Tuesday, March 19, 2013 **[T601]**
POSTER SESSION: GENESIS MISSION:
TARGET HANDLING AND SOLAR WIND ABUNDANCES
6:00 p.m. Town Center Exhibit Area

Allton J. H. Rodriguez M. C. Burkett P. J. Ross D. K. Gonzalez C. P. et al. ***POSTER LOCATION #1***
Recent Optical and SEM Characterization of Genesis Solar Wind Concentrator Diamond-on-Silicon Collector **[#2466]**
Observations of contaminants and irradiation damage on diamond-on-silicon surface and postsubdivision imaging.

Burkett P. J. Allton J. A. Clemett S. J. Gonzales C. P. Lauer H. V. Jr et al. ***POSTER LOCATION #2***
Plan for Subdividing Genesis Mission Diamond-on-Silicon 60000 Solar Wind Collector **[#2837]**
Using innovative laser scribing and cleaving techniques, Genesis sample 60000 was subdivided resulting subsamples for allocation and analysis.

Lauer H. V. Burket P. J. Rodriguez M. C.
Nakamura-Messenger K. Clemett S. J. et al. ***POSTER LOCATION #3***
Laser Subdivision of the Genesis Concentrator Target Sample 60000 **[#2691]**
The Genesis Allocation Committee received a request for ~ 1 cm^2 of the target sample 60000. We describe the cutting plan used to provide the allocation.

Rodriguez M. R. Allton J. H. Burkett P. J. Gonzalez C. P. ***POSTER LOCATION #4***
Examples of Optical Assessment of Surface Cleanliness of Genesis Samples **[#2515]**
We present recent examples of optically surveyed Genesis samples as part of a cleaning plan intended to create a set of "assessed clean" samples for allocation.

Kuhlman K. R. Rodgriguez M. C. Gonzalez C. P. Allton J. H. Burnett D. S. ***POSTER LOCATION #5***
Cleaning Study of Genesis Sample 60487 **[#2930]**
This examination of the efficacy of various cleaning methods was conducted using correlative microscopy of Genesis sample 60487.

Schmeling M. Burnett D. S. Allton J. H. Rodriguez M. Tripa C. E. et al. ***POSTER LOCATION #6***
Application of CO_2 Snow Jet Cleaning in Conjunction with Laboratory Based Total Reflection X-Ray Fluorescence Spectrometry for Genesis Solar Wind Samples **[#2465]**
Genesis solar wind samples were analyzed using TXRF spectrometry before and after CO_2 jet cleaning to investigate the efficiency of this cleaning method.

Goreva Y. S. Burnett D. S. ***POSTER LOCATION #7***
TOF-SIMS Ion Imaging for Evaluation of Effectiveness of Genesis Sample Cleaning **[#2109]**
TOF-SIMS techniques is used to image surfaces of Genesis samples before and after cleaning.

Veryovkin I. V. Schmeling M. Toyoda N. Mashita T. Yamada I. et al. ***POSTER LOCATION #8***
Gas Cluster Ion Beam Cleaning of Genesis Solar Wind Samples: Further Steps in the Method Evaluation **[#2970]**
We present new results of cleaning Genesis samples by Gas Cluster Ion Beam irradiation. This cleaning study includes sample characterization by TXRF and RIMS.

Veryovkin I. V. Zinovev A. V. Tripa C. E. Baryshev S. V. Pellin M. J. et al. ***POSTER LOCATION #9***
Backside Sputter Depth Profiling of Genesis Samples: An Application to Diamond-on-Silicon Collectors **[#2247]**
We present a new approach to quantitative elemental and isotopic analysis of Genesis Diamond-on-Silicon solar wind collectors by RIMS and SIMS.

Rieck K. D. Jurewicz A. J. G. Burnett D. S. Hervig R. L. Veryovkin I. V. et al. ***POSTER LOCATION #10***
Genesis Sodium and Potassium Bulk Solar Wind Fluences **[#3030]**
We present preliminary measurements of bulk solar wind ^{23}Na and ^{39}K abundances in the Genesis Si and diamond-on-Si wafers using backside depth profiling by SIMS.

Heber V. S. Burnett D. S. Duprat J. Guan Y. Jurewicz A. J. G. et al. ***POSTER LOCATION #11***
Carbon, Nitrogen, and Oxygen Abundances in the Bulk Solar Wind and Calibration of Absolute Abundances **[#2540]**
Updated C, N, and O solar wind abundances measured by backside depth-profiling using SIMS and strategies for their absolute calibration are presented.

Bochsler P. Heber V. S. Burnett D. S. ***POSTER LOCATION #12***
Solar Abundances of Volatile Elements Revisited After Genesis **[#1277]**
Significant differences among elemental abundances from different solar sources can be reduced or eliminated when results from the Genesis mission are used.

Ayres T. R. Lyons J. R. Ludwig H.-G. Caffau E. Wedemeyer-Bohm S. ***POSTER LOCATION #386***
Isotopic CO in the Solar Photosphere, Viewed Through the Lens of 3D Spectrum Synthesis **[#3038]**
New analyses of CO isotopologue abundances in the solar photosphere are now consistent with Genesis solar wind results, although ^{17}O error bars are still large.

POSTER SESSION: (PROTO)SOLAR NEBULA I:
COMPOSITION, EXCHANGE REACTIONS AND MIXING
6:00 p.m. Town Center Exhibit Area

Hyodo R. Ohtsuki K. Takeda T. ***POSTER LOCATION #13***
Evolution of Circumplanetary Particle Disks and Formation of Multiple-Satellite Systems **[#1856]**
We perform N-body simulations in order to see the evolution of less massive circumplanetary particle disks and see the evolution of multiple-satellite systems.

Baillié K. Charnoz S. Taillifet E. ***POSTER LOCATION #14***
Coupling Protoplanetary Disk Thermodynamics and Geometry: Toward a more Self-Consistent Structure **[#2274]**
Building a new complete model of protoplanetary disks that would be dynamically, thermodynamically, and geometrically intercorrelated and self-consistent.

Simon M. N. Ciesla F. J. ***POSTER LOCATION #15***
Dust Accretion onto Planetesimals in the Solar Nebula **[#1361]**
The extent to which newly formed planetesimals accrete solids remains uncertain. We created a model to determine under what conditions particles are accreted.

Taillifet E. Baillié K. Charnoz S. Aléon J. ***POSTER LOCATION #16***
Insights on CAIs Thermal History from Turbulent Transport Simulations of Micron-Sized Precursors in the Early Solar Nebula **[#2007]**
Using numerical simulations we showed that turbulent transport in a thermally zoned protoplanetary disk might be at the origin of CAIs complexity and diversity.

