

Combining Shimadzu's XRD, EDX, and Sietronics Siroquant Rietveld Refinement Software for Quantitative Analysis of Cement

J.M. Langford*, J. Peters
Shimadzu Scientific Instruments

Cement is manufactured by processing raw materials which contain multiple components such as limestone, clay, and silica. Since the content of these components can change the properties of the cement it is necessary to have strict quality control on the manufacturing process. Both X-ray diffraction and X-ray fluorescence are used for quality control in the cement manufacturing process. For cement analysis the Rietveld refinement method is the preferred method of quantitation. In this paper, we show how Shimadzu's X-ray instrumentation (XRD-6100 and EDX-7000) paired with Siroquant Rietveld refinement software can be used to measure the composition of cement. Unique aspects about both the XRD-6100 and EDX-7000 will be discussed including sample processing, sample holders, software, hardware and optional accessories. Siroquant's easy to use interface and features will also be discussed. We will emphasize the complimentary and interconnected nature of X-ray fluorescence, X-ray diffraction and Rietveld refinement when applied to analysis of cement.