

## REGOLITH PROCESSES AS POSSIBLE REFLECTANCE SPECTRA CONTROLS

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INTRODUCTION: In the search for definitive links between meteorites and their parent-body asteroids, several unexplained mysteries remain.<sup>1</sup> To date, the main criterion for meteorite-asteroid correlation has been significant match between reflectance spectra. It has already been shown that these spectra are sensitive to changes in grain size and degree of vitrification of the reflecting medium, independent of mineral composition.<sup>2</sup> In this paper we propose the existence of regolith processes in effect on the surface of asteroids that can alter their reflectance spectra, leading to erroneous identification. We simulate such regolith alteration in the laboratory under a range of pressure, temperature, and grain size conditions.

LABORATORY ANALYSIS: By systematically alternating pulverization with fusion of meteorite samples and monitoring the changes in reflectance spectra characteristics the path can be determined whereby a meteorite's reflectance spectra is altered by regolith processes. Assuming that the meteorites here on Earth have been structurally and mineralogically unaltered in transport, their alteration in the laboratory will simulate the regolith forming processes of meteorite and micro-meteorite impact on the surfaces of asteroids.

ORDINARY CHONDRITES AS LABORATORY SAMPLES: The reflectance spectra in the wavelength region of .3 to 25 microns of three different ordinary chondrite meteorites at different steps in the simulation of regolith processes is presented. An attempt is made to correlate this data with the available spectra from analyses made in the past<sup>3,4</sup> of meteorites and their parent-body asteroids with the goal of defining the limits to which continuum slope, albedo and band depth/shape can be altered by superimposed comminution and vitrification.

## REFERENCES:

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