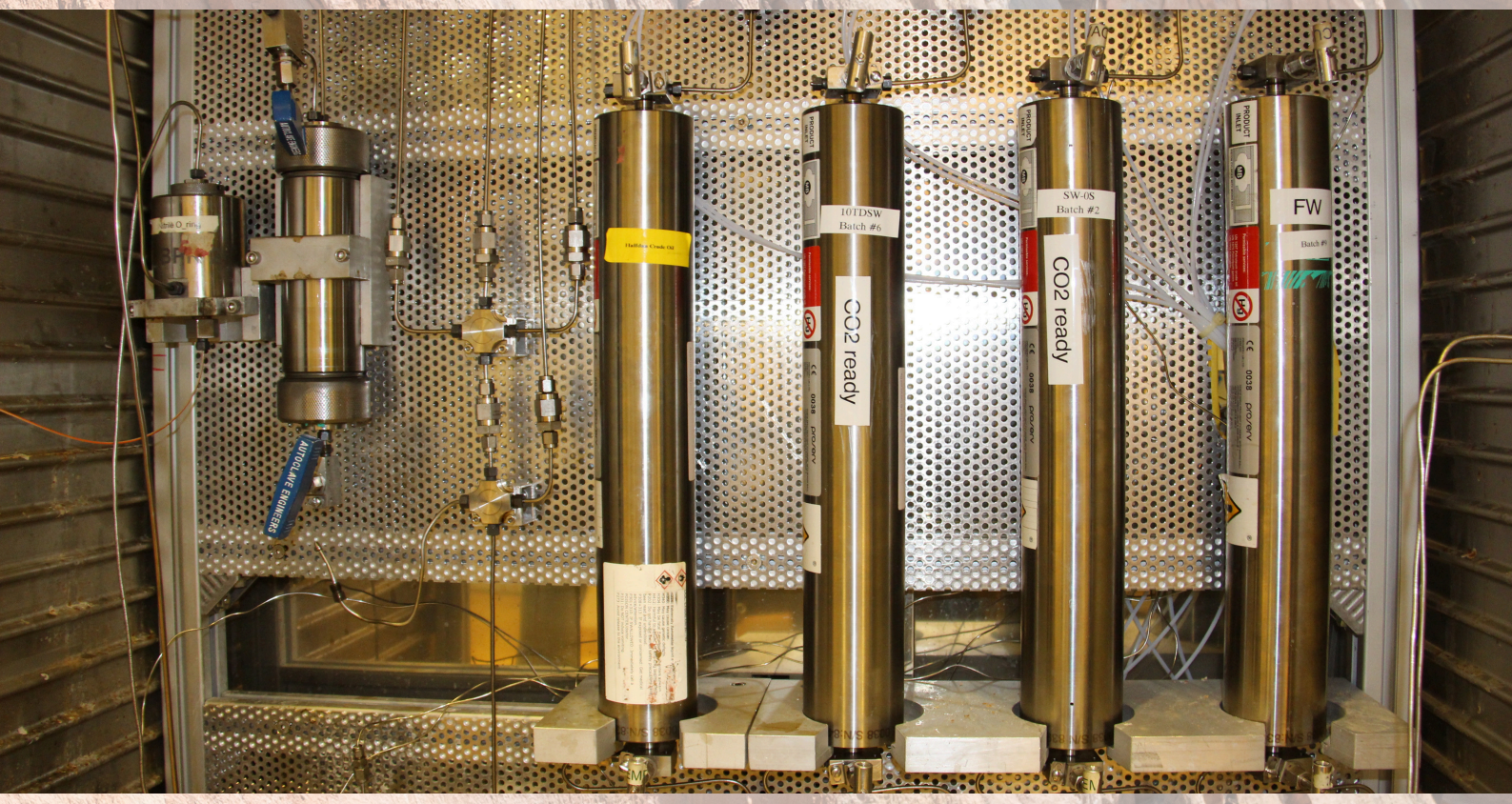
DTU Offshore
Danish Offshore Technology Centre

Unlocking the potential for CO_2 storage

The DTU Offshore laboratories can support the evaluation of the storage complex with input data based on cores collected from exploration wells.



