

# COST Action TD1208

## 2<sup>nd</sup> Annual Meeting

Electrical Discharges with Liquids for  
Future Applications

Barcelona, February 23<sup>rd</sup>-26<sup>th</sup> 2015

# FULL PROGRAMME

Monday, February, 23<sup>rd</sup>

09.00      **REGISTRATION**

10.40      **COFFEE BREAK**

11.15      **WG 1: DISCHARGES IN LIQUID PHASE**

**Session Chair: A. Rousseau**

**INVITED LECTURE: Novel Approaches to NTP Activation of Liquids by Steady-State and Pulsing Electrical Discharges**

Yu. Akishev, M. Grushin, N. Trushkin

11.55      **High Current Density Discharges in Water, A Discussion on Mechanisms**

D. C. Schram

12.15      **Micro-Discharges in Aqueous Electrolytic Media: The case of Plasma Electrolytic Oxidation (PEO)**

A. Nominé, G. Henrion, T. Belmonte, T.W. Clyne, A.V. Nominé, S.C. Troughton, N. St J. Braithwaite, J. Martin, C. Noël

12.35      **Chemical Detection of Free Radicals in Low-Temperature Plasmas**

V. Chechik, Y. Gorbanev, D. O'Connell

13.00      **LUNCH**

- 14.30 **WG 2: GAS DISCHARGES INTERACTION WITH LIQUIDS**  
**Session Chair: P. Lukes**
- INVITED LECTURE: Analysis of a Plasma Reactor with a Liquid Water Film**  
B. R. Locke
- 15.10 **Interaction of DC Corona Discharge with Water Electrospray**  
Z. Machala, B. Pongrác, V. Martišovitš, M. Janda, K. Hensel
- 15.30 **The Transport of Aerosol Microdroplets through an Atmospheric Pressure Plasma: Charge, Chemistry and Biological Interactions.**  
P. Maguire, C. Mahony, N. Hamilton, C. Kelsey, E. Bennet, D. Rutherford, D.A. McDowell, H. Potts, D. Diver, D. Mariotti
- 15.50 **Direct Liquid Sampling for Corona Discharge Ion Mobility Spectrometry**  
Š. Matejčík, M. Sabo
- 16.10 **COFFEE BREAK**
- 16.50 **INFORMAL MEETINGS AND DISCUSSIONS**
- 18.30 **WELCOME RECEPTION**  
Departure: Buses will leave at 18:30 from the meeting point, around the corner of the building (crossroads – c/ Pau Gargallo with c/ Pascual i Vila)  
Arrival: Buses will stop at Arenas Atiram Hotel, which is at 1 min walk to the metro station of “Maria Cristina” L3.

Tuesday, February, 24<sup>th</sup>

- 09.00      **WG 3: BASIC PROCESSES AND NUMERIC MODELLING**  
Session Chair: D. Maric
- INVITED LECTURE: Liquid Transformed Activation Energy: How Controlling Plasma Properties Translates to Chemically Active Species in Thin Liquid Layers**  
W. Tian, S. A. Norberg, A. M. Lietz, M. J. Kushner
- 09.40      **Simulation of Streamer Propagation in Hydrocarbon Liquids in Point-Plane Gaps**  
G. V. Naidis
- 10.00      **Water Vapour Microdischarges Generated from DC up to Radio Frequencies**  
M. Klas, L. Moravský, Š. Matejčík
- 10.20      **Spontaneous Formation of Monochloramine in Saline Solution Treated by Nanosecond Pulsed Cold Atmospheric Microplasma: A Way to Fast Bacterial Inactivation?**  
S. Maheux, D. Duday, T. Belmonte, C. Penny, H.-M. Cauchie, F. Clément, P. Choquet
- 10.40      **COFFEE BREAK**

- 11.15 **WG 4.1: APPLICATIONS IN WATER TREATMENT**  
**Session Chair: M. Dors**
- INVITED LECTURE: Plasma-Induced Advanced Oxidation  
in a Dielectric Barrier Discharge Reactor: Reactivity and  
Behaviour of Different Organic Pollutants**  
E. Marotta, E. Ceriani, C. Paradisi
- 11.55 **Role of Induced Conductivity in Formation of  
Interelectrode Discharge in Water**  
A. M. Anpilov, E. M., Barkhudarov, I. A. Kossyi
- 12.15 **Investigation of Reaction Mechanism for the  
Degradation of Pharmaceutical Residues by Pulsed  
Corona Discharges Generated in Water**  
R. Banaschik, P. Lukes, J. F. Kolb, P. Bednarski, C. Miron,  
K.-D. Weltmann
- 12.35 **Plasma Activated Water For Agricultural and Medical  
Applications**  
A. J. M. Pemen, P. P. van Ooij, W. F. L. M. Hoeben, P. H.  
M. Leenders
- 13.00 **LUNCH**
- 15.10 **Lorentz Highlights**
- 15.30 **STSM REPORTS**
- 15.50 **Information about incoming events**
- 16.30 **COFFEE BREAK**
- 18.30 **POSTER SESSION**

