

Distribution of Olivine and Plagioclase around the Crisium Basin on the Moon

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Global distribution of purest anorthosite (PAN) and olivine on the Moon has been revealed (Ohtake et al., 2009, Yamamoto et al., 2010, 2012), but mineral distribution on certain local regions have not often been discussed. Detailed analysis on local regions is also important to examine the lunar crustal structure. Sugamiya and Hirata (2015) revealed distribution of olivine, plagioclase and pyroxene in the southwest rim of the Crisium basin where the existence of these minerals were previously reported (Yamamoto et al., 2010, 2012). They used Multiband Imager (MI) data onboard SELENE (Kaguya). MI has high spatial resolution and it enables us to examine the whole region of the moon without gap. In this study, we expand the target region of their work to whole sector by investigating distribution of olivine and plagioclase around the Crisium basin using same method as Sugamiya and Hirata (2015). We found a wide and homogeneous distribution of olivine and plagioclase around the Crisium basin. As Sugamiya and Hirata (2015) have already been stated, sites of these minerals are associated to small craters around the basin. We found that the CSFD for craters associating olivine site almost matches the isochron for 3.44 Ga, expected age of the Crisium basin, in the size range of over 6 km in diameter. This means that olivine can be detected in almost all craters larger than 6 km in diameter, and olivine is commonly distributed in the ejecta of the Crisium basin beneath over 600 m from the surface.

Keywords: Lunar crust, olivine, plagioclase, Multiband Imager