LUNAR AND PLANETARY SCIENCE CONFERENCE XVIII
16-20 March 1987

The EIGHTEENTH LUNAR AND PLANETARY SCIENCE CONFERENCE will begin Sunday March 15 at 6:00 p.m. with registration and an open house at the Lunar and Planetary Institute. The registration fee for the conference is $35.00. A shuttle bus will run between NASA area hotels and the LPI from 5:45 to 10:00 p.m. Registration will continue throughout the conference on the 2nd floor of the Gilruth Center at the Johnson Space Center. All conference activities, technical sessions, exhibits, poster sessions, etc., unless otherwise listed, will be at the Gilruth Center.

From a total of 584 abstracts accepted for publication in Lunar and Planetary Science XVIII, the Program Committee has constructed 29 technical sessions and one special session. The general structure of the program is as follows:

MONDAY AM, MARCH 16
Venus Tectonic Styles, Surface Structures and Geologic History
Carbonaceous Chondrites: Inclusions and Matrix Impact Phenomena: Terrestrial Observations

MONDAY PM, MARCH 16
Venus Interior, Models and Surface Geochemistry
Carbonaceous Chondrites, Chondrules and the Nebula
Space Utilization
Impact Phenomena: Theory and Experimentation

TUESDAY AM, MARCH 17
Symposium: Lunar Geoscience Observer (LGO) and Future Lunar Exploration
Halley and Comet Exploration
Mars Geology and Geomorphology

TUESDAY PM, MARCH 17
Lunar Mare Basalts and Geology
Nucleosynthesis: Isotope Anomalies
The Outer Solar system

WEDNESDAY AM, MARCH 18
Mars and Other Remote Sensing
Planetary Differentiation and Crustal Genesis
Cosmic Dust

WEDNESDAY PM, MARCH 18
Mars Channels and Volatiles
Eucrites and Associates
Extinct-nuclide Chronology; Primitive Components

WEDNESDAY EVENING, MARCH 18, SPECIAL SESSION
Onset Of Accretion

THURSDAY AM, MARCH 19
SNC Meteorites
The Solar Nebula and Planetary Origins
Lunar and Asteroidal Regoliths

THURSDAY PM, MARCH 19
Lunar Highlands
Asteroids and Comets
Ureilites and Iron Meteorites,
Cosmic Rays

FRIDAY AM, MARCH 20
Planetary Geologic Processes
Ordinary Chondrites
Planetary Physics

The preliminary program included in this issue reflects plans for the conference as they exist early in February. Minor changes may yet occur before the Conference itself. (See Appendix to this Bulletin)

CONFERENCE HIGHLIGHTS

POSTERS entered in the Technical Poster Session will be highlighted each day of the Conference in the Gilruth Center. Approximately 20-30 posters will be displayed each day. Presenters of the day's display will have the opportunity to present and discuss their material during an informal cash bar session from 5-6:30 p.m. each evening.

The LPI Image Processing Facility will conduct an open house throughout the conference in McCgetchin Hall at the LPI. Check the registration desk for times. For additional information contact Mr. Kin Leung at 713-486-2165 or Ms. Sharon Allen at 713-486-2181.

The on-line and remote access capabilities of the LPI Geophysical Data Facility will be demonstrated at the LPI.
Exhibit in the Coffee area, Gilruth Center, during the regular conference hours.

The Combined Publishers Exhibit will be on display in the coffee area of the Gilruth Center from Monday through Friday noon. Several publishers have already indicated an intent to participate. Among them are American Institute of Aeronautics and Astronautics, Astromedia, Cambridge University Press, Columbia University Press, Doubleday, National Space Society, D. Reidel Publishing Co. and University of Arizona Press.

Monday - March 16
Special session sponsored by the Planetary Society will be held Monday evening at 8:00 p.m. in the Johnson Space Center Auditorium, Building 2. The topic of the symposium will be: FUTURE EXPLORATION OF MARS. The participants will be:
Dr. V. Barsukov, Vernadsky Institute for Geochemistry and Analytical Chemistry, U.S.S.R.
Dr. V.E. Mcrocz, Institute for Space Research, U.S.S.R.
Dr. B. Murray, Professor of Planetary Science, California Institute of Technology, former Director of the Jet Propulsion Laboratory, Vice President of the Planetary Society
Dr. H. Masursky, U.S. Geological Survey, Branch of Astrogeology.

Moderator will be Dr. Louis Friedman, Executive Director, The Planetary Society.
This session is open to the public.

Tuesday - March 17
Tuesday morning in the Gilruth Center a Symposium on Lunar Geoscience Observer (LGO) and Future Lunar Exploration will convene as a regular technical session. The program for this session can be found in the Program Appendix included in this issue of LPIB.

A special session, Planetary Exploration in the 1990's and Beyond, will be held in the JSC Building 2 Auditorium at 8 p.m. The prospects for an expanded planetary exploration program in the 1990's are being seriously explored as a response to the recent reports of the Solar System Exploration Committee and the National Commission on Space. This session will examine current NASA thinking with respect to such missions as Mars Sample Return and the potential for eventual human exploration of the Moon and Mars.

Wednesday - March 18
The JSC Astronomer's Brownbag Lunch Club will present Paul Weissman, Jet Propulsion Laboratory in the Conference Room, Room 193, Building 31 at Noon. The topic for discussion will be Comet Showers and Biological Extinctions.

A symposium on Terraforming will be the topic of a meeting to be convened by James Oberg, in the Berkner Room, LPI, at 7:00 p.m. The discussion will concern planet-wide artificial climate modification on Earth and other planets. Long-range prospects for redesigning the planets will be included. The symposium should help the participants take the topic of Terraforming from the realm of science fiction to future technology.

A special session on Onset of Accretion which will focus on processes and phenomena related to the earliest stages in the growth of solids in the protoplanetary nebula, will convene at 8:00 p.m. in Room 104 at the Gilruth Center. Jeff Cuzzi, NASA-Ames, is convener and moderator for this session.

Thursday - March 19
Thursday evening is Tex-Mex Fiesta time. Herding a new tradition, this social event will be held on the grounds of the LPI from 6:30 to 10:00 p.m. Activities will include beer and nacho appetizers, a Tex-Mex fiesta dinner, Country-Western Band in the early evening and a performance by our locally well-known "BAGS" from 9:30 until . . . . Paid registrants of the Conference are welcomed at the Fiesta. Tickets for guests and other non-conference registrants will be available at the Registration Desk during the Conference.

ABSTRACTS—
Lunar and Planetary Science XVIII
A staple-bound copy of abstracts will be sent before the conference to the corresponding author of an abstract. A copy is being sent to the foreign corresponding authors also. However, in the case of the foreign authors, if this mailing would result in multiple copies to one institution, only one will be sent. It is suggested that this copy be shared among the author's colleagues.

Abstract volumes will be distributed to conference attendees who have paid the $35.00 registration fee. For those who cannot attend the conference but wish to have the abstracts, a supply will be available after the conference at the cost of postage and handling. Note: New prices are in effect for mail orders on the LPSC abstracts. Please be sure to refer to the order form included in this Bulletin and mail with payment to the LPI ORDER DEPT. at the LPI.

Summaries of the main topics discussed at the Conference will be published in the June issue of Geotimes.

ERRATA: LPSC XVIII INFORMATION
A typo occurred in the conference information brochure which has been mailed to those indicating an interest in LPSC XVIII. The toll free number for Continental Airlines is: 1-800-445-0632. The master file number for the reduced rates is: 2677. We regret any inconvenience which this may have caused conferences attendees in attempting to make airline reservations.

Publication of 18th Proceedings
We are very pleased to announce satisfactory completion of an agreement between LPI and the Cambridge University Press for joint publication of the 18th Proceedings as a
NASA AND TELESCOPE INSTITUTE DEVELOP PLANETARIUM PROJECT

NASA and the Space Telescope Science Institute (Baltimore), recently awarded a grant to the Davis Planetarium, Baltimore, for the development and distribution of First Light, a planetarium program based on the Hubble Space Telescope.

The grant from NASA's Educational Affairs Division and the Space Telescope Science Institute Associates Program, assists with the development of the planetarium program by the staff of the Davis Planetarium, provides the project with technical consultation and makes possible the distribution of the program to all interested planetariums.

The 33-minute program was designed for effectiveness in both school and public planetariums regardless of the extent of their auxiliary projection equipment.

First Light premiered at the Davis Planetarium in November and will continue for 6 months. Program distribution will begin in the late spring of 1987 and will extend beyond the launch of the Hubble Space Telescope, scheduled for November 1988.

Because NASA funding is involved, American planetariums may borrow the program production materials without cost. Planetariums in other countries also can acquire the production kit at a modest cost which will be determined by the Davis Planetarium at a later date. Planetariums wishing to reserve the program production package should write to Dan Zirpoli, Director, Davis Planetarium, 630 Light Street, Baltimore, Maryland 21230 or call 301/685-2370.

NASA Release “Note to Planetarium Directors:”
January 6, 1987

The synthetic aperture radar, the only science instrument on Magellan, is being built by Hughes Aircraft and will acquire radar imagery of Venus' surface. An early test of the radar with the spacecraft is scheduled for this summer, Piotrowski told The AEROSPACE DAILY in a telephone interview. It won't be a flight model, "but it will contain some flight units," he said.

Spacecraft and radar integration should be completed by this fall and will be followed by "a number of tests" through the remainder of 1987 and 1988, Piotrowski said, leading up to the 1989 launch, a one-year delay caused by the Challenger accident.

Apollo 204
January 27, 1967

Challenger
January 28, 1986
The new launch date adds about a year to the spacecraft's travel time to Venus because of the new trajectory (type 4) which requires a trip around the Sun on the way, Piotrowski said. The original trajectory (type 2) is available only every 19 months, and the next window would have been November 1989. That would reduce the travel time to about six months. But that timeframe has been set aside by NASA for either the Ulysses or Galileo mission. Piotrowski said that "since there was another type of trajectory launching at a different time to Venus, when one considers the overall planetary program schedule, it was more advantageous for Magellan to go in April 1989."


**COBE TO BE LAUNCHED ON DELTA ROCKET**

NASA has announced plans to launch the Cosmic Background Explorer (COBE) satellite on a Delta expendable launch vehicle rather than the Space Shuttle. This decision will further NASA's effort to pare the backlog of science payloads that cannot be accommodated on a timely basis by the Shuttle.

The COBE, designed, integrated and tested at NASA's Goddard Space Flight Center, Greenbelt, Md., will be launched into a 560-statute-mile, sun-synchronous orbit from Vandenberg Air Force Base, Calif., in early 1989.

Carrying three scientific instruments, COBE is designed to study the "Big Bang," the primeval explosion that started the expansion of the universe 15 billion years ago.

Originally scheduled for deployment from the Space Shuttle in July 1988, COBE is one of several science payloads awaiting launch as a result of the Challenger accident and the decision to defer activation of the West Coast Shuttle launch site until the early 1990s.

