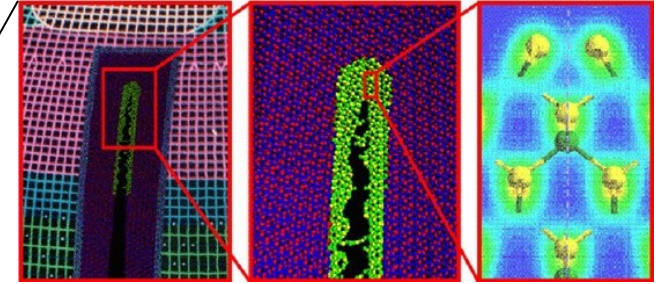
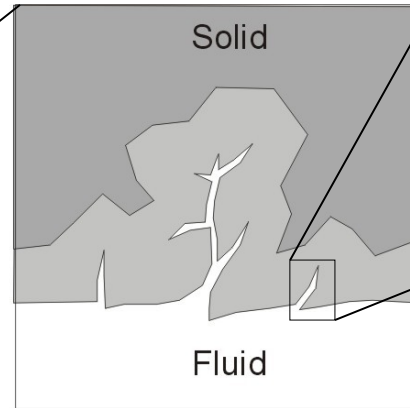
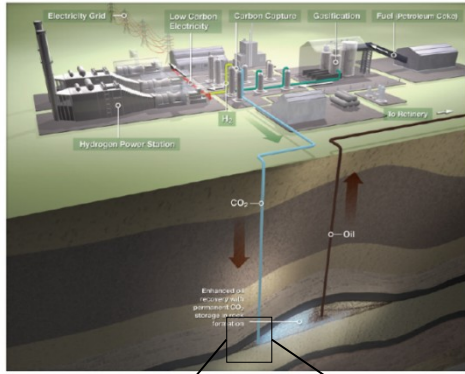


# Permanent storage of CO<sub>2</sub> (as rocks)



**Nano-scale fluid flow:** Flow in narrow fractures, reaction dynamics.

**Nano-scale reactions:** How do volume expanding reactions occur on the atomic scale?

**Nano-scale mechanics:** What determines material failure mechanisms on the atomic scale?

**Micro-scale fluid flow:** Fluid flow near surface, coupling to fracturing, surface tension effects.

**Micro-scale reactions:** Thermodynamic formulation for reaction-diffusion-deformation problem.

**Micro-scale deformations:** What are the main failure mechanisms from micro- to macro-scales?

**Large-scale fluid flow:** Fluid flow near surface, coupling to deformation

**Large-scale reactions:** Coupling between flow, reaction, and deformation.