PRINT-ONLY PRESENTATIONS

Alexeev V. A.

Diffusion Losses of Inert Gases in Ordinary Chondrites [#1062]
Periodic changes of the perihelion q of chondrites during their cosmic ray exposure history may stipulate diffusion losses of gases at q<0.2 AU and reaccumulation of natural thermoluminescence at q~1 AU during the last ~0.1 Ma before capture by the Earth.

Alexeev V. A.  Ustinova G. K.

Possible Parent Bodies of Ordinary Chondrites [#1047]
The accomplished correlative analysis of the statistical distributions of ages and orbits of ordinary chondrites makes it possible to derive the most general features as well as essential differences of evolution of H- and L-chondrites.

Assonov S. S.  Schultz L.  Schukolyukov Yu. A.  Semenova A. S.

Noble Gases in Agglutinates, Breccias and Fines from Luna-24 Regolith Samples [#1322]
This study aims determine which Luna-24 constituents have elevated or depleted ^36Ar/^38Ar that is relevant to a finding of isotopically light nitrogen in Luna-24 fines. Gas-rich constituents from 4 core levels have the ratios lower than or close unity.

Badjukov D. D.  Raitala J.

Shock-Reworked Remnants of a Projectile Matter in Impact Melts of the Lappajarvi Crater [#1591]
Pyrrhotite inclusions with Fe-rich globules in Lappajarvi melts are mineralogically recognisable shock-reworked rests of a chondrite (kamacite-rich?) projectile. Due to their relative high abundance the projectile should have a low velocity.

Basu A.  Wentworth S. J.  McKay D. S.

Grain-size Distribution of Apollo 11 Soil 10084 [#1306]
Results of a new grain size analysis of 0.99 g of the submillimeter fraction of the soil 10084, using the JSC methodology, are: Mz = 4.28 φ (51 µm) and σl = 2.23 φ (213 µm). A significant fraction (14.2%) of the soil is <10 µm in size.

Becker L.  Poreda R. J.  Bunch T. E.

The Origin of Fullerenes in the 65 Myr Old Cretaceous/Tertiary Boundary [#1832]
In this work we have searched for extraterrestrial (ET) helium (He) in fullerenes isolated from several K/T boundary (KTB) sediments. Measurements of He in these KTB fullerene residues revealed 3He/4He ratios that can only be explained as ET in origin.

Bernhard R. P.  Hörz F.  See T. H.

Natural and Man-Made Particle Populations Captured by Aerogel on the Mir Station [#1825]
A large number of natural and man-made particles were captured in aerogel on MIR, returned to Earth, extracted, and analyzed via SEM-EDX methods. The compositions of the recovered particles are discussed.

Borisov A.  Jones J. H.

The Influence of Suspended Metal in Silicate Liquid on Metal/Silicate Partitioning: A Numerical Study [#1236]
We performed a series of metal/silicate partitioning thought experiments where contamination of the silicate by metal increases as the size of the charge decreases. Unfortunately, regression of this entirely artificial dataset leads to very reasonable result.

Brian A. W.  Stofan E. R.

Geology of the V39 Quadrangle:Taussig, Venus [#1664]
Geologic mapping of the V39 quadrangle has revealed a complex and varied stratigraphy, which from initial analysis supports a non-directional history of Venus.
Bukovanska M.   Nemec I.   Solc M.

FTIR Microspectroscopy of Some Chondrites, Achondrites, Stony Irons and Lunar Meteorite [1559]
FTIR reflectance spectra of various kinds of powdered achondrites, chondrites, stony irons and lunar highland meteorite (2.5–25 microns) and IR microscope reflection spectra (2.5–16.7 microns) of 30–50 micron sized minerals and mineral mixtures are presented.

Burba G. A.

Laidamlulum Vallis, the Third Longest Lava Channel on Venus: Discovery Report [1185]
The unknown lava channel 2700-km long found in the S hemisphere of Venus with Magellan SAR images. It is located from 83.5°S, 160°E to 62°S, 142.5°E. The down gradient is 0.029%, which is typical for the plain rivers on the Earth.


More New Names for the Features on Venus: A Review of the 1999 Progress [1078]
Sixty-five features of 13 different types were named on Venus in 1999. Eleven of the names are in N, and 54 are in S hemisphere to support the NASA program of Venus geologic mapping at 1:5,000,000 scale after the Magellan SAR image data.

Burba G. A.   Shashkina V. P.   Bobina N. N.

Geologic Mapping of the Southern Venus: The First Results on Laimdota Planitia and Nsomeka Planitia [1699]
Geologic mapping of 32.7 × 10⁶ km² area in the Southern Venus (35–90° S, 80–200°E) has revealed very high density of long lava channels, which could be evidence for the emplacement of large volumes of low viscosity lava in this area.

Busarev V. V.

On a Possible Way of Hydrating Some M-, E-, and S-Class Asteroids [1428]
Visible-range reflectance spectra of M-class asteroid 161 Athor giving evidence on its spectral duality are presented. A supposition about hydrating 161 Athor and other igneous asteroids due to collisions with more primitive bodies is made.

Cabrol N. A.

Astronaut-Rover Exploration Strategies (ARES) for the Human Exploration of Mars [1164]
Starting this year, we develop a series of field and laboratory activities in the context of the Astronaut-Rover Exploration Strategy (ARES) project, which is the science support to the EVA-Robot Assistant project funded by the Surface System Thrust.

Cataldo F.   Heymann D.   Thiemens M. H.   Fokkens R.   Nibbering N. M. M.   Vis R. D.

Sulfur-Bearing Pigments for Jovian Clouds? [1012]
Jupiter’s clouds are colored white, yellowish, orange, red, and brown. The white colors are thought to be due to NH₄HS. The other colors might be due to photo-co-polymers of ethylene, acetylene, cyanogen, and hydrocyanic acid.

Chikami J.   Miyamoto M.

Chemical Zonings of Mafic Silicates in Y74025 and Y75305 Winonaites [1113]
We measured the chemical zonings of mafic silicates in Y74025 and Y75305 winonaites to compare the thermal history of winonaites with that of acapulcoites.

Cid A.    Casanova I.    Marinangeli L.

In-Situ X-Ray Diffraction Studies of the Martian Surface: The Evaporite Component [1403]
Calculations based on Viking and MPF analyses indicate that up to 37% of soil minerals can consist of hydrated magnesium sulfate (epsomite). A novel low-weight x-ray diffraction instrument (XMAP) is proposed for in-situ quantitative analysis of Martian soil mineralogy.
Cloutis E. A. Asher P. M. Mertzman S. A. Guertin M.

*Spectral Reflectance Properties of Common Zeolites [#1174]*

The spectral properties of common zeolites exhibit absorption features attributable almost exclusively to OH and water. There are few systematic spectral differences between these samples.

Cloutis E. A. Goltz D. M. Coombs J. Russell B. Guertin M. Mueller T.

*Reflectance Spectra of Anhydrous Carbonate Minerals: Implications for Mars [#1155]*

The reflectance spectra of a diverse suite of anhydrous carbonates were characterized. They all exhibit a number of common spectral features and many are consistent with absorption features seen in Mars spectra and attributed to them.

Collins G. C. Head J. W. Pappalardo R. T.