Yang L. Ciesla F. J. Lyons J. R. ***POSTER LOCATION #17***
The Distribution of Isotopically Heavy Water in an Evolving Solar Nebula **[#1806]**
We study how oxygen-isotopic anomalies inherited from the parent cloud vary as oxygen-bearing species experience isotopic exchange in an evolving solar nebula.

Djouadi Z. Merouane S. d'Hendecourt L. ***POSTER LOCATION #18***
Gas-Silicate Interactions: The "PRONEXT" Experiment **[#1990]**
PRONEXT, a new experimental set-up we developed, is dedicated to the investigation of the possibility (or not) of producing molecules on the surface of silicates.

Roskosz M. Leroux H. Depecker C. Rémusat L. Laurent B. ***POSTER LOCATION #19***
Water Uptake, Diffusion and Isotopic Signature in Amorphous Silicates in Contact with Dry Vapor at Low Partial Pressure **[#1968]**
Partial hydration of amorphous silicates is reported. A quick captation and a slow volume diffusion coupled to a large redistribution of H isotopes is observed.

Matsuno J. Tsuchiyama A. Koike C. Chihara H. Imai Y. et al. ***POSTER LOCATION #20***
Structural Modification in Amorphous $MgSiO_3$ with Heat Treatment **[#2199]**
A hydrous phyllosilicate crystallized in annealing experiments of amorphous $MgSiO_3$ using condensate at high-temperature plasma furnace.

Sun T. Niles P. B. Socki R. A. Bao H. Liu Y. ***POSTER LOCATION #21***

An Update on the Non-Mass-Dependent Isotope Fractionation Under Thermal Gradient **[#1700]**

Non-mass-dependent isotope fractionation of gases is found in laboratory convective condition, making such effect be considerable in natural environments.

Peto M. K. Jacobsen S. B. ***POSTER LOCATION #22***

Understanding the Initial Xe Isotope Composition of the Terrestrial Atmosphere and the Compositional Variation of Meteorites **[#3067]**

The Xe composition of the initial Earth atmosphere is depleted in the heaviest nuclides. We rederive this composition in light of nucleosynthetic components.

Yu T. Meyer B. S. ***POSTER LOCATION #23***
Yields in Simple Models of Dense Thermonuclear Supernovae **[#1998]**
Our calculation of simple models of dense thermonuclear supernovae shows that in such low entropy condition there could be a lot of n-rich isotopes produced.

Steele R. C. J. McKeegan K. D. Liu M. C. ***POSTER LOCATION #24***
Titanium Isotope Anomalies in CM Hibonites: Nucleosynthetic Sources and Mixing in the Early Solar System **[#2967]**
Titanium-isotope anomalies in hibonite grains have been used to investigate nucleosynthetic sources and mixing processes in the early solar system.

Akram W. M. Schönbächler M. ***POSTER LOCATION #25***
Zirconium Isotope Evidence for Dust Processing in the Early Solar Nebula **[#2138]**
Bulk rock solar system material has Zr-isotope anomalies, characteristic of a heterogeneous distribution of s-process material, from different sources.

Fukami Y. Yokoyama T. Okui W. ***POSTER LOCATION #26***
Tellurium Isotope Compositions in Sequential Acid Leaching Samples of Carbonaceous Chondrites **[#2038]**
We present data of Te-isotopic compositions in acid leachates of Murchison (CM2), Allende (CV3), and Tagish Lake (C2-ung) measured by N-TIMS.

Nagai Y. Yokoyama T. ***POSTER LOCATION #27***
Molybdenum Isotope Anomalies in Allende and Murchison Meteorites **[#2373]**
We report Mo-isotopic compositions for Allende (CV3.6) and Murchison (CM2) by N-TIMS. They have Mo-isotope anomalies characterized by s-process deficit.

Burkhardt C. Schönbächler M. ***POSTER LOCATION #28***
Nucleosynthetic Tungsten Isotope Anomalies in Acid Leachates of the Orgueil, Murchison and Allende Carbonaceous Chondrites **[#1912]**
Our W leachate data provide new insights into W nucleosynthesis and nebular and parent body processing of presolar materials.

Cook D. L. Kruijer T. S. Kleine T. ***POSTER LOCATION #29***
^{180}W Anomalies in Iron Meteorites: Implications for p-Process Heterogeneity **[#1097]**
Measurements of ^{180}W in iron meteorites and metal from the CB chondrite Gujba do not indicate a heterogeneous distribution of p-process isotopes in the nebula.

Peters S. T. M. Münker C. Becker H. Schulz T. ***POSTER LOCATION #30***
Tungsten-180 Anomalies in Iron Meteorites Reflect Alpha Decay of Osmium-184 **[#2073]**
Combined ^{180}W isotope and Os-W concentration data indicate that α-decay of ^{184}Os, previously considered stable, explains ^{180}W anomalies in iron meteorites.

Wittig N. Humayun M. Leya I. ***POSTER LOCATION #31***
Nucleosynthetic and Cosmogenic Palladium Isotope Anomalies Resolved in IVB Irons **[#2355]**
We present new and highly precise Pd-isotope data for IVB irons, which coupled to W-Os-Pt-isotope data, reveal cosmogenic and nucleosynthetic isotope anomalies.

Hidaka H. Yoneda S. ***POSTER LOCATION #32***
Systematic p-Process Isotopic Excesses of Sr, Ba, Ce and Sm Observed in the Chemical Separates of the Kapoeta Meteorite **[#1867]**
Sr-, Ba-, Ce-, Nd-, Sm-, and Gd-isotopic compositions of the chemical separates of Kapoeta were determined to find systematic p-process isotopic anomalies.

Bermingham K. R. Mezger K. Scherer E. E. Carlson R. Horan M. et al. ***POSTER LOCATION #33***
Barium Isotope Abundances in Meteorites: Implications for Early Solar System Evolution **[#1734]**
New Ba-isotope data from thermally unequilibrated chondrites indicate that Ba isotopes were homogeneously distributed throughout the solar system.

Bermingham K. R. Mezger K. Horstmann M. Scherer E. E. ***POSTER LOCATION #34***
Evidence for Extinct 135-Cs from Ba Isotopes in Allende Inclusions? **[#1732]**
New Ba-isotope data from Allende CAIs may provide direct evidence for live ^{135}Cs in the early solar system.

Antonelli M. A. Peters M. Farquhar J. ***POSTER LOCATION #35***
Multiple Sulfur Isotope Analyses of Iron Meteorites: Implications for Nebular Evolution **[#1279]**
This abstract presents the multiple sulfur-isotopic compositions of 61 different iron meteorites from 8 different chemical groups, and their implications.

Bowers M. Kashiv Y. Collon P. Lu W. ***POSTER LOCATION #36***
Experimental ^{33}S(α,p)^{36}Cl Reaction Cross-Section and ^{36}Cl Production in the Early Solar System **[#2543]**
Results of the ^{33}S(α,P)^{36}Cl cross section measurement will be discussed and other possible important reactions for ^{36}Cl production in the early solar system.

