

Polarimetric Measurements of Apollo 14, and 16 Soil Samples

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Polarimetric research of the moon is the key to understanding the lunar soil. Polarization curves offer polarization properties such as maximum/minimum polarization. However, there is a lack of related research and laboratory experiments using lunar samples. For this reason, we performed polarimetric measurements at various phase angles (15, 20, 25, and 100 degrees) using several Apollo soil samples in multi-band (B, V, and R bands). A total of five Apollo samples were used: two Apollo 14 samples (14163, 14260) and three Apollo 16 samples (61141, 61221, 65701). The samples were divided into different size groups (<25, 25–45, 45–90, 90–150 μm) including the bulk group (<150 μm). We investigate the effect of grain size on the degree of polarization, and their wavelength dependence. Additionally, we examine the negative branch at phase angles between 15° and 25°. In the negative branch, minimum polarization and inversion angle are measured to study their relationship to grain size and single-particle scattering. Here, we mainly show the correlation between the grain sizes and degree of polarization.