Tuesday, March 2, 2010
POSTER SESSION I: SPACECRAFT INSTRUMENTS
7:00 p.m. Town Center Exhibit Area

Blake D. F. Vaniman D. Anderson R. Bish D. Chipera S. Chemtob S. Crisp J. DesMarais D. J. Downs R. Farmer J. Feldman S. Gailhanou M. Ming D. Morris R. Stolper E. Sarrazin P. Treiman A. Yen A.
Test and Delivery of the CheMin Mineralogical Instrument for Mars Science Laboratory '11 **[#1898]**
CheMin, an XRD/XRF instrument selected for flight on Mars Science Laboratory '11 has been tested and delivered to the MSL project. Diffraction and fluorescence data collected over a range of Mars-relevant temperature and pressure conditions will be presented.

Treiman A. H. Robinson K. L. Blake D. F. Bish D.
Mineralogy Determinations by CheMin XRD, Tested on Ultramafic Rocks (Mantle Xenoliths) **[#1472]**
The CheMin XRD instrument, part of the MLS lander, can identify minerals and quantify their abundances in ultramafic rocks (like those at some proposed MSL landing sites).

Wiens R. C. Clegg S. M. Bender S. Lanza N. Barraclough B. Perez R. Forni O. Maurice S. ChemCam Team Dyar M. D. Newsom H.
Progress on Calibration of the ChemCam LIBS Instrument for the Mars Science Laboratory (MSL) Rover **[#2205]**
ChemCam underwent initial calibrations in late 2008 using rock powder standards; final lab calibrations will be in early 2010. Here we report analysis techniques and results from the ChemCam laser-induced breakdown spectroscopy (LIBS) instrument.

Perkins J. J. Sharma S. K. Lienert B. L. Misra A. K. Clegg S. M. Wiens R. C.
Improvement in Qualitative and Quantitaive LIBS Analysis of Elemental Compositions of Basalts **[#1517]**
We report here improvements in the qualitative classification and quantitative elemental compositions determination of rocks from the baseline corrected remote LIBS data with multivariate (PCA and PLS2) analysis.

Rauschenbach I. Jessberger E. K. Pavlov S. G. Schröder S. Hübers H.-W.
Calibration and Quantification of a Close-Up Mini-LIBS System for Planetary In-Situ Analysis **[#1658]**
We are developing a lightweight close-up LIBS instrument with a total mass of ~1 kg in flight-configuration. Here we report on a systematic performance study to determine the limits of detections and accuracies under martian atmospheric conditions.

Ishibashi K. Ohno S. Wada K. Senshu H. Kobayashi M. Arai T. Namiki N. Matsui T. Cho Y. Kamata S. Sugita S. Iijima Y. Tazawa S. Noda H. Sasaki S.
Effect of Spectral Quality on Laser-induced Breakdown Spectroscopy Measurements: The Precision of Elemental Abundance Prediction Using Partial Least Squares Regression **[#1719]**
We investigated the effect of S/N ratio and wavelength resolution of spectra on the prediction precision of elemental abundances in laser-induced breakdown spectroscopy measurements when partial least squares regression is used as an analysis method.

Cho Y. Sugita S. Ishibashi K. Ohno S. Kamata S. Kurosawa K. Sekine Y. Arai T. Kobayashi M. Senshu H. Wada K. Namiki N. Matsui T.
Effects of Laser Energy on LIBS Spectra **[#2158]**
LIBS spectra changes as laser fluence fluctuates, affecting the precision of analysis. Our experiments show that the spectral change may be predicted well with an LTE plasma with temperature proportional to a power-law function of laser fluence.

Cousin A. Maurice S. Forni O. Gasnault O. Dalmau J. Saccoccio M. Wiens R. ChemCamTeam
Laser Induced Breakdown Spectroscopy (LIBS) Library Under Martian Conditions **[#1983]**
ChemCam is part of the MSL rover to be launched in 2011 to investigate the martian surface geochemistry. The aim of this work is to build a library of LIBS emission lines in martian conditions and to develop software for analysis of ChemCam data.

