Thursday, March 18, 2004
POSTER SESSION II: MISSIONS AND INSTRUMENTS: HOPES AND HOPE FULFILLED
7:00 p.m. Fitness Center

Malin M. Edgett K. Cantor B. Caplinger M. Davis S. Jensen E. Lipkaman L. Nixon B. Posiolova L. Sandoval J. Supulver K. Williams R. Zimdar R.
Mars Global Surveyor Mars Orbiter Camera in the Extended Mission: The MOC Toolkit **[#1189]**
The MGS MOC investigation continues in its 2nd extended mission to gather amazing new results. Among new MOC capabilities--the opportunity to acquire sub-meter resolution images.

McConnochie T. H. Bell J. F. III Christensen P. R. Malin M. Caplinger M. Ravine M. Mehall G. L. Silverman S. H. Hayes A. G. Noe Dobrea E. Z. Savransky D.
Mars Odyssey THEMIS-VIS Calibration **[#2064]**
We describe the procedures used to calibrate the Visible subsystem of Odyssey's Thermal Emission Imaging System (THEMIS). We discuss the removal of stray light and shutter smear artifacts, with special emphasis on the limitations of the calibration.

Martin P. D. Zegers T. Pischel R.
Early Science Operations and Results from the ESA Mars Express Mission: Focus on Imaging and Spectral Mapping **[#1787]**
The status of the Mars Express mission is given, followed by a description of the scientific goals and planning focused on the imaging and mapping spectrometer data.

Thompson T. W. Horttor R. L. Acton C. H. Jr. Arroyo B. Barbieri A. J. Zamani P. Johnson W. T. K. Plaut J. J. Holmes D. P. No S.
The Mars Express/NASA Project at JPL **[#1158]**
U.S. participation in ESA's Mars Express mission is described. This includes supporting investigators, developing software, and DSN tracking. A key goal is to have Mars Express data available to the community via ESA's data archive and the PDS.

Gibson E. K. Pillinger C. T. Wright I. P. Morgan G. H. Yau D. Stewart J. L. C. Reese M. R. Praine I. J. Sheridan S. Morse A. D. Barber S. J. Ebert S. Groesmann F. Roll R. Rosenbauer H. Sims M. R.
Beagle 2: Mission to Mars — Current Status **[#1845]**
Beagle 2, developed in the UK, was launched on June 2, 2003. It landed on Mars on December 25th, 2003 in Isidis Planitia, a large sedimentary basin. To date, the team is awaiting signals from the Beagle 2 lander. Current status of the mission will be reported.

Lüthi B. S. Thomas N. Hviid S. F. Keller H. U. Markiewicz W. J. Blümchen T. Smith P. H. Tanner R. Oquest C. Reynolds R. Josset J.-L. Beauvivre S. Hofmann B. Rüffer P. Pillinger C. T.
The Beagle 2 Microscope **[#1238]**
The Beagle 2 microscope provides optical images of the Martian surface at a resolution 5x higher than any other experiment currently planned. By using a novel illumination system it images in three colors and can also detect fluorescent materials.

Möller L. E. Tuller M. Islam M. R. Baker L. Kuhlman K.
Mars Environmental Chamber for Dynamic Dust Deposition and Statics Analysis **[#1773]**
Accumulation of dust particles on solar cells is a great challenge for Mars exploration. To gain insight into basic processes governing dust deposition we simulate Martian atmospheric conditions and observe the angle of repose of Mars dust surrogate.

Nogeire K. Robinson M. S.
Locating Targets for CRISM Based on Surface Morphology and Interpretation of THEMIS Data **[#2153]**
THEMIS visible and infrared images are used to identify targets for the MRO CRISM spectrometer. Terrain analysis and thermal signatures are used to locate areas with relatively high abundances of rocks / outcrops.

Smith P. H. Phoenix Science Team
The Phoenix Mission to Mars **[#2050]**
The Phoenix mission will land on the northern polar plains of Mars in June 2008. Its goal is to study the history of water in all its phases and to assess the potential of the near surface ice discovered by Odyssey to host microbial lifeforms.

Helbert J. Benkhoff J.
First Studies of Possible Landing Sites for the Phoenix Mars Scout Mission Using the BMST **[#1243]**
We will present the very first results of our studies of potential landing areas for the NASA Phoenix mission. We will show how the Berlin Mars near Surface Thermal model (BMST) can support the landing site selection process.

Wilson G. R. DePaula R. Diehl R. E. Edwards C. D. Fitzgerald R. J. Franklin S. F. Kerridge S. A. Komarek T. A. Noreen G. K.
The 2009 Mars Telecommunications Orbiter **[#1775]**
The first spacecraft with a primary function of providing communication links while orbiting a foreign planet has begun development for a launch in 2009.

Kminek G. Vago J. L.
The Aurora Exploration Program — The ExoMars Mission **[#1111]**
In the framework of the Aurora exploration program, the European Space Agency plans to launch the ExoMars mission in 2009. We will describe the scientific and technological objectives and the status of payload selection.

