

**Tuesday, March 15, 2005**  
**POSTER SESSION I: INSTRUMENTS I:**  
**GAMMA-RAY THROUGH VISIBLE AND FANCY LASERS**  
**7:00 p.m. Fitness Center**

Sklute E. C. Rothstein Y. Dyar M. D. Schaefer M. W. Menzies O. N. Bland P. A. Berry F. J.  
*Temperature Dependence and Recoil-free Fraction Effects in Olivines Across the Mg-Fe Solid Solution* [#1888]  
 Measurements of temperature dependence of synthetic olivines with compositions across the Mg-Fe solid solution are used to calculate recoil-free fractions.

Agresti D. G. Dyar M. D. Schaefer M. W.  
*MERView: A New Computer Program for Easy Display of MER-acquired Mössbauer Data* [#1941]  
 MER Mössbauer data in the PDS are in a form unfamiliar to most spectroscopists, with time and effort required to convert to a more user-friendly form. A new Windows-based computer program, MERView, does this conversion quickly and conveniently.

Rothstein Y. Sklute E. C. Dyar M. D. Schaefer M. W.  
*Effects of Variable Temperature on Mössbauer Data Acquisition: Laboratory-based and MER A Results* [#2216]  
 The effects of variable temperature and short duration run times on Mossbauer spectra are considered, both on the basis of laboratory data and of released MER A results.

Pirard B. d'Uston C. Maurice S. Gasnault O.  
*Performance Limits of New Generation Scintillators for Planetary Gamma-Ray Spectroscopy* [#2187]  
 Performances of new scintillators such as LaBr<sub>3</sub>:Ce are evaluated in terms of spectral resolution for use in planetary gamma-ray spectroscopy.

Wiens R. Maurice S. Bridges N. Clark B. C. Cremers D. A. Herkenhoff K. E. Kirkland L. E. Mangold N. Manhés G. Mauchien P. McKay C. P. Newsom H. Poitrasson F. Sautter V. d'Uston C. Vaniman D. Shipp S.  
*ChemCam Science Objectives for the Mars Science Laboratory (MSL) Rover* [#1580]  
 ChemCam consists of two remote sensing instruments for the 2009 MSL rover. The LIBS instrument provides elemental composition data on samples within 13 m of the rover. The Remote Micro-Imager provides the highest resolution images 2 m to infinity.

Harris R. D. Cremers D. A. Khoo C. Benelli K.  
*LIBS-based Detection of Geological Samples at Low Pressures (<0.0001 torr) for Moon and Asteroid Exploration* [#1796]  
 LIBS was studied for the analysis of geological samples at pressures ~0.0003 torr to simulate the Moon and asteroids. Analytical lines, calibration curves, and detection limits were determined for *in situ* and stand-off analysis at 5.3 meters.

Radziemski L. J. Cremers D. A. Benelli K. Khoo C. Harris R. D.  
*LIBS-based Detection of As, Br, C, Cl, P, and S in the VUV Spectral Region in a Mars Atmosphere* [#1747]  
 LIBS was studied for the detection of As, Br, C, Cl, P, S using the vacuum ultraviolet spectral region. Analytical lines, calibration curves, and detection limits were determined and the effect of Mars atm. CO<sub>2</sub> on the analysis was determined.

Wiens R. C. Thompson J. Sharma S. Misra A. K. Barefield J. Clegg S. Steele S. Newsom H. Sallé B. Maurice S.  
*Remote LIBS Analyses of Zagami and DAG 476 Martian Meteorites* [#2209]  
 We investigate the ability of Laser Induced Breakdown Spectroscopy, recently selected for the 2009 MSL rover, to remotely determine differences between basaltic rock types on Mars by analyzing two different shergottite meteorites from Mars.

Sallé B. Mauchien P. Lacour J.-L. Maurice S. Wiens R. C.  
*Laser-induced Breakdown Spectroscopy: A New Method for Stand-Off Quantitative Analysis of Samples on Mars* [#1693]

ChemCam (Laser-Induced Breakdown Spectroscopy + Micro-Imaging) is an instrument selected for the MSL rover scheduled for launch in 2009. We present the capabilities of the LIBS method for standoff analysis of geological samples in Martian conditions.

Thompson J. Wiens R. C. Sharma S. Lucey P. G. Misra A. K.  
*Combined Remote LIBS and Raman Spectroscopy Measurements* [#1517]

Presentation of a combined data set of remote LIBS and Raman Spectroscopy (RS) measurements, showing how the two techniques complement each other. Research toward a combined remote LIBS/RS instrument.

Sridhar N. Dunn D. S. Price K. T. Miller M. A. Pabalan R. T. Abrajano T. A.  
*Development of a Surface Enhanced Raman Spectroscopy Technique for Identification of Biomarkers on Mars* [#1133]

The paper describes a new Surface Enhanced Raman Spectroscopy technique for identification of biomarkers on Mars. The technique will enable the identification of femtomolar levels of biomarker molecules in either mineral assemblage or soil.

