

PBS-SEPM MAY LUNCHEON

Tuesday, May 21st, 2024 – 11:30AM

Bush Convention Center - 105 N Main St, Midland, TX 79701

\$25 Early Bird Rate | \$35 Walk-In/Late RSVP | \$10 Student | \$5 Virtual

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Clay Mineralogy Interpretation and Quantification using XRD techniques: Importance from the Perspective of Unconventional Oil and Gas Operations

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RohmTek

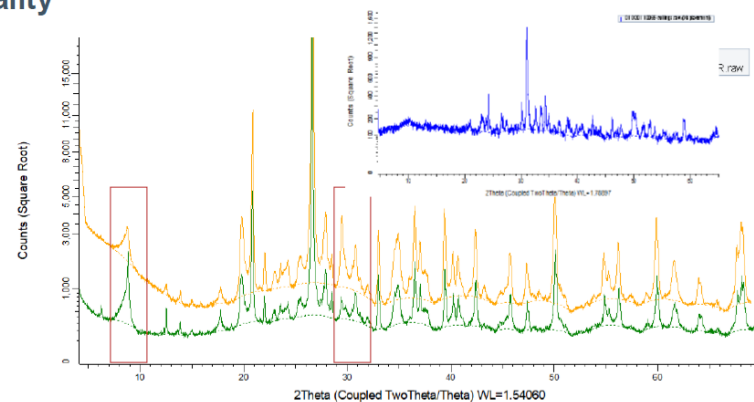
ABSTRACT

Clay minerals are the major constituent of fine-grained sediments and rocks. They began to be widely used in the oil and gas industry as a tool for depositional environment determination or stratigraphic correlation to find exploration target interval. Clay minerals also started to be studied for diagenesis and reservoir quality prediction mainly using petrological analysis and quantitative mineralogical analysis by X-ray diffraction. Their accurate identification and quantification therefore became essential for the evaluation of both conventional and unconventional reservoirs, as clay minerals strongly influence their physical and chemical properties. Yet, the practice remains challenging due to the unique structures and various element compositions of clay minerals. Case studies and examples will be presented highlighting the importance of accurate clay mineralogy interpretation and quantification in oil and gas operations from several point of views: burial and thermal history, to investigate matrix density and reservoir quality prediction, or at a reservoir scale to confirm geochemical data quality for mineral models' evaluation.

BIOGRAPHY

Giovanni grew up in Switzerland where he received a Bachelor's and Master's degree in Earth and Environmental Sciences from the University of Geneva (Switzerland). He will be defending his doctoral research on shale diagenesis from TTU in 2024. Giovanni Zanoni joined RohmTek in November 2023 as Sr. Technical Advisor and XRD analyst. Giovanni oversees X-ray Diffraction operations at RohmTek and provides his expertise in clay mineralogy. Prior to joining RohmTek, he contributed to creating a brand-new Clay Mineralogy Laboratory at Texas Tech University (Lubbock, TX), where he was the primary XRD analyst from 2018. He collaborated in various research projects leading to several scientific publications involving clay mineralogy. He then joined the industry in 2021 as a Mineralogist and XRD analyst for Premier Corex where he worked on over 6000 projects and 6000 samples.

XRD on shale sample – effect of bad preparation on scan quality



Ideal scan – good sample preparation and measurement settings

Problem with preferred orientation – good measurement settings

Bad diffractogram – poor quality preparation and measurement settings

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