*Chaos Formation on Europa: Plausibility of the Melt-Through and Solid-State Diapir Models [#1033]*

Two endmember models were proposed for the mobile substrate of chaotic terrain: a liquid water ocean, or ductile ice. We evaluate the plausibility of each of these models from a physical process standpoint; a new model of melt in the shell is needed.

Colson R. O. Hendrickson T. R. Malum K. M. Floden A. M.

*Electrochemical Measurement of Activities for NiO, Ru₂O₃, and ZnO in a Lunar Volcanic Glass Analog [#1774]*

Differential Pulse Voltammetry is a fast in situ method for measuring component activities in silicate melts. We report methods for confirming equilibrium conditions and activities for oxide components in an Apollo 15 green glass analog composition.

Crumpler L. S. Tanaka K. L. Hare T. M.

*Mars Surveyor (‘01) Landing Sites, Libya Montes: Comparison of MOC Image Data with Results from Detailed Geologic Mapping [#2057]*

The Libya Montes region has been selected as the top priority region for potential ’01 landing sites. In the following, details of our geologic map are used to prioritize landing ellipses. The geology within the ellipses is compared with MOC image data.


*Iapetus (1): Size, Topography, Surface Structures, Craters [#1596]*

Iapetus’ shape is found to be non-spherical and larger (767 × 742 × 713 km) than previously reported. Huge mountains with heights of up to 25 km have been detected. Crater counts on the bright and dark side revealed similar size-frequency distributions.

Dikov Yu. P. Dolin S. P. Levin A. A. Wlotzka F.

*On the Relative Stability of Silicate Clusters During Laser Evaporation [#1128]*

Quantum-chemical calculations were made in order to estimate the stability of molecular clusters during high-temperature evaporation of Fe,Mg-silicates, simulating impact events.

Dikov Yu. P. Huth J. Wlotzka F. Ivanov A. V.

*HASP Glasses in Apollo 17 Orange Soil Sample 74220 [#1110]*

A HASP particle (60% Ca+Al+Ti) was found on the surface of a glass spherule from orange soil sample 74220.

Dikov Yu. P. Malkovsky V. I. Pek A. A.

*Analysis of the Formation Mechanism of Apollo 15 Green Glasses [#1240]*

Smoluchowski’s equation was solved for particle size distributions evolving in a turbulent gas cloud, and compared to the known size frequency of Apollo 15 green glass spherules.

Edgett K. S. Malin M. C.

*Eolian Bedforms and Erosional Landforms at High Altitudes on the Martian Tharsis Volcanoes [#1072]*

Eolian bedforms and pedestal craters high on the flanks and in the calderae of the Tharsis volcanoes indicate winds sufficient to move sand have occurred there at some time in the past or present.
Examples of Martian Sandstone: Indurated, Lithified, and Cratered Eolian Dunes in MGS MOC Images

Sedimentary rocks on Mars. Mars has sandstones in the form of lithified eolian dunes. Some are cratered.

Mars Eolian Processes: Erosion in Lee of a Simple Raised-Rim Crater in Daedalia Planum Compared with 1974 Wind Tunnel Model

A crater-related wind streak in Daedalia Planum provides a good match to the wind flow patterns shown in “classic” wind tunnel studies by Greeley and others shortly after the Mariner 9 mission.

A Meter-scale View of the Mars Radar “Stealth” in Southwestern Tharsis

MGS MOC images show that “Stealth” does not look at all like the meters-thick mantle that had been hypothesized from radar observations; other areas without “stealth” characteristics do.

MGS MOC Images of Seif Dunes in the North Polar Region of Mars

MGS MOC images confirm the existence of linear, or seif, dunes on the surface of Mars. Though very common on Earth, this form of dune which requires a bimodal wind regime is quite rare — but DOES OCCUR — on Mars.

MGS MOC View of the Martian Northern Plains

MGS MOC images indicate that a heavily-cratered surface lies just beneath a relatively thin veneer of material on the martian northern plains. No evidence of volcanics or marine sediment is found.

The New Mars of MGS MOC: Ridged Layered Geologic Units (They’re Not Dunes)

Geologic units comprised of closely-spaced ridges/grooves have emerged as a new and common class of surface texture on Mars. At first glance they look like dunes, but are instead an expression of eroded layered material.

Sedimentary Bedding Features of Martian Polar Layered Terrain

Mars polar layered outcrops exhibit typical sedimentary features, including erosional unconformities, folded or deformed beds, beds of differing resistance to erosion, and can be stratigraphically correlated over 100s km distance.

Transformation of Amphibolite Under Shock-Wave Loading

The experimental shock-wave loading of amphibolite give us possibility to characterize the behavior of five rock-forming minerals depending on the shock-wave amplitude. For the first time in that experiment was fixed such high partial pressure of oxygen.

Primary Melt Inclusions in Olivine, Augite, and Orthopyroxene in Ureilite FRO 90054

Description and chemical compositions of primary melt inclusions (glass ± augite ± spherules of metal, sulfide and phosphide, ± minor grains of chromite) occuring in all primary silicates in the ureilite FRO 90054, similar to Hughes 009, is given.
Fisenko A. V. Semjonova L. F.
The Xe Excess Variations in Diamond Grains: Alternative Explanation [#1829]
In the present study we suggest an alternative explanation for Xe-P6.

Presolar Diamonds in CR and CI Clusters of the Kaidun Meteorite [#1834]
Interstellar diamonds separated from CR and CI types of clusts from the Kaidun meteorite were analysed for carbon, nitrogen and noble gas isotopes.

Fishbaugh K. E. Head J. W. III
North Polar Region of Mars: Evidence for Asymmetric Retreat of the Polar Cap from Mars Orbiter Laser Altimeter (MOLA) Data [#1271]
High-resolution topographic data from MOLA reveal that the Martian north polar cap may once have extended to about 77°N. The former Olympia Lobe, consisting now of Olympia Planitia and polar cap remnants and kettles, has asymmetrically retreated.

Fisher D. E.
On the Cometary Origin of Rare Gases in Mars and Earth [#1082]
Estimates of earth’s mantle rare gases allow an evaluation of a proposed model of atmospheric formation on both Earth and Mars, in which a mixture of internal trapped gases, released by degassing, is mixed with a cometary veneer.

Gaddis L. R. Farrand W. Weller L.
Compositional Mapping of Lunar Pyroclastic Deposits Using Clementine UVVIS and NIR Data [#1244]
We use the combined Clementine UVVIS and NIR data to examine the compositions of lunar pyroclastic deposits at 4 sites on the Moon: J. Herschel, Alphonsus, Archimedes, and Rima Bode.

Gillet Ph. Chen M. Dubrovinsky L. S. El Goresy A.
First Natural Occurrence of High-Pressure Phase Transformation of Oligoclase to Hollandite in the Shock Melt Veins of the Sixiangkou L-6 Chondrite [WITHDRAWN]
We report the first natural occurrence of hollandite, the dense polymorph of plagioclase in Sixiangkou L6. The cell parameters: \( a = 9.263(3) \, \text{Å}, c = 2.706(3) \, \text{Å} \). We estimate the upper bound for the crystallization of the hollandite-polymorph at 23 GPa.

