Tuesday, October 25, 2016
POSTER SESSION: I
4:10 – 6:00 p.m. California Ballroom

Fletcher Z. J. Cheng A. F. Barnouin O. S. Chabot N. L. Reed C. L.
DRACO: Didymos Reconnaissance and Asteroid Camera for Op-Nav **[#4043]**
The proposed DART mission is the first demonstration of kinetic impact for deflection of an asteroid. We describe DART's instrument DRACO's (Didymos Reconaissance and Asteroid Camera for Op-nav) requirements, resulting design, and planned operations.

Lucey P. G. Sun X. Li S. X. Numata K. Neumann G. A. Abshire J. B. Smith D. E.
An Infrared Multiwavelength Lidar for Compositional Mapping **[#4069]**
A laser altimeter that measures surface reflectance in up to seven bands in the infrared is being developed. Narrow band infrared lasers and infrared avalanche photodiode arrays have been demonstrated. The instrument can detect ppm levels of water.

Osburn S. M. Turner B. Sevy E. T. Austin D. E.
Reducing Impact Fragmentation with a Novel Inlet on a Closed Source Neutral Mass Spectrometer **[#4020]**
High velocity molecular impacts that occur during upper atmosphere flyby missions cause fragmentation of molecules collected from the atmosphere. We are developing a new design for an inlet that will reduce fragmentation of incoming molecules.

Getty S. A. Li X. Brinckerhoff W. B. Elsila J. E. Grubisic A. Cornish T. Balvin M.
Southard A. Ferrance J.
MACROS: Molecular Analyzer for Complex Refractory Organic-Rich Surfaces **[#4071]**
The novel MACROS instrument package will enable the in situ characterization of the inorganic and organic composition of surface samples by coupling liquid extraction with laser desorption/ionization mass spectrometry.

Southard A. E. Getty S. A. Ferrance J. P. Balvin M. A. Elsila J. E. Stewart D. Stamos B.
Kotecki C. Glavin D. P.
Design of an Integrated LC-MS Prototype for an In Situ Mission to an Icy Body in the Solar System **[#4080]**
The OASIS instrument is being developed to perform in situ liquid chromatography-mass spectrometry on icy bodies in the solar system. A chief goal for OASIS is to detect enantiomeric excess in amino acids, a compelling biosignature.

Schröder C. Klingelhöfer G. Morris R. V. Yen A. S. Renz F. Graff T. G.
The Miniaturized Mössbauer Spectrometer MIMOS II for the Asteroid Redirect Mission (ARM): Quantitative Iron Mineralogy and Oxidation States **[#4057]**
We propose a fully-qualified flight-spare Mössbauer spectrometer for the asteroid redirect mission to identify Fe-bearing mineral phases and Fe oxidation states, and for quantitative distribution of Fe between mineral phasesand oxidation states.

Park R. S. Bills B. G. Jorgensen J. Jun I. Maki J. N. McEwen A. S. Riedel E.
Walch M. Watkins M. M.
Advanced Pointing Imaging Camera (APIC) Concept **[#4018]**
The Advanced Pointing Imaging Camera (APIC) concept is envisioned as an integrated system, with optical bench and flight-proven components, designed for deep-space planetary missions with 2-DOF control capability.

Creamer J. S. Mora M. F. Kehl F. Willis P. A.
Enhanced Resolution of Chiral Amino Acids with Capillary Electrophoresis for Biosignature Detection in Extraterrestrial Samples **[#4061]**
This work describes two capillary electrophoresis methods capable of resolving 17 amino acids that are found in high abundance in both biotic and abiotic samples.

Karras J. Carpenter K. Fuller C. Parcheta C.
PUFFER (Pop-Up Flat Folding Explorer Robots) **[#4125]**
PUFFER (Pop-Up Flat Folding Explorer Robots) are origami-inspired folding robots with extreme terrain mobility. PUFFERs are low-volume, low-mass, and low-cost robots for high-reward extreme terrain science.

Arenberg J. W. Harpole G. Zamel J. Sen B. Lee G. Ross F. Retherford K.
Technology for a Thermo-chemical Ice Penetrator for Icy Moons **[#4131]**
This poster introduces a thermo-chemical ice penetrator for Ocean Worlds. It employs a eutectic mix of alkali metals that produce an exothermic with an icy surface. This technology builds on successful classified 1980's era program for the US Navy.

Deleuze M. D. Bernardi P. B. Caïs Ph. C. Perez R. P. Rees J. M. R. Pares L. P. Dubois B. D. Parot Y. P. Quertier B. Q. Maurice S. M. Maccabe K. M. Wiens R. W. Rull F. R.
SuperCam MastUnit **[#4009]**
This paper will describe and give a development status of SuperCam's mast unit. SuperCam will be carried on the Mars 2020 rover, and consists in an enhanced version of the ChemCam LIBS which is still performing at the surface of Mars, on Curiosity.

Leask E. K. Ehlmann B. L.
Identifying and Quantifying Mineral Abundance Through VSWIR Microimaging Spectroscopy: A Comparison to XRD and SEM **[#4022]**
VSWIR microimaging reflectance spectroscopy is used to identify minerals, quantify abundances, and assess textural relationships at sub-mm scale without destroying the sample. Results are compared to traditional methods such as XRD and SEM-EDS.

Wong M. H.
From Mars to Jupiter and Beyond: In Situ Atmospheric Studies with Synergistic Instrument Payloads **[#4119]**
Two case studies (Curiosity and the Galileo Probe) show how synergistic instrument payloads can overcome some of the challenges of variability over temporal and spatial dimensions, with implications for Saturn/ice giant probe missions.

