

Press Release

Rigaku Publishes New Method for Elemental Analysis of Residual Oil by EDXRF

Austin, TX— April 9, 2013. Applied Rigaku Technologies, Inc. is pleased to publish a new application report that details the analysis of sulfur, nickel, vanadium and iron in residual oil using the Rigaku NEX QC energy dispersive X-ray fluorescence (EDXRF) analyzer. The report includes complete information about sample preparation, method calibration and repeatability.

Residual oil is the low-grade oil that remains after the distillation and refining of crude oil. It can also be found in low concentrations naturally or in exhausted oil fields. Among its many uses are in the blending of bunker fuel and the production of adhesives and asphalt. In some regions it can be burned as a secondary fuel or can be further refined as a heating fuel.

Characterization of the nickel and vanadium content is important for several reasons. Nickel and vanadium are considered to be catalyst poisons, reducing the effectiveness of the chemical reaction. As such, they need to be removed prior to cracking, the process of breaking down complex organic molecules into simpler molecules by breaking carbon-carbon bonds in the precursors. Oil refinery cracking processes enable the production of commodities such as liquefied petroleum gas and gasoline from heavier crude oil distillation fractions.

Conceived to meet industry analytical needs, NEX QC EDXRF analyzers are designed to be ideal tools for elemental analysis of residual oil. For the new application, empirical calibrations were built using a suite of twelve commercially available residual oil calibration standards. Analysis was carried out using the NEX QC analyzer, which is shown to be a powerful and versatile system for quantifying elemental composition using the empirical approach.

The results of this study show that the Rigaku NEX QC EDXRF analyzer can achieve excellent results in monitoring the concentration of sulfur, nickel, vanadium and iron in residual oil.

A copy of this application report may be requested at
http://www.rigakuedxrf.com/edxrf/app-notes.html?id=1293_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 1,100 people globally and its products are in use in more than 70 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.

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