USING HED METEORITES TO HELP CHARACTERIZE V-TYPE ASTEROIDS.

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The Howardites, the Eucrites and the Diogenites (HEDs) meteorites were likely formed at different depths of the large asteroid (4) Vesta and arrived on Earth after passing trough Vesta-derived, Km-sized, intermediary bodies (V-type asteroids).

The spectroscopic link between the V-type asteroids in the vicinity of Vesta and the HED's meteorites seems to be quite consistent [1, 2], especially if we take into account that basaltic material is very rare in the asteroid belt. The mineralogical characterization of these objects through the analysis of the depth, width and spectral placement of the 1 and 2 m mafic silicate absorption features present in their reflectance spectrum, can further strengthen their genetic link. In a previous work on the mineralogy of V-type asteroids in the neighbourhood of Vesta we demonstrated the existence of different kinds of basalts which seem not related to the fact of the asteroids being, or not, members of the Vesta's dynamical family [3].

Here we present the analysis of visible and near-infrared (VNIR) spectra of 19 V-type asteroids taken at the Galileo Galilei 4.0m Telescope, and 29 Eucrites, 14 Howardites and 10 Diogenites taken from the RELAB public database at Brown University [4]. The RELAB standard viewing geometry is incidence = 30°, emission = 0° and phase = 30°. Grain size for the entire sample is 25 m. Asteroid spectra are from 0.5 to 2.5 m and meteorite spectra are from 0.3 to 2.6 m.

Visually, the spectra are dominated by absorptions near 1 and 2 m due to electronic transitions of Fe^{2+} located in the distorted M2 site within the pyroxene crystal structure. The VNIR spectra were then analysed with the Modified Gaussian Model (MGM) [5] which relies on an accurate shape model of crystal field absorption band (modified gaussians) super-imposed onto a baseline continuum, that is linear function in energy and log reflectance. Applying the MGM to a large number of HEDs, which already have a well-known mineralogy, allow us to have more confidence on the remote determination of the surface mineralogy of V-type asteroids.

We used this technique to analyse the ortho and clino-pyroxene present in the two samples and to compare the end-member mineral present in each group of meteorites and of asteroids. The obtained results will be discussed on view of the possible genetic link between the two samples.

References: [1] Binzel & Xu (1993) *Science* 260: 186. [2] Burbine et al. (2001) *Meteoritic & Planetary Science* 36: 761. [3] Duffard, et. al (2004) *Icarus*, submitted. [4] Pieters (1997). *Journal of Geophysical Research* 88:9534. [5] Sunshine, J. et al. 1990. *Journal of Geophysical Research* 95 : 6955.