

MIC-STAND

24 July '24

FACULDADE DE CIÊNCIAS
// LISBOA

Mitigation of Microbiologically
Influenced Corrosion:
Towards Scientific & Industrial
Standardization

26



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Organizing Committee

Dr. Elisabete R. Silva

**BioISI, DQB, Faculty of Sciences
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Dr. Noelia L. Garcia

**BioISI, Faculty of Sciences
of the University of Lisboa,
Lisboa/Portugal.**



Dr. Ana Carapeto

**BioISI , DF, Faculty of Sciences
of the University of Lisboa, Lisboa/Portugal.**



WELCOME MESSAGE

Dear Esteemed Participants,

We are delighted to welcome and invite you to take part in the MIC-STAND hybrid meeting 2024, hosted by the Faculdade de Ciências at the University of Lisboa in Portugal.

Set against the picturesque backdrop of Lisboa, this hybrid meeting is prepared to be an encouraging exploration of challenges and breakthroughs in Microbially Influenced Corrosion (MIC) Mitigation. Our core mission is to foster dynamic discussions within the expansive MIC community, bringing together young researchers, high-level scientists, industry stakeholders, policymakers, and regulators.

Our inclusive approach emphasizes cross-disciplinary and interdisciplinary collaboration, fostering an environment where the exchange of knowledge flourishes. The focal point of our discussions will span the entire spectrum of MIC Mitigation, covering Diagnosis, Monitoring, and Mitigation.

Beyond the exchange of ideas, this meeting aspires to be a catalyst for innovative, sustainable, and environmentally friendly strategies in the battle against MIC. Our goal is to translate these strategies into practical, real-world applications that make a tangible impact.

Join us in Lisboa for a journey of exploration, collaboration, and transformation. Let's collectively shape the future of MIC Mitigation!

Warm regards,

Lisbon, June 20, 2024

SCIENTIFIC COMMITTEE

// **Dr. Andrea Koert** -----

Principal Investigator

Bundesanstalt für Materialforschung und -prüfung
(BAM), Berlin/Germany.



// **Professor Torben L. Skovhus** -----

Docent and Project Manager, PhD

VIA University College, Denmark.



// **Dr. Richard B. Eckert** -----

Principal Owner

Microbial Corrosion Consulting, LLC, USA



// **Professor Scott Wade** -----

**Associate Professor, Swinburne University
of Technology, Australia**

School of Science, Computing
and Engineering Technologies

Swinburne University of Technology, Australia



// **Dr. Régine BASSEGUY** -----

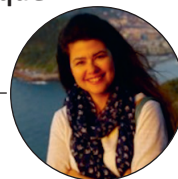
Senior Researcher – CNRS, Toulouse/France

CNRS – Centre national de la recherche scientifique



// **Dr. Maria Salta** -----

Endures B.V., Den Helder, The Netherlands



// Dr. Nanni Noël-Hermes -----
Endures B.V., Den Helder, The Netherlands



// Professor Guangming Jiang -----
Associate Professor
University of Wollongong, Australia



// Eng. Maria João Marques -----
Corrosion Engineer
Université de Toulouse, CNRS, INPT, UPS,
Toulouse, France
LNEG Laboratório Nacional de Energia
e Geologia, Lisboa, Portugal



// Dr. Vanessa Z. Luís -----
Chief Molecular Scientist
Global Biosciences Center,
SGS, Lisboa/Portugal



// Dr. Mónica M. Neves -----
Chief Microbiologist
Global Biosciences Center, SGS, Lisboa/Portugal



Dr. Elisabete R. Silva -----
Assistant Researcher | Invited Assistant Professor
BioISI, DQB, Faculty of Sciences
of the University of Lisboa, Portugal



HOW TO GET HERE?

Getting to FCUL/ULisbon is easy and quick
- by bus, subway, car, or even bicycle (cycle lanes).

AVAILABLE TRANSPORTATION:

Bus

Carris: 701, 717, 731, 735, 736, 738, 747, 750,
755, 764, 767, 768, 778, 783, 796, 798.