Gallegos Z. E. Lanza N. L. Newsom H. E. Ollila A. M. King P. L. Osinski G. R. Clegg S. M. Wiens R. C. Vaniman D. T. Humphries S. D. McInroy R. E. Lee P.
Using Laser Induced Breakdown Spectroscopy (LIBS) to Assess Geologic Samples Associated with a Terrestrial Impact Structure as an Analogue for Future Planetary Explorations **[#2365]**
Determining the diversity of geologic materials in a complex impact structure using tools in the Mars Science Laboratory payload including ChemCam (LIBS and Remote Imager), CheMin (XRD), and APXS (XRF) and the MAHLI and MastCam cameras.

Blank J. G. Clegg S. M. Barefield J. E. McKay C. P. Wiens R. C.
Laboratory Exploration of Organic and Inorganic Carbon by Laser-induced Breakdown Spectroscopy (LIBS): Relevance for Planetary Astrobiology Missions **[#2485]**
We used LIBS and chemometric analysis to distinguish between organic and inorganic carbon in various samples (igneous rocks, carbonates, and kerogen-rich fertilizers), demonstrating the potential for ChemCam LIBS as an astrobiology tool for MSL.

Schröder S. Pavlov S. G. Hübers H.-W. Rauschenbach I. Jessberger E. K.
Analysis of Frozen Sulfate and Chloride Salt Solutions Using Laser-induced Breakdown Spectroscopy Under Martian Conditions **[#1842]**
We showed the feasibility of laser-induced breakdown spectroscopy to analyze different frozen salt solutions under martian conditions. We focused on chloride and sulphate salts which were found on Mars and could lower the freezing point of water.

Rehse S. J. Miziolek A. W. Collins L. Torrione P. Blank J.
A New Opportunity Using Elemental Microbiological Multi-Variate Analysis for the In Situ Identification of Astrobiological Materials **[#2231]**
Laser-induced breakdown spectroscopy is a spectrochemical technique that is part of the ChemCam package. Recent advances have allowed this technology to be utilized to identify biological organisms, including bacteria, in a technique we call EMMA.

Fabre C. Maurice S. Wiens R. Sautter V. ChemCam Team
ChemCam LIBS Instrument: Complete Characterization of the Onboard Calibration Silicate Targets (MSL Rover) **[#1835]**
This abstract presents the certification of the homogeneity, at the scale of laser spot sampling, of the different synthetic silicate glasses and the natural macusanite glass that will be mounted for the CHEM CAM instrument on the MSL rover.

Tucker J. M. Dyar M. D. Schaefer M. W. Clegg S. M. Wiens R. C.
Multivariate LIBS Analysis of Geologic Materials **[#1970]**
Because of the wealth of compositional data they contain, LIBS spectra can be used to determine chemical constituents of planetary materials. This study explores the best techniques for extracting quantitative information from geologic LIBS spectra.

Anderson R. B. Morris R. V. Clegg S. M. Humphries S. D. Weins R. C. Bell J. F. III Mertzman S. A.
Partial Least Squares and Neural Networks for Quantitative Calibration of Laser-Induced Breakdown Spectroscopy (LIBS) of Geologic Samples **[#2013]**
We have collected LIBS spectra of a diverse suite of well-characterized geologic samples and compare the performance of partial least squares regression and artificial neural networks in predicting quantitative sample compositions.

Humphries S. D. Tucker J. M. McInroy R. E. Obrey S. J. Wiens R. C. Dyar M. D. Clegg S. M.
A LIBS Elemental Emission Library for ChemCam at 7 m **[#2096]**
The focus of this paper is the development of a LIBS elemental spectral library under ChemCam's 7 m operating conditions. To facilitate elemental identification in data returned by ChemCam, a spectral library is being assembled of simple molecular forms.

Sobron P. Alpers C. N. Wang A.
LIBS/Raman Investigation of Mars-related Sulfates from Iron Mountain, California **[#2585]**
A combined LIBS/Raman (L/R) was used to investigate sulfates from Iron Mountain. We show a methodology to unambiguously identify sulfates that L/R proves to be a powerful combination for mineralogical/geochemical investigations of planetary bodies.

King P. L. Gellert R. Campbell J. L. Hyde B. C. Schofield C. D. M. Perrett G. Brown-Bury W. Spilde M. S. Boyd N. Ollila A. Lanza N. Aran T. McCutcheon W. Newsom H.
Extended Calibrations for the APXS for the Mars Science Laboratory Mission **[#2539]**
We are using the laboratory MSL APXS to analyze materials with different textures, densities, and crystallographic orientation. We are testing APXS methods for analyzing light elements and rock coatings.