The switch from Shuttle to Delta will mean a reduction in the weight of COBE from 10,500 pounds to 5,000 pounds and a reduction in size from 15 feet to 8 feet in diameter. Scaling down of the spacecraft will require a redesign of the spacecraft's primary structure, a reconfiguration of its solar arrays, thermal shield and the differential microwave radiometer receiver. The Delta launch vehicle carries the usual complement of nine strap-on solid rocket boosters. However, the boosters on this version of the Delta have a higher thrust rating, allowing it to accommodate the weight of the COBE.

NASA Press Release 87-1, January 5, 1987

**AROUND-THE-WORLD IN 15 DAYS: NASA BALLOON FLIGHTS**

Officials at NASA's Goddard Space Flight Center, Greenbelt, Md., have announced plans to launch two large, unmanned balloons on around-the-world flights. The flights are expected to be launched during January and February from a site in Alice Springs, Australia.

According to Harvey Needleman, chief, Balloon Projects Branch, Goddard-Wallops Flight Facility, Wallops Island, Va., "The southern hemisphere is about the only place that we can conduct long duration flights of this type."

"To circumnavigate the globe, the balloons require strong, persistent winds to maintain proper latitude with minimum deviation. We expect that the flights will experience winds between 50 and 75 knots enabling the balloons to circle the Earth in 12 to 18 days," he continued.

The balloons will go around the Earth at about 23 degrees south latitude varying probably no more than 5 degrees from that course. Countries along the 23rd parallel south include New Zealand, Chile, Peru, Argentina, Bolivia, Paraguay, Botswana, Zambia, South Africa, Zimbabwe, Mozambique and Madagascar.

If favorable weather prevails, the first balloon could be launched as early as January 19. The second balloon will be released no less than 3-4 days later to minimize any potential operational interference between the two flights. In case of a weather delay, the launches could be accomplished anytime within the month of February.

The helium-filled, 28 million-cubic-feet volume balloons are taller than the Washington Monument and will carry payloads, weighing 3,000 pounds, to an altitude of 130,000 feet. These are the first balloons manufactured from a newly-developed material, called "Astrofilm," to be used in a global application.

Satellites play important roles in the success of both flights. Two U.S. polar-orbiting satellites, carrying French ARGOS instruments, will track the balloon flights. Four meteorological satellites, orbiting over the equator at different longitudes, will be used to relay to the ground the data acquired. Two of the satellites are U.S.-operated GOES satellites, the others belong to the European Space Agency and Japan.

The flights are being conducted by NASA for the University of California (U. of Calif.), Berkeley and San Diego branches, and carry a joint experiment by Louisiana State University (LSU) and the University of Washington.

Dr. Robert Lin is principal investigator for the U. of Calif experiment studying microflares and solar flares. Microflares have been discovered to occur more frequently than the classic solar flare. The energy produced by these microflares is now believed to be significant and may explain some phenomenon like the heating of the sun's corona. Results of these studies may be very useful to an understanding of the micro-scale structure of the sun and other similar stars.

The principal investigator for the experiment flying on the second balloon is Dr. John Wefel of LSU. His experiment will utilize an emulsion chamber that will be exposed to the primary cosmic rays to study nuclear interactions and cosmic ray composition.
In addition to the scientific experiments, each balloon will carry electronic instrumentation developed to meet the special requirements of long duration flight. The electronic system will be powered by batteries with daily recharging provided by arrays of solar cells.

When each balloon nears the end of its around-the-world flight, technicians in Australia will terminate the flight by radio signal to effect land recovery in a safe location during daylight hours. When transmitted, the signal will fire a charge that releases the payload from the balloon, allowing the payload to descend by parachute. Once recovered, the payloads will be prepared for shipment back to the U.S. where they will be refurbished for future flights.


NEW PUBLICATIONS

Some of the following publications are available from the Superintendent of Documents, Government Printing Office, Washington DC 20402. Although this agency requires prepayment on all orders, they will accept Mastercard or VISA credit cards. Just include the account number and expiration date on your order to them. Some of the publications may be available from the GPO bookstores which are found in major cities around the U.S. Check your city directory for a local listing.

Several of the GPO publications are being offered by other distributors at widely varying prices. It pays to shop and compare.

Please do not send orders for these publications to the LPI (unless listed as an LPI publication). We are not a distribution center and this will only delay your order. If you are interested in obtaining any of the items in the New Publications List do contact the publisher or supplier listed with each item. Inclusion of publications and other products in this Bulletin is not to be considered an endorsement by the LPI.

LPI OFFERS NEW SLIDE SET
Apollo Landing Sites

This set of 40 slides provides photographic coverage of the regional setting for the six Apollo landing sites. It has been compiled by Dr. James Zimbelman, staff scientist at the LPI. Dr. Zimbelman has selected a series of photographs for each of the sites. The photos show the sites at a variety of scales ranging from Earth-based telescopic views spanning hundreds of kilometers of the lunar surface to high-resolution photographs taken from lunar orbit. Descriptive text giving geological details for each area is included in the booklet which accompanies the slide set.

The slide set should be useful for both educators and researchers who wish to show the regional setting of samples and photographs returned by the Apollo missions.

This pre-publication announcement offers the 40-slide set and booklet for $15.00 to U.S. requestors, $20.00 for foreign orders. The set will be available in mid-March 1987. Orders may be placed using the LPI Order Form included in this Bulletin.

AGU ANNOUNCES AVAILABILITY OF PROCEEDINGS OF THE 17TH LPSC


Pricing of the Proceedings varies. Members of AGU may obtain Parts 1 and 2 for $20.00 softbound; and $35.00 hardbound. Members of the Meteoritical Society, Geochemical Society, and the Division for Planetary Sciences of the American Astronomical Society receive a special price of $23.00 softbound; $38.00 hardbound. For institutions and other individuals the list price is $70.00 softbound, $100.00 hardbound.

Orders or other inquiries should be directed to:
American Geophysical Union
2000 Florida Avenue NW
Washington DC 20009
Phone: 1-800-424-2488 toll-free
202-462-6903 (in D.C. area or outside contiguous U.S.)

TERSCH ENTERPRISES OFFERS SLIDE SETS

Two slide sets on Halley's Comet are being offered by this firm. The first is entitled Halley's Comet (1986) Pre-Perihelion. Slide set 210 (18 color slides shipped postpaid for $15.00). This set shows closeup and wide angle photos of the comet as seen from Tiara Observatory in South Park,
Colorado. The second set is entitled *Halley's Comet (1986 Post-Perihelion)*, Slide Set 213 (44 color slides shipped postpaid for $32.50). This set goes from March through May and shows wide angle and closeup views of the comet. Included in this set are 15 views taken from Moorea, French Polynesia. All slides are done by professionals and special attention was given to the proper color balance for each slide.

The company offers a catalog to educators and scientists free of charge. The catalog contains over 4100 selections of astronomical slides. Institutional purchase orders are accepted. Contact:

Tersch Enterprises
P.O. Box 1059
Colorado Springs CO 80901
Phone: 303-597-3603

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**ASTRONOMICAL SOCIETY OF THE PACIFIC - NEW RELEASES**

**Voyager Uranus Slide Set**

A new slide set showing 15 of the best images obtained during the Voyager spacecraft flyby of the planet Uranus has just been released. The set includes color and black-and-white views of the rotation of the Uranus cloud layers, the complex ring system, and the major satellites, as well as several close-ups of the bizarre terrain found on the satellite Miranda. The dramatic images were selected to display the richness and variety of astronomy and geology revealed by the historic first mission to the seventh planet.

The set is accompanied by a 20-page booklet giving a thorough introduction to the Voyager mission and the Uranus system, detailed nontechnical explanations of each slide, and a reading list of articles and books about our new understanding of Uranus. The set is available for $14.95 (including postage and handling).

**Astronomical Software List**

An annotated list of astronomical software for home computers includes 89 different commercially available programs for such popular microcomputers as Apple, Macintosh, IBM, Commodore, Atari, TRS-80, and Hewlett-Packard. The software ranges from simple calculational programs to elaborate home planetarium and space travel simulations.

This list prepared by A.S.P. includes a brief description of each piece of software, the computers for which it is available, the retail price, and the full address of the manufacturer. Also included are brief reviews of 13 introductory books and articles on astronomical computing.

To obtain a copy of the 8-page guide send $2.00 with your name and address to A.S.P.

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**Clyde Tombaugh Videotape**

A 39-minute videotape in which Clyde Tombaugh explains the work that led to his finding the planet Pluto in 1930 has been released by A.S.P. The tape shows a rare glimpse "behind-the-scenes" of a major astronomical discovery.

In 1985, Tombaugh, then age 79, returned to the Lowell Observatory where his discovery was made. The taping was done at Lowell and later at his home in New Mexico. Talking in an unassuming, nontechnical style and surrounded by the telescope and other equipment he used, Tombaugh tells the human and scientific story of the Kansas farmboy who came to Lowell as an amateur astronomer and stayed to make one of the epochal discoveries of 20th century astronomy.

The tape, made by Thomas Hickey of New Mexico State University, assumes little or no background in astronomy and can be enjoyed at home or in a classroom. It is available only in VHS format, comes in a protective box, and is accompanied by a twelve-page booklet written by Tombaugh. It is available for $32.95 (includes postage and handling).

To obtain any of the materials from the A.S.P., send check, money order to:

Astronomical Society of the Pacific
1290 24th Avenue
San Francisco CA 94122
Phone: 415-661-8660

Because A.S.P. is a non-profit organization, they ask that foreign orders be accompanied by an additional 30% to cover postage and that remittance be in U.S. funds. California residents please add correct sales tax.

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**GPO OFFERS TEACHER'S KIT ON NUCLEAR ENERGY**

The Department of Energy has released a new two-part teacher's kit on nuclear energy, *The Harnessed Atom* is a comprehensive middle school teacher's kit that provides students and teachers with unbiased, and up-to-date materials about nuclear energy. The text reviews the basic scientific principles that underlie nuclear energy and focuses on atoms, radiation, the technology of a nuclear powerplant, and the issues concerning nuclear energy. The kit contains written text and filmstrip, review exercises and activities for students in grades 6 through 8. The Teacher's Guide contains suggestions for using the materials, including ideas for a learning center. This kit also includes discussion questions, answers to review exercises and activities, a list of materials, and a list of additional resources. The student guide consists of four units, 18 separate reading lessons including summary and review exercises.
NEW EDITION OF REMOTE SENSING BOOK PUBLISHED
Remote Sensing: Principles and Interpretation

Floyd Sabins' book on remote sensing has been a standard source book on the subject since it was first published in 1978. Much has happened in the field since then, and many new sensors have been brought into use, such as the Landsat Thematic Mapper, the French SPOT system; SEASAT and Shuttle imaging radars, and a variety of experimental multi-channel, narrow-band systems working in the infra-red. Clearly, then, there was a need for a new edition of the book, which Sabins has now provided.

