3 / P6	<b>Microstructural evaluation and mechanical properties of bioabsorbable as-cast hypoperitectic Zn-based alloys</b> <a href="#">Ana Laura Ramirez-Ledesma</a> <i>Universidad Nacional Autonoma de Mexico, Mexico</i>
SOP4 / P8	<b>Electroforming process of Fe-Mn alloys for biomedical application using choline-chloride/urea deep eutectic solvent</b> <a href="#">Vinicius Sales</a> <i>Laval University, Canada</i>
SOP5 / P10	<b>Investigation of the microstructure, mechanical properties, and corrosion behavior of a highly oxidized biodegradable FeMnC sintered steel for biomedical applications</b> <a href="#">Abdelhakim Chergaoui</a> <i>Laval University, Canada</i>
SOP6 / P12	<b>Limited input metal balance optimization (LIMBO): how low can you go?</b> <a href="#">Adam Griebel</a> <i>Fort Wayne Metals, United States of America</i>
SOP7 / P14	<b>Additive manufacturing as a means to tailor the texture and mechanical behaviour of a biodegradable magnesium WE43 alloy</b> <a href="#">Francesco D'Elia</a>





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*Uppsala University, Sweden*

- SOP8/ P16      **Nanosized biodegradable powder fabrication by nanosecond pulsed laser ablation for biodegradable metal applications**  
[Carlo Paternoster](#)  
*Laval University, Canada*
- SOP9/ P18      **Effect of storage and reuse on powder and bulk specimen properties for powder bed fusion - laser beam of a WE43 magnesium alloy**  
[Giulio Cavaliere](#)  
*Uppsala University, Sweden*
- SOP10/ P20      **Mechanical assessment of engineered porous WE43 alloy coupons produced by Laser Powder Bed Fusion, a control for bone reconstruction device applications**  
[Luis H. Olivás-Alanis](#)  
*The Ohio State University, United States of America*
- SOP11/ P22      **Research on grain boundary segregation and partial nanograins in the biodegradable Mg alloy**  
[Wenhui Wang](#)  
*Shanghai Jiao Tong University, China*
- SOP12/ P24      **Research on grain boundary segregation and partial nanograins in the biodegradable Mg alloy**  
[Edgar B. Montufar](#)  
*Brno University of Technology, Czech Republic*
- P26              **Laser-Induced Single-Step Coating Of Hydroxyapatite On Sps-Consolidated Fe And Fe-Mg Alloys**  
[Rafael Guillermo Estrada Moyano](#)  
*CENIM-CSIC, URJC, Spain*
- P28              **Biodegradable zinc and zinc-magnesium alloy subjected to thermal shocks - microstructural and mechanical aspect**  
[Magdalena Wróbel](#)  
*Polish Academy of Sciences, Poland*
- P30              **Titanium surface Coated by polypyrrole /Gelatin-methyl acrylic Electroconductive Hydrogel for Bone Formation**  
[Guoxin Tan](#)



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*Guandong University of Technology, China*

P32

**Designing high performance Fe-Mn-Si biodegradable alloys by quaternary element additions**

[Alberto Coda](#)

*CNR ICMATE Lecco, Italy*

P34

**Degradative response of Fe-Mn-C alloys in albumin-supplemented pseudo-physiological solutions**

[Maria Laura Gatto](#)

*Laval University, Canada*

## Thursday, 24 August 2023

9h00-12h00

**Think Tank on Accelerating Translation in Biometals or excursions**

12h00-19h00

**Lunch(box) and Excursions or Free Time**

20h00

**Calabrese Dinner**

## Friday, 25 August 2023

### Session 3 – Corrosion

**Chairs:**

**Ke Yang & Ana Laura Ramirez**

**AV support:**

tbd

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

9h00-9h40

K3

**Can We Make Better Use of Magnesium Degradation?**

[Jia Pei](#)

*Shanghai Jiao Tong University, China*

9h40-10h00

O13

**Toward a mechanistic understanding of corrosion at the magnesium-biology interface through trace element analysis**

[Maxence Hannard](#)

*Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland*





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10h00-10h20	O14	<b>Fatigue and corrosion fatigue behaviors of biodegradable Zn alloys</b> <a href="#">Huafang Li</a> <i>University of Science and Technology Beijing, China</i>
10h20-10h25	SOP13/ P1	<b>Influence of the drying process after electrodeposition of coating on AZ31</b> <a href="#">Purificación Tamurejo Alonso</a> <i>University Institute of Biosanitary Research of Extremadura (INUBE), Spain</i>
10h25-10h30	SOP14/ P3	<b>Characterisation of a MgZnCa wire after corroding in 'harsh environment'</b> <a href="#">Petra Maier</a> <i>University of Applied Sciences Stralsund, Germany</i>
10h30-10h35	SOP15/ P5	<b>Sol-gel CaP deposition on magnesium alloy skeletal fixation devices for time-certain commencement of bioresorption</b> <a href="#">Michela Sanguedolce</a> <i>University of Calabria - Department of Mechanical, Energy and Management Engineering, Italy</i>
10h35-10h50		<b>SOP Discussion</b>
10h50-11h20		<b>Break</b>
<b>Chairs:</b>		<b>Adam Griebel &amp; Berit Zeller-Plumhoff</b>
<b>AV support:</b>		<b>tbd</b>
11h20-11h40	O15	<b>Influence of MnO inclusions in powder-processed FeMn alloys on their long-term corrosion behaviour in HBSS</b> <a href="#">Joseph Buhagiar</a> <i>University of Malta, Malta</i>
11h40-12h00	O16	<b>Characterisation of time dependent corrosion by <math>\mu</math>CT-analysis and calorimetry</b> <a href="#">Petra Maier</a> <i>University of Applied Sciences Stralsund, Germany</i>
12h00-12h20	O17	<b>In situ investigation of stress-corrosion cracking in biodegradable implant material using SR<math>\mu</math>CT</b> <a href="#">Birte Hindenlang</a> <i>Helmholtz-Zentrum Hereon, Germany</i>



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12h20-12h40	O18	<b>Plasma Treatment of Mg alloys for Biomedical Applications Improved the Degradation Rate of Magnesium Alloys</b> <a href="#">Masoud Shekarqoftar</a> <i>Laval University, Canada</i>
12h40-12h45	SOP16/ P7	<b>Microstructure, mechanical properties and corrosion behaviours of Mg and Zn alloys manufactured by LPBF for biomedical applications</b> <a href="#">Muzi Li</a> <i>IMDEA Materials, Spain</i>
12h45-12h50	SOP17/ P9	<b>Effect of coating time on the in vitro degradation behavior and mechanical integrity of HA coated biodegradable ZK60 alloy</b> <a href="#">Van Tuan Le</a> <i>Hanoi University of Science and Technology, Vietnam</i>
12h50-12h55	SOP18/ P11	<b>Tuning of phosphate-based Plasma Electrolytic Oxidation bioactive coatings on AZ31 magnesium for bone applications</b> <a href="#">Matteo Pavarini</a> <i>Politecnico di Milano, Italy</i>
12h55-13h10		<b>SOP Discussion</b>
13h10		<b>Lunch &amp; Free Time</b>
<b>Session 4 – In vitro</b>		
<b>Chairs:</b>		<b>Regine Willumeit-Romer &amp; Joseph Buhagiar</b>
<b>AV support:</b>		<b>tbd</b>
<i>Assignment Code: K=Keynote; O=Oral presentation; SOP=Short oral presentation; P=Poster</i>		
15h30-16h10	K4	<b>Resorbable molybdenum for temporary cardiac pacing leads</b> <a href="#">Christian Redlich</a> <i>Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM, Branch Lab Dresden, Germany</i>
16h10-16h30	O19	<b>Personalized skeletal fixation with resorbable metal components</b> <a href="#">David Dean</a> <i>The Ohio State University, United States of America</i>
16h30-16h50	O20	<b>Additive manufacturing of biodegradable Mg1%Y-based ureteral stents: Understanding the corrosion under simulated urinary tract environment</b>





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[Margarida Pacheco](#)

