Polarimetric Experiments of Soil Samples from the Moon

Serin Kim[1], Shuai Li[2], Minsup Jeong[3], Young-Jun Choi[3], **Kilho Baek**[1], Sungsoo S. Kim[1], Eunjin Cho[4]

[1] *Kyung Hee University*
[2] *University of Hawaii at Manoa*
[3] *Korea Astronomy and Space Science Institute*
[4] *Chungnam National University*

Polarization properties of the moon include information of lunar soil such as grain size and composition. Relationship between degree of polarization and phase angle offers the polarization properties. However, there is a lack of related research and laboratory experiments using lunar samples. This is why we performed polarimetric measurements of Apollo soil samples, which were measured at various phase angles (15, 20, 25, and 100 degrees) in three bands (B, V, and R). In these measurements, a total of five Apollo samples were used: two Apollo 14 samples (14163 and 14260) and three Apollo 16 samples (61141, 61221, and 65701). They were divided into different size groups (<25, 25–45, 45–90, and 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. Also, the branch of negative polarization is examined to study the influence of the grain size and single-particle scattering on the minimum polarization and inversion phase angle.