Wagstaff K. L. Altinok A. Bue B. Chien S. A. Mandrake L.
Instrument Science Autonomy for Orbital and Flyby Planetary Missions **[#4063]**
Autonomous analysis of data as it is collected enables response to dynamic or short-lived events, environmental monitoring, and increased science return. Missions operating at far distances (e.g., ocean worlds) can benefit greatly.

Parker C. W.
PEP-Hi: Energetic Electron, Ion, and Neutral Particle Instrumentation for the JUICE Mission **[#4110]**
The PEP-Hi instruments JENI and JoEE for the ESA JUICE mission will measure middle to high energy electrons, ions, and neutral particles in the jovian particle environment.

Blanc M. Jones G. Prieto-Ballesteros O. Mimoun D. Masters A. Kempf S. Iess L. Martins Z. Lorenz R. Lasue J. Andre N. Bills B. G. Choblet G. Collins G. Cremonese G. Garnier P. Hand K. Hartogh P. Khurana K. K. Stephan K. Tosi F. Vance S. D. van Hoolst T. Westall F. Wolwerk M. Cooper J. F. Sittler E. C. Brinckerhoff W. Hurford T. Europa Initiative
Europa Habitability and Extant Life Exploration with Combined Flyby-Lander-Orbiter Mission **[#4026]**
The optimal configuration for investigation of habitability and any extant life at Europa would be a combined constellation of flyby, lander, and orbiter spacecraft. The Europa Initiative is designing a small orbiter as part of this constellation.

Hong J. Romaine S. Ramsey B. Nittler L. Grindlay J.
Developing Miniature Wolter-I X-Ray Optics for Planetary Science **[#4040]**
We report the development progress and plan of miniature Wolter-I X-ray optics to make powerful, yet compact lightweight X-ray telescopes affordable for many future planetary missions.

Ravine M. A. Schaffner J. A. Caplinger M. A.
ECAM, a Modular Spaceflight Imaging System — First Flight Deliveries **[#4106]**
MSSS has delivered four ECAM systems to four different customers and for widely varying missions and is under contract for two additional systems. The variety of real-world applications has proven the flexibility of the architecture.

Dyar M. D. Breitenfeld L. B. Bartholomew P. Carey C.
Technique Development Needed to Interpret Raman Spectra of Minerals and Mixtures **[#4085]**
Three areas of Raman research are discussed: integration and review of new and existing Raman databases for minerals, assessment of the relationship between peak intensity and mineral abundance, and development of mineral identification software.

Blacksberg J. Alerstam E. Maruyama Y. Cochrane C. Rossman G. R.
High-Speed Pulsed Raman for Mapping of Minerals and Organics on a Microscopic Scale **[#4017]**
We present a miniaturized high-speed pulsed Raman (HiPuR) spectrometer, a planetary surface instrument for in situ identification and quantification of minerals and organics, with surface mapping capabilities on a microscopic scale.

Greenberger R. N. Ehlmann B. L. Green R. O. Blaney D. L.
Scientific Applications of Imaging Spectrometers for Landed Missions: Examples from Terrestrial Field Deployments **[#4028]**
In situ imaging spectroscopy for geology has been field trialed at outcrop scale and lab trialed at hand sample scale. We present key lessons.

Noell A. C. Fisher A. M. Takano N. Fors-Francis K. Sherrit S. Grunthaner F.
Astrobionibbler: In Situ Microfluidic Subcritical Water Extraction of Amino Acids **[#4059]**
A fluidic-chip based instrument for subcritical water extraction (SCWE) of amino acids and other organics from powder samples has been developed. A variety of soil analog extractions have been performed to better understand SCWE capabilities.

Chanover N. J. Aslam S. DiSanti M. A. Hibbitts C. A. Honniball C. I. Paganini L. Parker A. Skrutskie M. F. Young E. F.
Results from the Science Instrument Definition Team for the Gondola for High Altitude Planetary Science Project **[#4078]**
The GHAPS Science Instrument Definition Team presents its report .

Drouin B. J. Tang A. Schlecht E. Raymond A. W. Chang M.-C. F. Kim Y.
A Millimeter Wave Spectrometer on a Chip for In-Situ Molecular Spectroscopy **[#4005]**
We describe the initial gas measurements of a novel cavity resonator spectrometer utilizing low-mass/low power CMOS electronics.

Steininger H. Goesmann F. Raulin F. Brinckerhoff W. B. Mahaffy P. R. Szopa C.
Mars Organic Molecule Analyzer (MOMA) as an Example for Contamination Control for Life Detection Instrumentation **[#4082]**
The contamination control approach for life detection instrument is presented on the example of the Mars Organic Molecule Analyzer. A combined pyrolysis gas chromatograph mass spectrometer and laser desorption mass spectrometer.

Simcic J. Madzunkov S. M. Bae B. Nikolic D. Darrach M.
A Miniature Gas Chromatograph Mass Spectrometer (GCMS) for Planetary Atmospheres Studies **[#4019]**
Presented herein are the latest achievements in developing an instrument with the same analytical performance of commercial Gas Chromatograph Mass Spectrometer systems but approximately an order of magnitude smaller and optimized for space missions.

Willis P. A. Mora M. F. Creamer J. S. Kehl F.
Maximizing Science Return on Astrobiology and Planetary Missions Using Integrated Liquid-Handling Chemical Analysis Systems — A Status Report **[#4089]**
Our team has been developing all components required for liquid-based analysis on planetary missions. Here we summarize our progress in this area, and highlight enhancements to science return on NASA missions that these technologies could provide.