

MS31-05 | SINGLE-CRYSTAL TO SINGLE-CRYSTAL TRANSFORMATIONS IN SPIN-CROSSOVER COMPOUNDS. AN INCREDIBLE ZOOLOGY!

GUIONNEAU, Philippe (University of Bordeaux, Pessac, FRA); MARCHIVIE, Mathieu (University of Bordeaux, Pessac, FRA); TAILLEUR, Elodie (University of Bordeaux, Pessac, FRA); GUO, Wenbin (University of Bordeaux, Pessac, FRA); ROSA, Patrick (CNRS, Pessac, FRA); CHASTANET, Guillaume (CNRS, Pessac, FRA)

Stimuli like pressure, light and temperature induce a drastic **response of spin-crossover crystals** with modifications of colors, electrical and magnetic properties as well as **significant volume variations** (up to 15 %) offering a wide range of potential applications going from sensors to electronic devices. **Crystallography** plays a key role since the interplay between the structural properties and the transition features (temperature(s), abruptness, light-induced response ...) is clearly demonstrated. [1] If focusing on molecular compounds, the spin-crossover phenomenon is often reversible in the solid state with encountered situations going from partial conversion to hysteretic transitions. The combination of the structural response with the stimulus and many other events (polymorphism, structural transition, loss of solvent ...) **results in an incredible zoology of the observed structural responses**. The later are going from impressive negative thermal expansion to intricate phase diagrams, reversible bond breaking, finger-pushed transitions or guest-driven transitions for example. X-ray diffraction allows to describe all these behaviors and, in return, the spin-crossover field offers a great opportunity to push the frontiers of structural investigations [1, 2]. Based on 20 years of experience in the crystallography of spin-crossover materials, we will present an overview of such structural zoology.

[1] (a) P. Guionneau, *Dalton Trans.* **2014**, 43, 382 (b) E. Collet, P. Guionneau, *C. R. Chimie*, **2018**, 1133

[2] (a) Elodie Tailleux et al. *Chem. Eur. J.*, **2018**, 24, 14495 – 14499 (b) S. Lakhoulfi et al. *Phys. Chem. Chem. Phys.*, **2016**, 18, 28307