Tuesday, March 19, 2013 **[T641]**
POSTER SESSION: INSTRUMENT AND PAYLOAD CONCEPTS
6:00 p.m. Town Center Exhibit Area

Straub J. Berk J. Nervold A. Mohammad A. Korvald C. et al. ***POSTER LOCATION #565***
Open Orbiter: A Platform for Enabling Planetary Science **[#1424]**
A framework for developing the tools and staff required to support planetary science missions is presented which the Open Orbiter Spacecraft will space-qualify.

Saleh R. A. Kirk R. L. ***POSTER LOCATION #566***
Proposed Documentation Standards for Describing Specifications of Imaging Systems for Planetary Mapping **[#2857]**
A multiphase approach to develop standards for space imaging systems, involve documenting technical specs, geometric properties, and calibration procedures.

Saleh R. A. Kirk R. L. ***POSTER LOCATION #567***
Automated Image Matching Techniques for Planetary Photogrammetric Mapping **[#3008]**
Developing new and improving existing matching techniques for tiepoint and groundpoint measurement functions in support of planetary photogrammetric mapping.

Li Chen. Su Yan. Li Chunlai. Zhu Benxia. ***POSTER LOCATION #568***
Verification and Analysis to the Simulation Platform for Optimum Frame Synchronization in Deep Space Data Receiving Missions **[#1803]**
Frame synchronization simulation software was completed and verified,which is used to find optimal parameter setting strategy in deep space missions.

Feldkhun D. Braker B. Wagner K. H. Hynek B. M. Nesnas I. A. ***POSTER LOCATION #569***
Robust High-Speed 3D Imaging for Robotic Planetary Exploration **[#2594]**
The Structured Light Imaging Module uses a compact optical pattern generator for both 3-D imaging and remote microscopy for robotic planetary exploration.

Feldkhun D. Nowicki K. Wagner K. H. Hynek B. M. ***POSTER LOCATION #570***
Remote Microscopy for Robotic Planetary Exploration **[#2953]**
The structured-light remote microscope allows unprecedented 5-m-long working distance microscopy and enhances the resolution of existing rover cameras.

Thompson D. R. Abbey W. Allwood A. Bekker D. Bornstein B. et al. ***POSTER LOCATION #571***
TextureCam: A Smart Camera for Microscale, Mesoscale, and Deep Space Applications **[#2209]**
The TextureCam project is developing a “smart camera” to improve spacecraft autonomy by classifying geologic surfaces in planetary images.

Coulter A. B. Osinski G. R. Dietrich P. Tornabene L. L. Daly M. et al. ***POSTER LOCATION #572***
Demonstrating the Geological Applications of a Three Dimensional Exploration Multispectral Microscope Imager (TEMMI) **[#2398]**
The following summarizes the capabilities of a prototype instrument for future missions, TEMMI (Three Dimensional Exploration Multispectral Microscope Imager).

Poole W. D. Muller J.-P. Gupta S. ***POSTER LOCATION #573***
How Reliable are Surface Roughness Estimates from Planetary Laser Altimeter Pulse-Widths? An Assessment Using MOLA and LOLA Pulse-Width Data **[#1511]**
Here, we explore the reliability of surface roughness estimates derived from planetary laser altimeter pulse-width data from Mars and the Moon.

Maturilli A. Donaldson Hanna K. L. Helbert J. Pieters C. P. ***POSTER LOCATION #574***
A New Standard for Calibration of High Temperature Emissivity: Laboratory Intercalibration at PEL of DLR and ALEC of Brown University **[#1890]**
Two slag samples as references for emissivity measurements at high temperatures have been characterized at PEL of DLR and ALEC of Brown University laboratories.

Macke R. J. SJ Britt D. T. Consolmagno G. J. SJ ***POSTER LOCATION #575***
New Pycnometer Design for Thin-Sliced Meteorites **[#1398]**
We present a new pycnometer designed for meteorite grain density measurements, with an adaptor ideally suited for thin-sliced meteorites.

Ishibashi K. Wada K. Namiki N. Kameda S. Arai T. et al. ***POSTER LOCATION #576***
Elemental Analysis of Rocks with Short Range Fixed Focus Laser-Induced Breakdown Spectrometer (LIBS) **[#2117]**
We tested elemental composition prediction of igneous rocks with short range fixed focus LIBS with LIBS-to-sample distance changed around the focus position.