Physically, the new book is closely similar to its predecessor with the same size and format. It is slightly longer, at 449 pages compared to 425 in the original. All of the original chapter headings have been retained, in the same order, and naturally much of the fundamental material remains unchanged—the section on aerial photography, for example, has only been lightly revised. The later chapters have all been extensively revised and brought up to date. For example, in the chapter on radar images, there is an excellent new chapter on SIR-A data, but little on SIR-B. There is one completely new chapter, on land use and land cover analysis, and a new appendix on “Basic geology for remote sensing.” This seems rather a superficial, almost frivolous addition. How much serious geology can one convey in a mere four pages, half of them devoted to figures? This minor reservation apart, the new edition of Sabins' book represents a timely revision of what was already an invaluable source book and teaching aid, and it will undoubtedly be valued by students of remote sensing for many years to come.


NOTE TO OUR READERS:

PLEASE let us know when you move. Each change of address which we get through the postal service costs us $0.30-$0.80 in return postage costs. Because of the high costs of postage, we will make the address change on our list but we will no longer mail another copy of the LPIB issue or whatever was contained in the envelope that we get back. Since the same mailing list is used for conference announcements and other LPI mailings you will miss whatever is mailed from the LPI in the interval that we do not have your address change.

If you want to be sure that you get all of your mailings from the Institute promptly, be sure to send a change of address to: Mailist, Lunar & Planetary Institute, 3303 NASA Road One, Houston, TX 77058-4399. It often takes the postal service 60-90 days to return an item to us with the address correction. We also often receive a notice on the returned envelope that the “forwarding order is expired.” Under that circumstance, we have no alternative than to delete the name from the mailing list. Do yourself and us a service. Remember the LPI Mailing List when you move. Thanks.

ye editor
The LUNAR AND PLANETARY INFORMATION BULLETIN is published by the Lunar and Planetary Institute. There are usually three issues per year. It is distributed free on request to lunar and planetary scientists, educators, students, and their institutions.

The next issue will be in MAY. Copy deadline is APRIL 17, 1987. If you have any announcements which you would like to have printed in the BULLETIN, please send them to the Editor.

We reserve the right to select and edit copy.

Editor: Frances B. Waranus
Lunar and Planetary Institute
3303 NASA Road One
Houston, TX 77058-4399
Phone: 713/486-2135

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**March 10-14**

Sushil K. Atreya  
University of Michigan  
Space Research Building  
Ann Arbor MI 48109-2143

**March 16-20**

*XVIIIth Lunar and Planetary Science Conference*  
Houston, Texas.

**March 27-29**

*L-5 Society's 6th Space Development Conference*  
Pittsburgh, Pennsylvania.  
Pittsburgh L-5 Society  
P.O. Box 8391  
Pittsburgh PA 15218-0391  
Phone: 412-351-4973

**April 10-15**

*European Geophysical Society, XII General Assembly*, Strasbourg, France.  
M.M. Cara  
Institut de Physique du Globe  
5 rue R. Descartes  
F-67084 Strasbourg CEDEX France  
Phone: +33-88-604110

**April 13-16**

*1987 European Union of Geosciences Biennial Meeting*, Strasbourg  
Organizing Committee EUG IV  
Dept. of Earth Sciences ETH-Honggerberg  
CH-8093 Zurich, Switzerland

**May 5-7**

Pecora XI Symposium  
EROS Data Center  
Sioux Falls, SD 57198
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<th>Date</th>
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<tr>
<td>May 6-9</td>
<td>8th Biennial SSI/Princeton Conference on Space Manufacturing</td>
<td>Princeton, New Jersey</td>
<td>Space Studies Institute Ms. Barbara Faughnan, Conference Coordinator P.O. Box 82 Princeton NJ 08540</td>
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<tr>
<td>May 10-15</td>
<td>Impact of VLBI on Astrophysics and Geophysics</td>
<td>Cambridge, Massachusetts</td>
<td>J. Moran Center for Astrophysics Mail Stop 42 60 Garden Street Cambridge MA 02138</td>
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<td>May 18-22</td>
<td>American Geophysical Union Spring Meeting</td>
<td>Baltimore, Maryland</td>
<td>American Geophysical Union Spring Meeting 2000 Florida Avenue NW Washington DC 20009 Phone: 202-462-6903</td>
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<tr>
<td>June 7-9</td>
<td>1986 Houston Space and Telecomm Symposium</td>
<td>Houston, Texas</td>
<td>Space and Telecomm, Inc. P.O. Box 230192 Houston TX 77223 Phone: 713-225-1950</td>
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<tr>
<td>June 8-10</td>
<td>Twelfth Symposium on Antarctic Meteorites</td>
<td>National Institute of Polar Research, Tokyo, Japan</td>
<td>Tatsuro Matsuda, Director-General National Institute of Polar Research 9-10 Kaga 1-Chome, Itabashi-Ku Tokyo 173 Japan Phone: (03)962-4711 - 4716</td>
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<tr>
<td>June 14-18</td>
<td>170th Meeting of the American Astronomical Society</td>
<td>Vancouver, British Columbia</td>
<td>Harvey Richer Dept. of Geophysics and Astronomy University of British Columbia Vancouver BC V6T 1W5 Canada Phone: 604-228-4134</td>
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<tr>
<td>June 16-18</td>
<td>Uranus Conference</td>
<td>Pasadena, California</td>
<td>Jay T. Bergstralh, Organizer Mail Stop 183-301 Jet Propulsion Laboratory 4800 Oak Grove Drive Pasadena CA 91109 Phone: 818-354-2296</td>
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<td>June 20-24</td>
<td>Contribution of Amateur Astronomers to Astronomy</td>
<td>Paris, France</td>
<td>P. Simon Societe Astronomique de France 3, Rue Beethoven 75016 Paris, France Phone: 224.13.74</td>
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<td>July 6-10</td>
<td>International Workshop Cryptoexplosions and Catastrophes in the Geological Record</td>
<td>Parys, South Africa</td>
<td>Organising Committee Cryptoexplosions Workshop Bernard Price Institute of Geophysical Research University of the Witwatersrand 1 Jan Smuts Avenue Johannesburg 2001 South Africa</td>
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<td>July 6-11</td>
<td><strong>Continental and Oceanic Lithosphere: Similarities and Differences</strong></td>
<td>University of London, Royal Holloway and Bedford New College, England</td>
<td>Steve Bergman, Arco Exploration and Technology Copr., 2300 West Plano Pkwy, Plano TX 75075, Phone: 214-422-6264</td>
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<td>July 13-17</td>
<td><strong>Workshop on the Growth of Continental Crust</strong></td>
<td>Oxford University, England</td>
<td>Pam Jones, Lunar and Planetary Institute, 3303 NASA Road One, Houston TX 77058-4399, Phone: 713-486-2150</td>
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<td>July 16-24</td>
<td><strong>SPACEWEEK</strong></td>
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<td>Spaceweek National Headquarters, P.O. Box 58172, Houston TX 77258, Phone: Lisa Ehrler 713-332-4968 or Roger Grape 713-271-5000</td>
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<td>July 18-22</td>
<td><strong>Case for Mars III: Strategies for Exploration</strong></td>
<td>Boulder, Colorado.</td>
<td>Case for Mars III, P.O. Box 4877, Boulder CO 80306, Phone: 303-494-8144</td>
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<td>July 20-24</td>
<td><strong>50th Annual Meeting of the Meteoritical Society</strong></td>
<td>Newcastle upon Tyne, England.</td>
<td>Dr. D.W. Collinson, School of Physics, The University, Newcastle upon Tyne NE1 7RU England, Phone: 091-232-8511</td>
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<td>August 9-22</td>
<td><strong>Interdisciplinary Symposium 10 - Comparative Planetology - Sputnik Commemorative Symposium</strong></td>
<td>Vancouver, British Columbia, Canada.</td>
<td>Dr. James W. Head III, Department of Geological Sciences, Brown University, Box 1846, Providence RI 02912, Phone: 401-863-2526</td>
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| August 17-21 | 7th International Conference on Basement Tectonics                    | Queen's University, Kingston, Ontario, Canada  | 7th International Conference on Basement Tectonics  
c/o Events Management Inc.  
4 Cataraqui Street, Suite 209  
Kingston Ontario Canada K7K 1Z7  
Phone: 613-547-5093 |
| August 25-27 | International Workshop on Time-Variable Phenomena in the Jovian System | Flagstaff, Arizona                              | William A. Baum  
Lowell Observatory  
Mars Hill Road  
Flagstaff AZ 86001  
Phone: 602-774-3358 |
| September 6-11 | 15th Annual Meeting on Atmospheric Studies by Optical Methods (AMASOM) | Granada, Spain                                | Dr. J.J. Lopez-Moreno  
Instituto de Astrofisica de Andalucia  
P.O. Box 2144  
18080 Granada Spain  
Phone: 121300 |
| September 10-27 | Evolution of Metamorphic Belts, Department of Geology            | University College, Dublin, Ireland            | J.S. Daly  
Department of Geology  
University College, Dublin  
Belfield, Dublin 4, Ireland |
| September 14-16 | Origin of Granites, Edinburgh, Scotland                                |                                               | Meetings Secretary  
Royal Society of Edinburgh  
22-24 George Street  
Edinburgh, Scotland EH2 2PQ |
THE MOON


DULGINOV, SH. SH. (PHYSIKALISCHES INSTITUT, UNIV. OF BERN, 3012 BERN, SWITZERLAND): PALEOMAGNETISM OF THE MOON AND THE PROBLEM OF PLANETARY DYNAMO FIELDS

ASTRONOMY VOL. 24, 112-120 (1986)

EUWSTER, O. + WIEDERMANN, S. (PHYSIKALISCHES INSTITUT, UNIV. OF BERN, 3012 BERN, SWITZERLAND): SINGLE-STAGE EXPOSURE HISTORY OF LUNAR HIGHLAND BRECCIAS 60018, 67435, AND 6745


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PIETERS, C.M. (DEPT. OF GEOLOGICAL SCIENCES, BROWN UNIV., PROVIDENCE, RI 02912): COMPOSITION OF THE LUNAR HIGHLAND CRUST FROM NEAR-INFRARED SPECTROSCOPY

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RAVINE, M.A. + GRIEVE, R.A.F. (JET PROPULSION LAB., CALIFORNIA INST. OF TECH., PASADENA, CA 91109): AN ANALYSIS OF MORPHOLOGIC VARIATION IN SIMPLE LUNAR CRATERS


ROITON, J. + KELLY, I.W. (THE LUNACY OF IT ALL: LUNAR PHASES AND HUMAN BEHAVIOR

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WIENER, R. + BAUR, H. + SIGNER, P. (ETH-ZURICH, INSTITUT FUR KRISTALLOGRAPHIE UND PETROGRAPHIE, NO C 61 CH-8092, ZURICH, SWITZERLAND): NOBLE GASES FROM SOLAR ENERGETIC PARTICLES REVEALED BY CLOSED SYSTEM STEPHEN ETCHING OF LUNAR SOIL MINERALS


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ALLISON, M. + TRAVIS, L.D. (NASA GORDON INST. FOR SPACE STUDIES, 2880 BROADWAY, NEW YORK, NY 11205): THE JOVIAN ATMOSPHERES


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KRIGEL, A.M. ( Leningrad Hydro-Meteorological Inst., Malo-Oktentsky Pr. 98, Leningrad, USSR ); SEMIANNUAL OSCILLATIONS IN PLANETARY ATMOSPHERES SOVIET ASTRONOMY VOL. 30, 101-103 (1986)

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GREENBELT, MD 20771) : THE CENTRIFUGAL FLUTE INSTABILITY
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Schaber G.G.  Shoemaker E.M.  Kozak R.C.
Is the Venusian Surface Really Old?