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. Vostrukhin A. A. Golovin D. Varenikov A. B.
DAN/MSL Instrument: First Field Tests **[#2021]**
Results of field tests of DAN/MSL instrument: detection of bound water in the subsurface.

Mahaffy P. R. Glavin D. P. Eigenbrode J. L. Franz H. Stern J. Harpold D. N. Brinckerhoff W. B. Cabane M. Coll P. Szopa C. Conrad P. G. Webster C. R. SAM Team
Calibration of the Sample Analysis at Mars (SAM) Instrument Suite for the 2011 Mars Science Laboratory **[#2130]**
The calibration of the flight unit if the Sample Analysis at Mars instrument suite for the 2011 Mars Science Laboratory is described. SAM provides chemical and isotopic analysis of organic and inorganic volatiles for atmospheric and solid samples.

Wimmer-Schweingruber R. F. Martin C. Kortmann O. Boehm E. Boettcher S. Kharytonov A. Ehresmann B. Hassler D. M. Zeitlin C.
Measuring Neutrons and Gamma Rays on Mars — The Mars Science Laboratory Radiation Assessment Detector MSL/RAD **[#2432]**
The Mars Science Laboratory (MSL) Radiation Assessment Detector (RAD) will measure the radiation environment including the neutral component on the martian surface. We present initial studies on the inversion of neutron calibration results.

Reedy R. C. Boynton W. V. Hamara D. K. Evans L. G. Brückner J. Gasnault O.
Peaks in Germanium Planetary Gamma-Ray Spectra: An Update **[#2422]**
Improved techniques for fitting peaks in high energy resolution spectra from planetary gamma-ray spectrometer missions with Ge detectors are presented. Careful determination of continua and use of correct peak shapes are now done.

Brückner J. Reedy R. C. Englert P. A. J. Drake D. M.
Analysis of Complex Gamma-Ray Spectra: Simulations for Planetary Gamma-Ray Spectroscopy of Solar-System Bodies **[#1608]**
Planetary gamma-ray spectroscopy provides data on chemical composition of solar-system bodies. To study the complexity of the gamma-ray spectra, experiments were performed by bombarding thick targets with protons and recording the gamma-rays.

Parsons A. Bodnarik J. Evans L. Floyd S. Lim L. McClanahan T. Namkung M. Schweitzer J. Starr R. Trombka J.
Planetary Geochemistry Using Active Neutron and Gamma Ray Instrumentation **[#2553]**
We will present test data demonstrating the *in situ* bulk elementary composition measurement capabilities of the Pulsed Neutron Generator-Gamma Ray And Neutron Detector (PNG-GRAND) planetary geochemistry instrument.

Bodnarik J. Evans L. Floyd S. Lim L. McClanahan T. Namkung M. Parsons A. Schweitzer J. Starr R. Trombka J.
A Unique Outside Neutron and Gamma Ray Instrumentation Development Test Facility at NASA's Goddard Space Flight Center **[#2581]**
A unique outdoor gamma ray and neutron instrumentation development test facility has been constructed at NASA's Goddard Space Flight Center for evaluating *in situ* gamma ray and neutron instrumentation designed for future planetary missions in a controlled environment.

Hardgrove C. Moersch J. E. Starr R. McClanahan T. Parsons A.
Simulations of Time-Dependent Neutron Scattering in Layered Materials Containing Hydrated Minerals **[#2473]**
Results of Monte Carle (MCNPX) simulations are presented for neutron die-away of several hydrated minerals detected on Mars. Composition, burial depth and mixing with regolith are considered with respect to their detectability by DAN.

Rodionov D. Klingelhöfer G. Blumers M. Bernhardt B. Fleischer I. Gironés J. Maul M. Evlanov E. Shlyk A. d'Uston C.
In Situ Analysis of Iron Mineralogy on Phobos Surface by Moessbauer Spectroscopy **[#2261]**
Miniature Moessbauer Spectrometer (MIMOS II) is a powerful tool for *in situ* analysis of iron mineralogy. MIMOS successfully operates on the martian surface and now improved version is included in scientific payload of "Phobos-Grunt" mission.

