

## **Raman spectroscopic characterization of a Martian SNC meteorite: Zagami**

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**Abstract.** To demonstrate the ability of Raman spectroscopy to determine the mineralogical character of a rock that originated on Mars, we analyzed a small slab of “normal Zagami” by point analyses and multipoint scans using laboratory spectrometers. Spectra of clinopyroxenes were dominant; their compositions were estimated from a calibration of Raman peak positions with  $Mg/(Mg+Fe)$  based on lunar pyroxenes of known composition, and these agree with compositions obtained by electron microprobe. A few spectra of orthopyroxene were observed. The broad spectrum of maskelynite was observed, but not that of plagioclase feldspar. Spectra of minor phosphates, magnetite, and pyrrhotite were obtained, as were spectra of an organic contaminant and of hematite, both apparently introduced during sample handling prior to Raman analysis. The modal analysis based on the multipoint scans agrees well with published values. If the spectra had been obtained on the surface of Mars by Raman spectroscopic analysis as a stand-alone method and no other information about the sample was available (and by ignoring the spurious hematite and organic material), we could rule out sedimentary and plutonic rock types and conclude that the sample was a pyroxene-phyric basalt.