Abdrakhimov A. M.  
*Geologic Mapping of Vega 1 Landing Site Region [#1700]*  
Geologic mapping of the Vega 1 landing site showed that the area is dominated by Wrinkle Ridged Plains (98%). Densely Fractured Plains (1%), Shield Plains (1%) and some others are subordinate. So the lander probably sampled the Wrinkle Ridged Plains.

Abdrakhimov A. M.  
*Geologic Mapping of Vega 2 Landing Site Region [#1719]*  
Geologic mapping of the Vega 2 landing site showed that the area is dominated by Wrinkle Ridged Plains (99%). Less widespread are Lobate Plains (1%) and Fractured and Ridged Plains (<0.1%). So the lander probably sampled the Wrinkle Ridged Plains.

Abdrakhimov A. M.  
*Geologic Mapping of Venera 8 Landing Site Region [#1590]*  
Geologic mapping of the Venera 8 landing site showed that the area is dominated by Shield Plains (75%). Wrinkle Ridged Plains (15%), Lobate Plains (3%) and some others are subordinate. So the lander most probably sampled the Shield Plains.

Abdrakhimov A. M.  
*Geologic Mapping of Venera 9 Landing Site Region [#1601]*  
Geologic mapping of the Venera 9 landing site showed that the area is dominated by Wrinkle Ridged Plains (60%). Fractured and Ridged Plains (21%), Tessera Terrain (14%) and some others are subordinate. So the lander most probably sampled Shield Plains.

Abdrakhimov A. M.  
*Geologic Mapping of Venera 10 Landing Site Region [#1632]*  
Geologic mapping of the Venera 10 landing site showed that the area is dominated by Wrinkle Ridged Plains (60%). Lobate Plains (21%), Tessera Terrain (15%) and some others are subordinate. So the lander most probably sampled Shield Plains.

Abdrakhimov A. M.  
*Geologic Mapping of Venera 13 Landing Site Region [#1653]*  
Geologic mapping of the Venera 13 landing site showed that the area is dominated by Wrinkle Ridged Plains (90%). Lobate Plains (3%), Shield Plains (3%) and some others are subordinate. So the lander most probably sampled the Wrinkle Ridged Plains.

Abdrakhimov A. M.  
*Geologic Mapping of Venera 14 Landing Site Region [#1670]*  
Geologic mapping of the Venera 14 landing site showed that the area is dominated by Lobate Plains (53%). Wrinkle Ridged Plains (27%), Rift Terrain (14%) and some others are subordinate. So the lander most probably sampled the Lobate Plains.

Abels A.  
The Spider impact structure has been investigated by means of integrated remote sensing. It is concluded that cratering was influenced by the original morphostructural setting leading to the present, highly asymmetric properties of the deeply eroded site.
Aittola M.
*Age Relations Between Coronae and Novae* [#1503]
Majority of the novae, which are located in the inner part of the coronae, seem to postdate corona formation. These novae are usually located close to the corona annulus and display prominent topographic rise.

Albin E. F.
*Igneous Dike Remnants and the Emplacement of Flood Lavas Within Martian Impact Basins* [#1972]
A survey of high resolution Mars Observer Camera (MOC) images has revealed thin linear ridge-like features that are interpreted as the weathered remnants of igneous dikes within impact basins.

Albin E. F.  King J. D.
*Origin of Dark Slope Streaks Within the Schiaparelli Impact Basin, Mars* [#1395]
Schiaparelli basin is a prominent 470-km diameter impact feature situated in the equatorial cratered uplands of Mars. The nature and origin of dark slope streaks within the basin is discussed.

Alexeev V. A.
*The Strange Features of the H5 Chondrites* [#1025]
High fragmentation of H5 chondrites in the Earth atmosphere and significant losses of their cosmogenic and radiogenic gases may be caused by a feature of the catastrophic event on the H chondrite parent body about 200 Ma ago.

Alexeev V. A.  Gorin V. D.  Ustinova G. K.
*The Kunya-Urgench and Some Other Fresh-fallen Chondrites: Cosmogenic Radionuclides* [#1024]
A set of radionuclide measurements in the fresh-fallen chondrites is carried out nondestructively, as a part of our research program to study the radiation history of the chondrites, as well as the radiation conditions in the contemporary heliosphere.

Badjukov D. D.  Raitala J.  Petrova T. L.
*Ni-Co, Cu, and Zn Sulfides in the Melt Rocks of the Saaksjarvi Crater: Characteristics and Their Possible Origin* [#1532]
Pentlandite, Fe-Ni-Co monosulfide, millerite, chalcopyrite, and sphalerite were found in the Saaksjarvi melts. Morphology of some inclusions suggests a presence of sulfide liquids in the melts. Meteoritic origin for Ni-Co sulfides is proposed.

Barr A. C.  Pappalardo R. T.  Stevenson D. J.
*Rise of Deep Melt into Ganymede’s Ocean and Implications for Astrobiology* [#1781]
We investigate conditions under which magmatic events at Ganymede’s rock/ice interface could generate pockets of water melt which rise through the ice mantle and carry nutrients to the ocean to help sustain a biota.

Bartholy J.  Pongracz R.
*Teaching High-School and Undergraduate Students to Download, Understand and Use Satellite Images* [#1600]
This course is offered mainly for undergraduate students, however, the program can serve as a base in secondary schools or for self-education purposes. Our paper summarizes the course focusing on new ideas and features of satellite imagery.

Basilevsky A. T.  Zabalueva E. V.  Kotova I. V.  Ivanov M. A.
*Photogeologic Analysis of the 15 m/px Resolution Images of Callisto Taken at Orbit C21* [#1548]
15 m/px res Galileo images of Callisto show small (<1–2 km) craters which degradation style is similar to that of lunar craters of the same size. This indicates that major factors of their degradation are impact regardering and mass wasting.
Bell J. F. III  Morris R. V.  Farrand W. H.  Wolff M. J.
A Re-Assessment of Global Color Units on Mars from Hubble Space Telescope Visible to Near-IR Imaging and
Spectroscopy [#1484]
We are using new multispectral imaging and imaging spectroscopic measurements of Mars from the Hubble
Space Telescope (HST) to identify and map Mars surface color and spectroscopic units globally at scales of ~20
to 50 km/pix.

Benoit P. H.  Sears D. W. G.
The Orbital Distribution of Meteorites Based on High Temperature Thermoluminescence: 1. Theory and
Modern Falls [#1795]
Like 250°C TL data, 400°C TL levels of modern falls largely reflect solar heating, and thus perihelia. The
400°C data offers additional constraints on orbital information for ordinary chondrites.

Lukács B.  Roskó F.  Szakmány Gy.  Tóth Sz.  Hegyi A.  Kabai S.
How We Used NASA Lunar Sample Set in Making an Educational Atlas Series of the Solar System Materials:
(1), (2) [#1100]
and Asteroidal Evolution (lunar samples and meteorites), 2) Planetary Surface Studies by Surveyor and
Experimental University Lander Hunveyor.