Wilcox J. Z. Urgiles E. Douglas S. George T.
Electron-induced Luminescence and X-Ray Spectrometer (ELXS) System Development **[#1407]**
The ELXS is a novel portable micro-instrument for rapid non-contact detection of chemical-elemental composition of samples on planetary surfaces, based on JPL-pioneered concept of electron-induced XRF analysis in situ in ambient atmosphere.

Sharma S. K. Misra A. K. Lucey P. G. Exarhos G. J. Windisch C. F. Jr.
Remote-Raman and Micro-Raman Studies of Solid CO_2, CH_4, Gas Hydrates and Ice **[#1929]**
In this work, we have evaluated feasibility of using remote Raman and micro-Raman spectroscopy as potential nondestructive and non-contact techniques for detecting solid CO_2, CH_4 gas, and gas hydrates as well as water-ice on planetary surfaces.

Armstrong J. C. Sellar R. G.
The Compact Microimaging Spectrometer (CMIS): A New Tool for In-Situ Planetary Science **[#1680]**
In-situ identification of trace minerals in planetary samples may be difficult with microscopic imagery and 'spot' spectroscopy. With our Compact Micro- Imaging Spectrometer (CMIS) we acquire spectroscopic data in an imaging format at microscopic scales.

Buhler C. R. Calle C. I. Mantovani J. G. Buehler M. G. Nowicki A. W. Ritz M.
Preliminary Results of a New Type of Surface Property Measurement Ideal for a Future Mars Rover Mission **[#1996]**
Results of triboelectric measurements on soils are presented as another means to gather information about the physical properties such as moisture content, texture, underlying materials and soil size of the Martian regolith during rover traverses.

Calle C. I. Buhler C. R. Mantovani J. G. Clements S. Chen A. Mazumder M. K. Biris A. S. Nowicki A. W.
Electrodynamic Dust Shield for Solar Panels on Mars **[#2014]**
An electrodynamic shield for preventing the accumulation of dust on solar panels, windows and viewports is demonstrated for a Mars application.

Delin K. A. Jackson S. P. Johnson D. W. Burleigh S. C. Woodrow R. R. McAuley M. Britton J. T. Dohm J. M. Ferré T. P. A. Ip F. Rucker D. F. Baker V. R.
Sensor Web for Spatio-Temporal Monitoring of a Hydrological Environment **[#1434]**
For the first time, a Sensor Web is used to monitor hydrological events with implications for both terrestrial and extraterrestrial applications. The Sensor Web is suited for spatio-temporal monitoring where a long-term, continual presence is desired to observe localized, transient phenomena.

Lawrence D. J. Elphic R. C. Vaniman D. T. Feldman W. C. Wiens R. C.
Field Testing of an In-Situ Neutron Spectrometer for Planetary Exploration: First Results **[#2018]**
We have successfully made in-situ neutron measurements of buried hydrogen in a realistic field test. Buried hydrogen (and hence water) is easily identified. We have also accurately modeled the neutron counting rate behavior for these tests.

Smythe W. D. Johnson E.
A Miniature Solid-State Spectrometer for Space Applications — Field Tests **[#2021]**
Field perfomance tests are reported for a miniature solid state spectrometer. The spectrometer is being developed for landed surface applications on Mars.

Arp Z. A. Cremers D. A. Wiens R. C.
Application of Laser Induced Breakdown Spectroscopy (LIBS) to Mars Polar Exploration: LIBS Analysis of Water Ice and Water Ice/Soil Mixtures **[#1932]**
Here we show LIBS to be useful for the analysis of water ice and water ice/soil mixtures. We report on the effects of varying soil concentration in ice, sample temperature on ablation depth, standoff analysis, and demonstrate ice core sampling.

Cremers D. A. Sevostiyanova E. V. Gibson L. Wiens R. C.
LIBS Analysis of Geological Samples at Low Pressures: Application to Mars, the Moon, and Asteroids **[#1589]**
Characteristics of the laser plasma are investigated at reduced pressures of 7 Torr and near vacuum for application to LIBS instruments for Mars, Moon, and asteroid missions.

Rodolfa K. T. Cremers D. A. Ebinger M. H.
In-Situ 1-D and 2-D Mapping of Soil Core and Rock Samples Using the LIBS Long Spark **[#1777]**
The use of LIBS in 1D and 2D analysis modes was studied as a method to map retreived soil core and rock samples according to elemental distributions.

Lacour J. L. Sallé B. Fichet P. Vors E. Fabre C. Dubessy J. Maurice S. Wiens R. C. Cremers D. A.
Rocks Analysis at Stand Off Distance by LIBS in Martian Conditions **[#1260]**
The research project called MALIS (Mars Analysis by Laser-Induced breakdown Spectroscopy) aims at producing a LIBS facility allowing rocks and soils analysis on Mars at stand off distance up to 10 or ideally 20 m.

