Thursday, March 18, 2004
POSTER SESSION II: ASTROBIOLOGY
7:00 p.m. Fitness Center

Maule J. G. Steele A.
A Prototype Life Detection Chip **[#2091]**
We report generation of a life detection chip, capable of detecting 10 important biological molecules essential to most organisms on Earth. The chip is a few millimeters in diameter and is suitable for spaceflight.

de Pablo M. A. Fairén A. G. Márquez A.
The Geology of Atlantis Basin, Mars, and Its Astrobiological Interest **[#1223]**
Here is presented a general description of the Atlantis Basin geology, where the existence of different geological features seem to indicate the long-term presence of a thermal source and a water reservoir stable enaough to sustain biological processes.

Földi T. Bérczi Sz.
Collecting Bacteria Together with Aerosols in the Martian Atmosphere by the FOELDIX Experimental Instrument Developed with a Nutrient Detector Pattern: Model Measurements of Effectivity **[#1059]**
We carried out labor experiments and measured the effectivity of FOELDIX-1 which can collect dust + bacteria + water molecule containing coagulated aerosol units and which is a planned to be used in a Martian atmospheric bacteria collecting experiment.

Lemelle L. Simionivici A. Salomé M. Golosio B. Gillet Ph.
2D and 3D X-ray Imaging of Microorganisms in Meteorites **[#1499]**
We applied state-of-the-art developments of scanning X-ray microscopy and combined X-ray microtomographies, in the 5 to 20 keV range, at the ID21/ID22 beamlines of the ESRF, in order to identify microbial cells in meteorites (Tatahouine and NWA817).

Storrie-Lombardi M. Brown A. J.
Using Complexity Analysis to Distinguish Field Images of Stromatoloids from Surrounding Rock Matrix in 3.45 Ga Strelley Pool Chert, Western Australia **[#1414]**
A new method developed for the remote identification of stromatolites and subsequent quantification of their likely biogenicity is herein described. Initial results and future directions are presented. Further applications to planetary missions are outlined.

Demergasso C. Blamey J. Escudero L. Chong G. Casamayor E. O. Cabrol N. A. Grin E. A. Hock A. Kiss A. Borics G. Kiss K. Acs E. Kovacs G. Sivila R. Zambrana J. Liberman M. Sunagua Coro M. Tambley C. Gaete V. Morris R. L. Grigsby B. Fitzpatrick R. Hovde G.
Characterization of Two Isolates from Andean Lakes in Bolivia **[#1534]**
We are presently investigating the biological population present in the highest and least explored perennial lakes on earth in the Bolivian and Chilean Andes. In this work we report the morphology and phylogenetic characterization of two isolates.

Cabrol N. A. Grin E. A. Borics G. Kiss A. Fike D. Kovacs G. Hock A. Kiss K. Acs E. Sivila R. Ortega Casamayor E. Chong G. Demergasso C. Zambrana J. Liberman M. Sunagua Coro M. Escudero L. Tambley C. Angel Gaete V. Morris R. L. Grigsby B. Fitzpatrick R. Hovde G.
Short Time Scale Evolution of Microbiolites in Rapidly Receding Altiplanic Lakes: Learning How to Recognize Changing Signatures of Life **[#1044]**
A 100 km^2 field of high-altitude altiplanic lacustrine stromatolites including fossils and active microbiolite communities shows unique environmental analogies to early Earth and Mars and clues to learn how to identify putative martian fossil record remotely.

Kim H. I. Johnson P. V. Beegle L. W. Kanik I.
The Effect of Salts on Electrospray Ionization of Amino Acids in the Negative Mode **[#1784]**
The feasibility of negative mode electrospray ionization as part of an in situ Martian analytical experiment has been investigated in the context of sample salt content using ion mobility spectroscopy.

Bhartia R. McDonald G. D Salas E. Conrad P.
Determination of Aromatic Ring Number Using Multi-Channel Deep UV Native Fluorescence **[#2045]**
We have undertaken a preliminary study to determine whether useful molecular information regarding a suite of aromatic compounds can be obtained from broadband fluorescence spectra.

