

Study of spectral reflectance characteristics of Taruntius crater on Moon

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Taruntius crater is an floor-fractured impact crater on the Lunar near-side having a diameter of 56 km and located at 6°N 47°E [1]. It is situated in the northwest margin of Mare Fecunditatis. We used three I/F images of Moon Mineralogy Mapper (M3) for studying the mineralogy of the crater and its surrounding area. The images were georeferenced, subset to our region of interest and applied for Minimum Noise Fraction (MNF) transformation. Integrated Band Depth (IBD) parameters for 1 and 2 μm were derived and IBD colour composite was generated [2] [3]. The colour variations in the IBD colour composite were noted and the corresponding reflectance spectra were derived from M3 data to derive the mineralogical information. We observe that the crater rim is dominantly anorthositic in nature however, the impact crater with in the crater floor, the central peak and also the Cameron crater situated in the northwest portion on the rim of the Taruntius crater exhibit clinopyroxene signatures indicating basalt unit. The crater is surrounded by mare basin and hence the observed anorthositic signature on crater rim, ejecta blanket and interior basaltic signature can be explained by considering that the Taruntius crater was formed by a projectile impacting on a highland patch separating two mare basins, the impacting excavating a mafic intrusive body lying underneath the anorthositic crust. The secondary Cameron impact was at the rim of the crater on the north western side, thus exposing the mare basalt and also part of underlying intrusive body, the rays of which can be clearly seen on the anorthositic fractured floor of the Taruntius crater.

References:

- [1] Hawke B.R and Spudis P D (1980) *Proc. Conf. Lunar Highlands Crust*, 467-481.
[2] Mustard. (2011) *Journal of Geophysical Research*, 116. [3] Besse et al. (2011) *Journal of Geophysical Resource*, 116