Blacksberg J. Maruyama Y. Alerstam E. Choukroun M. Charbon E. et al. ***POSTER LOCATION #577***
Combined Microscopic Raman and LIBS for Planetary Surface Exploration Using a Fast Time-Gated Detector **[#2393]**
We present a mineralogy instrument that could potentially perform phase and elemental analysis on planetary surfaces in conjunction with microscopic imaging.

Ishikawa S. T. Gulick V. C. ***POSTER LOCATION #578***
An Automated Classification of Mineral Spectra **[#3085]**
We present a robust, autonomous algorithm to classify Raman spectra of minerals. Our classifier performed with an accuracy of between 83 and 100%.

Arzoumanian Z. Bleacher J. E. Gendreau K. McAdam A. Shearer C. et al. ***POSTER LOCATION #579***
Chromatic Mineral Identification and Surface Texture (CMIST) Instrument: A Next Generation Contact XRD/XRF Tool **[#2116]**
We discuss the unique analysis capabilities enabled by contact XRD/XRF including science, safety, and crew health for future human spaceflight missions.

Scheld D. L. Ladner D. R. Martin J. P. ***POSTER LOCATION #580***
In-Situ Resource Analyzer (ISRA) **[#2272]**
An instrument is presented with a triple measurement system to work as a robotic field geologist on remote planetary surfaces such as the Moon or Mars.

Cohen B. A. Li Z.-H. Miller J. S. Brinckerhoff W. B. Clegg S. M. et al. ***POSTER LOCATION #581***
Update on Development of the Potassium-Argon Laser Experiment (KArLE) Instrument for In Situ Geochronology **[#2363]**
Peering back in time / Flight parts unite to measure / The age of planets.

Cho Y. Miura Y. Sugita S. ***POSTER LOCATION #582***
Development of an In-Situ K-Ar Isochron Dating Method Using LIBS-QMS Configuration **[#1505]**
An in situ K-Ar isochron dating method has been developed. We constructed a simulated isochron using LIBS and QMS techniques simultaneously.

Okabayashi S. Sakata S. Hirata T. ***POSTER LOCATION #583***
Isotopic Analysis of Nano-gram Amounts of Tungsten Using Electrothermal Vaporization (ETV)-MC-ICPMS Technique **[#1911]**
The ETV-MC-ICPMS technique has been developed for the W-isotope analysis of ng sample. The reliability of this technique was evaluated using iron meteorites.

Socki R. A. Niles P. B. Cabiran M. Rossi C. Sun T. ***POSTER LOCATION #584***
In-Situ Water Vapor Probe for a Robot Arm-Mounted, Compact Water Vapor Analyzer: Preliminary Results **[#2769]**
We are working to develop an instrument package for the in situ detection and isotope analysis of water ice on future solar system exploration missions.

Getty S. A. Brinckerhoff W. B. Cornish T. Li X. Floyd M. et al. ***POSTER LOCATION #585***
Two-Step Laser Time-of-Flight Mass Spectrometry to Elucidate Organic Diversity in Planetary Surface Materials **[#2676]**
We have demonstrated two-step laser mass spectrometry (L2MS) as a means of in situ detection and identification of key classes of organics in a complex sample.

Mora M. F. Stockton A. M. Willis P. A. ***POSTER LOCATION #586***
Handling of Solid Samples with Microfluidic Technology for End-to-End Analysis in a Single Device **[#3091]**
Integrating solids in microchip would allow end-to-end analysis in a simpler and smaller instrument. Here, an approach for this and results will be discussed.

Tissot F. L. H. Ireland T. J. Yokochi R. Dauphas N. ***POSTER LOCATION #587***
Introducing Teflon-HPLC **[#2867]**
We are developing the first Teflon-HPLC (High-Performance Liquid Chromatography) system for isotope geo/cosmochemistry, and application to return samples.

Ladner D. R. Scheld D. L. Agerton T. ***POSTER LOCATION #588***
Low-Gravity MAss GAuging System (MAGA) **[#2084]**
The MAGA fluid mass gauging system is a non-invasive method based on excitation and measurement of acoustical resonant frequency modes.

