TOF-SIMS ANALYSIS OF 13 PRESOLAR SILICON CARBIDE GRAINS. T. Henkel[1], T. Stephan[1], E. K. Jessberger[1], P. Hoppe[2], R. Strebel[2], S. Amari[3], E. K. Zinner[3], and R. S. Lewis[4], [1]Institut für Planetologie/ICEM, Wilhelm-Klemm-Str. 10, 48149 Münster, Germany (torsten.henkel@uni-muenster.de), [2]MPI für Chemie, Postfach 3060, 55020 Mainz, Germany, [3]Laboratory for Space Sciences and Physics Department, Washington University, St. Louis, MO 63130, USA, [4]Enrico Fermi Institute, University of Chicago, Chicago, IL 60637, USA.

Introduction: Presolar SiC grains, extracted from primitive meteorites by chemical and physical treatments, condensed in the winds of AGB or J-type carbon stars with the exception of SiC X-grains, which are believed to condense in the ejecta of type II supernovae [1]. These grains can therefore be used to test stellar models.

We analyzed 13 presolar SiC grains from the Murchison and Tieschitz meteorites. One SiC X-grain was from Murchison, two from Tieschitz. The other SiC grains were five each from Murchison and Tieschitz.

Analytical Method: The particles were analyzed by time-of-flight secondary ion mass spectrometry (TOF-SIMS) [2]. TOF-SIMS has the advantage of recording simultaneously entire mass spectra with high lateral resolution (~300 nm) and low sample consumption (only monolayers). The achieved mass resolution $m/\Delta m$ reached 6000. To obtain depth profiles we applied some intensive sputtering using a low energy Ar-sputter gun.

Results and Discussion: We found heterogeneous Al-distributions in six of the grains, including one SiC X-grain (480-3) from Tieschitz. This SiC X-grain also showed a heterogeneous distribution of the (inferred) initial $^{26}Al/^{27}Al$-ratio [3]. Therefore, three sub-regions of the grain were analyzed individually. The heterogeneous Al-distributions can be explained as a condensation effect due to the lower condensation temperature of AlN.

The three SiC X-grains including the sub-regions from grain 480-3 showed a correlation between the $(^{26}Al/^{27}Al)_0$-ratio and the ^{28}Si-enhancement. This correlation can be explained in two ways: First, both nuclides could be produced together, *e.g.*, during C- or Ne-burning in massive stars [4]. But in this case the observed Al and Si isotopic ratios do not agree with present stellar models [5]. Second, an alternative explanation is that contamination with isotopically normal solar material would also lead to such a correlation.

The elemental compositions of the investigated presolar SiC grains can be assigned to four groups: Group 1 consists of SiC X-grains with high Cr and Fe but low Sc, Ti, and V, Group 2 of Murchison SiC grains with high Sc, Ti, and V, but low Cr and Fe. Group 3 (four Tieschitz SiC grains) shows low Sc, Ti, and V as well as low Cr and Fe. Group 4 is represented by only one Tieschitz SiC grain that is strongly depleted in all elements compared to the other grains.

The Murchison SiC grain KJG2-243, which was previously classified as a single grain, consists in fact of two individual grains, one SiC grain of type B and one mainstream or Y-grain.

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