Proposed Wind Tunnel Studies of Ventifact Formation on Mars and Earth [#1873]
Upcoming experiments to produce ventifacts in the wind tunnel under terrestrial and martian conditions are
discussed.

Britt D. T.  Kring D. A.
Portales Valley: The Bidirectional Reflectance Spectrum of a Unique H5 Breccia [#1475]
Portales Valley is an H5 ordinary chondrite with extensive crosscut metal rich veins. The bidirectional
reflectance spectrum of its silicate portion is presented.

Britt D. T.  Kelsey C. M.  Kring D. A.
Ourique: Spectra and Petrology of an H 4  Gas-rich Breccia [#1330]
Ourique is a brecciated, gas-rich, H 4  ordinary chondrite with a light-dark structure. The dark matrix shows
lower reflectance and absorption features relative to the light clasts. The matrix is enhanced in the finest size
fractions of metal.

Stofan E. R.
and Prospective [#2098]
12 names assigned on Venus in 2000. The current list includes 1821 names of 21 feature types. 95% of names
present 11 types of features. The main named types are craters – 872, and coronae – 267. These two types
possess 62% of the names.

Busarev V. V.
Oxidized and Hydrated Silicates on M- and S-Asteroids: Spectral Indications [#1927]
From our observational data we suppose that oxidized silicates may be widespread on the main-belt asteroids
including differentiated bodies. Moreover, there is also a possibility of presence on the asteroids a small amount
of hydrated silicates.

Cantor B. A.  James P. B.
Interannual Variability of the Martian Residual North Polar Cap [#1951]
Low-resolution MOC images of Mars during the 2000–1 northern summer season reveal a residual north polar
cap that is smaller than that seen the previous martian year.
Caplinger M. A.
High-Resolution Imaging of Ceraunius Tholus, Mars [#1342]
Features seen in new images of the small Tharsis volcano Ceraunius Tholus from the Mars Global Surveyor (MGS) Mars Orbiter Camera (MOC) are described.

Chikami J.
Mineralogical Study of GRA95209 Lodranite in Comparison with Acapulcoites and IAB Iron Meteorites [#1168]
High ZnO content in both GRA95209 chromite and IAB iron meteorites and heterogenous metal distribution in GRA95209 and Caddo County IAB iron meteorite might suggest the common formation process between GRA95209 and IAB iron meteorites.

Chuang F. C.  Figueredo P. H.  Kirk R. L.  Greeley R.
Europa’s Mitten: Estimate of Ice Thickness Using an Elastic Plate Model [#1848]
Results of a 2-D elastic plate model used to estimate the thickness of ice below Europa’s ‘mitten’ are presented. Using properties of polycrystalline water ice and inferred Europan ‘cryomagma’, we calculate an elastic thickness of ~2.1–2.6 km.

Clifford S. M.  George J. A.  Stoker C. R.  Briggs G.  Beaty D. W.
A Proposal for an Integrated Geophysical Strategy to “Follow the Water” on Mars [#1904]
In this abstract we propose an integrated strategy for the geophysical exploration of Mars that we believe represents the fastest, most cost-effective, and technically capable approach to identifying the state and distribution of subsurface water.

Cloutis E. A.
The reflectance spectra of melilites exhibit absorption features attributable to both ferrous and ferric iron. This mineral does not appear to be a spectrally dominant component of CAIs.

Cloutis E. A.  Bell J. F. III
Reflectance Spectra of Heated Palagonites [#1208]
Heating of palagonites results in a number of spectral changes, mimicking those of naturally heated palagonites. These include reductions in H₂O/OH band depths, increasing reflectance and a redder sloped spectrum.

Cloutis E. A.  Gautason B.
Spectral Reflectance Properties of Calcium-Aluminum Inclusion Minerals: 1. Perovskites [#1127]
The reflectance spectra of perovskites exhibit high overall reflectance and a number of absorption bands due to ferrous iron which may be diagnostic of composition.

Demidova S. I.  Ulyanov A. A.
Chemical Compositions of Rock-forming Minerals from Sahara 98044 (CV3) Refractory Inclusions and Findings of Rare Ge-rich Phases in Some Carbonaceous Chondrites [#1295]
CAIs from CV3 Sahara 98044 chondrite were studied and classified and detail mineralogical description of each type is given. Ge-rich phases were observed in one unique refractory inclusion from this chondrite and also in other carbonaceous chondrites.

Deutsch A.  Kettrup D.  Pesonen L. J.  Pihlaja P.
A Re-Examination of the Occurrence of Cosmic Spherules in the Mesoproterozoic Jotnian Sandstone [#1789]
Following an earlier description of the occurrence of cosmic spherules in the Satakunta sandstone, Finland, we sampled different outcrops. After 2 years of careful separation, it turned out that the samples from the Satakunta sandstone are barren.
Optical Characteristics of the Martian Dust

It is shown that when variations in optical thickness of the martian atmosphere are ignored in the analysis of the data obtained from the martian surface, this may result in overestimating both the values of the intensity and optical thickness of the dust component.

Problematic Constraints on Collisional Evolution in the Edgeworth-Kuiper Belt: Difficulties in Exploiting the “Vesta Crust” Paradigm

The existence of Pluto’s volatile N2/CO/CH4 crust against 4.5 Gyr of Kuiper Belt bombardment is used to attempt to constrain the collisional history of the 30–50 AU zone and the timing of Pluto’s crustal differentiation.

A layered mound in Gale Crater is a remnant of a more extensive sequence that likely once filled the crater and represents a suite of layered materials on Mars interpreted as “Noachian” sedimentary rock units.

During the action of shock wave on rock-forming minerals black opaque polymineral aggregate is formed. These aggregates are interpreted as a result of opacitization or shock-thermal decomposition. What is correct?

We have estimated the shock pressure in Kenna and Novo Urei ureilites on the basis of Ar and Xe contents in diamonds and bulk samples. It’s possible the ureilites of this type have experienced shock pressure equal to 65±16 GPa.

Analysis of the release pattern of Ar and Xe from grain size fractions of Efremovka presolar diamonds at stepped combustion and pyrolysis indicates that in both cases the gases release as a result of destruction of the diamond lattice.

Near-infrared spectral observations of Triton have been obtained with the ESO-NTT telescope. 3 unidentified bands previously observed are no longer detected, and the extended spectral range will be useful to bring new clues on the surface of Triton.

We have used a new digital technique (usable as a general mapping tool) to explore the spatial variation of extensional tectonic strain within the Diana Chasma region of Venus. The results are consistent with the presence of micro-plates on Venus.
TERMOSCAN Data-derived Thermal Inertia Mapping of Mars with Super High-Resolution [1845]
The results of TERMOSCAN data-derived thermal inertia mapping of Mars with super high-resolution are presented.

