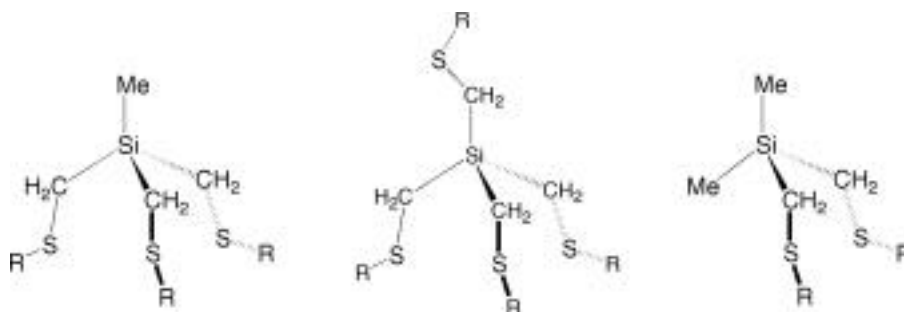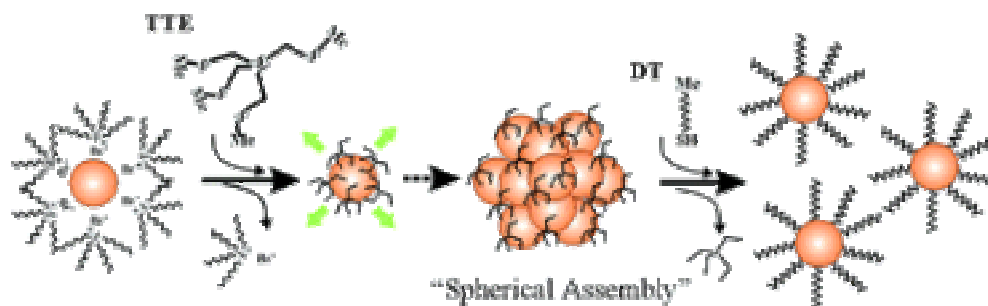# 2. New multidentate thioethers

Inspired by our success with poly(pyrazolyl)silane ligands, we have also introduced new families of tetradentate, tridentate, and bidentate thioethers of general formula $Me_nSi(CH_2SR)_{4-n}$ (n = 0, 1, 2; R = Me, Bu^t, Ph). We have explored and continue investigating the coordination chemistry of these ligands and have prepared many new complexes, including zerovalent group 6 metal derivatives $LM(CO)_3$ (M = Cr, Mo, W) and several interesting coordination polymers of Cu(I), Ag(I), Zn(II), Cd(II), Hg(II), and Bi(III).

An interesting new application of some of these thioethers is their ability to control the growth (*i.e.,* size) and shape of unusual gold nanoparticle assemblies, a project that is carried out in collaboration with Prof. Chuan-Jian ("CJ") Zhong (SUNY-Binghamton).

Some recent publications:

"Tris[(alkylthio)methyl]silanes: Syntheses and Structures of Chromium, Molybdenum, and Tungsten Complexes with a Tripodal Thioether Ligand" Yim, H. W.; Tran, L. M.; Dobbin, E. D.; Rabinovich, D.; Liable-Sands, L. M.; Incarvito, C. D.; Lam, K.-C.; Rheingold, A. L. *Inorg. Chem.* **1999**, *38*, 2211-2215.

"One-Dimensional Copper(I) Coordination Polymers Based on a Tridentate Thioether Ligand" Yim, H. W.; Tran, L. M.; Pullen, E. E.; Rabinovich, D.; Liable-Sands, L. M.; Concolino, T. E.; Rheingold, A. L. *Inorg. Chem.* **1999**, *38*, 6234-6239.

"Novel Spherical Assembly of Gold Nanoparticles Mediated by a Tetradentate Thioether" Maye, M. M.; Chun, S. C.; Rabinovich, D.; Zhong, C.-J. *J. Am. Chem. Soc.* **2002**, *124*, 4958-4959.

"Size-Controlled Assembly of Gold Nanoparticles Induced by a Tridentate Thioether Ligand" Maye, M. M.; Luo, J.; Lim, I.-I. S.; Han, L.; Kariuki, N. N.; Rabinovich, D.; Liu, T.; Zhong, C.-J. *J. Am. Chem. Soc.* **2003**, *125*, 9906-9907.