Thursday, March 10, 2011
POSTER SESSION II: INSTRUMENT AND PAYLOAD CONCEPTS
6:00 p.m. Town Center Exhibit Area

Kabai S. Bérczi Sz.
A Study of Possible Geometries of Modules for Shape Changing and Self Reconfigurable Robots with the Use of Interactive Wolfram Mathematica Demonstrations **[#2345]**
The self-reconfiguration of modules in robots could be used to change the overall functionality of the robots serving specific purposes. This abstract shows a few examples from the many different solutions we studied.

Hudson T. L. Diaz E. Doan D. Gordon S. Kobie B. Kokorowski M. Neidholdt E. Banfield D.
A Balloon-Borne Mars Analog Platform for 'Field' Tests of In Situ Instruments **[#1980]**
The stratosphere is a natural Mars surface analog with low pressure, low temperature, wind, and a radiation-dominated thermal environment. The ASTRA mission, which operates three prototype *in situ* Mars instruments on a stratospheric balloon platform, is described.

Reach W. T.
Stratospheric Observatory for Infrared Astronomy Capabilities for Planetary Science **[#2625]**
The Stratospheric Observatory for Infrared Astronomy (SOFIA) has initiated its scientific operations. The capabilities for planetary science are presented in this poster. The first full-year open call for proposals will be issued in the fall of 2011.

Chu W. K. Clark P. Cox R. T. Scharfstein G. Winglee R.
JWST: Pathfinder for Long-Duration Solar System Missions **[#1735]**
The James Webb Space Telescope (JWST) will not only explore the secrets of the distant universe but it may provide the key to the exploration of our solar system for both manned and unmanned l ong-duration missions.

Fillingim M. O. Delory G. T. Halekas J. S. Grimm R. E.
Signal Strength and Bandwidth for Magnetotelluric Sounding of the Moon **[#2475]**
We consolidate previous observations to develop a catalog of electromagnetic disturbances at the Moon that will be useful for surface magnetotelluric measurements.

Grimm R. E. Barr A. C. Harrison K. P. Stillman D. E. Neal K. L. Vincent M. A.
Measurement of the Thermal Lithospheric Thickness of Venus Using Aerial Electromagnetic Sounding **[#1551]**
Understand Venus geodynamics from 180,000 ft.

Carroll K. A.
Gravity Gradiometry for Lunar Surface Exploration **[#1108]**
The use of gravity gradiometer instruments on the lunar surface is examined, for the purpose of mapping density variations in the near-subsurface, which for example could be due to buried rocks or to topographical variations in stratigraphy.

Currie D. G. Dell'Agnello S. Delle Monache G.
Lunar Laser Ranging: Flight Hardware Simulation, Testing and Status **[#2448]**
Current accuracy of lunar ranging is limited by the Apollo arrays. We describe the next generation of retroreflectors that will increase the ranging accuracy, and thus the selenophysics and general relativity science by two orders of magnitude.

Iwata T.   Matsumoto K.   Ishihara Y.   Kikuchi F.   Harada Y.   Sasaki S.
A Study on the Four-Way Doppler Measurements and Inverse VLBI Observations for Mars Rotation Observations **[#1132]**
We plan to observe the multi-landers on the Mars using the four-way Doppler measurements relayed by an orbiter to observe mars rotation as a mission candidate of MELOS (Mars Exploration with Lander-Orbiter Synergy). We also introduce the new technology called inverse VLBI.

Nishikawa Y. N.   Kurita K. K.   Araya A. A.   Hori T. H.   Kobayashi N. K.   Shiraishi H. S.   Kakuma H. K.   Ishihara Y. I.
Consideration of Broadband Seismic Observation on Mars **[#1865]**
Japan Mars Exploration Project (MELOS) is now under discussion and it includes seismic measurements. We will issue a report on the Mars seismometer and environmental problems.

ElShafie A.   Chevrier V. F.
Mechanical Properties of Planetary Analog Material as Inferred from Penetration Testing **[#2741]**
Mechanical properties of planetary analog materials can be inferred from penetration testing which will allow us to estimate the penetration force under martian gravity.