Blackhurst R. L. Genge M. J. Grady M. M.
Microbial D/H Fractionation in Extraterrestrial Materials: Application to Micrometeorites and Mars **[#1584]**
High D/H terrestrial alteration of micrometeorites is described and suggested to be a result of microbial isotopic fractionation by methanogens. Applications to other planetary materials, including martian meteorites, are also considered.

Strapoc D. Schieber J.
Carbon Isotope Characteristics of Spring-fed Iron-precipitating Microbial Mats **[#1377]**
Carbon isotope study of iron precipitating microbial mats in a freshwater stream. Isotope fractionation relative to source material, and due to recycling of mat organic matter.

Garry J. R. C. ten Kate I. L. Ruiterkamp R. Peeters Z. Lehmann B. Foing B. H. Ehrenfreund P.
Amino Acid Survival Under Ambient Martian Surface UV Lighting **[#1686]**
Thin layers of glycine have been exposed to low ambient pressures and ultra-violet lighting conditions similar to those on Mars. Scaling times for sample alteration will be shown for these Mars-like conditions.

Beegle L. W. Abbey W. A. Tsapin A. T. Dragoi D. Kanik I.
Extraction of Organic Molecules from Terrestrial Material: Quantitative Yields from Heat and Water Extractions **[#2060]**
Detection of organic molecules depends both on the limits of detection of analytical instrumentation, and on the method of extraction. We explore different extraction methods on various field samples to determine extraction efficiencies.

Dragoi D. Kanik I. Bar-Cohen Y. Sherrit S. Tsapin A. Kulleck J.
Laboratory Detection and Analysis of Organic Compounds in Rocks Using HPLC and XRD Methods **[#2157]**
In this work we describe an analytical method for determining the presence of organic compounds in rocks, limestone, and other composite materials.

Golden D. C. Ming D. W. Lauer H. V. Jr. Morris R. V.
Thermal Decomposition of Siderite-Pyrite Assemblages: Implications for Sulfide Mineralogy in Martian Meteorite ALH84001 Carbonate Globules **[#1396]**
Closed system heating experiments of siderite-pyrite mixtures produce magnetite-pyrrhotite associations similar to those reported for black rims of the carbonate globules in ALH84001 Martian meteorite. These results support an inorganic formation process for magnetite and pyrrhotite in ALH84001.

Thomas-Keprta K. L. Clemett S. J. Schwartz C. Morphew M. McIntosh J. R. Bazylinski D. A. Kirschvink J. L. Wentworth S. J. McKay D. S. Vali H. Gibson E. K. Jr. Romanek C. S.
Determination of the Three-Dimensional Morphology of ALH84001 and Biogenic MV-1 Magnetite: Comparison of Results from Electron Tomography and Classical Transmission Electron Microscopy **[#2030]**
Up to ~25% of magnetites embedded in ALH84001 carbonate disks have morphological and chemical similarities to biogenic MV-1 magnetites. We have proposed that these Martian magnetites can be best explained as the diverse products of biogenic and inorganic processes that operated on early Mars.

Horváth A. Pócs T. Gánti T. Bérczi Sz. Szathmáry E.
On the Possibility of a Crypto-Biotic Crust on Mars Based on Northern and Southern Ringed Polar Dune Spots **[#1914]**
We developed our Martian defrosting model in a) comparing dark dune spots of Southern and Northern Polar Regions, b) discussing the possibility of the presence of a crypto-biotic crust on Mars in the form of DDS-MSOs.

Schulze-Makuch D. Dohm J. M. Fairen A. G. Baker V. R. Strom R.
Comparative Planetology of the Terrestrial Inner Planets: Implications for Astrobiology **[#1325]**
Venus and Mars had likely liquid water on their surface for long periods of time during their history from which life could have originated and then adapted to live in ecological niches such as the subsurface for Mars and the atmosphere for Venus.

de Morais A.
A Possible Europa Exobiology **[#1097]**
I suggest a comparison between laboratory IR data of phosphorus salts and NIMS data of the optically darker areas of the icy surface of Jupiter's moon Europa. I also propose a biogeochemical model for a possible microbial life inside Europa.

de Morais A.
A Possible Biogeochemical Model for Titan **[#1104]**
I suggest that quantum tunneling affects the production of organic molecules within Titan's atmosphere; I also propose a model for a possible biogeochemical evolution of Titan based on two pathways.