

**HH XRF, from the Lab to the Field and back!
Using the right calibration for the job at hand.**

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Traditional XRF (WD XRF) is a well accepted method for elemental analysis of majors, minors and traces in the geochemist's toolkit. XRF is able to measure a sample directly, without having to atomize and destroy the sample as needed for an ICP analysis. Nevertheless specimen preparation is required, involving the grinding of the sample and potentially (for majors) the fusion of the sample with a glass former to achieve highest accuracy. In this case the non destructive technique is "destructive" although the specimen remains intact as prepared after the analysis and can be used again.

How about using powders or fine grained samples directly, or better still can we analyze rock samples directly? The talk starts with the fundamental physics governing XRF and specimen preparation and applies them to the analysis sediments, soils and rocks using hand held XRF. With the concepts in mind it will show the limitations of Point and Shoot instrumentation and "Fundamental Parameter" methods. By applying lab based XRF calibration concepts to hand held XRF it is possible to achieve comparable results, without sample preparation. Now the hand held XRF can be utilized in the field directly. The approach is illustrated with examples from the field. With the right calibration(s) HH XRF is better than ever, as long as one does not try to overcome the basics physics and is aware of the in homogeneity of the specimen.