

REFLECTANCE SPECTRA FOR A EUCRITE HEATED WITH SUDDEN OXYGEN-FUGACITY CHANGE. M. Miyamoto, T. Mikouchi, Y. Ueda, A. Monkawa and E. Koizumi, Space and Planetary Science, Graduate School of Science, University of Tokyo, Hongo, Tokyo 113-0033, Japan (miyamoto@eps.s.u-tokyo.ac.jp).

Introduction: We have studied spectral changes of diffuse reflectance spectra (200-2500 nm) for the samples heated at different oxygen fugacities, because bombardments on asteroidal surfaces by meteoroids could locally increase surface temperature and change oxygen fugacity by selective evaporation of projectiles and surface materials. The general trend of the spectral changes for the sample heated at different oxygen fugacities show lower spectral contrast, stronger reddening and lower albedo, that are similar to those produced by space weathering effects [e.g., 1]. Miyamoto et al. [2] also studied the spectral changes for olivine heated with sudden (large) oxygen-fugacity changes to the oxidized condition. We, in this abstract, report spectral changes for the Millbillillie eucrite heated with a sudden oxygen-fugacity change.

Sample and Experiments: A pellet was made by the powder sample (<100 μm) of the Millbillillie eucrite weighing about 70 mg. The pellet placed in Pt-foil was heated at 800 $^{\circ}\text{C}$ under one log unit below the iron-wüstite buffer for 1 hr. The charge was taken out of the furnace slowly for 20 sec (20S cooling). This procedure of the sudden oxygen-fugacity change is the same as that in [2]. The measurement of biconical diffuse reflectance spectra is the same as those used in our previous studies.

Results and Discussion: Fig. 1 shows the spectra of the Millbillillie sample of 20S cooling and compares it with those of unheated sample and Vesta. The 20S cooling sample shows a lower spectral contrast, stronger reddening and lower albedo compared with that of the unheated sample. The albedo at 560 nm of the 20S cooling sample (38%) is the same as that of Vesta. The degree of spectral changes for the Millbillillie eucrite heated with sudden a oxygen-fugacity change is smaller than that of the olivine samples heated with a similar oxygen-fugacity change [2]. This result suggests that the eucrite sample is resistant to heating with a sudden oxygen-fugacity change. Similar results are obtained for the Millbillillie samples heated at different oxygen fugacities [3]. These results may explain why the spectra of Vesta show a high contrast.

References: [1] Hiroi T. and Pieters C. M. (1998) *Antarct. Meteorite Res.*, 11, 163-170. [2] Miyamoto M. et al. (2003) *LPS XXXIV*, #1563. [3] Miyamoto M. et al. (2003) *LPS XXXIII*, #1468.

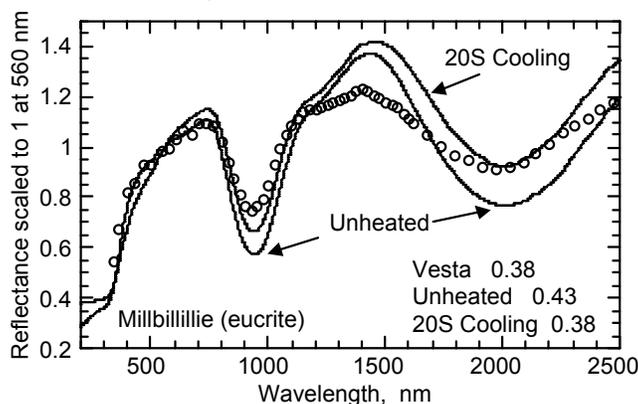


Fig. 1. Diffuse reflectance spectra of the Millbillillie eucrite and Vesta (open circles). Numbers show the albedos at 560 nm.