**EFFECT OF ALBEDO ON MID-INFRARED SPECTRA AS COMPARED TO DIVINER DATASET.** K. A. Shirley[1] and T. D. Glotch[1], [1]Geosciences Department, Stony Brook University, New York (katherine.shirley@stonybrook.edu).

**Introduction:** Albedo is a major optical component affected by space weathering: increased exposure to space weathering results in lower albedo or darker regolith. Work by [1] noted that space weathering is apparent in the Diviner dataset and, specifically, affects the Christiansen Feature (CF). The CF is an emissivity maximum that is used to determine bulk silicate composition across the lunar surface. [2] proposed an empirical correction to the Diviner CF dataset by using the OMAT parameter [3] and noted the inverse correlation between CF position and albedo. Our previous laboratory work [4] has shown that reduced albedo, rather than compositional changes caused by space weathering is the main factor contributing to variation in the CF position with optical maturity. Here we provide a comparison between laboratory and lunar data to better understand the effects of albedo on the Diviner data set.

**Methods:** Samples of forsterite, augite, and anorthite were darkened using nanophase carbon to produce sample sets with varying albedo at 750 nm. Mid-infrared (MIR) emission data for these samples were then collected under both terrestrial and simulated lunar environment (SLE) via methods in [4]. Data is processed via methods of [5,6] to obtain full resolution emission spectra. The CF position is then defined as the maximum of a polynomial fit to the ~7-9 μm region of the spectrum.

We examined young craters Giordano Bruno, in highlands terrain, and Kepler, in Oceanus Procellarum, and the swirl Reiner Gamma in Oceanus Procellarum using JMARS [7]. We compared the Diviner CF maps to Kaguya albedo at 750 nm, and to the OMAT parameter map as our index for space weathering.

**Results/Discussion:** The laboratory data exhibit a clear trend of CF shifts to longer wavelengths as albedo decreases, though the slope of the trend varies slightly in conjunction with the starting albedo (Figure 1a).

A ~200 km traverse starting from the interior of Giordano Bruno and one from Kepler both show a similar trend in decreasing albedo corresponding to CF shifts to longer wavelengths. The CF for both craters show an overall increase in CF position by ~0.3 μm. A ~100 km traverse across Reiner Gamma shows a similar trend with change in CF position of ~0.15 μm. The Diviner data show a much steeper trend (>4x; Figure 1b) between albedo and CF than the laboratory data. Further work will examine the differences between trends, and other thermophysical properties that may contribute to variation in CF position.

**References:** [1] Lucey P. G. et al. (2010) *LPSC XLI*, Abstract #1600. [2] Lucey P. G. et al. (2017) *Icarus, 283*, 343-351. [3] Lucey P. G. et al. (2000) *JGR-P, 105*, 20377-20386. [4] Shirley K. A. & Glotch T. D. (2017) *LPSC XLVIII*, Abstract #2115. [5] Ruff S. W. et al. (1997) *JGR*, 102. [6] Thomas I. R. et al. (2012) *Rev. Sci. Instrum., 83*, 124502. [7] Gorelick N. S. et al. (2003) *LPSC XXXIV*, Abstract # 2057.

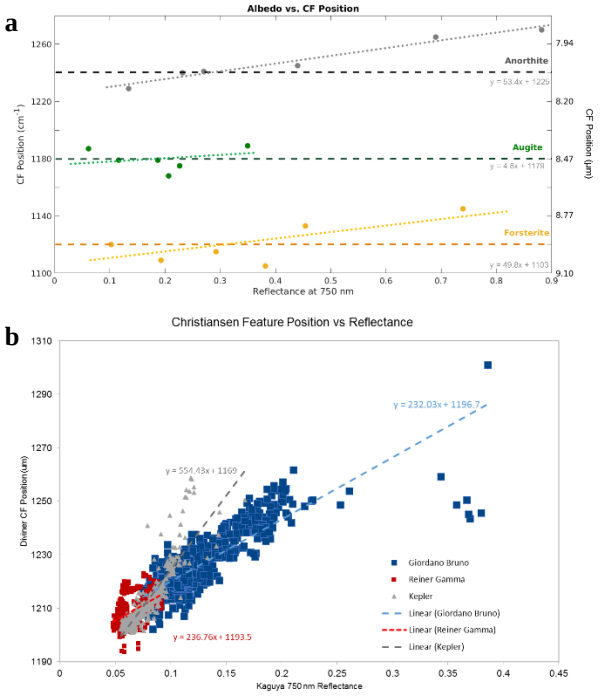


*Figure 1. (a) Laboratory data. (b) Crater and swirl data.*