Wide Range Oxide Fused Bead Standards

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A comprehensive method for the analysis of wide range oxides by fused glass beads and WD-XRFS using preconditioned interference free multi-element synthetic standards.

Historically, calibrations for the analysis of wide range oxides by fused glass beads have been carried out by using one of the following:

(i) single-element synthetic standards (e.g. Giles et al., 1995)
(ii) reference materials (RMs) as calibration standards
(iii) a mixture of (i) & (ii)

Single-element synthetic standards can be "tricky" to make and a large number may be required to produce an effective calibration. Using RMs, a large number of standards will be needed to cover all required oxides across the necessary ranges. Moreover, RMs are expensive, may offer only a limited concentration range and can be difficult to source.

With this method, 21 major oxides can be determined with an application calibrated using just 20 multi-element synthetic standards. The standard set covers concentration ranges from 0-100% and provides multiple calibration points for each regression. The calibration set is specifically designed to be free of line overlap interferences, thus enabling the calculation of accurate correction factors. The standards are prepared from high purity chemicals which are pre-treated so that the user has only to make the fused bead using their own flux and fusion process.

Modern fundamental parameter algorithms are used for accurate calibrations. Results will be shown from analysis of a wide variety of RMs as unknown samples.