

Supramolecular Coordination Chemistry – the Challenge of the Outer Sphere

Alan F. Williams, *Department of Inorganic Chemistry, University of Geneva, Switzerland*. E-mail: Alan.Williams@chiam.unige.ch

Supramolecular coordination chemistry seeks to construct large complexes, either as discrete multinuclear complexes or as extended structures. Synthetic approaches may be classified into: (A) the use of large polynucleating ligands capable of binding several metal ions; (B) the use of bridging ligands such as 4,4'-bipyridine, cyanide or oxalate to link metals together; (C) linking complexes via interactions between groups located on the exterior of the complex, the outer sphere. This last approach is the subject of the lecture. It offers a number of advantages including easier synthesis than approach (A), and little or no perturbation of the properties of the metal centre. In favorable cases the binding of the metal can be used to activate the ligand to outer sphere association, and the interaction may be controlled by the external environment.

These ideas will be illustrated by a series of examples using hydrogen bonding and stacking interactions of heterocyclic ligands. Attention will be paid to how these interactions may be induced or suppressed.

Keywords: coordination compounds, supramolecular chemistry, crystal packing