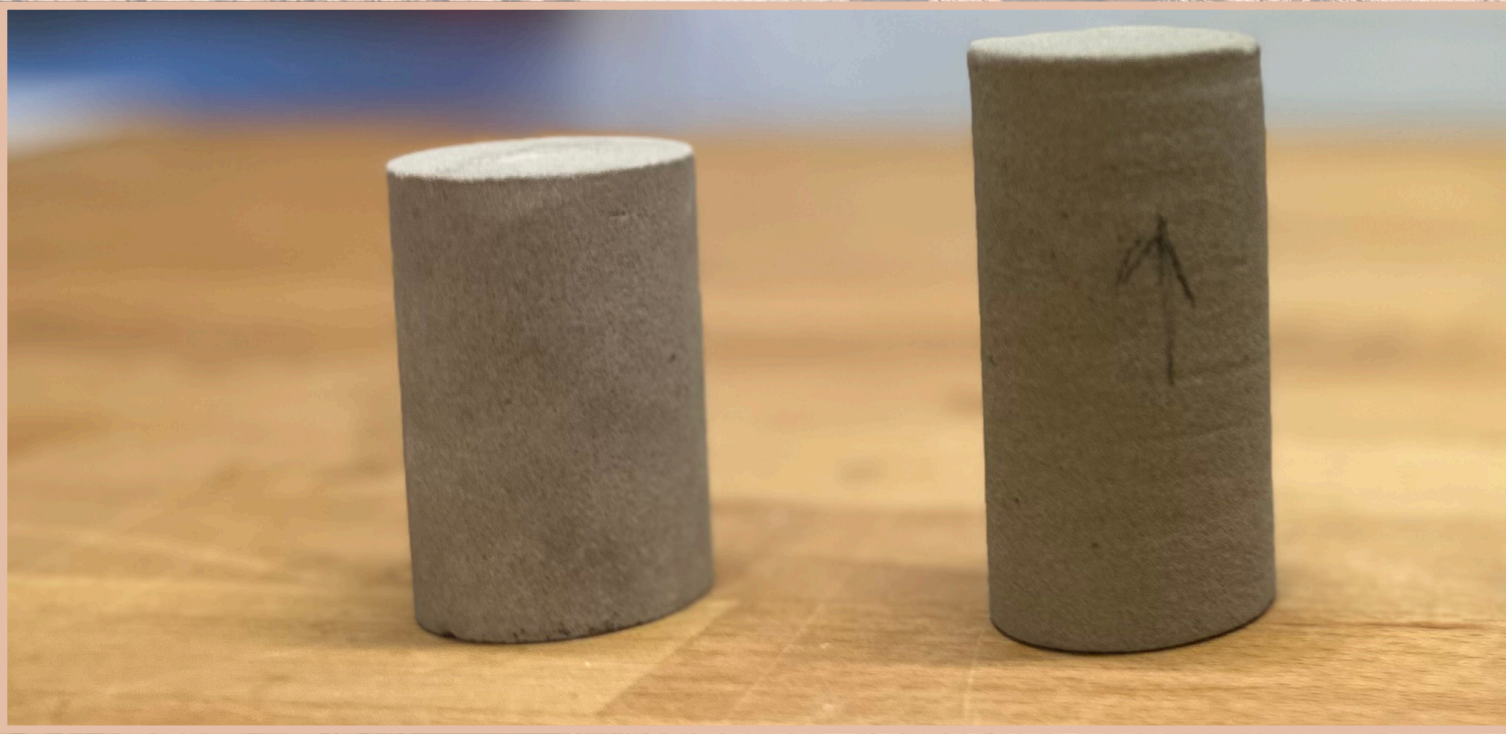
Evaluating a CO_2 storage site involves multiple lab experiments to assess its capacity, integrity, and long-term performance. These experiments generally focus on the properties of the storage reservoir, caprock, and the interaction of CO_2 with these materials.

