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which silicates have been described, consisting of albitic plagioclase, enstatite, and SiO_2 in a phosphate matrix (Scott and Bild, 1974).

The absence of clinopyroxene and chromite from the silicate inclusions is reflected in their bulk composition (determined by broad-beam microprobe technique) by a depletion of Cr, Mn, and Ca relative to ordinary chondrites (metal-free basis). Similar trends on a much smaller scale are found in IAB silicate inclusions. A comparison of trace element data (Scott and Wasson, 1975) also suggests that trends in group IIICD are very similar to but more pronounced than in group IAB. Thus the two groups may either be derived from the same parent body, or from very similar parent bodies which presumably formed in the same region of the solar system.

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A NEW TYPE OF Ca-Al-Na-RICH INCLUSIONS WITH AN IGNEOUS TEXTURE IN THE LANCÉ CARBONACEOUS CHONDRITE

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Three inclusions of an apparently new type have been found in the Lancé carbonaceous chondrite (no. 2LN, 3A1, and 5B). They are well-delineated aggregates with a groundmass that is granular in some places, but resembling an ophitic igneous texture in others. Patches of metal and sulfides are present along the rim and occasionally within the inclusions. The granular groundmass consists in all three cases of very pure enstatite (en $>$97). In addition, inclusion *2LN* contains ophitic feldspar (an 73), occasionally together with nepheline, and a very intimate intergrowth of Ca-rich pyroxenes, with skeletal hedenbergite or ferrosalite (en 10-25, fs 30-40, wo 45-50) embedded in augite (en 53, fs 3, wo 44). The augite is remarkable for its high Mn content (Mn/Fe - ratio about 1), and analyses give low cation sums unless most Ti and Cr are converted to Ti (3+) and Cr (2+). Hercynitic spinel (Fe/(Fe + Mg) = 0.6 and Cr_2O_3 around 1.3 wt %) surrounded by nepheline, and minor olivine of variable composition (fa 9-33) are also present. The bulk composition is alkali olivine basaltic (8% normative nepheline). Inclusion *3A1* does not contain nepheline or hercynite, but the other phases are generally similar to inclusion 2LN, except that olivine is more fayalitic (fa 40-60). Inclusion *5B* differs in some respects from the two others: The ophitic feldspar component is variable in composition (an 47-70), and there is only one Ca-rich pyroxene with very high Al_2O_3 (10 wt %). Olivine is more abundant and is strongly zoned (fa 8-32).

This type of inclusion is unique in bearing evidence for the presence of a basaltic melt during or perhaps even prior to the formation of the Lancé rock, *i.e.* very early in the history of the solar system.

The fragments encountered apparently had a complex history, of which at least three stages are still distinguishable: (a) formation of a highly reduced mineral assemblage, (b) fragmentation of this first generation rock and incorporation of fragments as xenoliths into a basaltic melt, and (c) emplacement of xenolith-rich basalt fragments into the Lancé parent rock, where they were subject to an alkali and Fe(2+) metasomatism similar to what we have previously observed on a Ca-Al-rich inclusion in Lancé (Kurat and Kracher, in preparation).

ANGRA DOS REIS REVISITED: PARTICLE TRACKS AND THEIR IMPLICATIONS

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There has been continued controversy about the interpretation of the particle track record in Angra Dos Reis (1-3). Measurements of track densities in various phases of ADOR by different groups are in agreement, but assignment of fractions of the total track density among cosmic ray, Pu + U fission, and possible superheavy element fission sources is in dispute. Recent evidence that particle tracks in ADOR are completely unaffected by post crystallization heating (3) lends credibility to the method of track length measurements, first used for ADOR by Bhandari *et al.* (1), for distinguishing among these sources in pyroxenes. Cosmic rays, ^{244}Pu and ^{238}U fission, and superheavy element fission each produce distinguishable tracks. We have therefore re-examined track lengths in ADOR in an attempt to check the work of (1) and to improve statistics. We have also measured additional phases.

Our track density measurements in pyroxene and olivine fall in the range reported by others (1-3). At this writing, 634 track lengths have been measured in ADOR pyroxenes; they have a mean of 14.6 μm and a standard deviation of 1.1 μm, which compares well with the mean length of 14.4 μm, measured by (1). More than 98% of the measured tracks fall within the expected Gaussian range of lengths, even for $\sigma = 0.9$ μm, a firm lower limit for this type of measurement based on published data for neutron-induced fission track lengths. These data reaffirm the conclusion of Bhandari *et al.* (1) that fossil tracks in ADOR pyroxenes result almost exclusively from ^{244}Pu fission.

The cosmic ray track density may be estimated from our data in several ways. A maximum value is obtained by assuming all tracks $\leq$ 12 μm in length to be due to nuclei lighter than iron, which results in a calculated Cr track