NEW I-Xe DATA FOR CHONDRULES FROM THE L4 BJURBÖLE METEORITE.

O. V. Pravdivtseva, A. P. Meshik, and C. M. Hohenberg. McDonnell Center for the Space Sciences and Physics Department, Washington University, CB 1105, Saint Louis, MO 63130, USA, olga@wuphys.wustl.edu

I-Xe studies of chondrules sometimes provide more questions than answers. Iodine host phase is difficult to identify when chondrules are small and separation of pure mineral phases is not possible. In these cases the interpretation of I-Xe ages is difficult, since chondrules potentially contain multiple iodine-carrier phases. Nevertheless, age information from different mineral components in chondrules or other complex samples [1] can be successfully resolved if, during step-wise heating, radiogenic xenon from different components is released at different temperatures. Thus, among 43 LL chondrules studied so far, 10 have yielded two well resolved distinct isochrones, with higher temperature releases corresponding to older apparent I-Xe ages. Lower temperature I-Xe ages generally reflect post formational alteration. Not only do LL chondrules tend to be younger with increasing metamorphic grade, but the spread between high- and low-temperature ages increases also, suggesting longer or multiple alteration events for higher metamorphic grade meteorites [2].

A similar trend is observed for H4 NWA267 [3] and H5 Richardton. Our recent study of 3 Elenovka L5 chondrules demonstrates the presence of two distinct iodine carrier phases in one of the samples, with an age difference between the high- and low-temperature phases of 27 ± 10 Ma. I-Xe studies of 2 Saratov L4 chondrules yield ages that differ by 12 Ma [4].

Earlier studies of L4 Bjurböle chondrules [5] provided 13 high precision I-Xe ages without indication of multiple iodine host phases. With the refined absolute normalization of the internal standard Shallowater [6], absolute ages of the Bjurböle chondrules cluster at 4564.8 – 4563.3 Ma, 2.4 Ma after formation of CAI's, the estimated time of the chondrule formation [7].

A new I-Xe study of 6 other Bjurböle chondrules is under way to explore the possible presence of low-temperature iodine carrier phases. The lower temperature isochrons may have been overlooked since earlier step-wise heating extractions have been done with 200ºC incremental temperature steps. The first chondrule yielded relative I-Xe age of 0.0 ± 0.7 Ma. Low temperature peaks on the release profiles of radiogenic ^{129}Xe and ^{128}Xe correspond to the experimental points that form a correlation line of the same slope that the major apparent isochron, but require a different sub-planetary trapped Xe component [8].

Supported by NASA grant NAG5-12776. We thank University of Missouri Reactor staff for the irradiation of samples.

References: [1] Pravdivtseva O. V. et al. 2003. *Meteoritics & Planetary Science* 38:A140. [2] Pravdivtseva O. V. et al. 2005. Abs. #2534. 36th Lunar & Planetary Science Conference. [3] Pravdivtseva O. V. et al. 2005. *Meteoritics & Planetary Science* 40:5234. [4] Pravdivtseva O. V. et al. 2006. Abs. #2418. 36th Lunar & Planetary Science Conference. [5] Caffee M. W. et al. 1982. 13th Lunar and Planetary Science Conference: A303-A317. [6] Gilmour J. D. et al. 2006. *Meteoritics & Planetary Science* 41:19-31. [7] Amelin Yu. et al. 2002. *Science* 297:1678-1683. [8] Hohenberg C. M. et al. 2004. *GCA* 68:4745-4763.