Briois C. Thissen R. Engrand C. Altwegg K. Bouabdellah A. et al. ***POSTER LOCATION #589***
Dust OrbiTrap Sensor (DOTS) for In-Situ Analysis of Airless Planetary Bodies **[#2888]**
We are developing a high-resolution Fourier Transform–Orbitrap-based mass spectrometer for in situ analysis of dust from airless solar system bodies.

Hines D. C. Hammel H. B. Lunine J. I. Milam S. N. Kalirai J. S. et al. ***POSTER LOCATION #590***
The James Webb Space Telescope: Solar System Science **[#1019]**
We discuss the capabilities of the James Webb Space Telescope for accomplishing solar system science.

Sonneborn G. Milam S. N. Hines D. C. Hammel H. B. Lunine J. I. ***POSTER LOCATION #591***
Operations Concept for Solar System Observations with the James Webb Space Telescope **[#1356]**
JWST is designed to obtain IR images and spectra (1–29 μm) of moving targets with rates of 0.030 arcsec/sec or less (Mars and beyond). Examples are given.

Longobardo A. Palomba E. Bearzotti A. Zampetti E. Pantalei S. et al. ***POSTER LOCATION #593***
The MOVIDA Instrument: Measurement of Volatiles Content and Charging Processes of the Lunar Dust **[#2204]**
MOVIDA is a miniaturised, light, and low-power-consuming thermogravimeter under development that can have several applications in a lunar lander mission.

Mocker A. James D. Sternovsky Z. Kempf S. Srama R. et al. ***POSTER LOCATION #594***
LDEX Sensitivity Studies: Material and Impact Velocity Dependence of the Total Charge Yield Generated in Hypervelocity Impacts of Micron and Sub-Micron Sized Dust Particles **[#2663]**
The operational principal of LDEX is investigated with a lab model to gain a deeper understanding of the impact process and to compare with theoretical models.

Clark P. E. Whitaker S. Brown K. Cox R. Vasant A. ***POSTER LOCATION #595***
Compact Ultra Low Temperature Instrumentation for the Lunar Surface **[#1235]**
We discuss technologies essential for exploration of lunar polar regions, and ongoing development activities in crucial cold temperature electronics.

Warren T. J. Bowles N. E. Thomas I. R. ***POSTER LOCATION #596***
The Space Environment Goniometer **[#1958]**
The "Space Environment Goniometer" has been constructed to support thermal infrared remote sensing measurements of the lunar surface.

Nagihara S. Zacny K. Hedlund M. Taylor P. T. ***POSTER LOCATION #597***
A Compact, Deep-Penetrating Heat Flow Probe for Small Lunar Landers **[#1252]**
We report the progress and lab tests we made in developing a compact heat flow probe for future robotic lunar missions.

Glass B. J. McKay C. P. Dave A. Lee P. Mellerowicz B. ***POSTER LOCATION #598***
Planetary-Prototype Drilling and Sample Acquisition Tests at Analog Sites **[#1334]**
Automated 1-m rotary-percussive drills and sample transfer could fly on a planetary mission soon. These have been tested in the lab and at analog field sites.

Cloutis E. A. Whyte L. Qadi A. Anderson-Trocme L. Bell J. F. III et al. ***POSTER LOCATION #599***
The Mars Methane Analogue Mission (M^3): Results of the 2012 Field Deployment **[#1579]**
A simulated rover mission to detect Mars methane suggests that search for enhanced methane is less effective than searching for suitable geological structures.

Ralchenko M. Perrot M. Samson C. Tremblay A. Holladay S. et al. ***POSTER LOCATION #600***
Mars Methane Analogue Mission (M3): Geological Mapping with an Electromagnetic Induction Sounder **[#1027]**
The Electromagnetic Induction Sounder (EMIS) was used alongside a microrover to detect structural variations in an analogue terrain.

Cabrol N. A. Wettergreen D. S. LITA Project Science Team ***POSTER LOCATION #601***
Life in the Atacama: Science and Technology Pathways to the Robotic Search for Life on Mars **[#1190]**
Multiplying the number of sites visited per mission through mobility and subsurface access may give us a greater chance of success of finding life on Mars.

