The fusion crust of Moore County was removed and the surface was abraded to a depth of one cm before a sample was taken, from which a three point “noise” was established (WR, Plag, Ps). The data define a line corresponding to $5.3 \times 10^6$ yr, which differs from the linear correlation Pb (linearly distributed Pb). The linearity of the data is preserved on a $\Delta$As vs. $^{207}Pb$ graph, thus indicating the strong possibility of a mixing line dominated by a terrestrial contamination (of a composition somewhat different from the black) that extended below the fusion crust into the interior. Samples from greater depths are being investigated.


A PETROGRAPHIC AND Mg ISOTOPIC STUDY OF CAI IN BALI (CMS) AND KATOLIC (CMS)
G. Kurat, Naturhistorisches Museum Wien, Vienna

One of the least well understood and most controversial aspects of CAI is the degree to which their mineralogical, chemical and isotopic composition has been affected by alteration and metamorphism. Coolidge is a highly metamorphosed carbonaceous chondrite, the only CAI (Van Schmus, 1959) and we have begun a petrographic and Mg isotopic study of Coolidge CAI to investigate the extent of chemical and isotopic recrystallization during thermal metamorphism. We also present the first Mg isotopic results from a coarse-grained CAI from Bali (CMS).

Three inclusions exhibiting bright blue luminescence were identified in a slab of Coolidge; two are comprised solely of fine-grained phases. Coolidge 1 is an amorphous-shaped object ~ 1.5 cm in diameter, comprised largely of micrometer-sized clusters of 5-10 µm spherical Fe-spinel (~ 10% FeO), fine-grained anorthite (An 99-100), silicate glass with 1% Na2O and accessory apatite. Coolidge 3 is oblong (1.5 x 3 mm) and comprised mainly of fine-grained forsterite (Fo 93), Fe-poor feldspar containing 10 x 102 µm anorthite laths (An 97-100), small Fe-rich spinel and fassaite (3.5% TiO2). Coolidge 2 and 3 are similar to Type IV chondrules in Vigarano (McSween, 1977). Coolidge 2 is a spherical inclusion, 0.5 cm across, texturally reminiscent of Allende Type B1 CAI. An interior of coarsely-grained feldspar (Ca4(Si2Al2O8), fine-grained anorthite (An 99-100) and pale pinkish spinel (Mg2Fe2O4) are surrounded by a fine-grained FeO, CaO-Al2O3-rich silicate mantle with comparably fine-grained FeO, CaO-Al2O3 rich mantie (An 93-95) that is 0.3 mm wide. Several features of Coolidge suggest that it was a Type I CAI: (1) the relatively zoned structure in which the original melt/melt has been replaced by a fine-grained silicate; (2) the similarity in composition between Coolidge fassaite and anorthite to their Allende counterparts; and (3) the textural relationship between primary fassaite and anorthite and secondary fine-grained silicate. The relative abundance of melt/melt in Coolidge 2 may reflect exchange with Coolidge matrix which is enriched in FeO (Mcxwen and Richardson, 1977). The Mg isotopic composition of the interior anorthite was measured with PANSURGE. The anorthite is extremely Mg-deficient and contains only normal Mg6/7Mg = 6 x 10^{-4} with $^{26}$Mg/FeO = 2500, giving $^{26}$Mg/FeO $< 1 \times 10^{-4}$, consistent with isotopic recrystallization during metamorphism.