



**STIM-REI**

# **PROGRAMME Research Workshop**

**INTERDISCIPLINARY ENDEAVOUR  
IN TECHNOLOGY AT NANOSCALE, WATER AND ENVIRONMENT**

**9. - 11. OCTOBER 2019.**

MEDITERRANEAN INSTITUTE FOR LIFE SCIENCES MedILS  
Šetalište Ivana Meštrovića 45, Split, Croatia



Europska unija - Zajedno  
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**EUROPSKI STRUKTURNI  
I INVESTICIJSKI FONDOVI**



**Operativni program  
KONKURENTNOST  
I KOHEZIJA**



**STIM**

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# Wednesday 9.10.2019.

8:00 REGISTRATION

9:00 CONFERENCE OPENING AND OFFICIAL WELCOME

## ~ Development of new materials for solar cells and fuel cells ~

9:30 „Tunable Luminescence in Stacked Bulk-like Hexagonal Boron Nitride Controlled by a Twist Angle“

**Silvija Gradečak**, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA

10:00 „Porphene - a Heterocyclic Analog of Graphene“

**Josef Michl**, University of Colorado, Boulder, Colorado, United States & Institute of Organic Chemistry and Biochemistry of the CAS, Prague, Czech Republic

10:30 „Effects of nano and subnano defects on electronic properties of bulk single-crystals“

**Neven Barišić**, Institute of Solid State Physics, Vienna, Austria & University of Zagreb, Zagreb, Croatia

11:00 COFFEE BREAK

11:30 „Interactions and magnetic orderings in intercalated transition-metal dichalcogenides“

**Petar Popčević**, Institute of physics, Zagreb, Croatia

12:00 „Unconventional experimental methods for detection of new phases in strongly correlated electron systems“

**Miroslav Požek**, University of Zagreb, Zagreb, Croatia

12:30 „Beyond gas-phase models for catalysts: towards the design and development of new MOF based catalyst and the invention of new reactions for organic synthesis“

**Richard O'Hair**, University of Melbourne, Melbourne, Australia

13:00 „Rapid, clean and scalable synthesis of microporous functional MOFs and their non-conventional forms via mechanochemistry“

**Krunoslav Užarević**, Ruđer Bošković Institute, Zagreb, Croatia

13:30 LUNCH

14:30 „New research directions of fuel cells at the University of Split: from improvement of membrane thermal conductivity to micro-sized fuel cells“

**Ante Bilušić**, STIM, Faculty of Science, University of Split, Split, Croatia

15:00 „Production and characterization of membrane electrode assemblies for fuel cell applications“

**Viktor Hacker**, Institute of Chemical Engineering and Environmental Technology, Graz, Austria

15:30 „PEM fuel cell system modeling and control, maximizing efficiency and minimizing degradation for automotive applications“

**Attila Husar**, Universitat Politècnica de Catalunya, Barcelona, Spain

16:00 COFFEE BREAK

16:30 „Application of Electrochemical Low Frequency Impedance Spectroscopy (ELFIS) in Diagnostics of Degradation in PEM Fuel Cells“

**Frano Barbir**, STIM, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Split, Croatia

17:00 „Experimental and physically based modelling analysis of electrochemical impedance to interpret limiting phenomena during PEMFC operation and ageing“

