MINERALOGY AND MATRIX COMPOSITION OF DARK CLASTS IN THE LEW 85300 POLYMICT EUCRITE; Michael E. Zolensky, Planetary Science Branch, NASA Johnson Space Center, Houston, TX 77058.

INTRODUCTION: CM chondrite clasts are reported to be present in many other meteorite types. We are now examining these to verify their chondritic affinities. Kozul and Hewins report dark, possible CM chondrite clasts from the polymict eucrite LEW 85300 [1&2]. Mittlefehldt and Lindstrom report that for one of these clasts, 85300,15, bulk Na, Ca, Fe, Sc and Cr, volatiles As, Cs, Sb and Se, and siderophiles Au, Co, Ir and Ni are all present in essentially chondritic concentrations (0.7-1.7 X CI). However, they determined that the REE are extremely enriched (compared to CI), with an "M"-shaped pattern [3]. In addition, Michael E. Lipschutz has determined that labile trace elements are uniformly enriched by 1.5 X CI in these clasts (personal communication, 1990). These latter results indicated that these clasts might not be CM material of a familiar type. Therefore, I examined two of these clasts (85300,15 and ,39), and report the results here.

PROCEDURE: The two sections were examined by standard petrographic techniques. Bulk matrix and mineral grain analyses were obtained by a microprobe using a focussed beam. Selected matrix samples from each thin section were then microtomed and examined using a JEOL 2000FX STEM equipped with a LINK eXL EDX analysis system.

PETROGRAPHY: As previously noted [1&2], the dark clasts within LEW 85300 have sharp boundaries with the enclosing eucrite materials, but contain abundant, but dispersed, aggregates, chondrule, and possible chondrule fragments resembling those encountered in the host eucritic materials. Kozul and Hewins [1] report olivine and pyroxene compositions of Fo51-99 and diopside-Fs40Wo10, respectively, from these aggregates and chondrules. These bodies are matrix supported. Matrix is extremely fine-grained and reddish-brown (due to rust, probably) in ultra-thin section.

MATRIX COMPOSITION: Dark clasts in both sections, but particularly 85300,15, were discolored with rust, probably from terrestrial alteration. The effects of this rust on bulk matrix compositions are unclear, although experience with other Antarctic meteorites suggests that chemical mobilization does not significantly alter the sorts of bulk major element analyses reported below. Individual focussed electron microprobe analyses of matrix from both sections are presented in Figure 1, on a reduced area Fe-Si-Mg ternary plot of atomic wt%. It is clear that the bulk compositions of these dark clasts are identical, with respect to the three elements presented here. Figure 2 compares the average matrix composition of these clasts (averaged together) to the fields occupied by average matrix and chondrule rims (all called "matrix" in the figure) from 20 CM and 6 CO and CV chondrites. Matrix composition of the LEW 85300 dark clasts is truly compatible with either CM, CO or CV materials. CI Matrix (not shown) is iron-depleted relative to LEW 85300 dark clast matrix.

MATRIX MINERALOGY: Matrix is dominantly composed of fine-grained (<1um diameter) irregularly-shaped grains of olivine and pyroxene, predominantly the former. AEM analyses of individual olivine grains yielded the compositional range Fo53-66. Both orthopyroxenes and augites were present. However, these analyses could have been compromised by the presence of ubiquitous rust, yielding analyses with incorrectly high Fe-contents. Grains of pyrrhotite, with intergrown pentlandite, and Fe-Ni metal were also noted. Fine-grained flakes (up to 30nm across) and fibers of saponite were common, but dispersed, throughout the matrix. While I cannot positively rule out the possibility that this phyllosilicate is terrestrial in origin, from the amount present, and lack of same reported for most Antarctic meteorites, I suggest that this saponite is preterrestrial in origin. A close examination of the eucritic host from these dark clasts should clarify this matter.

DISCUSSION: The bulk matrix composition of LEW 85300 dark clasts is most consistent with either CM, CO or CV matrix. Among known meteorite types, however, the mineralogy of these clasts' matrix is clearly most similar to CV3s, CO3s and unequilibrated ordinary chondrites (not to mention hydrous chondritic interplanetary dust particles) [4]. I therefore suggest that these LEW 85300 clasts are most similar to altered CV3 or CO3 meteorites, and not CMs.

REFERENCES: [1] Kozul and Hewins (1988) LPSC XIX, 647-648; [2] Hewins (1990) LPSC XXI, 509-510; [3] Mittlefehldt and Lindstrom (1988) LPSC XIX, 790-791; [4] Zolensky and McSween (1988) in Meteorites and the Early Solar System, 114-143.