Plaut J.  Arvidson R.
Spatial Distribution of Circular Features on Venus

Masursky H.
Geologic Evolution of Coronae (Complex Circular Features) on Venus

Stofan E.R.  Head J.W.  Parmentier E.M.
Corona Structures on Venus: Models of Origin

Crunpler L.S.  Head J.W.
Bilateral Topographic Symmetry Across Aphrodite Terra, Venus

Head J.W.  Crunpler L.S.
Evidence for Topographic Rises, Fracture Zones, Topographic Symmetry, Central Rift Zones, Transform Faults, and Crustal Spreading: Aphrodite Terra, Venus

Kozak R. C.  Schaber G. G.
A Spreading Center on Venus?

Vorder Bruegge R.W.  Head J.W.  Campbell D.B.
Maxwell Montes, Venus: Geological Unit Map from Arecibo and Venera Data Sets and Evidence of Deformation History

Zuber M. T.  Parmentier E. M.
Venus Tectonics: On the Relationship of Isostatic Topography to the Wavelengths of Surface Deformational Features

Grimm R.E.  Solomon S.C.
Viscous Relaxation of Impact Crater Relief on Venus: Constraints on Crustal Thickness and Thermal Gradient

Clark P.E.  Jurgens R.F.  Kobrick M.
Characterization of Venus Subdued Terrains with Ground-based Radar-derived Data

Wood C. A.  Francis P.
Venus Lives! (probably)

PRELIMINARY PROGRAM
18TH Lunar and Planetary Science Conference
March 16-20, 1987

Monday, March 16, 1987
VENUS TECTONIC STYLES, SURFACE STRUCTURES, AND GEOLOGIC HISTORY
8:30 a.m.  Gilruth 104

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Bindschadler D.  Head J.W.
The Parquet Terrain of Venus: Geology and Surface Properties

Burke K.  Sharpton V.L.  Kennedy J.W.
Circular Structures of Diverse Origins in China: A Possible Resemblance to Northern Venus

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Crunpler L.S.  Head J.W.
Regional Linear Cross-strike Discontinuities in the Western Aphrodite Highlands, Venus

Senske D.A.  Head J.W.
Characterization of the Venus Equatorial Highlands Using Pioneer Venus Imaging Mode Date

Nature and Sequence of Volcanic and Tectonic Activity in Beta Regio, Venus

Sukhanov A.L.
Parquet on Venus: Areas of Regional Deformations

Sukhanov A.L.
"Spiders" on Venus: Ring Complexes
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CARBONACEOUS CHONDRITES: INCLUSIONS AND MATRIX
8:30 a.m. Gilruth Gym

Nagahara H. Nagasawa H. Nakamura N. Matsui T.
HN3-1 (Type B-1 CAI) Formed From Isotopically and Chemically Heterogeneous
Interstellar Minerals and Condensates of the Solar System by Incomplete Melting

Nakamura N. Nagasawa H.
Rare Earth Distribution in the Allende Ca-Al Rich Inclusion HN3-1

MacPherson G. J. Crozaz G. Lundberg L. L.
Rare Earth Element Distribution in a Complex Type B1 Allende Inclusion,
an Ion Microprobe Study

Wark D.A. Boynton W.V.
Origin of Rims-I: The Evidence from Refractory Metals, Major Elements
and Mineralogy

Boynton W.V. Wark D.A.
Origin of CAI Rims-I: The Evidence from the Rare Earth Elements

Paque J.M.
CaAl407 from Allende Type A Inclusion NMMNH 4691

Davis A.M. MacPherson G.J. Hinton R.W. Laughlin J.R.
An Unaltered Group I Fine-Grained Inclusion from the Vigaro
Carbonaceous Chondrite

Beckett J.R. Stolper E.
The Stability of Hibonite in Silicate Melts: Implications for the Origin
of Hibonite-bearing Inclusions from Carbonaceous Chondrites

Blum J. D. Armstrong J. T. Hutcheon I. D. Wasserburg G. J.
Fremdlinge and the Cooling of CAI: Observational and Experimental Constraints
from the Coexistence of NiFe and RuOs

Morioka M.
Diffusion Coefficients of Cations and Oxygen in Synthesized Single Crystal
Melilites and Their Implications to the Thermal History of Allende CAI

Kuehner S. M. Grossman L.
Petrography and Mineral Chemistry of Spinel Grains Separated from the
Murchison Meteorite

McSween H.Y., Jr.
Matrix Compositions in Antarctic and Non-antarctic CM Carbonaceous Chondrites

Zolensky M.E.
Tochilinite in C2 Carbonaceous Chondrites: A Review with Suggestions

POSTER PRESENTATIONS

Nuth J. Nelson R. Thiemens M. Donn B.
Experimental Studies of Pre-Solar Grain Analogs

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A37 - A Coarse-grained, Volatile Element-poor Ca, Al Rich Inclusion with
Huge Fremdlinge

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A Metal Particle in Ca, Al-rich Inclusion from the Efremovka CV Chondrite

Lavrukhina A.K. Ljul A.Yu. Kolesov G.M.
Occurrence of Sc-Rich Phases in the Kainsaz CO Carbonaceous Chondrite

Liu Y.-G. Rajan R.S. Schmitt R.A.
Mokola Ca-Al Inclusions (CAIs) with Negative and Positive Ce
Anomalies: Interim Report 2

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A Chemical Study of KABA (CV3 Chondrite) Inclusions

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Evidence for Hydrothermal Alteration in Meteorites of Higher Petrologic Type

Gooding J. L. Zolensky M. E.
Thermal Stability of Tochilinite

Nazarov M. Brandstatter F. Ulyanov A. A. Kolesov G. M. Kurat G.
Metal-Rich CAI's in Efremovka (C3)
Is There a Significant Periodic Signal in the Terrestrial Cratering Record?

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The K/T Impact Excavated Oceanic Mantle: Evidence from REE Abundances

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Flyash: An Analysis for Spherules in K-T Boundary Clays

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Use of Accelerator Mass Spectrometry for the Determination of Osmium Isotopes

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Jehanno C. Boclet D. Castellarin A. Rocchia R.
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Siben W.
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Shock Metamorphism at the Vredefort Structure, South Africa: Evidence for a Single Shock Event

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Deutsch A.
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Wasson J.T.
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Glass B.P.
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Water Content of Tektites and Impact Glasses and Related Chemical Studies

Alexopoulos J. Grieve R.A.F. Robertson P.B.
Microscopic Lamellar Deformation Features in Quartz from Different Geologic Environments

Glass B.P. Burns C.A.
A New Term is Needed to Distinguish Impact Ejecta in the Form of Glassy Spherules Containing Primary Crystallites from Microtektites

Bhor B.F. Foord E.E.
Magnesioferrite from a Nonmarine K-T Boundary Clay in Wyoming

O'Keefe J.D. Ahrens T.J.
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Glazovskaya L.I. Parfenova O.V.
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Cretaceous-Tertiary Event: Noble Gases in Turkmenia K/T Boundary Sediments

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Garvin J.B. Blodgett H.W.  
Suspected Impact Crater near Al Madafi, Saudi Arabia

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Nitrogen and Trace Elements in Huong Nong Tektites and Irgizites: Clues to Tektite and Impactite Formation

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Evidence for 36 m.y. and 90 m.y. Periodicities in the Terrestrial Cratering Record

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Tectonic Features Due to Gravitational Relaxation of Topography

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Mantle Plumes on Venus

Arvidson R. E. Elachi C. Kwok R. Curlander J. Saunders R. S.  
Simulation of Venera and Magellan Radar Images From SEASAT Data

Greeley R. Marshall J. R. Pollack J. B.  
Venus: Compositional and Mechanical Effects from Windblown Grains

Garvin J.B. Bryan W.B.  
Venus Surface Compositions: Implications from Terrestrial Geochemical Analogies

Stability of Scapolites on Venus Surface

Majewski E.  
Nonequilibrium Thermodynamics of Processes at the Inner - Outer Core Boundary in the Venus' Interior

Slade M.A. Zohar S. Jurgens R.F.  
Venus: Improved Spin Vector from Goldstone Radar Observations

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Limits on Modes of Lithospheric Heat Transport on Venus From Impact Crater Density

Liu H.S.  
Convective Stress Field in Venus

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Parmentier E.M. Stefan E.R. Head J.W.  
A Finite Amplitude Necking Model for the Formation and Evolution of Rift Zones: Application to the Beta Regio Rift

Zolotov M.Yu.  
Redox Conditions on Venus Surface

Shkuratov Yu.G. Kreslavsky M.A. Nikolayeva O.V.  
Diagram Albedo-Color of Venus Surface According to Venera 13 Data
Monday, March 16, 1987

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1:30 p.m. · Gilruth Gym

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Fe-Cr-rich Rims around Magnesian Chondrules in the Kainsaz (CO3) Chondrite

Palme H. · Fegley B.
Formation of FeO-bearing Olivines in Carbonaceous Chondrites by High Temperature Oxidation in the Solar Nebula

Hua X. · Adam J. · Palme H. · El Goresy A.
Fayalite-rich Rims Around Forsteritic Olivines in CAIs and Chondrules in Carbonaceous Chondrites: Types, Compositional Profiles and Constraints of Their Formation

Clayton R.W. · Mayeda T.K. · Rubin A.E. · Wasson J.T.
Oxygen Isotopes in Allende Chondrules and Coarse-grained Rims

Rubin A.E. · Wasson J.T.
Chondrules and Matrix in the Ornans CO3 Chondrites: Possible Precursor Components

Kurat G. · Palme H. · Brandstatter F. · Huth H.
Allende-AF: Undisturbed Record of Condensation, Accretion, and Metasomatism

Koeberl Ch. · Ntaflos Th. · Kurat G. · Chai C. F.
Petrology and Geochemistry of the Ningqiang (CV3) Chondrite

POSTER PRESENTATION

Matsui T. · Tajika E.
Fragmentation Process of Allende Meteorite During Its Atmospheric Passage

Rubin A. E. · Wang D. · Kallemeyn G. W.
The Ningqiang Carbonaceous Chondrite and the Origin of Aggregational and Granoblastic Chondrules

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Heymann D. · Read N.W.
Raman Study of Carbon in Allende

Van der Stap C.C.A.H. · Heymann D. · Vis R.D. · Verheul H.
Carbon in Dark Clasts of Allende

