SIMS). The elemental abundances should allow the classification of the particulates with respect to known meteoritic materials. The concentration of volatile elements or special molecules may give important clues concerning the thermal history of comets. A detailed measurement of interesting isotopic rations provides information about the origin and age of the investigated comets. As the ion sources of both spectrometers have similar ionisation characteristics a comparison of the dust components of Halley and Temple 2 is directly possible on the basis of the measured mass spectra.

AN SEM-PETROGRAPHIC STUDY OF AMOEBOID OLIVINE AGGREGATES IN ALLENDE

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Amoeboid olivine aggregates (*AOA*) are composed of olivine (*ol*) clumps and individual equant *ol*, both enclosed in two kinds of finer-grained matrix. The rounded clumps (d ~ 100 μm) consist of cores containing irregular grains of spinel (*sp*), perovskite (*pv*) and diopside embedded in a mixture of fine-grained ($\leq$5 μm) nepheline (*ne*), sodalite (*so*) and Ti-bearing, Al-rich, Ca-clinopyroxene (*cpx*). Surrounding each core is an innermost shell of salitic *cpx* and an outermost shell of 5-20 μm equant *ol* (Fo ~ 70). *Sp* and *pv* are probably the relict carriers of refractory trace elements seen in Grossman *et al.* (1979). Equant *ol* (Fo ~ 70) isolated in the matrix commonly have hollow cores. Compositions are the same for *ol* near the *AOA* margin. Hollow cores commonly contain Ni-Fe (Ni ~ 65%) and/or Fe-Ni sulfide inclusions. The first kind of matrix consists of relatively well-sorted, loosely-packed, randomly-oriented, elongate (~ 5-15 μm) *ol* plates (Fo ~ 70). Interstices are void or filled by *ne* and *so*. The second kind of matrix is finer-grained and poorly-sorted, consisting of salitic *cpx, ne, so* and Ni-Fe. Their very irregular shapes and clastic textures suggest that *AOA* formed by accretion of solid bodies. Textures within *ol* clumps, however, preserve a history of reaction between early refractory phases and vapor to form *cpx, ne* and *so*. *AOA* are dominated by *ol*, have no overall zonal structure, and are quite different from the fine-grained, pink inclusions which are mostly *cpx* and are strongly concentrically zoned.

Grossman *et al.*, 1979. *G.C.A.* **43**, 817-829. One sample studied in the present abstract is #3 in this paper.