

PPS024-11

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## Optical maturity of crater ray materials on the Moon

Shizuka Suzuki<sup>1</sup>, Chikatoshi Honda<sup>1\*</sup>, Naru Hirata<sup>1</sup>, Tomokatsu Morota<sup>2</sup>, Hirohide Demura<sup>1</sup>, Makiko Ohtake<sup>2</sup>, Junichi Haruyama<sup>2</sup>, Tsuneo Matsunaga<sup>3</sup>, Noriaki Asada<sup>1</sup>

<sup>1</sup>University of Aizu, <sup>2</sup>JAXA, <sup>3</sup>NIES

Fresh lunar impact craters have rays which are bright features radially expanding from host craters. It has been suggested that the rays are erased by space weathering that modify surface materials by exposure to solar wind and micrometeorite bombardments, and by impact gardening that mixes surface materials and subsurface materials by meteorite bombardments (Wilhelms, 1987). Werner and Medvedev (2010) surveyed lunar rayed craters with Clementine UVVIS images and showed that retention time of the rays of craters larger than 5 km in diameter is 750 Myr.

The purpose of this research is to investigate the retention time of rays around smaller lunar craters with high-resolution multiband images from Kaguya/MI (Multiband Imager). In our research, we surveyed rayed craters using OMAT (Optical Maturity) parameter developed by Lucey et al. (2000). The OMAT parameter is the optical index representing the degree of space weathering, which is derived from multiband images. Crater rays are not only bright, but also have larger OMAT value than the background. We surveyed craters from 300 m to 10 km in diameter in lunar highland with MI and TC images, and measured the OMAT profiles each crater. The craters the OMAT value at the crater rim is clearly higher than background OMAT value are detected as rayed craters. We described the size-frequency distribution of the detected craters. The craters larger than 1 km in diameter are plotted above the 1 Ga isochron. However, the distribution cannot be fitted by a single isochron. This suggests that the ray retention time is significantly longer than 1 Ga.