

PERFORMANCE OF A BOREHOLE XRF SPECTROMETER FOR PLANETARY EXPLORATION

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We have designed and are constructing a borehole XRF Spectrometer (XRFS) as part of the Mars Subsurface Access program [1]. It will be used to determine the composition of the Mars regolith at various depths by insertion into a pre-drilled borehole. Performance metrics for the instrument will be the lower limits of detection over a wide range of the periodic table and a relative error evaluation of the calibration curve. Power consumption will also be measured as well as time to acquire a spectrum and the energy per measurement. The prototype instrument will be completed and testing will begin early this summer. By the time of this presentation, at least preliminary performance data will be available and will be the focus of this talk. The performance will be tested with terrestrial soil Standard Reference Materials and compared to a laboratory setup with similar components.

[1]<http://marstech.jpl.nasa.gov/content/detail.cfm?Sect=MTP&Cat=base&subCat=SSA&subSubCat=&TaskID=2256> (Verified Feb. 21, 2007)

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Prefer oral presentation.

Not an invited paper.

We do plan to publish in *Advances in X-ray Analysis*.