

## PRELIMINARY PROGRAM

### Workshop on the Issue MARTIAN METEORITES: WHERE DO WE STAND AND WHERE ARE WE GOING?

Lecture Hall, Lunar and Planetary Institute, Houston, Texas  
November 2–4, 1998

***Click on the title of a presentation to view the abstract for that presentation.***

#### MONDAY, NOVEMBER 2, 1998

7:30 – 8:15 a.m. Registration and Continental Breakfast

8:15 a.m. David C. Black  
*Welcome and Opening Remarks*

#### ALLAN HILLS 84001

**Chair: David Black**

8:30 a.m. **Overview:** Treiman A. H.\*  
*Ancient Martian Life in Allan Hills 84001? Status of Some Current Controversies*

9:10 a.m. **Perspective:** Harvey R. P.\*  
*Formation of Carbonates in Allan Hills 84001 by Impact Metasomatism: Cooking with Gas*

9:30 a.m. **Perspective:** McKay D. S.\*  
*Evidence for Ancient Life in Mars Meteorites: Lessons Learned*

9:50 a.m. Discussion

11:45 a.m. Session Summary

12:00 noon LUNCH

#### SIGNS OF LIFE: BIOMARKERS AND BIOGENICITY

**Chair: Michael Drake**

1:30 p.m. **Overview:** Knoll A. H.\*  
*The Signature of Life: Is It Legible?*

2:10 p.m. **Perspective:** Moldowan J. M.\*  
*Recognizing Life and Its Evolution Through Biomarkers*

2:30 p.m. **Perspective:** Ferris F. G.\*  
*Bacterial Mineral Precipitation and the Making of Microfossils*

2:50 p.m. Discussion

4:45 p.m. Session Summary

5:00 p.m. Adjourn to **RECEPTION** in Great Room

**POSTER SESSION**  
**6:00 – 8:00 p.m. Berkner and Hess Rooms**

**Allan Hills 84001 Posters**

Bodnar R. J.

*Fluid Inclusions in Allan Hills 84001 and Other Martian Meteorites: Evidence for Volatiles on Mars*

Borg L. E. Nyquist L. E. Shih C. -Y. Wiesmann H. Reese Y. Connelly J. N.

*Rubidium-Strontium Formation Age of Allan Hills Carbonates*

Brearley A. J.

*Rare K-bearing Mica in Allan Hills 84001: Additional Constraints on Carbonate Formation*

Flynn G. J. Keller L. P. Jacobsen C. Wirick S.

*Organic Carbon in Carbonate and Rim from Allan Hills 84001*

Ksanfomality L. V.

*Martian Biogenic Activity: Looking for Viruses and DNA Traces Instead of Extant Bacteria Traces*

Ksanfomality L. V.

*The Structure of Findings in the Allan Hills 84001 May Hint at Their Inorganic Origin*

Lindstrom M. Satterwhite C. McBride K. Allton J. Warren J. Stansbery E.

*Curation of United States Martian Meteorites Collected in Antarctica*

Schilling E. A. Schneider M. N.

*Reconnaissance Sampling of Airborne Molecular Organic Contamination in the Meteorite Curation Facility of Johnson Space Center*

Scott E. R. D.

*Biogenic or Abiogenic Origin of Carbonate-Magnetite-Sulfide Assemblages in Martian Meteorite Allan Hills 84001*

Scott E. R. D. Krot A. N.

*Origin of Carbonate in Martian Meteorite Allan Hills 84001*

Shearer C. K. Adcock C.

*A Comparison Between Sulfide Assemblages in Martian Meteorites Allan Hills 84001 and Governador Valadares*

Shearer C. K. Brearley A.

*Evidence for a Late-Stage Thermal Overprint in Allan Hills 84001 and Implications for Biomarkers*

Stephan T. Rost D. Heiss C. H. Jessberger E. K. Greshake A.  
*The Lateral Distribution of Polycyclic Aromatic Hydrocarbons in Allan Hills 84001: Implications for Their Origin*

van der Bogert C. H. Schultz P. H.  
*High Strain-Rate Deformation and Friction Melting as a Possible Origin for "Shock" Features in Allan Hills 84001*

Warren P. H.  
*The Common Ion Effect in Deposition of Martian (e.g., Allan Hills 84001) Carbonates*

Wentworth S. J. Thomas-Keprta K. L. McKay D. S.  
*Alteration Products and Secondary Minerals in Martian Meteorite Allan Hills 84001*

### **Signs of Life: Biomarkers and Biogenicity Posters**

Allen C. C. Kivett S. J. McKay D. S.  
*Biomarkers in Carbonate Thermal Springs: Implications for Mars*

Friedmann E. I. Wierzchos J. Ascaso C.  
*Chains of Magnetite Crystals in Allan Hills 84001: Evidence of Biological Origin*

García-Ruiz J. M.  
*Biomimetic but Abiotic Carbonates: New Geochemical Markers for Primitive Environments*

Gibson E. K. Jr. McKay D. S. Thomas-Keprta K. Westall F. Romanek C. A.  
*How Do the Properties of Allan Hills 84001 Compare with Accepted Criteria for Evidence of Ancient Life?*

Morris P. A. Wentworth S. J. Allen C. C. McKay D. S.  
*Possible Microfossils (Warrawoona Group, Towers Formation, Australia, ~3.3–3.5 Ga)*