Gibbons H. L  Scott E. D.  Wilson L.  Head J. W. III
Inferred Properties of Giant Radial Dikes Beneath Graben in Northern Tharsis, Mars [1154]
We analyze graben in N Tharsis to deduce the geometries of underlying giant dikes. The shapes and sizes of associated pit craters are used to find how much dike magma was erupted in spatially localized but violently explosive eruptive events.

Giese B  Wagner R.  Neukum G.  Pappalardo R.  Head J. W. III  Galileo SSI Team
The Topography of Bright/Dark Terrain on Ganymede [1751]
Stereo images acquired during Galileo’s 28th orbit are used to derive the topography in a bright-dark terrain transition area on Ganymede. Implications for the origin of bright terrain are given.

Geochemical Studies of the Lomonosov-Fleming Region of the Lunar Farside [1516]
Geochemical iron and titanium data is used to determine if the Lomonosov-Fleming basin is a cryptomare region.

Golubeva L. F.  Shestopalov D. I.
Some Peculiarities of S-Asteroid Surface Materials Obtained by Modeling of Asteroid Reflectance Spectra [1004]
Reflectance spectra of 38 asteroids from SI-SVII subtypes and probable reflectance spectra of optic active minerals on surface of these asteroids have been calculated. Spectral properties of asteroid pyroxenes and olivines are described.

Gounelle M.  Maurette M.  Engrand C.  Kurat G.  Shu F.
Refractory Phases of Micrometeorites and the “Primitivity” of Cometary Nuclei [1626]
We used common characteristics of refractory phases in modern and early micrometeorites to both further constrain the scenarios proposed for the origin of the solar system and confirm that cometary nuclei are not as primitive as previously thought.

Greeley R.  Fagents S. A.
Volcanic Pseudocraters on Mars: Icelandic Analogs [1871]
Pseudocraters are small conical structures which develop on some basaltic lava flows in Iceland as a result of the interaction of the active flow with water or marshy ground. These features have been studied in the field and compared with structures observed on Mars.

Greeley R.  Kraft M. D.
Survivability of Aggregate Sands on Mars [1839]
Sand-size particles are considered to exist on the surface of Mars, as indicated by the presence of numerous dunes and duneforms, as well as other evidence.

Greeley R.  Iversen J. D.  Beardmore G.  Mickelson B.  Metzger S.
Martian Dust Devils: Laboratory Simulations [1888]
Mars dust devils are effective in raising particles into the atmosphere. A laboratory apparatus has been installed in which particle threshold and flux experiments can be run under Mars and Earth conditions.

Greshake A.  Clayton R. N.  Mayeda T. K.
Dhofar 125: A New Acapulcoite from Oman [1325]
With a total mass of 2697 g Dhofar 125 is the largest acapulcoite ever found. It consists of olivine, augite, low-Ca pyroxene, plagioclase, Fe,Ni metal, troilite, chlorapatite, and chromite and displays a recrystallization texture with abundant 120° triple junctions.
Hargitai H. I.

*New Focuses on the Teaching of Planetology: Planetary Science at Middle Schools of Hungary [#1211]*

The education of Solar System bodies many times follows the traditions, which does not include our new knowledge. Now its place should be in Geography instead of Physics. I give suggestions for a stronger emphasis on moons and Cartographic Atlases in education.

Haskin L. A.  Korotev R. L.  Jolliff B. L.

*On Surface-Sample Collection Strategy for Mars, with Lessons from Lunar Sampling [#1820]*

A reasonable sampling strategy for a Mars sample collection mission (assume total 0.5 kg) would be to obtain a few rocks not exceeding 5 g, at least half the mass as 1–5 mm rocklets, and a few 10–25-g samples of bulk regolith.

Haskin L. A.  McKinnon W. B.  Moss B. E.

*A Model for Properties of Basin Ejecta Deposits and Secondary Crater Densities [#1570]*

Ejecta scaling relationships, ballistic sedimentation, and ejecta fragment size distributions are used to give estimates of thicknesses of basin ejecta deposits, proportions of primary ejecta, and secondary crater diameters and surface densities.

Head J. W. III

*Medusae Fossae Formation as Ancient Polar Deposits?: Tests and New Data on Stratigraphic Relationships [#1394]*

Analysis of the Medusae Fossae Formation shows that its properties are consistent with those in polar regions; the age of the deposit may be partly Hesperian.

Head J. W. III  Basilevsky A. T.

*The Hesperian Period of Martian History: Key Trends in Volcanic and Tectonic Activity [#1114]*

Volcanism in the Hesperian Period of Mars, together with global ridge and wrinkle-ridge formation, represent a major change in the evolution of the planet.

Head J. W. III  Bridges J. C.

*Beagle 2 Landing Site: Regional Characteristics of Isidis Planitia from MOLA Data [#1236]*

The geologic setting and regional topography of the Mars Express Beagle 2 landing site in Isidis Planitia are documented.

Head J. W. III  Ghatan G. J.

*Hesperian-aged Ice-rich Deposits near the South Pole: Evidence for Large-Scale Melting and Drainage in the Southern Noachis Terra Region of Mars [#1062]*

Analysis of the interior of a regional ice-rich deposit of Hesperian age near the south pole shows abundant evidence interior meltings and transport of water to the deposit margins and into surrounding lows.

Head J. W. III  Hallet B.

*Origin of Sinuous Ridges in the Dorsa Argentea Formation: Additional Criteria for Tests of the Esker Hypothesis [#1366]*

Principles of esker formation are reviewed from glacial physics and Earth field observations to test the origin of sinuous ridges on Mars.

Head J. W. III  Pratt S.

*Closed Chaos Basins on Mars: Evidence for Regional Groundwater Drawdown and Collapse [#1774]*

A zone of isolated occurrences of chaotic terrain (closed chaos basins) is interpreted to represent drawdown of the regional groundwater table associated with the formation of Ma'Adim Valles, one of the largest valley networks on Mars.
Head J. W. III Pratt S.

Large Hesperian Lake in Schmidt Valley near the South Pole of Mars: Evidence for Water Input and Drainage [#1159]
Cavi and esker-like ridges suggest that water derived from melting of the Dorsa Argentea Formation ponded in the Schmidt valley to form a lake which was breached at its northern end and flowed down into the Argyre Basin.

Head J. W. III Pratt S.
Malea Planum Hesperian Volcanic Province: Characterization Using MOLA Data [#1627]
New MOLA data permit characterization of highland paterae in Malea Planum and assessment of the adjacent Hesperian ridged plains.

Heber V. S. Baur H. Wieler R.

High Resolution Solar He Record in Lunar Samples: Evidence for a Temporal Variation of the Solar Wind Composition with Time? [#1847]
We present high depth resolution $^{3}$He/$^{4}$He ratios of solar wind implanted in lunar regolithic samples. These data show at face value a decreasing $^{3}$He/$^{4}$He with increasing antiquity as might be expected from solar physics. However Ne isotopes suggest an alteration artefact.

Hess P. C. Longhi J.

