SURVIVING HIGH-TEMPERATURE COMPONENTS IN CI CHONDRITES. M. Zolensky[1], D. Frank[2], [1]ARES, NASA JSC, Houston, TX 77058 USA (michael.e.zolensky@nasa.gov), [2]ESCG, Houston, TX 77058 USA.

The CI1 chondrites, while having the most solar-like composition of any astromaterial available for laboratory analysis, have also been considerably altered by asteroidal processes including aqueous alteration. It is of fundamental importance to determine their pre-alteration mineralogy, so that the state of matter in the early Solar System can be better determined. In the course of a re-examination of the compositional range of olivine and low-Ca pyroxene in CI chondrites Orgueil, Ivuna and Alais [1] we found the first reported complete CAI, as already reported [2], with attached rock consisting mainly of olivine and low-Ca pyroxene. The range of residual olivine major element compositions we have determined in the CIs (Fig. 1) may now be directly compared with those of other astromaterials, including Wild 2 grains. The abundance of olivine and low-Ca pyroxene in CIs is higher than is generally appreciated, and in fact much higher than for some CMs [1]. We also noted numerous rounded objects varying in shape from spheres to oblate spheroids, and ranging up to 100μm in size (Fig. 2), which have been previously noted [3] but have not been well documented or appreciated. We characterized the mineralogy by transmission electron microscopy and found that they consist mainly of rather fine-grained, flaky single phase to intergrown serpentine and saponite. These two materials in fact dominate the bulk of the host CI1 chondrites. With the exception of sparse spinels, the rounded phyllosilicate objects are remarkably free of other minerals, suggesting that the precursor from which the phyllosilicates were derived was a homogeneous material.

We suggest that these round phyllosilicates aggregates in CI1 chondrites were cryptocrystalline to glassy microchondrules. If so then CI chondrites cannot be considered chondrule-free. Small though they are, the abundance of these putative microchondrules is the same as that of chondrules in the Tagish Lake meteorite.

References: [1] Frank et al., GCA in press; [2] Frank et al. (2011) *41st LPSC*; [3] Zolensky et al. (1996) LPSC XXVII, pp. 1753-1754.

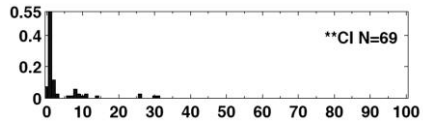

Figure 1. Olivine compositions in CI chondrites [1].

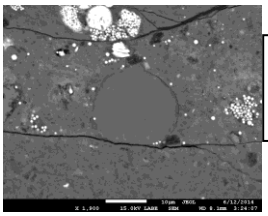

Figure 2. Altered microchondrule in Alais