

**SAYH AL UHAYMIR 300 – A NEW LUNAR METEORITE**

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On February 21<sup>st</sup>, 2004 a meteorite suspected stone of 152.6 g was found on a gravel plateau of Miocene fresh-water limestone [1] 42 km SSE of Ghaba/Oman (21°00'23.6" N, 57°20'03.9" E).

The stone is an olive-green colored flat rounded rock with resinous luster and few tiny rusty patches, but without any fusion crust. The cut surface shows a medium grey brecciated matrix with various lighter components (<8 mm), thin dark melt veins, metal specks up to 2 mm and small vesicles (<2 mm), mostly filled with white alteration products (calcite, gypsum).

Thin sections show various mineral- and rock-fragments with hypidiomorphic-granular, subophitic, poikilitic and granular textures in a very fine-grained grey granoblastic texture, accompanied by several opaque minerals. Light-grey glassy melt veins with brownish rims and rounded mineral fragments are present. Olivine shows irregular fractures and weak undulatory extinction.

Microprobe measurements were performed with a JEOL JXA 8900 R microprobe at the University of Kiel.

The lithic xenolites are embedded in a matrix containing 25% Al<sub>2</sub>O<sub>3</sub>, 4.9% FeO and 4.9% MgO and show following composition: troctolite (Fa 25-31; An 95-96), anorthositic olivine-gabbro (Fa 25-28; Fs 12-14; An 95-96), olivine-gabbro (Fa 27; Fs 30; An 96), anorthosite (An 96), wehrlit (Fa 15-39; Fs 23-36), dunite (Fa 25-36), clinopyroxenite (Fa 36; Fs 28), gabbro (Fa 23; An 96), and glass with Al<sub>2</sub>O<sub>3</sub> 24, FeO 7.4, MgO 4.7 wt.-%.

Mineral inclusions are olivine (Fa 16-41), clinopyroxene (Fs 13-40 Wo 40-3) plagioclase (An 94-98). Further accessory minerals are kamacite (Ni 3.7-8.0; Co 0.35-0.55%), chromite (Al<sub>2</sub>O<sub>3</sub> 11-23; TiO<sub>2</sub> 0.5-10; MgO 2-10%), spinel (Al<sub>2</sub>O<sub>3</sub> 56; TiO<sub>2</sub> <0.1; MgO 21%), ulvospinel (Al<sub>2</sub>O<sub>3</sub> 6-11; TiO<sub>2</sub> 15-21; MgO 6-7%), ilmenite (Cr<sub>2</sub>O<sub>3</sub> 0.8; MgO 8%), armalcolite (Cr<sub>2</sub>O<sub>3</sub> 0.3-3; TiO<sub>2</sub> 49-53; MgO 7-9%) and trace of troilite.

The FeO/MnO ratio in melt, matrix, olivine and pyroxene plots around the lunar fraction line of 70, olivines slightly above and pyroxenes below it.

**Summary:** According to these data, the chemical classification [2] and its O-isotopes [3] this stone is a lunar anorthositic regolith breccia with basaltic components. Due to its granoblastic matrix, Th-Sm data that plot in the field of magnesian granulitic breccias [2], and noble gas isotopes poor in SW-component [4], Sayh al Uhaymir 300 [5] should be classified as "lunar granulite of primary anorthositic regolith with basaltic components".

**References:** [1] J. LE METOUR et al. (1995) *Geology and Mineral Wealth of the Sultanate of Oman*. Ministry of Petroleum and Minerals, Directorate General of Minerals, Sultanate of Oman, Muscat, Oman. 285 pp. [2] Bartoschewitz R. et al. 2005. *Meteoritics and Planetary Science* 40: this issue. [3] Bartoschewitz R. et al. 2005. *Meteoritics and Planetary Science* 40: this issue. [4] Bartoschewitz R. et al. 2005. *Meteoritics and Planetary Science* 40: this issue. [5] Russell S. et al. 2005. *Meteoritics and Planetary Science* 40: The Meteoritical Bulletin 89: this issue.