Zacny K.   Chu P.   Wilson J.   Davis K.   Craft J.
Core Acquisition and Caching for the 2018 Mars Sample Return Mission **[#1878]**
In this poster we present an approach to core acquisition and caching for the 2018 Mars Sample Return, MAX-C rover mission.

Paulsen G.   Zacny K.   McKay C.   Glass B.   Szczesiak M.   Craft J.   Santoro C.   Shasho J.   Davila A.   Marinova M.   Pollard W.   Jackson A.
Field Testing of the IceBreaker Mars Drill in the Antarctic **[#1901]**
We report on testing of a Mars prototype drill, called the IceBreaker, in University Valley (the Beacon Valley region of Dry Valleys). The drill penetrated 1 meter in ice-cemented ground in ~1 hr, with 100wWatt power and <100 N wt on bit.

Seweryn K.   Banaszkiewicz M.   Bednarz S.   Gonet A.   Grygorczuk J.   Rybus T.   Rzyczniak M.   Wawrzaszek R.   Wisniewski L.   Wojcikowski M.
Mole Penetrator 'KRET' for Lunar Exploration **[#1437]**
The paper highlights the major achievements in a mole penetrator KRET developments, such as single stroke dynamics, lunar regolith analogue development, results of test in 5-m test-bed system, and development of a mole penetrator capable of working in zero-gravity conditions.

Pilgrim R. P.   Ulrich R.
Numerical Modeling of Fiber Optic Bundles for In Situ Reflectance Spectroscopy **[#1962]**
Fiber optics will help keep subsurface exploration instruments small and lightweight. Here we experimentally and numerically investigate the characteristics of several fiber optic probes.

Cudnik B. M.   Saganti P. B.   Erickson G. M.
Imaging Detectors in Planetary and Space Science **[#1543]**
We have begun work on a program involving the use of CMOS imaging technology in the application of lunar and planetary science. The paper outlines the project and the detector, presents "first light" images, and details the next steps in the program.

McEwen A. Thomas N. Bridges J. Byrne S. Cremonese G. Delamere W. Hansen C. Hauber E. Ivanov A. Kestay L. Kirk R. Mangold N. Markiewicz W. J. Massironi M. Mattson S. Okubo C. Wray J.
HiSCI Experiment on ExoMars Trace Gas Orbiter **[#2270]**
The High-resolution Stereo Color Imager (HiSCI), chosen for the payload of the ExoMars Trace Gas Orbiter (TGO), is described.

Maki J. N. Thiessen D. Pourangi A. Kobzeff P. Scherr L. Elliott T. Dingizian A. St. Ange B.
The Mars Science Laboratory (MSL) Navigation Cameras (Navcams) **[#2738]**
This abstract describes the Mars Science Laboratory (MSL) Rover Navigation Cameras (Navcams). The MSL rover is scheduled for launch in November/December 2011.

Lasnik J. Soto J. Roark S. Beegle L. W.
Automated Sample Processing for Future Martian Astrobiology Missions **[#1589]**
We describe a sample processing system that was developed for astrobiological missions on Mars and Europa. The ASPS consists of solvent extraction system and a distribution subsystem that directs the liquid analyte to multiple different analytical instruments.

Coy S. L. Killeen K. Han J. Eiceman G. A. Kanik I. Kidd R. D.
A Microfluidics-HPLC/Differential Mobility Spectrometer Macromolecular Detection System for Human and Robotic Missions **[#1423]**
Our goal is to develop a unique, miniaturized, solute analyzer based on microfluidics technology. The analyzer consists of an integrated microfluidics High Performance Liquid Chromatographic chip/Differential Mobility Spectrometer (HPLC-chip/DMS) detection system.

Eigenbrode J. Glavin D. Dworkin J. Conrad P. Mahaffy P.
Thermochemolysis — A New Sample Preparation Approach for the Detection of Organic Components of Complex Macromolecules in Mars Rocks Via Gas Chromatography Mass Spectrometry in SAM on MSL **[#1460]**
The effectiveness of thermochemolysis was studied as a sample preparation method for GCMS analyses of martian samples. As a result of this research, thermochemolysis experiments have been included in the SAM instrument suite on the 2011 MSL mission.

