Capillarity in Rocks - CIR

COURSE

About the Course

This course covers conventional reservoirs.

The course provides detailed knowledge of how capillarity affects hydrocarbon distribution in a reservoir rock, and how the magnitude of capillary forces can be used to deduce valuable information about rock properties including pore throat sizes, pore network geometry, porosity, and permeability. Several in-class exercises reinforce the course learning and provide students with experience using capillary pressure data for reservoir characterization. Exercises will be worked on the computer using spreadsheet software.

"It was fun and engaging as well as informative." - Petrophysicist, United States

"I can't say enough great things about [instructor]. Great course. One of the best instructors ever." - Foundation Geologist

Target Audience

Geoscientists, petrophysicists, reservoir engineers, and research and development staff who want to gain fundamental and intermediate insight into the capillary properties and hydrocarbon distribution in reservoir rocks.

You Will Learn

Participants will learn how to:

- Select the appropriate capillary pressure measurement method for a set of desired results
- Closure correct a set of mercury/air capillary pressure data
- Fit and analyze capillary pressure data using Thomeer, Leverett-J, and Brooks-Corey methods
- Determine the representativeness of a set of capillary pressure curves within a zone of interest
- Estimate permeability from a mercury/air capillary pressure curve
- Calculate pore throat sizes from a capillary pressure curve
- Create a synthetic capillary pressure curve and estimate the air permeability from a petrographic analysis
- Obtain values for interphase tension
- Convert mercury/air capillary pressure curves to hydrocarbon/water capillary pressure curves
- Determine saturation-height distribution in a single-pore system rock or in a multiple- pore system rock

- Determine irreducible water saturation
- Estimate the length of a transition zone
- Predict downdip water level from partial penetration
- Determine clay-bound water using Klein-Hill-Shirley method
- Compare/contrast capillary pressure data with NMR data
- Determine the maximum column of hydrocarbon that a specific sealing layer can sustain without leaking

Course Content

- Capillary pressure applications in reservoir characterization
- Rock properties from mercury/air capillary pressures
- Capillary pressure data representativeness
- Capillary forces in reservoir rocks; their measurement
- Capillary pressure data fitting methods
- Representing / upscaling a large number of capillary curves
- Permeability from capillary pressure curves and petrography
- Saturation-height functions
- Surface phenomena, capillarity, wettability, and interphase tension
- Competition between capillary and gravity forces
- Imbibition cap curves
- Interpretation of single and multiple pore system rocks
- Clay-bound water
- Capillary pressure vs. NMR
- Seal capacity

Product Details

Categories: Upstream

Disciplines: Petrophysics Reservoir Engineering

Levels: Intermediate

Product Type: Course

Formats Available: In-Classroom Virtual

Instructors: PetroSkills Specialist David Murphy

Virtual Format

28 Nov '23 7 Dec '23 - | Course | Virtual (Houston UTC) $3,115.00