SAYH AL UHAYMIR 290 – A NEW CH3 CHONDRITE

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The new meteorite Sayh al Uhaymir 290 (SaU 290) is classified as CH3-chondrite due to its petrology and chemistry [1]. CH-chondrites are one of the rarest meteorite groups with only 3 kg from 10 meteorites, from that some of the Antarctic may be paired [2].

More than 70 pieces between 0.2 and 888 g were found within a distance of ~10 m. The stones are dark-brown fragments, partly with little darker fusion crust. The angular main mass shows deeply corroded layered shape.

The thin section shows small chondrules (<20µm) of various types, chondrule and mineral fragments embedded in extreme fine grained mineral fragments (comparable to PCA 91467 [3]), accompanied by much fine grained metal, some small “matrix lumps” and rare refractory inclusions.

Microprobe measurements, performed with a JEOL JXA 8900 R microprobe at the University of Kiel, brought following results (oxides in wt.-%):

- Pyroxene: Fs 0-46 Wo 0.1-9-9, Al_2O_3 1.90, Cr_2O_3 0.62; fassaite Fs 2.88, Wo 19.66, Al_2O_3 10.40, Cr_2O_3 1.27.
- Olivine: Fa 0-3.1, CaO 0.1-1.0, Al_2O_3 0.27, Cr_2O_3 0.47.
- Opaque minerals (mg/g): weakly zoned kamacite follows CI trend (Ni 37-80, Co 3.5-5.6, Cr 0.8-4.0, Si 0-1.5), sulfides (Ni 4 -217), tetrataenite (Ni 592, Co 14.5).

Whole rock analysis were done by ICPMS, TXRF and INAA at the Instituto Tecnológico e Nuclear in Sacavém and ICPMS at Bern University. Siderophile, chalcophile and lithophile elements follow the CH-trend and distinguish SaU 290 from the other groups of the CR-clan [2]. Sm shows the same anomaly like the CR2 chondrite El Djouf 001 and plots outside the trend of CR-clan [4].

The O-isotopes are measured by IR-laser fluorination technique with BrF_5 as a reagent at the Okayama University. First imagine, that SaU 290 could be an anomalous E-chondrite (like LEW 87223) was rejected by O-isotopes (δO-17 = 1.91, δO-18 = 5.71) that plot on the CR-mixing line [2].

At the University of Tokyo SaU 290 was analyzed by the mass-spectrometric system with modified VG 5400 / MS-II for rare gas isotopes. The already presented data [5] show that SaU 290 bears beside Q-component rare gas the highest amount of solar-wind among the CH meteorites.

References: [1] Russell S. et al. 2005. *Meteoritics and Planetary Science 40*: The Meteoritical Bulletin 89: this issue. [2] Krot A. et al. 2002. *Meteoritics and Planetary Science 37*: 1451-1490. [3] Hezel D. 2005. pers. Comminication. [4] Koblitz J. 2005. MetBase 7.0, CD-ROM. [5] Park J. et al. 2005. Abstract #1632. Lunar & Planetary Science Confrernce.