Advanced Core Analysis

This 5-day course covers various aspects of Special Core Analysis (SCAL) with emphasis on current practices in SCAL. SCAL projects are often designed and performed poorly and the results are unreliable and contradictory. Almost half of SCAL results are not practically useful due to poor data quality or project design. The aim of the training course is to present fundamentals, improved understanding, best practices, and advanced methods for core analysis applicable to reservoir engineering. Pore-scale and core-scale attributes of rock properties such as capillary pressure, relative permeability, and wettability pertinent to multiphase flow in porous media will be explained. Various examples of laboratory experiments and simulation of SCAL studies will be discussed. Characterizing the flow function, interpretation of displacement experiments, and error analysis are the focus of this course. Hands-on practices for waterflooding using Buckley Leverette fractional flow will be exercised.

Key Learning Points

1. Practical understanding of core analysis
2. How to use and interpret the results of SCAL tests for reservoir engineering practices.
3. Obtaining physic-based flow functions from core experiments
4. How to design the studies to attain pertinent parameters.
5. Pore-scale interpretation of displacement experiments (water or gas injection cases)

Practical Applications

- Practical assessment of SCAL experiments
    - Sandstone reservoirs
    - Carbonate reservoirs

Materials Provided

- Printed course materials will be provided in a booklet.

Target audience

Petroleum, reservoir, production, process, drilling engineers / operators / technicians / managers.

Main content

- Day-1
  - Importance of core analysis
  - Parameters to be obtained from core analysis
  - Core handling
  - Fundamentals of relative permeability and capillary pressure
  - Wettability
- Day-2
  - Fundamentals of water-oil systems
  - Relative permeability and capillary pressure for water-oil systems
  - Practical aspects of waterflood design
  - Hysteresis effects in water-oil systems
  - Lab to field trials
- Day-3
  - Fundamentals of gas-oil systems
  - Flow functions for gas-oil systems
  - Design of core experiments
- Day-4
  - Interpretation of laboratory experiments water-oil and gas-oil systems
  - Buckley-Leverette analysis of displacement experiments
- Day-5
  - Three-phase SCAL experiments and interpretations
  - Advanced core analysis (two and three phase flow)
  - Implication of SCAL results to EOR studies.

Instructor

Professor Bahman Tohidi and Dr. Pedram Mahzari

You can email Prof. Tohidi if you have any questions about the course content, or if you wish to see a specific topic to be added to the course.

Booking

If you are interested in attending this course, please email Hydrafact Ltd. at info@hydrafact.com

Cost

£1,900

Delivery options

The course can be tailored based on your specific requirement with respect to duration and contents and delivered in your offices.