Séminaire ARCANE
Mercredi 23 janvier 2019 – de 14h à 16h30
Amphi Rassat – 470 rue de la chimie
Campus Saint Martin d'hères

Programme :

14h – 15h **"Photoredox catalysis for environmental and chemical applications. A mechanistically-based approach"**

Pr. Maria-Luisa MARIN GARCIA, Universitat Politècnica de València, (Spain)

In the last decades, photoinduced-redox processes mediated through visible light have obtained great attention due to the generally mild operating conditions that they offer. Thus, they are becoming an outstanding methodology in organic synthesis, which has opened the door to new synthetic and chemical routes. However, despite the growth of the field, little attention has been paid to the mechanistic pathways behind these processes. Therefore, the main objective of this talk is to gain deeper understanding of different photoredox processes carried out using organic photocatalysts. More specifically, the viability of several organic photocatalysts, such as pyrylium and thiapyrylium salts, which operate through oxidative electron transfer pathways, will be analysed. Besides, the postulated mechanisms will be supported on time resolved experiments. With all this information, the key points to consider in a photoredox system will be highlighted. Furthermore, the major contribution of Type I vs Type II mechanism operating in the photooxidation of three different pollutants will be illustrated using Rose Bengal, a typical photocatalyst used in wastewater remediation, known for working via Type II mechanism. Finally, riboflavin, a naturally occurring organic dye, will be used as a photocatalyst to perform the photocatalytic reduction of organic bromides. Again, careful attention will be paid to the behavior of the intermediates, as well as to the thermodynamics of the steps involved in the photocatalytic cycle.

15h - 15h30 **"Tuning the electron storage potential of a charge-accumulating Ru(II) photosensitizer towards photocatalytic hydrogen production"**

Dr. Julia RENDON, SYMMES, équipe CAMPE

Dr. Nicholas RANDELL, LCBM, équipe SolHyCat

15h30 - 16h **"On the nature of radicals in biomimetic thiamine-dependent organocatalysis: insights from stable-carbene chemistry"**

Dr. David MARTIN, DCM, équipe CIRE

16h - 17h Discussions around a drink

M. Luisa Marin did her PhD at the University of Valencia working on the synthesis of natural products. In 1996, she moved to Imperial College where she spent two years as postdoctoral Pierre and Marie Curie fellow. When she came back to Spain she moved to the Technical University of Valencia (Spain) and started working in the group of Prof. M. A. Miranda in the field of photochemistry, photophysics and photobiology, being promoted to Associate Professor in 2004. In March 2018, she received a positive evaluation to Full Professor (ANECA).

Her research interests are focused on the mechanistic studies of different photochemical processes, and can be grouped in two main lines: i) Stereodifferenciation in photophysical and photochemical processes within supramolecular biomimetic systems, and ii) Mechanistic aspects of photocatalysis using organic photocatalysts [1].

Moreover, Pr. Marin has spent several periods at the University of Ottawa working on the synthesis and applications of nanoparticles within the group of Prof. J.C. Scaiano. In the academic year 2013-2014 she was awarded for the competition of the Distinguished Visiting Researcher Program at the University of Ottawa.

Besides, as Professor at the UPV, she is coauthor of 18 teaching publications, she teaches “Applied Photochemistry” to undergraduates and also to Master students. M.L. Marin participates as teacher in postgraduate courses in the University of Ottawa (2014) and Universidad Nacional de La Plata (Argentina) in 2014, 2017 and 2018. M. L. Marin is member of the Real Sociedad Española de Química.

[1] Marin, M.L. et al., Organic Photocatalysts for the Oxidation of Pollutants and Model Compounds, Chemical Reviews, 2012, 112, 1710-1750