Capillary Effects on the Stability of Ice in Martian Crust [#1702]
Capillary effects can stabilize liquid water by as much as 40°C below the bulk melting temperature.

Hoffman N.

CO$_{2}$ Phase Changes and Flow Mechanisms for Non-Aqueous “Floods” on Mars [#1288]
Water is not required as the active medium for sediment transport and erosion in the outburst “floods”. CO$_{2}$ vapour-supported density flows are an ideal and far more probable mechanism. Explosive outbursts of subsurface liquid CO$_{2}$ fuel the flows.

Hoffman N.

Explosive CO$_{2}$-driven Source Mechanisms for an Energetic Outflow “Jet” at Aromatum Chaos, Mars [#1257]
New models of subsurface liquid CO$_{2}$ escape show that giant gas-supported debris flows can be accelerated to speeds of 500 km/sec by the expansion pressure of CO$_{2}$ vapour. Aromatum chaos is modelled as a low-pressure rocket motor, but operating at cryogenic temperatures.

Hoffman N.

The Origin of Pervasive Layering on Early Mars Through Impact/Atmosphere Feedback Mechanisms [#1582]
Layering on Early Mars is not a localized feature of individual lake basins but a planetwide phenomenon tied to major impacts. Mass balance of ejecta and fill supports this. Major impacts would have caused wildly unstable atmospheres on early Mars.
Hoffman N.  Kargel J. S.  Tanaka K. L.  
*Isidis Basin — A Potential Focus of Cryovolcanic Activity on Mars* [#1493]  
Mounds in Isidis Basin may well be the sites of explosive eruptions of CO₂ from a subsurface liquid reservoir, rather than magmatic features. The surface chemistry and stratigraphy of Isidis may contain evidence of this cryovolcanism.

Hoffman N.  Tanaka K. L.  Kargel J. S.  Banerdt W. B.  
*Emplacement of a Debris Ocean on Mars by Regional-Scale Collapse and Flow at the Crustal Dichotomy* [#1584]  
Giant debris flows could have filled the northern lowlands with ~2 km of sediment in 10³ to 10⁵ years by catastrophic regional terrain collapse. The outburst floods and chaos zones are probably the waning stage of this process.

Horváth A.  Gánti T.  Gesztesi A.  Bérczi Sz.  Szathmáry E.  
*Probable Evidences of Recent Biological Activity on Mars: Appearance and Growing of Dark Dune Spots in the South Polar Region* [#1543]  
We imply from MGS images’ morphological analysis: Dark Dune Spots (DDSs) on sand sheets, S. polar reg. Mars: 1) DDSs do not fit to fine topography, 2) water flows out from DDSs, 3) sublimation + recent biological activity explain their changes.

Ipatov S. I.  
*Formation of Trans-Neptunian Objects* [#1165]  
It may be possible that some large trans-Neptunian objects, asteroids, and planetesimals with diameter up to several hundreds kilometers were formed by compression of rarefied dust condensations, but not by accumulation of smaller planetesimals.

Ivanov A. V.  Kononkova N. N.  Zolensky M. E.  Migdisova L. F.  Stroganov I. A.  
*The Kaidun Meteorite: A Large Albite Crystal — Fragment of an Alkaline Rock* [#1386]  
A large albite crystal was found in a Kaidun thin section. The clast is the second alkaline rock found in meteorites.

Ivanov M. A.  Basilevsky A. T.  
*Morphology and Density of Impact Craters in Galileo Regio, Ganymede, and Asgard Basin, Callisto* [#1501]  
Impact craters on Callisto and Ganymede have different preservation state. The variety of the degradation states occurred during the early bombardment when intensive formation of craters was accompanied by their rapid degradation.

Ivanov M. A.  Kotova I. V.  Basilevsky A. T.  
The statistics of craters less than 8 km suggests that the intensity of crater degradation was rather high early in the history of Callisto. This may be caused by the presence of temporary atmosphere at Callisto in the beginning of its geologic history.

Ivanova M. A.  Petaev M. I.  Nazarov M. A.  Taylor L. A.  Wood J. A.  
*Refractory Inclusions from the New CH Chondrite, NWA 470* [#1392]  
CAIs from NWA 470 are grossite-, hibonite-, melilite- and spinel-rich, with anorthite and Al-diopside. One CAI contains the first reported occurrence of calcium monoaluminate, CaAl₂O₄. These CAIs probably formed in the region depleted in Mg relative to Ca and Al.

Johnson J. R.  Plescia J. B.  
*Field Spectroscopy of Modern and Ancient Calcareous Tufa Deposits* [#1982]  
Visible/near-infrared and thermal infrared field spectroscopy of calcareous tufa deposits at Mono and Searles Lakes was used to study potential differences in carbonate/evaporite mineralogy related to age differences between the deposits.
Johnson J. R. Sucharski T. Reid R J.

*Implementation of the Image for Mars Pathfinder Calibration Algorithms in Isis [#2062]*

Version 3 of the spectrophotometric calibration algorithms for Imager for Mars Pathfinder (IMP) stereo camera multispectral image data sets has been implemented in the USGS Integrated Software for Imagers and Spectrometers (ISIS) software package.

Kargel J. S. Head J. W. III Hogenboom D. L. Khurana K. K. Marion G.

*The System Sulfuric Acid-Magnesium Sulfate-Water: Europa’s Ocean Properties Related to Thermal State [#2138]*

Europa’s aqueous evolution is modeled in the system H$_2$O-H$_2$SO$_4$-MgSO$_4$. For a thin ice crust, the ocean is thick, warm (~267 K) and dominated by MgSO$_4$; for a thick ice crust, the ocean layer is thin, cold (as low as 211 K), and dominated by H$_2$SO$_4$.

Kashkarov L. L. Ivliev A. I. Assonov S. S. Kalinina G. V. Semenova A. S.

*Track-Thermoluminescence and Microstructure Data of Single Silicate Crystals from Lunar Regolith: The Problem of Gas Bubbles Formation [#1354]*

Tracks, thermoluminescence, and SEM investigations were carried out for lunar regolith crystals. Report includes measured parameters, estimated shock pressure and heating temperatures and their possible relation to gas micro bubbles formation.

Kenkmann T.

*Deformation Mechanisms During Impact Crater Modification Inferred from the Crooked Creek Impact Structure, Missouri, USA [#1560]*

Microstructural investigations show that intergranular fracturing and brittle shear zone formation are dominant deformation modes during crater modification. Indications for plastic flow and granular flow were not found on the scale of observation.

Kerridge J. F. Marti K.

*Solar Nitrogen Measurements and Records of Past Radiations [#1246]*

Several new nitrogen isotopic signatures have recently been found to possibly approximate those in the solar wind, but major discrepancies in these observations preclude a firm identification of this important datum.

Kettrup B. Deutsch A.

*New Data for Chicxulub Target Lithologies and Ejecta Material [#1505]*

Geochemical analysis of lithic clasts in impactites is a promising approach to constrain the target, and to determine contributions of precursor rocks to the melt. Investigation of material from different K/T sites may enlighten ejecta mechanisms.