Misra A. K. Sharma S. K. Lucey P. G.  
*Single Pulse Remote Raman Detection of Minerals and Organics Under Illuminated Condition from 10 Meters Distance* [#1546]

A directly coupled portable remote Raman instrument developed by the University of Hawaii has been shown here to identify several minerals, chemicals and organics from a distance of 10 m using a single laser pulse in a well illuminated background.

Kuebler K. Jolliff B. L. Wang A. Haskin L. A.  
*Extracting Olivine (Fo-Fa) Compositions from Raman Spectral Peak Positions* [#2086]

This improved olivine calibration builds on our ability to extract petrologic information from a suite of Raman spectra. An ability to extract petrologic data from samples at a landing site will greatly improve our geologic understanding of the site.

Sharma S. K. Wang A. Haskin L. A.  
*Remote Raman Measurements of Minerals with Mars Microbeam Raman Spectrometer (MMRS)* [#1524]

We have measured remote Raman spectra of various minerals with a remote Raman receiver interfaced to a miniaturized Mars microbeam Raman spectrometer (MMRS). Our data show that remote Raman measurements can be made with a miniaturized Raman spectrometer such as MMRS.

Pollock H. R. Haring R. E. Sutin B. Mustard J. Boardman J.  
*Wide Field Imaging Spectrometer (WFIS) — Instrument Design and First Field Tests* [#2310]

WFIS is a new instrument concept that provides hyperspectral images with a compact system. A flight-like opto-mechanical WFIS engineering model was constructed and has been used to demonstrate data collection techniques and to provide representative data for simulations for future applications.

Edgett K. S. Bell J. F. III Herkenhoff K. E. Heydari E. Kah L. C. Minitti M. E. Olson T. S. Rowland S. K. Schieber J. Sullivan R. J. Yingst R. A. Ravine M. A. Caplinger M. A. Maki J. N.  
*The Mars Hand Lens Imager (MAHLI) for the 2009 Mars Science Laboratory* [#1170]

The Mars Hand Lens Imager (MAHLI) will acquire color, high resolution views of martian surface material during the Mars Science Laboratory (MSL) mission, launching in 2009.

Malin M. C. Bell J. F. III Cameron J. Dietrich W. E. Edgett K. S. Hallet B. Herkenhoff K. E. Lemmon M. T. Parker T. J. Sullivan R. J. Sumner D. Y. Thomas P. C. Wohl E. E. Ravine M. A. Caplinger M. A. Maki J. N.  
*The Mast Cameras and Mars Descent Imager (MARDI) for the 2009 Mars Science Laboratory* [#1214]  
The MastCam and MARDI will be used to explore the geology and geomorphology of the MSL landing site. MastCam and MARDI are both capable of high-definition video.

Mungas G. S. Beegle L. W. Boynton J. Sepulveda C. A. Fisher T. A. Balzer M. A. Sobel H. R. Deans M. Lee P.  
*CHAMP — Camera, Handlens, and Microscope Probe* [#2045]  
CHAMP (Camera, Handlens And Microscope Probe) is a novel field microscope capable of color imaging with continuously variable spatial resolution from infinity imaging down to diffraction-limited microscopy (3  $\mu\text{m}/\text{pixel}$ ).

Farrand W. H. Merényi E. Murchie S. Barnouin-Jha O. S.  
*Spectral Class Distinctions Observed in the MPF IMP SuperPan Using a Self Organizing Map* [#2009]  
Examination of the Imager for Mars Pathfinder (IMP) SuperPan with a Self Organizing Map ANN indicates spectral variability within previously identified physical classes and new insights into class distribution in the near and far field.

Maurice S. Wiens R. Manhés G. Cremers D. A. Barraclough B. L. Bernardin J. Bouyé M. Cros A. Dubois B. Durand E. Hahn S. Kouach D. Lacour J.-L. Landis D. Moore T. Parès L. Platzer J. Saccoccio M. Sallé B. Whitaker R.  
*ChemCam Instrument for the Mars Science Laboratory (MSL) Rover* [#1735]  
ChemCam is an active remote sensing instrument selected for the MSL project to investigate details of the Martian geochemistry.

Crowther S. A. Mohapatra R. K. Turner G. Blagburn D. J. Gilmour J. D.  
*Characteristics and Applications of RELAX, an Ultrasensitive, Resonance Ionization Mass Spectrometer for Xenon* [#1723]  
We report the features and characteristics of RELAX — Refrigeration Enhanced Laser Analyser for Xenon — the most sensitive resonance ionisation mass spectrometer currently available for determination of xenon isotope ratios.

Anderson F. S. Whitaker T. Miller G. Young D. Mahoney J. Norman M. French L.  
*A LASER RIMS Instrument to Date Igneous Rocks Using Rb-Sr and Measure Elemental Chemistry* [#1843]  
We are developing a laser ablation (LA) resonance ionization (RI) mass spectrometer (MS) under PIDDP to make *in situ* measurements of rock age and geochemistry on bodies with rocky surfaces.