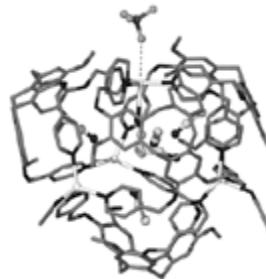


W0205

**Polyhedral Clusters and Networks with Host-type Ligands.** M.J. Hardie, C.J. Sumbly, School of Chemistry, Univ. of Leeds, Leeds, LS2 9JT, UK.

We have recently generated a series of host-type ligands based on the cyclotrimeratrylene framework. These ligands have rigid molecular cavities capable of binding other molecules. They can be incorporated into either discrete or polymeric metal-ligand systems, thus creating metallo-supramolecular assemblies or coordination polymers with specific molecular recognition sites.

Complex  $[\text{Ag}_3\{\text{tris}(2\text{-pyridylmethyl})\text{cyclotrimeratrylene}\}_2].3\text{PF}_6$ , for instance, has a 3-D  $[\text{Ag}_3\text{L}_2]$  coordination network with  $\text{PF}_6^-$  anions in both lattice sites and within the molecular cavity of the ligand. The structure has cubic symmetry and is highly disordered.



By making a single, simple assumption we are able to disentangle the disorder and make sense of the structure as a four-fold interpenetrating (10,3)-a network. An unusual "star-burst" tetrahedral assembly is formed in the complex  $[\text{Ag}_4\{\text{tris}(3\text{-pyridylmethylamino})\text{cyclotrimeratrylene}\}_4(\text{CH}_3\text{CN})_4].4\text{PF}_6$  (pictured) where the  $\text{Ag}(\text{I})$  centres are at the corners of a tetrahedron. We can use host-guest chemistry to control the self-assembly outcome: the star-burst  $[\text{Ag}_4\text{L}_4]^{4+}$  tetrahedron is isolated in the presence of acetonitrile guest molecules, but in the presence of much bulkier glutaronitrile guest molecules a 2-D coordination polymer with  $4.8^2$  topology is formed instead.