

### **138a The Solubility of N<sub>2</sub> & O<sub>2</sub> in Liquid CO<sub>2</sub> near the Critical Point**

*Steve Gerdemann, Thomas Ochs, Danylo Oryshchyn, and Cathy Summers*

Accurate prediction of the solubility of O<sub>2</sub> and N<sub>2</sub> in liquid CO<sub>2</sub> is required for the Integrated Pollutant Removal (IPR) process, which uses compression and condensation of coal combustion products for pollutant capture. However, equations of state for the ternary CO<sub>2</sub>, N<sub>2</sub>, and O<sub>2</sub> system fail at conditions near the critical point of CO<sub>2</sub>, and existing data from the literature are limited. Consequently the USDOE/Albany Research Center (ARC) has designed an apparatus for examining vapor-liquid equilibrium compositions in this region. The design of the apparatus and initial experimental results are presented and compared with literature values and equations of state.