Klingelhöfer G. Blumers M. Bernhardt B. Lechner P. Gironés-Lopez J. Maul J. Soltau H. Strüder L. Henkel H.
The Improved Miniaturized Mössbauer Spectrometer MIMOS IIA with Elemental Analysis Capability and Increased Sensitivity **[#2423]**
The instrument MIMOS IIA originally developed for the ESA ExoMars mission will use newly designed Si-Drift detectors with circular geometry (SDD) allowing high resolution X-ray fluorescence spectroscopy in parallel to Mössbauer measurements.

Sharma S. K. Misra A. K. Acosta T. Bates D. Lucey P. G.
Remote Raman Detection of Dark Minerals and Minerals in Hawaiian Basalts **[#1443]**
We present remote Raman spectral detection of hydrous dark minerals and minerals in basaltic rocks to a distance of 1 m with 10–30 s integration time with a compact Raman spectrograph.

Kong W. G. Wang A.
Planetary Laser Raman Spectroscopy for Surface Exploration on C/D-Type Asteroids — A Case Study **[#2730]**
A laser Raman spectroscopic study on Murchison and Allende meteorites provide detailed information on major, minor, and trace minerals information. This study demonstrates the feasibility of LR for surface exploration missions to C/D-type asteroids.

Rull F. Klingelhöfer G. Martinez-Frias J. Fleitcher I. Medina J. Sansano A.
In-Situ Raman, LIBS and Mössbauer Spectroscopy of Surface Minerals at Jaroso Ravine and Related Areas in Sierra Almagrera (Almeria-Spain) **[#2736]**
In this work we describe the results obtained from an *in situ* mineral analysis using Raman, LIBS and Mössbauer techniques during a field trip performed in the Jaroso Ravine area in September 2009.

De Sanctis M. C. Filacchione G. Capaccioni F. Piccioni G. Ammannito E. Capria M. T. Coradini A. Migliorini A. Battistelli E. Preti G.
SETA: An Imaging Spectrometer for Marco Polo Mission **[#1203]**
The aim of the SETA experiment is to perform imaging spectroscopy in the spectral range 400–3300 nm for a complete mapping of the Marco Polo target with a spectral sampling of at least 20 nm and a spatial resolution on the order of meters.

Maturilli A. Helbert J. D'Amore M.
Reflectance and Transmission Measurements in Support of the Emissivity Measurements in the Planetary Emissivity Laboratory (PEL) **[#1319]**
In the PEL a spectral library of emissivity measurements for planetary analogues, at high temperature and vacuum envoronment is built. Reflectance, transmission and emissivity measurement at room pressure and moderate temperatures are routinely performed in support.

Piccioni G. Filacchione G. Capaccioni F. Capria M. T. Cerroni P. De Sanctis M. C. Magni G. Stefani S. Zambelli M. Adriani A. Bellucci G. Boccaccini A. Coradini A. Grassi D. Nuccilli F. Palomba E. Tosi F. Turrini D. Fonti S. Poulet F. Berthé M. Bibring J. P. Eng P. Langevin Y. Nathues A. Titov D. Battistelli E. Calamai L. McCord T. Jaumann R. Helbert J. Sanchez-Lavega A. Debei S. Arnold G. Blaney D. Carlson R. Drossart P. Reuter D. Bolton S. Irwin P.
The Visible and Infrared Hyperspectral Imaging Spectrometer (VIRHIS): A Study for the EJSM Mission **[#1328]**
VIRHIS on JGO is an advanced imaging spectrometer in the 0.4-5.2 microns range. It is perfectly suitable to obtain a comprehensive picture of the Jupiter system by combining information of the surfaces of the Galilean satellites, the Jupiter's atmosphere, and other targets.

Mandrake L. Thompson D. R. Gilmore M. Castaño R.
Hii-HAT: An IDL/ENVI Toolkit for Rapid Hyperspectral Inquiry **[#1441]**
The Hii-HAT (Hyperspectral Image Interactive Helper and Analysis Tools) toolset in ENVI utilizes the novel superpixel concept to augment endmember discovery, mineral map formation, and automated neutral spectrum discovery in hyperspectral imagery.

Helbert J. Maturilli A. D'Amore M.
High-Temperature Emission Spectroscopy — The Planetary Emissivity Laboratory (PEL) at DLR Berlin **[#1502]**
After three years of intensive planning and a setup period of more than one year the PEL is close to completion. It will allow unique measurements with a strong focus on airless bodies and extreme conditions as for example BepiColombo and MESSENGER will encounter at Mercury.

