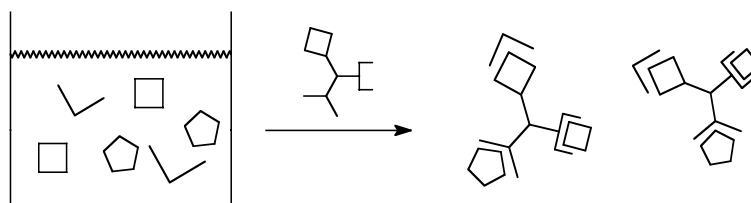


W0013

Modular Supramolecular Synthesis Driven by Selective and Hierarchical Hydrogen Bonds. Christer B. Aakeröy, John Desper, Meg Fasulo, Brock Levin, Janie Salmon, Nate Schultheiss, Ben Scott, and Michelle Smith, Dept. of Chemistry, Kansas State Univ., Manhattan, KS, 66506.

In supramolecular synthesis, the focus is on site-specific interactions of an *intermolecular* nature. The question is, can we use tools and principles forged in synthetic organic chemistry to construct supramolecular architectures? More specifically, can we fine-tune *intermolecular* interactions by altering the local electrostatic environment of individual molecules, thereby guiding supramolecular assembly in a predictable manner? In order to bring crystal engineering to a higher level of refinement and versatility it is necessary to identify reliable supramolecular reactions and synthetic strategies that will allow us to build multi-component heteromeric structures, *e.g.* binary and ternary supermolecules.¹

This presentation will explore some possibilities and limitations of supramolecular synthesis, and will discuss the design of new supramolecular reagents that can facilitate a range of supramolecular reactions (see below). The products from these reactions must be obtainable in high yields and with predictable and reproducible geometries.



¹The term supermolecule used here indicates a discrete 0-dimensional species composed of molecular building blocks, assembled *via* directional non-covalent forces. Thus, ternary systems formed by ionic interactions (salts) or by incorporation of solvent molecules within a lattice (*e.g.* clathrates, heterosolvates, or inclusion compounds) are distinctly different from the supermolecules that we discuss in this proposal.