



Contribution ID: 154

Type: Poster

## Heteroleptic Iron(III) {Quinolylsalicylaldimine/Thiosemicarbazone- salicylaldimine} Complexes: Spin crossover, intermolecular structural and solvation features, magnetism and Mössbauer spectra

Thursday, 26 November 2015 13:30 (45 minutes)

The relationship between intermolecular interactions and spin-crossover features such as the abruptness of the spin transition and cooperativity, in crystalline complexes of iron(II) and iron(III), is of much current interest.<sup>1</sup> We were particularly interested to make heteroleptic complexes of Hqsal and H2thsa ligands (where Hqsal = quinolylsalicylaldimine<sup>2</sup> and H2thsa = thiosemicarbazone-salicylaldimine<sup>3</sup>) for the first time, to explore the intermolecular interactions when two different ligands are present around each Fe(III) centre. A family of neutral, heteroleptic iron(III) complexes, [Fe(qsal)(thsa)] solvent, is presented where solvent is 0.4BuOH, 0.5MeCN, 0.5THF, as well as two polymorphs of solvent free compounds i.e. [Fe(qsal)(thsa)]. We describe a fascinating array of intermolecular interactions occurring in the various crystals, all containing two distinct Fe sites, including similarities and differences and the importance of a void in the lattice structure wherein solvate molecules sit (or do not sit, in [Fe(qsal)(thsa)] polymorphs), and how these all relate to differences in spin states of neighbouring [Fe(qsal)(thsa)] molecules i.e. HS-HS and spin crossover HS-HS to HS-LS. Supporting information and insights are provided by TGA, PXRD and Mössbauer spectral data.

### Keywords

Spin crossover, Fe(III), Single crystal X-ray diffraction

Primary author: Dr PHONSRI, Wasinee (Monash University)

Co-authors: Dr MOUBARAKI, Boujemaa (Monash University); Prof. JAMESON, Guy (University of Otago); Prof. MURRAY, Keith (Monash University)

Presenter: Dr PHONSRI, Wasinee (Monash University)

Session Classification: Poster Session 1

Track Classification: Advanced Materials