

Density correction – a better method for difficult samples

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When most powdered samples are analysed using gamma-ray spectrometry, the ability to accurately determine the concentration of low energy nuclides such as Pb-210 (46.5 keV), Th-234 (63.3 keV), and Th-230 (67.7 keV) requires some degree of density correction. A general method has been previously discussed using a Ra-226 point source to determine attenuation through the sample.

However relatively dense samples and those containing certain elements require a more complex correction process to obtain correct concentration data. In these cases it is not possible to accurately measure the Pb-210 peak in the point source through these samples. The point source method was extended using major element data and incorporated into an Excel spreadsheet. Results obtained from a number of different samples and matrices were compared with nuclide data obtained using a density correction algorithm incorporated in existing proprietary software. These will be discussed.