Franz H. B. Mahaffy P. R. Kasprzak W. Lyness E. Raaen E.
Measuring Sulfur Isotope Ratios from Solid Samples with the Sample Analysis at Mars Instrument and the Effects of Dead Time Corrections **[#2800]**
We discuss the development of a method for determining sulfur isotope ratios with the SAM quadruple mass spectrometer by pyrolysis of solid sulfate samples.

Conrad P. G. Eigenbrode J. E. Mogensen C. T. Von der Heydt M. O. Glavin D. P. Mahaffy P. M. Johnson J. A.
The Mars Science Laboratory Organic Check Material **[#2076]**
This is a report on the development of the organic check material (OCM), which is part of the payload of the Mars Science Laboratory.

Goetz W. Steininger H. Steinmetz E. Bierwirth M. Goesmann F. Philippon C. Lustrement B. Szopa C. Buch A. Amundsen H. Fogel M. Steele A.
Mars Organic Molecule Analyzer (MOMA) Field Test as Part of the AMASE 2010 Svalbard Expedition **[#2460]**
A breadboard of the MOMA instrument (Mars Organic Molecule Analyzer, part of the ExoMars science payload) has been tested during the AMASE 2010 Svalbard expedition. This paper presents in-field acquired data on organic-rich shales.

Sobron P. Wang Alian.
Spectral Data Processing for LIBS Quantitative Elemental Analysis of Geological Samples **[#1640]**
We have developed a set of routines for fast geochemical evaluation of LIBS targets under Earth and Mars atmospheric conditions. The atomic fractions of K, Na, Mg, Ca, Al, Fe, S, H in sulfate samples are calculated by using calibration functions.

Lienert B. R. Sharma S. K. Bates D. E.
Reduction of Spectral Correlation in LIBS Data Using Lorentzian Fitting **[#2831]**
Laser Induces Breadown Spectroscopy (LIBS) is one of the methods deployed on the Mars Science Lander for determining chemical composition.

Ishibashi K. Ohno S. Arai T. Wada K. Kameda S. Senshu H. Namiki N. Matsui T. Cho Y. Sugita S.
Prediction Accuracy of Laser-Induced Breakdown Spectroscopy: Quantitative Analysis of Olivine **[#1743]**
We investigated the possibility of predicting the elemental abundance of olivine, which is one of the important minerals, by laser-induced breakdown spectroscopy in several sample conditions and laser-irradiation conditions.

Carmosino M. L. Bender S. Speicher E. A. Dyar M. D. Clegg S. M. Wiens R. C.
End-to-End Models for Effects of System Noise on LIBS Analyses of Igneous Rocks **[#1739]**
We use a data set of 100 igneous rocks to assess LIBS instrument performance by degrading spectra, either by increasing peak widths (simulating misalignment) or decreasing the spectral amplitude (decreases in SNR).

Moreschini P. Zacny K. Paulsen G.
Laser Induced Breakdown Spectroscopy for Downhole Analysis of Lunar Regolith **[#1318]**
In this paper, we describe progress in the design of a LIBS system for downhole applications, currently under development at Honeybee Robotics.

Lasue J. A. Wiens R. C. Clegg S. M. Vaniman D. T. Joy K. H. Humphries S.
Applicability of LIBS on the Moon: Elemental Analysis of Lunar Simulants in Vacuum **[#1165]**
Laser-induced breakdown spectroscopy (LIBS) is an active analytical technique that ablates and spectrally analyses material at a distance. We review the capability of LIBS for lunar rock and regolith analysis up to 1.5 m from a lunar rover.

Schröder S. Pavlov S. G. Rauschenbach I. Jessberger E. K. Hübers H.-W.
Identifying Perchlorates Under Mars Conditions in Soil Samples and in Frozen Solutions Using LIBS **[#1912]**
We showed the feasibility of LIBS to distinguish between perchlorates and chlorides in pressed samples mixed with martian analogue material by applying principal component analysis. These salts can be distinguished in frozen salt water solutions.