Gillis J. J. Rueb D. Cohen J. Hager M. A.
The Lunar Orbiter Photographic Atlas Digital Archive [#1815]

Greenberg R. Hoppa G. V. Tufts B. R. Geissler P.
Non-Synchronous Rotation of Europa [#1910]
Europa’s rotation rate is constrained by direct observations and tidal-tectonic features. The period is \( > 12,000 \, \text{yr} \) and \( < 10^7 \, \text{yr} \) relative to Jupiter, consistent with tidal theory and with implications for geological and biological conditions.

Grin E. A.
Strategy and Technology Overview for EVA-Rover Exploration of Subsurface and Challenging Environments on Mars [#1300]
We propose the investigation of techniques and instrument designs for EVA-Rover teams to access challenging environments on Mars that can hold important clues about water and the possible development of life.
Rainbow: A New CO3 Chondrite from Australia [#1355]
Rainbow olivine is intermediate between Colony and Kainsaz. AOI resemble Kainsaz. Induced TL gives subtype 3.1-3.2. O-isotopes are at the heavy end of the CO3 trend. There is no correlation between O-isotopes and petrologic type in the CO3 group.

Gyenzise P. Nagyvaradi L. Pirkhoffer E. 
Detection of Candidate Impact Sites in Hungary [#1818]
In the western part of the Carpathian basin in Hungary, a candidate impact site can be found with a 23-km diameter.

Head J. W. III
Channels Surrounding Candidate Ancient South Polar Deposits on Mars: Evidence for Drainage of Meltwater [#1121]
MOLA data support the presence of an extensive Hesperian-aged volatile-rich south polar deposit. Four major channels emerge from these deposits and extend downslope over 900 km to the floor of the Argyre basin, apparently draining the meltwater.

Head J. W. III
Mars South Pole: Evidence for Geologically Recent Lateral Migration of Volatile-rich Layered Deposits [#2036]
An impact crater with pristine-appearing secondary crater chains is partly covered with more than a km of polar layered terrain suggesting that the crater formed near the edge of the cap in late Amazonian time, was buried by polar cap advance.

Head J. W. III
Tests for Ancient Polar Deposits on Mars: Assessment of Morphology and Topographic Relationships of Large Pits (Angusti and Sisyphi Cavi) Using MOLA Data [#1118]
MOLA data reveal that two regions of large pits near the South Pole show poleward subsidence and equatorward drainage features; these relationships support an origin through basal melting of a water-rich ice cap in earlier Mars history.

Head J. W. III
Tests for Ancient Polar Deposits on Mars: Morphology and Topographic Relationships of Esker-like Sinuous Ridges (Dorsa Argentea) Using MOLA Data [#1117]
MOLA data are used to characterize the Hesperian-aged Dorsa Argentea sinuous ridges near the South Pole in order to assess their origin.

Head J. W. III
Tests for Ancient Polar Deposits on Mars: Origin of Esker-like Sinuous Ridges (Dorsa Argentea) Using MOLA Data [#1116]
MOLA data support the interpretation of the Dorsa Argentea sinuous ridges as eskers and suggest that polar deposits occurred near the South Pole during the Hesperian and subsequently underwent extensive subglacial melting and retreat.

Head J. W. Kreslavsky M. A.
Mars Northern Lowlands: Topographic Characteristics of Members of the Vastitas Borealis Formation [#1279]
The Vastitas Borealis Formation dominates the northern lowlands and proposed to be the site of ancient oceans; some of the distinctive and unusual characteristics of the members are consistent with the presence of former standing bodies of water.

Head J. W. III Ivanov M. A. Hiesinger H. Kreslavsky M. Thomson B. Pratt S. 
Oceans in the Past History of Mars?: Evidence for Recession and Timing from MOLA Data [#1750]
MOLA data are consistent with a large standing body of water in the northern lowlands and its retreat by the Amazonian Period.
Head J. W. III Wilson L. Galileo SSI Team
    Modelling a Candidate Lava Fountain Fissure Eruption on Io [#1367]
    Models for the ascent and eruption of magma are applied to recent data from Io.

Head J. W. III Wilson L. Pieters C. M.
    Pyroclastic Eruptions Associated with the Floor-fractured Lunar Farside Crater Oppenheimer in the South Pole Aitken Basin [#1280]
    Pyroclastic deposits of Imbrian age are associated with floor-fracturing in the farside crater Oppenheimer in the South Pole-Aitken basin and are consistent with sill emplacement, floor uplift, and vulcanian style eruptions.

Heather D. J. Wilson L. Dunkin S. K.
    Theoretical Modelling of the Thermal and Physical Evolution of the Moon [#1354]
    We intend to bring the global compositional data from recent missions together with physical models to address some of the questions remaining about the history of the formation, rise and eruption of mare basalts. Here we outline the basic issues.

Heber V. S. Baur H. Wieler R.
    Solar Kr and Xe in Gas-rich Meteorites Determined by Closed System Stepwise Etching [#1563]
    We present isotopic and elemental ratios of implanted solar Krypton and Xenon from the meteorites Fayetteville and Pesyanoe. We show that it is possible to measure by closed system etching with HF heavy solar noble gases despite the presence of primordial noble gases.

Heymann D.
    What is Isotopically Strange Xenon? [#1014]
    A novel model is proposed for the origin and implantation into nanodiamonds of isotopically strange xenon. The basic assumption is that its p-, s-, and r-components are inseparable because they existed together in surfaces of stars.

Hiesinger H. Head J. W. III Pratt S.
    Deuteronilus Mensae: Testing for a Possible Shoreline with New MOLA and MOC Data [#1646]
    We investigated the elevation of a proposed shoreline (Parker’s Contact 2) in Deuteronilus Mensae over ~800 km extent. Contact 2 is closer to an equipotential line than any other randomly picked line and is highly correlated with a break in slope.

Hörz F. See T. H.
    Quenched Olivines and Pyroxenes in Impact Melts from Meteor Crater, AZ [#1737]
    The shock melting and mixing of target rocks — dominated by quartz and dolomite — and of an iron-rich projectile at Meteor Crater, AZ, produced an ultramafic melt that crystallized olivine and pyroxene of varied compositions during ballistic ejection.

Housen K. R. Voss M. E.
    Scale-dependent Outcomes in Collisional Fragmentation of Basalt [#1495]
    Collision experiments were performed with basalt targets with a factor of ten variation in size. The results show that the kinetic energy/target mass for shattering a strength-dominated rocky asteroid should decrease as asteroid size increases.

Hviid S. F. Knudsen J. M. Madsen M. B. Hargraves R. B.
    Spectroscopic Investigation of the Dust Attracted to the Magnetic Properties Experiment on the Mars Pathfinder Lander [#1641]
    Spectroscopic investigation of the dust attracted to the magnet arrays on the Mars Pathfinder Lander. The magnetic dust spectrum shows a correlation to the Mars bright regions spectrum.
Ivanov M. A.  
*Possible Nature of Tessera Precursor Terrain on Venus* [#1241]
Detailed mapping of tessera terrain revealed that the tessera precursor terrain resemble in many cases morphologically smooth plains. The plains are presumably of basaltic composition.

