Thursday, March 16, 2006
POSTER SESSION II: ASTROBIOLOGY
7:00 p.m. Fitness Center

Moores J. E. Smith P. H. Tanner R.
The Effect of Martian Surface Geometry on Ultraviolet Fluxes **[#2340]**
The effect of four different small scale geometries on localized ultraviolet surface fluxes is considered for differing latitudes and atmospheric conditions using a 1D atmospheric model.

Lerman L.
Prebiotic Chemical Evolution on an Early Mars: Consequences and Artifacts of "Organic" Weather Cycles in the Noachian **[#1566]**
The conditions for life to exist are not necessarily those needed for its origin. Could basic organic molecules on an early Mars have even come together to bring about life? This paper is the first attempt to build a "universal" theory of life's (potential) origin on a warmer, wetter younger Mars.

Cabrol N. A. Hock A. N. Sunagua M. Grin E. A.
Evolution of Aqueous Habitat and Life in High-Altitude Lakes During Rapid Climate Change: Astrobiological Methods and Geo and Biosignatures **[#1016]**
Microbialites are studied from the peak stage of a paleolake to the current water level. This continuum allows to track the increased pressure from extreme factors on habitat in the geological record in an environment analogous to early Mars.

Gleeson D. F. Pappalardo R. T. Grasby S. E. Spear J. R.
Borup Fiord: A Unique Glacial Environment of Astrobiological Significance and Potential Analogue to Europa Exploration **[#1854]**
Supraglacial sulfur-rich springs located in the High Canadian Arctic are abundant in microbes, and will offer insights into possible Europa microbial niches, surface chemistry, and movement of melt within ice.

De Gregorio B. T. Sharp T. G.
Possible Abiotic Formation of Kerogen-like Carbon in the Strelley Pool Chert **[#2318]**
Black chert veins near ancient stromatolites in the 3.45 Ga Strelley Pool Chert contain kerogen-like carbonaceous material. Although it is likely biogenic, Fischer-Tropsch-type processes may have also created this carbonaceous material.

Socki R. A. Gibson E. K. Jr. Bissada K. K.
Isotope Variations in Terrestrial Carbonates and Thermal Springs as Biomarkers: Analogs for Martian Processes **[#1014]**
Stable isotope measurements in terrestrial carbonates and methane are indicators of paleoenvironmental conditions and can be used as possible biomarkers when making isotope measurements on Martian carbonates.

Stivaletta N. Barbieri R. Bosco M. Ori G. G. Marinangeli L.
Microbial Communities from Continental Sabkhas of Southern Tunisia: Terrestrial Analogues of Mars Evaporite Environments **[#1608]**
We are conducting a comparative investigation of the microbial communities and their biosignatures from modern and fossil evaporite deposits of continental sabkha environments for evaluating what and how microbial products can be delivered to the fossil record.

Prieto-Ballesteros O. Fernandez-Remolar D. C. Gómez F. Torres J. Gómez Ortiz D. Kargel J. S. Gonzalez Pastor E. Fernandez Sampedro M. Martín Redondo M. P. Gonzalez de Figueras C. Gómez-Elvira J.
The Permafrost in the Imuruk Lake Basaltic Field (Alaska) as a Martian Permafrost Analogue **[#1524]**
We are studying the permafrost in the Imuruk lake volcanic area (Alaska) in order to define biosignatures in cold environmens and develop new instrumentation for detecting life that may be used in future space exploration missions.

Gómez F. Gonzalez-Pastor E. Fernandez-Remolar D. C. Torres J. Gómez-Ortiz D. Fernandez-Sampedro M. Martin-Redondo M. P. Gonzalez de Figueras C. Gómez-Elvira J. Prieto-Ballesteros O.
Microbial Diversity on a Volcano-Sedimentary Mars Analog Permafrost: Imuruk Lake **[#1760]**
Due to Mars surface environmental conditions (oxidative stress, UV radiation) there are few chances for life on the surface of the red planet. Permafrost on earth is located at circumpolar latitudes. Of special interest is permafrost on volcanic areas due to the similarities with Mars geology.

Gómez F. Fernández-Remolar D. C. Prieto O. Rodríguez-Manfredi J. A. Rodríguez N. Amils R.
Mars Analogs on Earth: Putative Habitats on Mars? Lectures from Extremophiles **[#1793]**
Mineralogy studies by NASA Opportunity Rover report iron oxides and hydroxides precipitates on Mars. Sedimentary deposits have been identified at Meridiani Planum. These deposits should have been generated in a dune aqueous acidic and oxidizing environment. Similarities appear when we study Rio Tinto.

Szynkiewicz A. Pratt L. M.
Calibration of Contamination from Soil Organic Matter in Exposed Mantle Xenoliths — Preliminary Results **[#2088]**
Concentration and distribution of organic compounds in mantle xenoliths indicate that contamination by soil organic matter is not a simple process. Inhomogeneity and low porosity appear to limit penetration of contaminants.

