Thursday, March 22, 2012
POSTER SESSION II: MARS SCIENCE LABORATORY
INSTRUMENT AND METHODS DEVELOPMENT
6:00 p.m. Town Center Exhibit Area

Anderson R. B. Bell J. F. III
Correlations Between Multispectral Imaging and Compositional Data from the Mars Exploration Rovers and Implications for Mars Science Laboratory (MSL) Data Analysis **[#2284]**
We used several methods to seek relationships between Pancam multispectral observations and APXS and Mossbauer data. Gusev correlations were weak, but Meridiani was slightly better, likely because of lower dust cover and several outlier compositions.

Bell J. F. III Malin M. C. Caplinger M. A. Ravine M. A. Godber A. S. Jungers M. C. Rice M. S. Anderson R. B.
Mastcam Multispectral Imaging on the Mars Science Laboratory Rover: Wavelength Coverage and Imaging Strategies at the Gale Crater Field Site **[#2541]**
We describe the multispectral imaging capabilities and science strategies of the Mars Science Laboratory rover "Curiosity" Mastcam multispectral imaging system, which can obtain color images in 13 medium or narrowband wavelengths from 445 to 1013 nm.

Bennett K. A. Bell J. F. III McConnochie T. H. Wolff M. J.
Extending CRISM Spectral Coverage in Gale Crater Using THEMIS-VIS and HiRISE **[#2761]**
In this study, we investigate whether HiRISE color and THEMIS-VIS images can be used to identify clay and/or sulfate deposits at finer spatial scales and/or in areas not yet measured by CRISM within Gale Crater and elsewhere.

Fraeman A. A. Arvidson R. E. Ehlmann B. L. McGovern J. A. Milliken R. E. Murchie S. L. Seelos F. P. Seelos K. D.
Increasing the Spatial Resolution of Oversampled CRISM Images at Gale Crater **[#2123]**
CRISM has gathered data which is oversampled in the along-track direction. We describe characteristics of these observations, discuss techniques for processing them, and highlight results from an oversampled observation acquired over Gale Crater.

Beyer R. A. Kirk R. L.
HiRISE Photoclinometry of Final MSL Landing Sites **[#2694]**
We present the results of point photoclinometry on HiRISE images of three of the four finalist MSL landing sites. We also provide calibration to previous photoclinometry results and to slope information from stereo terrain models.

Parker T. J. Golombek M. P. Calef F. J. III Hare T. M.
High-Resolution Basemaps for Localization, Mission Planning, and Geologic Mapping at Meridiani Planum and Gale Crater **[#2535]**
We recently updated the Opportunity location map to include Endeavour Crater, using CTX and HiRISE images at 25 cm/pixel (http://goo.gl/pSuFZ, http://goo.gl/ydjT2). A similar base mosaic is nearing completion for the Gale Crater landing site.

Fairen A. G. Davila A. Uceda E. R. Dohm J. M. Baker V. R. McKay C. P. Stokes C. R.
Glacial Paleomorphologies in Gale Crater, Mars **[#2182]**
We identify large-scale glacial morphologies in Gale Crater, Mars. We propose to use MSL instrumentation to search for and identify small-scale glacial features.

Yakovlev V. V.
The Ice Nature of the Gale Crater Central Structure **[#1454]**
Morphometric and other data substantiate the ice origin of the central structure of Gale Crater. It is offered as the mechanism of the considerable changes of the piezometric surface of the underfrost hydrosphere of Mars.

Golombek M. P. Bellutta P. Calef F. J. III Fergason R. L. Hoover R. H. Huertas A. Kipp D. Kirk R. L. Parker T. J. Sun Y. Sladek H. L.
Surface Characteristics and Traversability of the Gale Crater Mars Science Laboratory Landing Site **[#1608]**
Comparison of remote sensing data of Gale crater with the existing six landing sites on Mars allows predictions of likely surface characteristics at the Mars Science Laboratory landing site.

Newsom H. E. Blaney D. Wiens R. C. Clegg S. Lanza N. Vaniman D. Maurice S. Gasnault O. King P. Bridges N. Dyar M. D. Melikechi N. Blank J. G. Cousin A. Ollila A. Baxter A. Vasavada A. Mangold N. Le Mouelic S. ChemCam Team
Operational Strategies for the ChemCam LIBS Experiment on MSL **[#2477]**
The ChemCam LIBS on the Mars Science Lab can analyze a single target (within an RMI image), producing a depth profile on a single point, rasters consisting of ~9 separate points, or a line of points to characterize fine-grain layered materials.

Cousin A. Sautter V. Fabre C. Maurice S. Wiens R.
ChemCam Technique: A Powerful Tool for Textural Comparison of DAG 476 Meteorite and Picritic Basalt **[#1841]**
ChemCam optical measurement will be blind for fine-grained textured rock. We test the capability of ChemCam to distinguish rocks with different grain size distribution using key elemental ratios.

