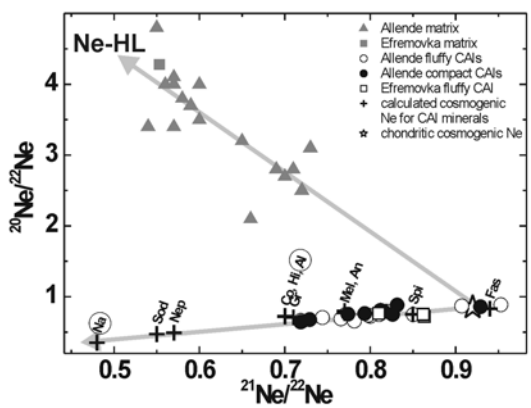
NO EVIDENCE FOR PRIMORDIAL NOBLE GASES IN CAIs. N. Vogel[1,2*], H. Baur[1], I. Leya[1], and R. Wieler[1] [1]Institute for Isotope Geology and Mineral Resources, ETH Zürich, CH-8092 Zürich; [2]Berkeley Geochronology Center, 2455 Ridge Road, Berkeley, CA 94709 (nvogel@bgc.org*).

Introduction: Several studies [1-3] have reported the presence of, e.g., Ne-E, Ne-HL (Ne-A), or solar Ar in CAIs, which would provide important constraints on CAI formation. To re-examine these findings, we measured Ne and Ar in Allende (A) and Efremovka (E) CAIs. E CAIs contain less secondary phases than those of A [4], thus, alteration should be minor.

Experimental: Samples from 5 fluffy and 4 compact A CAIs and 1 fluffy E CAI were separated under a binocular microscope. At the conference, data from Axtell will also be presented. Gases were extracted by IR-laser (CW-mode). Blanks of $\leq 2\times10^{-13}$ cm^3STP for ^{20}Ne and ^{36}Ar contributed ≤9% to measured signals.

Results: Unlike the matrix, all CAIs in the figure fall on a line between normal chondritic cosmogenic Ne and ~ the origin, where also Ne-E (essentially pure ^{22}Ne) plots. However, rather than by admixture of Ne-E, the data are more straightforwardly explained by fractions of cosmogenic Ne having been produced from Na and Al. Calculated cosmogenic Ne compositions in Na- and Al-rich minerals in CAIs [5] indeed plot on the same line as the CAIs. Since the shift of ^{21}Ne/^{22}Ne to lower ratios is mainly due to cosmogenic Ne production in secondary Na-rich phases, E CAIs should plot close to chondritic cosmogenic ^{21}Ne/^{22}Ne, which is indeed the case. No CAI shows enhanced ^{20}Ne/^{22}Ne, which would indicate, e.g., Ne-HL.



^{36}Ar/^{38}Ar of compact A CAIs scatter between 0.7-1.7, those of fluffy A CAIs between 2.2-4.8. We explain this by higher Cl and lower Ca concentrations in fluffy A CAIs due to more pronounced alteration compared to compact ones: the cosmogenic ^{36}Ar/^{38}Ar produced from Ca and Cl are ~0.65 and ~100, respectively. E CAIs are less altered than A CAIs, and the pre-atmospheric size of E was smaller than that of A, leading to smaller cosmogenic production of Ar from Cl. This explains the low ^{36}Ar/^{38}Ar (0.7 - 0.8) of the fluffy E CAI.

Conclusion: The studied CAIs contain no primordial Ne-HL. Although we cannot conclusively exclude Ne-E or primordial Ar, the Ne data are straightforwardly explained by cosmogenic Ne production from Na- and Al-rich minerals. The enhanced ^{36}Ar/^{38}Ar of fluffy A CAIs are best explained by cosmogenic production of Ar from Cl particularly abundant in altered fluffy A CAIs.

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