New 1,2,4-triazole Ligand towards Colorimetric and Photochromic Molecular Materials

Yunnan GUO[1], Shufang XUE[1], Yann GARCIA[1]

IMCN-MOST, UNIVERSITÉ CATHOLIQUE DE LOUVAIN
PLACE LOUIS PASTEUR 1 / L4.01.03
1348 LOUVAIN-LA-NEUVE
E-mail : yunnan.guo@uclouvain.be

In the past few years, photochromic compounds have emerged as the molecule-of-choice for the construction of novel dynamic materials.[1] This unique molecular switch undergoes structural isomerization in response to a variety of orthogonal stimuli, e.g. light, temperature, metal ions, redox potential, and mechanical stress. Incorporation of this switch onto macromolecular supports or inorganic scaffolds allows for the creation of robust dynamic materials, which led to their tantalizing applications in sensors, ophthalmic lenses and optical filters.[2] As a new horizon of nano-science and technology, grafting photochromic ligands into coordination compounds has also been outlined for developing photoswitchable inorganic hybrid materials[3], in particular molecular switches presenting a magnetic memory effect that have been proposed as read–write photochromic opto-magnetic units[4]. Here, we select a new and rather easy synthetic procedure wherein Dithienylethene derivative combining a 1,2,4-triazole group (Figure 1). The photochromism of this dithienylethene compound is successful within bulk crystals, which can be potential applied to light-driven switchable materials.

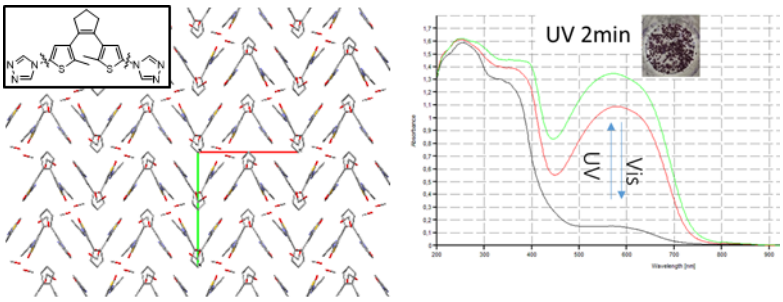

Figure 1 Crystal structure of Photochromic Ligand and its Photochromic properties under bulk crystals

References:

1. M. Irie, *Chem. Rev.*, 2000, **100**, 1683-1684.
2. H. Dürr and H. Bouas-Laurent, *Photochromism: Molecules and System*, Elsevier Science Ltd., Amsterdam, 2003.
3. C.-C. Ko and V. Wing-Wah Yam, *J. Mater. Chem.*, 2010, **20**, 2063-2070.
4. P. Gütlich, Y. Garcia and H. Spiering, *in: Magnetism: From Molecules to Materials IV,* , 2003.

Acknowledgements

We thank the FNRS fellowships of chargé de Recherches allocated to Y. GUO (28109061) and S. XUE (24918505).