Tuesday, March 19, 2013 **[T604]**
POSTER SESSION: EARLY SOLAR SYSTEM CHRONOLOGY
6:00 p.m. Town Center Exhibit Area

Myojo K. Yokoyama T. Sano Y. Takahata N. Sugiura N. ***POSTER LOCATION #37***
Strontium Isotope Anomalies and ^{26}Al-^{26}Mg Chronology in CAIs from CV Chondrites **[#2626]**
We present Sr-isotopic data and Al-Mg ages for CAIs from CV chondrites. The result suggests ^{84}Sr/^{86}Sr heterogeneity due to location in the early solar system.

Bell E. A. Gilmour J. D. Harrison T. M. Turner G. Crowther S. A. ***POSTER LOCATION #38***
Origins of Pu/U Variations in >4 Ga Terrestrial Zircons **[#2313]**
Xenon in >4 Ga zircons yields estimates of original Pu/U that deviate from chondritic estimates. Xenon loss is resolved for some; other causes are less certain.

Cooke I. Sapah M. S. Kaltenbach A. Stirling C. H. Amelin Y. ***POSTER LOCATION #39***
Uranium Isotopic Composition and Trace Element Abundances of CAIs from CV Chondrite Northwest Africa 4502 **[#1709]**
We have initiated a study of the new oxidised CV chondrite NWA-4502 to help reconcile inconsistencies between recently reported ages of CAIs.

Andreasen R. Lapen T. J. ***POSTER LOCATION #40***
The Absolute Neodymium Isotopic Composition of Standard Materials — Implications for Accurate and Precise 142-Neodymium Measurements and Chronology **[#2918]**
The stable Nd-isotopic compositions of standard materials vary by 1.5 ε per amu. Variations are observed for both synthetic and natural standards.

Parai R. Jacobsen S. B. Huang S. ***POSTER LOCATION #41***
Strontium Isotopic Constraints on Early Solar System Chronology **[#2544]**
Precise determination of instrumental mass fractionation laws are necessary to constrain the age of formation of planetary objects, such as the Moon.

Theis K. J. Schönbächler M. ***POSTER LOCATION #42***
Palladium-Silver Ages of the Ordinary Chondrite Allegan (H5) and Acapulcoite Dhofar 125 and Related Stable Isotope Fractionation **[#2051]**
Using the short-lived Pd-Ag chronometer to infer a resetting event for Allegan and early Pd-Ag closure for Dhofar 125 followed by stable isotope fractionation.

Matthes M. Fischer-Gödde M. Kleine T. ***POSTER LOCATION #43***
Palladium-Silver Isotope Systematics of IIIAB Iron Meteorites **[#2780]**
We analyzed the Ag-isotopic composition of the IIIAB irons Grant and Cape York to improve the resolution of their cooling history in the early solar system.

Telus M. Huss G. R. Nagashima K. Ogliore R. C. ***POSTER LOCATION #44***
Initial Abundance of 60Fe in Unequilibrated Ordinary Chondrites **[#2964]**
New results for SIMS measurements of ^{60}Fe-^{60}Ni systematics of chondrules from UOCs are reported. Implications for the $(^{60}Fe/^{56}Fe)_0$ ratio of UOCs are discussed.

Chen H. Bishop M. C. Humayun M. Williams J. T. Moynier F. ***POSTER LOCATION #45***
Cosmogenic Effects on Cu Isotopes in IVB Irons: Implications for the 182Hf-182W Chronometry **[#1909]**
Cu isotopes in IVB irons are affected by cosmic ray exposure. Cu isotopes can be used for correcting neutron capture induced shifts in W isotopes.

Claydon J. L. Ruzicka A. Crowther S. A. Lee M. Y. P. Bischoff A. et al. ***POSTER LOCATION #46***
First I-Xe Ages of Rumuruti Chondrites and the Thermal History of Their Parent Body **[#2211]**
Xe closure occurred 4556–4548 Myr ago, ~5 Myr after the Mn-Cr system. The R5 sample is young compared to the R3 samples, consistent with the onion shell model.

Iizuka T. Kaltenbach A. Amelin Y. Stirling C. H. Yamaguchi A. ***POSTER LOCATION #47***
U-Pb Isotope Systematics of Eucrites in Relation to Their Thermal History **[#1907]**
We present the first combined high-precision $^{238}U/^{235}U$- and Pb-isotopic data for eucrites, including Camel Donga, Agoult, DAG 380, NWA 049, and Ibitira.

Bricker G. E. Caffee M. W. ***POSTER LOCATION #48***
Incorporation of the Short-Lived Radionuclide 36Cl Into Calcium Aluminum Inclusions in the Solar Wind Implantation Model **[#1722]**
We consider ^{36}Cl in CAIs in primitive carbonaceous meteorites in accordance with a solar wind implantation model.

Beard S. P. Swindle T. D. Isachsen C. Jenniskens P. Shaddad M. ***POSTER LOCATION #49***
Ar-Ar Analysis of Almahata Sitta Ordinary Chondrites **[#2311]**
Ar-Ar analyses of two ordinary chondrite fragments from the Almahata Sitta breccia reveal no evidence for any thermal events more recent than 4150 Ma.

Doyle P. M. Nagashima K. Jogo K. Krot A. N. ***POSTER LOCATION #50***
Relative Sensitivity Factor Defined for ^{53}Mn-^{53}Cr Chronometry of Secondary Fayalite **[#1792]**
Matrix-matched standards are required for accurate ^{53}Mn-^{53}Cr chronometry. We have prepared synthetic fayalite in order to date secondary fayalite in chondrites.

Tuesday, March 19, 2013 **[T605]**
POSTER SESSION: CHONDRITES:
ORGANIC SYNTHESIS AND SECONDARY PROCESSES
6:00 p.m. Town Center Exhibit Area

Gasda P. J. Ogliore R. C. Taylor G. J. ***POSTER LOCATION #51***
Addressing Background Fluorescence and Uncertainty Estimation in Raman Spectra of Insoluble Organic Carbon **[#1742]**
We asses the accuracy and precision of the Savitzky-Golay Second Derivative fitting method to Raman spectra of IOM in comparison to previous fitting techniques.

Yesiltas M. Unger M. Sedlmair J. Hirschmugl C. J. Brusentsova T. N. et al. ***POSTER LOCATION #52***
Microspectroscopy of Meteorites: Search for Organic-Mineral Correlations **[#2717]**
Correlations between concentrations of organic species and mineral species in meteorites have been assessed by infrared and Raman microspectroscopy.