Ivanov M. A.  Head J. W. III  Kortz B. E.  Morris A.  Russell P.  Stoddard P.  
*Deformation Belts in Lavinia Planitia, Venus, Stratigraphy and Relative Ages* [#1446]
Analysis of detailed stratigraphy of deformation belts shows that ridge belts predate fracture belts.

Ivanova M. A.  Kononkova N. N.  Nazarov M. A.  
*Rutile and Mn-rich Chromite-bearing Sulfide Nuggets in an Unusual Inclusion from the Ghubara (L5) Chondrite* [#1715]
Sulfide nuggets containing rutile, alabandite and Mn-rich chromite were found in an enstatite inclusion from the Ghubara (L5) chondrite. The inclusion could be considered as a middle temperature condensate from the solar nebula gas.

Kashkarov L. L.  Ustinova G. K.  
*Peculiarities of the Radiation Conditions in the Early Solar System* [#1046]
The study of isotopic anomalies and tracks of VH-nuclei in meteorites provides new evidence on a peculiar radiation environment in the early solar system, which could be conditioned by strong shock wave propagations.

Kashkarov L. L.  Assonov S. S.  Ivliev A. I.  Semenova A. S.  
*Double Stage Shock-Thermal History of Olivine Crystals from Luna-16* [#1377]
This work aims elucidate thermal history of silicate crystals from lunar regolith by means VH-tracks and natural TL. Shortened tracks and low temperature TL found in several olivine grains may be indicative of some heating events.

*Track and Noble Gas Investigation of New Kunya-Urgench H5 Chondrite* [#1397]
Noble gases and nuclear tracks were measured in new Kunya-Urgench H5 chondrite. According track data and high $^4\text{He}$ and $^{40}\text{Ar}$ retention ages, this meteorite had not underwent substantial heating that will correspond. The mean $^{21}\text{Ne}$ exposure age is 42 Ma.

Kereszrti Á.  Sik A.  
*Feng-Shui on Mars — History of Geomorphological Effects of Water and Wind* [#1216]
We overviewed the martian historical geomorphology of water and wind effects on difference scales. We reconstructed the surface the great steps of evolution of MPF landing site, where the flood sediment covered area was long time resurfaced by different wind regimes.

Kettrup D.  Deutsch A.  Pesonen L. J.  Bahlburg H.  
*Micrometeorites from the Proterozoic Satakunta Sandstone, Finland — Why are They Preserved?* [#1350]
Preservation of micrometeorites in mesoproterozoic sandstones. What are depositional and diageneric influences of the host rocks and how does this affect the preservation of the micrometeorites.

Kimura M.  
*Opaque Minerals in an LL3.0 Chondrite, Y74660: Potential Indicators of Petrologic Subtypes* [#1213]
Opaque minerals in Y74600 LL3.0 evidently show distinguishable features from those in the other LL chondrites, and such mineral chemistry may be an potential indicator of metamorphic sequence and parent body process of ordinary chondrites.

Korotev R. L.  
*The Magnesium Mystery of the Apollo 11 Regolith* [#1482]
The Apollo 11 regolith is enriched in Mg compared to mixtures of local mare basalts and feldspathic highland material that accounts for other elements. Using mass-balance constraints, we cannot identify the component, but its abundance is ~8%.
Korotev R. L.
*On the Relationship Between Site Geology and the Distribution of Surface Regolith Compositions at the Apollo Sites [#1209]*
Some considerations are discussed on how information on site geology can be obtained from the distribution of data points on 2-element plots of composition of lunar regolith samples collected along a traverse.

Korotev R. L.  Jolliff B. L.
*Siderophile Element Concentrations in Two Metal Fragments from the Apollo 16 Regolith [#1385]*
We present results of siderophile-element analysis of two FeNi metal grains from the Apollo 16 regolith which each likely crystallized from an impact melt. One is unusual in having a high Ir/Au ratio and high Ga concentration for Apollo 16 metal.

Korotev R. L.  Jolliff B. L.  Haskin L. A.
*The Concentration of Oxygen (and Silicon) in Lunar Materials [#1210]*
As an aid for interpretation of nuclear data obtained remotely, we provide data on concentrations of oxygen and silicon in a variety of lunar materials.

Kreslavsky M. A.  Starukhina L. V.
*Dielectric Properties of Plains on Venus [#1289]*
Radiophysical data on dielectric properties of regional plains on Venus are hardly consistent with laboratory data on dry basalts. Plains should be heavily weathered. Some impact crater floors and lava flows can represent fresh dry basalt surface.

Krot A. N.  Meibom A.  Keil K.
*Volatile-poor Chondrules in CH Carbonaceous Chondrites: Formation at High Ambient Nebular Temperature [#1481]*
Volatile-poor, magnesian chondrules are similar to those in QUE94411 and Hammadah al Hanra 237 and formed at high ambient nebular temperatures prior to condensation of Fe,Ni-metal. These chondrules may be of the very first generation.

Kuzmin R. O.  Zabalueva E. V.
*Possibility of the Seasonal Existence of Salt Solution in the Martian Surface Regolith and Their Morphological Effect [#2104]*
It is studied the seasonal effect of the salt solutions appearance in the Martian regolith.

Kuzmin R. O.  Greeley R.  Rafkin S.  Haberle R.
*Wind-related Modification of the Meteorite Crater Morphology as Key to Wind Regime History on Mars [#1643]*
The results of high resolution imaging of the Martian surface by MOC, show that wind activity is a dominant process in the current environment, forming and modifying the surface from the equator to the poles.

Langenhorst F.  Shaw C. S. J.  Metzler K.
*Mineral Chemistry and Microstructures in ALH84001 [#1866]*
We summarize SEM and TEM results obtained on the martian meteorite ALH84001. Clino/ortho-inversion in orthopyroxene, shock melting of plagioclase and silica, as well as degassing features in carbonates indicate strong shock metamorphism.

Lavrukhina A. K.
*New Model of Preplanetary Nebula Accretion [#1001]*
Recently a considerable interest calls an idea that supernovae might sometimes cause star formation.
Lavrukhina A. K.

Nitrogen Isotopes in Solar System [#1002]
The nitrogen isotopic compositions in solar system bodies are high heterogeneity and variable.

Lawson S. L. Jakosky B. M.

Comparison of Clementine LWIR and UVVIS Images: Factors Controlling Lunar Surface Temperatures [#2017]
In an effort to better understand the factors which control lunar surface temperatures, we compare a Clementine long-wave infrared camera mosaic to images from the ultraviolet-visible camera.

Leone G. Wilson L. Cataldo V.

Lava Flow Field Areas and Caldera Volumes on Io: Their Correlation with Magma Reservoir Size and Collapse Events [#1651]
Caldera volumes on Io can be related to areas and thicknesses of lava flows. This sheds light on the relative importance of elastic and inelastic processes in the crust.

Lin Y. Amari S. Pravdivtseva O.

Presolar Si₃N₄ and Subtypes of SiC of Type X from the Qingzhen (EH3) Meteorite [#1431]
Presolar SiC grains from the Qingzhen enstatite chondrite are smaller than those from Murchison. Grains X are rarer and their Si isotopic ratios indicate two subtypes. The abundance of presolar oxides is much lower than in Murchison and Tieschitz.

Llorca J.

