LATE I-XE AGES OF SILICATE CLASTS (CHONDRULES) FROM GUJBA AND HAH237. J. A. Whitby,[1] G. Holland[2], A. Busfield[2] and J. D. Gilmour[2], [1]Physikalisches Institut, University of Bern, [2]Earth Sciences Dept., University of Manchester.

Introduction: Gujba and Hammadah al Hamra 237 are both members of the metal-rich carbonaceous chondrite CR clan [1,2], and have been grouped together as CB chondrites [2,3]. Differences in petrography, such as the size of chondrules, led to the designation of Gujba as CB_a and HaH237 as CB_b [2,3,7]. It has been suggested that zoned FeNi metal grains in HaH237 formed by direct condensation from a hot gas (1-50 × solar dust/gas ratio) in the nebula, as did metal-free chondrules [4] (the chondrules formed before condensation of the metal). On the other hand, an impact origin has been suggested for metal grains in Gujba (and CB_a members Weatherford and Bencubbin) to account for the necessary metal-rich vapour [5,6]; the impact may have been into a metal-rich parent body with composition similar to the CB_b group.

Although impact processing may have occurred over a long time-scale, the nebula is generally thought to have existed for less than 10Myr and so radiometric dating may distinguish between these scenarios, and shed light on whether the components in the CB_a meteorites could be derived from CB_b meteorites..

Experimental: Fragments of several chondrules were separated from small slices of both Gujba (ex Eric Twelker, www.meteoritemarket.com) and HaH237 (ex Natural History Museum, London) and neutron irradiated for I-Xe dating. Fragments from the same chondrules were mounted and polished for use with an electron microscope. Xenon isotopic analyses were carried out on the RELAX instrument at Manchester University using laser stepped heating; metal-free enstatite from Shallowater was used as an I-Xe reference.

Results: There was no evidence for iodine derived ^{129}Xe in chondrules from either meteorite, but iodine derived ^{128}Xe was observed even in high temperature releases.

Interpretation Either 1) The I-Xe system was reset during formation of the chondrules after the substantial decay of ^{129}I, or 2) There was never any significant iodine in the chondrule, and the observed high-temperature ^{128}Xe (^{127}I) release is the result of terrestrial or parent body weathering, or 3) The I-Xe system was reset by thermal annealing on the parent body after decay of ^{129}I.

Observations of glass in barred olivine chondrules, and sharp contrasts in nickel concentrations between adjacent metal grains in Gujba argue against significant thermal metamorphism [7]. There is no textural evidence of terrestrial alteration in the chondrules we analysed, and so no obvious host that might trap terrestrial iodine derived xenon until high temperatures. Accordingly, we favour interpretation 1), that the I-Xe system reflects the high temperature formation of the chondrules, and that this must have happened some 100Myr after the origins of the solar system, strongly favouring an impact origin over nebula condensation.

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