

Pore-network modeling of single-phase reactive transport and dissolution pattern evaluation

Scientific Achievement

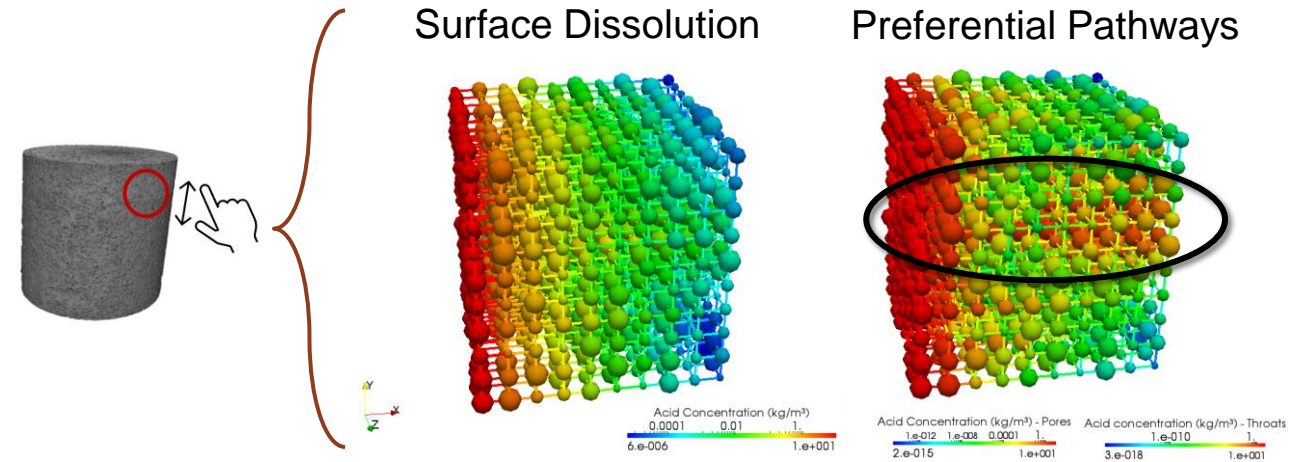
The mapping of dissolution regimes and the construction of k - ϕ relationship curves using pore-network modeling (PNM) and a novel quantitative criteria are explored.

Significance and Impact

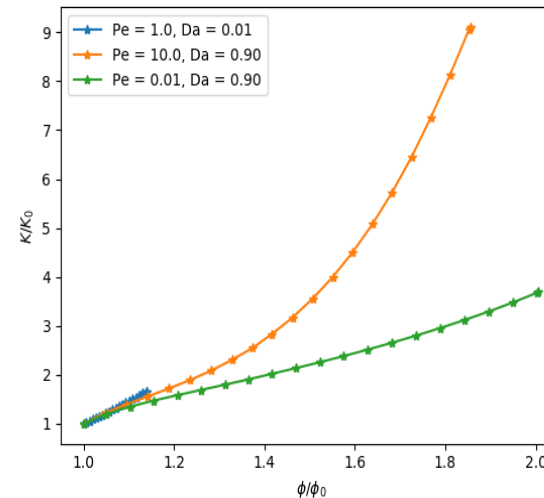
Fundamental understanding of the dissolution patterns in a porous medium is crucial for geological CO_2 storage, as such mineralogical alterations may be of concern for the safety and efficiency of the technique.

Research Details

- Reactive transport and mineral dissolution were simulated using PNM.
- Geometry changes were considered.
- Dissolution regimes were evaluated by qualitative and quantitative criteria (standard deviation).
- Behavior diagrams were constructed based on dimensionless numbers (Pe, Da and PeDa).
- k - ϕ relationship curves were investigated.



k - ϕ Relationships



Behavior Diagram

