

Course Code

Gc02

Course Title

Use of Reservoir Geochemistry in Exploration, Oil Field Development and Production Studies

Instructor

Dr. Kadir Gürgey



Professional Career

Dr. Gürgey is a emeritus Professor of Petroleum Geochemistry from the University of Pamukkale in 2009 where he used to teach several petroleum and natural gas related courses. He gained his main experience while he was working for TPAO between 1986 and 2004 in various localities in Turkey (SE-Turkey, Thrace and Ala ehirGraben basins), Kazakishtan (Pre-Caspian basin), Azerbaijan (South Caspian Basin), Cuba, Spain (Galicia Basin) and South Korea (Songlia Basin). His research area basically covers geochemistry of crude oil, natural, condensate and source rocks. He has a number of published papers and presentations in national and international journals and meetings in addition to giving several seminars for oil companies and universities. Dr. Gürgey, currently, is working for Merty Energy as a coordinator involving mainly petroleum geochemistry and training and education related studies.

Course Objective and Description

Reservoir geochemistry deals with the data obtained from accumulated and producible oil, gas and condensates. Data are mainly generated by using Iatroscan, gas chromatography (GC), gas chromatography-mass spectrometry (GC-MS) and isotope ratio mass spectrometer (GC-IRMS). Interpretation of the data provides a great knowledge of information on oil field development and production studies such as vertical and lateral fluid continuity, production allocation, gas, oil and water interface prediction, and viscosity and gravity prediction. Both analysis and interpretation of nonproducibile oil (residual oil) and producibile oil on the other hand, give information to petroleum geologist such as filling direction of oil and the number of hydrocarbon charges into the reservoir. In this course, students will learn how to apply petroleum geochemical data to solve the various reservoir problems.

Who Should Attend

Petroleum geologists, geophysicist and petroleum and natural gas engineers

Prerequisite

Geology background

Learning Level

Intermediate

Duration

5 days

Course Outline

Day One

- Basic organic chemistry
- Compounds and group compounds in crude oil
- Analytical data used for characterization and interpretation of reservoir oil
 - o Sulphur content
 - o Iatroscan
 - o Gas Chromatography (GC)
 - o Gas Chromatography-Mass Spectrometry (GC-MS)
 - o Isotope Ratio Mass Spectrometer (IRMS)

- Analytical data obtained from core analysis
 - o Residual oil analysis
 - o Fluid inclusion analysis

Day two

- History of the reservoir oil before accumulation
 - o Source rock
 - o Generation, primary migration and expulsion
 - o Carrier bed
 - o Secondary migration
 - o Accumulation

Day Three

- Processes changing oil composition after accumulation
 - o Water washing and biodegradation
 - o Deasphalting/gravitational segregation
 - o Evaporative fractionation
 - o Thermal maturity
 - o Thermochemicalsulphate reduction
- Tools for data presentation and interpretation
 - o Sampling
 - o Star diagrams
 - o Cluster analysis
 - o Principle component analysis (PCA)

Day Four

- Homogeneity of oil in the reservoir
 - o Density of driven mixing
 - o Diffusive mixing
- Oil field development and production and exploration - Producible oil analysis
 - o Vertical and lateral fluid continuity,
 - o Production allocation
 - o Oil/ water and gas/water contact prediction
 - o Viscosity and gravity prediction

Day Five

- Non-producible oil (Residual oil) analysis
 - o Reconstruction the oil accumulation history
- Exercise and discussion

Antalya, Turkey
 19-23 Apr
 USS 2,950

stanbul, Turkey
 11-15 Oct
 USS 2,950
