F3/4 CHONDRITE NORTHWEST AFRICA 7135: FURTHER ASSESSMENT OF ITS RELATIONSHIP TO CLASTS IN THE CUMBERLAND FALLS AUBRITE.

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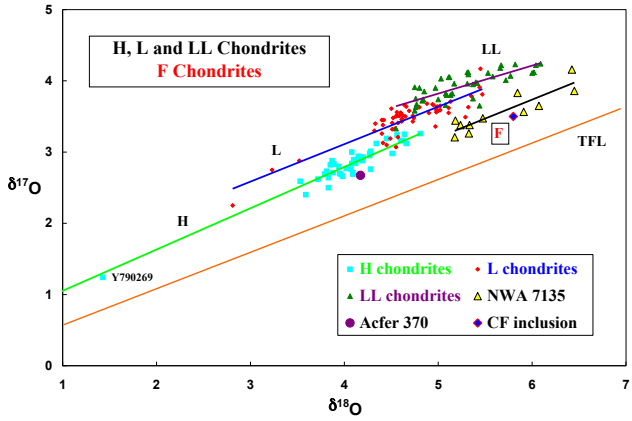
The Northwest Africa 7135 meteorite was recently described by us [1] as an ungrouped chondrite containing reduced sulfides, and we now assert that it is in fact a discrete meteorite specimen related to the F chondrites described [2] as clasts in the Cumberland Falls (CF) aubrite. It thus joins Acfer 370 [3] in being the only known representatives of this rare class of reduced chondrites derived from a parent body with unique characteristics.

Accessory Minerals: We previously reported the occurrence of minor amounts of schreibersite, oldhamite, daubreelite, Cr-free troilite, djerfisherite, pentlandite, chromite and Si-free kamacite in NWA 7135. A further search for niningerite or alabandite in two separate polished sections was unsuccessful.

Oxygen and Chromium Isotopes: Analyses of an additional five acid-washed subsamples by laser fluorination gave, respectively: $\delta^{17}O$ 3..474, 3.443, 3.830, 3.378, 3.564; $\delta^{18}O$ 5.474, 5.183, 5.845, 5.237, 5.910; $\Delta^{17}O$ 0.584, 0.706, 0.744, 0.613, 0.444 per mil (TFL slope = 0.528). These data reinforce our previous results [1], and establish that the supra-TFL oxygen isotope reservoir represented by NWA 7135 is distinct from those for ordinary chondrites, and is notably elevated in $\delta^{18}O$ with respect to H chondrites. Analyses of $\varepsilon^{54}Cr$ are in progress at UC Davis.



Discussion: As their name implies F (for forsterite) chondrites contain very magnesian silicates (olivine typically Fa_{4-6}). In that respect they resemble the chondrite precursors of winonaites (e.g., NWA 725/1463), and they are similarly highly reduced (although not as much as enstatite chondrites and aubrites). However, their oxygen isotopic compositions clearly rule out any affinities to winonaites.

References: [1] Irving A. et al. 2015. *Lunar Planet. Sci* **XLVI**, #2230 [2] Verkouteren R. and Lipschutz M. 1983. *Geochim. Cosmochim. Acta* **47**, 1625-1633 [3] Moggi-Cecchi V. et al. 2009. *72nd Meteorit. Soc Mtg.*, #5421 [4] Clayton R. and Mayeda T. 1978. *Geochim. Cosmochim. Acta* **42**, 325-327; Clayton R. et al. 1991. *Geochim. Cosmochim. Acta* **55**, 2317-2337.