Shkuratov Y.G. · Stankevich N.P. · Antipova-Karataeva I.I.
On Spectral Albedo of Phobos and Deimos in UV-Range

Baryshnikova G.V. · Stakheeva S.A. · Lavrentjeva Z.A. · Ignatenko K.I.
Lavrukhina A.K.
Chondrules in the Kainsaz CO Chondrite: Mineral Composition and Assemblages; Comparison with the Allende CV and Ordinary Chondrite Chondrules

Ljul A.Yu. · Kolesov G.M. · Lavrukhina A.K.
Elemental Composition of Chondrules from the Murray CM Chondrite

SESSION B · SPACE UTILIZATION

Arnold J.R.
Ice at the Lunar Poles Revisited

Lucey P.G. · Roush T.R. · Owensby P.D. · Blaney D.
A Search for Water on the Moon at the Reiner Gamma Formation, A Possible Comet Impact Site

Gibson E. K. Jr. · Bustin R. · Skaugset A. · Carr R. H. · Wentworth S. J. · McKay D. S.
Hydrogen Distributions in Lunar Materials

Suitor J. W. · Schroeder J. E. · Steinbacher R. H.
The Development of a Zirconia Cell for Generating Oxygen from the Martian Atmosphere

Stephenson L. D. · Smith A. · Rigsbee J. M. · Hock V. F.
Development of Space-Based Containerless Coating Processes

Meek T.T. · Vaniman D.T. · Blake R.D. · Godbole M.J.
Sintering of Lunar Soil Stimulants Using 2.45 GHz Microwave Radiation

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Agosto W. N.
Lunar Volatiles: More than Meets the Eye?

Winisdoerffer F. · Brown J. · Ximenes S.
Project LEAP: Lunar Ecosystem and Architectural Prototype

Fielder J. · Leggett W.
Lunar Agricultural System Design Considerations

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Meier T. A.
Geometrically-Arrayed, Instrument-Carrying Elevated Cable Systems for Investigating Inaccessible Regions of the Lunar Surface
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IMPACT PHENOMENA: THEORY AND EXPERIMENTATION
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O’Keefe J. D. Ahrens T. J.
Impact Crater Maximum Depth of Penetration and Excavation

Holsapple K. A. Choe K. Y.
Impact Spall as a Mechanism for Surface Material Ejection

Mizutani H. Kawakami S. Takagi Y. Naide T. Hayakawa M.
Scaling Law of Impact Fragmentation and Coagulation

Melosh H. J. Hillgren V.
A Finite Element Study of Multiring Basin Tectonics

Schultz P. H.
Impact Velocity and Changes in Crater Shape, Morphology, and Statistics

Crawford D. Schultz P. H.
Electromagnetic Emissions from Low Angle Hypervelocity Impacts

Schultz P. H. Crawford D.
Impact Vaporization by Low-angle Impacts

Morgan T. H. Potter A. E. Zook H. A.
Impact Driven Supply of Sodium and Potassium to the Atmosphere of Mercury

Gerasimov M. V. Satovsky B. I. Mukhin L. M.
Mass-Spectrometrical Analyses of Gases Originated During Impulsive Evaporation of Meteorites and Terrestrial Rocks

Polanskey C. A. Ahrens T. J.
Shocked Calcite from an Explosion Crater - Electron Paramagnetic Resonance

Tyburczy J. A. Ahrens T. J.
Effect of Shock on the Kinetics of Thermally-induced Dehydration of Serpentine

Boslough M. B. Cygan R. T.
Shock-enhanced Dissolution of Silicate Minerals: An Important Planetary Surface Process

Heymann D. Celluchi T. A. Boyer H.
Raman Studies of Shocked Dunite, Enstatite, and Augite

POSTER PRESENTATION

Heymann D. Boyer H.
Raman Study of Experimentally Shocked Plagioclase

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Heymann D.
Raman Spectra of Carbon in the Canyon Diablo Iron Meteorite

Ahrens T. J. O’Keefe J. D.
Loss of the Earth’s Atmosphere from Giant Impacts

Lang B. Franaszczuk K.
Fracture Cascade for a Meteorite at Atmospheric Entry: Canyon Diablo, Odessa and Wolf Creek Irons

Schultz P. H. Gault D. E.
Transition Diameters for Crater Shape in Laboratory Experiments and on Planets

Schmidt R. M.
Preliminary Scaling Results for Crater Rim-Crest Diameter

Gerasimov M. V.
On the Release of Oxygen from the Intensively Shocked Meteorites and Terrestrial Rocks
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A Field Geologist's Return to the Moon

Sturms F. M. Jr.
Lunar Geoscience Observer Mission Overview

Drake M. J.
Lunar Geoscience Orbiter and the Origin of the Moon

Taylor G. J.
The Lunar Geoscience Observer's Role in Unraveling the Magmatic Evolution of the Moon

Hood L. L.
Contributions of an LGO Mission to the Solution of Lunar Geophysical Issues

Haskin L. A.
Toward Geochemical Prospecting for Lunar Ores

Spudis P. D. Hawke B. R.
The Use of Basin Ejecta to Determine Lunar Crustal Structure and Composition: Current Models and LGO Contributions

Pieters C. M.
Stratigraphy and Evolution of the Lunar Highland Crust: A Sampling of Vertical and Regional Heterogeneities

Fairchild K. O. Roberts M. L. Templin K. C.
Design and Engineering of Lunar Science Experiments: The Importance of Getting an Early Start

Reedy R. C. Drake D. M. Feldman W. C. Haines E. L. Metzger A. E.
Coupled Neutron/Gamma-Ray Spectroscopy from Lunar Orbit

Garvin J. B. Bufton J. L. Abshire J. B. Zuber M. T.
Laser Altimetry in Planetary Geology

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Wallace R. A.
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Weissman P.
Post-perihelion Brightening of Halley's Comet: Spring Time for Halley

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The Evolution of Topography on a Comet

Moroz V. Combes M. Bibring J. P. Coron N. Crovisier J. Encrenaz T.
Crifo J. F. Sanko N. Grigoriev A. Bockele-Morvan D. Gispert R.
Emerich C. Lamerre J. M. Rocad F. Krasnopolsky V. Owen T.
Detection of Parent Molecules in the 2.5-5 um Spectrum of Comet Halley with the IKS-Vega Experiment

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The D/H and 18O/16O Isotopic Ratios in Comet Halley

Jessberger E. K. Kissel J.
Bits and Pieces from Halley's Comet

Grin E.
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Prilutsky O. F. Zubkov B. V. Sagdeev R. Z.
Different Types of Dust Particles in Halley's Comet

Langevin Y. Kissel J. Bertaux J. L. Chassefiere E.
Impact Ionization Mass Spectrometry of Cometary Grains on Board Giotto, Vega 1 and Vega 2 Spacecrafts: Preliminary Statistical Analysis of Spectra in Compressed Modes

Clark B. C. Mason L. W. Kissel J.
Coma Particle Type Occurrences: Evidence for Chemical Heterogeneity in Comet Halley

Brownlee D. E. Wheelock M. M. Temple S. Bradley J. P. Kissel J.
A Quantitative Comparison of Comet Halley and Carbonaceous Chondrites at the Submicron Level

Albee A. L. Bradley J. G.
SEMPA—A Scanning Electron Microscope and Particle Analyzer for the CRAF Mission

Langevin Y. McDonnell J. A. M. Pillinger C. T. Schwegm G.
Stofler D. Wanek N. Wasserburg G. J. West R. M. Wood J. A.
The Comet Nucleus Sample Return Mission
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McKay C. P.
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Stern S.A.
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Ages of Fracturing and Resurfacing Along the Martian Dichotomy Boundary Between Nepenthes and Nilosyrtis Mensae

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Topography: Buried Beneath the Plains of Utopia and Elysium, Mars

Watters T. R.
The Volcanic Plains Ridges of the Chryse and Amazonis Depressions

Borrello M. C.
Surficial and Structural Analysis of Large Patterned Fractures in Southern Acidalia Planitia, Mars

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Volcanic and Tectonic Evolution of Martian Impact Basins

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De Hon R.A.
Striped Plains of Acidalia, Mars

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Resurfacing in the Transition Zone in Eastern Mars: Evidence for Variation in Efficiency of Plains Formation
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Circular Mare Ridges

Raitala J. T.
Highland Wrinkle Ridges on Mars

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Color/Albedo Provinces and Surficial Units of the Central Equatorial Region of Mars: Definitions and Methods

Strickland E. L.
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Zimbelman J. R. Leshin L. A. Edgett K. S. Skinner S.
High-resolution Thermal Inertias at Equatorial Latitudes on Mars

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A Possible Volcanic Component in the Fine-Grained Materials Near Alba Patera, Mars

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Uplands/Knobby-Terrain Relation on Mars

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Mare Basalt Evolution: The Influence of KREEP-like Components

Neal C. R. Taylor L. A. Lindstrom M. M.
Very High Potassium (VHK) Basalt Petrogenesis: The Role of Granite and KREEP Components

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Petrology of Mare Basalt and Highland Clasts from Breccia 15498

Ryder G. Steele A.
Apollo 15 Olivine-Normative Mare Basalts: New Chemical Analyses, Chemical Dispersion, and Chemical Relationships

Hughes S. S. Delano J. W. Schmitt R. A.
Integrated Petrogenetic Models of Apollo 15 Yellow/Brown Glass, Green Glass and Olivine Mare Basalt, Consistent with the Magma Ocean - Cumulate Hypotheses

O'Keefe J. A. Ganapathy R.
Nickel-Iron Spherules in a Lunar Glass Sphere

Golombek M. P. Franklin B.
Physiographic Constraints on the Origin of Lunar Wrinkle Ridges

Coombs C. R. Hawke B. R.
Geologic and Remote Sensing Studies of Rima Mozard: Early Results

Craddock R. A. Greeley R.
Thickness and Volume of Mare Tsolokovsky, Lunar Farside

Farrand W. H.
Vertical Vs. Lateral Mixing of Highland Materials and Minimum Basalt Thickness in Northern Mare Facunditatis

Sullivan R.
Quantitative Evaluation of Ballistic Sedimentation

Jaumann R. Neukum G.
New Spectrophotometric Studies of the Lunar Surface: Distribution and Composition of Lithologic Units

Campbell B. A. Zisk S. H. Thompson T. W. Mouginis-Mark P. J.
Surface Scattering Properties from Lunar Radar Polarization Data

Helfenstein P. Veverka J.
Photometric Properties of Lunar Terrains Derived from Hapke's Equation
POSTER PRESENTATION

Shaw D., Middleton T.
Lunar Boron: A Preliminary Study

Zisk S. H., Mouginis-Mark P. J., Pettengill G. M., Thompson T. W.
New Very-High-Resolution Lunar Radar Measurements at 3.0 cm Wavelength: Initial Maps of the Hadley/Apollo 15 Area

Engel S., Neukum G., Jaumann R., Nagel E.
Lunar Light Plains: Ages and Composition

Hawke B. R., Coombs C. R.
Remote Sensing of the Rima Hyginus Region of the Moon

Coombs C. R., Hawke B. R., Geddis L. R.
Explosive Volcanism on the Moon

Thompson T. W.
Ultra-High-Resolution Radar Mapping of the Moon at 70 cm Wavelength

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Neal C. R., Taylor L. A.
Lunar Granite: An Enigma with a New Perspective

Delano J. W., Hughes S. S., Verplanck D. L., Schmitt R. A.
Multi-element Abundances of Individual Mare Volcanic Glasses by Collaborative Electron Microprobe and Neutron Activation Analyses: Interim Report 2

Simon S. B., Papike J. J.
Petrology of a Low-titanium Mare Basalt from Apollo 16 Regolith Breccia 60255

Schreiber W. D., McManus K. K., Settle S. A.
Oxidation-Reduction Chemistry in Diopside-Albite Melts

Okano O., Watson E. B., Tatsumoto M.
Partition Coefficients for REE and Hf Between Zircon and Liquid: Inferences for Lunar Granite Petrogenesis

Sharpton V. L.
Onset of Tectonic Rille Development in Southern Mare Serenitatis: Evidence for Incomplete Pre-mare Isostatic Compensation?

