

Press Release

Rigaku Publishes New Application Report for Quality and Process Control of Iron Ore Products by Pressed Powder Method



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December 3, 2014 – Tokyo, Japan. [Rigaku Corporation](#) is pleased to announce the publication of a new application report on the Rigaku [ZSX Primus III+](#) wavelength dispersive X-ray fluorescence (WDXRF) spectrometer. Rigaku Application Note *XRF 1002* addresses production control of iron ore products by the pressed powder method, and includes details of sample preparation method, calibration and repeatability.

Iron ore is the most abundant mineral resources and one of the most important materials in modern industries. In recent years, both trade activity and price have increased, precipitating more stringent analytical requirements. Total iron concentration in iron ore is a prime focus for trading. Analysis for determination of total iron content therefore requires utmost accuracy.

Wet chemical analysis is the traditional analytical technique for total iron determination, but can be complex and time-consuming. The pressed powder method is the most established sample preparation technique in X-ray fluorescence (XRF) analysis due to its quickness and simplicity. The complex matrix of iron ores, however, a consequence of its varied mineral composition, requires suitable corrections for these matrix effects in XRF analysis. The new application report addresses the industry requirement for a more cost-efficient technique, offering increased speed of analysis, simplicity and accuracy, and demonstrates an improved method to determine total iron in iron ore and products by the pressed powder method.

The ZSX Primus III+ with 3 kW Rh target X-ray tube was used for the analysis. As detailed in the report, an improved Compton scattering method was developed, enabling significant improvement of the analytical results. To evaluate the new correction method, two types of iron ore products in certified reference materials were analyzed. Measurements were performed for duplicated pressed pellet samples. The method is commonly applicable with little dependence on mineral compositions.



Rigaku ZSX Primus III+ high power, tube above, sequential WDXRF spectrometer



The results show that X-ray fluorescence spectrometry is a rapid, precise and accurate method for meeting the requirements of the iron ore industry, while minimizing the cost and time requirements of iron ore analysis. It is also shown that the pressed powder method with Rigaku's advanced correction technology is applicable throughout the iron ore industry: for suppliers, producers and steel manufacturers seeking greater cost-efficiency and higher throughput than achievable by conventional methods.

A copy of this application report may be requested on Rigaku's official website at http://www.rigaku.com/products/xrf/appnotes?id=XRF_1002

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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