Press Release

Rigaku Publishes New Method for Elemental Analysis of Sulfur and Metals in Crude Oil by EDXRF

Austin, TX— February 6, 2017. Applied Rigaku Technologies, Inc. has published a new application report that details the elemental analysis of crude oil using energy dispersive X-ray fluorescence (EDXRF). Rigaku EDXRF Application Note #1521 describes the measurement of sulfur (S), calcium (Ca), vanadium (V), iron (Fe) and nickel (Ni) and highlights the performance of the Rigaku NEX DE analyzer. The report includes complete information about sample preparation, method calibration and repeatability.

Sulfur, vanadium and nickel occur naturally in crude oil, but their concentrations vary. Depending on the region of the oil deposits, some crude may also contain measurable levels of calcium and iron. Crude oil with low metal levels is typically more desirable as high metal content can compromise the refining process during crude oil cracking.

At the refinery - as well as midstream at pipelines, in transit, at gathering points and during blending - an efficient means of screening and monitoring metal content is essential for characterizing the quality of the crude before refining.

In the method described in the published report, empirical calibrations were built using a suite of 10 commercially available mineral oil calibration standards; three calibration standards were measured in 10 repeat analyses to demonstrate precision. Analysis was performed using the Rigaku NEX DE EDXRF spectrometer. The analyzer's new excitation and detection technology achieves throughput of up to 500,000 counts per second with very low background and exceptional detection limits. Sub-ppm limits of detection (LLD) were achieved for calcium, vanadium and nickel.

The results of this study, emphasizing stable samples, proper sample handling and proper calibration techniques, indicate that the Rigaku NEX DE EDXRF analyzer can achieve excellent results in monitoring the concentrations of metals, as well as sulfur, in crude oil and other heavy hydrocarbons.

A copy of this application report may be requested at
https://www.rigakuedxrf.com/edxrf/app-notes.html?id=1521_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, production control and quality assurance activities. Throughout the world, Rigaku continuously promotes partnerships, dialog, and innovation within the global scientific and industrial community.

For further information, contact:
Scott Fess
Product Manager
Applied Rigaku Technologies, Inc.
tel: +1. 512-225-1796
info@RigakuEDXRF.com