Wang Alian. Lambert J. L. Sobron P. S. ***POSTER LOCATION #602***
An Instrument Suite for Mineral ID and Biomarker Seeking in Atacama **[#2586]**
Three active sensors, MMRS, WIR, and BUF, were used in an Atacama field test. They provided complimentary science and suitable for next planetary surface exploration.

Zacny K. Paulsen G. Mellerowicz B. Craft J. Wettergreen D. et al. ***POSTER LOCATION #603***
Life in the Atacama: The Drill and Sample Delivery System **[#1332]**
We describe development of a 1-m-class rotary percussive drill and sample delivery system for Life in the Atacama, the ASTEP-funded project.

Li R. Li D. Di K. Paar G. Coates A. et al. ***POSTER LOCATION #604***
Experimenetal Results of Geometric Modeling and Accuracy Assessment of an ExoMars Rover PanCam Prototype **[#2779]**
Uncertainty levels for the European Space Agency (ESA) ExoMars 2018 mission panoramic camera vision system (PanCam) for mapping and localization are quantified.

Motamedi K. Colin A. Hutchinson I. Ingley R. Davies G. ***POSTER LOCATION #605***
The Effect of Martian Condition on the Stoichiometry Calculation of Olivine (Fo-Fa) Composition Using a Combined Raman-Laser Induced Breakdown Spectroscopy Instrument **[#2264]**
We study olivine structure by using RLS inside a Mars atmosphere simulation chamber, to assess the effect of temperature and pressure on olivine Raman spectra.

Lopez-Reyes G. Sobron P. Lefevbre C. Rull F. ***POSTER LOCATION #606***
Application of Multivariate Analysis Techniques for the Identification of Sulfates from Raman Spectra — Implications for Exomars **[#2135]**
Evaluation of multivariate techniques (PCA, PLS, ANN) for the ID/quantification of minerals from Raman spectra. Implications for the Exomars Raman instrument (RLS).

Rull F. Maurice S. Diaz E. Lopez G. Catala A. ***POSTER LOCATION #607***
Raman Laser Spectrometer (RLS) for ExoMars 2018 Rover Mission: Current Status and Science Operation Mode on Powdered Samples **[#3110]**
The Raman instrument is part of the analytical suite in the Exomars mission. It is able to address the mineralogical and exobiological goals of the mission.

Ciarletti V. Clifford S. M. Plettemeier D. Dorizon S. Statz C. et al. ***POSTER LOCATION #608***
WISDOM GPR Investigations of Ice Thickness, Stratigraphy, Structure and Basal Topography in an Alpine Ice Cave in Dachstein, Austria **[#2365]**
Prototypes of the WISDOM GPR designed for the ExoMars rover mission have been tested in an ice cave.The experimental results show the instrument performance.

Brinckerhoff W. B. Pinnick V. T. van Amerom F. H. W.
Danell R. M. Arevalo R. D. Jr. et al. ***POSTER LOCATION #609***
Mars Organic Molecule Analyzer (MOMA) Mass Spectrometer for ExoMars 2018 and Beyond **[#2912]**
We describe the Mars Organic Molecule Analyzer (MOMA) mass spectrometer on the 2018 ExoMars rover mission to seek the signs of past or present life on Mars.

Smith H. D. ***POSTER LOCATION #610***
Detection of Biomolecules, Organics, and Minerals on Mars Using Fluorescence **[#3061]**
We propose a fluorescence instrument, adapted from ChemCam, as a non-contact detection method for organics and an excellent triage instrument for sample return.

Misra A. K. Sharma S. K. Abedin M. N. Acosta T. E. Porter J. N. et al. ***POSTER LOCATION #611***
Remote Detection of Minerals and Biomarkers Using RALLF: A Compact Raman, Atmospheric Lidar, LIBS and Fluorescence Sensor **[#1328]**
Integrated Raman, atmospheric lidar, LIBS, and fluorescence (RALLF) sensor suitable for Mars rover is described for remote detection of minerals and biomarkers.

Becker K. J. Anderson J. A. ***POSTER LOCATION #612***
ISIS Support for the MRO/CRISM Instrument **[#2366]**
The USGS ISIS team is working on data ingestion software and a camera model for the MRO/CRISM instrument that complements HiRISE, CTX, and MARCI now in ISIS.

