

W0013

Supramolecular Chemistry in Alternative Solvents: Are Nonvolatile Ionic Liquids Effective Crystallization Solvents or Fodder for Co-Crystals? Robin D. Rogers, Scott T. Griffin, Grant A. Broker, W. Matthew Reichert, Jane H. Poplin, Richard P. Swatloski, John D. Holbrey, Dept. of Chemistry and Center for Green Manufacturing, Univ. of Alabama, Tuscaloosa, AL 35487.

While the use of ionic liquids (ILs) as reaction solvents has been extensively reviewed and has been the subject of enormous publicity, work on developing an understanding of properties, and physical and structural data of ILs is less prolific. Compared to conventional molecular organic solvents, ILs are much more complex, both chemically, and in terms of the wide range of interactions that can take place, and although some systematic studies of structure-property relationships have been attempted, there are no simple rubrics for comparison of the solvent and solvating properties of differing ILs.

One aspect of our research is the expansion of applications of ILs as crystallization solvents in order to realize goals of controlled crystallization, formation of unique materials, and modification of crystal habit or polymorphic tendencies through solvent design. The variation in IL solvent systems and properties and apparent order, and structuredness of IL solvents, leads to optimism that polymorph and crystallization control can be afforded. The questions posed, and that will hopefully be addressed, are: (a) Is crystallization from IL solutions of interest for bulk purification of products? (b) Can crystallization processes and crystal growth events be better understood by investigating IL systems? (c) Can non-traditional crystallization methods be used to produce new materials or crystal forms?