

Ejecta material distribution around Tycho

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We have undertaken a new analysis on a lunar crater Tycho using remote sensing data in an attempt to verify the recent results of theoretical and experimental studies on oblique impact. We used a Clementine UVVIS/NIR multi-spectra image, and data taken by an earth-based imaging spectrometer named as Advanced Lunar Imaging Spectrometer (ALIS).

There is a ring of dark halo of glassy melt material just outside of the rim. Based on the OMAT image analysis, the dark ring extends 50 to 70 km, corresponding to 1.2 to 1.6 crater radius from the rim. By analysis of excavation features by small craters on the dark ring, we estimate thickness dark ring material and volume of impact melt.

There is a fan-shaped unit with characteristic color on the eastern area of Tycho. The nine-point spectra of the UVVIS/NIR image and the ALIS spectra of this unit shows a similarity with that of materials with in Tycho.