Kettrup D. Deutsch A.

*Micrometeorites in Sandstones: FRANKA — A Successful Separation Method? [#1308]*

FRANKA and the results — unfortunately no new successful separation method to separate micrometeorites from solid rock samples. Similar to some welding and cutting techniques, the electrodynamical fragmentation produces spherical artifacts.

Korotev R. L.

*On the Systematics of Lunar Regolith Compositions [#1134]*

Some systematics of lunar regolith composition are discussed in terms of chemical elements measurable from orbit.


*Trace-Element Concentrations in Northwest Africa 032 [#1451]*

Trace-element concentrations (INAA) are presented for four samples of the NWA 032 lunar meteorite. The mare basalt has a moderately high Th concentration (1.9 ppm) and a higher Th/REE ratio than any other known mare basalt.
Kostama V-P.

Classification of Arachnoids on Cytherean Surface [#1093]
Arachnoids are morphological lithospheric features unique to Venus. Their distribution probably reflects the qualities of the Venusian geological development. Different geological environments give us the variables to use in classifying arachnoids.

Kozlova E. A. Michael G. G. Rodionova J. F. Shevchenko V. V.

Compilation and Preliminary Analysis of a Catalogue of Craters of Mercury [#1231]
We have used the data of the Mariner 10 spacecraft to create a new Morphological catalogue of craters of Mercury including 6334 craters of diameter 10 km and more.

Krause M. O. Grosfils E. B.

Analysis of Hellas Rim Geologic Units Using Mars Orbiter Laser Altimeter (MOLA) Data [#1108]
We use MOLA data to assess whether elevation or point to point slope can be used to discriminate between different geologic units with a range of ages in a 10x10 degree region on the east side of the Hellas impact basin rim.

Kurat G. Brandstätter F. Clayton R. Nazarov M. A. Palma H. Schultz L. Varela M. E. Wäsch E. Weber H. W. Weckwerth G.

D’Orbigny: A New and Unusual Angrite [#1753]
This is the sixth and largest angrite. Its chemical, mineralogical, O isotopic and rare gas compositions fit the range displayed by other angrites. It is porous in places, rich in druses and hollow spheres, a wonderful rock.

Lavrentjeva Z. A.

Elemental Composition of Accessory Minerals from Adhi Kot EH4 Chondrite [#1022]
The results of elemental abundances in accessory minerals of enstatite chondrite Adhi Kot are reported.

Lavrukhina A. K.

Helium Isotopes in Solar System [#1026]
The differences in isotopic compositions of planetary He and solar He, which is produced by deuterium burning on the stage of the main sequence Sun, allow us to propose that accretion of protoplanetic nebula took place during earlier stages.

Le Mouélic S. Langevin Y.

Estimation of the Bulk Iron Content of the Surface of Mercury from a Lunar Iron Mapping Technique [#1097]
We use an integrated telescopic spectrum of Mercury to discuss the composition of the surface in terms of iron content.

Le Mouélic S. Forni O. Quirico E.

Near Infrared Spectral Observations of the Asteroid 140 Siwa, Second Flyby Target of the Rosetta Mission [#1094]
We present the first spectral observation of the C Class asteroid 140 Siwa in the near infrared domain (0.95–2.5 µm). A flyby of 140 Siwa is planned in the baseline of the Rosetta mission in 2008.

Leya I. Wieler R. Neumann S. Michel R.

Modelling the Cosmic-Ray Production Rates in Lunar Samples [#1504]
We present production rates of cosmogenic nuclides in lunar samples.

López I.

Plume-Lithosphere Interaction on Venus: Possible Scenarios for the Origin of Multiple and Asymmetric Coronae [#1268]
This work considered three possible scenarios involving plume-lithosphere interaction on Venus that can produce the lateral flow and ponding of a mantle diapir (channeling), process that could explain the occurrence of asymmetric and multiple coronae.
Lorenz C. Nazarov M. A. Kurat G. Brandstätter F. Ntaflos Th.

*Clast Population and Chemical Bulk Composition of the Dhofar 018 Howardite* [#1778]

Besides the usual clasts of HED achondrite and CM chondrite heritage, Dhofar 018 contains also clasts of an aubrite and a LL chondrite — the first of such kind found in a howardite. What do they tell us?

Lucey P. G. Hinrichs J. L.

*Thermo-Reflectance Spectra: A New Tool for Compositional Analysis of Planetary Surfaces* [#1486]

Thermo-reflectance spectroscopy, a new tool for remote sensing analysis of planetary surfaces, exploits the temperature dependent NIR spectra of mafic minerals. This technique is effective at detecting olivine in olivine-pyroxene mixtures.

Malyshev A. I. Malysheva L. K.

*Mars’ Planetary Evolution and the Problems of Earth Geodynamics* [#1323]

Degasification model of planetary evolution is considered. Schemes of planetary evolution for Earth and Mars are offered. Plate tectonics is only special case of planetary evolution. It is peculiar to modern stage of Earth evolution.

Marzari F. Vanzani V. Tomasella L.

*On the Origin of the 3:2 Almost Resonance Between the Two Earth-like Planets Orbiting Pulsar PSR 1257 + 12* [#1120]

We suggest that the 3:2 near-resonance between the two more massive planets orbiting pulsar PSR1257 + 12 might be a consequence of two independent resonances (2:1 and 3:1) with a low-mass stellar companion, now completely evaporated.

Matrajt G. Maurette M. Duprat J. Engrand C. Gounelle M.

*Three New Tests to Validate EMMA and Confirm the Cometary Origin of Antarctic Micrometeorites* [#1540]

We review all the evidences supporting the validity of a new scenario (EMMA) developed to account for various effects of the micrometeorite flux during the period of heavy bombardment, prior to 3.9 Ga ago.

Matrajt G. Maurette M. Engrand C. Gounelle M.

*From the Earth to Early Planetary Systems with EMMA* [#1588]

EMMA (Early MicroMeteorite Accretion) defines the initial state of the early atmosphere of the terrestrial planets and allows to extrapolate the results obtained for the Earth’s hydrosphere to the other planets such as Mars.

Maurette M. Matrajt G.

*A Diffuse Cosmic Volcanism “Erupting” from the Thermosphere on the Early Earth* [#1581]

The deceleration of the enormous flux of early micrometeorites in the thermosphere generated a new kind of “cosmic volcanism” which has astonishing implications.

Maurette M. Leach S. Engrand C. Matrajt G.

*Search for Sites of Low Temperature Ion-Molecule Reactions in the Early Solar System* [#1605]

The D/H ratio of complex organic molecules in carbonaceous meteorites indicates that sites of low temperature ion-molecule reactions were existing in the early solar system. We investigated several processes to produce such sites.

Maurette M. Matrajt G. Gounelle M. Engrand C. Duprat J. Kurat G.

