

Oil & Gas Application of QEMSCAN

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Abstract

QEMSCAN is an acronym for Quantitative Evaluation of Minerals by Scanning Electron Microscopy, a system that differs from image analysis systems in that it is configured to measure mineralogical and textural variability based on chemistry at the micrometer-scale. QEMSCAN is the most powerful process mineralogical tool currently employed in the minerals industry, and now, the oil and gas industry. Its flexible technology has been successfully employed for diverse commodities such as gold, Rare Earth Elements, as well as oil & gas bearing rocks and media..

Recently, QEMSCAN has been applied to Oil & Gas investigations using FieldScan measurement mode and various electron beam stepping intervals (point spacing). Fine micron-level pixels of information are generated based on X-Ray spectroscopy and electron backscatter in samples including: thin sections or polished sections of rock samples, core samples and cuttings and loose particle samples. Measurement modes and other variables can cater to the question of the investigator providing bird's eye field image of a thin section and deciphering all the textural details and minerals down to micron-level resolution.

QEMSCAN thus provides imaging from which: tabular, graphical and statistical information regarding: mineral proportions, grain size (including pores), matrix density, and mineral associations. In fine grained shales and carbonates, QEMSCAN can decipher fine grained clay minerals of various composition, micro-pores, vugs, or fractures and secondary minerals. At higher resolution settings down to <1 micron, interesting textures such as coated grains, partially-filled cavities, pores, or fractures, or mineral association based on pixel adjacency.

Depending on the question or purpose of the investigator, QEMSCAN can be tweaked and employed for several different purposes producing precise and detailed data on mineralogy and textural variations in oil & gas bearing rocks.