Asaduzzaman A. M. Muralidharan K. Runge K. Zega T. J. ***POSTER LOCATION #53***
A Computational Exploration on the Attachment of Organics to Minerals: Implications for the Delivery of Organics to Meteorite Parent Bodies and the Early Earth **[#2884]**
A quantum-chemical calculation is carried out on the adsorption of organics on mineral surfaces to investigate the delivery of organics into Earth.

Snape J. F. Morlok A. Starkey N. A. Franchi I. A. Gilmour I. ***POSTER LOCATION #54***
In-Situ NanoSIMS Measurements of Isotopic Hotspots in the CM2 Meteorite Cold Bokkeveld **[#1913]**
In situ NanoSIMS analyses of material within Cold Bokkeveld are used to investigate the nature of isotopic hotspots in meteoritic insoluble organic matter.

Gasda P. J. Taylor G. J. ***POSTER LOCATION #55***
Effect of Aqueous Alteration on Insoluble Organic Carbon in CR Chondrites **[#1029]**
Raman data for three CR chondrites demonstrate that initial heterogeneity disappears with degree of aqueous alteration. A new model explains the processes involved.

Chaumard N. Charon E. Rouzaud J.-N. Devouard B. ***POSTER LOCATION #56***
Maturation Grade of Organic Matter in Metamorphosed Carbonaceous Chondrites **[#2621]**
We see two distinct and successive processes in the evolution of organic matter in metamorphosed carbonaceous chondrites: carbonization then graphitization.

Changela H. G. Cody C. D. Alexander C. M. O'D. Nittler L. R. Peeters Z. et al. ***POSTER LOCATION #57***
TEM Study of Insoluble Organic Matter in Primitive Chondrites: Unusal Testures Associated with Organic Nanoglobules **[#3101]**
We report some unusual nanoglobule morphologies found in the insoluble organic matter from primitive chondrites.

Zaytsev M. A. Gerasimov M. V. Safonova E. N.
Ivanova M. A. Lorenz C. A. et al. ***POSTER LOCATION #58***
Comparative Investigation of Organic Components in the Murchison (CM2) and Kainsaz (CO3) Carbonaceous Chondrites **[#1905]**
Organics in meteorites could be synthesized in nebula and by processing on protoplanetary bodies. Synthesis in a high-temperature vapor cloud is also possible.

Hashiguchi M. Kobayashi S. Yurimoto H. ***POSTER LOCATION #59***
Isotopically Anomalous Organic Matters in Murchison and Northwest Africa 801 **[#1758]**
We report isotopic compositions and morphology of D- and/or ^{15}N-rich organic matters from Murchison (CM2) and NWA 801 (CR2) identified by isotope imaging.

Laurent B. Roskosz M. Rémusat L. Depecker C. Vezin H. et al. ***POSTER LOCATION #60***
Molecular and Isotopic Study of Irradiated Organic Matter Analogue **[#1536]**
To better understand the H-isotope signature in IOM, polymer films were irradiated with electrons producing quinones groups, organic radicals, and D-H fractionation.

Le Guillou C. Bernard S. Rémusat L. Brearley A. J. Leroux H. ***POSTER LOCATION #61***
Amorphization and D/H Fractionation of Kerogens during Experimental Electron Irradiation: Comparison with Chondritic Organic Matter **[#1960]**
Kerogens irradiation in the TEM studied by STXM/NanoSIMS. Kinetics of electron driven D/H fractionation may be inhibited in the ISM and the protosolar nebula.

Orthous-Daunay F.-R. Gyngard F. ***POSTER LOCATION #62***
Sulfur Isotopic Composition of HF/HCl Residues in Type 1 and 2 Carbonaceous Chondrites **[#2604]**
We measured isotopic composition of organic relative to inorganic sulfur in several HF/HCl residues in order to investigate for aqueous alteration signatures.

Riebe M. Busemann H. Huber L. Wieler R. ***POSTER LOCATION #63***
Primordial Noble Gases in the Unequilibrated LL3.2 Chondrite Krymka Analyzed by Closed System Step Etching **[#2133]**
CSSE analysis of phase Q gives elemental ratios consistent with Q. Neon-isotopic ratios differ significantly from ratios for Q, indicating the presence of Ne-E or HL.

McLeod A. S. Dominguez G. Gainsforth Z. Westphal A. Keilmann F. et al. ***POSTER LOCATION #65***
NanoFTIR for the Analysis of Planetary Materials **[#2643]**
We present the application of scanning near-field microscopy and nanoscale broadband infrared spectroscopy to the study of chondrites and presolar grains.

Henkel T. Lyon I. C. ***POSTER LOCATION #66***
Further Analysis of the Molecular Structure of Cometary Organic Material **[#2554]**
Using time-of-flight secondary ion mass spectrometry to record complete mass spectra enables determination of whole molecules rather than functional groups only.

Tuesday, March 19, 2013 **[T606]**

POSTER SESSION: CHONDRITES: LOW-TEMPERATURE SECONDARY PROCESSES

6:00 p.m. Town Center Exhibit Area

Clayton A. N. Strait M. M. Flynn G. J. Durda D. D. ***POSTER LOCATION #67***

Construction of Hydrous Meteorites from Ordinary Chondrite Fragments **[#2730]**

Small fragments of anhydrous rock are hydrated and adhered to create an analogue for a hydrous meteorite.

Trigo-Rodríguez J. M. Moyano-Cambero C. E. Mestres N.
Fraxedas J. Zolensky M. E. et al. ***POSTER LOCATION #68***

Evidence for Extended Aqueous Alteration in CR Carbonaceous Chondrites **[#1929]**

Three CR chondrites (EET 92159, GRA 95229, and LAP02342) were studied together with the Kaidun microbreccia to get insight into the parent body aqueous alteration.

Chizmadia L. J. Bravo-Ruiz H. ***POSTER LOCATION #69***

Detailed Statistical Analysis of Fe-Mg Systematics of Amoeboid Olivine Inclusions **[#2991]**

Fe-Mg distributions of olivine grains in AOIs can be used to refine the petrologic subtypes to the second digit, similar to the use of Cr_2O_3 distribution in chondrules.

Krot A. N. Doyle P. Nagashima K. ***POSTER LOCATION #70***

Secondary Fayalite, Hedenbergite, and Magnetite in the CO3.0-3.1 Carbonaceous Chondrites Y-81020, ET 90043, and MAC 88107 **[#1754]**

Fayalite, hedenbergite, and magnetite in Y-81020, EET 90043 and MAC 88107 resulted from aqueous alteration of the CO chondrite parent asteroid at low water/rock ratio.

Howard K. T. Benedix G. K. Bland P. A. Gibson J. Greenwood R. C. et al. ***POSTER LOCATION #71***

Non-Progressive Aqueous Alteration of CM Carbonaceous Chondrites: The Perspective of Modal Mineralogy and Bulk O-Isotopes **[#2520]**

Mineral abundances and O isotopes in CMs are inconsistent with progressive aqueous alteration models: Hydration was without flow and supply of H_2O was limited.