*EMMA and the Early Earth’s Hydrosphere* [#1586]

EMMA (Early MicroMeteorite Accretion) is a scenario developed to account for various effects of large interplanetary dust particles in the inner solar system during the period of heavy bombardement.

Meyer B. S. Denny J. E. Clayton D. D.

*Calculating Chemical Evolution on the Web* [#1785]

We have constructed an interactive web site that may be of interest to cosmochemists seeking to understand the evolution of isotopes in the Galaxy. The URL is http://photon.phys.clemson.edu/gce.html.
Mitchell K. L.

*Explosive Volcanic Eruptions on Mars: An Improved Numerical Model [#1189]*

In the light of new data, I present an outline of a improved numerical model for explosive volcanic eruptions on Mars.

Miyamoto M.  Mikouchi T.

*Diffuse Reflectance Spectra of a Eucrite: Resistance to Heating at Different Oxygen Fugacities [#1261]*

We have compared reflectance spectra of heated samples of the Millbillillie eucrite with those of several chondrites. Unlike chondrites, there has been little change in the spectra of the heated Millbillillie samples.

Morris R. V.  Graff T. G.  Shelfer T. D.  Bell J. F. III


Visible, near-IR, and Mossbauer measurements on dust coated rocks and minerals show that a 300 µm thick layer is required to obscure the substrate for VNIR measurements and that a >2000-µm-thick layer is required to obscure the substrate for Mossbauer measurements.

Nazarov M. A.  Kurat G.  Brandstätter F.

*Phosphorinan Sulfides from the ALH 84029, ALH 85013, EET 96029, and Y 82042 CM Carbonaceous Chondrites [#1769]*

The listed CM chondrites, as all CM chondrites do, contain phosphorinan Fe, Ni sulfides associated with schrebersite and/or barringerite which fit into the previously established compositional range. P-sulfides are a powerful taxonomy tool for CM chondrites.

Norman L. M.

*Fractal Dimensions and the Emplacement of Lava Flows: Conclusions from Experimental Analysis [#1536]*

Lava flow emplacement processes are studied and compared with the fractal dimension of the boundary of flows and the fractal dimension of the timing of new episodes of emplacment.

Okubo C. H.  Schultz R. A.

*Inverse Topographic Modeling: A Tool for Finding Subjacent Wrinkle Ridge Faults [#2072]*

Mechanical models of wrinkle ridges can predict subjacent fault geometries based on systematic variations in topography.

Papike J. J.  Karner J. M.  Shearer C. K.

*Mn-Fe Systematics in Pyroxene from Planetary Basalts: An Indicator of Planetary Parentage [#1009]*

Pyroxene chemistries from the Earth, Moon, Mars, and 4 Vesta show indications of planetary parentage.

Parmentier E. M.  Zhong S.  Zuber M. T.

*Gravitational Differentiation of an Initially Unstable Chemical Stratification: Origin of Lunar Asymmetries [#1329]*

Magmatic differentiation of the Moon creates an incompatible element-rich, dense residual mantle layer. To explain hemispheric crustal asymmetries, we examine conditions for diapirically instablity of this layer at spherical harmonic degree one.

Petaev M. I.  Wood J. A.

*Chromium Condensation in the Solar Nebula: Insights from the Upgraded CWPI Code [#1424]*

Our new condensation model explicitly shows that the Cr depletions necessary to account for the chemical compositions of zoned metal grains in the CB chondrites could have resulted from the condensation of Cr in silicates.
Silica-bearing Objects in the CH Chondrite NWA 470: Evidence for Their Formation in Fractionated Nebular Systems

Several occurrences of silica in the NWA 470 chondrite are described. One of the SiO$_2$-rich phases has chemical formula (K,Na,Ca)Mg$_2$Al$_2$Si$_9$O$_{24}$.

Zoned Metal Grains in the CH Chondrite NWA 470: More Constraints on the Cooling History of the CH Chondrite Nebular Source Region

Zoned metal grains in the CH chondrite NWA 470 display varied zoning patterns indicative of different formation conditions.

Big Basin, Kansas: Gravity Investigation of a Proposed Impact Structure

Big Basin is a proposed multiple impact structure in Kansas. There are three depressions 600–1700 m in diameter. A gravity survey over the largest suggests the depressions are solution collapse structures rather than impact structures.

Elysium Region Tectonics

Tectonism in Elysium consists of graben and lineaments radial to Tharsis and graben and troughs concentric about the regional Elysium topographic high. Radial faulting associated with Elysium is not observed.

Geology of Tharsis Tholus, Mars

Tharsis Tholus exhibits two styles of faults: graben radial to Tharsis and normal faults which cut the entire edifice. The large normal faults may reflect whole deformation of the edifice due to sliding along a subsurface plastic layer.

Hackberry Flat, Oklahoma: Gravity Survey of a Proposed Impact Structure

Hackberry Flat, Oklahoma has been proposed to be of impact origin. The feature is 6.9 km wide, 10–15 m deep. A gravity survey over the features indicates the complete absence of any anomaly suggesting the feature is purely erosional in origin.

Visible-Near Infrared Spectroscopy of Hyperthermophile Organisms, Yellowstone National Park

VNIR reflectance data of hyperthermophile organisms indicate they can be differentiated on the basis of spectral character.

Connolly Basin, Western Australia: Total Magnetic Field Survey

Total magnetic field profiles across the Connolly Basin impact structure in Western Australia indicate the complete absence of any anomalies associated with the structure.

The Tarlton, Ohio Indian Effigy Cross Mound

This astronomically significant, unique effigy mound is shown to be part of a much larger complex of earthworks connected by a 100 km length Indian Highway.

The January 3, 2000 Lunar Occultation of Asteroid (4) Vesta

Lunar occultations of bright asteroids can be observed by using small, portable equipment. Lunar occultations of asteroids provide the most theoretically precise astrometry possible.
Prilutskyi O.  Korchuganov B.  Dolnikov G.  Gerasimov M.  Rieder R.  Wänke H.  Economou T.

Determination of Hydrogen in Surface Layers of Planetary Bodies by Means of Forward Scattering Spectrometry [#1525]

Determination of hydrogen using elastic scattering of H and D by alpha-particles from a Cm-244 source. Hydrogen can be determined down to concentrations of less than 0.01 wt%; within a certain range it is even possible to determine the H/D ratio.

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

Cathodoluminescence Analysis of Nakhla 1401 Chloroapatites [#1638]

Analysis of Nakhla 1401-1 using cathodoluminescence (CL) spectroscopy has allowed greater detail of composition differences in chloroapatites.

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

Nakhla 1911-369 Chloroapatites [#1642]


Reedy R. C.  Frankle S. C.

Neutron-Capture Gamma-Ray Data for Obtaining Elemental Abundances from Planetary Spectra [#1655]

Newly compiled and evaluated energies and intensities of gamma rays made by the capture of thermal neutrons by elements from H to Zn plus Ge, Sm, and Gd are reported for use in determining elemental composition by planetary gamma-ray spectroscopy.