Ollila A. M. Blank J. G. Wiens R. C. Lasue J. Newsom H. E. Clegg S. M. Cousin A. Maurice S.
Preliminary Results on the Capabilities of the ChemCam Laser-Induced Breakdown Spectroscopy (LIBS) Instrument to Detect Carbon on Mars **[#2395]**
The ChemCam LIBS instrument, part of the 2012 MSL mission, is capable of detecting C. In this work, we identify C lines and C2 Swan features observed in spectra of samples taken in a Mars atmosphere using the ChemCam flight instrument.

Graff T. G.   Morris R. V.   Clegg S. M.   Wiens R. C.   Anderson R. B.
Dust Removal on Mars using Laser-Induced Breakdown Spectroscopy **[#1916]**
We report on laboratory experiments conducted to characterize the removal of air-fall dust coatings using similar LIBS parameters as ChemCam under Mars-like conditions, to facilitate the analysis of ChemCam LIBS spectral data and RMI images.

Cousin A.   Maurice S.   Berger G.   Forni O.   Gasnault O.   Wiens R.
Depth Profiles Using ChemCam **[#1963]**
ChemCam, which is in part of the MSL payload, uses the LIBS technique to investigate the martian surface. The capabilities of ChemCam for the depth profile have to be understood, as ChemCam will shoot several targets which can have alteration coating.

Rull F.   Vegas A.   Barreiro F.
In-Situ Raman-LIBS Combined Spectroscopy for Surface Mineral Analysis at Stand-Off Distances **[#2275]**
A combined remote Raman-LIBS system for potential use in planetary surface analysis has been developed and results obtained at the field are presented and discussed.

Rull F.   Maurice S.   Diaz E.   Tato C.   Pacros A.   RLS Team
The Raman Laser Spectrometer (RLS) on the ExoMars 2018 Rover Mission **[#2400]**
Raman investigation onboard the ESA ExoMars 2018 rover mission. Science objectives and implementation, design concept. Laboratory model for development of the method and calibration.

Sansano A.   López G.   Rull F.   AMASE 2010 Team
Activities of Exomars' Raman Laser Spectrometer Scientific Team During the Campaign AMASE 2010 **[#2469]**
In this work the preliminary results of the work of the RLS science team in the AMASE 2010 campaign are presented.

Babin F.   Hô N.   Paradis P.-F.   Deblois S.   Châteauneuf F.
Stand-off UV Laser Induced Fluorescence and UV Enhanced Raman Spectroscopy for Mineral Analysis **[#1800]**
INO has developed a stand-off Laser Induced Fluorescence and Raman sensor and has measured mineral spectra from a distance of 10 meters. Identification is possible using a 355 nm excitation and analyzing the returned signal in the 390 to 640 nm range.

Blacksberg J.   Rossman G. R.
On-Surface Planetary Mineralogy Using Time Resolved Raman and Fluorescence Spectroscopy **[#1166]**
Raman spectroscopy is a prime candidate for *in situ* exploration of planetary bodies (e.g., Mars, Venus, Mars' moons, asteroids). We present time-resolved spectroscopy to obtain Raman spectra in diverse planetary environments with extreme fluorescence.

Nathaniel T. A.   Underwood C. I.
Spatial Heterodyne Raman Spectroscopy **[#1045]**
This abstract presents the design and first results of the Spatial HEterodyne RAman instrument (SHERA). SHERA is a novel design for a compact planetary exploration Raman spectrometer using spatial heterodyne spectroscopy.

Abedin M. N.   Garcia C. S.   Refaat T. F.   Ismail S.   Bradley A. T.   Sharma S. K.   Misra A. K.   Robinson B.   Hibberd J.
Compact Remote Raman, Fluorescence, and Lidar Multi-Sensor Instrument for Characterization of Planetary Surfaces and Atmosphere from Robotic Platform **[#2298]**
Compact combined remote Raman/Fluorescence spectroscopy and Lidar instrument for measuring surface mineralogy, surface organic materials and atmospheric constituents from planetary rovers and landers.

