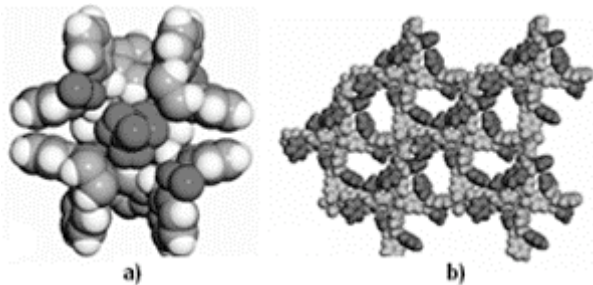


**Self-assembled Metal-organic Frameworks Based on Polyfunctional Ligands Derived from the Organic Solid State.** D.-K. Bučar, T.D. Hamilton, L.R. MacGillivray, Dept. of Chemistry, Univ. of Iowa, Iowa City, IA 52242.

Our focus on the design of functional material has led to the creation of a series of polyfunctional ligands following a design strategy in which linear templates direct stereospecific and regiospecific [2+2]-photodimerizations in the solid state. To prepare the ligands *rctt*-1,2-bis(2-pyridyl)-3,4-bis(3-pyridyl)cyclobutane (2,3-tpcb) and *rctt*-1,3-bis(2-pyridyl)-2,4-bis(4-pyridyl)cyclobutane (2,4-tpcb-ht), linear templates (4,6-diphenylethyl-resorcinol and catechol)



were used as a means to direct a [2+2]-photodimerization of *trans*-1-(2-pyridyl)-2-(3-pyridyl)ethylene and *trans*-1-(2-pyridyl)-2-(4-pyridyl)ethylene in the solid-state. The ligands self-assemble with Cu(II) and Zn(II) ions into complex three-dimensional structures that are held together coordination bonds.

In this contribution, we present a chiral tetrahedral host for a polyatomic anionic guest (*i.e.* perchlorate) in which the Cu(II) ions occupy four vertices (Fig. 1a) and the 2,3-tpcb ligands occupy each of the four faces of a tetrahedron. Furthermore, we show that Cu(II) and Zn(II) ions in a reaction with 2,4-tpcb-ht gives one- and two-dimensional metal-organic frameworks with walls decorated by 2-pyridyl groups suitable for hydrogen bonding with guest species (Fig. 1b).