

## Columnar mesophases in supramolecular aggregates melamine-metalloacids: Liquid crystals of Fe, Cr, Mo and W at room temperature

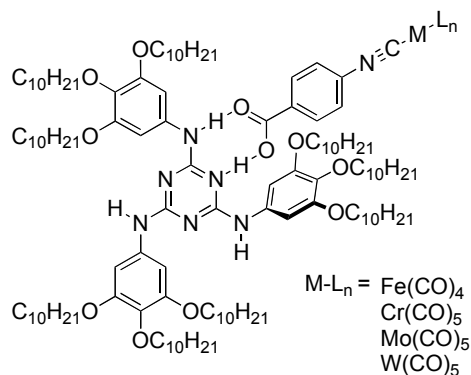
Silverio Coco,<sup>a</sup> Carlos Cordovilla,<sup>a</sup> Cristina Domínguez,<sup>a</sup> Bertrand  
Donnio,<sup>b</sup> Pablo Espinet,<sup>a</sup> and Daniel Guillon<sup>b</sup>

*a IU CINQUIMA/Química Inorgánica, Facultad de Ciencias, Universidad de Valladolid, 47071 Valladolid, Castilla y León, Spain.*

*b Institut de Physique et Chimie des Matériaux de Strasbourg (IPCMS), UMR 7504 (CNRS-ULP), 23 rue du Loess, BP 43, F-67034 Strasbourg Cedex 2, France.*

There are many reports on the effects of intermolecular hydrogen bonding in the field liquid crystals.<sup>1</sup> However, the studies on supramolecular metal-complexes based on hydrogen bond, are scarce.<sup>2</sup>

In this communication, we present examples of supramolecular aggregates melamine-metalloacids of Fe, Cr, Mo and W (Figure 1). They have been synthesized by combining equimolar amounts of 2,4,6-triarylamino-1,3,5-triazine and metallo-acids [Fe(CO)<sub>4</sub>(CNC<sub>6</sub>H<sub>4</sub>CO<sub>2</sub>H)] or [M(CO)<sub>5</sub>(CNC<sub>6</sub>H<sub>4</sub>CO<sub>2</sub>H)] (M = Cr, Mo, W). All the supramolecular aggregates obtained display columnar mesophases at room temperature, promoted by columnar packing of 1:1 melamine-metalloacid supramolecules. The stability of the columnar hexagonal mesophases formed is high and the clearing temperatures decrease very regularly in the order Fe > Cr > Mo > W. The compounds show high thermal stability, even in the isotropic state.



**Figure 1**

### References

- (1) (a) C. M. Paleos, D. Tsiourvas, *Liq. Cryst.*, **2001**, 28, 1127. (b) D. W. Bruce, *in Advances in Inorganic Chemistry*, **2001**, 52, 151. (c) J. Barberá, L. Puig, J. L. Serrano, T. Sierra, *Chem. Mater.*, **2004**, 17, 3308.
- (2) (a) P. Massiot, M. Imperor-Clerc, M. Veber, R. Deschenaux, *Chem. Mater.*, **2005**, 17, 1946. (b) S. Coco, C. Cordovilla, C. Domínguez, P. Espinet, *Dalton Trans.*, **2008**, 6894.