Grunthaner P. J. Bryson C. DeFlores L. Gill D. Grunthaner F. J. Kelly M. Quinn R. Taylor C. L. White V.
Ambient-Pressure X-Ray Photoemission Spectrometer for Chemical Analysis of Planetary Surfaces **[#1914]**
Ambient-pressure XPS probes the surface chemistry of a rock/soil sample, including the atmospheric species interacting with the surface. It provides quantitative information on all elements, including the chemical state of each element (except H).

Reedy R. C.
Backgrounds in Bismuth Germanate (BGO) Gamma-Ray Spectrometers in Space **[#1917]**
The peaks from backgrounds in BGO detectors used as a main detector or from BGO in a main Ge detector were studied using space and laboratory measurements. Both prompt reactions and the decay of radionuclides make background peaks.

Chanover N. J. Glenar D. A. Voelz D. Xiao X. Tawalbeh R. Boston P. Brinckerhoff W. Mahaffy P. Getty S.
An AOTF-LDTOF Spectrometer Suite for In Situ Organic Detection and Characterization **[#1943]**
We discuss the development of a miniature near-infrared point spectrometer, operating from 2–4 µm, based on AOTF technology. It is paired with a laser desorption time-of-flight mass spectrometer for volatile or refractory organics detection.

Wang A. Freeman J. J. Sobron P. Lambert J.
A Miniaturized Near Infrared Instrument for Detecting H_2O/OH, Sulfates, Carbonates and Organic Species During Planetary Surface Explorations **[#2018]**
We report the basic parameters of a newly developed miniaturized NIR sensor. It is small, light, robust, yet can provide rich science information for future planetary surface exploration missions to Mars, Moon, and asteroids.

Chemtob S. M. Glotch T. D. Rossman G. R.
ATR-IR Spectroscopy for In Situ Mineral Analysis on Planetary Surfaces: Steps Toward a Forward Model **[#2198]**
Attenuated total reflectance (ATR) is an FTIR method that has potential as a tool for quantitative mineralogy on future lander missions. We present new ATR spectra of silicates and initial efforts towards a forward model for ATR of mineral mixtures.

Bhartia R. Fries M. D. Hug W. H. Reid R. D. Beegle L. W. Allwood A. Lane A. L. Salas E. C. Nealson K. H.
Deep UV Native Fluorescence and Resonance Raman Imaging Spectroscopy for In-Situ Organic Detection **[#2674]**
Non invasive detection of organics utilizing optical methods has been limited. New laser technology in the deep UV enables enhanced detection capabilities for trace organics on surfaces by combining resonance Raman scattering and native fluorescence spectroscopic methods.

Glass B. Thompson S. Paulsen G. Lee P.
Planetary Drill Concept Tests at Haughton Crater **[#2709]**
Field test results in a relevant planetary analog site are presented for 2009 tests of a conceptual planetary sampling rotary-percussive drill.

Zacny K. Paulsen G. Szczesiak M. Glass B. McKay C. Santoro C. Wilson J. Craft J.
Rotary-Percussive Drill for Planetary Exploration and a 3.5 m Vacuum Chamber Enabling Full Scale Testing **[#2115]**
We present a 1-meter-class rotary-percussive drill and test results comparing rotary and rotary-percussive drilling in various formations. A 3.5-m large vacuum chamber build for testing drill systems to a depth of >1 m is also presented.

ElShafie A. Chevrier V. F. Ulrich R. Roe L.
Penetration Testing in Martian Analog Material **[#1293]**
Penetration forces for different probes have been measured in different martian analog materials which enhances the required knowledge of the masses of the rovers or landers.

Schibler P. Lognonne P. de Raucourt S.
Planetary Protection Policy Applied to Planetary Seismometers Development **[#1165]**
The development of planetary seismometers must fulfill planetary protection requirements. COSPAR gives recommendations classified in five categories. The general approach to planetary protection compliance is to be defined at the very beginning.

Ciarletti V. Clifford S. M. Plettemeier D. Corbell C. Biancheri-Astier M.
The NetStation GPR: Lander- and Network-based 3-D Investigations of Subsurface Structure, Stratigraphy, and Volatile Distribution in Near- and Deep-Subsurface Planetary Environments **[#1518]**
The NetStation GPR is a stationary, impulse, multiband HF GPR, designed to conduct geologic and volatile-related investigations of planetary environments in both the near- and deep-subsurface, whether from a lander or geophysical network.

