Sample	$\delta^{26}Mg$ (‰)	$^{27}Al/^{24}Mg$
BB-1 spinel	0 ± 2	2.5
hibonite	6 ± 2	25
BB-4 spinel	− 1 ± 2	2.5
hibonite #1	15 ± 2	30
hibonite #2	25 ± 3	75
BB-6 hibonite #1	2 ± 2	27
hibonite #2	3 ± 3	34
MUCH-1 hibonite	− 1 ± 3	196
DJ-1 #2	1 ± 2	190
#3	0 ± 2	181
DJ-3	0 ± 3	113
DJ-6	0 ± 2	123
SH-4 hibonite	− 1 ± 2	14

that defined by data from melilite in Murchison inclusions MUM-1 and MUM-2 (Tanaka *et al.*, 1980) and to the slope of the standard Allende isochron (Lee, 1979), suggesting that some Murchison BB and MUM inclusions are contemporaneous with Allende Type B1 inclusions. In contrast, the DJ, BB-6, MUCH-1, and SH-4 hibonites contain no excess ^{26}Mg with $^{27}Al/^{24}Mg$ up to ~ 200. $^{26}Al/^{27}Al$ was $< 2 \times 10^{-6}$ when these hibonites formed. If the lack of ^{26}Al is due to decay, then these hibonites formed ≥ 3 My after BB-1 and 4. The similarity in physical appearance and chemical and isotopic composition of the DJ hibonites and those in MUCH-1 suggests that of the inclusions thus far observed, MUCH's are the most likely source of DJ hibonite fragments.

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Sm-Nd ISOTOPIC SYSTEMATICS OF CHONDRITES AND ACHONDRITES

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The $^{143}Nd/^{144}Nd$ and $^{147}Sm/^{144}Nd$ ratios have been measured in five chondrites and the Juvinas achondrite. The range in $^{143}Nd/^{144}Nd$ for the analyzed meteorite samples is 5.3 ε-units (0.511673 to 0.511944) normalized to $^{150}Nd/^{142}Nd = 0.2096$. This is correlated with the variation of 4.2% in $^{147}Sm/^{144}Nd$ (0.1920 to 0.2000). Much of this spread is due to small scale chemical heterogeneities in the chondrites and does not appear to reflect the large scale volumetric averages. It is shown that all samples lie within 0.5 ε-units of a 4.6 AE reference isochron and define an initial $^{143}Nd/^{144}Nd$ ratio at 4.6 AE of 0.505828 ± 9 (Fig. 1). As there is a range of $^{147}Sm/^{144}Nd$ in chondrites there is no unique way of picking solar or average chondritic values for $^{143}Nd/^{144}Nd$ and $^{147}Sm/^{144}Nd$. From these data we have selected a new set of selfconsistent present-day reference values for CHUR ("chondritic uniform reservoir") of $(^{143}Nd/^{144}Nd)_{CHUR} = 0.511836$ and $(^{147}Sm/^{144}Nd)_{CHUR} = 0.1967$. The new $^{147}Sm/^{144}Nd$ value is 1.6% higher than the previous value assigned to CHUR using the Juvinas data of Lugmair. This results in a small but significant change in the CHUR evolution curve. At 4.6 AE ago the new CHUR curve is 1.8 ε-units lower than the old CHUR curve. Some terrestrial samples of Archean age show clear deviations from the new CHUR curve (Fig. 2). If the new CHUR curve is representative of undifferentiated mantle then it demonstrates that depleted sources were also tapped early in the Archean. Such a depleted layer may represent the early evolution of the source of present-day mid-ocean ridge basalts. There exists a variety of discrepancies with most earlier meteorite data which includes determination of all Nd isotopes and Sm/Nd ratios. These discrepancies require clarification in order to permit reliable interlaboratory comparisons. The new CHUR curve implies substantial changes in model ages for lunar rocks and thus also in the interpretation of early lunar chronology. In addition to the total chondrite data isochrons will be presented for St. Severin and Angra dos Reis.

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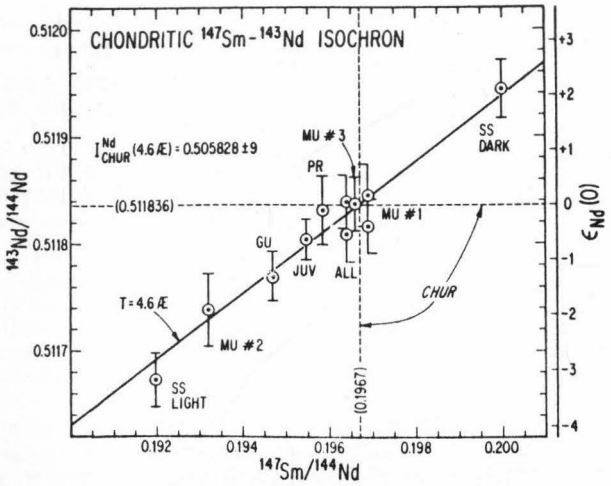

Fig. 1 **Sm-Nd evolution diagram for chondrite samples and Juvinas (=JUV). SS = St. Severin, MU = Murchison, GU = Guareña, PR = Peace River, ALL = Allende.**

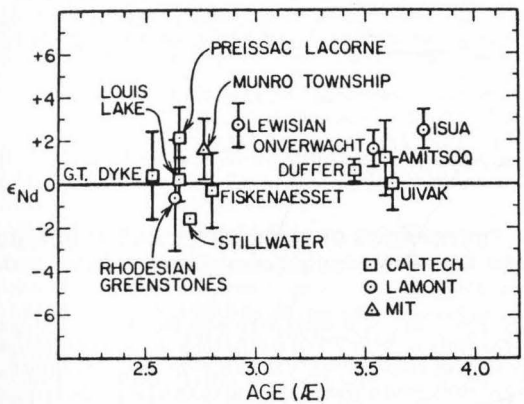

Fig. 2 **Fractional deviations in parts in 10^4 of initial $^{143}Nd/^{144}Nd$ of Archean rocks, from evolution in the CHUR reservoir.**

STELLAR OR INTERSTELLAR MOLECULES IN METEORITES

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Robert *et al.* (1979) had found in the LL 3 chondrite Chainpur the highest D/H ratios (up to 9 10^{-4}) ever found inside the solar system. In the same meteorite we have found oxygen enriched up to 1% in ^{17}O relative to other LL chondrites. The total range in oxygen isotope variation is 3 to 10.5‰ in $\delta^{18}O$ and 0.9 to 15.3 in $\delta^{17}O$ relative to Smow. These results have been checked for the possible interferences due to the presence of NF_3 both directly in the mass spectrometer and by analyzing a meteorite of known oxygen isotopic composition rich in nitrogen. The ^{17}O rich samples define a straight line of steep sloe (8 ± 1) in the $\delta^{17}O$ $\delta^{18}O$ diagram. The ^{17}O anomaly is apparently removed by heating at moderate (400 °C) to high (1200 °C) temperatures. It appears to be located in the matrix and the solid rim of chondrules. It does not show up to now any correlation with the deuterium enrichments.