Wednesday, March 3, 2010
STARDUST MISSION TO COMET WILD 2
8:30 a.m. Waterway Ballroom 1

Chairs: Hope Ishii
Andrew Westphal

8:30 a.m.

*The Nature of Moderately Fragmenting Comet Dust: Case Studies of Tracks 25 (Inti) and Track 77 [#2146]*
TEM studies of 36 fragments from SD tracks 77 and Inti provide insight into moderately fragmenting comet dust. T77 fragments are chondrule derived while the Inti impactor was a mix of ~3-µm CAI nodules individually wrapped with 0.5-µm diopside rims.

8:45 a.m.

*Lack of Evidence for In Situ Decay of Aluminum-26 in Comet 81P/Wild 2 CAI-like Refractory Particles 'Inti' and 'Coki' [#2317]*
The comet 81P/Wild 2 CAI-like particles “Inti” and “Coki” show no evidence for initial 26Al in TEM sections stabilized for NanoSIMS measurements by FIB. Implications for CAI history prior to incorporation in the comet are presented.

9:00 a.m.
Joswiak D. J. * Brownlee D. E. Matrajt G. Messenger S. M. Ito M.

*Stardust Track 130 Terminal Particle: Possible Al-rich Chondrule Fragment or Altered Amoeboid Olivine Aggregate [#2119]*
The terminal particle from track 130 is composed of the refractory mineral assemblage Mg-rich olivine, Al- and Ti- bearing augite and anorthite and may be a fragment from an Al-rich chondrule or amoeboid olivine aggregate (altered).

9:15 a.m.
Bridges J. C. * Changela H. G.

*Refractory Chondrule Fragments with Carbonaceous Chondrite Affinities in Comet 81P/Wild2 [#2058]*
Track #154 of Comet Wild 2 contains a refractory, 7–16 wt% Al₂O₃ Al-diopside (+ Fo, En) terminal grain. It is similar to a fragment of an Al-diopside rich chondrule from C-chondrites and is distinct from CAI refractory pyroxene.

9:30 a.m.

*A Type IIA Chondrule Fragment from Comet 81P/Wild 2 in Stardust Track C2052,2,74 [#2446]*
Coordinated analyses on a terminal particle, named Iris, from Stardust sample C2052,2,74, found it to be consistent with Type IIA chondrules. Methodologies used were in-aerogel XRF and Fe-XANES, followed by ultramicrotomy, STXM and TEM.

9:45 a.m.
Stodolna J. * Jacob D. Leroux H.

Mineralogy of Stardust Track 80: Evidences for Aqueous Alteration and Igneous Process [#1657]
We report a TEM examination of a compressed wall piece from track 80. The sample shows a high variability of minerals from highly reduced silicates to oxidized components such as Fe-rich olivine, ulvöspinel and magnetite.
Survivability of Cometary Phyllosilicates in Stardust Collections and Implications for the Nature of Comets [2357]
In response to the recent report of phyllosilicates in comet 9P/Tempel 1, we explored survivability and alteration of phyllosilicates under Stardust hypervelocity collection conditions for comet 81P/Wild 2 dust and discuss the implications.

Analysis of “Midnight” Tracks in the Stardust Interstellar Dust Collector: Possible Discovery of a Contemporary Interstellar Dust Grain [2050]
We report on the results of analyses by synchrotron X-ray microprobe of four “midnight” tracks extracted from the Stardust Interstellar Collector. One particle is a candidate to be the first contemporary interstellar dust particle ever identified.

10:30 a.m. Leroux H. * Kearsley A. T. Troadec D.
Mineralogy of Wild 2 Residues in Micron-sized Craters from the STARDUST Al-Foils [1621]
Electron transparent sections of micron-sized craters residues from Al-foils of Stardust were investigated by TEM. We show that impactors were multicomponent aggregates, mainly composed of crystalline material.

10:45 a.m. Stroud R. M. * Koch I. M. Bassim N. D. Piccard Y. N. Nittler L. R.
Structure and Composition of Comet Wild 2 Residues in Sub-Micron to Micron-Sized Craters [1792]
We report on 89 new micrometer-sized and smaller craters that we identified by automated SEM mapping, and TEM analysis of cross-sections from 6 of these craters.

11:00 a.m. Leitner J. * Hoppe P. Heck P. R.
First Discovery of Presolar Material of Possible Supernova Origin in Impact Residues from Comet 81P/Wild 2 [1607]
The oxygen isotopic compositions of cometary dust particles from 81P/Wild 2 have been analyzed by NanoSIMS in impact residues of 169 small impact craters (d<2µm) on Stardust Al foil C2037N. One 18O-rich presolar signature has been detected.

11:15 a.m. Kearsley A. T. * Burchell M. J. Price M. C. Green S. F. Franchi I. A. Bridges J. C. Starkey N. Cole M. J.
Distinctive Impact Craters are Formed by Organic-rich Cometary Dust Grains [1435]
Experimental impacts of organic-rich dust grains, fired at the Stardust-Wild 2 encounter velocity of 6 km/s, produce a distinctive surface texture in craters on Al foil, and leave a detectable light-element (C, N, O) trace from the impactor.

11:30 a.m. Fries M. * Steele A.
Comet 81P/Wild-2 Carbon — An Extraordinarily Diverse Suite of Materials [1083]
Raman measurements of Comet 81P/Wild-2 particles reveal an extraordinary range of structure and chemistry consistent with formation and metamorphism of those materials under a similarly broad range of conditions.