

**University of Kentucky Center for Applied Energy Research
Power Generation Research Group**

Vapor-liquid equilibrium (VLE) apparatus

The VLE system is used to study the CO₂ solubility in aqueous solvents under utility flue gas conditions. The central part of the equipment is a thermostated high-pressure sample cell installed with a sapphire window in the front face. In a typical experiment, this sample cell is filled partially with a known amount of desalted and degassed water. After the addition of a known amount of ammonia, the cell is charged with carbon dioxide. After each step, the mixture is stirred using a magnetically couple stirrer till equilibrated, then the temperature, pressure, and volume of the liquid phase are measured, and a gas sample is drawn for gas analysis using GC.