**Andrea Casalegno**, Politecnico di Milano, Milano, Italy

17:30 „Science and applications of novel organometallic perovskites“

**László Forró**, École Polytechnique Fédérale de Lausanne Lausanne, Switzerland

18:00 *Overview with perspective*

**Frano Barbir**, STIM, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Split, Croatia

18:15-20:00 **Poster Session and Quarterly Convention of young Researchers**

Refreshment



# Thursday 10.10.2019.

## ~ Design of novel nanostructured biosensing materials and their application in medical diagnostics and biomedicine ~

- 9:00 „Opportunities and challenges in nonlinear optics of ligated nanoclusters and their bio-applications“  
**Rodolphe Antoine**, Université Claude Bernard Lyon 1, Lyon, France
- 9:30 „Concepts guiding joint theoretical and experimental approaches from bioimaging to catalysis and efficient light harvesting“  
**Vlasta Bonačić-Koutecký**, STIM, University of Split, Split, Croatia
- 10:00 „Gold nanostructures activate neural cells“  
**Dušica Maysinger**, McGill University, Montreal, Canada
- 10:30 „Exploring metal-based nanomedicine for cancer theranostic investigations“  
**Lucie Sancey**, Institute for Advanced Biosciences, La Tronche, France
- 11:00 **COFFEE BREAK**
- 11:30 „Subcellular-resolution extracellular electrophysiology with CMOS-based high-density microelectrode arrays“  
**Andreas Hierlemann**, ETH Zurich, Zurich, Switzerland
- 12:00 „The use of graphene- and hBN-based substrates for auditory neuroelectronic interfaces“  
**Damir Kovačić**, STIM, Faculty of Science, University of Split, Split, Croatia
- 12:30 „Nanotechnology enabling future health care“  
**Dries Braeken**, IMEC, Leuven, Belgium
- 13:00 „New instrumental developments for detection and quantification of proteins by Mass Spectrometry for medical diagnostics: Application to protein effectors of antibiotic resistance and protein oxidation“  
**Marion Girod**, Université Claude Bernard Lyon 1, Lyon, France
- 13:30 **LUNCH**
- 14:30 „Aging and diseases as biological consequences of protein misfolding, oxidation and aggregation“  
**Miroslav Radman**, STIM, Mediterranean Institute for Life Sciences, Split, Croatia
- 15:00 „Protein misfolding and aggregation: learning from materials in neurodegenerative diseases“  
**Tiago F. Outeiro**, University Medical Center Göttingen, Göttingen, Germany
- 15:30 „Intracellular communication is key to longevity“  
**Anita Kriško**, STIM, University Medical Center Göttingen, Göttingen, Germany
- 16:00 *Overview with perspective*  
**Rodolphe Antoine**, Université Claude Bernard Lyon 1, Lyon, France
- 16:15 **COFFEE BREAK**

## ~ Education and transfer of knowledge and technology with Quarterly Convention of Young Researchers ~

- 16:45 „Higher VET in the Austrian NQF – new ways to make competences visible“  
**Eduard Staudecker**, Federal Ministry of Education, Science and Research, Vienna, Austria
- 17:15 „Why startups fail and what university can do about it“  
**Miro Hegedić**, University of Zagreb, Zagreb, Croatia
- 17:45 „Collaborative learning and transferable competences of young researchers“  
**Mile Dželalija**, STIM, Faculty of Science, University of Split, Split, Croatia
- 18:15 *Overview with perspective*  
**Mile Dželalija**, STIM, Faculty of Science, University of Split, Split, Croatia
- 19:00 **DINNER**

# Friday 11.10.2019.

## ~ Water and environment ~

- 9:00 „Modeling of emerging contaminants along a river network“  
**Alberto Bellin**, University of Trento, Trento, Italy
- 9:30 „How results for the dispersion of contaminants in environmental flows can be used in assessing a dilution process and risk assessment in estuaries“  
**Roko Andričević**, STIM, Faculty of Civil Engineering, Architecture and Geodesy, University of Split, Split, Croatia
- 10:00 „Air-sea coupling – An example of coupled regional climate model“  
**Vladimir Đurđević**, University of Belgrade, Belgrade, Serbia
- 10:30 „Challenges and approaches to investigate coastal and open-sea climatology and dispersion using observations and regional climate models“  
**Darko Koračin**, STIM, Faculty of Science, University of Split, Split, Croatia
- 11:00 **COFFEE BREAK**
- 11:30 „A microbiome approach to conversion of underutilized marine side-streams into industry-relevant small molecules and cold-active enzymes“  
**Peik Haugen**, The University of Tromsø - The Arctic University of Norway, Tromsø, Norway
- 12:00 „The potential of the Adriatic microbiome in the blue biotechnology“  
**Sandi Orlić**, STIM, Ruđer Bošković Institute, Zagreb, Croatia
- 12:30 „Eco-interactions of engineered nanomaterials: a lesson to learn for their ecosafety assessment“  
**Ilaria Corsi**, University of Siena, Siena, Italy
- 13:00 **LUNCH**
- 14:00 **Discussion platform for the possible cooperation with public institutions and enterprises: Energy, Ecobiology, Water and Environment**
- 16:00 „Engineering Cyanobacteria for Direct Production of Solar Chemicals and Fuels“  
**Peter Lindblad**, Uppsala University, Uppsala, Sweden
- 16:30 „From molecular characterization of key cellular defense mechanisms in aquatic organisms to prioritization of contaminants and identification of biologically active substances in marine environment“  
**Tvrtko Smital**, STIM, Ruđer Bošković Institute, Zagreb, Croatia
- 17:00 *Overview with perspective*  
**Tvrtko Smital**, STIM, Ruđer Bošković Institute Zagreb, Croatia
- 17:15 **Closing**