

Press Release

Rigaku Publishes New Method for Sulfur Analysis of Petroleum Products by WDXRF According to ASTM D2622-10

The Woodlands, TX – December 19, 2012. Rigaku Americas Corporation is pleased to announce the publication of a new application report on sulfur analysis in petroleum products using wavelength dispersive X-ray fluorescence (WDXRF) spectrometry. Application Note #5012 describes the performance of the Rigaku ZXS Primus WDXRF spectrometer and presents the analysis of sulfur, with complete information regarding sample preparation, method calibration and repeatability. The report adheres to the American Society for Testing and Materials Method ASTM D2622-10, *Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry*.

Crude oil typically contains sulfur in concentration from 0.5 to 5.0 mass%. Sulfur in petroleum-based fuels contributes to atmospheric pollution and is strictly regulated. Sulfur also causes damage to facilities, such as catalysts in refinery processes; therefore, control of the level of sulfur in refinery intermediates and final products is critical. Control of sulfur content is also very important in the petroleum industry from the standpoints of both environmental impact and production cost.

Among the benefits of using X-ray fluorescence (XRF) spectrometry for quantitative analysis of sulfur in petroleum products is its simple sample preparation requirements. The ZXS Primus, a tube-below sequential WDXRF spectrometer, is optimized for the routine analyses that today's petroleum laboratories need to perform.

For the published method, measurements were performed on the ZXS Primus with a 3 kW X-ray tube operating at 30 kV and 80 mA using a Ge analyzing crystal and the S4 slit, included in the standard configuration. The beryllium primary beam filter, inserted between the sample and the X-ray tube, protects the X-ray tube window against damage from samples leaking during measurement. The counting time for low sulfur concentration was 200 seconds for peak and 100 seconds for background; for high sulfur concentration, 20 seconds and 10 seconds respectively.

The results detailed in the report show that sulfur in petroleum products can be routinely analyzed in both low and high concentration ranges with great accuracy, sensitivity and repeatability using the ZXS Primus WDXRF spectrometer, meeting the requirements of ASTM D2622-10, which has become stricter in the recent versions of ASTM D2622.

A copy of this application report may be requested on Rigaku's official website at <http://www.rigaku.com/products/xrf/primus/app5012>

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 general-purpose analytical instrumentation and the life sciences. With hundreds of major innovations to their credit, Rigaku companies are world leaders in X-ray spectrometry, diffraction, and optics, as well as small molecule and protein crystallography and semiconductor metrology. Today, Rigaku employs over 1,100 people in the manufacturing and support of its analytical equipment, which is used in more than 70 countries around the world supporting research, development, and quality assurance activities. Throughout the world, Rigaku continuously promotes partnerships, dialog, and innovation within the global scientific and industrial communities. For further information, contact:

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Rigaku ZSX Primus wavelength dispersive X-Ray fluorescence spectrometer