A FASTER WAY TO PRESOLAR GRAINS: PURE DIAMONDS IN JUST SEVEN DAYS. S. Merchel and U. Ott, Max-Planck-Institut für Chemie, D-55020 Mainz, Germany (merchel@mpch-mainz.mpg.de)

Introduction: Since presolar grains were isolated in a fairly pure form for the first time [1] many attempts have been made to improve the purity and yield of the isolation products. Nowadays, most groups follow some variant of the separation method developed by the Chicago group [2]. But all applied procedures have one common feature: they take weeks to months before the grains are available for measurements. Therefore, we recently started to develop a much faster separation method.

Experimental and results: One of the most time-consuming parts of the usual chemical procedure is the repeated treatment with HCl and mixtures of HCl/HF to dissolve the silicates. In our approach, we started the procedure using microwave pressure bombs and more aggressive acid solutions (mixture of $HCl/HNO_3/HF$). Therefore, we were not only able to get rid of the silicates in one step; we also oxidized sulfides and macromolecular organic carbon at the same time. The acid-resistant residues of the meteorites Allende and Murchison (5 - 7 % of the original weights) consisted mainly of aluminum and magnesium fluorides, which have been products of the digestion, but which were easily destroyed by a following treatment with $HClO_4$. There was no need for any additional reagent like CS_2, KOH, H_2O_2, $Cr_2O_7^{2-}$, or $C_6H_5CH_3$ which are usually applied.

The separation of the remaining mineral phases was performed similar as in Amari *et al.* [2]: e.g. diamonds were brought into colloid by ammonia solution and reprecipitated by acidification. Then the traces of spinel, silicates, oxides, and silicon carbide present in this fraction were eliminated using H_3PO_4, HF, and a final treatment with $HClO_4$.

Preliminary investigations (e.g. SEM/EDX) with respect to yield and purity of the diamond fraction were quite satisfying, but further work regarding grain size distribution and isotopic structures by means of mass spectrometry and electron microscope (TEM, SEM/EDX) has to be done for all presolar materials.

We hope to achieve a selection of these data in the near future to validate if these speeded-up chemistry can compete with the traditional one.

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References: [1] Lewis R. S. et al. (1987) *Nature, 326,* 160-162. [2] Amari et al. (1994) *GCA, 58,* 459-470.