

Evaluation of non-destructive, rapid, high-resolution, major element analysis of rocks by the X-ray analytical microscope

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High-speed, non-destructive analysis of rocks is necessary for high-resolution reconstruction of the paleoenvironment. Horiba XGT-2700 is a commonly used instrument for non-destructive, rapid, high-resolution chemical mapping of rocks, but its application to quantitative analysis is not yet attempted. Here, we evaluated this possibility. Major elements except for Na and Mg can be measured with reproducibility of <10%(2-sigma). In case of fine-grained rocks, an area as small as 0.5x0.5 mm can be measured within 100 seconds. Analysis of fine-grained rocks of known composition revealed strong positive correlations between the concentrations and X-ray peak intensities of each elements, suggesting that Si content can be measured within the precision of 10wt% and other elements within 1wt%.

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