Rice J. W. Jr.  Ruff S. W.

New MOC Observations of Dorsa Argentea Sinuous Ridges [#2188]

New photogeologic analysis of the enigmatic sinuous ridges of the Dorsa Argentea region near the martian south pole have been conducted utilizing MOC data. These ridges have significant paleoclimatic implications whatever their origin.

Rifkin M. K. *  Mustard J. F.  Cooper C. D.

Identification of Mantled and Disaggregated Terrain Imaged by the Mars Orbital Camera [#2064]

Mantled and disaggregated terrain on Mars is observed in MOC images. The distribution of these terrains is strongly dependent on latitude, which implies a relationship to climate. Diverse morphologies hint at variability in the process of dissection.

Robert F.  Camy-Peyret C.

Non Mass Dependent Oxygen Isotopic Fractionation: A Numerical Application to the Ozone Specific Rate Coefficients. Implication for Cosmochemistry [#1718]

A numerical application of a proposed theory for non-mass dependent effect is shown for isotopic reaction rates of ozone. Possible consequences for solid condensation in a high temperature gas. Numerical application to silicon isotopes.

Robinson M. S.

Scattered Light in the Clementine UVVIS Camera [#2004]

Limb images show that scattered light in the Clementine UVVIS camera can effect multispectral analyses of high contrast features. Residual signal in space (normalized to the limb) is 8–10% at 50 pixels and above 2% of the limb after 200 pixels.


Gujba: A New Bencubbin-like Meteorite Fall from Nigeria [#1779]

Gujba is a new Bencubbin-like meteorite fall enriched in $^{15}$N and consisting (in vol.%) of 41% metal nodules, 20% large light-colored silicate nodules and 39% dark-colored, C- and silicate-rich matrix.
Sasaki S., Nakamura K., Hamabe Y., Kurahashi E., Hiroi T.

*A Successful Simulation of Space Weathering — Spectral Change and Nanophase Fe Particles on Olivine by Pulse-Laser Irradiation* [#1610]

Space weathering is simulated using nanosecond pulse laser. Laser-treated olivine pellets show reduction and reddening of reflectance, comparable to asteroid data. Nanophase Fe particles are found to have caused the optical property changes.

Saunders R. S., Meyer M. A.

*2001 Mars Odyssey: Geologic Questions for Global Geochemical and Mineralogical Mapping* [#1945]

2001 Mars Odyssey has three experiments. GRS will map the surface elemental composition. MARIE will characterize the Mars radiation environment for risk to humans. THEMIS will map the mineralogy and morphology with a camera and thermal IR imaging.

Schultz R. A., Watters T. R.

*How Big is Amenthes Rupes? An Inversion of MOLA Data Using Mechanics* [#1736]

The structural topography of the Amenthes Rupes lobate thrust fault scarp, measured by MOLA, is modeled using mechanics. The best-fitting parameters indicate a deep fault, a specific dip angle, and spatially inhomogeneous contractional deformation.

Schwartz J. M., McCallum I. S.

*Evolution of the Basaltic Eucrite, Haraiya 6277* [#2030]

Equilibrated eucrite, Haraiya, shows a range of textures with sharp boundaries between textural domains. However, calculations show a uniform cooling rate indicating a three-stage history of magmatic crystallization, brecciation, and thermal metamorphism.

Scott R. S., Wilson L.

*The Stress State of the Lunar Lithosphere and the Volumes of Intruded and Erupted Magmas* [#1549]

Using a new model of dike rise from the upper mantle we find the ranges of magma densities, magma source depths and lithosphere tensile stresses that could deliver large volumes of magma to either erupt at, or to intrude close to, the lunar surface.

Shearer C. K., Papike J. J., Karner J. M.

*Chemistry of Olivine from Planetary Materials. Mn/Fe and Trace Element Systematics in an Unusual Achondrite: QUE 93148* [#1634]

Major and trace element characteristics of olivine in basalts from Earth, Moon, and Mars reflect conditions of crystallization and potentially fingerprint the planetary body. Here, we extend this study to the planetary body represented by QUE 93148.

Shevchenko V. V., Skobeleva T. P.

*Crater Chains on Mercury* [#1510]

A few crater chains on the surface of Mercury are identified as impact tracks of “fragment trains” of the disrupted comets.

Shoemaker E. M., Plescia J. B., Shoemaker C. S.

*Connolly Basin Impact Structure, Western Australia* [#1311]

Connolly Basin is a 9 km complex impact structure with a central uplift. The central uplift exhibits complex folding and faulting.

Sik A.

*Comparative Study of Periglacial Mass Movements on Mars and Earth* [#1762]

Based on MOC images and my own field work experience, the fretted debris aprons of Mars are analogous to rock glaciers. By finding the correlation between morphology, mechanisms and changing environment, they can be used as paleoclimatic indicators.
Soderblom L. A.    Yelle R. V.
*Near-Infrared Reflectance Spectroscopy of Mars (1.4–2.6 Microns) from the New Millennium Deep Space 1 Miniature Integrated Camera and Spectrometer (Micas)* [#1473]
Presented is an analysis of Micas near-infrared observations of Mars (1.4–2.6 microns) by detailed modeling and removing atmospheric components and extracting surface reflectance spectra.

Spaun N. A.    Pappalardo R. T.    Head J. W. III
*Equatorial Distribution of Chaos and Lenticulae on Europa* [#2132]
We have performed an equatorial assessment of chaos and lenticulae on Europa. A dominant diameter of 9 km is found and other mapping issues are addressed.

Starodubtseva O. M.    Akimov L. A.    Korokhin V. V.
*Seasonal Variations in the North-South Asymmetry of Polarized Light of Jupiter* [#1095]
Seasonal changes in the north-south asymmetry of polarization at high latitudes of Jupiter are revealed from polarimetric observations in blue light made over a 18-yr period. They are seemingly caused by seasonal north-south asymmetry in Jupiter’s atmosphere insolation.

Szilassi L.    Karsai J.    Pataki T.    Kabai S.    Bérczi Sz.
*How Interactive Graphical Modeling Helps Space Science and Geometry Education in Hungary* [#1184]
We developed a space science/construction/geometry curriculum: lessons, graphical designs of space form construction/modeling, infolding/folding out objects which is attractive by visualizing graphical projections, movements outside/inside objects.

Tanaka K. L.
*The Stratigraphy of Mars: What We Know, Don’t Know, and Need to Do* [#1695]
To maintain its utility, the martian stratigraphic scheme must evolve to keep up with the state of knowledge. Geologic mapping and MGS data and careful application of stratigraphic techniques and principles can help refine the present scheme.

Taylor L. A.    Cahill J. T.    Patchen A.    Pieters C.    Morris R. V.    Keller L. P.    McKay D. S.
*Mineralogical and Chemical Characterization of Lunar Highland Regolith: Lessons Learned from Mare Soils* [#2196]
The Lunar Soil Characterization Consortium has begun study of the <45 m fractions of ten representative highland soils, chosen for their contrasting maturities. Difficulties are addressed in the modal and chemical analyses of these highland soils.

