

Distribution of Oxygen isotopes in fine-grained refractory inclusions of the Allende meteorite

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Textual relationships among fine-grained inclusions (FGIs) in Allende meteorite have been analyzed by SEM-EDS. Oxygen isotope ratios of individual crystals in the FGIs have been measured by SIMS. Minerals which were directly condensates from vapor were spinel and fassaite. Secondary alteration minerals were nepheline, sodalite, olivine, and hedenbergite. The textual and O isotopic evidence suggests that FGIs were not solidification from liquid but condensates from gas, and that secondary alteration process occurred in Fe-rich environments after aggregation of FGI. Textual evidence of hedenbergite indicates that FGIs may have had melilite before secondary process.