

Experimental bachelor's thesis, research internship

Parameter study on indirect CO₂ capture using mineral formation in natural waters

Description

Global warming is one of the most urgent challenges for humankind. Therefore, the Laboratory for Chemical Process Engineering is investigating methods for the sequestration of CO₂ and evaluating their potential. Due to the high levels of carbon/CO₂ in natural waters and because of the option of stable and reliant storage of carbon in minerals, the indirect removal of CO₂ via ion-containing, aqueous solutions opens up an untapped potential that needs to be investigated.

Within this scientific work, a laboratory setup for measuring precipitate formation in aqueous solutions is to be put into operation and optimized throughout the process. Furthermore, a parameter study is to be carried out to investigate the influence of variables such as pH during mineral formation. The results will be used to investigate the thermodynamic equilibrium and the underlying reaction kinetics. The results are to be evaluated against the background of the current state of research.

Requirements

- Interest and prior knowledge of laboratory analytical work desirable
- Previous knowledge of chemical thermodynamics, physical chemistry, or reaction engineering is desirable, but not a prerequisite
- Motivated and independent work in collaboration with the advisor

Tasks

- Familiarization with carbon dioxide removal and mineral reaction systems
- Planning and execution of precipitation experiments
- Ion chromatography and titration measurements for the investigation of the system

The focus and scope of the work will be agreed upon in a personal interview.

Start date

- immediately

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