**Poster Presentation**

**MS002.P13**

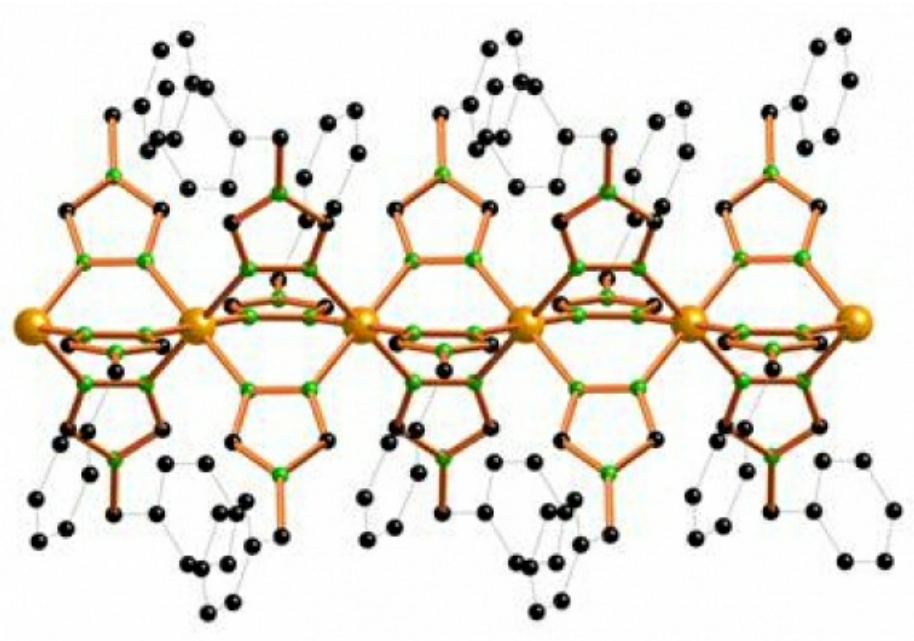
*Cooperative triazole based spin crossover feII coordination polymers*

Narsimhulu Pittala[1], Smail Triki[1], Franck Thétiot[1], Kamel Boukheddaden[2], Guillaume Chastanet[3], Mathieu Marchivie[3]
*[1]Department Of Chemistry, UMR CNRS 6521, Université De Bretagne Occidentale (UBO), Brest, France, [2]Groupe d'étude de la matière condensée (GEMaC), Université de Versailles Saint-Quentin, Versailles, France, [3]CNRS, Université Bordeaux, ICMCB, UPR 9048, Bordeaux, France*
E-mail: narsimha.iitms@gmail.com

The spin crossover (SCO) phenomenon - associated with the transition between a low-spin (LS) and a high-spin (HS) state in a transition metals with d4-d7 electronic configurations - represents a prototypical example of molecular switching.1-2 Notably, the Fe(II) ion with a d6 electronic configuration can switch between the paramagnetic high-spin state and the diamagnetic low-spin state by external perturbations such as temperature, pressure, irradiation or magnetic fields, and with changes of the crystal properties such as the color, volume, dielectric constants, photoluminescence, conductivity etc., making them very attractive in thermal sensors, light switches and data storage devices.1-4 Among the few systems exhibiting remarkable SCO behavior, the triazole based molecular materials [Fe(Rtrz)3][A]x (Rtrz = 4-substituted-1,2,4-triazole, A = monovalent or divalent anion) - constructed through triple N1,N2-1,2,4-triazole bridges - are a unique class of SCO materials with possible hysteresis around room temperature and a high synthetic versatility that allows for the tuning of the SCO properties.1,3-5 As a result, these materials have been considered as the most promising materials for the design of future electronic devices.1,3 However, this system is known for more than three decades, their crystallographic structure has been rarely established.5-6 In this context, our group has been interested to investigate the structural properties involving 1,2,4-triazole derivatives. Here, we report the synthesis, the structural and magnetic characterizations, as well as the first accurate single crystal investigations of both HS and LS states of a new triazole based SCO Fe(II) 1D polymer [Fe(bntrz)3][Pt(CN)4].H2O (bntrz = 4-benzyl-1,2,4-triazole).7

References

[1] Kahn, O. & Martinez, C. J. (1998). Science 279, 44-48.
[2] Gütlich, P.; Garcia, Y. & Goodwin, H. A. (2000). Chem. Soc. Rev., 29, 419-427.
[3] Kahn et al. (1994). Chem. Mater. 6, 1404-1412.
[4] Kahn, O.; Kröber, J. & Jay, C. (1992). Adv. Mater. 4, 718-728.
[5] Roubeau, O. (2012). Chem. Eur. J. 18, 15230-15244 and references therein.
[6] Guionneau et al. (2011). Chem. Commun. 47, 12382-12384.
[7] Pittala et al. (2017). Chem. Mater. 29, 490-494



**Keywords:** Spin Crossover, Single Crystals