

## Press Release

# Rigaku Publishes Method for Analysis of High Calcium Limestone

**Austin, TX— December 14, 2016.** [Applied Rigaku Technologies, Inc.](#) today announced a new empirical method for the elemental analysis of oxide minerals in limestone.

Rigaku Application Note #1614 describes a method employing energy dispersive X-ray fluorescence (EDXRF) for the measurement of calcium carbonate ( $\text{CaCO}_3$ ), magnesium carbonate ( $\text{MgCO}_3$ ), ferric oxide ( $\text{Fe}_2\text{O}_3$ ), aluminum oxide ( $\text{Al}_2\text{O}_3$ ), silicon dioxide ( $\text{SiO}_2$ ) and potassium oxide ( $\text{K}_2\text{O}$ ) in high calcium limestone using empirical calibration. The report includes detailed information regarding sample preparation, calibration and repeatability, and demonstrates the performance of the [Rigaku NEX QC+](#) high-resolution benchtop EDXRF spectrometer.



*The Rigaku NEX QC+ high-resolution benchtop EDXRF analyzer*

Limestone (calcium carbonate) is a key ingredient in cement and mortar, and is used as an aggregate in concrete and asphalt for building roads. It is also used as a soil conditioner and is the raw material for making quicklime (calcium oxide) and slaked lime (calcium hydroxide). During mining and processing operations it is important to monitor and control the limestone composition to ensure proper quality and characteristics for various products.

For the analysis described in the report, the sample was prepared by grinding it into a homogeneous powder approximately 100-200 mesh and then drying to remove excess moisture. The sample was then prepared for EDXRF analysis by making a hydraulically pressed pellet using a wax binder.

Ten repeat analyses of each sample were performed with the sample in static position, using a total time of 450 seconds per analysis.

The empirical method was used to determine detection limits, whereby ten repeat analyses of a blank sample (boric acid prepared as a pressed pellet) were taken with the sample in static position, and the standard deviation determined.

Measurement was performed using the high-performance, low-cost NEX QC+ benchtop EDXRF system. The performance detailed in the report demonstrates that the NEX QC+ analyzer, a self-contained unit with simple touchscreen operation, provides excellent sensitivity and performance for the measurement of carbonates and major oxides in limestone. With simple and intuitive software designed for the non-technical operator, as well as for use in quality control labs, the NEX QC+ spectrometer is an excellent tool for at-line control and quality checks throughout the mining and processing of limestone.

A copy of this report may be requested at:

[http://www.rigakuedxrf.com/edxrf/app-notes.html?id=1614\\_AppNote](http://www.rigakuedxrf.com/edxrf/app-notes.html?id=1614_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.

For further information, contact:

Scott Fess  
Product Manager  
Applied Rigaku Technologies, Inc.  
tel: +1. 512-225-1796  
[info@RigakuEDXRF.com](mailto:info@RigakuEDXRF.com)