Carris Metropolitana: bus routes available at Carris Metropolitana
- Escolas

Search results for “Universidade de Lisboa- Faculdade de Ciências”
and «Universidade de Lisboa»

Underground

Cidade Universitária and Campo Grande Stations

Train

Entrecampos Station

Car

2.ª circular - Campo Grande / Cidade Universitária exit

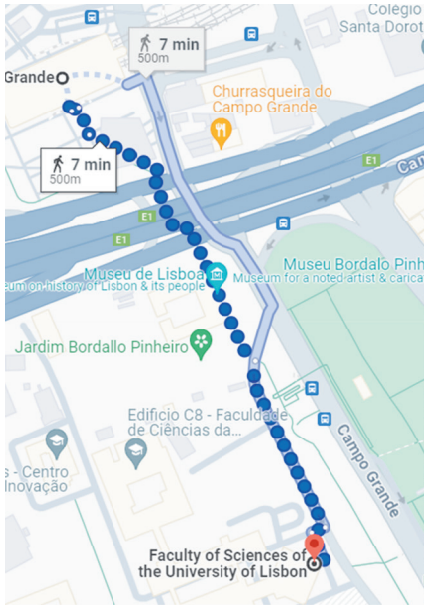
Taxi

<https://lisboataxis.pt/en>

Others

Uber, Bolt

MEETING VENUE



Campus Ciências - Map with Highlighted Event Locations

Mapa do Campus

Campus Map

Rooms

- 8.6.29 (6th Floor)
- 8.2.47 (Entrance floor level)
- 6.2.56 & 6.2.50 (2th Floor)

Event Locations:

- C6 building:**
 - 25-26 July: Poster sessions
 - Poster Sessions/Coffee Breaks (25-26 July)
 - MIC-STAND Conference (25-26 July) – Room 6.2.56
 - MIC Interlaboratory and pilot study workshop (24th July) – Room 6.2.50
- C8 building:**
 - Workshop (24th July) Room 8.2.47
- C3 building:**
 - Core Group meeting Room 3.1.05

Legend:

- P Parques Parking
- Escadas Stairs
- Entradas Entrance
- Telefone Público Public Phone
- Multibanco ATM
- Metro Underground
- Autocarros Bus Stop
- Informações Information Desk

INVITED SPEAKERS

MORE INFO | www.mic-stand.pt



Dr. Danika Nicoletti
Applications Scientist
LuminUltra Technologies Ltd, CAN



Dr. Martyn Wright
Principal Technology Specialist,
Lloyd's Register (LR)



Dr. Matt Snape
Principal Consultant
At Facility Integrity & Oilfield Microbiology
– SGS MIRAS, PT



Dr. Heather Hughes
BSc Hons Applied Chemistry
with Polymer Chemistry, FIMF, RMI
Lloyd's Register (LR)



Dr. Paulina D. Rakowska
Biofilm Standards & Regulatory Programme Lead
National Biofilms Innovation Centre, UK



Dr. James Kwame,
CEng MIMMM
Senior Manufacturing Technologist
Lloyd's Register (LR)



Dr. Pedro Vinagre
Researcher, Marine Communities specialist
WavEC Offshore Renewables, PT



Professor Dake Xu
Professor, Director of the Talent Affairs Office
Northeastern University, CHINA

SPONSORS

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www.biofilms.ac.uk



The National Biofilms Innovation Centre (NBIC) is an Innovation Knowledge Centre (IKC) funded by BBSRC and Innovate UK. Biofilms are central to our most important global challenges – from infections, antimicrobial resistance and food safety to water security, marine biofouling and corrosion – and exert significant economic, social and environmental impacts estimated at \$5 trillion per annum. NBIC was launched in 2017 by its four lead universities (Edinburgh, Liverpool, Nottingham and Southampton) to address these challenges and bring together the best of UK research and businesses to drive the translation of biofilm research into innovative solutions.

