Wednesday, November 5, 2014
PLENARY SESSION II
9:00 a.m. / Building 34-Conference Room W150

Chairs: M. Grande (Aberystwyth U., UK)
        C. Nixon (GSFC)

9:00 a.m. Grotzinger J. P. * Science Team M. S. L.
Geologic, geochemical and mineralogic framework for Aeolis Palus bedrock, and its
relationship to Mt. Sharp, Mars [#1135]
Curiosity's instruments have documented an impressive set of sedimentary and igneous rock
compositions, preserved as part of fluvial-deltaic-lacustrine environment, indicating a habitable
paleoenvironment at Gale crater.

Wednesday, November 5, 2014
INSTRUMENTATION FOR NEXT GENERATION ORBITERS (I)
9:30 a.m. / Building 34-Conference Room W150

Chairs: M. Grande (Aberystwyth U., UK)
        C. Nixon (GSFC)

9:30 a.m. Grasset O. * Altobelli N. Barabash S. Iess L. Jaumann R. et al.
The Jupiter Icy Moons Explorer (JUICE): Complementarity Of The Payload In Addressing The
Mission Science Objectives. [#1141]
Invited Speaker.

9:50 a.m. Bergsrud C. M. * Straub J.
Using Space Solar Power Satellites to Aid in Planetary Science Discovery
and Exploration [#1000]
This paper presents an overview of the space solar power satellite technology, and its
application to planetary science missions. It details how it can drive lower costs and discusses
prospective cost savings in the context of two example missions.

10:05 a.m. Korth H. * Strohbehn K. Kitching J.
Miniature Absolute Scalar Magnetometer Based on the Rubidium Isotope 87Rb [#1016]
Presented is a low-resource, miniaturized, absolute scalar magnetometer based on the isotope
87Rb, which has a mass of <500 g and uses 0.5 W of power, while maintaining sensitivity
comparable to present state-of-the-art absolute magnetometers.

10:20 a.m. Mariani G. * Kenyon M.
Radiometric Mapping of Europa: Challenges of Building a Radiation-Hardened, Uncooled,
Far-Infrared Thermal Imager [#1017]
Thermopile technology integrated with state-of-the-art readout chips provides a far-infrared,
uncooled, radiation-hardened, thermal imaging solution to conduct accurate radiometric
measurements of Europa.
Mass Analyzer for Real-time Investigation of Neutrals at Europa (MARINE) [#1018]
Presented herein is a summary of the Mass Analyzer for Real-time Investigation of Neutrals at Europa (MARINE). MARINE new mass analyzer for analysis the exospheres of planets, moons, and primitive bodies, such as found at Europa or Enceladus.

Levitated Superconducting Gravity Gradiometer for Planetary Missions [#1021]
We are developing an accurate tensor superconducting gravity gradiometer for planetary missions. A new and innovative design gives a sensitivity < 1 mE Hz^(−1/2) in the measurement band 1 mHz to 0.1 Hz for a device with a baseline just over 10 cm.

Silicon Micromachined High-Resolution Terahertz Spectroscopic Instrument for Planetary Missions [#1022]
Using newly developed silicon micromachining technology we are developing a low-mass and highly integrated state-of-the-art terahertz radiometer/spectrometer instrument for planetary orbiter missions to Mars, Venus, Titan, and the Galilean moons.

Hyperdust: Advanced instrument for the in-situ detection and chemical analysis of cosmic dust particles [#1023]
The Hyperdust instrument is developed for future missions for the composition and trajectory analysis of interstellar and interplanetary particles, as well as surface composition analysis of airless planetary objects.