Kirby J. P. Halabian S. Kanik I. Beegle L. W. Roark S. Lasnik J. Soto J.
Automated Sample Handling and Processing on Future Mars Missions **[#2153]**
We report on the development of an Automated Sample Processing System that takes samples, extracts organics through solvent extraction, removing non-organic soluble species that are interferences and moves sample to multiple instruments for analysis.

Dreyer C. B. Zacny K. Anderson R. C. Skok J. Steele J. Paulsen G. Szczesiak M. Schwendeman J.
A Rock Thin Section Device for Space Exploration **[#2573]**
The petrographic instrument, along with mobility, would result in the collection of a diversity of samples required to answer a very large number of scientific questions about many of the planetary bodies of current and future scientific interest.

Young K. E. Hodges K. V. Schmitt H. H. Ford K. M.
Developing Advanced SmartTools for Advanced Planetary Field Geology **[#1918]**
We develop advanced "SmartTools" for planetary field geology, which will first be tested and implemented in terrestrial fieldwork. One tool is the "SmartStaff", which could provide stability and situational awareness to astronauts on planetary surfaces.

Millar P. S. Clark P. E. Yeh P. S. Cooper L. Beaman B. Feng S. Ku J. Young E. M. Johnson M. A.
Technologically Optimized Science Packages for Planetary Surfaces **[#1253]**
Our optimized instrument package concept incorporates ultra low temperature/ultra low power electronics, low voltage power supplies, and distributed power systems to meet the challenges of operating on atmosphereless planetary surfaces.

Iwata T. Imai K. Misawa H. Noda H. Kondo T. Nakajo T. Takeuchi H. Kumamoto A. Tsuchiya F. Nariyuki Y. Asari K. Kawano N.
A Study on the Moon-Earth Baseline Interferometry for Jovian Low Frequency Radio Observation **[#1677]**
Lunar Low Frequency Astronomy Telescope (LLFAST) is the Moon-Earth baseline interferometry which is a candidate mission instrument of Japan's lunar explorer SELENE-2. It will shed light on the mechanism of Jovian radio sources.

Medley S. K. Gregory D. A. Sampson A. R. Gaskin J. A.
Optimization of a Cold Field Emission Electron Gun for a Miniaturized Scanning Electron Microscope **[#2676]**
The field emission and the effects of aberrations of an electron gun will be examined, through simulations and testing of a prototype, to optimize the gun for a miniaturized scanning electron microscope.

Becker L. Antione M. Cornish T. Pinnick V. Cotter R.
The Search for Life on Mars Using the Mars Organic Molecule Analyzer "MOMA" **[#2345]**
Mars Organic Molecule Analyzer 'MOMA' combines Gas Chromatography (GC) and Laser Desorption (LD) to form 'intact organic compounds that are mass analyzed using an Ion-Trap Mass Spectrometer (ITMS.

Scheld D. Marshall J. Mason L. Thompson P.
An Acoustic Particle Size Analyzer for Planetary Surfaces **[#1916]**
An acoustic method of determining the size of loose particles has been developed at the breadboard level. This is intended as a precursor to aflight instrument that can conduct grain-size analyses requiring no sample processing and handling.

Brinckerhoff W. B. Cornish T. J. Ecelberger S. A. Corrigan C. M. Ganesan A. L. Getty S. A. ten Kate I. L.
Advancement of a Compact Reflectron TOF-MS for Planetary Sample Analysis **[#2358]**
We present the status of our development of a miniature mass spectrometer for *in situ* planetary exploration. The spectrometer uses pulsed laser desorption and an advanced reflectron time-of-flight mass analyzer to detect elements and organics in solid samples.

Tomkinson T. Wolters S. D. Guthery B. W. Bohman A. F. Sund B. Sund A. T. Hagene J. K. Grady M. M.
Detection of Water and Magnesite with WATSEN: The Next Generation of Instrumentation for Mars **[#2719]**
Detection of water and magnesite with WATSEN: the next generation of instrumentation for Mars.

Anderson F. S. Nowicki K.
In-Situ Geochronometry: Improved LDRIMS Precision **[#1979]**
LDRIMS can now measure the isotope ratio of standards with 10 ppm net Sr to a precision of ±0.1%, with a sensitivity of $1{:}10^{10}$, in <15 minutes.