

## Press Release

# Rigaku publishes new Application Report for U.S. EPA Tier 3 Gasoline testing protocols

*A new application report from Rigaku demonstrates an EDXRF analysis method for compliance with U.S. EPA Tier 3 Gasoline performance-based testing protocols*

**Austin, TX— June 26, 2017.** [Applied Rigaku Technologies, Inc.](http://www.rigaku.com) today announced a new empirical method for measurement of sulfur in gasoline, in compliance with the U.S. EPA Tier 3 Gasoline PBMS testing protocol and performance. Rigaku Application Note #1707 describes an analysis method employing energy dispersive X-ray fluorescence (EDXRF) in accordance with the U.S. Environmental Protection Agency (EPA) Tier 3 Gasoline Performance-Based Measurement System (PBMS). The report includes complete information about sample preparation, testing requirements, calibration and measurement results.

In 2016 the U.S. EPA began phasing in Tier 3 Gasoline, mandating the maximum allowable sulfur in gasoline to be 10 ppm (10 mg/kg). PBMS testing requirements similar to those for Ultra-Low Sulfur Diesel (ULSD) were established. The EPA allows any testing method that can comply with the performance guidelines for accuracy and precision.



**Rigaku NEX CG - Energy Dispersive  
X-ray Fluorescence Spectrometer**

For the analysis described in the report, empirical calibrations were built using a suite of six commercially available certified gasoline calibration standards. The detection limits were determined by the empirical method, whereby ten repeat analyses of a blank gasoline sample containing 0.0 ppm S were taken with the sample in static position and the standard deviation determined. The Lower Limits of Detection (LLD), defined as three times the standard deviation, were reported as 0.24 ppm for Tier 3 gasoline using a measurement time of 300 sec per analysis.

The analysis was performed using the [Rigaku NEX CG](#) monochromatic EDXRF spectrometer, using Cartesian Geometry polarization. Ideally suited for ultra-low sulfur measurements, such as those for Tier 3 Gasoline and ULSD, the NEX CG spectrometer is a multi-element analyzer capable of performing a variety of applications throughout the petroleum industry, including down-stream analyses as well as mid-stream and upstream measurements.

The results detailed in the report demonstrate that the NEX CG analyzer complies with U.S. EPA Tier 3 Gasoline performance-based testing protocols and achieves this excellent performance using monochromatic EDXRF with Cartesian Geometry polarization.

A copy of this report may be requested at:  
[https://www.rigakuedxrf.com/app-notes.php?id=1707\\_AppNote](https://www.rigakuedxrf.com/app-notes.php?id=1707_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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