Ménard J. M. Caron B. Jambon A. Michel A. Villemant B. ***POSTER LOCATION #72***

Halogens in CM Chondrites **[#2375]**

Setup of an extraction line of halogens by pyrohydrolysis using restricted sample masses, and its application to chondrites to determine the asteroidal history.

McAdam M. M. Sunshine J. M. Howard K. T. Kelly M. S. McCoy T. J. ***POSTER LOCATION #73***

Fe and Mg Compositional Variations of CM/CI Meteorites and Dark Asteroids **[#1048]**

CM/CI meteorites show a trend between 12-µm band position and modal abundance of Mg-rich phyllosilicates that is now observed in the spectra of dark asteroids.

Watanabe1 K. Isobe H. ***POSTER LOCATION #74***

Aqueous Alteration Experiments of Chondrule Analogue and Iron Sulfide Mixture with H_2O-CO_2 Fluid **[#1878]**

We carried out aqueous alteration experiments of mixture of olivine, mesostasis glass, and pyrrhotite with H_2O-CO_2 fluid.

Asaduzzaman A. M. Muralidharan K. Ganguly J. ***POSTER LOCATION #75***

Hydration Kinetics of Pericalse: Quantum Chemical Calculations and Implications for the Timescale of Formation of Hydrous Minerals in the Solar Nebula **[#2396]**

The kinetics for the formation of hydrous phyllosilicates, which has important implications for water incorporation into Earth, is studied theoretically.

Hutson M. Ruzicka A. Brown R. ***POSTER LOCATION #76***
A Pyroxene-Enriched Shock Melt Dike in the Buck Mountains 005 (L6) Chondrite **[#1186]**
A complex pyroxenitic igneous dike in the Buck Mountains 005 (L6) chondrite was produced by a variety of shock-related processes.

Meszaros M. Ditrói-Puskás Z. Váczi T. Kereszturi Á. ***POSTER LOCATION #77***
A New Petrological Study of Nyírábrány, an Ordinary Chondrite from Hungary **[#1477]**
Analyzing the Hungarian Nyírábátny meteorite, based on chemical, mineralogical, and textural features it can be classified as an L/LL4-5S2W2 ordinary chondrite.

Khan R. Shirai N. Ebihara M. ***POSTER LOCATION #78***
Bulk Chemical Composition of R Chondrites: New Data **[#2059]**
We have analyzed 15 R chondrites of different petrologic types by neutron activation analysis and discuss the metamorphism in the R-chondrite parent body.

Dunlap D. R. Pewitt M. L. McSween H. Y. Taylor L. A. Doherty R. ***POSTER LOCATION #79***
Tupelo, a New EL6 Enstatite Chondrite **[#2088]**
The Tupelo meteorite was found, classified, and named in 2012. Based on mineral compositions and modal abundances, it was determined to be an EL6 chondrite.

Berger E. L. Lauretta D. S. Zega T. J. Keller L. P. ***POSTER LOCATION #80***
FIB-TEM Investigations of Fe-Ni-Sulfides in the CI Chondrites Alais and Orgueil **[#1615]**
We discuss the microstructures and textures of sulfide grains from Alais and Orgueil and the implications that these data have on grain formation conditions.

Lehner S. W. Nemeth P. Petaev M. I. Buseck P. R. ***POSTER LOCATION #81***
Origin of Fine-Grained Albite in an EH3 Sulfidized Chondrule **[#2500]**
We report evidence that nanocrystalline albite in an Al-rich, Cl-bearing mesostasis from EH3 chondrite SAH 97072 formed as a byproduct of augite sulfidation.

Lehner S. W. Nemeth P. Petaev M. I. Buseck P. R. ***POSTER LOCATION #82***
Pyrite in an EH3 Metal-Sulfide Nodule **[#2237]**
We report the occurrence of pyrite and pyrrhotite interspersed among porous silica in the core of a metal-sulfide nodule from the EH3 chondrite ALH 84170.

Lewis J. A. Jones R. H. ***POSTER LOCATION #83***
Phosphate Mineralogy of Petrologic Type 4-6 L Ordinary Chondrites **[#2722]**
We compare phosphates in L chondrites with previous work on H and LL chondrites, and examine differences in metamorphic conditions between OC parent bodies.

Cuvillier P. Leroux H. Jacob D. ***POSTER LOCATION #84***
Fe-Mg Interdiffusion Profiles in Forsterite within the Allende Matrix. Time-Temperature Constraints Deduced from a TEM Study **[#1873]**
To infer the origin (nebular or asteroidal) of the ferroan olivine in the Allende matrix, an analytical TEM study of forsterite with Fe-rich rim was performed.

Posner E. S. Ganguly J. Hervig R. ***POSTER LOCATION #85***
Cr Diffusion in Spinel: Experimental Studies and Applications to Cooling Rate Recorded by Chevron Zoned Cr-Spinel in Allende and Mn-Cr Cosmochronology **[#1419]**
We determined Cr diffusion in spinel and applied the data to retrieve cooling rate of spinel likely to have formed by nebular condensation, and Mn-Cr chronology.

Berlin J. Käppel A. Hansen B. K. Salge T. Goran D. et al. ***POSTER LOCATION #86***
From 2D to 3D Chemical Analysis: A μ-XRF, EDS and EBSD Study of the Gujba CB Chondrite **[#2439]**
3-D chemical data of Gujba are presented, which help visualizing the magnitude of interactions between different preexisting metal particles and impact melt.

Fedkin A. V. Grossman L. Campbell A. J. Humayun M. ***POSTER LOCATION #87***
CB Chondrites Could have Formed in an Impact Plume **[#2309]**
Metal with similar siderophile contents to bulk compositions of zoned and unzoned CB grains condenses from a plume formed by CR metal-H chondrite impact.

Krzesinska A. Gattacceca J. Rochette P. ***POSTER LOCATION #88***
Magnetic Fabric Formation by Oblique Impact in Pułtusk H Chondrite **[#2089]**
Oblique collision on the parent body of Pułtusk allowed for non-coaxial deformation, shearing, brecciation, and formation of magnetic foliation and lineation.

Tikoo S. M. Gattacceca J. Weiss B. P. Suavet C. R. ***POSTER LOCATION #89***
Thermal Demagnetization of Shock Remanent Magnetization in Extraterrestrial Materials **[#2354]**
We study how the magnetic records of meteorites are affected by shock.

Bunch T. E. Wittke J. H. Irving A. J. Rumble D. III ***POSTER LOCATION #90***
Unique Polymict Breccia Northwest Africa 7531 Composed of Recrystallized LL Clasts Associated with CR Metachondrite Material: Evidence for Highly Equilibrated Ordinary Chondritic Impactors onto the CR Chondrite Parent Body **[#2214]**
This remarkable specimen records impact mixing of two very different highly equilibrated chondritic lithologies (presumably on the CR chondrite parent body).