Lawrence D. J. Peplowski P. N. ***POSTER LOCATION #613***
Measurements of Elemental Stratigraphy on Mars with a Rover-Mounted Gamma-Ray Spectrometer **[#2282]**
Laboratory data is presented to illustrate how surface gamma-ray spectroscopy can obtain measurements of compositional stratigraphy to depths of tens of centimeters.

Anderson F. S. Whitaker T. Hamilton V. Nowicki K. ***POSTER LOCATION #614***
Rb-Sr Dating with Accuracy of Better than ±150 Ma Using a Portable LDRIMS for the Mars-2020 Rover **[#1762]**
We demonstrate repeatable dates using portable LDRIMS hardware that could be carried on MER- or MSL-sized rovers.

Cartwright J. A. Farley K. A. Hurowitz J. A. Asimow P. D. Jacobson N. S. ***POSTER LOCATION #615***
Dating Planetary Surfaces Including Mars Using a New K-Ar Technique — ID KArD **[#1744]**
With ID KArD, K-Ar dating planetary surfaces is readily achievable, as shown by low age uncertainty, and without requiring high temperature or mass measurement.

DeWitt R. McKeever S. W. S. ***POSTER LOCATION #616***
ODIN — A Prototype Mars In-Situ Luminescence Reader for Geochronology and Radiation Measurements **[#1665]**
ODIN is a prototype Mars in situ luminescence instrument for geochronology and radiation measurements, intended to be mounted on a lander.

Zacny K. Chu P. Paulsen G. Craft J. ***POSTER LOCATION #617***
Core Acquisition and Caching for the 2020 Mars Mission **[#1331]**
We present a core acquisition and architecture for the planned Mars 2020 mission.

Younse P. Aveline D. Bao X. Berisford D. Bhandari P. et al. ***POSTER LOCATION #618***
Sample Tube Sealing for Future Proposed Mars Sample Return Missions **[#1198]**
Sample tube sealing methods for sample collection tubes were developed and tested to preserve the scientific value for future sample return missions.

Dandonneau P-A. Lognonne P. Banerdt W. B. Deraucourt S. Gabsi T. et al. ***POSTER LOCATION #619***
The SEIS InSight VBB Experiment **[#2006]**
Description of the primary payload of the next NASA martian mission: SEIS InSight. Description, heritage, performance.

Naudet C. Tanaka H. Kedar S. Plaut J. Jones C. E. et al. ***POSTER LOCATION #620***
Interrogating the Martian Subsurface Using Muon Radiography **[#1605]**
Muon Radiography is a novel, passive and deeply penetrating imaging technique, which will allow direct exploration of subsurface habits and ice reservoirs.

Conway S. A. Strong K. Walker K. A. Olsen K. S. Wennberg P. O. et al. ***POSTER LOCATION #621***
The Mars Atmospheric Trace Molecule Occultation Spectrometer (MATMOS): An Overview **[#2227]**
We present an overview of the design and projected capabilities of the MATMOS instrument and discuss the instrument's present status and some test results.

Olsen K. S. Boone C. D. Toon G. C. Strong K. ***POSTER LOCATION #622***
Atmospheric Retrievals in Preparation for a Solar-Occultation High-Resolution Fourier Transform Spectrometer at Mars **[#2244]**
The CSA and JPL's MATMOS is a high-resolution Fourier transform spectrometer intended to orbit Mars. We present work on temperature retrievals and dust effects.

Simon-Miller A. A. Reuter D. C. ***POSTER LOCATION #623***
OSIRIS-REx OVIRS: A Scalable Visible to Near-IR Spectrometer for Planetary Study **[#1100]**
Details of the OSIRIS-REx visible and near IR spectrometer are presented. This instrument can be easily adapted for other planetary missions.

Smith P. H. Rizk B. Kinney-Spano E. Fellows C. d'Aubigny C. et al. ***POSTER LOCATION #624***
The OSIRIS-REx Camera Suite (OCAMS) **[#1690]**
OCAMS, the primary instrument on the NF OSIRIS-REx mission to NEO 1999RQ36, has three cameras designed to map surface characteristics to find a safe sampling site.

Arakawa M. Saiki T. Wada K. Kadono T. Takagi Y. et al. ***POSTER LOCATION #625***
Small Carry-On Impactor (SCI): Its Scientific Purpose, Operation, and Observation Plan in Hayabysa-2 Mission **[#1904]**
SCI and DCAM3 are prepared in Hayabusa-2 mission to elucidate the subsurface feature of the asteroid 1999JU3 and the scaling rule of the impact crater.