Riedo A. Fernandes V. A. S. M. Yakovleva M. Tulej M. Wurz P.
A Miniaturized Laser Ablation Mass Spectrometer for Space Research **[#1880]**
In this abstract we present current performance of our miniaturized Laser Ablation Time-of-Flight Mass Spectrometer (LMS) to be used for *in situ* planetary missions and laboratory elemental and isotopic analyzes.

Henkel T. Wong R. Longobardo A. Lockyer N.
Advances in the Analysis of Tiny Samples like Presolar Grains **[#2305]**
Every atom counts when analyzing tiny samples. Using femtosecond lasers for post-ionization of sputtered neutrals simplifies and improves elemental quantification and has the potential to boost the efficiency with which the samples are analysed.

Getty S. A. Brinckerhoff W. B. Cornish T. J. Merrill Floyd M. A. Ecelberger S. A. Callahan M. P. McAdam A. Elsila J. E. Eigenbrode J. L. Arevalo R. D.
Miniature Two-Step Laser TOF Mass Spectrometer with Reversible Ion Polarity **[#2490]**
We present details of the initial development of a two-step laser TOF mass spectrometer (L2MS) for enhanced *in situ* analysis of planetary samples for particular classes of organic compounds.

Klingelhöfer G. Morris R. V. Blumers M. Bernhardt B. Graff T.
The 2010 ILSO-ISRU Field Test at Mauna Kea, Hawai'i: Results from the Miniaturized Mössbauer Spectrometers MIMOS II and MIMOS IIA **[#2810]**
The 2010 ILSO-ISRU Moon analogue field test on the Mauna Kea volcano in Hawai'i was coordinated by NORCAT in collaboration with the Canadian Space Agency, the German Aerospace Center, and NASA.

Alp E. E. Yan L. Cramer S. P. Zhao J. Y. Toellner T. S. Friedrich J. M. Boesenberg J. Alsmadi A. Sturhahn W.
A Mössbauer Microscope for Mineralogy in the Synchrotron Age **[#1911]**
We demonstrate a new microscope that has unique sensitivity to iron containing meteorites and minerals, using Mössbauer effect, with a resolution of a few micrometers.

Shanmugam M. Acharya Y. B. Goyal S. K. Murty S. V. S.
Alpha Particle X-Ray Spectrometer (APXS) On-Board Chandrayaan-2 Rover **[#1232]**
Alpha Particle X-ray Spectrometer (APXS) for ISRO's Chandrayaan-2 rover, slated for launch in 2013.

Kobayashi M. Miyachi T. Nakamura M. H.
Cosmic Dust Detector Capable of Measuring Hypervelocity Speed Using Piezoelectric PZT **[#2389]**
We propose a cosmic dust detector capable of measuring hypervelocity speed (higher than about 7 km/s) using Piezoelectric PZT. The dust detector can observe the momentum and the speed and as a result the mass can be also derived.

Horanyi M. Sternovsky Z. Gruen E. Kempf S. Srama R. Postberg F.
LDEX+: Lunar Dust Experiment with Chemical Analysis Capability to Search for Water **[#1656]**
The LDEX+ instrument extends the capabilities of the currently developed Lunar Dust Experiment (LDEX) of the upcoming Lunar Atmosphere and Dust Environment Explorer (LADEE) mission to measure the chemical composition of the impacting particles in addition to their mass.

Clark P. E. Dunlop D.
SPACE (Surface Payloads and Advanced Concepts for Exploration) Open Access Database/Spreadsheet Tool and Working Group **[#1112]**
An extensive open–source spreadsheet representing design, development history, applications, requirements, and operating characteristics of potential pay-loads and advanced concepts to support a broad range of applications is being made available.

Clark P. E. Millar P. S. Yeh P. S. Beaman B. Brigham D. Feng S.
Instrument Packages for Cold, Dark, High Radiation Environments **[#1111]**
We are developing a small cold temperature in-strument package concept that integrates cold tempera-ture power system and radhard ULT ULP electronics into a 'cold temperature surface operational' version of a planetary surface instrument package.

Grimm R. E. Stillman D. E.
Progress in Prospecting for Near-Surface H_2O on the Moon and Mars with Dielectric Spectroscopy **[#2550]**
A broadband relaxation is the principal low-frequency dielectric signature of low-abundance H_2O.

