Tuesday, March 11, 2008
POSTER SESSION I: *IN SITU* INSTRUMENTATION
6:30 p.m. Fitness Center

Mimoun D. Lognonne P. Gagnepain-Beyneix J. Giardini D. Mance D. Zweifel P. Pike T. Calcutt S. Christensen U. Roll R. van den Berg A. Smit J. M. Selig A. Schibler P. Nebut T. Gabsi T. Tillier S. Robert O. Pot O. Anglade A. Godet P. E. Bulow R. Banerdt W. B.
The ExoMars-Humbold Payload SEIS Experiment **[#1324]**
The ExoMars Seismometer is one of the major instruments of the Humbold payload on board the next ESA Mars mission "Exomars." It will study of the seismic activity of the red planet and will allow the evaluation of the frequency of meteorites impacts.

Wiens R. C. Clegg S. M. Barefield J. E. II Vaniman D. T. Lanza N. L. Newsom H. E. Herkenhoff K. E. Bridges N. T. Blaney D. L. Maurice S. Gasnault O. Blank J. G. Dyar M. D. Milliken R. E. Grotzinger J. Crisp J. ChemCam Team MSL Team
ChemCam Remote Analyses and Imaging on the Mars Science Laboratory 2007 'Slow Motion' Field Test **[#1500]**
Instrument teams from the upcoming MSL rover mission completed a blind field test to rehearse the instrumental analysis and decision making processes. We report on analyses performed and imaging simulated for the ChemCam remote sensing instruments.

Elam W. T. Kelliher W. C. Carlberg I. A.
A New X-Ray Fluorescence Spectrometer for Planetary Exploration **[#1824]**
We have built a borehole X-ray Fluorescence Spectrometer (XRFS) that can be used to determine the composition of planetary regolith at various depths in a pre-drilled borehole. Analytical performance gives ppm detection limits for most elements.

Urgiles E. Wilcox J. Z. Toda R. Crisp J.
Progress in the Development of the Atmospheric Electron-induced X-Ray Spectrometer (AEXS) with High Spatial Resolution for Surface Elemental Analysis from Samples in Planetary Atmosphere **[#1118]**
The status of the development of the AEXS instrument using a focused beam of energetic electrons for excitation of characteristic XRF from samples in planetary atmosphere rapidly (<1 min per resolved spectrum) with variable and high (mm to cm) spatial resolution is described.

Grunthaner P. Grunthaner F. White V. Bryson C. Wu W. Kelly M. Quinn R.
Ambient-Pressure X-Ray Photoemission Spectrometer for Chemical Analysis of Planetary Surfaces **[#1902]**
A new implementation of XPS will be discussed that enables miniaturization for planetary applications and real-time probing of dynamic atmosphere/solid surface phenomenon such as weathering processes, oxidant formation, and degradation of organics.

Dreyer C. B. Mungas G. S.
Hollow Waveguide Cavity Ringdown Laser Absorption Spectroscopy Progress for Trace Gas Detection **[#2491]**
We present progress on the development of a cavity ringdown trace gas detection technique that uses a hollow waveguide.

Parnell J. Bowden S. A. Phillips S. J. Wilson R. Cooper J. M.
High Resolution Analysis of Selected Organic Compounds in Icy Terrains, Using Surface-enhanced Raman Spectroscopy **[#1026]**
Surface-enhanced Raman spectroscopy will increase sensitivity by several orders of magnitude over conventional Raman, and should be considered for future missions. We demonstrate detection of organic pigments from ice containing snow algae.

Fortes A. D. Wood I. G. Dobson D. P.
Rationale and Preliminary Design of an Icy Mineralogy Package for Deployment at the Surface of Titan **[#1183]**
We describe a conceptual miniature X-ray diffractomer (and fluorescence spectrometer) to characterise the surface mineralogy of Titan.

Nehéz I. Varga T. Szilágyi I. Bérczi Sz. Varga T.
Long Life Airship Probe for the Application in the Atmosphere of Titan with the Utilization of ND Technology **[#1403]**
The lighter than atmosphere exploring airship probe utilizing Nil-Diffusion technology and with special structure, drifting in the Hadley cell circulation system of the Titan atmosphere, can make long time observations.

Lorenz R. D.
A 20-Station Array of Intelligent Dataloggers to Study Terrestrial Dust Devils: Preliminary Trials **[#1382]**
Novel results from an array of 20 intelligent meteorology stations deployed to measure the 2-D structure of dust devils in Arizona. Network measurement promises a new window into the statistics and structure of dust devils.

Lemmon M. T. Smith P. H. Shinohara C. Tanner R. Woida P. Shaw A. Hughes J. Reynolds R. Woida R. Penegor J. Oquest C. Hviid S. F. Madsen M. B. Olsen M. Leer K. Drube L. Morris R. V. Britt D. T.
The Phoenix Surface Stereo Imager (SSI) Investigation **[#2156]**
The Surface Stereo Imager is the multi-spectral stereo camera for the Phoenix Mars Lander. It is designed to support Phoenix landed operations and to conduct geological, mineralogical, and atmospheric investigations.

Ming D. W. Morris R. V. Woida R. Sutter B. Lauer H. V. Jr. Shinohara C. Golden D. C. Boynton W. V. Arvidson R. E. Stewart R. L. Tamppari L. K. Gross M. Smith P. H. Phoenix Science Team
Mars 2007 Phoenix Scout Mission Organic Free Blank: Method to Distinquish Mars Organics from Terrestrial Organics **[#1067]**
The Organic Free Blank (OFB) onboard the Mars 2007 Phoenix Scout Mission provides an organic carbon null sample to compare against possible martian organic signatures obtained by the Thermal and Evolved-Gas Analyzer (TEGA).