Sears D. W. G. ***POSTER LOCATION #91***
The Metamorphic History of Two Major New Finds of Antarctic CO Chondrites (DOM 08004) and MIL 07531) Determined from Thermoluminescence data **[#2333]**
TL data for two major CO chondrites were determined. Both are homogeneous low-grade CO chondrites (DOM 3.2, MIL 3.3). NTL data indicate very different orbits.

Corrigan C. M. Lunning N. G. ***POSTER LOCATION #92***
Petrogenesis of Microporphyritic Impact Melt Clasts in Ordinary Chondrites **[#2615]**
In an effort to understand early solar system bombardment in the asteroid belt, we examine microporphyritic impact melt clasts in ordinary chondrites.

Abreu N. M. Eckert J. O. Bullock E. S. ***POSTER LOCATION #93***
Mineralogical and Chemical Relationships Among Anomalous CV and CR Chondrites MET 01017, RBT 04133, and MIL 07513 **[#2346]**
We use the mineralogy of matrices to discriminate between CV and CR group classification and discuss the relationship of anomalous CV/CRs with CV_{red} chondrites.

Bullock E. S. Lunning N. G. McCoy T. J. ***POSTER LOCATION #94***
Allende 10 B 41: Megachondrule, or Impact Melt Clast? **[#1646]**
Oh, “megachondrule” / We were sadly mistaken / You are impact melt.

POSTER SESSION: EARLY DIFFERENTIATION OF PLANETARY BODIES ACROSS THE SOLAR SYSTEM
6:00 p.m. Town Center Exhibit Area

Elkins-Tanton L. T. Weiss B. P. Asphaug E. Bottke W. F. Binzel R. et al. ***POSTER LOCATION #96***
Differentiation in Planetesimals with Applications to Asteroid (16) Psyche **[#1351]**
We explore the likely compositional ranges of silicate planetesimal interiors and consider the ramifications for the asteroid Psyche and in the IVA iron meteorites.

Fu R. R. Elkins-Tanton L. T. ***POSTER LOCATION #97***
Partially Differentiated Planetesimals may Retain Primitive Crusts **[#1173]**
Melts of carbonaceous chondrites are dry and denser than the chondritic crust itself. A primitive surface is therefore expected to survive differentiation.

Komacek T. D. Ciesla F. J. Davison T. M. ***POSTER LOCATION #98***
A Model for the Three-Dimensional Heating of a Planetesimal **[#1359]**
We present a 3-D model exploring the effects of radiogenic and impact heating in a planetesimal, displaying model test results and describing future work.

Righter K. ***POSTER LOCATION #99***
Late Chondritic Additions and Planet and Planetesimal Growth: Evaluation of Physical and Chemical Mechanisms **[#2196]**
The hypothesis of late chondritic addition to planets and differentiated bodies will be evaluated using both chemical and physical constraints.

Hirschmann M. M. ***POSTER LOCATION #100***
Atmosphere/Magma Ocean Interactions: Consequences for Planetary Differentiation and Volatile Evolution **[#2049]**
Magma ocean-atmosphere interactions play a key role in the differentiation of terrestrial planets and formation of geochemical reservoirs.

Zhang H. Withers A. C. Hirschmann M. M. ***POSTER LOCATION #101***
Experimental Investigation of the Role of Oxygen Fugacity on Degassing of Planetary Magma Oceans **[#2657]**
We present experiments on fO_2 variation with pressure in silicate melts to address redox gradients in magma oceans and their influence on planetary evolution.

Mills R. D. ***POSTER LOCATION #102***
The Effect of Thermal Cycling on Crystal-Liquid Separation During Lunar Magma Ocean Differentiation **[#2317]**
Thermal cycling during crystallization of a magma ocean could lead to coarsening of crystals and more efficient fractional crystallization.

Tuesday, March 19, 2013 **[T609]**
POSTER SESSION:
TERRESTRIAL PLANETARY DIFFERENTIATION: CORE TO MANTLE
6:00 p.m. Town Center Exhibit Area

Shibazaki Y. Fei Y. ***POSTER LOCATION #103***
Experimental Comparison of Densities Between Liquid and Solid Phases in the Fe-FeS System at High Pressure: Implications for the Evolution of Planetary Cores **[#1623]**
Based on our high-pressure experiments, Fe-S liquid is denser than coexisting solid FeS. S-rich core would consist of outer solid core and inner liquid core.

Hillgren V. J. Fei Y. ***POSTER LOCATION #104***
Metal-Silicate Partitioning of Si and S in Highly Reducing Conditions: Implications for the Evolution of Mercury **[#3078]**
The strange composition of Mercury's surface may be the result of core formation under reducing conditions and high temperatures.

Marin N. Righter K. Danielson L. Pando K. Lee C. ***POSTER LOCATION #105***
Metal-Silicate Partitioning of Bi, In, and Cd as a Function of Temperature and Melt Composition **[#1848]**
New data for the systematic metal-silicate partitioning behavior of Bi, In, and Cd as a function of temperature, pressure, and melt composition was obtained.

Colson R. O. Anderson J. K. Buhr S. J. Ramsey M. Anderson L. K. et al. ***POSTER LOCATION #106***
Measuring the Solubility of Neutral Nickel in Silicate Melts: Another Experimental Problem **[#1559]**
New experiments indicate that exsolution of gas from the metal phase during quench can spew metal particles into the silicate melt.

Monteux J. Arkani-Hamed J. ***POSTER LOCATION #107***
Thermal Consequences of Giant Impacts and Core Merging in Early Mars **[#1456]**
We investigate the dynamics of core merging after a giant impact and explore the consequences of this process on the early martian thermal state.

Grocholski B. Cottrell E. ***POSTER LOCATION #108***
Water Storage Capacity of Dense, Lower Mantle Minerals **[#1303]**
We have found evidence of structrally bound water with IR absorption in the dense, high-pressure minerals that make up the lower mantle of terrestrial planets.

Tuesday, March 19, 2013 **[T610]**
POSTER SESSION: VESTA AND THE HED CONNECTION: DAWN RESULTS
6:00 p.m. Town Center Exhibit Area

Haba M. K. Yamaguchi A. Horie K. Hidaka H. ***POSTER LOCATION #109***
Formation Processes of Zircons in Basaltic Eucrites: Evidence from Zr/Hf Ratios and REE Abundances **[#1989]**
Zr/Hf ratios and REE abundances of some zircons from basaltic eucrites indicate that the zircons could have formed or recrystallized during metamorphic events.