Sulfide Formation in Interplanetary Dust Particles [#1042]
Pyrrhotite is the only sulfide phase obtained in experiments where model kamacite particles are exposed to H₂+H₂S gas mixtures under nebular-type conditions. Pyrrhotites in IDPs appear to be primordial condensates from nebular gas-solid reactions.

Lorenz C. Nazarov M. Kurat G. Brandstaetter F.

High-Magnesium Lithologies and Dry Fluid Metasomatism in the Budulan Mesosiderite [#1315]
The first evidence for dry fluid metasomatism was found in the Budulan mesosiderite. Metasomatism manifests itself in local reduction of olivine, formation of a variety of symplectites and mobilization of Fe,Ni metal.


Optimized Calibration Constants for the Clementine NIR Camera [#1273]
We have performed a global optimization of exposure duration, gain, global bias, digital offset, and offset multiplier for the data collected by the Clementine NIR camera.

MacKinnon D. J. Tanaka K. L.

Mechanisms for Transport of Fine-grained Materials Within the Martian Subsurface [#1465]
Formed by impact, volcanic, and sedimentary process, we propose a two-layer, physical and hydrologic model for Mars. We develop simple fluidization models, driven by impacts and volcanotectonic activity, that could erode deep layers on and within the martian subsurface.

Malin M. C. Edgett K. S.

Early Defrosting of the 1999 South Polar Seasonal Frost Cap: Evidence of Interannual Climate Change? [#1052]
MGS MOC images suggest that the interior of the S polar seasonal cap of Mars began to defrost 5 months earlier in 1999 than in 1997.

Malin M. C. Edgett K. S.

Frosting and Defrosting of Martian Polar Dunes [#1056]
Martian polar dunes are the first surfaces to show evidence of frosting and defrosting in autumn/spring, respectively. Polar dunes may contain volatiles.
Malin M. C.  Edgett K. S.
Martian Burial and Exhumation Theme: Example of Older Cratered Terrain Exposed from Beneath Layered Rocks East of the Elysium Rise [#1191]
Heavily cratered terrain appears to be exposed on the floor of a trough cut into 100s of meters of layered rock. Crater count-based dating schemes for Mars do not adequately account for burial and exhumation of the scale seen in MGS MOC and Viking Orbiter images.

Malin M. C.  Edgett K. S.
The Nature of Layered Outcrop Expression in the Martian Polar Layered Terrains [#1055]
Mars polar layer outcrops in the N are expressed as ridges/troughs while those in the S are usually stair-stepped. This suggests something is very different about the history of the two polar caps.

Malin M. C.  Edgett K. S.
The New Mars of MGS MOC: Cratering and Eolian History of a Small Intercrater Plain in Western Terra Sirenum [#1069]
Increased spatial resolution offers increased temporal resolution as illustrated by this unique, brief study of dune and cratering history in Terra Sirenum from one of the very first MGS MOC images.

Malin M. C.  Edgett K. S.
Observations of Aprons in Martian Fretted Terrain [#1053]
MGS MOC images show that fretted terrain aprons bear little evidence that the material has flowed. They are not necessarily composed of debris shed from the adjacent slope.

Malin M. C.  Edgett K. S.
Rough is Smooth and Smooth is Rough: The Martian Surface at Meter Versus Hectometer Scales and Implications for Future Landing Sites [#1059]
At meter scales, areas that appear rugged at 100-m scales on Mars are relatively smooth and surfaces that appear smooth at 100-m scales are extremely rugged at m scale. Implication: Can’t land current-design Mars Surveyor landers in places that look smooth in Viking images.

Malyshev A. I.  Malysheva L. K.
An Origin of Valley Networks and Outflow Valleys on the Martian Surface [#1125]
All concepts of aqueous erosion have serious difficulties and are forced to resort to various speculative suppositions. It is sufficient to take into account a specific character of Martian volcanism for elimination of Martian relief-forming problems.

Marakushev A. A.
Origin of the Moon and Halilean Jupiter’s Satellites [#1383]
The Moon follows the row of Halilean Jupiter’s satellites by many characteristics being the most close to Io. This regularity reflects a supposed giant size of the Protoearth and its similarity to Jupiter.

McCallum I. S.
How Magnesian are Mg-Suite Troctolites? [#1477]
Mg-suite samples have undergone extensive subsolidus recrystallization during which original compositions of olivine and spinel have changed. Recrystallized olivines are significantly more magnesian than liquidus olivines.

McCallum I. S.
Petrogenesis of Mg-Suite Parent Magmas by Polybaric Fractional Fusion and Crustal Assimilation [#1471]
Polybaric fractional fusion of primitive lunar material followed by assimilation of urKREEP and ferroan anorthosite cannot generate magma parental to the troctolitic members of the Mg-suite. Mg-suite troctolites may represent residues from crustal melting events.
Meibom A. Krot A. N. Keil K. Righter K. Chabot N.
*FeNi-Metal/Sulfide — Ferrous Silicate Shock Melts in QUE94411 and Hammadah Al Hamra 237: Remains of the Missing Matrix?* [#1420]
We describe the mineralogy of FeNi metal/sulfide - ferrous silicate shock melt in QUE94411 and HH237, which could be the remains of the missing matrix component in these meteorites.

Mikouchi A. K. Mikouchi T.
We developed a computer software to make users learn about the Moon through their observation and appreciation. We performed a usability test at school, and knew that 7th grade students enjoyed it, making them more interested in the Moon than before.

Miura Y.
*Shock Wave Formation of the Sea of Japan* [#2096]
The zircon and Fe-Ni grain in spherules found at the Takamatsu buried crater of Japan indicate that proto-Sea of Japan is opened by direct impact on old Tamakatsu crater site, and shock-wave transportation of shock wave impact from back-side of the Ear.

Miyamoto M. Komatsu M. Mikouchi T.
*Diffuse Reflectance Spectra of Several Chondrites Heated at Different Oxygen Fugacities* [#1109]
We measured diffuse reflectance spectra in the UV-Visible-Near IR wavelength region for heated samples of Murchison (CM2), Allende (CV3) and Nuevo Mercurio (H5) chondrites to study spectral changes due to heating at different oxygen fugacities.

Morris R. V. Golden D. C. Shelfer T. D.
*Meteor Crater Impact Melt Particles: An Analogue for Formation of Ultramafic Mineral Assemblages from Soil on Mars* [#1638]
Meteor Crater impact melts suggest that impact into martian soil might produce melts that crystallize ultramafic olivine and pyroxene assemblages that are normally associated with magmatic processes.

Morris R. V. Lane M. D. Mertzman S. Shelfer T. D. Christensen P. R.
*Chemical and Mineralogical Purity of Sinus Meridiani Hematite* [#1618]
Thermal emission spectra of hematitic rocks having a range of chemical and mineralogical purity confirm the identification of the hematite deposit in the Sinus Meridiani region of Mars.

Morris R. V. Le L. Lane M. D. Golden D. C. Shelfer T. D. Loefgren G. E. Christensen P. R.
*Multidisciplinary Study of Synthetic Mars Global Average Soil Glass* [#1611]
Mars global average soil glass has thermal emission spectra that are independent of iron oxidation state, but its detectability is reduced compared to SiO2-rich glasses because of broad spectral features with low spectral contrast.

