Friday, March 23, 2012
COSMIC DUST: INTERSTELLAR, INTERPLANETARY, AND COMETARY MATERIAL
8:30 a.m. Montgomery Ballroom

Chairs: **Lindsay Keller**
Rhonda Stroud

8:30 a.m. Sterken V. J. * Westphal A. J. Altobelli N. Postberg F. Srama R. Grün E.
Interstellar Dust Simulations for the Stardust Mission **[#1878]**
In 2006, Stardust returned dust grains from Comet 81P/Wild2 as well as (candidate) interstellar dust grains. We simulated the flow of interstellar dust through the solar system and calculated impact velocities and directions on Stardust.

8:45 a.m. Westphal A. J. * Achilles C. Allen C. Ansari A. Bajt S. Bassim N. Bastien R. Bechtel H. A. Borg J. Brenker F. E. Bridges J. Brownlee D. E. Burchell M. Burghammer M. Butterworth A. Changela H. Cloetens P. Davis A. M. Floss C. Flynn G. Fougeray P. Frank D. Gainsforth Z. Gruen E. Heck P. R. Hillier J. K. Hoppe P. Hudson B. Huss G. R. Huth J. Hvide B. Kearsley A. King A. J. Lai B. Leitner J. Lemelle L. Leonard A. Leroux H. Lettieri R. Marchant W. Nittler L. R. Ogliore R. Postberg F. Price M. C. Sandford S. A. Sans Tresseras J.-A. Schmitz S. Schoonjans T. Schreiber K. Silversmit G. Simionovici A. Sole V. A. Srama R. Stephan T. Sterken V. Stodolna J. Stroud R. M. Sutton S. Treiloff M. Tsou P. Tsuchiyama A. Tyliszczak T. Vekemans B. Vincze L. Wordsworth N. Zevin D. Zolensky M. E. >30,000 Stardust@home dusters
Status of the Stardust ISPE and the Origin of Four Interstellar Dust Candidates **[#2084]**
Here we apply quantitative tests to constrain the origin of four interstellar dust candidates from the Stardust interstellar collector.

9:00 a.m. Gainsforth Z. * Simionovici A. Brenker F. E. Schmitz S. Burghammer M. Cloetens P. Lemelle L. Sans Tresseras J.-A. Schoonjans T. Silversmit G. Sole V. A. Vekemans B. Vincze L. Achilles C. Allen C. Ansari A. Bajt S. Bassim N. Bastien R. S. Bechtel H. A. Borg J. Bridges J. Brownlee D. E. Burchell M. Butterworth A. Changela H. Davis A. M. Floss C. Flynn G. Fougeray P. Frank D. Grun E. Heck P. R. Hillier J. K. Hoppe P. Hudson B. Huss G. R. Huth J. Hvide B. Kearsley A. King A. J. Lai B. Leitner J. Leonard A. Leroux H. Lettieri R. Marchant W. Nittler L. R. Ogliore R. Postberg F. Price M. C. Sandford S. A. Schreiber K. Srama R. Stephan T. Sterken V. Stodolna J. Stroud R. M. Sutton S. Trieloff M. Tsou P. Tsuchiyama A. Tyliszczak T. Westphal A. J. Wordsworth N. Zevin D. Zolensky M. E. >30,000 Stardust@home dusters
Identification of Crystalline Material in Two Interstellar Dust Candidates from the Stardust Mission **[#2336]**
Two interstellar dust candidates from the Stardust mission are found by synchrotron X-ray nanodiffraction to contain crystalline components. Analysis of the X-ray diffraction patterns determines the most likely mineral candidates.

9:15 a.m. Stroud R. M. * Achilles C. Allen C. Ansari A. Bajt S. Bassim N. Bastien R. Bechtel H. A. Borg J. Brenker F. E. Bridges J. Brownlee D. E. Burchell M. Burghammer M. Butterworth A. Changela H. Cloetens P. Davis A. M. Floss C. Flynn G. Fougeray P. Frank D. Gainsforth Z. Grün E. Heck P. R. Hillier J. K. Hoppe P. Hudson B. Huss G. R. Huth J. Hvide B. Kearsley A. King A. J. Lai B. Leitner J. Lemelle L. Leonard A. Leroux H. Lettieri R. Marchant W. Nittler L. R. Ogliore R. Ong W. J. Postberg F. Price M. C. Sandford S. A. Sans Tresseras J.-A. Schmitz S. Schoonjans T. Schreiber K. Silversmit K. Simionovici A. Solé V. A. Srama R. Stephan T. Sterken V. Stodolna J. Sutton S. Trieloff M. Tsou P. Tsuchiyama A. Tyliszczak T. Vekemans B. Vincze L. Westphal A. J. Wordsworth N. Zevin D. Zolensky M. E.
Constraining the Origin of Impact Craters on Al Foils from the Stardust Interstellar Dust Collector **[#2001]**
We present results from the elemental analysis of 24 craters in Al foil from the Stardust interstellar dust collector, and discuss the possible origins of 4 craters that are identified as candidate interstellar dust impacts.