Crown D. A., Greeley R.
Structural Control of Lunar Sinuous Rilles in the Orientale Basin

Blount G., Greeley R.
Lunar Rotation and the Distribution of Dark-Halo Pyroclastic Deposits: A Cause for Asymmetric Ejecta Patterns

Williams J. G., Newhall X. X., Dickey J. O.
Lunar Science from Lunar Laser Ranging

Raitala J. T.
Thrust and Strike-Slip Faulting in Mare Ridge Tectonics

Schultz R. A.
Why Do Lunar Normal Faults Propagate Upward?

Rodionova Zh. F., Shevchenko V. V., Karlov A. A., Smolyakova T. F.
The Density Distribution of Lunar Craters of Different Degrees of Rim Sharpness and Completeness
Tuesday, March 17, 1987
1:30 p.m.  Gilruth Gym

Clayton D.D.  
Cosmic Chemical Memory of 48Ca/50Ti Correlation

Liffman K.  Clayton D.  
Stochastic Models of Refractory Interstellar Dust

Niemeyer S.  
Ti Isotopes in Allende and Chainpur Chondrules and in the Kaidun Breccia

Ireland T.R.  
Correlated Morphological, Chemical, and Isotopic Systematics from Murchison (CM) Hilonites

Fahey A.J.  Goswami J.N.  McKeegan K.D.  Zinner E.K.  
More Isotopic Measurements in CM Hilonites: Carbon, Oxygen and Silicon

Thiemens M.H.  Meagher O.  
Demonstration of a Mass Independent Isotopic Fractionation in CO Reaction

Prombo C.A.  Hashimoto A.  Birck J.L.  Lugmair G.W.  Grossman L.  
Search for Correlated Isotopic Effects in Allende CAIs: II. Comparison with Mineralogical Data

Brigham C.A.  Papanastassiou D.A.  Hutcheon I.D.  Armstrong J.T.  Wasserburg G. J.  
FUN Anomalies in Purple, Spinel-Rich Refractory Inclusions

Papanastassiou D.A.  Brigham C.A.  
FUN Isotopic Anomalies: Reincarnation in Purple Refractory Inclusions

Birck J.L.  Prombo C.A.  Lugmair G.W.  
Ni and Cr Isotopes in Allende Inclusions

Fahey A.J.  Zinner E.K.  
Determination of the Fe Isotopic Ratios in Terrestrial Minerals and a Lance Hilonite-Hercynite Inclusion

Molini-Velsko C.A.  Mayeda T.K.  Clayton R.W.  
Silicon Isotope Systematics During Distillation

Papanastassiou O.A.  Wasserburg G.J.  
Rayleigh Distillation Constraints on Mg Isotopic Compositions

Lee S.W.  Crow D.A.  Lancaster W.  Greeley R.  
Observations of Industrial Sulfur Flows: Implications for Io

Locations, Temperatures and Areas of Io's Hot Spots from Multi-Color Infrared Photometry of Occultations

Roush T.L.  Singer R.B.  McCord T.B.  
The Spectral Reflectance, 0.6 to 4.3μm, of Particulate Mineral-Water Ice Mixtures

Kargel J.S.  
Density and Viscosity Measurements of NH3-H2O Liquids

Thomas P.J.  Schubert G.  
Non-Newtonian Ice Rheology and the Retention of Craters on Ganymede

Golombek M.P.  Banerdt W.B.  
Early Thermal Profiles of Ganymede and Callisto

Golombek M.  Banerdt B.  
Failure Strength of Icy Lithospheres

Murchie S.L.  Head J.W.  
Evidence for the Existence of Major shear Zones on Ganymede

Schenk P.M.  McKinnon W.B.  
Dark Ray and Dark Floor Craters on Ganymede

James D.M.  Melosh H.J.  
Surface Tectonics from Sinker Induced Mantle Convection: Application to Miranda

Croft S.K.  
Miranda Geology and Tectonics: A Non-catastrophic Interpretation

Thomas P.J.  Reynolds R.T.  Squyres S.W.  Cassen P.M.  
The Viscosity of Miranda

Strom R.G.  
The Solar System Cratering Record: Voyager 2 Results at Uranus and Implications for the Origin of Impacting Objects

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Appendix - Program - Tuesday
Wednesday, March 18, 1987
MARS AND OTHER REMOTE SENSING
8:30 a.m. Gilruth 104

Francis P.
Variability in Spectral Signatures of Terrestrial Ignimbrites and Implications for Volcanology on Mars

Christensen P.R., Luth S.J.
Thermal-infrared Spectral Observations of Martian Candidate Materials in Emission

Salisbury J.W., Walter L.S., Verno N.

Walter L.S., Salisbury J.W., Verno N.
Spectral Variations in the Thermal Infrared Reststrahlen Band of Silicates

Blaney D.L., McCord T.B.
Telescopic Observations of Mars: A Search for Carbonates and Other Salts in the 4 um Region

Blaney D.L., Walsh P.A., McCord T.B.
Laboratory Spectral Measurements of Palagonite-Salt Mixtures in the Visible and Near Infrared -- Implications for Mars

Agresti D.G., Newcomb J.A., Morris R.V.
Mossbauer Study of Ultramicrocrystalline Hematite

Morris R.V., Lauer H.V. Jr., Murani A.V., Agresti D.G.
Ultramicrocrystalline Hematite: Properties and Occurrence on the Martian Surface

Burns R.G.
Gossans on Mars: Spectral Features Attributed to Jarosite

Bruckenthal E.A., Singer R.B.
Spectral Effects of Dehydration on Phyllosilicates

Arvidson R.E., Dale-Barnister M.A.
Mixing Patterns in Viking Orbiter Color Image Data for the Equatorial Region of Mars

Blount W., Greeley R., Christensen P.R., Arvidson R.
Aeolian Mixing and the Identification of Active Sand Surfaces on the Earth and Mars

POSTER PRESENTATIONS

Eluszkievicz J., Leiwa-Kopystynski J.
A Model of the Porous Structure of Icy Satellites

Global Geologic Mapping of Io

Zimbelman J.R., Burke K.
Triple-junction Rifting and Detachment Surfaces near the Pele Volcano on Io

Croft S.K.
Tectonism and Volcanism on Ganymede's Dark Terrain

Wu S.S.C., Schafer F.J., Jordan R., Howington A.E.
Topographic Map of Miranda

Thomas P.
Limb Topography of Uranian Satellites

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Kargel J.S.
Mass Distributions in Minimum Mass Models of the Jovian, Saturnian, Uranian, and Solar Nebulae

Strobel M.E., Masursky H.
New Features Named on the Moon and Uranian Satellites

Croft S.K., Kargel J., Lunine J.I.
Equations of State of Ammonia-water Liquid: Planetological Implications

Dolginov Sh.Sh.
On the Problem of Uranus Magnetic Field

Horner V.M., Greeley R.
Ganymede and Callisto: Impact Crater Ejecta Types

Murchie S.L., Head J.W.
Origin and Evolution of Furrows in the Dark Terrain of Ganymede

Murchie S.L., Head J.W.
Shear Zones on Ganymede: Global Nature and Effect on Grooved Terrain Formation

Murchie S.L., Head J.W.
A Preliminary Process-oriented Geologic History for Ganymede

Plescia J.B.
Cratering History of Miranda
Thompson T. W.  
Goldstone Radar Observations of Mars: The 1986 Opposition

Armand N. A.  
Radar Experiment for the Phobos Mission

POSTER PRESENTATIONS

Smith M. O.  
Adams J. B.  
Guinness E. A.  
Arvidson R. E.  
Viking Orbiter Multispectral Images Linked to Lander Images and Laboratory Analogs

Presley M. A.  
Arvidson R. E.  
Christensen P. R.  
Characterization of Surficial Units in the Central Equatorial Region

Roush T. L.  
Singer R. B.  
McCord T. B.  
Reflectance Spectra of Selected Phyllosilicates from .6 to 4.6 μm

Roush T. L.  
Singer R. B.  
McCord T. B.  
Reflectance Spectra of Selected Mafic Silicates from .6 to 4.6 μm

Nedell S. S.  
McKay C. P.  
Possible Formation of Carbonates in Ancient Lakes in the Valles Marineris, Mars: A Search of the Mariner 6/7 IRS Dataset

Yon S. A.  
Pieters C. M.  
Specular Reflections and the Nature of Particle Surface Interactions

Wu S. S. C.  
Howington A. E.  
Digital Presentation of Mars Topography

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Pike R. J.  
Toward Geometric Signatures for Planetary Terrain: An Assessment of Earth at 1:24,000 Scale

Pike R. J.  
Information Content of Planetary Terrain: Varied Effectiveness of Parameters for the Earth

Calvin W. M.  
Jakosky B. M.  
Christensen P. R.  
A Model of Diffuse Radar Scattering from Martian Surface Rocks

Wednesday, March 18, 1987  
PLANETARY DIFFERENTIATION AND CRUSTAL GENESIS  
8:30 a.m.  
Girruth Gym

Kato T.  
Irisune I.  
Ringwood A. E.  
Experimental Constraints on the Early Differentiation of the Earth's Mantle

Knittle E.  
Jeanloz R.  
The Melting of Metallic FeO to Over 100 GPa: Implications for Core Temperature and Composition

Anderson W. W.  
Ahrens T. J.  
Svendsen B.  
Melting in the Fe-FeS System and its Relation to the Compositions of the Cores of Earth and Mars

Klock W.  
Palme H.  
Partitioning of Siderophile and Chalcophile Elements between Metal, Sulfide, Olivine, and Glass in a Naturally Reduced Basalt from Disko Island, Greenland

McDonough W. F.  
Sun S. S.  
Ringwood A. E.  
Jagoutz E.  
Rb and Cs in the Earth and Moon