Brown I. I. Sarkisova S. A. Garrison D. H. Thomas-Keprta K. L. Allen C. C. Jones J. A. Galindo C. Jr. McKay D. S.
Bio-Weathering of Lunar and Martian Rocks by Cyanobacteria: A Resource for Moon and Mars Exploration **[#1673]**
The results on the bioweathering of analogs of lunar and martian soil analogs by siderophilic CB are described in the abstract. Obtained results seem to be applicable to ISRU needs on the Moon and Mars.

Freeman J. J. Wang A. Lambert J.
An Active Source, NIR, Reflectance Spectrometer in a Rover Wheel, Water-Wheel IR (WIR), for Soil Characterization in Future Mars Surface Exploration **[#2190]**
An active NIR reflectance spectrometer covering 1.25–5.0 μm spectral range has been developed. It is small, light weight, sensitive, and can be deployed by planetary rover wheels or by a robotic arm for surface material characterization.

Zacny K. Paulsen G. Davis K. Mumm E. Gorevan S.
Honeybee Robotics Planetary Drill Systems **[#1355]**
The Honeybee Robotics Spacecraft Mechanism Corporation has developed over a dozen planetary drill systems to meet specific requirements. This abstract describes some of them in more detail.

Vasadia S. J. Mistry A. H.
Thermal Sensors and Drilling Systems for Lunar and Planetary Regoliths **[#1337]**
The thermal conductivity of planetary near surface layers is a key parameter for describing the energy balance of many solar system bodies like airless moons, asteroids and comets.

Grygorczuk J. Seweryn K. Wawrzaszek R. Banaszkiewicz M.
Insertion of a Mole Penetrator — Experimental Results **[#1977]**
The work presented in this paper is focused on the dynamics of a mole penetrator designed, developed and successfully tested in SRC PAS. It can be considered as a transport device for different sensors designed for *in situ* investigations in subsurface environments.

El Shafie A. Kegege O. Barrows S. Roe L. Ulrich R.
Penetration Testing of the OPRA Regolith Penetrator **[#2125]**
Our work focuses on the mechanical design and penetration forces for the Optical Probe for Regolith Analysis. This is a spike-shaped probe delivered to a planet, asteroid, or cometary body by a lander to provide IR spectroscopy of the subsurface.

Pilgrim R. Ulrich R. Leftwich M.
Optical Design of OPRA: Optical Probe for Regolith Analysis **[#1391]**
OPRA is a spike-shaped penetrator with windows down the side, each connected via fiber optics to an infrared spectrometer in the lander or rover. Once inserted into the planetary, cometary, asteroidal or moon surface, a vertical composition profile is produced.

Tomkinson T. Wolters S. D. Hagermann A. Fraser W. T. Bohman A. F. Sund A. T.
Hagene J. K. Grady M. M.
WatSen — A Miniaturized Package to Detect Water on Mars **[#2040]**
We describe WatSen — a water sensor that comprises a miniaturised infrared spectrometer plus humidity detector, designed for the direct detection of water at and below Mars' surface.

Litvak M. L. Mitrofanov I. G. Shvecov V. N. Timoshenko G. N. Kozyrev A. S. Malakhov A. V.
Mokrousov M. I. Sanin A. B. Tretyakov V. I. Vostrukhin A. Golovin D. Varenikov A.
Following Subsurface Water on Mars: First Field Tests with DAN/MSL Instrument **[#1549]**
This abstract contains description of DAN/MSL instrument first field tests. The primary goal of these field tests is to show how the DAN instrument will able to detect subsurface water distribution along the path of the Mars Science Laboratory rover.

Klingelhöfer G. Rodionov D. Blumers M. Strüder L. Lechner P. Bernhardt B. Henkel H. Fleischer I.
Schröder C. Gironez-Lopez J. Studlek G. Maul J. Fernandez-Sanchez J. d'Uston C.
The Advanced Miniaturised Mössbauer Spectrometer MIMOS IIA: Increased Sensitivity and New Capability of Elemental Analysis **[#2379]**
A significant increase in sensitivity and performance of the advanced model of the MIMOS II Mössbauer Spectrometer will be reported. It will allow X-ray fluorescence analysis in parallel to Mössbauer spectroscopy.

Gómez-Elvira J. REMS Team
Environmental Monitoring Instrument for Mars Exploration **[#1647]**
REMS is on the MSL instrument payload and is composed of different sensors for recording pressure, humidity, air and ground temperature, UV radiation, and wind speed and direction. Scientific objectives, instrument description, and operation is described.

Peng Y. Wang M. Miller I. W. Hansen B. J. Zhang Z. Tolley S. E. Hawkins A. R. Radebaugh J.
Lee M. L. Austin D. E.
Planar Resistive Electrode Ion Traps: A New Tool for Planetary Atmosphere Analysis **[#2476]**
We have developed a novel ion trap mass spectrometer using planar resistive electrodes instead of metal electrodes. Designed for portable and spacecraft applications, this device is rugged, lightweight, and low-power.

Strashnov I. Blagburn D. J. Gilmour J. D.
Development of Resonant Photoionization Mass Spectrometer for Determination of Isotopic Compositions of Krypton **[#1917]**
An ultra sensitive resonance photoionization mass-spectrometer analysis of isotopic compositions of Kr is being developed. Nonlinear four-wave mixing is used to generate a VUV light for the first transition of three-color Kr ionization scheme.