

*Rhodium(I) carbonyl complexes as model nano wires*

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Square planar rhodium(I) complexes display non-covalent metal-metal interactions arising from the close proximity of the adjacent metal centres forming infinite one-dimensional chains. This study focused on investigating the effects of changing the rhodium(I) environment on the metallophilic interactions in the solid state. Systematic variations of coordinating bidentate ligands were introduced to prompt either steric or electronic effects on the rhodium(I) metal centre.

A range of complexes were synthesized and characterized using IR, UV/Vis and NMR spectroscopy. Single crystal X-Ray diffraction was used for the solid state structural determinations of these complexes which appear in a variation of shapes and colours attributed to the significant changes in the Rh(I)···Rh(I) bond distances. Changes in the molecular arrangement of these complexes along the one-dimensional chains were also observed.

The results suggest that the systematic manipulation of the electronic and steric environment around rhodium(I) metal centre can in principle provide an insight on how these nano wires are constructed via a one-dimensional network and this will in turn provide opportunities in the development of new electronic and optical technologies.

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