The Ganymede Laser Altimeter (GALA) on ESA’s JUICE mission: Overview of the Instrument Design. [#1029]
ESA’s Jupiter Icy Moons Explorer (JUICE) will launch in 2022 and arrive at Jupiter in 2029. The Ganymede Laser Altimeter (GALA) will focus on geodetic and geophysical investigations of the icy satellites Europa, Callisto and Ganymede.
Wednesday, November 5, 2014
INSTRUMENTS ON FUTURE MARS LANDERS (I)
9:30 a.m. / Building 34- Conference Room W120 A&B

Chairs:  R. Jaumann (DLR, Germany)
         C. Stahle (GSFC)

9:30 a.m.  Mahaffy P. R. *  Arevalo R.  Brinckerhoff W. B.  Caartwright J. A.  Conrad P. G.  et al.
            AGES: A Noble Gas Mass Spectrometer for Future in Situ Cosmic Radiation Exposure Age and
            K-Ar Chronology Investigations [#1028]
            The AGES mass spectrometer proposed for a future Mars, Lunar, asteroid, or Phobos mission
            provides definitive in situ measurements of cosmogenically and radiogenically produced noble
            gases to implement in situ chronology investigations.

9:45 a.m.  Sinclair J. A. *  Wilson E. L.  Irwin P. G. J.  Calcutt S.
            Detecting trace species in the Martian atmosphere with a gas correlation
            filter radiometer [#1038]
            We present the potential of a gas correlation radiometer in detecting trace gases in the Martian
            atmosphere, such as methane and sulphur dioxide.  These species would serve as tracers of
            geological, and perhaps biological activity on Mars.

10:00 a.m.  Schmitz N. *  Jaumann R.  Coates A. J.  Griffiths A. D.  Leff C. E.  et al.
            PanCam on the ExoMars 2018 Rover: A Stereo, Multispectral and High-Resolution Camera
            System to Investigate the Surface of Mars [#1053]
            The ExoMars rover will carry a Panoramic Camera System (“PanCam”) being designed to obtain
            high-resolution colour and wide-angle multi-spectral stereoscopic panoramic images from the
            rover mast.

10:15 a.m.  Yu H. *  Garnero E.  Fouch M.
            Molecular Electronic Transducers Based Micro-Seismometers for
            Planetary Exploration [#1055]
            A Molecular Electronic Transducers based micro seismometers are under development, which
            are robust (orientation independent and high shock tolerant) with low power, low mass, and
            relatively low cost and can be deployed flexibly across a broad range.

10:30 a.m.  Lorenz R. D. *
            Micropower Instrumentation Needs for an RHU-powered Mars
            Mini-Network Mission [#1062]
            A network of affordable Mars landers (‘MASER’) able to operate year-round is enabled by a
            radioisotope heater units (RHU) power system (~200mWe)  Continuous seismic and wind
            measurements require new instrument designs able to operate on ~50mW.

11:50 a.m.  COFFEE BREAK

11:05 a.m.  Rafkin S. C. R. *  Banfield D.  Nowicki K.  Silver J.  Dissly R.
            An Instrument to Measure Turbulent Fluxes in the Atmosphere of Mars and
            Other Planets [#1063]
            A newly developed instrument capable of simultaneously measuring turbulent fluxes in planetary
            atmospheres has been developed.  The focus to date has been for Mars, but can be adapted to
            other atmospheres such as Venus, Titan, and gas or ice giants.
11:20 a.m. Arruego I. *
* A Roadmap for the Development of Miniature Instrumentation for Mars Exploration. [#1068]
We report on a 10-year initiative to set up a number of resources for the development of miniature instruments for Planetary Exploration. Thanks to it, we are involved in 2 Mars exploration missions: Mars MetNet Lander and ExoMars 2016 EDM.

11:35 a.m. Olcott Marshall A. Marshall C. P. *
* Challenges facing Raman spectroscopy on Mars: Lessons from an Earth-based analog [#1070]
Here we explore the best excitation wavelength ranging from UV, Vis, and NIR for Raman analysis of samples from a Mars analog.

11:50 a.m. Apestigue V. * Jiménez J. J. Martínez J. Álvarez F. J. Rivas J. et al.
The DREAMS-SIS sensor, a miniature photometer that will be part of the DREAMS payload package on board ExoMars 2016 EDM, is presented. We report on the design, development, calibration and qualification processes, as well as present status.

12:05 p.m. LUNCH BREAK