Chafetz H. S.
Recognition of Bacterially Induced Mineral Precipitates: Examples from Carbonate, Silicate, and Mn- and Fe-rich Deposits **[#1844]**
Bacterially induced mineral deposits range from those fairly obvious on the outcrop to those in which the bacteria only occur as the nucleus around which precipitation is initiated. Nevertheless, all of these precipitates provide evidence for the former existence of bacterial life.

Bowden S. A. Wilson R. Parnell J. Cooper J. M.
Liquid-Liquid Extraction of Included Organic Compounds from Dissolved Sulphate Minerals Performed on a Microfluidic Format **[#1616]**
Sulfates are present on the surface of Mars and could have trapped organic compounds present in their parent solution. Extraction via a microfluidic device can recover fossil-lipid biomarkers from small quantities of sulfate bearing materials.

Schieber J. Glamoclija M. Schimmelmann A. Thaisen K.
Snot, Sticks, and Lots of Water: Iron Microbes as Minimalist Architects **[#2004]**
Mat textures of iron microbes (Leptothrix) are based on open scaffold structure with water pockets. Efficiently constructed from sheaths and EPS, macroscopic/microscopic structures can be preserved by diagenetic mineralization or clay infiltration.

Glamoclija M. Schieber J.
Biotic Contributions to the Formation of Submarine Iron-rich Hydrothermal Crusts near the Panarea Islands, Tyrrhenian Sea, Italy **[#1135]**
Iron-crusts from submarine hot springs from Tyrrhenian Sea contain a wide range of morphological features and geochemical signatures that resemble fossilized microbial life forms adapted to a harsh hydrothermal environment.

Hasiotis S. T. Walton A. A. Roberts J. A. Goldstein R. H.
Distinguishing Between Trace Fossils as Organism-Substratum Interactions and Traces of Chemical Fingerprints from Life **[#1522]**
If life was once part or still part of the martian landscape or that of any other extraterrestrial body, an excellent chance exists for the preservation of this evidence in the form of trace fossils, as borings, biolaminates, and inclusions.

Zahnle K. J. Abe Y. Abe-Ouchi A. Sleep N. H.
Dune: How Much Sunlight is Too Much? **[#2359]**
The planet Dune is a well-known fictional example of a very dry yet habitable planet. We show that the habitable zone for dry planets like Dune is bigger than the habitable zone for wet planets like Earth.

ten Kate I. L. Garry J. R. C. Peeters Z. Foing B. H. Ehrenfreund P.
Amino Acid Destruction in the Martian Surface Environment **[#2397]**
In this paper we present the results of experiments, in which thin films of glycine have been irradiated with UV in a CO_2 atmosphere, and cooled to an average martian surface temperature of 210 K.

Wirick S. Flynn G. J. Jacobsen C. Keller L. P.
Organics in the Murchison Meteorite Using Carbon XANES Spectroscopy **[#1418]**
We analyzed the organics in the Murchison meteorite using carbon XANES. The sample is prepared by crushing and suspending fine particles of the meteorite in water. Three categories of carbonaceous compounds were found: water soluble organic, water insoluble organic, and water insoluble inorganic.

Golden D. C. Ming D. W. Lauer H. V. Jr. Morris R. V. Treiman A. H. McKay G. A.
Formation of "Chemically Pure" Magnetite from Mg-Fe-Carbontes: Implications for Exclusively Inorganic Origin of Magnetite and Sulfides in Martian Meteorite ALH84001 **[#1199]**
Pure (Mg-free) magnetite was synthesized by heating Mg-Fe-carbonate at 350°C in the presence of pyrite in an evacuated sealed glass tube. The Mg-free magnetite in the black rims of ALH84001 may have formed by a similar inorganic abiotic process from Mg-Fe-carbonates.

Steele A. Fries M. Amundsen H. E. F. Mysen B. Fogel M. Schweizer M. Boctor N.
A Comprehensive Imaging and Raman Spectroscopy Study of ALH84001 and a Terrestrial Analogue from Svalbard **[#2096]**
We have undertaken a comprehensive Raman microprobe study of a depth profile of ALH84001 and a terrestrial analogue. We find that ALH84001 globules contain hematite as well as magnetite. Macromolecular carbon is always associated with magnetite both in the carbonates and in the bulk matrix.

Gibson E. K. Jr. Clemett S. J. Thomas-Keprta K. L. McKay D. S. Wentworth S. J. Robert F. Verchovsky A. B. Wright I. P. Pillinger C. T. Rice T. Van Leer B.
Observation and Analysis of In Situ Carbonaceous Matter in Nakhla: Part II **[#2039]**
Analysis of *in situ* carbonaceous matter in the Nakhla SNC meteorite has been carried out using a variety of techniques. Laser raman data shows the carbonaceous matter to be highly complex and static mass spectrometry has shown it to have an isotopic composition of –18 to –20‰ C.