



Houston, TX, USA

The Schlumberger Reservoir Laboratory in Houston is a global center of excellence for rock and core analysis, delivering a wide range of services from field core acquisition to analytical measurements. The Houston laboratory supports a wide range of reservoir characterization projects, with standardized processes built on industry best practices and unparalleled data quality and analyses.

The facility has core analysis capabilities for both conventional and unconventional reservoirs with emphasis on enhanced oil recovery (EOR) and digital core analysis. Digital rock analysis and physical laboratory measurement are performed under the same roof, enabling personnel to optimize the use of technology so that customers can better understand reservoir issues. From whole core to nanopore, the Schlumberger Reservoir Laboratory in Houston provides the information necessary to make better-informed reservoir decisions while reducing risk, simplifying operations, and improving field productivity.

Each of the more than 25 Schlumberger Reservoir Laboratory locations around the world maintains a focus on reliably and accurately performing all operations without compromising security, safety, and quality.

Scientific rigor and attention to detail enable Schlumberger to provide accurate and insightful information that can improve reservoir understanding and enable better drilling, development, and production decisions.



State-of-the-art scanning electron microscopy at the Schlumberger Reservoir Laboratory in Houston provides key insights into the petrology of conventional and unconventional formations.

CORE ANALYSIS SERVICES

Wellsite services

- Onshore, offshore, and international operations
- Core handling
- Onsite measurement
- Sample plugging
- Core preservation
- Core transportation

Routine core analysis

- Total and spectral core gamma logging
- Profile permeametry
- Core photography
- Core slabbing and plugging
- Dual-energy computed-tomography (CT) scanning
- Dean-Stark, Soxhlet, and retort extraction
- Boyle's Law porosity
- Gas permeability
- Grain density
- Continuous strength profiling (scratch testing)
- Core and plug preservation

Petrology

- Thin-section preparation with description
- Quantitative point counting
- Mineralogy using X-ray diffraction, X-ray fluorescence, Fourier transform infrared spectroscopy (FTIR), and diffuse reflectance infrared Fourier transform spectroscopy (DRIFTS)
- Scanning electron microscopy (SEM)
- Ion-milled SEM
- SEM with color cathodoluminescence (SEM-CL)
- Detailed sedimentological core description
- Core fracture description
- Sieve and laser grain-size analysis

Digital core analysis

- Dual-energy whole-core or core-plug 3D CT scanning
- 2D and 3D focused-ion-beam (FIB) SEM
- Microscale CT rock model acquisition
- Petrophysical analysis of 3D rock model
- Digital fluid model development
- Multiphase property evaluation of rock model
- Digital rock simulation of steady-state, two-phase, and immiscible-relative permeability

Special core analysis

- Formation resistivity factor (A and m) determination
- Resistivity index (n) determination
- Core conductivity (C_o/C_w) determination
- Cation exchange capacity identification
- Porous plate capillary pressure measurement
- High-pressure mercury injection
- Centrifuge capillary pressure evaluation
- Amott-Harvey, US Bureau of Mines, and combined-method wettability testing
- Measurement of specific or effective liquid permeability at confining pressure
- Unsteady- and steady-state relative permeability measurement
- Centrifuge relative permeability determination
- Nuclear magnetic resonance low-field measurement and core-log integration
- Dielectric permittivity determination
- Critical velocity identification
- Fluid sensitivity determination

- Static acid solubility testing
- Customized core flooding
- Ambient- or reservoir-condition testing

EOR

- Gas-injection and water-alternating-gas evaluation
- Chemical EOR evaluation (polymer, surfactant, polymer-surfactant, and alkali-polymer-surfactant processes)
- Low-salinity evaluation
- Chemical cocktail formulation
- Interfacial or surface tension determination at reservoir pressure and temperature
- Contact-angle measurement at reservoir pressure and temperature
- Swelling and multiple contact testing
- Minimum-miscibility conditions using a rising bubble apparatus or slim-tube displacement test
- Chemical core flooding in sandpack or core plugs
- Permeability-impairment flow assurance coreflood study



Schlumberger reservoir experts help customers select the best EOR development methods by using advanced laboratory equipment to develop a recovery program for optimized oil displacement in the reservoir.



Coreflood studies help evaluate waterflood and EOR processes and are used to assess formation damage caused by a variety of sources.



Core analysis, such as measurement of the electrical properties of formation samples, provides important information to tune log interpretations.



Careful core cleaning techniques are performed using a Dean-Stark apparatus to determine water content.

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