Because of the initial selection criteria, most of the analyzed IDPs have a “chondritic” major element composition. However, one of the IDPs containing heavy N, St. Elizabeth, is a FSN-type (Fe-S-Ni containing) particle. The IR-class has been determined for only 3 of the 6 most $^{15}$N-enriched IDPs: Santa Fe and Cedarcreek are pyroxene class particles while Calrissian mainly consists of layer lattice silicates and carbonates. There is no correlation between $\delta^{15}$N and $\delta^{13}$C. Reference: (1) Zinner E. et al. (1987) Nature 330, 730.

Ion microprobe measurements of nitrogen and carbon isotopic variations in individual IDPs. F. J. Stadermann, R. M. Walker and E. Zinner. McDonnell Center for the Space Sciences and Physics Department, Washington University, St. Louis, Missouri 63130, USA.

We report N and C isotopic measurements on individual interplanetary dust particles (IDPs). Measurements were made with a CAMECA IMS 3F ion microprobe at high MRP (M/ΔM ≈ 6500) using a Cs$^+$ primary beam and negative secondary ions (1). We analyzed 24 different IDPs which had previously been characterized by SEM-EDX, FTIR transmission, Raman microprobe, and/or D/H isotopic measurements. All samples had already been identified as being extraterrestrial by one or more of these techniques.

No $^{13}$C enrichments were observed among the measured IDPs. The lowest $^{12}$C/$^{13}$C ratios are only slightly smaller than the lower limit of the range of the terrestrial ratios, with no $\delta^{13}$C$_{ter}$ values significantly below −60‰. The variations among different fragments of a given particle are small, i.e., all IDPs seem to be homogeneous with respect to their C isotopic composition.

N isotopes are measured as CN$^-$ ions and thus can be measured only in carbonaceous phases. Although a quantitative estimate of the N concentrations cannot be given at this time, we note that CN$^-$/C$^-$ ratios in the IDPs were comparable to those measured in the 1-hydroxybenzotriazole-hydrate standard (N concentration 27.5 wt%), indicative of high N concentrations, probably in organic compounds. 10 of the IDPs exhibit heavy N ($\delta^{15}$N up to +442‰ relative to air) and large intra-particle variations of the N isotopic composition. The figure shows the results of the N isotopic measurements for the 6 most $^{15}$N-enriched IDPs with error bars representing standard errors of the mean. From particle “Santa Fe” 4 different fragments have been measured; their $\delta^{15}$N values range from $(61 \pm 11)$ to $(442 \pm 29)$‰.