
## AIAA Rocky Mountain Region December Program

## Thursday, 15 March 2007

*Hosted By:*
Lockheed Martin Space Systems Company
Waterton Facility Main Plant
LSTTB Conference Center
6:00 p.m. Reception, 6:30 p.m. Program

## Topic

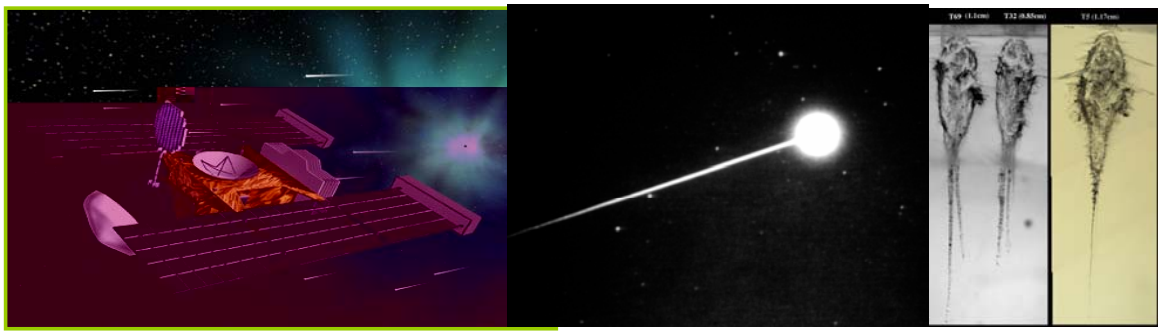
# Stardust – Bringing a Comet Home

***Discussion of Stardust Design, Mission and Preliminary Science***

## Guest Speaker

Joe Vellinga, Lockheed-Martin Stardust Program Manager

*(also a short post-talk demonstration of the "stardust@home" amateur interstellar dust particle hunter project by Barb Sande of Lockheed-Martin)*



## ***Please RSVP no later than Tuesday 13 March 2007***

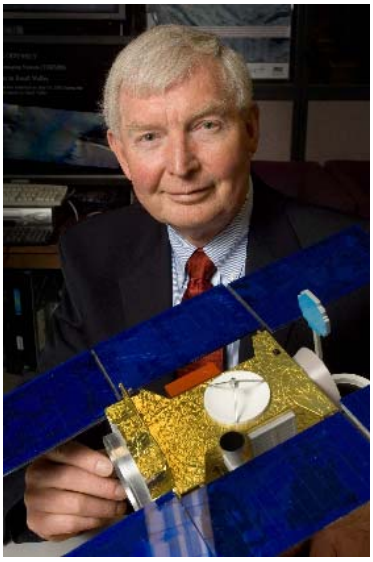
Please call Elaine Heinrich for badge access. Citizenship verification required.
elaine.m.heinrich@lmco.com, ph: 303-977-7094

# Abstract

Stardust is the 4th NASA Discovery Program. It was proposed in 1994 and selected in 1995. Stardust is the first mission to collect dust from the coma of a known comet, P81/Wild 2, and return the samples to earth. The spacecraft was designed and built at Lockheed-Martin in Denver along with the Sample Return Capsule (SRC). The spacecraft went further into space on just solar power than any previous spacecraft. The comet particles were captured in aerogel, the lowest density known solid material. The aerogel was deployed above a Whipple Shield that protected the spacecraft from the hypervelocity 'rocks' also present in the coma. The spacecraft encountered the comet at 13,000 mph but successfully capture comet particles without destroying them – the magic of aerogel! The spacecraft also collected interstellar particles in the back-side of the aerogel grid and returned them also. Barb Sande will discuss the opportunity for the public to search for the interstellar particles. The spacecraft dropped the capsule off near earth on January 15, 2006 and it entered the atmosphere at 28,000 mph, decelerated across Nevada and settled to a soft landing by parachute a little after 3 am. The preliminary evaluation of the returned comet particles is revolutionizing our understanding of the dynamics of the early solar system.

# Biography of Mr. Joe Vellinga

Joe Vellinga has been the Lockheed-Martin Program Manager for Stardust since the proposal in 1994. Prior to Stardust he delivered the Faint Object Spectrograph to the Hubble Space Telescope and preformed studies of weather satellite instruments and earth observing imaging spectrometers. In 1991 he demonstrated that the Manned Maneuvering Units flown in 1984 were still flight worthy. He studied space based lasers for the USAF and integrated payloads into a USAF research satellite. He integrated instruments into the Skylab program from inception through the three manned missions. He helped in the early development of small radiation cooled rocket motors including those flown on the Apollo Service Module and the Lunar Excursion Module.



Mr. Vellinga received a B.S. degree in Engineering from UCLA. He completed the Defense Systems Management College Program Manager's course. He received the NASA Public Service Medal for Leadership of the Stardust Development Team.