LEW 85300 DARK CLASTS: Zolensky M E

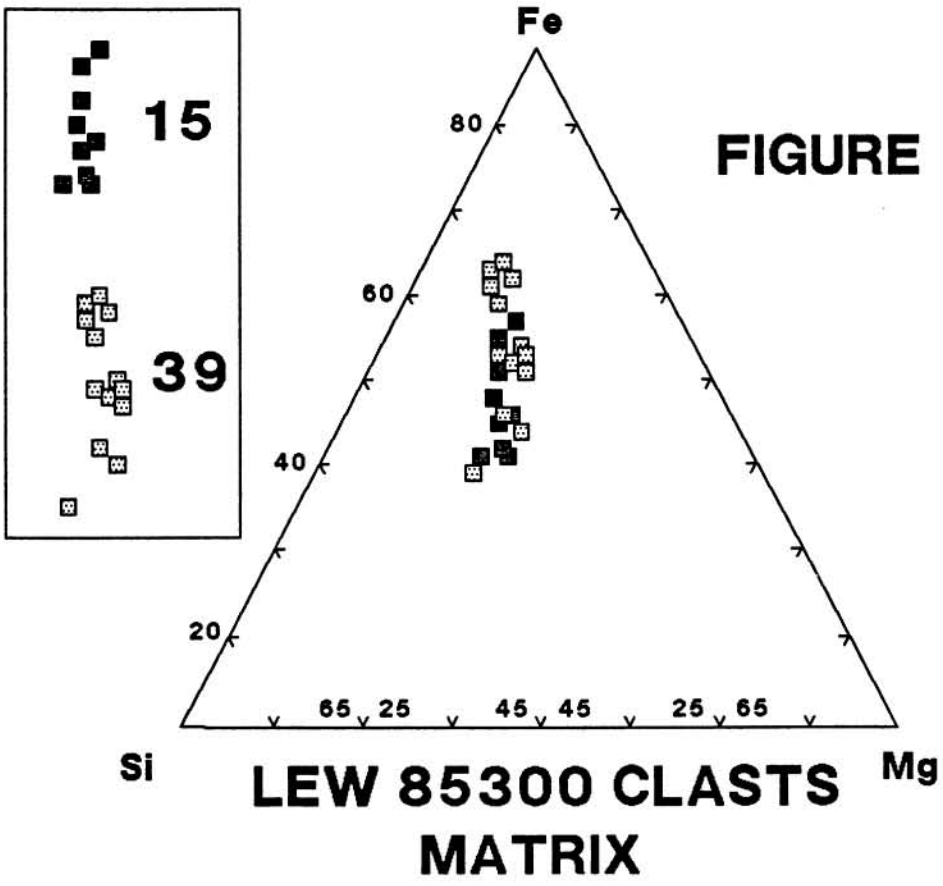

FIGURE 1

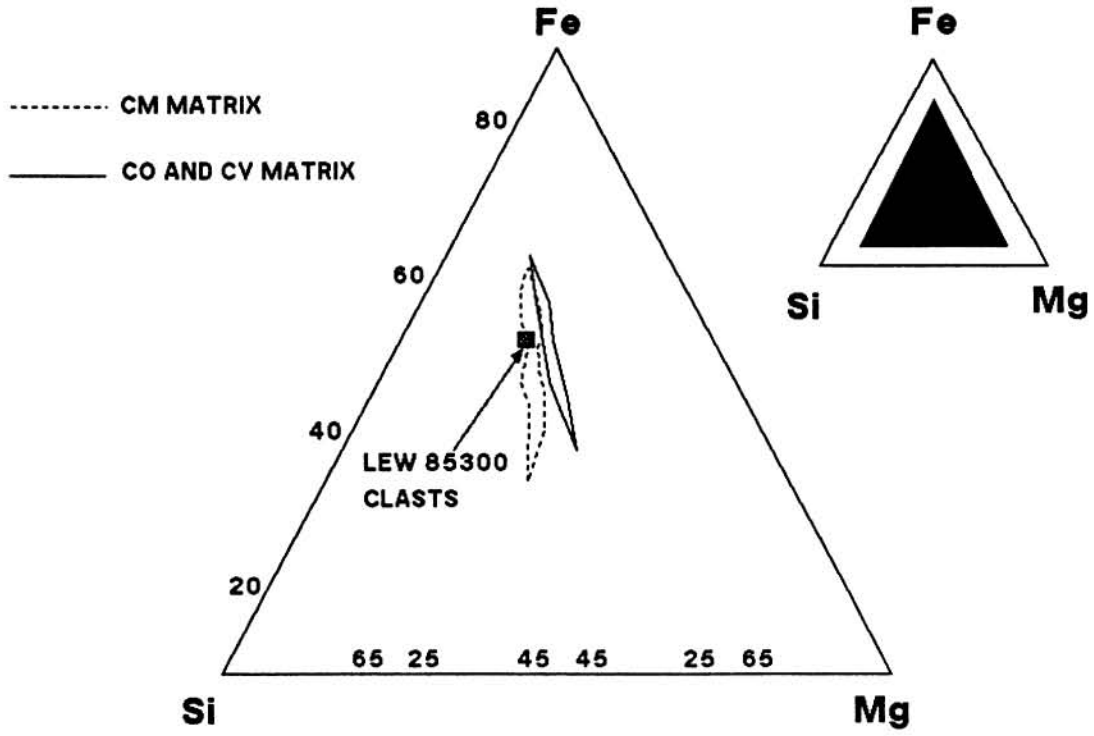

FIGURE 2