Dhaliwal J. K. Corder C. A. Day J. M. D. Patchen A. D. Taylor L. A. ***POSTER LOCATION #110***
Petrology of the Unbrecciated Eucrite, Cumulus Hills 04049 **[#2434]**
CMS 04049, 27 is an equilibrated slowly-cooled eucrite with an unusual sulfide-rich mesostasis area.

Beck A. W. Viviano C. E. McCoy T. J. ***POSTER LOCATION #111***
Limitations of Sample Size in Meteorite Thin Section and Spectroscopic Studies: Implications for the HEDs and Vesta **[#3069]**
Sampling error calculations for harzburgite diogenites indicate olivine abundance is best estimated with available fine-grained samples, even at low abundance.

De Sanctis M. C. Ammannito E. Frigeri A. Capaccioni F. Tosi F. et al. ***POSTER LOCATION #112***
Mineralogical Diversity Across Vesta: Identification of Different Lithologies **[#1881]**
Global mapping of the distributions of HED lithologies on Vesta by Dawn's VIR imaging spectrometer provides the missing geologic context for these meteorites.

Yamashita N. Prettyman T. H. Reedy R. C. Feldman W. C. Lawrence D. J. et al. ***POSTER LOCATION #113***
Preliminary Iron Distribution on Vesta **[#3015]**
A preliminary map of Fe on Vesta derived from Dawn's Gamma Ray and Neutron Detector indicates a variation in the distribution of elemental Fe.

Palomba E. Longobardo A. De Sanctis M. C. Ammannito E. Capaccioni F. et al. ***POSTER LOCATION #114***
Calibration of Spectral Indexes Suitable for Olivine Detection on Vesta **[#1922]**
In order to detect olivine-rich regions on the vestan surface, spectral indexes are reviewed, calibrated and applied to the hyperspectral Dawn-VIR data.

Hoffmann M. Nathues A. ***POSTER LOCATION #115***
Mixing and Formation of Pure Layers of Specific Minerals on Vesta **[#1554]**
Images by the Dawn Framing Camera have been used to identify mixing and exposure processes on Vesta. Granular flows and secondary cratering are discussed.

Reddy V. Li J.-Y. Le Corre L. Russell C. T. Scully J. E. C. et al. ***POSTER LOCATION #116***
Vesta-HED Connection: Comparison of Dawn FC, Hubble Space Telescope, and Ground-Based Observations of Vesta **[#1040]**
We compared data from Dawn, HST, and groundbased telescopes of Vesta. Dawn data confirms a significant number of earlier interpretations from the ground.

Reedy R. C. Prertyman T. H. Yamashita N. ***POSTER LOCATION #117***
Solar-Proton Fluxes During the Current Solar Cycle and Their Space Effects **[#2855]**
Solar-proton fluxes since 2009 at Earth and STEREO spacecraft were compiled and usually compare well with count rates in GRaND on Dawn near Vesta.

Mizzon H. Toplis M. J. Yamashita N. Prettyman T. H. Forni O. ***POSTER LOCATION #118***
Application of Blind Source Separation to Planetary Nuclear Spectroscopy **[#2975]**
This study presents the application of the independent component analysis to separate chemical-element contributions to planetary gamma ray spectra.

Li J.-Y. Combe J.-P. Longobardo A. Capaccioni F. De Sanctis M. C. et al. ***POSTER LOCATION #119***
The Photometric Properties of Vesta in Visible and Near-Infrared from Dawn VIR Instrument **[#2343]**
We report the photometric properties of Vesta derived from Dawn VIR instrument at 0.4–3.5 μm with the Hapke model and Minnaert model.

Palmer E. M. Heggy E. Capria M. T. Tosi F. Russell C. T. ***POSTER LOCATION #120***
Dielectric Properties of the Surface of Asteroid Vesta from Dawn VIR Thermal Observations **[#2476]**
We utilize thermal inertia calculations from the Dawn mission to develop a dielectric model of the surface of asteroid Vesta.

Ruesch O. Hiesinger H. Metzler K. Kallisch J. Cloutis E. A. et al. ***POSTER LOCATION #121***
Assessment of HED Spectral Variability: Observation Geometry and Accuracy in Retrieving Composition **[#2236]**
We measured vis-NIR spectra and composition of 11 HED samples. We investigated observation geometry effects and accuracy in retrieving composition from spectra.

Tuesday, March 19, 2013 **[T611]**
POSTER SESSION: IMPACT CRATERS ON VESTA, LARGE AND SMALL
6:00 p.m. Town Center Exhibit Area

Schenk P. M. Vincent J.-B. Marchi S. O'Brien D. P. Gaskell R. et al. ***POSTER LOCATION #123***
Impact Crater Morphologies on Vesta in Solar System Context **[#2039]**
We look at vestan craters with planetary eyes: Why don't they fit?

Krohn K. Jaumann R. Elbeshausen D. Kneissl T. Wagner R. et al. ***POSTER LOCATION #124***
Bimodal Craters on Vesta: Impacts on Slopes Studied by Geological Investigations **[#1949]**
Geological investigations of bimodal craters on Vesta.

Elbeshausen D. Krohn K. Wünnemann K. Jaumann R. Russell C. T. et al. ***POSTER LOCATION #125***
Bimodal Craters on Vesta: Impacts on Slopes Studied by Numerical Simulations **[#1903]**
A number of unusual craters have been observed on Vesta. By numerical simulations, we studied the formation of these craters in topographically rough terrain.

Carsenty U. Wagner R. J. Boczkowski D. L. Denevi B. W. Hviid S. F. et al. ***POSTER LOCATION #126***
The "Swarm" — A Peculiar Crater Chain on Vesta **[#1492]**
The Swarm is a unique crater chain on Vesta. It is an elongated concentration of small craters and is located in the Pinaria quadrangle.

Scully J. E. C. Russell C. T. Yin A. Jaumann R. McSween H. Y. et al. ***POSTER LOCATION #127***
Gullies on Vesta, Related Geologic Features and Possible Formation Mechanisms **[#1578]**
Gullies in craters are classified as type L (linear) and type C (curvilinear). Possible formation mechanisms, including dry and fluid flow, are investigated.

Williams D. A. O'Brien D. P. Schenk P. M. Denevi B. W. Carsenty U. et al. ***POSTER LOCATION #128***
Impact-Related Flow Features on Asteroid Vesta **[#1611]**
This presentation discusses lobate, flow-like features on Vesta, which we suggest were produced by impact and gradational processes, not volcanism.

Kneissl T. Schmedemann N. Walter S. Williams D. Garry W. B. et al. ***POSTER LOCATION #129***
Prominent Impact Craters in the AV-13 Quadrangle Tuccia on Vesta — Morphology, Degradation, and Ages of Tuccia, Eusebia, Vibidia, Galeria, and Antonia **[#1078]**
We investigated prominent impact features in the mapping quadrangle Av-13 Tuccia, as this quadrangle offers a rich variety of different crater morphologies.