Jones J. H.  
Delano J. W.  
A Three Component Model for the Bulk Composition of the Moon

Bertka C. M.  
Holloway J. R.  
Partial Melting of An Anhydrous Martian Mantle

Elthon D.  
Composition and Petrogenesis of Parental Komatiite Liquids

Harrison D. A.  
Phinney W. C.  
Maczuga D. E.  
Archean Anorthosites: Constraints on the Accumulation Process

Haskin L. A.  
Dymek R. F.  
Korotev R. L.  
Nearly Pure Plagioclase Anorthosites: Lunar and St. Urbain

Salpas P. A.  
Haskin L. A.  
McCallum I. S.  
Trace Element Distributions Among Subunits of A Stillwater Anorthosite Boulder

Nutman A. P.  
Fryer B. J.  
Bridgewater D.  
The Origin and Significance of the Earliest Archean Naujiang (Supracrustal) Assemblage, Northern Labrador

Kusky T. M.  
Kidd W. S. F.  
De Paor D. G.  
Simpson C.  
Isachsen C.  
Bradley D. C.  
Bradley L.  
On the Possible Ophiolitic Origin of Some Slave Province Greenstone Belts
POSTER PRESENTATIONS

Elthon D.
Cryptic Variation in Cumulate Dunites from Blow Me Down Mountain, Newfoundland

Elthon D.
Partitioning of Ni Between Olivine and High MgO Basaltic Liquids

Ashwal L.D. Burke K.
Types and Characteristics of Terrestrial Anorthosites

Pyle B. R. Neal C. R. Taylor L. A.
Ancient Oceanic Crust Subducted Beneath the Kaapvaal Craton: The Genesis of Eclogites in Kimberlites

Phinney W. C. Morrison D. A. Maczuga D. E.
Anorthosites: An Analog Study

Gomez-Moran C. Elthon D.
Geochemistry of Crustal Xenoliths from Xalapasco de la Joya (State of San Luis Potosi, Mexico)

Anderson W. W. Campbell A. J. Ahrens T. J.
Melting of Iron Sulfide and Iron Oxide at High Pressure

Warren P.H. Jerde E.A. Kellemeyn G.W.
Estimated Average Siderophile Element Contents of the Pristine Lunar Crust

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Yakovlev O.I. Markova O.M. Manson B.M.
The Role of Vaporization and Dissipation Processes in the Lunar History

Korotaev M.J. Nikishin A.M.
Formation Models of Sialic Matter and Problem of Crust Composition for the Terrestrial Planets

Lucey P.G. Hawke B.R.
Speculations on the Possible Compositional Layering of the Upper Ten Kilometers of the Lunar Crust

McCallum I.S.
The Parental Magmas of the Stillwater Complex

Moralev V. M. Glukhovsky M. Z.
Giant Circular Structures in the Precambrian Shields as Evidences of Early Crust-forming Processes on the Terrestrial Planets

Selivanovskaya T.V.
Petrochemical Trends of Crystallized Impact Melts

Gardner J. E. Haskin L. A. Brannon J. C.
Possible Assimilation by a Mafic Magma: The Endion Sill, Duluth, Minnesota

Wednesday, March 18, 1987
COSMIC DUST
8:30 a.m. Gilruth 206

Robin E. Jehanno C. Maurette M. Hammer C.
A Micrometeorite "Spectrum" for the Mass Distribution of Well Preserved Greenland Cosmic Dust Grains

Bonte Ph. Jehanno C. Maurette M. Robin E.
A High Abundance and Great Diversity of "Umelted" Cosmic Dust Grains on the West Greenland Ice Cap

Webb S.J. Zolensky M.E.
Characterization of Interplanetary Dust Particles from Antarctic Ice Samples

Bibring J-P. Surkhov Y. A. Borg J. Langevin Y. Salvetat P. Vassent B.
The Comet Experiment: First Results

Rietmeijer F.J.M.
Chondritic Interplanetary Dust and Primitive Chondrite Matrices: The Search for Chemically Pristine Solids in the Solar System

Bradley J. P. Brownlee D. E.
Fine-grained Matrices of Chondritic Interplanetary Dust Particles (IDP's)

Blake D. F. Bunch T. E. Mardinly A. J.
AEM Characterization of Phases in a Hydrated IDP

Blanford G.E. VerPloeg K.T. McKay D.S.
Microbeam Analysis of Interplanetary Dust Particles for Major Elements, Oxygen and Carbon

Flynn G.J. Sutton S.R.
First Cosmic Dust Trace Element Analyses with the Synchrotron XRF Microprobe

Nier A.O. Schlutter D.J. Brownlee D.E.
Helium and Neon Isotopes in Extraterrestrial Particles

McKeegan K.D. Swan P. Walker R.M. Wopenka B. Zinner E.
Hydrogen Isotopic Variations in Interplanetary Dust Particles

Esat T. M. Taylor S. R.
Mg Isotopic Composition of Some Interplanetary Dust Particles

Wopenka B.
Raman Observations of Individual Interplanetary Dust Particles

Walker R.M.
Are IDPs and Halley Dust Similar and, if so, So What?
POSTER PRESENTATIONS

Flynn G.J.
Earth Encounter Velocities and Exposure Ages of IDPs from Asteroidal and Cometary Sources

Robin E. Bonte Ph. Jehanno C.
A Search for a Relationship between Greenland Cosmic Dust

Zook H. A.
The Velocity Distribution and Angular Directionality of Meteoroids that Impact on an Earth-Orbiting Satellite

Tsou P. Peng S. T. J. Albee A. L.
Hypervelocity Intact Capture in Multiple-Layer Films

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Reedy R. C.
Cosmogenic Nuclide Production in Small Metallic Spherules

Rietmeijer F.J.M.
Silicone Oil: A Persistent Contaminant in Chemical and Spectral Microanalyses of Interplanetary Dust Particles

Rietmeijer, F.J.M.
Formation of High-temperature Minerals by Annealing of Amorphous, Low-temperature Anhydrous Chondritic Interplanetary Dust

Jehanno C. Maurette M. Robin E.
Fe/Ni Cosmic Dust Grains: A Comparison of the Greenland and Deep-Sea Collections

Wednesday, March 18, 1987
MARS CHANNELS AND VOLATILES
1:30 p.m. Gilruth 104

Tanaka K. L. MacKinnon D. J.
Development of the Chryse Hydrologic System, Mars

Carr M. H. Wu S. S. C. Jordan R. Schafer F. J.
Volumes of Channels, Canyons, and Chaos in the Circum-Chryse Region of Mars

De Hon R. A.
Eastern Lunae Planum Outflow Complex: Analogy to Overbank Flooding

MacKinnon D. J. Tanaka K. L.
Nirgal Vallis Basin: Some Questions on Fluvial and Regolith History

Craddock R. A. Greeley R. Christensen P. R.
Martian Outflow Channels: IRTM and Visual Observations

Gulick V. C. Baker V. R.
Origin and Evolution of Valleys on Martian Volcanoes: The Hawaiian Analog

Mouginis-Mark P. J. Zimbelman J. R.
Channels on Alba Patera, Mars: Evidence for Polygenic Eruptions

Jons H. P.
Large Fossil Mud Lakes or Giant Mud Sheet Floods in Syrtis Major (Isidis Planitia) and Mare Australe, Mars

Zent A. P. Fanale F. P. Postawko S. E.
Mars: Detection of Regolith H2O Sources from Space

Jakosky B. M.
Sublimination of Water from the Residual North Polar Cap on Mars

Haberle R. M. Jakosky B. M.
Transport of Water From the Residual North Polar Cap on Mars

Costard F. Dollfus A.
Thermokarstic Evolution of Impact Craters on Mars

POSTER PRESENTATIONS

Hart H. M. Jakosky B. M.
Vertical Distribution of Water Vapor in the Atmosphere of Mars: Error Analysis and Preliminary Results

Clifford S. M.
Theoretical Equilibrium Profiles of the Martian Perennial Polar Caps
Yanai K., Kojima H.
Japanese Collection of Antarctic Meteorites

Beckett J.R., Stolper E.
Constraints on the Origin of the Eucritic Melts: An Experimental Study

Longhi J., Pan V.
Olivine/Low-Ca Pyroxene Liquidus Relations and Their Bearing on Eucrite Petrogenesis

Tera F., Carlson R.W., Doctor H.
Isotopic and Petrologic Investigation of the Eucrites Cachari, Moore County, and Stannern

Paul R.L., Lipschutz N.E.
Volatile/Mobile Trace Elements in Eucrites—Antarctic/Non-Antarctic Comparisons

Jovanovic S., Reed G.W., Jr.
Mg-Geothermometry Applied to Achondritic Meteorites

Wohrmeyer C., Stoffler D.

Metzler K., Stoffler D.
Polymict Impact Breccias on the Eucrite Parent Body: I. Lithic Clasts in Some Eucrites and Howardites

Takeda H., Aoyama T.
Mineralogy of New Lithic Clasts in Polymict Eucrites and Possible Crystallization of Diogenite from a Eucritic Melt

Berkeley J.L.
Petrology and Compositional Trends in Five New Antarctic Diogenites

Hewins R.H.
The Howardite Parent Body: Composition and Crystallization Models

Schulze L.
Exposure Ages of Basaltic Achondrites and Implications for the Stratigraphy of Their Parent Body

Mittlefehldt D.W.
Petrogenesis of Mafic Lithologies in Mesosiderites

Warren P.H., Kallemeyn G.W.
A Trio of Meteoritic Dunites, and New Data for Shergotty

POSTER PRESENTATIONS

Agosto W.N.
P-FeO Systematics as an Indicator of Genetic Environment in the Basaltic Achondrite Group

Schutt J., Cassidy W.A., Fessler B.W.
AMLAMP (Antarctic Meteorite Location and Mapping Project): A Progress Report

Sutton S.R., Delaney J., Smith J.V., Prinz M.
Trace Element Contents of Eucritic Plagioclase Determined by Synchrotron X-ray Fluorescence

Khisina N.R., Petushkova L.V., Skripnik A.Y., Nazarov M.A., Zabelueva E.V.
Thermal History of Eucrites: Model Based on Pyroxene Geospeedometry

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Okulewicz S.C., Delaney J.S.
Petrography of EET 83212, 7, and EET 83229, 7: A Comparison of 2 New Howardites

Warren P.H., Kallemeyn G.W.
A Trio of Meteoritic Dunites, and New Data for Shergotty
Harper C. L.
Geochronology, Time-asymmetry and the Foundations of Quantum Mechanics

Harper C. L.
Comparative Resolutions of Possible Time Variations in the Weak Interaction Coupling Constant from Geochronology, Oklo and Primordial Nucleosynthesis

Lee T.
Inferences on the Evidence for Extinct Mn-53

The Abundance and Distribution of Be in Allende Inclusions

Pellas P. Perron C. Bourot-Denise M. Fieni C. Ghelis M. Crozaz G.
Very High Track-Densities in Forest Vale (H4) Murrillites: Was Cm248 Alive in the Early Solar System?

