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

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

~ 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 „Engineering Cyanobacteria for Direct Production of Solar Chemicals and Fuels"
Peter Lindblad, Uppsala University, Uppsala, Sweden

14:30 „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

15:00 *Overview with perspective*
Tvrtko Smital, STIM, Ruđer Bošković Institute Zagreb, Croatia

15:15 **Discussion platform for the possible cooperation with public institutions and enterprises: Energy, Ecobiology, Water and Environment**

17:15 **Closing speech**