ACADEMIC MENTOR SPONSOR

www.mdpi.com/journal/coatings



coatings

an Open Access Journal by MDPI

Coatings (ISSN 2079-6412) is an international, peer-reviewed and open access journal devoted to the science and engineering of coatings, thin and thick films, surfaces and interfaces. The journal covers Coatings (ISSN 2079-6412) is an international, peer-reviewed and open access journal devoted to the science and engineering of coatings, thin and thick films, surfaces and interfaces. The journal covers coatings, surface and interfaces in the broader sense.

PROGRAMME • Wednesday, 24 July 2024

Location: Faculdade de Ciências, Universidade de Lisboa, Portugal
(<https://ciencias.ulisboa.pt/>) **Location: C8 building, Entrance Floor Level, Room 8.2.47**

9:45-10:00 **Registration**

9:45 -13:30 **Fluorescence Microscopy and applications to microbiology workshop
- Morning Session**

10:00 **Introduction to microscopy**

- Fundamental properties of light
- Main families of fluorophores
- Introduction to fluorescence microscopy

Instrumentation (I)

- Anatomy of the epifluorescence microscope

11:10 **Coffee Break**

11:30 **Instrumentation (II)**

- Confocal microscopy

Applications to microbiology

- Best practices for imaging microbiological samples

12:30 **Tour of the imaging facility**

13:00-14:15 **LUNCH**

14:15-17:30 **MIC interlaboratory and pilot study workshop**
C6 building, 2nd Floor, Room 6.2.50

14:15 • Overview of Pilot study test protocols
15:15 • Provisional test results Euro-MIC members
16:15 • Open discussion of protocols and engagement (new sites and inoculum samples)
17:15 • Wrap up

19:30 **Dinner**

14:30-17:30 **Fluorescence Microscopy and applications to microbiology workshop
- Afternoon Session**
C8 building, Entrance Floor Level, Room 8.2.47

14:30 **Introduction to microscopy**

- Fundamental properties of light
- Main families of fluorophores
- Introduction to fluorescence microscopy

Instrumentation (I)

- Anatomy of the epifluorescence microscope

15:40-16:00 **Coffee Break**

16:00 **Instrumentation (II)**

- Confocal microscopy

Applications to microbiology

- Best practices for imaging microbiological samples

17:00 **Tour of the imaging facility**

19:30 **Dinner**



PROGRAMME • Thursday, 25 July 2024

Location: Faculdade de Ciências, Universidade de Lisboa, Portugal
(<https://ciencias.ulisboa.pt/>) Location: C6 building, Room 6.2.56

- 8:30–9:00** **Registration**
- 9:00** **Opening/Welcome**
- SESSION 1** **Early detection of MIC for effective control: new advances in Diagnosis and Monitoring**
Chairs: Geert Potter & David Culliton
- 9:15** **KN1 Use of Complimentary Microbial Monitoring Technologies for Effective Asset Integrity Threat Assessment**
Matthew Snape (SGS) & Danika Nicoletti (LuminUltra)
- 10:10–10:30** **Coffee-Break**
- 10:30** **01 Application of Machine Learning Techniques for Detection of Microbiologically Influenced Corrosion** • Miroslav Milovanovi
- 10:45** **02 Electrochemical Sensing of Aerobic Marine Biofilms and the Influence of Nitric Oxide Attachment Control** • Julian Wharton
- 11:00** **03 Exploring Biomimetic Texturing for Antifouling Applications: Insights from a Computational Fluid Dynamics (CFD)** • Samira Nazari
- 11:15** **04 Case Study on Progressive Corrosion of Carbon Steel Cooler Treated with Epoxy-ceramic Coating** • Veronika Hlavackova
- 11:30** **Q&A Session**
- 12:15–14:00** **LUNCH | POSTER SESSION**
- SESSION 2** **MIC mitigation strategies towards eco-friendly and sustainable systems**
Chairs: Torben L. Skovhus & Tugce Tuccar
- 14:00** **KN2 Demyth mechanism of microbial corrosion to design microbial corrosion-resistant materials**
• Dake Xu (Northeastern University, China)
- 14:50** **05 Marine Microbial Induced Mineralization: Exploring Mechanisms for Mechanisms for Bioinspired Anticorrosion Solutions** • Maria J. Marques
- 15:05** **06 Chitosan-based Coatings for Marine Biofilm Prevention**
• Filipe Mergulhão
- 15:20** **07 Polyoxometalate Ionic Liquids (POM-ILs) as Protective Coatings for Cultural Heritage against Acid Corrosion and Biodeterioration**
• Archismita Misra
- 16:00–16:30** **Coffee Break & Poster Session**
- 16:30** **08 Fabrication of new Antifouling Coating based on Commercial Epoxy Resin and Hydrophobic Ionic Liquid** • Geert Potters
- 16:45** **09 Investigating the use of freshwater in simulations of water compensated fuel tanks to impede corrosive activity by SRB**
• Gareth Williams
- 17:00** **Q&A Session**
- 17:20** **Closing Remarks**
- 20:30** **Social Dinner**

