Chronological consideration of Luna 24 regolith sample by in-situ U-Pb analysis

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In 1976, Luna 24 spacecraft landed in Mare Crisium and collected regolith samples with total weight of 170 grams by drilling. So far, LUNA 24 samples have been classified into Very-Low-Ti (VLT) basalt, and thermal activity at 2.9 Ga ago has been reported, which is the the youngest among the collected lunar rocks/soils. However, it should be taken into account that individual grains of regolith have a different origin. Moreover, late impact events might have disturbed the radiometric age, making the age younger apparently. Therefore, in order to decipher the precise history of VLT magmatism, comprehensive studies on both mineralogical description and the high-spacial resolution U-Pb dating are required, which is resist to secondary events. At the meeting, we will report on the characterization of LUNA 24 regolith collected from Mare Crisium and its in-situ U-Pb ages. Most of Ca-phosphates shows U-Pb crystallization age of about 3.5 Ga, which is older than those of previous studies, and some Ca-phosphates show disturbance of U-Pb system possibly due to secondary event. Also, some grains shows different age and chemical composition, which might derive from highland of the Moon. We also compare these results with the remote-sensing data obtained the lunar orbiters (chemical composition and the crater chronology).

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