

### **235e Tuning Ionic Liquids for CO<sub>2</sub> Gas Absorption**

*JaNeille K. Dixon, Mark J. Muldoon, Jessica L. Anderson, Joan F. Brennecke, and Edward J. Maginn*

Ionic liquids are being investigated for a variety of applications, including reaction media, separation solvents, non-volatile electrolytes, heat transfer fluids, and gas capture. The negligible vapor pressure and tuneable properties make them ideal to replace volatile and/or corrosive solvents currently being used for these processes. We are interested in how the structure of the ionic liquid affects the solubility of pure gases, in particular CO<sub>2</sub>. Compounds containing fluoroalkyl groups, ethers, and carbonyl moieties were investigated to better understand the structural requirements for physical absorption of a gas. We also examined ionic liquids as replacements for the expensive amine-based technology presently being used for chemical capture of CO<sub>2</sub>. Ionic liquids containing tethered 1° amines and other Lewis-acid acceptors capable of forming chemical bonds between the gas and IL were studied. Based on the absorption data, new ionic liquids are continually designed, synthesized and tested in order to maximize absorption.