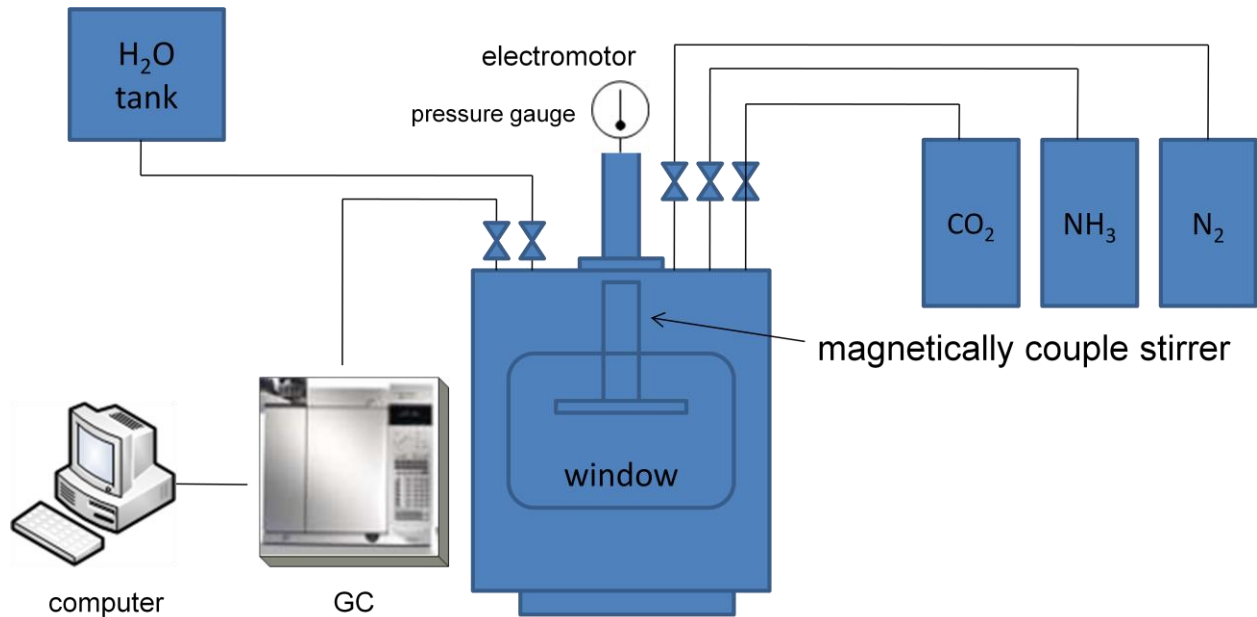


**University of Kentucky Center for Applied Energy Research
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Schematic diagram for vapor-liquid equilibrium (VLE) apparatus

The VLE apparatus is used to perform CO₂ solubility study. The inlet stream contains 1-14vol.% of CO₂, and the CO₂ solubility is tested with the following experimental variables:

- CO₂ vapor pressure
- Temperature
- Ammonia concentration
- Initial pH (adjusted by HCl)
- Initial carbon loading (spiked by K₂CO₃)

The partial pressure of CO₂ and NH₃ in the vapor phase will be correlated to the CO₂ loading of the liquid phase in mole CO₂/kg solvent