Thomas-Keprta K. L. Bazylinski D. A. Wentworth S. J. McKay D. S. Golden D. C. Gibson E. K. Jr. Romanek C. S.  
*Mineral Biomarkers in Martian Meteorite Allan Hills 84001?*

Westall F. McKay D. S. Gibson E. K. de Wit M. J. Dann J. Gerneke D. de Ronde C. E. J.  
*Terrestrial Biomarkers for Early Life on Earth as Analogues for Possible Martian Life Forms: Examples of Minerally Replaced Bacteria and Biofilms from the 3.5–3.3 Ga Barberton Greenstone Belt, South Africa*

Zolotov M. Yu. Shock E. L.  
*Abiotic Synthesis of Hydrocarbons on Mars: Theoretical Modeling of Metastable Equilibria*

### **Key Research: Life on Earth Posters**

Thomas-Keprta K. L. McKay D. S. Wentworth S. J. Stevens T. O. Taunton A. E. Allen C. C. Gibson E. K. Jr. Romanek C. S.  
*Mineralization of Bacteria in Terrestrial Basaltic Rocks: Comparison with Possible Biogenic Features in Martian Meteorite Allan Hills 84001*

## **Key Research: Meteorites and Planetary Geology Posters**

Chuburkov Yu. T. Perelygin V. P. Alekseev V. A.

*On Independent Proof of Martian Origin of Shergotty Meteorite*

Gilmour J. D. Whitby J. A. Burgess R. Turner G.

*Xenon and Argon Isotopes in Irradiated, Etched Nakhla: Characterizing the Host of Martian Atmospheric Xenon*

Harvey R. P. Cassidy W. A.

*Recovering More Antarctic Martian Meteorites: Answers to Common Questions*

Herd C. D. K. Papike J. J.

*Estimates of Oxygen Fugacity in the Basaltic Shergottites from Electron Microprobe Oxygen Analysis*

Kirkland L. E. Herr K. C.

*Implications of a Hydrous Weathering Product on Mars for Future Exploration*

Mikouchi T. Miyamoto M. McKay G. A.

*What Were the Major Factors That Controlled Mineralogical Similarities and Differences of Basaltic, Lherzolithic, and Clinopyroxenitic Martian Meteorites Within Each Group?*

Minitti M. E. Rutherford M. J.

*Genesis of the Mars Pathfinder "Sulfur-Free" Rock from SNC Parental Liquids*

Saxton J. M. Lyon I. C. Turner G.

*Oxygen-Isotopic Composition of Nakhla Siderite: Implications for Martian Volatiles*

Warren P. H. Kallemeyn G. W. Kyte F. T.

*Planetary Core Formation: Evidence from Highly Siderophile Elements in Martian Meteorites*

## **The Future Search for Life on Mars Posters**

Allen C. C.

*Gamma-Ray Sterilization of Mars Analog Rocks and Minerals*

Clancy P. Brack A. Hofmann B. Horneck G. Kurat G. Maxwell J. Ori G. G. Pillinger C. Raulin F. Thomas N. Westall F. Fitton B.

*The Search for Early Life on Mars: A European Space Agency Exobiology Science Team Study*

Levin G. V.

*The Future Search for Life on Mars: An Unambiguous Martian Life Detection Experiment*

McDonald G. D. Storrie-Lombardi M. C.

*Principal Component Analysis for Biosignature Detection in Extraterrestrial Samples*

**TUESDAY, NOVEMBER 3, 1998**

8:00 a.m. Continental Breakfast

**KEY RESEARCH: LIFE ON EARTH**

**Chair: Michael Myer**

8:30 a.m. **Overview:** Des Marais D. J.\*  
*Studies of Life on Earth are Important for Mars Exploration*

9:10 a.m. **Perspective:** Baross J.\*  
*Title TBA*

9:30 a.m. **Perspective:** Runnegar B.\*  
*Title TBA*

9:50 a.m. Discussion

11:45 a.m. Session Summary

12:00 noon LUNCH

**KEY RESEARCH: METEORITES AND PLANETARY GEOLOGY**

**Chair: Horton Newsom**

1:30 p.m. **Overview:** McSween H. Y. Jr.\*  
*Key Research: Martian Meteorites and Their Relationships to Planetary Geology and Perhaps Biology*

2:10 p.m. **Perspective:** Carr M. H.\*  
*Water on Mars: How Much Was (Is) There, Where Did It Go, and When?*

2:30 p.m. **Perspective:** Leshin L. A.\*  
*Constraints on Martian Volatile History from Studies of Martian Meteorites*

2:50 p.m. Discussion

4:45 p.m. Session Summary

5:00 p.m. Adjourn

**WEDNESDAY, NOVEMBER 4, 1998**

8:00 a.m. Continental Breakfast

**SEARCH FOR LIFE ON MARS**

**Chair: Daniel McCleese**

8:30 a.m. **Overview:** Squyres S. W.\*  
*Overview: The Search for Life on Mars*

9:10 a.m. **Perspective:** Neelson K. H.\*  
*Perspectives on the Future Search for Life on Mars and Beyond*

9:30 a.m. **Perspective:** Farmer J. D.\*  
*Optimizing the Search for a Fossil Record of Ancient Martian Life*

9:50 a.m. Discussion

11:00 a.m. Session Chair Panel Summary

11:45 a.m. Carl Pilcher  
*Closing Remarks*

12:00 noon Workshop Adjourns