Miller R. S. Souza A. N. Lawrence D. J. Bussey B. J.
Hydrogen at the Lunar Poles: Search Strategies and Tradeoffs for a Surface-Based Neutron Spectrometer **[#2002]**
We report initial results of performance and survey strategies for a neutron telescope capable of addressing the lunar-polar hydrogen exploration challenge.

Hardgrove C. J. Moersch J. E.
Geochemical Effects on Neutron Die-Away: Implications for the Mars Science Laboratory Dynamic Albedo of Neutrons Experiment **[#2135]**
We have shown that strong reductions in the total number of thermal neutrons as well as shifts in arrival times may allow DAN, on-board the MSL rover Curiosity, to detect evaporitic Cl-rich deposits, Fe concretions or hydrothermal Si-rich materials.

Peplowski P. N. Hepplewhite P. D. Feldman W. C. Lawrence D. J. Hibbitts C. A.
Considerations for the Operation of a ^3He Proportional Counter in the Ganymede Radiation Environment **[#1481]**
Simulations of the response of a neutron spectrometer in the Ganymede radiation environment are presented. The results are used to identify instrument modifications required as well as to quantify its ability to map water ice deposits on the surface during the JGO mission.

Parsons A. Bodnarik J. Burger D. Evans L. Floyd S. Lim L. McClanahan T. Namkung M. Nowicki S. Schweitzer J. Starr R. Trombka J.
Planetary Geochemistry Techniques: Probing In-Situ with Neutron and Gamma Rays (PING) Instrument **[#2379]**
The Probing *in situ* with Neutrons and Gamma rays (PING) instrument uses a pulsed neutron generator and neutron and gamma-ray detectors to measure the surface and subsurface elemental composition of planetary bodies without the need for drilling.

Mokrousov M. I. Mitrofanov I. G. Kozyrev A. S. Litvak M. L. Malakhov A. V. Sanin A. B. Tretyakov V. Vostrukhin A. Golovin D. Varenikov A.
Nuclear Instruments for Planetary Science **[#1782]**
The discussion about neutron and gamma spectrometry instruments is presented.

Kobayashi S. Mitani T. Takashima T. Karouji Y. Hasebe N.
The Lunar Geochemical Analysis by a Gamma-Ray Spectrometer for Next Lunar Explorations **[#1721]**
The sensitivity of a gamma-ray spectrometer using a LaBr3 detector has been estimated for the geochemical analysis (K, Th, U) of the central peak of a crater on the Moon. This study is for a future lunar mission to explore Procellarum KREEP Terrain.

Reedy R. C.
Background Peaks in Bismuth Germanate: Nuclear Reactions with Bismuth **[#2317]**
Cross sections for nuclear reactions of neutrons and protons with Bi were evaluated and used to estimate relative production rates in BGO detectors in space. The largest production is by (n,x) reactions. High-energy reactions can make many nuclides.

Ciarletti V. Clifford S. Vieau A. J. Lustrement B. Hassen Khodja R. Cais P.
Results from the First Field Tests of the WISDOM GPR (2018 ExoMars Mission) **[#2613]**
Results from the first field tests of the WISDOM GPR (2018 ExoMars Mission) on Mount Etna.

Hill K. S. Hansford G. M. Vernon D. Talboys D. L. Ambrosi R. M. Bridges J. C. Hutchinson I. B.
The Mars-XRD Instrument for ExoMars: Combined X-Ray Diffraction and Fluorescence Measurements **[#2107]**
Mars-XRD is a combined X-ray diffractometer and fluorescence spectrometer to analyse the mineralogy and chemical composition of Mars. We present our initial investigation into its ability to identify minerals under representative conditions.

Sarrazin P. Taylor G. J. Blake D. Vaniman D. Bish D.
XTRA: Extraterrestrial Regolith Analyzer **[#2280]**
XTRA is an XRD/XRF instrument for mineralogiocal analysis of regolith on air-less bodies. Very compact and light weight, it will be suitable for missions to the Moon, Mercury, or asteroids on landers fitted with basic sample acquisition capabilities.

