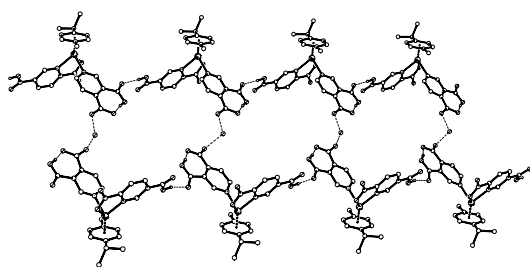


Towards the Synthesis of Supramolecular Polygons and Polyhedra Containing the Ruthenium- η^6 -Arene Unit, Sophie H. Dale* and Mark R. J. Elsegood, *Chemistry Department, Loughborough University, Loughborough, LE11 3TU, UK.* E-mail: S.H.Dale@lboro.ac.uk

Keywords: Supramolecular chemistry; Organometallic chemistry; Coordination complexes

Stang *et al* [1] and Zaworotko *et al* [2] have investigated the synthesis of supramolecular polygons and polyhedra from coordination complexes bearing a combination of site-blocking and linker-style ligands, while this has been extended by Yamamoto *et al* [3] to include functional, organometallic metal(η^6 -arene) units in the synthesis of supramolecular rectangles. The dimeric $[\text{Ru}(\eta^6\text{-arene})\text{X}_2]_2$ (X = halide; arene = benzene, *p*-cymene, hexamethylbenzene etc.) complexes are important reagents in the synthesis of further substituted $\text{Ru}(\eta^6\text{-arene})$ complexes through the lability of the bridging Ru-X bonds [4,5], yielding sandwich or piano-stool complexes. Pyridinepolycarboxylic acids possess aromatic *N*-functionality ideal for coordination to the $\text{Ru}(\eta^6\text{-arene})$ unit, leaving uncoordinated carboxylic acid groups available for hydrogen bonding interactions. Neutral, pseudo-octahedral complexes of the form $\text{Ru}(\eta^6\text{-}p\text{-cymene})(N,O\text{-}L\text{-}L)\text{X}$ [where *N,O-L-L* = pyridine-2-carboxylate or *n*-carboxy-pyridine-2-carboxylate (*n* = 3, 4 or 5) and X = Cl, Br or I] are formed readily from the reaction of $[\text{Ru}(\eta^6\text{-}p\text{-cymene})\text{X}_2]_2$ with two equivalents of the required pyridinecarboxylic acid. A range of cationic species $[\text{Ru}(\eta^6\text{-}p\text{-cymene})(N,O\text{-}L\text{-}L)L]^+$ (where *L'* = monodentate ligand) are synthesised through the removal of chloride from $[\text{Ru}(\eta^6\text{-}p\text{-cymene})\text{Cl}_2]_2$ prior to reaction with the desired *N,O*-bidentate and monodentate ligands. Structural examples from this diverse system will be presented, including complexes which have crystallised as chains, ladders and discrete quadrangles through the formation of intermolecular hydrogen bonded arrays.



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