1135-86-2910 **Christopher Paolini*** (paolini@engineering.sdsu.edu), San Diego State University, 5500 Campanile Drive, San Diego, CA 92182-1326. *Effects of CO2 Injection on Calcite Saturation during Geologic CO2 Sequestration.*

Three-dimensional numerical simulations were conducted to investigate the effects of varying aqueous CO2 concentration on calcite saturation and precipitation during CO2 injection, under variable injection temperatures and pressures. A nine-mineral kinetic mechanism governing the dissolution of quartz, potassium-feldspar (K-spar), anorthite, albite, calcite, kaolinite, smectite, illite, and halite in a porous medium was used, with the aqueous phase pore water temperature modeled using a transient heat advection-diffusion transport model with non-constant thermal coefficients. Water-rock interaction is coupled with a transient mixed finite element method for fluid pressure and velocity, and a Galerkin method for poroelastic mechanics. Thermal coefficients (specific heat and specific enthalpy) are temperature and pressure dependent and computed using the revised Helgeson-Kirkham-Flowers (HKF) model for approximating the thermodynamic properties of aqueous electrolytic solutions at geologic conditions of high temperature and pressure. The HKF derived heat capacity and enthalpy of charged aqueous species arising from the interaction of CO2-rich brine with sandstone are used in the heat transfer model source term for computing aqueous phase volumetric energy generation rate. (Received September 26, 2017)