Young K. E. Evans C. Allen C. Mosie A. Hodges K. V.
In-Situ XRF Measurements in Lunar Surface Exploration Using Apollo Samples as a Standard **[#2121]**
We present handheld XRF data on 22 Apollo samples. We also discuss the development of 3 different deployment modes for this instrument.

Allwood A. C. Wade L. A. Hodyss R.
Micro-XRF: Fast, High Spatial Resolution Analysis of Rock and Soil Elemental Chemistry In Situ **[#2725]**
We are developing a Micro-XRF instrument for high-resolution measurements of rock chemistry, which will provide crucial information about the relationship of composition to texture.

Speicher E. A. Dyar M. D. Gunter M. E. Lanzirotti A. Tucker J. M. Peel S. E.
Brown E. B. Delaney J. S.
Synchrotron Micro-XANES Analysis of Fe^{3+} in Oriented Amphiboles **[#2287]**
Micro-XANES was performed for iron analysis on oriented amphibole crystals with the X-ray beam polarized along the X, Y, and Z optical directions. Results provide Fe^{3+} calibration curves useful for data acquisition on oriented amphibole grains in thin sections.

Okada T.
Calibration Method Using a Solar X-Ray Monitor with a Standard Sample for Planetary Remote X-Ray Spectroscopy **[#1703]**
Planetary remote XRF spectroscopy should provide major elemental composition as precisely as possible. Uncertainty of solar X-ray monitoring is a crucial topic on this, and we propose onboard calibration method with a standard sample.

Okada T. Fukuhara T. Nakamura R. Sekiguchi T. Hasegawa S. Kitazato K. Taguchi M.
Imamura T. Hayabusa-2 Mid-Infrared Imager Team
Mid-Infrared Imager for Mapping Thermal Emission off the Surface of Near-Earth Asteroid 1999JU3 in Hayabusa-2 **[#1370]**
A mid-infrared imager is being prepared for Hayabusa-2 to map thermal emission off the surface of a C-class near-Earth asteroid 1999JU3 and investigate surface physical properties with an assessment for landing site selection.

Cloutis E. A. Hipkin V. J. Wennberg P. O. Wolff M. J. Stromberg J. M. Berard G. M. Mann P. MATMOS Team

ExoMars Trace Gas Orbiter MATMOS Instrument: Preliminary Strategy for Development of a Dust Spectral Library **[#1175]**

A library of spectral dust signatures, utilizing long path IR transmission, dust-covered IR transparent disks, and modeling of reflectance spectra, is being developed in support of data analysis for the 2016 ExoMars Trace Gas Orbiter MATMOS solar occultation FTIR instrument.

Pilorget C. Bibring J.-P. Berthe M.

MicrOmega: An IR Hyperspectral Microscope for the Phobos Grunt Lander **[#1930]**

MicrOmega IR is an ultra miniaturized near-infrared hyperspectral microscope dedicated to *in situ* analyses that has been developed in the framework of the Exomars mission. A demonstrator will be embarked on the Phobos Grunt mission.

Lucey P. G. Crites S. T.

Thermal Infrared Imaging Interferometer Performance for Planetary Applications **[#1335]**

Performance models of imaging interferometers using both cooled and uncooled arrays are tested against measurements to enable assessment for planetary applications.

Maturilli A. Helbert J. D'Amore M.

An Overview of the Planetary Emissivity Laboratory (PEL) at DLR in Berlin **[#1693]**

In the Planetary Emissivity Laboratory (PEL) at DLR we measure emissivity at high T under vacuum, low/moderate T under purging, bi-directional reflectance and transmission at room T under vacuum or purging, of planetary analogue materials from VIS to FIR.

Helbert J. Maturilli A.

Laboratory Emission Spectra at 500°C at the Planetary Emissivity Laboratory at DLR in Berlin — Challenges, Challenges and even more Challenges… **[#1794]**

For the last four years we are upgrading the Planetary Emissivity Laboratory at DLR in Berlin to obtain emissivity spectra at temperatures realistic for Mercury and Venus. Here we report about the challenges encountered in this effort.