WESTCARB Regional Partnership

Samples for Analyses of Mineralogy and Dissolved Gas

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Mineralogy Samples - To help design CO₂ flood experiments for use with geochemical models of CO₂-rock interaction.
Polished thin sections were made from ends of sidewall cores competent enough to allow sectioning.

1. Point counts to determine mineral contents of sidewall cores. Complete
2. Electron microprobe analyses of select mineral phases to determine precise chemical composition of minerals. Planned

Dissolved Gas Samples - To determine gas chemistry of associated fluids to help inform models of water-rock interaction.
Core samples collected in canisters, evacuated and allowed to sit for 8 months to allow gas to diffuse out of cores.

1. Noble gas isotopic compositions and concentrations. Underway
2. δ¹³C and concentrations of CO₂ and C₁-C₅ alkanes. CO₂ analyses complete, other analyses underway.
Citizen Green Mineralogy

Mokelumne Sandstone
1762 m depth

- Plane-polarized light
- Blue = porosity
- Cross-polarized light

- Quartz
- Feldspar
- Clays (e.g., illite, smectite) plus Mica
- Opaques
- Carbonate
- H&T Shale and Sandstone
- Starkey Shale
Citizen Green Mineralogy

- Quartz
- Feldspar
- Clays (e.g., illite, smectite) plus Mica
- Opaques
- Carbonate
- Porosity

**H&T Sandstone**
- 1915 m depth
- Plane-polarized light

**H&T Shale and Sandstone**

**Starkey Shale**

**Carbonate cement**

**Mokelumne Sandstone**
Citizen Green Mineralogy

- **Quartz**
- **Feldspar**
- **Clays (e.g., illite, smectite)** plus Mica
- **Opaques**
- **Porosity**
- **Carbonate**

**H&T Shale**
2016 m depth

Plane-polarized light

Cross-polarized light

- **Clays**
Carbon Isotope Composition of Dissolved CO$_2$

Decrease in $\delta^{13}$C of dissolved CO$_2$ with depth indicates increased contribution from fossil fuel sources?