Core material preparation

- Registration and storage
- Whole core CT imaging
- Mineralogy analyses
  - ✔ XRD/XRF
  - ✔ Thin section analyses
- Clay content

Routine Core Analyses

- CT scanning of core plugs
- Gas porosity
  - ✔ Pore volume
  - ✔ Grain density
- Klinkenberg permeability
- Liquid permeability
- Surface characterization
  - ✔ SEM/EDX analyses
- Specific surface area (BET)



Fluid analyses

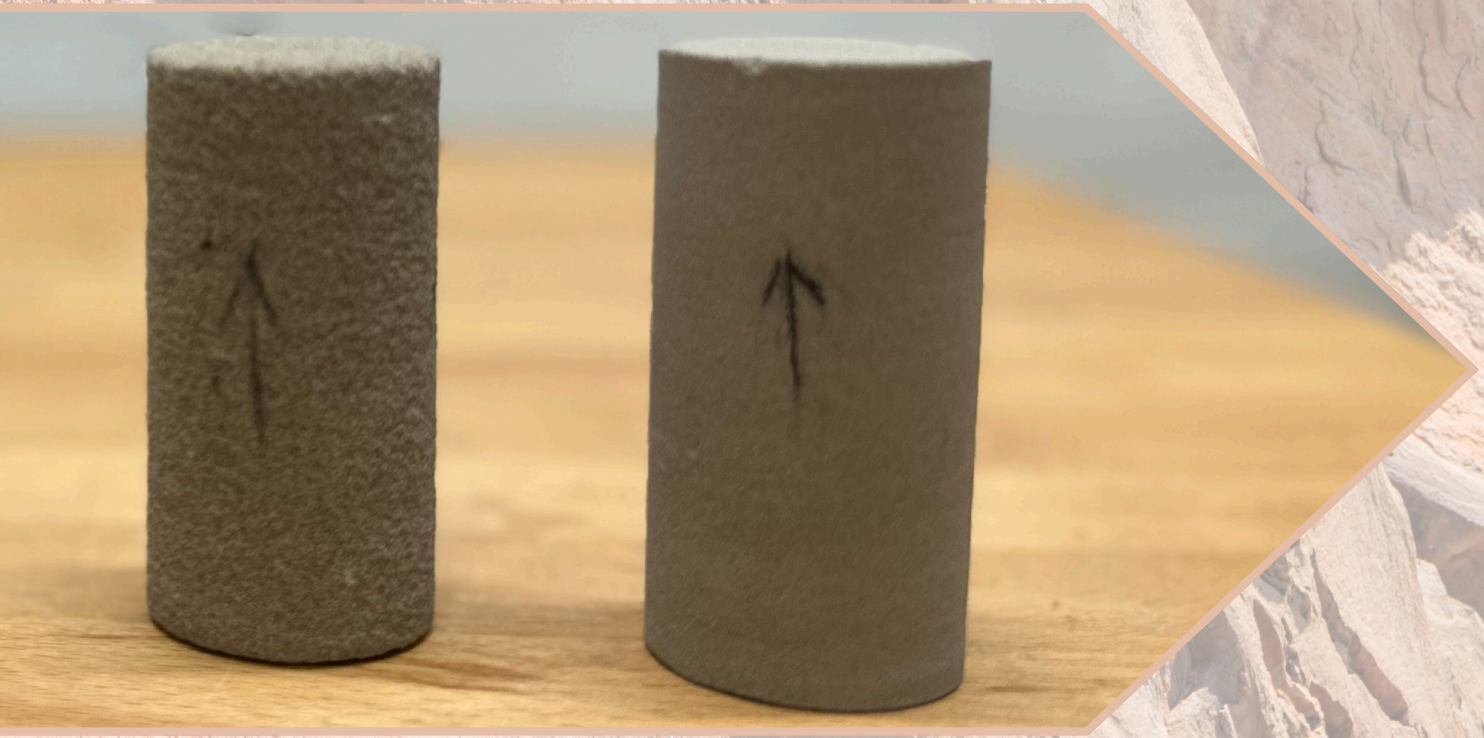
- Registration and storage
- Ionic composition
- Density and viscosity
  - ✔ Room conditions
  - ✔ HPHT conditions
- Interfacial tension (IFT)
- CO_2 solubility

CO_2 storage

- Geochemical behaviour
  - ✔ Mineral dissolution/ precipitation
  - ✔ Effect of impurities
- Geomechanical behaviour
  - ✔ Triaxial/uniaxial test
  - ✔ Acoustic measurement
- Flow behaviour
  - ✔ Routine core flooding incl. CT scan
  - ✔ Resistivity measurements
  - ✔ HPHT microfluidics
- Capillary entry pressure
- Gas hydrate in porous media

