Kinder Morgan “McElmo Dome” Project: Capillary Pressure Measurements of Supercritical CO$_2$/Brine/Carbonate Rock Systems

Drainage and imbibition capillary pressure curves provide important information about a reservoir, such as initial fluid contact(s) and approximate height of its transition zone. Proper estimation of the reservoir transition zone is critical when estimating reserves and establishing field development plans. The focus of this research is to estimate capillary pressure of supercritical CO$_2$/brine/carbonate rock systems in McElmo Dome, one of the largest pure CO$_2$ fields in the world.

**Research Activities:**

- Develop the experimental setup that can measure capillary pressure at reservoir conditions
- Analyze basic petrophysical properties, such as porosity, permeability, and saturation
- Measure capillary pressure and generate drainage and imbibition curves

Some major concerns include:

- Wettability alteration of carbonate rocks in the presence of supercritical CO$_2$
- Effects of salinity and pH of reservoir water on capillary pressure curves

![Capillary Pressure Equipment Setup](image-url)