#0002

Enstatite chondrites: the message from olivine-bearing chondrules

Jacquet E.*, Gounelle M., Alard O.*IMPMC & MNHN, 61 rue Buffon 75005 Paris, France, emjacquet@mnhn.fr.

Enstatite chondrites exhibit a very reduced mineralogy long ascribed to a condensation sequence in a reservoir with supersolar C/O ratios. Yet, save for oldhamite, little evidence for the expected condensates is seen and several objects, in particular olivine-bearing chondrules, testify to relatively oxidizing conditions. We [1] report LA-ICP-MS analyses of mineral phases of the latter in Sahara 97096 (EH3). REE patterns of olivine and enstatite are generally similar to their counterparts in other chondrite groups, suggesting similar igneous origins, but the mesostases frequently bear Eu and Yb (and sometimes Sm) anomalies. This we ascribe to partitioning with oldhamite, produced by a subsequent sulfidizing event [2], before expulsion of the latter from the chondrules. The above REE anomalies would then reflect the divalent state of these elements under those conditions. There is thus no need for a special condensation sequence for enstatite chondrites. We also found two anomalous chondrules with (CI-normalized) light REE *enriched* over heavy REE in their silicates implying a revision of conventional lattice strain modeling.

[1] Jacquet E. et al. (2015), M&PS, 50, 1624-1642. [2] Lehner S. W. et al. (2013), GCA, 101, 34-56.

Cite abstract as:
Jacquet, E., Gounelle, M., Alard, O. (2015) Enstatite chondrites: the message from olivine-bearing chondrules. Paneth Kolloquium, Nördlingen (Germany), abstract URL:
http://www.paneth.eu/PanethKolloquium/2015/0002.pdf (abstract #0002).