**ISOTOPIC MEASUREMENTS OF RARE SUBMICRO-METER-SIZED SiC GRAINS FROM THE MURCHISON METEORITE**

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**Introduction:** Presolar SiC grains have been divided into subtypes based on their C and Si isotopic compositions [1]. The search for rare types of grains has been facilitated by the development of an automatic grain mode analysis program for the NanoSIMS [2]. We report results from the automatic analysis of SiC grains of sizes 0.5–0.8 μm from the KJE size separate of the Murchison meteorite [3].

**Experimental:** For the automatic grain analysis the C and Si isotopes were measured in multidetection by rastering a primary Cs + beam over 40 x 40 um 2 large areas. After identification of different grain types, N and S isotopic measurements were made on selected grains in imaging mode in order to assess possible S contamination. This was followed by Al-26 Mg and Ca-Ti isotopic analyses to look for the initial presence of 26Al and 44Ti.

**Results and Discussion:** Among 1118 analyzed grains we found 63 SiC AB grains (5.7%), one C grain (0.1%), 17 X grains (1.5%), 64 Y grains (5.8%), 55 Z grains (5.0%), 5 nova candidates (0.5%) and 5 X-type SiSNa grains (0.5%). These abundances are similar to those previously found in somewhat smaller grains [4]. The C grain has 13C/12C = 92, 15N/14N = 58, δ34S = 134±19‰, δ60Si = 1272±19‰. It has an enormous 32S excess (δ32S = –944±33‰, δ33S = –941±14‰; see figure). This is the largest 32S excess ever observed. The S isotopic composition is almost that calculated for the Si/S zone in a 15M⊙ SNII model [5]. The C grains has δ26Mg = 2625±394‰ and δ44Ca = 9742±23‰, with initial 26Al/27Al and 147Ti/148Ti ratios of 1.7×10–9 and 4.2×10–8, respectively, the first somewhat smaller, the second comparable to values previously found in two C grains [6].

Type X grains tend to have 32S excesses but errors are large. Still, two grains have ±34S deficits of more than 2σ and another five grains ±34S deficits of more than 2σ. One grain has a 32S excess of more than 2σ. One SiSNa grain has extreme C and N ratios (13C/12C = 7.9, 14N/13N=N=4.5), usually indicating a nova origin. However, its Si isotopic ratios are that of an X grain (δ34Si = –434±6‰, δ32Si = –317±6‰), thus a SN origin is more likely. It has marginal ±34S deficits, which however, within the errors, are consistent with normal S.