

**M.Sc. Geology Public Lecture****Candidate: Sharini Kanni Suresh Babu****Supervisor: Catherine Neish and Gordon Osinski****Photometric Analysis of Lunar Impact Melt Deposits****July 11, 2025 at 1:00 pm****Biological & Geological Sciences Building, Room 1069****Abstract**

Impact cratering induces the melting of target rocks, and the resulting molten material subsequently solidifies to form impact melt deposits.

The physical properties of lunar impact melt deposits remain poorly constrained, particularly due to ambiguities in their surface roughness.

Their odd surface roughness properties have been hypothesized to result from the formation of a glassy outer layer under unique cooling conditions. To investigate this hypothesis, we use remote sensing techniques to analyze the photometric properties of melt deposits across diverse lunar craters. Surface reflectance of impact melts is compared with that of surrounding melt-free ejecta to assess the presence of glass, and textural analyses are conducted to further examine surface roughness variability. Our results indicate that impact melt deposits are consistently darker than adjacent crystalline ejecta, consistent with a higher glass content. These findings enhance our understanding of the bulk composition, physical properties, and emplacement mechanisms of lunar impact melts.

**ALL WELCOME!**