

Press Release

Rigaku Publishes New Application Report for Analysis of Elemental Composition of Drill Cuttings

A new application report from Rigaku demonstrates an EDXRF analysis method for the elemental determination of drill cuttings for mud logging.

Austin, TX— May 25, 2018. [Applied Rigaku Technologies, Inc.](#) today announced a new method for the analysis of drill cuttings for mud logging. Rigaku Application Note #1769 describes a method employing energy dispersive X-ray fluorescence ([EDXRF](#)) for the measurement and characterization of the geological strata encountered during drilling for crude oil and natural gas.

The report includes detailed information regarding sample preparation, calibration and repeatability, and demonstrates the performance of the [Rigaku NEX QC+ QuantEZ](#) elemental analyzer.

When drilling for crude oil and natural gas, rock cuttings are brought to the surface by the drilling mud for examination and characterization of the rock strata. Mud logging is the creation of a detailed record of a borehole by examining the cuttings of rock brought to the surface by the drill, which provides well owners and producers with information about the lithology and fluid content of the borehole while drilling.

Mineralogy and elemental composition are some of the tests that go into the lithology of the rock layers, giving valuable data on the formation being drilled for well logging and positioning of the drill bit when geosteering. EDXRF reveals the elemental composition of the cuttings, an important part of the overall well logging system.

In the method presented in the report, Fundamental Parameters (FP) is used to generate semi-quantitative results without the need for reference standards. The *semi-quant* approach is ideal for general screening and comparative characterization. *Rigaku RPF-SQX* is an advanced FP methodology that automatically models background and deconvolutes any peak overlaps. It is typically used to measure and characterize the geological strata encountered during drilling, including: shale, limestone, clay, sand, sandstone, siltstone, etc.



Rigaku NEX QC⁺ - Energy Dispersive X-ray Fluorescence Spectrometer

For the analysis described, measurement was performed using the NEX QC+ QuantEZ benchtop EDXRF spectrometer, a high-resolution benchtop EDXRF analyzer for rapid qualitative and quantitative elemental determination. Designed for demanding applications where analysis time and sample throughput are critical, the NEX QC+ QuantEZ spectrometer employs next generation silicon drift detector (SDD) technology, enabling an extremely high count rate capability with sharpened spectral resolution to deliver the highest precision analytical results in the shortest possible measurement times. The Microsoft® Windows® -based QuantEZ analytical software walks the user through steps required for calibration and routine operation.

The results shown in the report show that EDXRF provides a rapid, non-destructive means of semi-quantitative measurement for screening, identification, and elemental quantification of metals, solids, powder, pellets, thin films and liquids. The NEX QC+ QuantEZ analyzer is shown to be an ideal system for measuring elemental composition of drill cuttings in the drill site or in the lab.

A copy of this report may be requested at:

https://www.rigakuedxrf.com/app-notes.php?id=1769_AppNote

About Rigaku

Since its inception in Japan in 1951, Rigaku has been at the forefront of analytical and industrial instrumentation technology. Rigaku and its subsidiaries form a global group focused on life sciences and general purpose analytical instrumentation. With hundreds of major innovations to its credit, Rigaku and its subsidiary companies are world leaders in the fields of small molecule and protein crystallography, X-ray spectrometry and diffraction, X-ray optics, as well as semiconductor metrology. Rigaku employs over 1,400 people globally and its products are in use in more than 90 countries – supporting research, development, and production control and quality assurance activities. Throughout the world, Rigaku continuously promotes partnerships, dialog, and innovation within the global scientific and industrial community.

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