*3Bs Research Group on Biomaterials, Biodegradables and Biomimetics from the University of Minho, Portugal*

16h50-17h10 O21

**Exploring the biodegradability and biocompatibility of candidate metallic intravascular stent materials using microCT and CECT**

[Lisa Leyssens](#)

*UCLouvain, Belgium*

**17h10-17h40**

**Break**

**Chairs:**

**Kenneth MacLeod & Cecilia Persson**

**AV support:**

**tbd**

17h40-18h00 O22

**How plastic deformations affects performance of absorbable zinc alloys? A focus on biological behaviour**

[Anna Jarz'bska](#)

*Institute of Metallurgy and Material Science PAS, Poland*

18h00-18h05 SOP19/ P17

**Highly biocompatible Mg-Ca alloy with enhanced bioactivity towards bone regeneration**

[Niccolò De Berardinis](#)

*Uppsala University, Sweden*

18h05-18h10 SOP20/ P19

**Insights into Mg degradation with X-ray ptychographic computed tomography**

[Tatiana Akhmetshina](#)

*Laboratory of Metal Physics and Technology, ETH Zurich, Switzerland*

18h10-18h15 SOP21/ P21

**The Hydrogen Released from Biodegradable Mg to Regulate CAFs Reducing drug Resistance in Gallbladder Cancer**

[Rui Zan](#)

*Zhongshan Hospital, Fudan University, China*

18h15-18h20 SOP22/ P23

**Critical assessment of direct contact cytotoxicity assay based on the in vitro studies on biodegradable Zn-Ag-Mg alloys**

[Maria Watroba](#)

*Empa Swiss Federal Laboratories for Materials Science and Technology, Switzerland*

**18h20-18h40**

**SOP Discussion**



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18h40-18h45	SOP23/ P35	<b>Improved fracture healing and concurrent bone-inhibitory effects from intramedullary magnesium implants: observations in a rat femoral model</b> <a href="#">Yu Sun</a> <i>Helmholtz-Zentrum Hereon, Germany</i>
18h45-18h50	SOP24/ P37	<b>Vascular biocompatibility of Mg-Li-Y wires in the murine aorta</b> <a href="#">Roger Guillory II</a> <i>Medical College of Wisconsin, United States of America</i>
18h50-18h55	SOP25/ P39	<b>Degradable magnesium and its surface modification as tumor embolic agent for transcatheter arterial chemoembolization</b> <a href="#">Xinbao Kang</a> <i>State Key Laboratory of Metal Matrix Composites, School of Materials Science and Engineering, Shanghai Jiao Tong University, China</i>
18h55- 19h00	SOP26/ P45	<b>Introducing nanoporous metallic membranes for improved stem cell delivery and function: A collection of in vitro and in vivo studies</b> <a href="#">Thomas Webster</a> <i>NanoVault, United States of America</i>
19h00-19h20		<b>SOP Discussion</b>
19h30-21h00		<b>Dinner</b>
21h00-midnight		<b>Poster Session 2 (odd numbers)</b>
<b>Corrosion</b>		
	SOP13/ P1	<b>Influence of the drying process after electrodeposition of coating on AZ31</b> <a href="#">Purificación Tamurejo Alonso</a> <i>University Institute of Biosanitary Research of Extremadura (INUBE), Spain</i>
	SOP14/ P3	<b>Characterisation of a MgZnCa wire after corroding in 'harsh environment'</b> <a href="#">Petra Maier</a> <i>University of Applied Sciences Stralsund, Germany</i>
	SOP15/ P5	<b>Sol-gel CaP deposition on magnesium alloy skeletal fixation devices for time-certain commencement of bioresorption</b>



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[Michela Sanguedolce](#)

*University of Calabria - Department of Mechanical, Energy and Management Engineering, Italy*

SOP16/ P7

**Microstructure, mechanical properties and corrosion behaviours of Mg and Zn alloys manufactured by LPBF for biomedical applications**

[Muzi Li](#)

*IMDEA Materials, Spain*

SOP17/ P9

**Effect of coating time on the in vitro degradation behavior and mechanical integrity of HA coated biodegradable ZK60 alloy**

