

Stardust sample recovery, curation and science: Submicron dust particles from Comet 81P/Wild-2

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Dust particles released from comet 81P/Wild-2 were captured in silica aerogel on-board the STARDUST spacecraft and successfully returned to the Earth on January 15, 2006. STARDUST recovered thousands of particles ranging in size from 1 to 100 micrometers. The analysis of these samples is complicated by the small total mass collected (~ 1 mg), its entrainment in the aerogel collection medium, and the fact that the cometary dust is comprised of submicrometer minerals and carbonaceous material. During the six month Preliminary Examination period, 75 tracks were extracted from the aerogel cells, but only 25 cometary residues were comprehensively studied by an international consortium of 180 scientists who investigated their mineralogy/petrology, organic/inorganic chemistry, optical properties and isotopic compositions [1-7]. These detailed studies were made possible by sophisticated sample preparation methods developed for the STARDUST mission and by recent major advances in the sensitivity and spatial resolution of analytical instruments. The STARDUST curation team at ARES/ NASA Johnson Space Center assumed a major role in the photo documentation and sample preparations of these precious samples. The sample recovery, curation and the results from preliminary examination will be reviewed in my presentation.

On-line Catalog is now available at:

<http://curator.jsc.nasa.gov/stardust/>

this is a public-domain access website with all the curatorial information associated with a given particle, track, or tile, including allocation history, analytical summary (when available) and various photo documentations acquired during the curation process. The purpose behind this online catalog and the care and effort being applied to this sample suit by the JSC Curatorial staff is to provide the scientific community with information such that interested investigators can make intelligent sample request. How to make such request can also be found on the above mentioned website, along with a great deal of other information related to the Stardust mission and sample suites.

References:[1] Brownlee D. et al. (2006) Science, 314, 1711-1716. [2] Zolensky M.E. et al. (2006) Science, 314, 1735-39. [3] Horz F. et al. (2006) Science, 314, 1716-1719. [4] Keller L.P. et al. (2006) Science, 314, 1728-1731. [5] Flynn G.J. et al. (2006) Science, 314, 1731-1735. [6] Sandford S.A. et al. (2006) Science, 314, 1720-1724. [7] McKeegan K.D. et al. (2006) Science, 314, 1724-28.

