PHOTOMETRY OF SILICATE-ORGANICS MIXTURES AS C-TYPE ASTEROID SURFACE ANALOGS.

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Introduction: Photometric observations for large number of asteroids indicate that mean slope of their phase curves differ with the taxonomic type. Among them, C-type asteroids, which are the target of Hayabusa-2 mission, tend to show steeper slope in their phase curves rather than those of S-, M-, E-, and V-type asteroids [1]. Recent laboratory studies show that the steep slope of C-type asteroids cannot be reproduced by photometric properties of carbonaceous chondrite samples [2,3]. In order to investigate the effect of content of organics having properties of low-albedo and strong back-scatter, we performed photometric measurements of mixtures of silicate and organics.

Methods: We used the gonio-spectrometer newly developed in the University of Aizu for photometric measurments. The gonio-spectrometer can measure the intensity of light scattered on sample surface varying phase angle in the range of 6-90 degrees. As for samples, we selected dunite and humic acid as C-type asteroid surface analogs. The dunite sample was dry sieved in 45-53 µm and the humic acid sample was used with a size fraction of less than 100 µm. We measured six mixture samples with different humic acid fraction: 0, 2, 7, 12, 17 and 21wt%.

Results and Discussion: We confirmed that the sample albedo decrease with increase of humic acid fraction. But there was little change in phase curve slopes. Since the humic acid fraction of our sample is fully larger than the content of orgnics including carbonaceous chondrites, our results imply that the content of organics in the asteroid surface materials would hardly affect the slope of phase curve.

References: [1] Harris, A.W. (1989) *LPSC*, 20, 375. [2] Capaccioni, F. et al. (1990) *Icarus*, 83, 325. [3] Beck, P. et al. (2012) *Icarus*, 218, 364.