ESRF	**Experiment title:** Grids and supramolecular networks	**Experiment number:** **CH-2474**
Beamline: ID 11	**Date of experiment:** from: 27/11/2007 at 8:00 a.m. to: 02/12/2007 at 8:00 a.m.	**Date of report:** 18 – 12 – 2007
Shifts: 12	**Local contact(s):** Dr. Gavin Vaughan	*Received at ESRF:*

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Report:

The following classes of structures were analyzed:

A. Supramolecular grids and sticks. Ligands able to generate such objects

1) Pyrazine-based [2x2] grid-, stick- and rack-like complexes were synthesized and the X-ray structures that were obtained confirmed the expected way of self-organisation of the metal-ligand systems.

- a Cu(II) [2x2] grid-like complex (A-M Stadler, Strasbourg) (figure 1)
- a Cu(II) binuclear rack-like complex (A-M Stadler, Strasbourg) (figure 2)
- a Pb(II) binuclear stick-like complex (J. Ramirez, Strasbourg) (resolution in work)

2) Triazine-based ligands for [2x2] grids and networks:

- an "adaptable" triazine-based ligand (J. Ramirez, Strasbourg) (figure 3). Depending on the solvent, this ligand is able to form both grid-like and pincer-like complexes of Co(II).

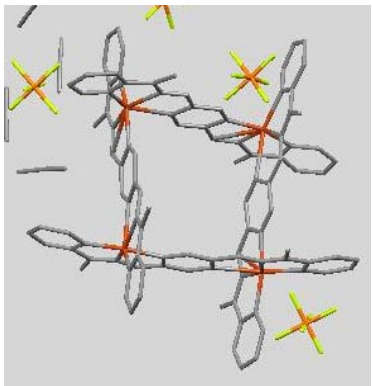

Figure 1

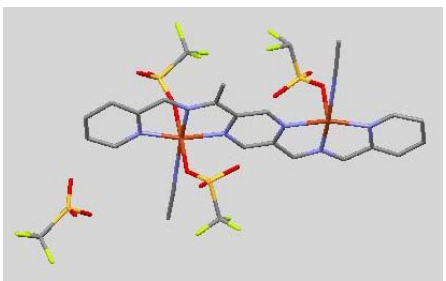

Figure 2

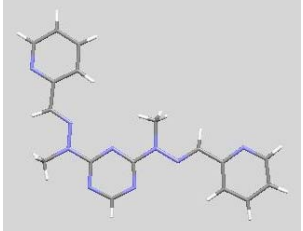

Figure 3

B. Complexes for molecular motions

1) A helical complex was obtained. It is a dinuclear Pb(II) two-turns helical complex, containing a ligand folded around the two metal ions (A-M Stadler, Strasbourg) (figure 4). Such reversible folding processes may be modulated by pH-variations, by using a second ligand.

2) A Cu(I) catenane-like complex (J.-P. Sauvage, Strasbourg) (figure 5)

C. Mononuclear complexes. Pincer-like complexes: models for ruthenium (II) [2x2] grids and racks.

- a Ru(II) mononuclear pincer-like complex (A-M Stadler, Strasbourg) (figure 6)

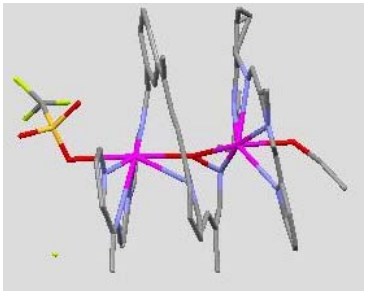

Figure 4

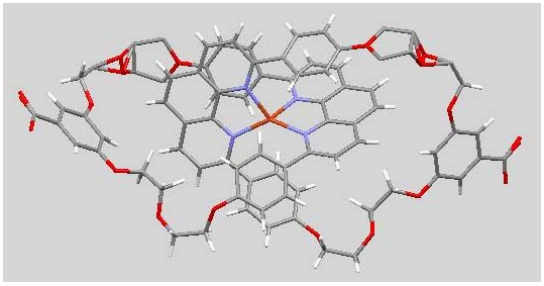

Figure 5

Figure 6

D. Solid-state networks (M. W. Hosseini, Strasbourg) (figure 7)

E. Macrocyclic ligands (S. Ulrich, Strasbourg) (figure 8). These macrocycles are able to generate solid-state channels by stacking

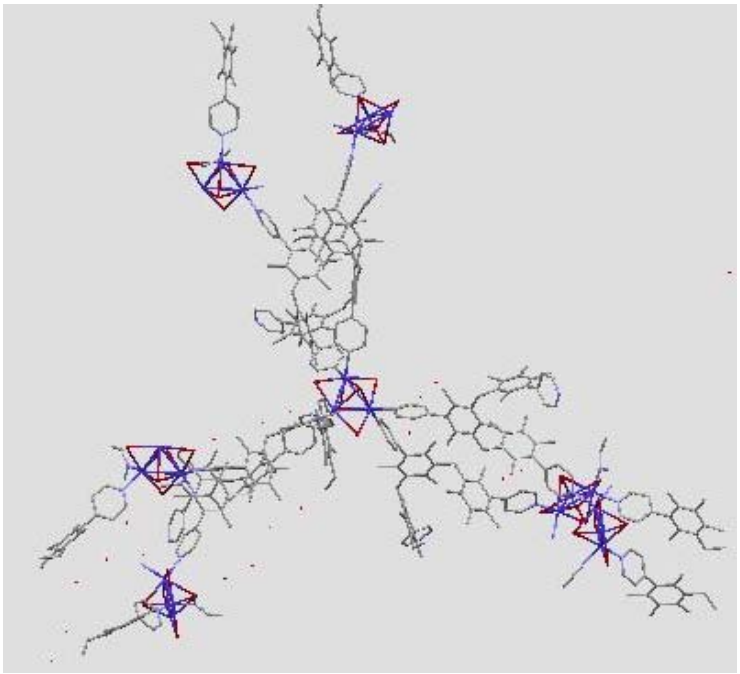

Figure 7

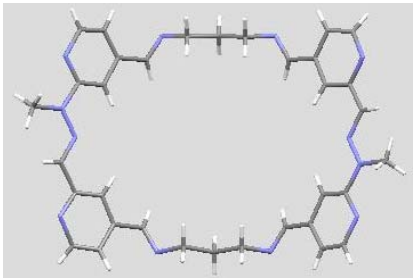

Figure 8

Conclusion:

During this experiment, the structures that were solved, confirmed the expected molecular structures.

The complexity of the molecules and the smallness of the crystals fully justified the employment of Synchrotron radiation.

Most of these structures will be included in scientific papers.