- 09.00      **WG 4.2: BIOMEDICAL APPLICATIONS**  
**Session Chair: S. Reuter**
- INVITED LECTURE: Chemical Analysis of Plasma-Activated Medium (PAM)**  
K. Ishikawa, N. Kurake, H. Tanaka, T. Kondo, K. Nakamura, H. Kajiyama, F. Kikkawa, M. Mizuno, K. Takeda, H. Kondo, M. Sekine, M. Hori
- 09.40      **Direct and Indirect Treatment of Prokaryotic and Eukaryotic Cells in Liquid Medium by Means of a Low Power Inductively Coupled Plasma (ICP) Torch: Evaluation of Antibacterial Effects and Cytocompatibility**  
D. Barbieri, M. Boselli, F. Cavrini, V. Colombo, M. Gherardi, M. P. Landini, R. Laurita, A. Liguori, A. Stancampiano
- 10.00      **Mechanisms Underlying Antimicrobial Efficacies of Non-Thermal Dielectric Barrier Discharge (DBD) Plasma-Treated N-Acetyl Cysteine (NAC) Solution**  
U. K. Ercan, H. F. Ji, A. D. Brooks, S. G. Joshi
- 10.20      **New insights into the antimicrobial effects of non-thermal plasma activated water (PAW)**  
M. Mareş, E. Hnatiuc, M. Ursache, J.-L. Brisset
- 10.40      **COFFEE BREAK**

- 11.15      **WG 4.3: APPLICATIONS IN NANOSCIENCE AND SURFACE TREATMENT**  
Session Chair: D. Mariotti
- INVITED LECTURE: Materials Electrochemistry in Ionic Liquids: Plasma Processes, Nanostructured Materials and Nanotubes**  
F. Endres
- 11.55      **Novel Approach to Obtain Efficient TiO<sub>2</sub> and Ag-TiO<sub>2</sub> Photocatalytic Thin Coatings for Water Treatment from Liquid Precursor with Atmospheric Pressure Plasma Jet APPJ**  
H. Fakhouri, A. K. Jaiswal, J. Pulpytel, F. Arefi-Khonsari
- 12.15      **Surface Modification of Materials Treated by Nanosecond Pulsed Driven Electrical Discharges in Liquids**  
C. Miron, J. Zhuang, I. Sava, C. Hulubei, K.-D. Weltmann<sup>1</sup>, J. F. Kolb<sup>1</sup>
- 12.35      **Microplasmas of Electrical Discharges in Liquid for Nanomaterials Synthesis**  
N. V. Tarasenko, V. S. Burakov, M. I. Nedelko, V. V. Kiris, A. A. Nevar
- 13.00      **LUNCH**

- 14.30 **WG 4.4: APPLICATIONS IN ORGANIC CHEMISTRY**  
Session Chair: F. Iza
- INVITED LECTURE: Organic Chemistry: What Can the Low-temperature Plasma Community Learn from the Sonochemistry Community?**  
Pedro Cintas
- 15.10 **Virtues and Limitations of Small Molecule Florescence Probes for Plasma Generated ROS**  
C. Castelló Beltrán, B. R. Buckley, F. Iza
- 15.30 **Sr-rich Implant Surfaces Obtained by Anodic Plasma Chemical Discharge for Osseointegration Improvement**  
S. Sanchez, P. Sevilla, F.-J. Gil
- 15.50 **Time-Resolved Optical Emission Spectroscopy of Discharges in Liquids: Promise and Pitfalls**  
T. Belmonte, C. Noël, H. Kabbara, Kh. Hussein, J. Martin, G. Henrion
- 16.10 **COFFEE BREAK**
- 16.50 **INFORMAL MEETINGS AND DISCUSSIONS**
- 20.30 **CONFERENCE DINNER**



Thursday, February, 26<sup>th</sup>

09.00      **MC Meeting**

10.40      **COFFEE BREAK**

11.15      **MC Meeting**

13.00      **LUNCH**

14.30      **Core Team Meeting**

16.10      **Final of the meeting**