system, 50 zaps of the sample were required for each run. $^{129}Xe_r$ excesses were measured, and variations were observed in different phases of the meteorite. Preliminary results are described in Table 1.

Table 1

Inclusion	Ol	Px	Ne	So	Sp	An	^{129}Xe (10^3 atoms/zap)		
CAI-F7 (core)	—	64	19	6	3	8	37.8 ± 2.8*	41.2 ± 2.2	pink fine grained
CAI-F7 (rim)	15	50	30	5	—	—	32.4 ± 4.2		
CAI-F6	—	5	95	—	—	—	11.2 ± 1.4	6.9 ± 1.7	white fine grained
CAI-F8	—	63	31	—	6	—	5.0 ± 0.5		
AOA-1	56	33	12	—	—	—	1.8 ± 0.6		

*(1σ statistical errors), Ol = olivine, Px = pyroxene, Ne = Nepheline, So = sodalite, Sp = spinel, An = anorthite, CAI-F = calcium aluminum inclusion-fine, AOA = amoeboid olivine aggregate. Values are percentages.

The sodalite bearing fine grained inclusion CAI-F7 had about 4×10^4 atoms of $^{129}Xe_r$/zap or about 7×10^{-9} cc/gm. The non-sodalite bearing white fine grained inclusions had less $^{129}Xe_r$, the amounts varying between 3.3×10^{-10} and 2.1×10^{-9} cc/gm. These results are somewhat less than the 10^{-8} cc/gm measured in apparently similar inclusions by other workers [*EPSL* **47**, 211 (1980); *EPSL* **15**, 101 (1972)]. Within single inclusions and chondrules different minerals had different $^{129}Xe_r$ contents. For example, melilite had more $^{129}Xe_r$ than pyroxene in coarse grained inclusion CAI-B2. Pyroxene had significantly more $^{129}Xe_r$ than olivine in chondrule C7, and a dark rim surrounding the chondrule had $^{129}Xe_r$ comparable to the pyroxene. The same minerals in different samples had differing $^{129}Xe_r$ amounts. Pyroxene in C7 had considerably more $^{129}Xe_r$ than pyroxene in CAI-B2, and olivine in C7 had more than olivine in the chondrule G2.

By far the majority of $^{129}Xe_r$ seems to be in sodalite-bearing inclusions. Results for coexisting minerals are generally consistent with the ability of various mineral structures to accommodate large atoms of ^{129}I, which should follow the order nepheline > melilite > pyroxene > olivine. The main shortcoming of our work is the low precision obtainable with the conventional mass spectroscopy. The use of the laser microprobe with a mass spectrometer designed specifically for analyses of very small samples, such as those described by Renolds *et al.* (1980) and Hohenberg (1980), holds great promise as a means to probe meteorites effectively with 30μ resolution.

Hohenberg, 1980. *Rev. Sci. Inst.* **51**, 1075.
Reynolds *et al.*, 1980. *Z. Naturforsch.* **35a**, 257.

CARBON, HYDROGEN, AND NITROGEN ISOTOPIC COMPOSITION OF THE RENAZZO AND ORGUEIL ORGANIC COMPONENTS

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The concentration and isotopic composition were determined for carbon, nitrogen, and hydrogen extracted from bulk samples and acid (HF-HCl) residues of Orgueil and Renazzo meteorites. The samples were heated step-wise and the measured quantities of gasses given off at each step were analyzed mass spectrometically. The whole rock δD and δ^{15}N values are +930‰ and +190‰ for Renazzo and +170‰ and +40‰ for Orgueil respectively. Hydrogen concentrations from the acid residues, shows a bimodal release pattern at temperatures between 400 and 1300 °C and the average δD of hydrogen from the acid residues from Renazzo is +2500‰ and from Orgueil is +1100‰. The δD of the hydrogen released at the high temperature release mode is on the average of +1500‰ for Orgueil and +3100‰ for Renazzo. The low temperature-release-hydrogen has a δD value of +1000‰ for Orgueil and +2000‰ for Renazzo. These results imply that the hydrogen isotopic composition is not homogeneously distributed among the various compounds of the acid residues. The δ^{13}C of the carbon in the acid residues measured −20‰ for Renazzo and −5‰ for Orgueil. With our previous results on δD's acid residues of Murray and Murchison (+600‰ and +800‰ respectively) we are able to calculate by mass balance an approximate isotopic composition of phyllosilicates in these four meteorites. The δD's of inorganic hydrogen are calculated to be ~ −250‰ for Murray, Murchison, and Orgueil.