**TITANIUM ISOTOPIC RATIOS IN KJG PRESOLAR SIC GRAINS FROM MURCHISON.** F. Gyngard[1], S. Amari[1], M. Jadhav[1], K. Marhas[1], E. Zinner[1], and R. S. Lewis[2], Laboratory for Space Sciences and Department of Physics, Washington University, St. Louis, MO 63130, USA, fmgyngar@wustl.edu, [2]Enrico Fermi Institute, University of Chicago, Chicago, IL 60637, USA.

**Introduction:** Thousands of individual presolar SiC grains have been measured for their C and Si isotopic compositions [1-3]. Despite the fact that Ti is one of the most abundant trace elements in SiC, only approximately 110 SiC grains have had their Ti isotopic compositions determined [1,4-7], but most analyses suffer from selection effects. Specifically, the Ti data for mainstream SiC, thought to have formed in the outflows of low-mass (1–3$M_O$) C-rich Asymptotic Giant Branch (AGB) stars [8], have not been obtained from a representative sample of the larger population. The grains analyzed have been chosen either for their high Ti concentrations [4] or their large $^{29}$Si and $^{30}$Si excesses [1]. To rectify this situation, we report here the Ti isotopic composition of 75 of the 247 SiC grains we have randomly selected for these measurements.

**Experimental:** Energy Dispersive X-ray (EDX) analysis was performed on grains from a Murchison KJG separate (diameter 2–4.5 μm) [9] dispersed on gold foil. After identification as SiC, 247 grains of size roughly ≥ 2.5 μm were randomly selected for isotopic measurement in the Washington University NanoSIMS, with this lower limit on grain size in place only to ensure suitably precise Ti results. Carbon, N, and Si isotopic ratios were measured first and the Ti isotopes for 75 of the grains measured afterwards by a combination of peak jumping and multidetection. Signals from $^{44}$Ca, $^{51}$V, $^{52}$Cr, and $^{53}$Cr were also monitored in order to correct for Ca interferences at masses 46 and 48 and Cr and V interferences at mass 50.

**Results:** The $\delta^{46,47,49,50}$Ti/$^{48}$Ti values measured cover a range comparable to what has been seen previously [1,4], and plot along correlation lines in Ti 3-isotope plots. The data also exhibit a linear correlation between Si and Ti isotopic ratios, similar to what has been previously observed, indicative of a Galactic chemical evolution component in the grains' Si and Ti compositions [10-12]. Hoppe et al. [1] observed that Ti in SiC is usually characterized by enrichments in the minor isotopes relative to $^{48}$Ti, resulting in a V-shaped pattern; here, we have found that roughly 40% of the grains measured so far exhibit this pattern, while about 55% have irregular patterns and the rest (5%) have an inverted pattern. The grains of this study can be grouped into three broad categories based on the Ti concentration as a function of depth: those with very negligible amounts of Ti, virtually at the limit of sensitivity (~10%); those with relatively uniform Ti concentration (~40%); and those with marked variation - often orders of magnitude changes - in Ti concentration, likely due to the presence of Ti subgrains (~50%).

**References:** [1] Hoppe P. et al. 1994. *ApJ* 430: 870-890. [2] Hoppe P. et al 1996. *GCA* 60:883-907. [3] Nittler L. R. and Alexander C. M. O'D. 2003. *GCA* 67:4961-4980. [4] Alexander C. M. O'D. and Nittler L. R. 1999. *ApJ* 519:222-235. [5] Amari S. et al. 2001. *ApJ* 546:463-483. [6] Amari S. et al. 2001. *ApJ* 559:248-266. [7] Zinner E. et al. 2005. *LPS XXXVI*, Abstract #1691. [8] Hoppe P. and Ott U. 1997. In *Astrophysical Implications of the Laboratory Study of Presolar Material* pp. 27-58. AIP, New York. [9] Amari S. et al. 1994. *GCA* 58:459-470. [10] Lugaro M. et al. 1999. *ApJ* 527:369-394. [11] Lugaro M. and Gallino R. 2001. *MAPS* 36:A118. [12] Nittler L. R. 2005. *ApJ* 618:281-296.