

SEMINAR 211-5

Multi-Frequency Dielectric Measurement for Rocks Characterization

Date: Tuesday, October 12, 2021

Time: 01: 10 PM – 02: 00 PM

Location: Bldg. 59-2015

Speaker:

Mr. Salah Al-Ofi

Team Leader – Physics

Dhahran Technology Center 4.0,

Baker Hughes, Saudi Arabia

Abstract:

Estimating Oil reserves in the subsurface is essential for proper reservoir planning and efficient hydrocarbon production. Geoscientists use electrical logging to evaluate subsurface for resistive anomalies to indicate hydrocarbon reserves. Eventually, this technique has its pitfalls as reservoirs and fluids nature gets complicated and not any resistive anomaly indicates hydrocarbon presence. Thus, more advanced technologies had evolved to address these challenges such as multi-frequency dielectric logging.

In this talk, an overview of dielectric properties of materials will be provided and how different polarization mechanisms influence the dielectric constant measurement of a porous media, e.g. rock, at different frequency ranges. Different techniques for measuring dielectric constant of a rock in the field and laboratory will be illustrated. Then, we will discuss how a geoscientist applies effective medium theory models to interpret hydrocarbon saturation and rock's geometrical characteristics from multi-frequency dielectric data. Furthermore, some real applications will be shared for utilizing dielectric properties for evaluating reservoir rocks.

Bio:

Salah Al-Ofi joined Baker Hughes in Dhahran Technology Center 4.0 as a physics team lead in 2018 and has more than 8 years' experience in research with Schlumberger. He graduated with BSc degree in electrical engineering in 2010 and MSc in electromagnetics in 2015 from KFUPM. He is an IEEE, SPE and SPWLA member and published several papers and patents on formation evaluation and core analysis. His current focus is on developing formation evaluation new applications through laboratory applied research on emerging logging techniques mainly on multi-frequency dielectric and resistivity.