Mukhin L. M. Pimenov K. Y.
*The Cooling Rates of Impact Craters and the Surface Temperature of Early Earth* [#1086]
The cooling rate of impact crater strong depends on force convection. Low surface temperature of the growing Earth in frames of Safronov’s accretion model is shown.

*AMICA Science Team*
*Development of the Asteroid Multiband Imaging Camera (AMICA) for the Japanese Sample Return Mission: MUSES-C* [#1310]
MUSES-C is a technology demonstration mission to a near-Earth asteroid with some scientific instruments including AMICA. This report describes the AMICA specifications, calibrations, scientific goals, and current status of development.
Nazarov M. A. Chaussidon M. Kurat G.
Trace Element Patterns of Phosphorian Sulfides from the Cold Bokkelveld (CM) Chondrite
New trace element data for phosphorin sulfides were obtained by SIMS. The results confirm that the sulfides have a pre-solar trace element signature and could have originated in the reduced environment of carbon star envelopes.

Nazarov M. A. Patchen A. Taylor L. A.
Ca,Ti-rich FeNi Metal Nuggets from a CAI of the Efremovka Chondrite
Ca and Ti enrichments were found in metal nuggets in a rhonite-bearing CAI of the Efremovka chondrite. It is suggested that the nuggets are Fe-Ni carbide-metal alloys, which could dissolve small amounts of Ca and Ti.

Nelson R. M. Hapke B. W. Smythe W. D.
Wavelength Dependence of the Coherent Backscattering Induced Phase Curve in Simulated Planetary Regolith Material
We have searched for wavelength dependent effects in phase curves of candidate planetary regolith materials where coherent backscattering contributes to the opposition phase curve.

Nelson V. E. Rubin A. E.
Update on the Size-Frequency Distributions of Chondrules and Chondrule Fragments in the Semarkona LL3.0 Chondrite
The variation in chondrule/fragment ratio among LL3 chondrites indicates that most fragmentation took place on the parent body rather than in the nebula. Droplet chondrules (BO,C,RP) appear to be larger and less friable than porphyritic chondrules.

Oberst J. Zeitler W. Kuschel M.
Where is Viking Lander 2?
Based on an analysis of the Viking control point network, we predict that the Viking Lander 2 site is located 25 km south-west of crater Goldstone.

Ori G. G. Marinangeli L. Komatsu G.
Gas (Methane?) — Related Features on the Surface of Mars and Subsurface Reservoirs
Several features on the surface of Mars suggest the release of material from the subsurface to the surface: mud volcanoes, pits, bulges in impact craters. These structures may be related to gas releases from the subsurface.

Papike J. J. Shearer C. K. Spilde M. N. Karner J. M.
Metamorphic Diogenite GRO 95555: Mineral Chemistry of Orthopyroxene and Comparisons to the Diogenite Suite
Orthopyroxene chemistry in unique, metamorphic diogenite GRO 95555 is compared to orthopyroxene in a suite of diogenites.

Pearson V. K. Sephton M. A. Franchi I. A. Gilmour I.
Intra- and Inter-Meteorite Heterogeneity in Carbon and Nitrogen Abundance and Isotopic Compositions Within CM Chondrites
Significantly lower nitrogen abundances have been observed in whole-rock and splits of Antarctic CM chondrites compared with non-Antarctic samples. This may reflect the influence of Antarctic weathering on these samples.

Petaev M. I. Meibom A. Krot A. N. Wood J. A.
The Condensation Origin of Zoned Metal Grains in Bencubbin/CH-like Chondrites: Thermodynamic Model
The PCMET and CWPI codes, their thermodynamic database, and comparisons with other condensation codes are described.
Pieters C. M. Pratt S.

*Earth-based Near-Infrared Collection of Spectra for the Moon: A New PDS Data Set [#2059]*

Near-infrared spectra (0.6 to 2.5 µm) acquired for the Moon with earth-based telescopes will be available to the community through PDS in the spring of 2000.

Povenmire H. R.

*The Other Upsilon Pegasid Fireball [#1184]*

Double station Upsilon Pegasid Fireball description and comparison to other fireball measurements.

Povenmire H. R.

*Physical Dynamics of the Upsilon Pegasid Fireball — European Network 190882A [#1183]*

A description of the physical dynamics of an Upsilon Pegasid fireball as measured by the European Network.

Povenmire H. R. Strange R. L.

*A Tektite from Richmond County, Georgia [#1187]*

Description of the Georgia tektite strewnfield and as mapped by H.R. Povenmire including the newest specimen found in Richmond County, GA expanding the strewnfield.

Protheroe W. J. Jr. Stirling J. A. R.

*Cathodoluminescence Analysis of Mars Meteorites [#1980]*

CL imaging is used to locate and detail the texture, and the CL spectrometer can be used to investigate trace variances found, which then can be correlated with WDS analysis.

Protheroe W. J. Jr. Stirling J. A. R.

*Preliminary Results of Cathodoluminescence Spectral Analysis of β-Ca-Phosphates (“Whitlockite”) in the Mars Meteorite ALH 84001 [#2021]*

Three mineral grains of β-Ca-phosphates from the Mars meteorite ALH 84001 sample N fragments #3734, #3738 and #3739 were studied by cathodoluminescence imaging and spectroscopy, and microprobe analysis.

Pugacheva S. G. Shevchenko V. V.

*The Model of the Moon’s Thermal Radiation in the Infrared Spectral Ranges (10–12 Microns) [#1129]*

On the basis of the classic theory of the lunar-surface radiation and the radiation measurements performed by the GOMS artificial satellite was derived a generalized digital analytical model of the thermal fields of the Moon in the infrared (10–12 micron) spectrum.

Robert F. Camy-Peyret C.

*Non Mass Dependent Oxygen Isotopic Fractionation: An Angular Effect in Scattering Processes [#1779]*

A non mass dependent isotopic fractionation effect for oxygen isotopes is described. Numerical applications to the synthesis of ozone are in agreement with the experimental data.

Rodionova J. F. Kozlova E. A.

*Antipodes on the Moon [#1349]*

It is shown that the basins of far side are antipodes of the lunar near side maria and basins.

Ruiz J. Torices A.

*Structure of the Upper Ice Mantle of Triton [#1298]*

If low thermal conductivity ices elevate the effective surface temperature of Triton in a dozen of degrees, or more, an ocean could exist in their interior. If not, the internal structure could evolve to a gravitationally unstable situation.
Sahijpal S., McKeegan K. D., Goswami J. N., Davis A. M.

Oxygen Isotopic Compositions of Murchison Hibonites with Wide-ranging Radiogenic and Neutron-rich Stable Isotope Anomalies [1502]

To better characterize the origins, extents, and interactions of isotopically exotic reservoirs, we determined O isotopic compositions of Murchison hibonites that show a wide range of radiogenic (26Mg, 41K) and n-rich (48Ca, 50Ti) isotope anomalies.

Sanloup C., Blichert-Toft J., Telouk P., Gillet P., Albarede F.

Evidence for Extinct 92 Nb Radioactivity in Chondrites and SNC Meteorites [1247]

The isotopic composition of Zr for chondrites, four SNC meteorites and a eucrite were analyzed. Six of the analyzed chondrites display a distinct negative $^{92}_{80}$Zr anomaly, reaching down to $-2.7 \pm 0.8$ $\varepsilon$ units for Forest Vale (H4).