Sallé B. Cremers D. A. Benelli K. Busse J. Wiens R. C. Maurice S. Walters R.
Evaluation of a Compact Spectrograph/Detection System for a LIBS Instrument for In-Situ and Stand-Off Detection **[#1263]**
LIBS is being developed for in-situ and stand-off analysis of geological samples for planetary landers and rovers. We are evaluating a compact commercial spectrograph/detection system for this application and are developing a flight-rated version.

Mahaffy P. R. Brinckerhoff W. B. Buch A. Cabane M. Coll P. Demmick J. Glavin D. P.
Analysis of Organic Compounds in Mars Analog Samples **[#1392]**
Mars simulant samples are analyzed for a wide range of organic compounds using pyrolysis gas chromatograph mass spectrometry, chemical derivatization, and laser desorption mass spectrometry.

Mahaffy P. R. Beaty D. W. Anderson M. S. Aveni G. Bada J. L. Clemett S. J. Des Marais D. J. Douglas S. Dworkin J. P. Kern R. G. Papanastassiou D. A. Palluconi F. D. Simmonds J. J. Steele A. Waite J. H. Zent A. P.
Report of the Organic Contamination Science Steering Group **[#1385]**
The considerations of the Organic Contamination Science Steering Group (OCSSG) regarding the potential impact of terrestrial contamination on the measurement of reduced carbon in future Mars lander experiments (http://mepag.jpl.nasa.gov/reports/index.html).

Wang A. Haskin L. A. Freeman J. Dong E. X. Kuebler K. E.
The Water-Wheel IR (WIR) — A Contact Survey Experiment for Water and Carbonates on Mars **[#1510]**
The Water-wheel IR spectrometer will do a near-contact survey to quantify water and carbonate on Mars during rover travel.

Garrick-Bethell I. Thomson M. A. Melling P. J.
Mid-IR Fiber Optic Probe for In Situ Water Detection and Characterization **[#1456]**
A mid-IR fiber optic probe can offer detection of water below 0.1% with a flexible sampling geometry.

Menard J. Sangillo J. Savain A. McNamara K. M.
Effects of Subsurface Sampling & Processing on Martian Simulant Containing Varying Quantities of Water **[#1202]**
This study is an attempt to simulate lubricant-free drilling into JSC Mars-1 simulant containing up to 50% water by weight and assess the impact of processing parameters on interpretation of in-situ compositional and mineralogical measurements.

Cardell G. Hecht M. H. Carsey F. D. Engelhardt H. Fisher D. Terrell C. Thompson J.
The Subsurface Ice Probe (SIPR): A Low-Power Thermal Probe for the Martian Polar Layered Deposits **[#2041]**
The JPL Subsurface Ice Probe (SIPR) concept and purpose is described. Analytical, computational, and experimental results from SIPR prototypes are presented.

Williams K. K. Grant J. A. Schutz A. E. Leuschen C. J.
Deploying Ground Penetrating Radar in Planetary Analog Sites to Evaluate Potential Instrument Capabilities on Future Mars Missions **[#1563]**
Results of GPR studies in Mars analog terrains in Arizona reveal the near-surface structure down to 5–10 m and provide information about the geologic setting and history. Data collection is motivated by the potential capabilities of a Mars GPR.

Chipera S. J. Vaniman D. T. Bish D. L. Sarrazin P. Feldman S. Blake D. F. Bearman G. Bar-Cohen Y.
Evaluation of Rock Powdering Methods to Obtain Fine-grained Samples for CHEMIN, a Combined XRD/XRF Instrument **[#1400]**
We examined several rock powdering methods to determine their suitability for analyses by a combined XRF/XRF instrument (CHEMIN). The methods including an ultrasonic driller/corer, tungsten carbide rotary bit, and a miniaturized rock crusher.

Sarrazin P. Chipera S. J. Bish D. Blake D. Feldman S. Vaniman D. Bryson C.
Novel Sample-handling Approach for XRD Analysis with Minimal Sample Preparation **[#1794]**
A novel sample handling technique for planetary X-ray diffraction instruments is presented. It relaxes the constraints on sample preparation by allowing characterization of coarse-grained material produced by rock crushers.

Trautner R. Bello Mora M. Hechler M. Koschny D.
A New Celestial Navigation Method for Mars Landers **[#1106]**
In this paper, the celestial navigation method developed and implemented for Beagle2 will be described. The achievable accuracy is presented, and a software implementation of the method is introduced.

Dyar M. D. Schaefer M. W. Griswold J. L. Hanify K. M. Rothstein Y.
Mars Mineral Spectroscopy Web Site: A Resource for Remote Planetary Spectroscopy **[#1356]**
A web site dedicated to Mars Mineral Spectroscopy has been established at http://www.mtholyoke.edu/go/mars. Its goal is to provide an easily accessible data set of Mössbauer spectra of minerals collected over a range of temperatures, as well as FTIR and Raman data.