Wednesday, July 16, 2014
POSTER SESSION: BIOSIGNATURES, HABITABILITY, AND PRESERVATION
4:00 p.m. Dabney Hall and Garden

Wei J. Wang A. Lambert J. L. Wettergreen D. Cabrol N. A. Warren-Rhodes K. Kong F. Zheng M.
Detecting Biosignatures on Mars: Lessons Learned from Mars Analog Site Studies **[#1369]**
We suggest a strategy for detecting bio-signatures in future missions to Mars, on the basis of field explorations at two Mars analog sites and laboratory ground truth study from which the reduced carbon and other bio-signatures were detected.

Bhartia R. Wanger G. P. Orphan V. J. Fries M. D. Rowe A. Nealson K. Abbey W. J. Beegle L. W.
Combining Chemistry and Morphology to Assess Biosignatures **[#1463]**
Spectroscopic methods that combine chemistry and spatial distribution can provide new insight on biosignatures.

Buz J. Kirschvink J. L. Kobayashi A. Thomas-Keprta K. L. Clemett S. J.
Ancient Life on Mars: Application of New Paleomagnetic and Rock Magnetism Techniques to Test the Origin of Magnetites in ALH 84001 Carbonates **[#1393]**
The use of new ultra-high resolution scanning superconducting magnetic microscopes enables us to conduct paleomagnetic and rock magnetism tests which distinguish between formation hypotheses for magnetites found within the ALH84001 carbonates.

Valdivia-Silva J. E. Karouia F. McKay C. P.
Microorganisms and Organic Carbon in the Hhyper-Arid Mars-Like Soils and Their Correlation with Oxidant Activity **[#1001]**
Mars-like soil samples were analyzed for organic C and bacteria content. The microorganisms did not show any correlation with the organics, however, presented a significant dependence on changes in the capacity of decomposition of sodium formate.

Grimm R. E. Stillman D. E.
Characterization of Shallow Subsurface Ice, Water, and Biosignatures on Mars Using Spectral Induced Polarization **[#1372]**
The frequency and strength of electrical polarizations gives information on the identity and abundance of certain materials, analogous to classical spectroscopy. Geophysical implementation from Mars surface is sensitive to several meters depth.

Belmahdi I. Buch A. Szopa C. Brault A. Freissinet C. Pinnick V. El Bekri J. Coll P. Teinturier S. Cabane M.
Extraterrestrial Material Analysis : Influence of the Acid Hydrolysis on the MTBSTFA Derivatization **[#1288]**
Objective of this study is to determine the best chemical conditions to perform derivatization on MOMA, experiment aboard the future ExoMars mission. .

Kaplan H. H. Milliken R. E. Knoll A. H.
Detection of Organics in Fine Grained Sediments Using Near-Infrared Reflectance Spectroscopy **[#1263]**
Fine-grained sediments are analyzed with reflectance spectroscopy to understand the relationship between organic carbon and absorption feature strength. Spectral modeling is used to separate overlapping carbonate and organic features.

Shkolyar S. Farmer J. D. Blacksberg J.
Identifying High Priority Fossil Biosignatures in Mars Analog Materials Using Raman Spectroscopy **[#1037]**
Proof of life on Mars will come from identification of biosignatures in samples which will be returned to Earth for further analysis. Time-gated Raman reduces background effects allowing enhanced selection of optimal samples for return.

Beaty D. W. Rummel J. D. Jones M. A. Bakermans C. Barlow N. Boston P. Chevrier V. Clark B. de Vera J.-P. Gough R. Hallsworth J. E. Head J. Hipkin V. Kieft T. McEwen A. Mellon M. Mikucki J. Nicholson W. Omelon C. Peterson R. Roden E. Sherwood Lollar B. Tanaka K. Viola D. Wray J.
An Updated Planetary Protection Special Regions on Mars Analysis by the MEPAG Special Regions-Science Analysis Group 2 **[#1145]**
This work represents an analysis by the MEPAG Special Regions-Science Analysis Group 2 chartered to review and update technical information since the first study in 2006.

Perl S. M. Corsetti F. A. Berelson W. M. Nealson K. H. Bhartia R. Vance S.
Experimental Constraints on Martian Aqueous Environments and Biosignature Preservation: Simulating Fluid Flow Profiles and Microbial Development in the Shallow Subsurface **[#1157]**
The purpose of this investigation is to quantify the preservation potential of biosignatures within permeable sedimentary rocks and to understand how variable fluid movement modifies habitability given sedimentological constraints.

Poch O. Coll P. Szopa C. Stalport F. Georgelin T. Jaber M. Lambert J.-F.
Chemical Evolution of Organic Molecules Under Mars-Like UV Radiation Conditions Simulated in the Laboratory with the MOMIE Setup **[#1228]**
Results of laboratory simulations aiming to explain the evolution of organic molecules at the surface of Mars, to support the search for organics conducted *in situ*. What molecule can be preserved? Within which timescale? What is the effect of clays?

Lane M. D.
Habitable Environments Include Acidic Zones: Looking Beyond an Alkaline Environment for Signatures of Life on Mars **[#1465]**
Our objective is to challenge the notion of searching for evidence of life only in a near-neutral pH, mid-range saline, water-rich environments on Mars, and to recommend potential settings that look beyond traditional "Goldilocks" regions.

Pavlov A. A. Vasilyev G. I. Ostryakov V. M. Pavlov A. K. Mahaffy P.
Abundance of Cosmogenic Noble Gases as a Marker of the Organic Degradation by Cosmic Rays in the Surface Martian Rocks. Implications to MSL and Mars 2020 **[#1488]**
We conducted a modeling study which links the rates of cosmogenic isotopes production with the radiation accumulation rates on Mars. We calculated the degradation level of the organic molecules at Cumberland based on the observed cosmogenic isotopes.

Mickol R. L. Waddell W. H. Kral T. A.
Methanogens as Models for Life on Mars **[#1005]**
Four methanogen species have been subjected to various martian conditions in order to test their suitability as candidates for life on Mars. These conditions include low pressure, low temperature and analog regoliths.