Schmitt H. H.

Source and Implications of Large Lunar Basin-forming Objects [1821]

Initial breakup of the original Main Belt planetesimal and subsequent resonance interaction of asteroids with Jupiter would appear to be the best present choice as a discrete impactor source for large lunar basin-forming objects.

Schultz R. A.

Depth Implications of Fault-Population Statistics for the Valles Marineris Extensional Province, Mars [1177]

The fault population statistics for the Valles Marineris region are consistent with a mixture of faults and grabens having different aspect ratios, and therefore a dependence of D-L scaling relation on the 3D fault shape.

Schultz R. A.

Mechanical Modeling of Planetary Wrinkle Ridges [1173]

3D calculations demonstrate that horizontal strains across wrinkle ridges are strongly inhomogeneous in 3D (map view and depth). The ratio of folding strains to faulting strains is dependent on fault depth.

Schultz R. A.

On the Application of the Canyonlands Model to Planetary Grabens: Two Decades of Progress [1176]

The observational basis for planetary grabens as simple, symmetric, keystone wedges in a shallow viscoelastic sequence is corrected to demonstrate non-simple, non-symmetric fault networks that extend to non-trivial depths.


Revised Model for Simple Planetary Grabens and Tectonic Implications [1175]

An hourglass model for the cross-sectional geometry of planetary grabens in the near-surface crust is consistent with terrestrial observations and planetary data. Planetary grabens are no longer the simple symmetric structures they were once thought to be.

Scott E. D.


Convective removal lithospheric root and its replacement with asthenosphere explain two of the morphological peculiarities of Alba Patera: the low angle flank slopes, the annular graben, and that volcanic activity changed from volatile rich to poor.

Scott E. D.

Sub-Lithospheric ‘Subduction’ on Mars: Convective Removal of a Lithospheric Root. II: Alba Patera [1329]

Convective removal lithospheric root and its replacement with asthenosphere explain two of the morphological peculiarities of Alba Patera: the low angle flank slopes, the annular graben, and that volcanic activity changed from volatile rich to poor.
Scott E. D.  

*Sub-Lithospheric ‘Subduction’ on Mars: Convective Removal of a Lithospheric Root. III: Syria Planum Region [#1331]*

Convective removal of a lithospheric root and its replacement with asthenosphere can explain the tectonic evolution of the Syria Planum region of Mars, which changed from that characteristic of uplift to that associated with subsidence.

Scott E. D.  Wilson L.  Head J. W. III  

*Martian Plinian Eruptions and Pit Chain Craters [#1332]*

Pit craters in graben on the flanks of Alba Patera form by two processes within stalled dykes: small ones follow the leakage of volatiles from the dyke surface and collapse of crustal rocks into this void; larger ones form during plinian eruptions.

See T. H.  Mittlefehldt D. W.  Varley L. R.  Mertzmann S. A.  Roddy D. J.  Hörz F.  

*Major Element Composition of the Target Rocks at Meteor Crater, AZ [#1720]*

We analyzed the target rocks from Meteor Crater, AZ., using XRF and XRD. Coconino contains >96% SiO₂; Kaibab is dominated by quartz and dolomite and contains very little calcite; the Moenkopi has the highest Al₂O₃ and CaO/MgO of all rocks.

Semenova A. S.  Nazarov M. A.  Kononkova N. N.  Patchen A.  Taylor L. A.  

*Mineral Chemistry of Lunar Meteorite Dar Al Gani 400 [#1252]*

Lunar meteorite Dar Al Gani 400 is dominated by a ferroan anorthosite component. It contains also minor Mg-suite lithologies, rare mare basalt mineral fragments related to VLT basalts, and an unusual feldspar component enriched in Ba/K.

Sephton M. A.  Gilmour I.  Wright I. P.  De Leeuw J. W.  Grady M. M.  Pillinger C. T.  

*High Molecular Weight Organic Matter in Nakhla [#1786]*

Carbon isotopic measurements of individual organic moieties liberated from aromatic high molecular weight material in Nakhla indicate that this meteorite contains complex organic matter similar to carbonaceous chondrites.

Sepp B.  Bischoff A.  Kerschhofer L.  

*Low-Temperature Phase Decomposition in Fe-Ni Metal of the Portales Valley Meteorite [#1604]*

The Portales Valley meteorite shows well developed Widmanstätten pattern in its metallic veins. Due to the slow cooling of the Fe-Ni metal taenite displays a very complex microstructure which can be used to investigate the thermal history of the host meteorite.

Shchepanov D. I.  Golubeva L. F.  

*Influence of Temperature on Reflectance Spectra of Asteroids [#1003]*

Authors of new publications attempt to explain the peculiarities of asteroid reflectance spectra by their relatively low surface temperature.

Shevchenko V. G.  

*Occultation Albedo of Asteroids [#1392]*

Occultation albedos of thirty asteroids were determined using their occultation diameters.

Shingareva T. V  Kuzmin R. O.  

*Some New Data on Morphology of Phobos Surface [#1665]*

The grooves types, the crater and block size distribution and slope processes on Phobos were studied using the new MOC images.

Snyder G. A.  Hall C. M.  Taylor L. A.  Nazarov M. A.  Semenova T. S.  

*40Ar-39Ar Geochronology of Ancient Highlands Rocks from the Luna 20 Landing Site [#1221]*

A group of 6 “new” Luna 20 rocks have been analyzed for their 40Ar-39Ar isotopic composition. Two troctolites suggest ancient ages, possibly in excess of 4350 Ma.
Snyder G. A. Hall C. M. Taylor L. A. Nazarov M. A. Semenova T. S.

\[ #1222 \]

40Ar-39Ar Geochronology of “New” Basalts from Mare Fecunditatis and Mare Crisium

A group of 12 “new” basalts from Luna 16 and Luna 24 have been analyzed for their \(^{40}\text{Ar} - ^{39}\text{Ar}\) isotopic composition. Ages for these samples span a range from 3000 to 3350 Ma.

Sunshine J. M. Hinrichs J. L. Lucey P. G.

Temperature Dependence of Individual Absorptions Bands in Olivine: Implications for Inferring Compositions of Asteroid Surfaces from Spectra

The temperature variations of individual absorptions in olivine are modeled and found to narrow, move slightly in position, and change in relative strength as predicted by theory. These thermal changes may be confused with compositional differences.


Mineralogical Characterization of Lunar Mare Soils

Modal data on the abundances of minerals and glasses in the fine fractions of 9 mare soils form the basis for deciphering their reflectance spectra; these data also provide the basis for detailed understanding of the formation of lunar soils.

Tejfel V. G. Sinyaeva N. V. Kharitonova G. A.

The Detailed Study of Longitudinal-Latitude Variations of the Methane Absorption Distribution Along Jupiter’s Central Meridian

From 380 CCD-spectra of Jupiter’s central meridian, recorded in November-December 1999, the latitudinal and longitudinal variations of the methane absorption bands 619, 725, 798, and 887 nm have measured, analysed and offered as computerized atlas.


