

Press Release

Rigaku Application Note for Low Concentration Sulfur in Petroleum-based Fuels by WDXRF According to ASTM D2622-10

The Woodlands, TX – January 3, 2013. Rigaku Corporation today announced the publication of a new empirical application note for the analysis of low concentration sulfur in petroleum-based fuels using wavelength dispersive X-ray fluorescence spectrometry (WDXRF). Application Note #XRF 5015 describes the capabilities of the Rigaku ZSX Primus WDXRF spectrometer for the quantitative analysis of low concentration sulfur in diesel fuel, gasoline and kerosene in accordance with the American Society for Testing and Materials method ASTM D2622-10, which covers Standard Test Method for Sulfur in Petroleum Products. The application note details sample preparation, method calibration and repeatability.

Sulfur content in fuels, particularly automobile fuels, is strictly controlled since sulfur in petroleum-based fuels is a significant contributor to atmospheric pollution. Control of sulfur content is therefore very important in refineries.

X-ray fluorescence (XRF) spectrometry is used for quantitative analysis of sulfur in petroleum-based fuels, in part because of its simple sample preparation requirements. In XRF analysis of fuel oil, samples are simply poured into liquid cells. Complicated treatments such as chemical decomposition or dilution are not required, yet the total concentration of sulfur is obtained. The analysis in this report was performed using the Rigaku ZSX Primus, a tube-below sequential WDXRF spectrometer with a 3 kW X-ray tube that is optimized for the routine analyses that today's petroleum laboratories need to perform.

For the described application, "number 2 diesel fuel" standards, isooctane-based standards and kerosene-based standards were used for calibration of diesel fuel, gasoline and kerosene respectively. Repeatability tests were carried out using a representative sample for each material.

The test results detailed in the report demonstrate that low concentration sulfur in petroleum-based fuel can be routinely analyzed with high accuracy and precision on the ZSX Primus sequential 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/app5015>.

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.

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