[Van Tuan Le](#)

*Hanoi University of Science and Technology, Vietnam*

SOP18/ P11

**Tuning of phosphate-based Plasma Electrolytic Oxidation bioactive coatings on AZ31 magnesium for bone applications**

[Matteo Pavarini](#)

*Politecnico di Milano, Italy*

P13

**Magnetic field influence on corrosion behaviour of pure Fe in Hanks' solution**

[Marta Multigner](#)

*Universidad Rey Juan Carlos, Spain*

P15

**Magnetic fields: A new method to modify the corrosion rate of biodegradable metals?**

[Sandra Cifuentes](#)

*Universidad Rey Juan Carlos, Spain*

## In vitro

SOP19/ P17

**Highly biocompatible Mg-Ca alloy with enhanced bioactivity towards bone regeneration**

[Niccolò De Berardinis](#)

*Uppsala University, Sweden*

SOP20/ P19

**Insights into Mg degradation with X-ray ptychographic computed tomography**

[Tatiana Akhmetshina](#)

*ETH Zurich, Switzerland*

SOP21/ P21

**The Hydrogen Released from Biodegradable Mg to Regulate CAFs Reducing drug Resistance in Gallbladder Cancer**





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[Rui Zan](#)

*Zhongshan Hospital, Fudan University, China*

SOP22/ P23

**Critical assessment of direct contact cytotoxicity assay based on the in vitro studies on biodegradable Zn-Ag-Mg alloys**

[Maria Watroba](#)

*Empa Swiss Federal Laboratories for Materials Science and Technology, Switzerland*

P25

**Coating of a biodegradable magnesium alloy for rapid action against *S. aureus* after ultraviolet exposition**

[Purificación Tamurejo Alonso](#)

*University Institute of Biosanitary Research of Extremadura (INUBE), Spain*

P27

**Fatigue behaviour of biodegradable Zn-0.3Li alloy**

[Dandan Xia](#)

*Peking University School and Hospital of Stomatology, China*

P29

**Design and antimicrobial performance of HT-Ag-PL composite coatings on magnesium alloys**

[Ying Zhao](#)

*Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, China*

P31

**Effect of Zn, Mg, and Ca in solution and released from 3D-printed scaffolds on musculoskeletal cells**

[Blanca Limones Ahijón](#)

*Instituto IMDEA materiales, Spain*

## In vivo

SOP23/ P33

**Improved fracture healing and concurrent bone-inhibitory effects from intramedullary magnesium implants: observations in a rat femoral model**

[Yu Sun](#)

*Helmholtz-Zentrum Hereon, Germany*

SOP24/ P35

**Vascular biocompatibility of Mg-Li-Y wires in the murine aorta**

[Roger Guillory II](#)

*Medical College of Wisconsin, United States of America*

SOP25/ P37

**Degradable magnesium and its surface modification as tumor embolic agent for transcatheter arterial chemoembolization**



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- Xinbao Kang**  
*State Key Laboratory of Metal Matrix Composites, School of Materials Science and Engineering, Shanghai Jiao Tong University*  
**Tissue plasminogen activator-loaded magnetoacoustic discoidal polymeric particles for thrombolysis**
- P39
- Sungmin Han**  
*Korea Institute of Science and Technology, South Korea*
- P41
- Novel in-situ elemental imaging of bioabsorbable metal vascular implants**
- Roger Guillory II**  
*Medical College of Wisconsin, United States of America*
- P43
- The important role of biodegradable magnesium metal in mediating subperiosteal osteogenesis through the bone immune microenvironment**
- Liangwei Chen**  
*Peking University School and Hospital of Stomatology, China*
- SOP26/P45
- Introducing nanoporous metallic membranes for improved stem cell delivery and function: A collection of in vitro and in vivo studies**
- Thomas Webster**  
*NanoVault, United States of America*

