

Downhole Raman Spectroscopy: Real Time, In Situ Chemical Analysis of Coalbed Reservoirs

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A new, Raman spectrometer-based analytical chemistry system has been developed to directly assess coalbed reservoirs in place. The specially constructed, compact, and ruggedized Raman analytical system is lowered deep into wells, where it analyzes the downhole, in situ chemistry of the wellbore fluid, and measures methane content in real time. The Raman spectroscopy system is suitable for remote characterization of harsh environments, which would normally be inaccessible to high performance laboratory instruments. A technological overview of this unique system is presented, along with case studies of its operational performance under actual field conditions.