THE REGOLITH PORTION OF THE LUNAR METEORITE SAYH AL UHAYMIR 169
A. Al-Kathiri1,2, E. Gnos1 and B. A. Hofmann3
1Institut für Geologie, Universität Bern, Baltzerstrasse 1, CH-3012 Bern, Switzerland 2Directorate General of Commerce and Industry, Ministry of Commerce and Industry, Salalah, Sultanate of Oman. 3Naturhistorisches Museum der Burgergemeinde Bern, Bernastrasse 15, CH-3005 Bern, Switzerland.

Introduction: SaU 169 is a complete, light gray-greenish stone (70 x 43 x 40 mm) with a mass of 206.45 g found in the Sultanate of Oman in January 2002. The rock consists of two contrasting lithologies. Approximately 87 vol% consists of a holocrystalline, fine-grained poikilitic polymict KREEP-rich impact melt breccia, the other 13 vol% are shock-lithified regolith [1].

Discussion: The regolith shows two formation stages and contains the following clasts: Ti-poor to Ti-rich basalts, gabbros to granulites, and regolith breccias. The younger regolith additionally contains a highland gabbrororite clast with anorthite (An96-97), forsteritic (Fo85) and fayalitic (Fo12) mineral clasts, and impact melt glass shards. The average regolith bulk chemical composition and its REE content lie between the soil and regolith breccias of Apollo 12 and 14, with more affinity with Apollo 14 [2,3,4]. The largest KREEP breccia clast in the regolith is identical in its chemical composition and total REE content to the ITE-rich high-K KREEP rocks of the Apollo 14 landing site, pointing to a similar source. The regolith shows characteristic lunar ratios of Fe/Mn (74-80) and K/U (535-1682). The Sc content, the Sm versus Al2O3 and the La/Yb values show that the SaU 169 average regolith is very similar to the Apollo 14 regolith breccias but different to regoliths from other Apollo landing sites and lunar far side highland regolith. All data point to a regolith origin at the lunar front side with strong influence from Procellarum terrane KREEP rocks.