Dr David Turner

Room No. 123, Tel: 9905 6293, email: *david.turner@monash.edu*

This document will give you an idea of the type of research we are undertaking within my group. If you have any further queries, please do not hesitate to contact me (details above).

More information on my research can be seen at:
http://monash.edu/science/about/schools/chemistry/staff/turner.html *(follow link to personal site)*

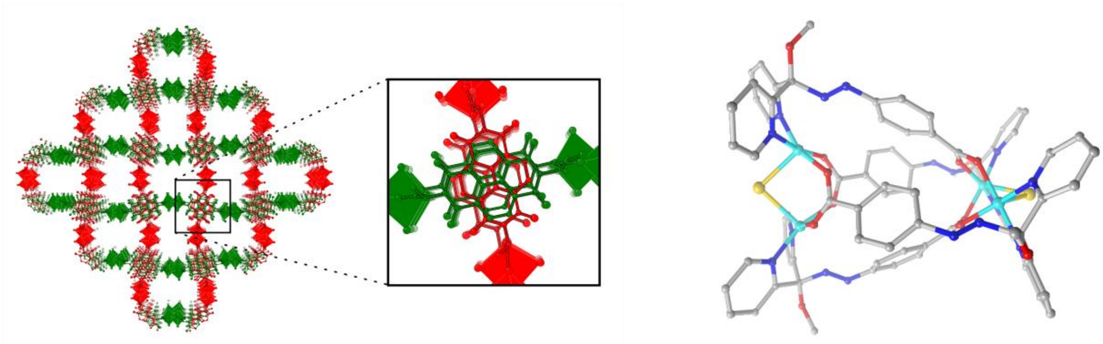
Description of Project Area(s)

All research projects in my group are concerned with aspects of crystal engineering and supramolecular chemistry. Our research primarily aims to design porous coordination polymers - materials that resemble nano-scale scaffolding - which will be able to selectively store, sense or separate small molecules. All projects involve (i) the synthesis of organic ligands that will be able to bridge between metal atoms to construct the framework and which will possess additional sites for supramolecular interactions, (ii) synthesis of coordination polymers and/or coordination cages, (iii) structural characterization by X-ray crystallography (typically involving the Australian Synchrotron) and (iv) analysis of the physical properties of the materials for separation/storage/sensing where appropriate.

Current project areas include:

- ***Chiral coordination polymers for separation.*** Using quite simple bis-amino acid ligands, we have been able to construct several coordination polymers that are able to provide resolution of racemic mixtures in small-scale liquid chromatographic experiments.
- ***Heterotopic ligands in acentric frameworks.*** From a crystal engineering perspective, it is a challenge to create acentric or chiral frameworks using achiral precursors. We have adopted a strategy using low symmetry ligands to try and target such materials.
- ***Amine-based materials for CO_2 capture*** (with Stuart Batten). By including amine groups within the ligands, we aim to create materials with an enhanced selectivity for carbon dioxide with potential application in post-combustion capture.
- ***Coordination cages.*** In addition to coordination polymers, we are also interested in forming discrete cages that are able to trap small molecules inside.

Links to recent papers and more information about recent projects and results can be found on my website (http://users.monash.edu/~dturner).



Left: A chiral coordination polymer used for resolution of racemates (Boer et al., Chem. Eur. J., 2014). Right: A small cage-type complex (Hall et al., RSC Adv., 2014).