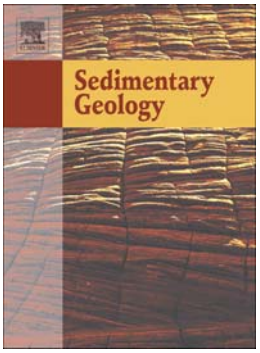

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ASSESSING AND CALIBRATING THE ATR-FTIR APPROACH AS A CARBONATE ROCK CHARACTERIZATION TOOL

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Abstract: ATR-FTIR (attenuated total reflectance Fourier transform infrared) spectroscopy can be used as a rapid and economical tool for qualitative identification of carbonates, calcium sulphates, oxides and silicates, as well as quantitatively estimating the concentration of minerals. Over 200 powdered samples with known concentrations of two, three, four and five phase mixtures were made, then a suite of calibration curves were derived that can be used to quantify the minerals. The calibration curves in this study have an R^2 that range from 0.93-0.99, a RMSE (root mean square error) of 1-5wt% and a maximum error of 3-10wt%. The calibration curves were used on 35 geological samples that have previously been studied using XRD (X-ray diffraction). The identification of the minerals using ATR-FTIR is comparable with XRD and the quantitative