#0035

PETROLOGICAL AND COSMOCHEMICAL EVIDENCE FOR VARIABLE C/O RATIO DURING FORMATION OF EL3 CHONDRITES OF ALMAHATA SITTA TC_3 ASTEROID.

A. El Goresy[1], Y. Lin[2], M. Miyahara[3], A. Gannoun[4], M. Boyet[4], E. Ohtani[5], Ph. Gillet[6], M. Trieloff[7], A. Simionovici[8], L. Lemelle[9]. [1]Bayerisches Geoinstitut, Universität Bayreuth, 95447 Bayreuth, Germany, E-Mail: Ahmed.Elgoresy@uni-bayreuth.de. [2]Chinese Academy of Sciences, Beijing, 100029, China, [3]Hiroshima University, Hiroshima, 739-8526, Japan, [4]Université Blaise Pascal, F-63038, Clermont-Ferrand, France, [5]Tohoku University, Sendai, 980-8578, [6]École Polythechnique Féderale de Lausanne, 1015 Lausanne, Switzerland, [7]Institut für Geowissenschaften, Universität Heidelberg, 69126 Heidelberg, Germany, [8]Institut des Sciences de la Terre, UJF/CNRS, Université de Grenoble, France, [9]École Normale Supérieur de Lyon, UMR CNRS 5570, 69364, Lyon Cedex, France.

Primitive EL3 chondrites in Almahata Sitta asteroid (MS-17 & MS-177) contain two distinct lithologies: CaS-rich chondrules with graphite books and heterogeneous FeNi-metal nodules in matrix. FeNi-nodules consist of conglomerates of concentrically zoned individual C-bearing FeNi-pebbles (20-50µm in diameter). They enclose FeS, $(FeNi)_3P$, Fe_3C, Sinoite **(Si_2N_2O)**, enstatite, graphite flames and no quenched immiscible liquids hence negating claimed impact or preaccretionary melting. We report a novel adouble track condensation sequence in separate FeNi-nodules: (1) **CaS⇨sinoite⇨enstatite**. Here enstatite largly consumed sinoite and (2) **CaS⇨sinoite⇨graphite flames** latter track evidencing abrupt increase in the C/O ratio (0.83-1.03) of the solar gas after sinoite. REE patterns of CaS in chondrules and in FeNi nodules are flat with negative Eu anomaly indicative of condensation from an REE fractionated source. $\delta^{13}C$ of graphite books (-8 to -2‰) and graphite flames (-24 to -10‰) depict a clear dichotomy in the same meteorite thus refuting melting. $\delta^{15}N$‰ of sinoite in FeNi is -24.9‰ in MS-17 & MS-177.

Cite abstract as:
El Goresy, A., Lin, Y., Miyahara, M., Gannoun, A., et al. (2015) PETROLOGICAL AND COSMOCHEMICAL EVIDENCE FOR VARIABLE C/O RATIO DURING FORMATION OF EL3 CHONDRITES OF ALMAHATA SITTA TC3 ASTEROID. . Paneth Kolloquium, Nördlingen (Germany), abstract URL: http://www.paneth.eu/PanethKolloquium/2015/0035.pdf (abstract #0035).