Spinning Chondrules Deduced from Their Three-Dimensional Structures by X-ray CT Method

3D structures of POP and BO chondrules were obtained by X-ray CT method. The external shapes are oblate. Distributions of voids and parallel olivine plates in connection to the minor axes suggest spinning chondrules with the rate of about 100 rpm.

Ustinova G. K. Marti K.

Possible Fractionation of Noble Gases in Shock Waves

A new possible mechanism of the noble gas fractionation, conditioned by the different acceleration of ions during the passage of strong shock waves, is considered; some inferences are discussed.

Valter A. A. Gurskij D. S. Erjomenko G. K.

Distribution of Impact Diamond in the Belilovka (Zapadnaja) Astrobleme on Ukrainian Shield

Layer suevites and vein impaccites with glass matrix (tagamites) appear to be diamondiferous with average (and maximum) content of diamond grails (>50 mcm) correspondingly (in carat per ton): 1.2(14) and 4.7(38.1).

Valter A. A. Oleynic H. S. Fisenko A. V. Semenova L. F.

Electron Microscopy Evidences of Novo Urei Diamond Nature

By electron microscopy study and by comparison with experimentally obtained and natural diamond, the Novo Urei diamond concluded to be form upon graphite by martensite like transformation probably under the condition of grate scale impact.
Velbel M. A.  
*Relative Accessibility of CM Chondrite Matrix, Rims, and Chondrule Mesostasis to Aqueous Alteration: Inferences from Terrestrial Weathering of EET 92005* [#1681]

The weathering front in Antarctic CM chondrite EET 92005 penetrates farther into chondrule mesostasis than into matrix or chondrule rims. Preferential alteration of chondrule interiors can post-date chondrule incorporation into rim or matrix.

Velikodsky Yu. I.  Akimov L. A.  Korokhin V. V.  
*Two-Parameter Empirical Photometric Function in Analysis of Earth-based Observations of the Moon* [#1391]

Improved empirical Akimov’s formula is presented. This photometric function gives a good fit to Earth-based and Clementine observational data. An influence of albedo and relief on the disk brightness distribution is discussed.

Vid’machenko A. P.  
*Variations of the Reflective Characteristics of Jupiter’s Atmosphere* [#1060]

Analysis of long-term photometrical data of Jupiter integral brightness in visible light is carried out. Periods of 22.3-years magnetic cycle, of 11.1-years solar activity, of double orbital and orbital periods (11.86 years), and period about 180 years are found out.

Wang M.-S.  Lipschutz M. E.  
*Thermally Labile Trace Elements in Enstatite Meteorites* [#1029]

RNAA data for Bi, In and Tl in 30 E3–6 chondrites accord well with trends for heated Abee (EH4) suggesting that all EH and EL samples reflect open-system, post-accretionary heating, independent of siderophile content or recovery location.

Warren P. H.  
*Bulk Composition of the Moon as Constrained by Lunar Prospector Th Data, II. Inferences Regarding the Deeper Crust and Whole Moon* [#2082]

By assessing the distribution of Th in and around craters as measured by the Lunar Prospector GRS, I show that the crust tends to be less Th-rich at depth than the surface composition.

Wasson J. T.  Richardson J. W.  
*IVA Irons: New Data Set, Lower Solid/Liquid Partition Ratios than in Group IIIAB* [#1852]

Ir-Au and Ir-As slopes are much lower for IVA than for IIIAB irons. Although DAu was similar during IIIAB and IVA crystallization, DIr and DAs were much lower in the IVA magma. Initial S and P contents appear to have been much lower in the IVA magma.

Watson J. K.  Cabrol N. A.  Grin E. A.  
*Characterization of Terrestrial Analog Sites for Mars Mission Engineering Development Activities* [#1455]

We describe the effort initiated to allow the development community to identify and select which location is most appropriate to support specific activities related to Mars exploration.

Watters T. R.  Robinson M. S.  
*Topographic Studies of Wrinkle Ridges: The Significance of Elevation Offsets* [#1879]

MOLA profiles from SPO-1 and SPO-2 that cross wrinkle ridges are examined for evidence of elevation offsets. Results suggest some elevation offsets may be due to regional slope rather than the localized surface manifestation of a thrust fault.

Weidenschilling S. J.  Davis D. R.  
*After Oligarchy Comes Chaos: From the Middle to Late Stage of Planetary Accretion* [#1685]

Nebular gas drag is effective at stabilizing a system of growing planetary embryos; its removal triggers chaos and crossing orbits.
Wilson T. L.  Pinsky L. S.  MacGibbon J. H.
Monte Carlo Study for Planetary Exploration [#1382]
Preliminary results from an ongoing study of radiation albedo backgrounds for planetary regoliths is presented. It utilizes a new Monte-Carlo package based upon the melding together of two existing codes evolving at CERN known as FLUKA and ROOT.

Wright I. P.  Morgan G. H.  Prairie I. J.  Morse A. D.  Leigh D.  Pillinger C. T.
Beagle 2 and the Search for Organic Compounds on Mars Using GAP [#1573]
The Gas Analysis Package (GAP) on Beagle 2, the lander of Mars Express, will search for signs of organic materials on Mars. Using stepped combustion/mass spectrometry, all forms of carbon in surface samples will be studied (quantitatively and isotopically).

Yada T.  Kojima H.
The Collection of Micrometeorites from Bare Ice of the Yamato Mts. in Antarctica in Austral Summer of 1998 [#1528]
We collected Antarctic micrometeorites (AMMs) by melting ~40 tons of bare ice around the Yamato Mts. in austral summer of 1998. A total number of AMMs of 40–100 µm fraction is estimated as ~3000.

Yanai K.
Achondrite Polymict Breccia 1153: A New Lunar Meteorite Classified to Anorthositic Regolith Breccia [#1101]
Over 16 meteorites have been identified as lunar origin, such as the first lunar meteorite Y-791197, ALHA 81005 and many others from Antarctica and Calcalong Greek in Australia. Recently specimen 1153 has been identified and classified as a lunar meteorite.

Zeigler R. A.  Jolliff B. L.  Korotev R. L.  Haskin L. A.
Petrology and Geochemistry of an Unusual Ferroan Anorthositic-Troctolite Assemblage from Apollo 16 [#1623]
A fragment of ferroan anorthositic troctolite was found in soil from the Cayley Plains, Apollo 16. An assemblage of magnesian olivine, orthopyroxene, troilite, and Fe metal replaced primary ferroan olivine via sulfide alteration and Fe reduction.

Zent A. P.  Quinn R. C.  Grunthaner F. J.  Beuhler M.
Mars Oxidant Instrument (MOI): An In-Situ Heterogeneous Chemistry Analysis [#1886]
An instrument designed to characterize interfacial oxidants of the martian soil has been developed. It relies on controlling the chemical ambient while exposing the soil to well-characterized thin films, and sounding their electrical resistivity.

Zinovieva N. G.  Mitreikina O. B.  Granovsky L. B.
Origin of Ureylt-Eryeite-bearing Pyroxene in Ordinary Chondrite: Evidence for Significant Pressure in the Parental Bodies [#1064]
The crystallization of unusual, ureyite- and jadeite-rich pyroxene in the chondrules of ordinary chondrites is demonstrated to be indicative of significant pressures in the parental bodies.