

Press Release

Rigaku Publishes New Method for Analysis of Dolomite and Limestone on a Benchtop WDXRF Spectrometer

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Aug 13, 2015 – The Woodlands, Texas. [Rigaku Corporation](#) has announced the publication of a new X-ray fluorescence (XRF) technique for the analysis of dolomite and limestone by the pressed powder method. Rigaku Application Note XRF 1058 demonstrates the high-precision elemental analysis of dolomite and limestone using a benchtop sequential wavelength dispersive XRF (WDXRF) spectrometer. The report highlights the performance of the [Rigaku Supermini200](#) analyzer and includes details about sample preparation, measurement and calibration.

Dolomite and limestone are important mineral resources used in numerous industries, including cement, electronics, iron manufacturing, glass, paper and pulp, and agriculture. Each industry has unique interests in contents and components of its materials. In the cement industry, dolomite and limestone are sources of calcium, which is controlled to affect strength and set time. In iron manufacturing, calcium acts as an absorber of impurities like silicone, sulfur and phosphorous, and magnesium protects the furnace walls from corrosive elements like sulfur and phosphorous. In the glass industry, low content of iron is preferred because it can color glass.

For the technique described in the report, samples were ground in a tungsten carbide container for two minutes. Each ground sample was mixed with a binder and pelletized using an aluminum ring under 150 kN of pressure.

Analysis was performed using the Supermini200 WDXRF spectrometer. The instrument features a unique air-cooled 200 W X-ray tube, two detectors, three analyzing crystals and a selectable vacuum or helium environment. The Supermini200 spectrometer can analyze elements from oxygen to uranium, and was designed specifically to deliver excellent performance while eliminating conventional installation requirements such as cooling water, special power supply and large floor space. The need for P10 gas can be also be eliminated by utilizing the optional sealed proportional counter instead of the gas flow proportional counter.



Rigaku Supermini200
wavelength dispersive X-ray
fluorescence Spectrometer

The Supermini200 spectrometer is operated by Windows®-based software that runs on the same platform as the popular high-power Rigaku ZSX family of WDXRF instruments, and offers the same advanced algorithms, multiple language support and intuitive, user-friendly interface.

The results presented in the application report show that high-precision analysis of elements in dolomite and limestone can be performed using a benchtop WDXRF spectrometer, and that X-ray fluorescence quickly and easily delivers precise elemental analysis, allowing control of components in the product manufacturing process. The calibration curves obtained using the theoretical alpha corrections show good linearity by the pressed powder method for both major and trace components.

The Supermini200 analyzer is a benchtop spectrometer with a small footprint and is able to be operated with only a wall power outlet. It is not site-specific. It can be installed anywhere, and is particularly suited for mining sites or small laboratories.

A copy of this report may be requested at
<http://www.rigaku.com/products/xrf/supermini/app1058>.

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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