PROGRAMME • Friday, 26 July 2024 (Hybrid meeting)

Location: Faculdade de Ciências, Universidade de Lisboa, Portugal
(<https://ciencias.ulisboa.pt/>) Location: C6 building, Room 6.2.56

- 8:30–9:00** **Registration**
- 9:00** **Welcome /Opening Remarks**
- SESSION 3** **Standardization: the lab-to-field transition**
Chairs: Julian Wharton & Rick Eckert
- 09:15** **KN3 Building Consensus: Advancing Standards and Innovation in Microbiologically Influenced Corrosion and Biofilms**
• Paulina D. Rakowska (National Biofilms Innovation Centre, UK)
- 10:10–10:30** **Coffee-Break**
- 10:30** **010 Integrating Multiple Lines of Evidence (MLOE): Essential for Diagnosis of Microbiologically Influenced Corrosion (MIC)**
• Torben L. Skovhus10:45
- 11:00** **011 Pilot Study of a Laboratory-Based Microbiologically Influenced Corrosion (MIC) Test Using Microbiological Consortia Sampled from the Field** • Sara Kalajahi
- 11:00** **012 Investigating the Efficacy of THPS and Glutaraldehyde Treatment for Enhanced Performance on North Sea Offshore System**
• Tanmay Chaturvedi
- 11:15** **013 Dual anaerobic reactor model to study biofilm and microbiologically influenced corrosion interactions on UNS G10180 carbon steel** • Liam Jones
- 11:30** **Q&A Session**
- 12:15–14:00** **LUNCH | POSTER SESSION**
- SESSION 4** **Industry insights: Technology and regulatory challenges**
Chairs: Matt Snape & Maria Salta
- 14:00** **KN4 Biofouling assessment in the offshore renewable energy sector: challenges and expectations** • Pedro Vinagre (WAVEC Offshore Renewables)
- 14:50** **014 Challenges and Opportunities in Corrosion Mitigation to Meet the Decarbonisation Journey** • Invited Talk (Lloyd's Register): Martyn Wright & Heather Hughes & James Kwame
- 15:15** **015 Investigating Microbiologically Influenced Corrosion in Hot Water Boilers: Mechanisms and Mitigation Strategies** • Milena Rajic
- 15:30** **016 New strategies for active corrosion protection of aluminium parts based on encapsulated inhibitors** • Andreu Ruiz
- 15:45** **Q&A Session**
- 16:10–16:40** **Coffee Break & Poster Session**
- 16:40** **017 Quick Enrichment and Detection of Electrochemically Active Microorganisms** • Satoshi WAKAI
- 16:55** **Q&A Session**
- 17:00** **Pitch From Patents to Programmes - Supporting IPR Holders and Exploring Grants for all MIC-STAND members** • Theo Zacharis
- 17:15** **Closing Remarks**
- 20:30** **Social Dinner**

MIC-STAND



REGISTRATION
FOR FREE
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PARTICIPATION



EURO-MIC



LOCATION