9:30 a.m. Henkel T. * Lyon I. C. Kearsley A. T. Price M. C. Cole M. J. Burchell M.
Survival of Organic Compounds on Al Foil Under Stardust Conditions **[#2158]**
Organic material was captured on the Al foils of the Stardust collector. We studied the survival of organic material under Stardust conditions to understand the processing that organic crater residues, found on the flight foils, must have undergone.

9:45 a.m. Kearsley A. T. * Price M. C. Burchell M. Cole M. J. Foster N. J.
How the Shape and Volume of Impact Tracks in Stardust Aerogel Reflect Cometary Dust Properties: Experimental Evidence **[#1398]**
Stardust aerogel track shape was controlled by impactor internal structure, subgrain size and overall strength, rather than bulk grain density. Carbonaceous chondrite powders make Type B tracks; organics can make distinctive, squat “carrot” tracks.

10:00 a.m. Nakamura-Messenger K. * Keller L. P. Messenger S. Clemett S. J. Nguyen A. N. Frank D.
Coordinated Analyses of Diverse Components in Whole Stardust Cometary Tracks **[#2551]**
We are performing systematic examinations of entire Stardust tracks to discern the representative mineralogy and origins of comet Wild 2 components and to search for well preserved fine grained materials.

10:15 a.m. Joswiak D. J. * Brownlee D. E. Matrajt G. Nakashima D. Ushikubo T. Kita N. T. Gainsforth Z. Westphal A.
Diverse Source Regions for Fragments from a Single Stardust Track: A Mineralogical and Isotopic Study of Track 77 **[#2395]**
TEM studies of large fragments from Stardust track 77 indicate that Comet Wild 2 is mineralogically heterogeneous on the micrometer scale. Isotopic measurements further suggest the fragments were derived from diverse source regions in the nebula.

10:30 a.m. Starkey N. A. * Franchi I. A. Davidson J.
Insight into the Oxygen Reservoirs of the Comet Forming Region: Oxygen Isotope study of Interplanetary Dust Particles **[#1764]**
We present NanoSIMS O-isotopes on a set of IDPs. Most anhydrous IDPs have values similar to carbonaceous chondrites or their components, including FUN-like material. However, evidence exists for a distict group with more solar-like compositions.

10:45 a.m. Messenger S. * Keller L. P. Nakamura-Messenger K. Clemett S. J.
Pristine Stratospheric Collection of Cosmic Dust **[#2696]**
We report initial mineralogical and chemical studies of interplanetary dust particles collected in the stratosphere using a polyurethane foam substrate, without the use of silicone oil.

11:00 a.m. Stodolna J. * Butterworth A. Leroux H. Gainsforth Z. Tyliszczak T. Jacob D. Westphal A. J.
Iron Valence State Distribution at the Nano-Scale in Comet Wild2 Material from the Stardust Mission — A Coordinated TEM/STEM EDX/STXM Study **[#1212]**
We characterize the Fe valence state distribution of the GEMS-like material and combine the results with TEM characterization to better understand the chemical modifications during capture versus the primary nature of the Wild 2 fine-grained material.

11:15 a.m. Keller L. P. * Messenger S.
Formation and Processing of Amorphous Silicates in Primitive Carbonaceous Chondrites and Cometary Dust **[#1880]**
Amorphous silicates in CR 3.0 chondrites and Acfer 094 are compared and contrasted with GEMS grains in IDPs. Parent body oxidation and hydration reactions have modified the meteoritic amorphous silicates.

11:30 a.m. Bridges J. C. * Hicks L. J. Gurman S. J.
Space Weathering in Stardust Comet Wild2 Samples **[#2214]**
The Stardust Track 170 terminal grain is shown by XANES and EXAFS to be an Fe-metal and silicate assemblage that originated through space weathering on the surface of Wild 2.