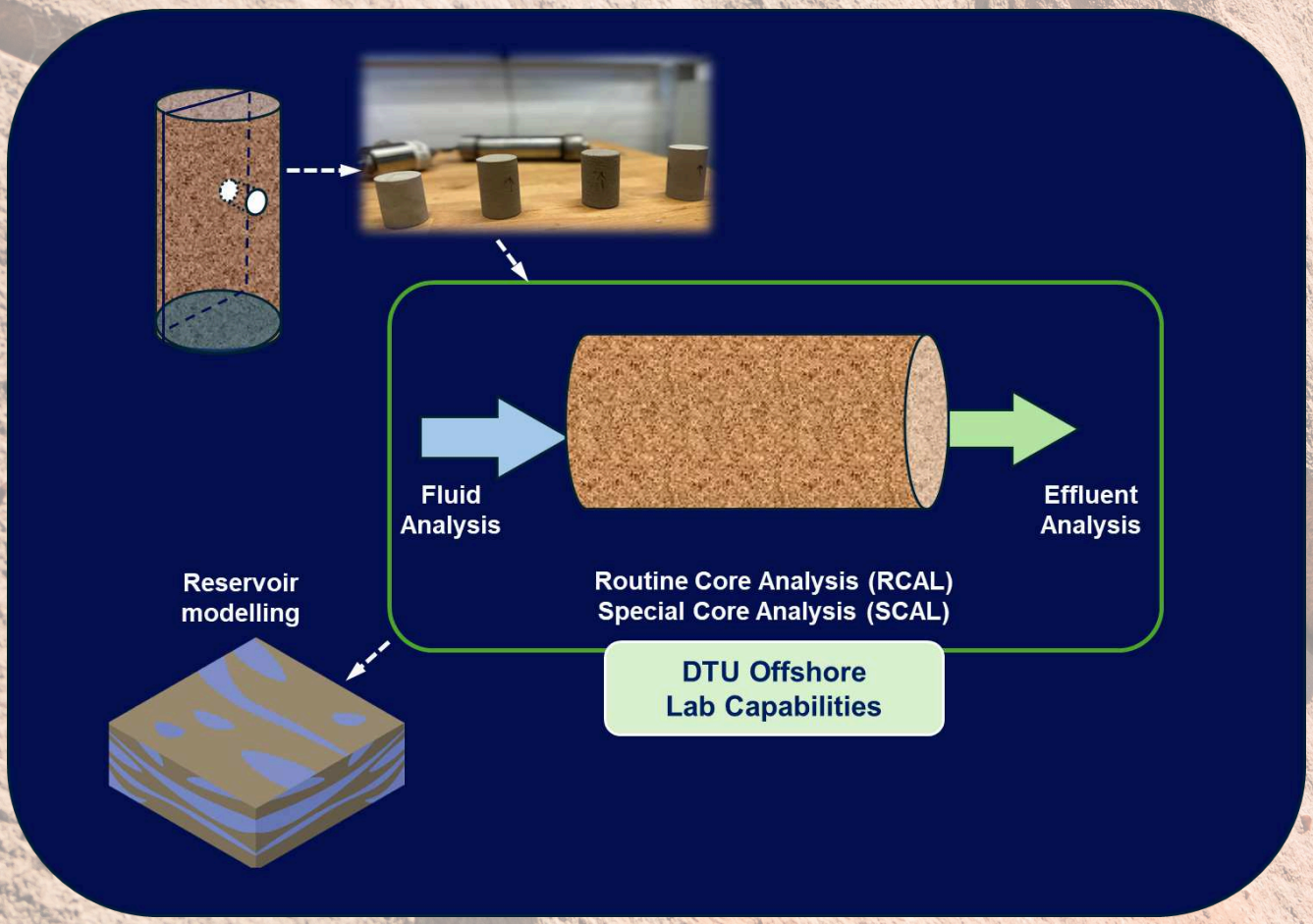
Special Core Analyses

- Relative permeability
  - ✔ Steady state/ Unsteady state
- Capillary pressure
  - ✔ Centrifuge
  - ✔ Porous plate
- Pore size distribution (MICP)
- Wettability
  - ✔ Imbibition
  - ✔ Contact angle
  - ✔ NMR
- Electrical and Mechanical properties



Support the understanding of:

- Storage Capacity
- Formation response to injection pressure (geomechanics)
- Formation response to fluid changes (geochemistry)
- Long-term performance



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