Cousin A. Forni O. Sautter V. Fabre C. Maurice S. Wiens R.
Classification of Non-Homogeneous Basalts Using Independent Component Analysis Technique for MSL/ChemCam Data **[#2891]**
Independent Component Analysis technique, concerning ChemCam data, is usually performed using calibration standards spectra, which are usually homogeneous compacted powders. Here we test the capability of this technique using heterogeneous basalts.

Gasnault O. Mazoyer J. Cousin A. Meslin P.-Y. Lasue J. Lacour J.-L. Ollila A. Berger G. Forni O. Maurice S. Wiens R.-C. Clegg S. Blank J.
Deciphering Sample and Atmospheric Oxygen Contents with ChemCam on Mars **[#2888]**
Use of oxgen line calibration with ChemCam, LIBS instrument on Curiosity, Mars.

Clegg S. Lasue J. Forni O. Bender S. Wiens R. C. Maurice S. Barraclough B. Blaney D. Cousin A. DeFlores L. Delapp D. Dyar M. D. Fabre C. Gasnault O. Lanza N. Morris R. V. Nelson T. Newsom H. Ollila A. Perez R. Sautter V. Vaniman D. T.
ChemCam Flight Model Calibration **[#2076]**
ChemCam is an integrated Remote LIBS and remote micro-imager (RMI) on the Mars Science Laboratory Rover. This paper will describe the ChemCam flight model calibration and report the elemental accuracy, precision, and detection limits.

Thompson L. M. King P. L. Spray J. G. Elliott B. E. Gellert R.
Characterization of BT-2: Calibration Target for Mars Science Laboratory Alpha Particle X-Ray Spectrometer **[#2427]**
This work describes the ongoing effort to fully characterize BT-2 (the calibration standard for the APXS instrument onboard MSL) using a variety of techniques and instrumentation to aid in the interpretation of APXS data.

Yen A. S. Bish D. L. Blake D. F. Vaniman D. T. Treiman A. H. Ming D. W. Morris R. V. Farmer J. D. Downs R. T. Chipera S. J. Des Marais D. J. Chen C. W.
Definitive Mineralogy from the Mars Science Laboratory CheMin Instrument **[#2741]**
CheMin is on its way to Mars to provide detailed, in situ measurements of mineralogy. Laboratory work with the flight hardware and related instruments characterize the performance capabilities.

Achilles C. N. Ming D. W. Morris R. V. Blake D. F.
Effects of Kapton Sample Cell Windows on the Detection Limit of Smectite: Implications for CheMin on the Mars Science Laboratory Mission **[#2786]**
The CheMin IV laboratory instrument measured the detection limit of smectite in Kapton sample cells along with the effects of the Kapton diffraction peak for both hydrated and dehydrated smectite samples.

Minitti M. E. McCoy T. J.
Assessing the Longwave Ultraviolet Fluorescent Characteristics of Martian Meteorites **[#2349]**
We investigate the occurrence and importance of mineral fluorescence in the martian meteorites utilizing 365-nm ultraviolet light. The results provide "ground truth" for observations that can be carried out by the MSL Mars Hand Lens Imager (MAHLI).

Maki J. N. Thiessen D. Pourangi A. Kobzeff P. Scherr L. Elliott T. Dingizian A. St. Ange B.
The Mars Science Laboratory (MSL) Hazard Avoidance Cameras (Hazcams) **[#2828]**
The Mars Science Laboratory (MSL) Rover, scheduled to land on Mars on August 6th 2012 UTC, utilizes eight Hazard Avoidance Cameras (Hazcams). This abstract describes the MSL Hazcams.

McCanta M. C. Dyar M. D. Dobosh P. A. Newsom H. E.
Using the LIBSSIM Program to Calculate Rock Composition: Testing the Potential of LIBS Analyses **[#1993]**
We use the LIBSSIM program to examine sampling strategies for the LIBS instrument (ChemCam) on MSL. Grain size, phase proportions, and numbers of analyses are investigated to determine the accuracy and precision of the calculated compositions.

Ozanne M. V. Dyar M. D. Carmosino M. L. Breves E. A. Clegg S. Wiens R. C.
Comparison of Lasso and Elastic Net Regression for Major Element Analysis of Rocks Using Laser-Induced Breakdown Spectroscopy (LIBS) **[#2391]**
Results of using the LASSO (least absolute shrinkage and selection operator) and elastic net regression techniques for quantitative elemental analysis of rocks are compared.

Maurice S. Cousin A. Wiens R. C. Gasnault O. Parès L. Forni O. Meslin P.-Y.
Clegg S. ChemCam Team
Laser Induced Breakdown Spectroscopy (LIBS) Spot Size at Stand-Off Distances with ChemCam **[#2899]**
First measurements of spot size for a Laser Induced Breakdown Spectroscopy (LIBS) experiment at Stand-off distances (MSL/ChemCam).

Carmosino M. L. Breves E. A. Dyar M. D. Ozanne M. V. Clegg S. Wiens R. C.
Behavior of Feature Selection in LIBS Spectroscopy as a Function of Varying Distance and Data Pre-Processing **[#2285]**
This study uses the lasso approach to examine the importance of varying distance and data pre-processing (baseline subtraction) on results of multivariate elemental analysis of LIBS data on geological samples.