Sugita S. Morota T. Kameda S. Honda R. Honda C. et al. ***POSTER LOCATION #626***
Science Observation Strategy for Hayabusa-2 Optical Navigation Cameras (ONC) **[#3026]**
The flight units of ONC are currently developed for the Hayabusa-2 mission. The outline of the instrument and science observation plans will be discussed.

Namiki N. Mizuno T. Hirata N. Noda H. Senshu H. et al. ***POSTER LOCATION #627***
Scientific use of LIDAR Data of Hayabusa-2 Mission **[#1945]**
Range data taken by Hayabusa-2 LIDAR are scientifically important for analysis of the shape, mass, and surface properties of the asteroid.

Tachibana S. Sawada H. Okazaki R. Takano Y. Okamoto C. et al. ***POSTER LOCATION #628***
The Sampling System of Hayabusa-2: Improvements from the Hayabusa Sampler **[#1880]**
We will report the current status of development of the Hayabusa-2 sampler.

Okada T. Fukuhara T. Tanaka S. Taguchi M. Imamura T. et al. ***POSTER LOCATION #629***
Thermal-Infrared Imager TIR on Hayabusa2: Science and Instrumentation **[#1954]**
Purposes of the TIR on Hayabusa 2 are to investigate the nature, origin, and evolution processes of C-class NEA 1999JU3 through thermophysical properties.

Grott M. Knollenberg J. Hänschke F. Kessler E. Müller N. et al. ***POSTER LOCATION #630***
The MASCOT Radiometer MARA for the Hayabusa 2 Mission **[#1586]**
The instrument concept for the MASCOT radiometer MARA, one of the payloads of the Hayabusa II mission, is presented.

Grott M. Knollenberg J. Maturilli A. Helbert J. Müller N. et al. ***POSTER LOCATION #631***
Mineralogical Surface Characterization Using the MASCOT Radiometer MARA on the Hayabusa 2 Mission **[#1597]**
The expected performance of the MASCOT Radiometer MARA, one of the payloads of the Hayabusa 2 mission, is presented.

Parsons A. M. Evans L. Lim L. Starr R. ***POSTER LOCATION #632***
Capabilities of Gamma Ray and Neutron Spectrometers for Studying Trojan Asteroid Composition **[#2082]**
We will discuss the capabilities of high heritage gamma ray and neutron spectrometers for determining the surface and subsurface composition of Trojan asteroids.

Sava P. Grimm R. E. Ittharat D. Stillman D. E. ***POSTER LOCATION #633***
Radar Imaging the Interiors of Small Bodies: Initial Migration Studies **[#1350]**
Transmission between an orbiter and a subsatellite and processing by full migration tomography will optimize internal imaging of asteroids and comets.

Bajo K. Itose S. Matsuya M. Ishihara M. Uchino K. et al. ***POSTER LOCATION #634***
Development of Novel Sputtered Neutral Mass Spectrometer to Analyze Solar Wind Noble Gas **[#2285]**
Solar-gas-rich meteorites that were irradiated by solar wind have been studied. We have developed a novel SNMS to analyze solar noble gases in the meteorites.

Sobron P. Bamsey M. Thompson C. Berinstain A. Caron S. et al. ***POSTER LOCATION #635***
Ion-Selective Optical Sensors for the Characterization of Europa's Oceans **[#2740]**
We describe a method for characterizing the chemistry of water bodies in the solar system using optical sensors equipped with ion-selective membranes.

Sobron P. Lefebvre C. Koujelev A. Wang A. ***POSTER LOCATION #636***
Why Raman and LIBS for Exploring Icy Moons? **[#2381]**
The elemental and molecular features of water ice mixed with salts and organics relevant to Europa have been analyzed using laser Raman and LIBS instruments.

Paulsen G. Zacny K. Mellerowicz B. Bar-Cohen Y. Beegle L. W. et al. ***POSTER LOCATION #637***
Wireline Deep Drill for the Exploration of Icy Bodies **[#1333]**
We describe development and testing of a wireline core drill system capable of penetration hundreds of meters in icy bodies such as Mars, Europa, and Enceladus.