UNIVERSITÀ
DEGLI STUDI DI TRIESTE
Dipartimento di Scienze Chimiche e Farmaceutiche

AVVISO DI SEMINARIO

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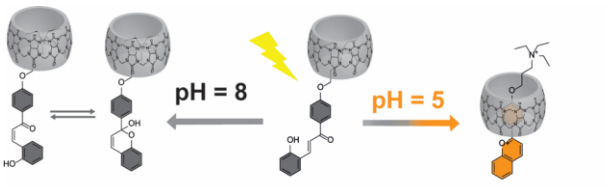
PHOTORESPONSIVE SUPRAMOLECULAR HOST-GUEST SYSTEMS

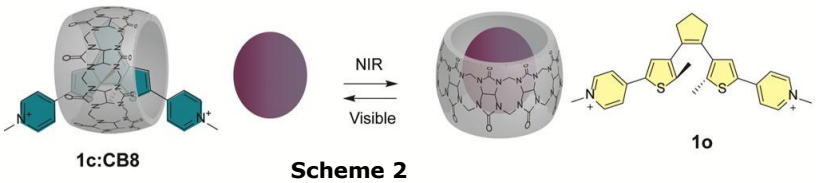
13 febbraio 2020, ore 11.00
Aula A1, 3° piano, Edificio C11

Summary: The development of systems able to exist in different states whose interconversion can be controlled by different stimuli (light, ions, electrons) may contribute to the appearance of molecular-level devices and materials with new functionalities. Over the last few years, we have worked in systems mainly based on *trans*-2-hydroxychalcones. [1] These photoisomerizable compounds originate in aqueous solution intricate pH-dependent chemical reaction networks involving several species. Among these species, flavylium cations are strongly coloured compounds that have been allowing to explore these chemical networks as pH–coupled photochromic systems. [1]



Scheme 1

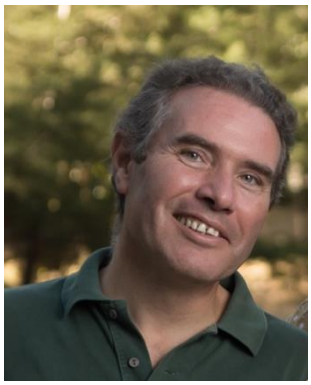
As aromatic cations, flavylia are electron poor guests able to intercalate into neutral or negatively charged electron rich cavities such as those of molecular clips and cucurbiturils. This allows the use of supramolecular interactions to further control the conversion between different states of the system through functional host-guest complexes with potential applications in drug-delivery, molecular switches, molecular machines, supramolecular polymers, etc. Recent examples of these multistate systems exploited as photochromic,[2] pH-driven self-sorting,[3] pH-gated photoresponsive pseudorotaxanes with ring translocation [4] (Scheme 1) and the first steps in the development of dual photochromic systems containing 2-hydroxychalcones and dithienylethenes [5] (Scheme 2) will be shown.



Scheme 2

[1] F. Pina, M. J. Melo, C. A. T. Laia, A. J. Parola, J. C. Lima, *Chem. Soc. Rev.* 41 (2012) 869.
[2] A. Alejo-Armijo, L. Corici, I. Buta, L. Cseh, A. J. Moro, A. J. Parola, J. C. Lima, F. Pina, *Dyes Pigm.* 174 (2020) 108013.
[3] N. Basílio, J. Mendoza, S. Gago, A. J. Parola, *Chem. Commun.* 53 (2017) 6742.
[4] N. Basílio, A. Zubillaga, P. Ferreira, S. Gago, A. J. Parola, *Chem. Commun.* 54 (2018) 2743.
[5] P. Ferreira, B. Ventura, A. Barbieri, J. P. Da Silva, C. A. T. Laia, A. J. Parola, N. Basílio, *Chem. Eur. J.* 25 (2019) 3477.

Short biography:



A. Jorge Parola received his PhD in chemistry from Universidade NOVA de Lisboa in 1998, after which he made a post-doc at the Institute of Inorganic Chemistry, Fribourg, Switzerland. He was appointed Associate Professor at the Department of Chemistry of Universidade NOVA de Lisboa, teaching inorganic chemistry and physical chemistry. He is co-author of 6 book chapters and more than 135 papers, and holds 3 patents. His research interests include supramolecular photochemistry, from the design and synthesis of supramolecular species to the study of their photochemical properties, in particular, systems with flavylium cations as guests, and development of chromogenic materials for applications.