

Séminaire du Pr. Lionel Sanguinet le 18/06 à 16h30, amphi E

Title : a useful BOX-Me unit to develop two interesting & uncommon photochromic systems

Summary :

The benzazolo-oxazolidine (BOX) derivatives constitute a relatively recent and niche family of molecular switches, often considered a sub-class of spiropyrans. Since their first synthesis in the 1970s, these compounds have demonstrated impressive switching capabilities, enabling the reversible transformation of their closed, colorless form into a vivid, colorful open form using three distinct external stimuli (photon/electron/proton).

While our previous presentation at the ILV focused on the electrochromic properties of these systems—specifically their utility in developing highly selective multi-level switches—this seminar will shift the focus toward their photochromic behavior.

In this context, I will present previous investigations into the photochemical properties of structurally very simple BOX systems. Indeed, We will demonstrate how discriminating the oxazolidine ring-opening from the photo-isomerization of the ethylenic bridge allows for the design of simple molecules capable of exhibiting four distinct addressable states. Complementing these fully organic platforms, our recent work on hybrid Polyoxometalate-BOX (POM-BOX) architectures will also be discussed. While the electrochromic properties of the BOX-Me units have previously proven crucial for the elaboration of some BOX-acridine based material these new hybrid systems have revealed surprising and promising photochromic properties.

Short CV :

Lionel Sanguinet received his PhD in organic chemistry in 2003 from the University of Bordeaux under the supervision of Prof. J.-L. Pozzo and V. Rodriguez, where he began his research on molecular switches, particularly for nonlinear optical (NLO) applications. Following his PhD, he spent two years in Prof. R.J. Twieg's group at Kent State University, working on the development of octupolar NLO chromophores and non-polar materials. In 2005, he joined the Faculty of Sciences in Angers as a postdoctoral researcher under Dr. E. Levillain, focusing on electroactive chromophores for analytical chemistry applications. He was appointed Assistant Professor in 2007 and promoted to Full Professor in 2022. Over the years, he has developed recognized expertise in the design and characterization of multimodal molecular switches, particularly those exhibiting photochromic and electrochromic properties. His deep interest in a wide range of chromophoric materials has led him to expand his skills from synthesis and characterization to, more recently, the computational modeling of their optical and electrochemical properties.