## Saturday, August 26, 2023

### Session 5 – In Vivo

**Chairs:** Frank Witte & Sandra Cifuentes

**AV support:** tbd

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

- 9h00-9h40      K5      **Bioresorbable flow diverters for the treatment of intracranial aneurysms**  
**Alexander Oliver**  
*Mayo Clinic, United States of America*
- 9h40-10h00      O23      **Ex vivo thrombosis study of pure biodegradable metals and clinical cardiovascular alloys for vascular stent applications**  
**Anderson Deirdre**  
*Oregon Health & Science University, United States of America*



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10h00-10h20	O24	<b>Osteosynthesis with bioabsorbable magnesium - experiences and learnings from our first 1000 cases</b> <a href="#">Alexander Kopp</a> <i>MEOTEC, Germany</i>
10h20-10h40	O25	<b>From dynamic in vivo to multimodal ex vivo: exploring comprehensive approaches in preclinical research of magnesium implants for fracture repair</b> <a href="#">Yu Sun</a> <i>Helmholtz-Zentrum Hereon, Germany</i>
10h40-11h00	O26	<b>3D micro and nanoscale analysis of bone morphology surrounding Mg-10Gd and Ti implants</b> <a href="#">Berit Zeller-Plumhoff</a> <i>Helmholtz-Zentrum Hereon, Germany</i>
<b>11h00-11h30</b>		<b>Break</b>
<b>Chairs:</b>		<b>Monica Hinds &amp; Roger Guillory II</b>
<b>AV support:</b>		<b>tbd</b>
11h30-11h50	O27	<b>Magnesium-containing biomimetic hydrogel facilitates in-situ cartilage regeneration under OA</b> <a href="#">Han Wu</a> <i>Shanghai Jiao Tong University, China</i>
11h50-12h10	O28	<b>Measurements of strain, temperature, and pH on magnesium and titanium plates in vivo during fracture healing in sheep</b> <a href="#">Andrea M. Rich</a> <i>Laboratory of Metal Physics and Technology, ETH Zurich, Switzerland</i>
12h10-12h30	O29	<b>The novel magnesium alloy suture anchor promotes fibrocartilaginous entheses regeneration in rabbit rotator cuff repair</b> <a href="#">Lili Tan</a> <i>Institute of Metals Research, Chinese Academy of Sciences, China</i>
12h30-12h50	O30	<b>Biocompatibility of bioabsorbable metallic molybdenum</b> <a href="#">Maria Kwesiga</a> <i>Grand Valley State University, United States of America</i>





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12h50-13h10

O31

**In vivo and in vitro biocorrosion of iron molybdenum composite bioabsorbable wires**

[Roger Guillory II](#)

*Medical College of Wisconsin, United States of America*

13h10

**Lunch & Free Time**

## Session 6 – In Vivo

**Chairs:**

**Charles Sfeir & Jia Pei**

**AV support:**

**tbd**

15h:40-16h00

O32

**Local Release of Magnesium and CGRP Accelerates Bone Repair in Calvarial Defects With or Without Periosteum.**

[Charles Sfeir](#)

*University of Pittsburgh, United States Of America*

16h00-16h20

O33

**Lithium-induced optimization mechanism for an ultrathin-strut biodegradable Zn-based vascular scaffold**

[Hongtao Yang](#)

*Beihang University, China*

16h20-16h40

O34

**Influence of subchondral implantation of small magnesium cylinder on cartilage and bone in an OA-rabbit model**

[Nina Angrisani](#)

*Hannover Medical School, Clinic for Orthopedic Surgery, NIFE, Germany*

16h40-17h00

O35

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

[Wolfgang Rubin](#)

*Laboratory of Metal Physics and Technology, ETH Zurich, Switzerland*

17h00-17h20

O36

**Biosafety and efficacy evaluation of a biodegradable Zn-Cu-Mn-based stent in porcine Coronary Artery**

[Yi Qian](#)

*School of Materials Science and Engineering, Shanghai Jiao Tong University, China*

17h20-17h50

**Break**

17h50-18h45

**Discussion on the 15th Biometal 2023 (FW, DM, CHSH, YZ)**

18h45-19h00

**Conclusive Remarks & 16th Biometal 2024 Venue**



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19h30-00h30

*Conference Farewell Party*