



## Abu Dhabi, United Arab Emirates

The Schlumberger Reservoir Laboratory in Abu Dhabi, UAE, is a state-of-the-art rock analysis laboratory supporting customers in the Middle East and Asia. The laboratory offers industry-leading workflows and technologies for wellsite core collection and processing through special core analysis (SCAL), geomechanics, geochemistry, petrology, and digital rock modeling. In addition to rock analysis for conventional and unconventional resources, the Abu Dhabi laboratory is the first location outside of North America to offer a full suite of proprietary FIS\* fluid inclusion stratigraphy analysis technology, including microthermometry. Customers also have access to CoreFlow\* digital rock and fluid analytics services supported by proprietary direct hydrodynamic (DHD) simulation to optimize various aspects of field development planning.

Each of Schlumberger Reservoir Laboratory locations around the world focuses on operational reliability and accuracy without compromising security, safety, or quality. Together with our Jebel Ali location, the Abu Dhabi laboratory provides powerful data integration opportunities and an unparalleled value chain of rock and fluids services for our customers.



*The Schlumberger Reservoir Laboratory in Abu Dhabi features a comprehensive portfolio of core processing and analysis services coupled with advanced digital rock modeling and fluid inclusion technologies.*

### WELLSITE SERVICES

- Core handling
- Wellsite sampling and measurements
- Core preservation and 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
- Core and plug preservation

### 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 state-steady relative permeability measurement
- Centrifuge relative permeability determination
- Nuclear magnetic resonance low-field measurement and core-log integration
- Critical velocity identification
- Fluid sensitivity determination
- Static acid solubility testing
- TerraTek TRA\* tight rock analysis service
- Retort extraction

### PETROLOGY

- Automated thin-section scanning
- Manual thin-section imaging with detailed description
- Quantitative point-count and modal analysis of thin sections
- Automated scanning electron microscopy (SEM) imaging
- Manual SEM imaging with detailed description
- Ion-milled SEM imaging
- Mineralogy using X-ray diffraction (XRD), X-ray fluorescence (XRF), and Fourier transform infrared spectroscopy (FTIR)
- SEM spot elemental spectrum and mapping using energy-dispersive X-ray (EDX)
- Fines analysis using digital microscopy and SEM
- Core fracture description
- Sieve and laser particle size analyses
- Detailed sedimentological description of core and plug samples



Our proprietary technologies, workflows, and global domain expertise enable us to achieve the most representative data for mitigating risk and maximizing production.



The Abu Dhabi laboratory is the first location outside of North America to offer FIS analysis, which is based on mass spectrometry and automated cuttings analysis.

## GEOMECHANICS

- Scratch-strength testing, Brinell hardness evaluation, and thermal profiling
- CT profiling as part of CoreFlow digital rock and fluid analytics services
- Multistress testing for determining static and dynamic anisotropic elastic properties
- Unconfined compression and single- or multistage triaxial compression testing for determining anisotropic shear strength envelopes
- Brazilian testing or direct-pull testing for determining anisotropic tensile strength
- Hydrostatic crush testing for determining compactant cap
- Fracture toughness testing
- Specialized fracture toughness or flow testing in medical CT scanners
- Brinell hardness testing for fluid sensitivity
- Pore-volume compressibility testing via effective-stress or true-depletion methods
- Hollow cylinder testing for determining sanding potential
- Direct shear testing for friction properties on weak interfaces
- Thermal conductivity, specific heat, and thermal expansion testing

## DIGITAL CORE ANALYSIS

- Dual-energy whole-core or core-plug 3D CT scanning
- 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

## FLUID INCLUSION TECHNOLOGY SERVICES

- FIS fluid inclusion stratigraphy analysis
- Fluid inclusion petrography and microthermometry
- RockEye\* automated high-resolution photography
- PDQ-XRF\* automated X-ray fluorescence elemental analysis
- PetroFecta\* automated trapped fluid and elemental composition analysis
- Fluid inclusion gas and liquid composition and compound-specific carbon stable isotope analysis

## SOURCE ROCK AND SHALE SCREENING

- Isothermal adsorption and desorption
- RockEval™ analysis
- Total organic carbon (TOC) determination
- Advanced geochemical analyses (via our Dubai laboratory)

## DATA INTEGRATION PETROPHYSICS SERVICES

- TerraTek HRA\* heterogeneous rock analysis service
  - Whole-core sample selection
  - Real-time rotary sidewall core selection
  - Core-to-log integration products
- Reservoir and completion quality logs
- Rock mineralogy logs
- Regional multiwell modeling
- Project data delivery using Techlog\* wellbore software platform

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