

m41.p19**Four years of the EPSRC SRS Service**

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Since October 2001, the EPSRC national crystallography service in the UK has had a SRS component, run in conjunction with the national crystallographic service based at Southampton University, through the use of station 9.8 at Daresbury laboratory.

Over the course of the past 3.5 years regular monthly visits have taken place, and a total of 385 data collections made, averaging 6 data collections per day of beam time.

This poster reports the many successes of the service, and includes statistics on users and publications benefiting from the service.

The reader will hopefully gain an insight into a service utilizing the most successful small molecule synchrotron beam line in the world.

m41.p20**The Design and Synthesis of Metal-Carboxylate Coordination Polymers**

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Research into coordination polymers, or metal-organic frameworks, has increased dramatically in recent years. Through the use of organic bridging ligands, it has been possible to introduce rational design principles and functionalisation into structures, thereby allowing the properties of structures to be tuned. As part of my research, a series of 2D and 3D porous carboxylate network structures have been synthesised. Initially, the dicarboxylic acids terephthalic acid (BDC) and 4,4'-biphenyldicarboxylic acid (BPDC) were used before moving onto polycarboxylic acids. All examples presented contain Zn^{2+} as the metal centre and have been solvothermally synthesised in the temperature range 95-120 °C. In addition, all of the networks incorporate trapped or bound solvent molecules. The isostructural complexes $Zn_3(BDC)_3(EtOH)_2$ and $Zn_3(BPDC)_3(DMF)_2$ form 2D triangular grids with the coordinated solvent molecules preventing extension into the third dimension. Square grids with the formulas $Zn(BDC)(DMF)$, $Zn_3(BDC)_2(\mu_3-OH)_2 \cdot 2DEF$ and $Zn_3(BPDC)_2(\mu_3-OH)_2 \cdot 2DEF$ have also been synthesised, the first one being 2D and the other two 3D. As well, in the latter two examples, the DEF solvent molecule forms a hydrogen bond to the bridging hydroxide group. A new family of tetracarboxylic acids based on two isophthalic acid units bridged by different groups have been synthesised. The bridging groups have so far included butenyl, *p*-xylyl and butyl. The first structure from this family is described, a 3D network using the butene tetraacid having the formula $Zn_4(BuTA)_2(H_2O)_3(DMF)_{2.23}(EtOH)_{0.77} \cdot 4H_2O$. Current work is directed towards investigating the solvent uptake and release of these frameworks and also at using powder diffraction to probe the evacuated framework structure. Possible gas storage properties are also being explored. The presentation will include examples of the simple networks together with an updated account of efforts to prepare more open and highly functionalised networks.