

The Center for In Situ Exploration and Sample Return (CISSR)  
Speaker Series

presents

Speakers: Wayne Zimmerman and Lloyd French

Topic: The Mars '07 North Polar Cap Deep Penetration  
Cryo-Scout Mission

Date: Friday, March 1, 2002

Time: 1:30 - 3:00 p.m.

Location: JPL Bldg. 306-302

Abstract:

A 2007 Mars North Polar Cap penetration mission is being proposed under the Mars Scout Discovery Program. The Cryobot robotic mole vehicle being developed by a team of JPL engineers would penetrate up to 200 meters below the polar ice cap in the only known accessible reservoir of water on the planet. The probe would be manifested with a suite of science instruments that will:

1. Examine the climatic history of Mars as reflected in the layers of ice -- the Mars Surveyor Orbiter Camera (MOC) has revealed exciting images of the polar ice cap indicating the layers to be on the order of 1 to 100 meters thick;
2. Look for organics and bio-signatures potentially trapped in the ice;
3. Examine trapped minerals and understand the chemical make-up of soluble constituents; and
4. Provide the first-ever polar cap surface images, as well as characterize the polar cap meteorology.

Biographies:

Wayne Zimmerman has been a senior engineer at JPL for more than two decades. He received his B.S. in Fluid Dynamics, with a major in Aerospace Engineering, from Case Institute of Technology, Cleveland, Ohio in 1969. He received his M.S. in System Engineering/Management from the University of Southern California, Los Angeles California in 1972. Wayne has been working in robotics for 22 years and was the Project Element Manager (PEM) for the Mars '98 Polar Lander Robotic Arm. He was also the Avionics PEM/Lead Engineer for the Mars '01 Micro-Rover and Robotic Arm. He currently holds a joint position as Lead Engineer for the Mars/Europa Cryobot Task and is Lead Engineer for CISSR. Wayne is responsible for spearheading advanced robotic vehicle and sampling/sample handling system designs, which are enabling for out-year NASA missions to extreme environments, such as Europa, Venus, Titan, and comets. He has published over 55 technical papers and co-authored two books in the field of robotics.

Lloyd French is Task Manager for JPL's Active Thermal Probe, sponsored by the Cross-Enterprise Technology Development Program (CETDP). He previously served as lead engineer for the Underwater Volcanic Vent Probes. Lloyd is one of the first graduates of JPL's Systems Architect Development Program. He works closely with the Center for Space Mission Architecture and Design (CSMAD) and CISSR, and he maintains a Thermal Environment Lab with a Mars Environment Chamber. Lloyd lectures at the International Space University on thermal spacecraft design and mission design. He holds degrees in Mechanical Engineering from the University of California-Berkeley in the areas of Heat Transfer and Control Systems.

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