
Rapid, Accurate Phase Quantification of Clay-Bearing Samples Using a Position-Sensitive X-Ray Detector

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Abstract: The rapid phase quantification method using X-ray diffraction (XRD) with a position-sensitive detector (PSD), outlined by Cressey and Schofield (1996), has been extended to facilitate mineral phase quantification of clay-bearing samples. In addition, correction factors for differences in matrix absorption effects have been calculated and applied. The method now enables mudrock mineralogy to be quantified rapidly and efficiently. Using this approach overcomes many of the problems hitherto associated with the quantitative analysis of clay minerals, in particular the effects of preferred orientation of crystallites and variable sample-area irradiation, that make the task of quantification extremely difficult by conventional Bragg-Brentano scanning diffractometry.

Key Words: Absorption Correction • Mudrocks • Position-sensitive Detector • Quantification • X-ray Diffraction

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