Tejfel V. G.
*The Space-Time Asymmetry of Atmospheric Properties on Saturn* [#1315]
A comparison of observational data for the last three decades show significant differences in the reflectivity and methane absorption bands intensity on Saturn’s disk.

Thomas C.    Ghail R. C.
*Using Elliptical Craters as Strain Markers in Marius Regio, Ganymede* [#1399]
The quantitative degree of strain from transtensional movement can be successfully recovered by restoring the circularity of elliptical craters. We also intend to apply this method to other types of deformed craters on Ganymede.

Tunyi I.    Timko M.    Roth L. E.
*Shock Magnetic Field and Origin of the Earth* [#1119]
To the effects of impulse magnetic field in protoplanetary nebula (fast melting, cooling and magnetization of chondrules), there is added another possible effect — mechanism associated with the forces of attraction between magnetized planetesimals.
Ustinova G. K.


The effects of the Kr isotope fractionation due to the hardening of the energy spectrum of the incident particles accelerated by the strong shock waves in the early solar system, as well as in the contemporary heliosphere, are described.

Ustinova G. K.

*Shock Wave Fractionated Krypton: 2. Effects of Ion Acceleration* [#1028]

The effects of the noble gas fractionation, conditioned by the different acceleration of ions during the passage of strong shock waves, are featured with the examples of the Kr isotopic system.

Vasut J. A.  Hyde T. W.

*Computer Modeling of Edge Effects in Plasma Crystals* [#1158]

Dusty plasmas play an important role in astrophysical environments such as protostellar clouds and ring systems. A computer simulation of such plasmas will be presented.

Vogel N.  Baur H.  Bischoff A.  Semenenko V. P.  Wieler R.

*Microdistribution of the Noble Gases Neon and Argon in Primitive Chondrites and Implications for Their Accretionary History* [#1841]

We present laser-extraction noble gas data from Krymka and Leoville chondrules, rims and one dark inclusion. The chondrules contain very small but measurable amounts of primordial Ne and Ar, the dark inclusion displays extremely high Ne and Ar, with Ne being Q-dominated.

Wang A.  Kuebler K. E.  Freeman J.  Jolliff B. L.

*Preliminary Raman Spectroscopic Survey on a Martian Meteorite — Los Angeles* [#1427]

A Raman survey on a flat-sawn rock slab provides the major mineralogy of martian meteorite Los Angeles. Three unreported accessory minerals and seven terrestrial alteration products and contaminants (organic and inorganic) were also found.

Wang A.  Kuebler K. E.  Jolliff B. L.

*Raman Spectroscopy of Opaque Minerals and Applications to EETA79001 Martian Meteorite* [#1615]

Martian meteorite EETA79001 contains abundant Fe-Ti oxides, which yield Raman spectra useful for the assignment of their structural and compositional features.

Wark D. A.  Boynton W. V.

*Metal Grains in CAIs, Rim Flash Heating and CAI Growth Zoning* [#1714]

Metal grains in 6 Ca-Al-rich inclusions were found to become more ‘refractory’ from core to rim of the CAI, i.e., richer in refractory metals and poorer in Fe and Ni. This is due to primary metal zonation in the inner CAI and ‘flash heating’ at the rim.

Warren P. H.  Gessler P.

*Bluewing 001: A New Eucrite with Extremely Unequilibrated Pyroxene, Cognate (?) Eucritic Xenoliths, and Stannern-like Geochemistry* [#1970]

New eucrite Bluewing 001 features unequilibrated, extensively zoned pyroxenes. Bluewing pyroxenes show systematic Ti-enrichment vs. zoned pyroxenes in Pasamonte. Some pyroxenes nucleated around xenolithic enclaves with lower (yet moderately high) mg.


*Bulk-Compositional Study of Three Dhofar Lunar Meteorites: Enigmatic Siderophile Element Results for Dhofar 026* [#2197]

The bulk chemistry of three new lunar meteorites is presented and placed within the context of each meteorite’s petrographic texture. Unusual PGEs for D-26 is not explainable by contamination, but may reflect the presence of siderophile-rich nuggets.
Wasson J. T.    Kallemeyn G. W.

*Compositions of Iron Meteorites in the IAB Complex; Six Groups Showing Similar Element-Au Trends* [#2085]

On element-Au diagrams IAB irons form a main group and parallel clusters called subgroups (S). IIIC (S2) and IIID (S3) are resolved from each other. S1 is intermediate between main group and S2. These may have formed in impact events on an asteroid.

Watters T. R.

*Studies of Martian Wrinkle Ridges Using MOLA Topographic Data: The Nature of Elevation Offsets* [#1414]

MOLA profiles across martian wrinkle ridges show the presence of elevation offsets. MOLA data has reveal that many wrinkle ridges do not exhibit elevation offsets and some may result from the ponding of lava flows or the accumulation of wind-blown material.

Watters T. R.

*The Topography of Lobate Scarps Along the Dichotomy Boundary from MOLA Data* [#1597]

The topography of lobate scarps along the crustal dichotomy boundary is being studied using MOLA data. The presence of thrust faults and fractures along the dichotomy boundary suggests that a major tectonic event was associated with its formation.

Wilson L.    Head J. W. III

*Heat Transfer and Melting in Subglacial Volcanic Eruptions: Implications for Volcanic Deposits and Meltwater Volumes* [#1213]

Principles of ascent and emplacement below ice caps and glaciers are developed and criteria for recognition are presented.

Young L. A.    Bullock M. A.    Colwell W. B.    Durda D. D.    Gleason K.    Parker J. Wm.    Stern S. A.    Terrell D.    Young E. F.

*Photometric Monitoring of Triton at Sommers-Bausch Observatory in 2000* [#1999]

We undertook pilot program to develop an observing and analysis strategy that can be used to measure Triton’s B and V albedos with 0.05 magnitude accuracy at moderate-to-small telescopes, under moderate-to-poor seeing conditions.

Zent A. P.

*Use of SNC Meteorites to Constrain the Role of Oxidants in the Martian Regolith* [#1770]

Martian meteorites show evidence of oxidation, but putative Noachian organic materials should be accessible.

Zent A. P.    Quinn R. C.    Grunthaner F. J.    Hecht M. H.    Buehlher M.    Ricco A. J.

*Mars Atmospheric Oxidant Sensor (MAOS): An In-Situ Heterogeneous Chemistry Analysis* [#1775]

A new chemical sensor designed to detect oxidants in the martian environment has been developed.

Zolotov M. Yu.    Shock E. L.

*Geochemical Constraints on the Oxidation States of the Europan Ocean and Mantle* [#2025]

We present observational, meteoritic, and physical-chemical arguments for an oxidized Fe-metal free mantle and an oxidized sulfate-carbonate rich ocean on Europa. The ocean should be out of equilibrium even with oxidized igneous rocks at the oceanic floor.