



## Workshop « Challenges in Plasmas and Catalysis »

October 17-18 2019, LOMC, Université Le Havre Normandie

Organized by LCS, Caen (F. Maugé and F. Azzolina-Jury), LSCP, Rouen (I. Polaert), CORIA, Rouen (A. Bultel) and LOMC, Le Havre (I. F. Schneider)

### Thursday October 17

09h45 Welcome and introduction

10h00 **Daniela PIETANZA** (P.LAS.M.I. Lab, Bari, Italy):  
Vibrational and electron kinetics in CO<sub>2</sub> plasmas

10h25 **Vasco GUERRA** (Technical University of Lisbon, Portugal):  
Towards the definition of a reaction mechanism of CO<sub>2</sub> plasmas

10h50 **Arnaud BULTEL** (Université de Rouen Normandie, France):  
Consequences of the polyades on the chemistry of CO<sub>2</sub>

11h15 *Coffee break*

11h40 **Vincenzo Laporta** (P.LAS.M.I. Lab, Bari, Italy):  
Electron-molecule elementary processes for modelling CO<sub>2</sub> plasmas

12h05 **Janos Zsolt MEZEI** (Institute of Nuclear Physics of the Hungarian Academy of Sciences, Debrecen, Hungary):  
Carbonated molecular cations colliding with electrons: the state of the art of the stepwise-MQDT approach, and perspectives

12h30 *Lunch*

14h00 **Viatcheslav KOKOULINE** (University of Central Florida, Orlando, US):  
The quantum defect approach of the vibronic resonances in the collisions of electrons with molecular ions

14h25 **Mehdi AYOUB** (Centrale Supélec, Saclay, France):  
Dissociative recombination and vibrational excitation of large molecules by electron impact

14h50 **Yannick ENGELMANN** (University of Antwerpen, Belgium):  
Plasma catalysis for methane reforming: optimizing the synergy to maximize ethylene and acetylene formation

15h15 *Coffee break*

15h40 **Bachar ALRAFEI** (Institut National de Sciences Appliquées, Rouen, France):  
Synergetic effect of microwave plasma and catalysts in CO<sub>2</sub> hydrogenation into high added-value molecules?

16h05 Round table 1: Modelling of the cold plasmas  
Moderators: **Yannick ENGELMANN** and **Federico AZZOLINA-JURY**

17h00 Perspectives 1

Moderators: **Daniela PIETANZA** and **Arnaud TRAVERT** (Ecole Nationale Supérieure d'Ingénieurs de Caen, France)

17h30 *End of the 1<sup>st</sup> day of the workshop*

19h30 *Diner @ « Le Grand Large »*

### **Friday October 18**

08h35 **Carlos Manuel Faria De BARROS HENRIQUES** (Technical University of Lisbon, Portugal):

CO<sub>2</sub> methanation over Ni/zeolite catalyses: a comparative study under thermal and plasma catalysis

09h00 **Radoslaw DEBEK** (Sorbonne Universités, UPMC, Université Paris 6):

Plasma-catalytic CO<sub>2</sub> methanation - looking for an efficient catalyst

09h25 **Federico AZZOLINA-JURY** (Ecole Nationale Supérieure d'Ingénieurs de Caen, France)

Plasma utilization for catalyst modification and for CO<sub>2</sub> valorization

09h50 *Coffee break*

10h15 **Teresa GRZYBEK** (AGH University of Science and Technology, Kraków, Poland):

Selected catalytic processes in environmental protection

10h40 **Savita KALIYA** (Ghent University, Belgium):

Plasma-catalysis for VOC abatement

11h05 **Catherine BATIOU DUPEYRAT** (Université de Poitiers, France):

Regeneration of coked catalysts by non-thermal plasma

11h30 **Marilena RADOIU** (Microwave Technologies Consulting, Lyon, France):

Microwave excited plasma, from laboratory scale to industrial applications

11h55 *Lunch*

13h15 Round table 2:

Progress and challenges for plasma-assisted catalysis

Moderators: **Isabelle POLAERT** (Institut National de Sciences Appliquées, Rouen, France), and **Arnaud BULTEL**

14h15 Round table 3: Industrial future of plasma for catalysis

Moderators: **Jean-Pierre DATH**, Total, France, and **Carlos Manuel Faria De BARROS HENRIQUES**

15h15 *Coffee break*

15h30 Perspectives 2 and Conclusions

Moderators: **Vasco GUERRA** and **Françoise MAUGE** (Ecole Nationale Supérieure d'Ingénieurs de Caen, France)

16h00 *End of the workshop*