Chen J. H. Wasserburg G. J.
A Search for Evidence of Extinct Lead 205 in Iron Meteorites

Papanastassiou D. A. Ngo H. H. Wasserburg G. J.
Sr-Nd Systematics in Coarse-Grained Refractory Inclusions from Allende

Bernatowicz T. J. Hagee B. E. Fahey A. J.
Isotopic Fractionation of Kr and Xe Implanted in Solids at Very Low Energies

Ozima M. Zashu S.
Solar Type He and Ne in Diamonds

Lewis R. S. Ming T. Wacker J. F. Steel E.
Interstellar Diamonds in Meteorites

Epstein S. Krishnamurthy R. V. Cronin J. R. Pizzarello S. Yuen G. U.
Compositions of Hydrogen, Nitrogen and Carbon of Amino Acids and Carboxylic Acids from the Murchison Meteorite

Becker R. H.
Heavy Nitrogen in the Bells Carbonaceous Chondrite

Kerridge J. F. Shipp R. Chang S.
Isotopic Characterisation of Kerogen-like Material from the Murchison Carbonaceous Chondrite

Huss G. R.
Partial Evaporation of Pre-Solar Dust: The Mechanism of Fe/Silicate and Oxygen Isotopic Variation in Chondrites?
Strickland E. L.
Mars-Rocks on Phobos?, and a Possible Solution to the SNC Meteorite Abundance Problem

Gooding J. L., Wentworth S. J., Zolensky M. E.
Martian (?) Calcite and Gypsum in Shergottite EETA79001

Wright I. P., Grady M. M., Pilinger C. T.
Carbonates in EETA 79001: Terrestrial or Martian?

Solberg T. C., Burns R. G.
Iron Oxidation State and Weathering Studies of SNC and Other Antarctic Meteorites

Treiman A. H.
Geology of the Nakhliite Meteorites: Cumulate Rocks from Flows and Shallow Intrusions

Swindle T. D., Garrison D., Hohenberg C. M., Pilinger C. T.
Xenon and Argon in Nakhla and Lafayette: Evidence for Multiple "Martian" Components

McKay G., Wagstaff J., Le L. Lindstrom D. J.
Colson R. O.
Whitlockite/Melt Partitioning and Henry's Law: Shergottite Late-Stage Minerals

Nyquist L., Horz F., Wiesmann H., Shih C.-Y., Bansal B.
Isotopic Studies of Shergottite Chronology: II. Possible Effect of Shock Metamorphism on the Rb-Sr System

Nyquist L., Bansal B., Wiesmann H., Shih C.-Y., McKay G.
Isotopic Studies of Shergottite Chronology: II. Possible Effect of Contamination on the Sm-Nd System

Colson R. O., Nyquist L., McKay G., Horz F.
Possible Isotopic Resetting Mechanisms in Shergottite Meteorites

Wiens R. C.
CO2 and Noble Gas Emplacement into Basalt by Artificial Shock; Relevance to EETA79001 Trapped Gas

Bogard D., Horz F., Johnson P., Jordan J.
Further Studies on the Phenomenon of Shock-implanted Gases

Dreibus G., Wanke H.
Water, Rare Gasses and Other Volatiles on Mars
Thursday, March 19, 1987
THE SOLAR NEBULA AND PLANETARY ORIGINS
8:30 a.m. Gilruth Gym


Hartmann W. K. A Satellite/Asteroid Mystery and the Primordial Scattering of C Asteroids Through the Solar System

Wetherill G. W. Stewart G. R. Factors Controlling Early Runaway Growth of Planetesimals

Greenberg R. Rizk B. Incipient Runaway Growth of Planetesimals: Why the Biggest Bodies Were not all the Same Size

Carusi A. Greenberg R. Valsecchi G.B. Outcomes of Gravitational Encounters of a Planetesimal with a Planetary Embryo

Lissauer J. J. Greenzweig Y. Protoplanet Accretion Rates in a Disk of Planetesimals with Low Random Velocities

Cameron A. G. W. Benz W. Slattery W. L. Planetary Collision Calculations: Origin of Mercury

Benz W. Cameron A. G. W. Slattery W. L. Planetary Collision Calculations: Origin of the Moon


Vickery A. M. Melosh H. J. Orbital Evolution of the Vapor Jet from a Giant Impact

Taylor S.R. Loss of Volatile Elements During Impact Events in Relation to Lunar Composition and Origin


Hinton R.W. Clayton R.N. Olsen E.J. Davis A.M. Isotopic Mass Fractionation of Potassium in the Earth Compared to the Bulk Solar System

PRESENTED BY TITLE ONLY
Weidenschilling S. J. Davis D. R. Orbital Resonances in the Solar Nebula: Timescales and Resonance Widths

Hartmann W. K. Spaute D. Modelling of Lunar Accretion

Pechernikova G.V. Vitjazev A.V. Schmidt O. Yu. Erosion of Mercury Silicate Shell During Its Accumulation

Vitjazev A. V. Pechernikova G. V. Schmidt O. Yu. When Was the Gas Removed From the Zone of Terrestrial Planets?
LUNAR AND ASTEROIDAL REGOLITHS

8:30 a.m. Gilruth 206

LUNAR AND ASTEROIDAL REGOLITHS
Thursday, March 19, 1987

Wieler R. Baur H. Benkerl J.P. Pedroni A. Signer P.
Noble Gases in the Meteorite Fayetteville and in Lunar Ilmenite Originating from Solar Energetic Particles

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The Use of Anhysteretic and Rotational Remanent Magnetizations in Detecting Fine Iron Particles

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Petrology of the Apollo 15 Apennine Front II: Plutonic Rocks and KREEP Basalts

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Takeda H. Mori H. Tagai T. Miyamoto M.
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Ryder G. Lindstrom M. Willis K.
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Neal C.R. Taylor L.A. Lindstrom M.M.
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Composition of Magnetic and Nonmagnetic Fractions of Noritic Impact Melt Breccias from Apollo 16

Simon S.B. Papike J.J.
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Takahashi K. Masuda A.
Ce Anomaly in Lunar Highland Samples: An Examination From REE Abundances and Rb-Sr Systematics for Lunar Meteorites

Takahashi K. Masuda A.
A Rb-Sr Age of an Impact Melted Sample in Lunar Meteorite

Ringwood A.E.
Gordian Knots and Lunar Origin

Seifert S. Ringwood A.E.
Metal-Silicate Partition Coefficients for Some Volatile Siderophile Elements and Implications for Lunar Origin

Lucey P.G. Hawke B.R.
Characterization of Mineralogical Changes with Longitude on the Lunar Nearside Based on Spectral Reflectance Measurements

Lucey P.G. Hawke B.R.
Criteria for the Remote Detection of Pristine Rock Using Near Infrared Reflectance Spectroscopy

Lucey P.G. Hawke B.R.
Probable Outcrops of Mg-Gabbronorite in the Lunar Highlands Detected by Near-Infrared Reflectance Spectroscopy
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Patterson C.W.
Three-body Resonance Trapping and the Asteroid Belt

Oberst J.
On the Stability of "Meteorite Swarms" in Resonant Orbits - A Preliminary Study

Binzel R. P.
The Koronis Family: Possible Evidence for a Recent Catastrophic Disruption

Shoemaker E. M. Wolfe R. F.
Crater Production on Venus and Earth by Asteroid and Comet Impact

Wetherill G.W.
Ratio of Asteroidal Impact Rates on Mars and Earth

Wood C. A.
Phobos and Deimos: Comets, Asteroids or Left Over Pieces of Mars?

McFadden L. A. Vilas F.
The 3:1 Kirkwood Gap as Sources of Ordinary Chondrites: Perspectives from Spectral Reflectance

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Surface Lithologic Heterogeneity and Body Shape for Asteroid (15) Eunomia: Evidence from Rotational Spectral Variations and Multi-color Lightcurve Inversions

Aoyama T. Hiroi T. Miyamoto M. Takeda H.
Absorption Spectra and Bulk Chemical Compositions of Achondritic Polymict Breccias with Reference to Characterization of the Surface of Vesta-like Asteroids

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1986 DA and 1986 EB: Iron Objects in Near Earth Orbits

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Stooke P. J. Keller C. P.
Morphographic Projections for Maps of Non-spherical Worlds

Gaffey M.J.
Instrumental Requirements and Observational Strategies for Spectrophotometric Data Acquisition during a CRAF-type Asteroid Flyby

Zeigler K. W.
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Tholen D.J. Bell J.F.
Evolution of Asteroid Taxonomy

Miyamoto M.
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Hartmann W.F. Tholen D.J. Cruikshank D.P.
Studies of Trojan and Hilda Asteroids Lightcurves

Harris A. W.
Fourier Analysis of Asteroid Lightcurves: Some Preliminary Results
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Prinz M. Weisberg M. K. Nehru C. E. Delaney J. S.
EET 83309, A Polymict Ureilite: Recognition of a New Group

Grady M. M. Pillinger C. T.
The EET 83309 Polymict Ureilite: Its Relationship to Other Ureilites on the
Basis of Stable Isotope Measurements

Ogata H. Takeda H. Ishii T.
Interstitial Ca-Rich Silicate Minerals in the Yamato Ureilites with
Reference to Their Origin

Goodrich C. A. Jones J. H.
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Kracher A. Benjamin T. M. Duffy C. J. Rogers P. S. Z.
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Van der Stap C. C. A. H. Heymann D. Vis R. Verheul H.
Simultaneous Measurements of C, N, and P in the Toluca and Algarobbo
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Kowalik J. A. Williams D. B. Goldstein J. I.
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Sulfide Nodules of Burkhalu Iron Meteorite

Prinz M. Weisberg M. K. Nehru C. E. Delaney J. S.
Bencubbin, Kakangari, Tucson and Renazzo: A Speculative Connection Between
Some of Their Major Components

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and Terrestrial Age

Rajan S. Lugmair G. W.
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Cosmogenic Radionuclides in H-Chondritic Meteorite Finds

Reedy R. C.
Solar-Proton-Produced Nuclides in Meteorites

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Long-Lived Cosmogenic Nuclides in the Derrick Peak and Lazarev Iron Meteorites

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Continuous Geochemical Surface Monitor and Hazard Detector for a Mars Rover

Gravitational Effects on Mars Neutron Spectra

Drake D. M. Feldman W. C. Reedy R. C. Jakosky B. M.
Neutron Mode of the Mars Observer Gamma Ray Spectrometer

Horstman K. C. Melosh H. J.
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Profiles of Lava Flows at Alba Patera, Mars

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Murali A. V. Mahoney J. J. Macdougall J. D. Deshmukh S. S. Blanchard D. P.
Chemical and Isotopic Systematics of Deccan Traps, Western India;
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A Possible Volatile-Rich Air-Fall Deposit in the Electris Region of Mars

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Nuclear Tracks of VH-group Solar Cosmic Rays in the Ordinary Chondrite Samples

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