

## Press Release

### Cement Analysis by the Fusion Method on Benchtop WDXRF Supermini200 According to ASTM C114-11

**The Woodlands, TX – November 29, 2012.** Rigaku Corporation is pleased to announce the publication of a new application report on the chemical analysis of hydraulic cements. Application Note XRF5046 demonstrates quantitative analysis for Portland and aluminate cements by the fusion method according to ASTM C114-11 on the Rigaku Supermini200, a benchtop sequential wavelength dispersive XRF spectrometer configured for high sensitivity and equipped with a newly developed high-power air-cooled X-ray tube that does not require cooling water. The report covers sample preparation, method calibration and repeatability.

Cement is one of the most important materials for construction. Different types of hydraulic cement with various physical properties are produced by changing the composition of clinker minerals. It is therefore important to control the chemical composition of cement and interim products.

ASTM C114-11 covers chemical analysis of hydraulic cements. In this standard test method, procedures of wet chemical analysis are described utilizing X-ray fluorescence (XRF) spectrometry as a “rapid test method.”

XRF spectrometry by the fusion method has been the method of choice in cement production processes, due in part to its simple sample preparation and high precision. The fusion technique involves dissolving a sample in a solvent and producing a homogeneous glass bead. Since the fusion method can eliminate sample heterogeneity such as grain size and mineralogical effects, it is possible to obtain high accuracy for cement samples and also to establish calibrations using a variety of materials.

As detailed in the application note, nine NIST CRMs (Certified Reference Material) of Portland and alumina cement were used for calibration and qualification testing. The results prove that the analysis method meets the requirements described in ASTM C114-11. The precision obtained by the repeatability test exceeds the requirements defined in the method.

A copy of this application report may be requested on Rigaku’s official website at <http://www.rigaku.com/products/xrf/supermini/app5046>.

#### 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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