Daly R. T. Schultz P. H. ***POSTER LOCATION #130***
Experimental Studies into the Survival and State of the Projectile **[#2240]**
Experiments at the NASA AVGR determine how much of the projectile survives impact and reveal differences in survival for porous silicate and porous icy targets.

Schmedemann N. Kneissl T. Ivanov B. A. Michael G. G. Neukum G. et al. ***POSTER LOCATION #131***
Lunar-Like Chronology for Vesta — Crater Retention Ages Matching Independent Ar-Ar HED Ages **[#2155]**
We derived a lunar-like chronology for Vesta. Application to measured crater frequencies result in agreement with three peaks of HED Ar-Ar ages within the error.

Ivanov B. A. Kamyshenkov D. ***POSTER LOCATION #132***
Vesta Impact Craters: Rheasilvia over Veneneia **[#1924]**
Two-dimensional numerical modeling is aimed to analyze consequences of Rheasilvia crater formation over the older Veneneia crater and connection Vesta family mineralogy.

Otto K. A. Jaumann R. Krohn K. Matz K.-D. Preusker F. et al. ***POSTER LOCATION #133***
Is the Coriolis Force Responsible for Curved Features on Vesta? **[#1955]**
We investigated the curved features associated with Vesta's south polar basin Rheasilvia to analyse the contribution of the Coriolis force.

Hiesinger H. Ruesch O. Blewett D. T. Buczkowski D. L. Scully J. E. C. et al. ***POSTER LOCATION #134***
Geologic Map of the Northern Hemisphere of Vesta Based on Dawn FC Images **[#2582]**
We present a new geologic map of the northern hemisphere (>21°) of Vesta based on images of the Dawn mission.

Tuesday, March 19, 2013 **[T612]**
POSTER SESSION: PLANETARY DYNAMICS AND TECTONICS
6:00 p.m. Town Center Exhibit Area

Walsh L. S. Watters T. R. Banks M. E. Solomon S. C. ***POSTER LOCATION #135***
Wrinkle Ridges on Mercury and the Moon: A Morphometric Comparison of Length-Relief Relationships with Implications for Tectonic Evolution **[#2937]**
Morphometric comparison of 300 mercurian and lunar wrinkle ridges indicate greater amounts of global contraction on Mercury than the Moon.

Williams N. R. Bell J. F. III Watters T. R. Banks M. E. Robinson M. S. ***POSTER LOCATION #136***
Recent Tectonic Deformation in Mare Frigoris **[#2949]**
Tectonic deformation within Mare Frigoris has continued to within the last tens of millions of years.

Weller M. B. Lenardic A. ***POSTER LOCATION #137***
Hysteresis of Tectonics Regimes on Terrestrial Worlds, One is Not Enough: Plate Tectonics and Internal Heating Through Time **[#1822]**
Time passes, worlds age / Where once only stagnant reigns / Active may remain.

Matsuyama T. ***POSTER LOCATION #138***
Large Effect of Small Planet on Plate Tectonics and Thermal Evolution: Application to Mars **[#2783]**
This study applies a recently developed thermal evolution model of Earth to other planets, especially Mars, which supports the early martian plate tectonics.

Sekhar P. King S. D. ***POSTER LOCATION #139***
Analysis of Martian Geoid and Topography based on Temperature Dependent Layered Viscosity Mantle Convection Models **[#2719]**
Correlate spherical harmonic degree structure of martian mantle with geoid and topography for varying viscosity-layered models and compare it with observed data.

Arkani-Hamed J. Roberts J. H. ***POSTER LOCATION #140***
Impact Heating and Coupled Core Cooling and Mantle Dynamics on Mars **[#2395]**
Impact shock heats Mars / Core can't convect, dynamo dies / Back in a billion?

Lillis R. J. Robbins S. J. Manga M. Halekas J. S. Frey H. V. ***POSTER LOCATION #141***
A New, Statistically Robust Timeline for the Martian Dynamo **[#1435]**
Using a probabilistic technique for estimating crater magnetization from magnetic fields, we determined that the martian dynamo very likely ceased 4.1 Gyr ago.

Espley J. R. Connerney J. E. P. ***POSTER LOCATION #142***
Crustal Magnetic Fields at Mars: Improved Interpretation Through Higher Resolution **[#2891]**
Downward continuation of martian magnetic crustal fields creates higher-spatial-resolution maps that allow for improved interpretations of geophysical features.

Amara S. Cole T. E. Morales N. Schuman S. ***POSTER LOCATION #143***
Comparing and Contrasting Magnetic Properties of Terra Cimmeria and Tharsis Montes **[#1308]**
Our team studied this question: What mineralogical and thermal characteristics make the magnetism of Terra Cimmeria different from that of Tharsis Montes?

Banerdt W. B. Smrekar S. Lognonné P. Spohn T. Asmar S. W. et al. ***POSTER LOCATION #144***
InSight: A Discovery Mission to Explore the Interior of Mars **[#1915]**
The InSight mission will illuminate the processes of terrestrial planet formation and evolution through a surface-based geophysical investigation of Mars.

Taylor J. Teanby N. A. Wookey J. ***POSTER LOCATION #145***
Seismic Activity Estimates for the Cerberus Fossae Region of Mars and Implications for the 2016 InSight Mission **[#1264]**
Using of crater density and measured fault motion in the Cerberus Fossae region of Mars to determine the annual rate of seismicity and number of detectable events.

Teanby N. A. Taylor J. Wookey J. Pike W. T. ***POSTER LOCATION #146***
Seismic Wind Noise Coupling Through Mars' Regolith: Implications for the InSight NASA Discovery Mission **[#1035]**
We present seismic attenuation properties of martian regolith analogues and discuss implications for a surface-deployed planetary seismometer.

Lorenz R. D. Nakamura Y. ***POSTER LOCATION #147***
Viking Seismometer Record: Data Restoration and Dust Devil Search **[#1178]**
Whispers from the past / Viking mostly felt the wind / Let's all look closer.

Castillo-Rogez J. C. Banerdt W. B. ***POSTER LOCATION #148***
Impact of Anelasticity on Mars' Dissipative Properties — Application to the InSight Mission **[#2679]**
Attenuation models accounting for material anelasticity suggest that Mars' average mantle viscosity is orders of magnitude greater than previously inferred.

Nimmo F. Faul U. H. ***POSTER LOCATION #149***
Dissipation Inside Mars at Tidal and Seismic Frequencies **[#2174]**
Measured martian dissipation is consistent with a convective interior having a temperature ~1450 K. A low-velocity zone exists at the base of the lithosphere.

Tielke J. Li Y. Zimmerman M. Kohlstedt D. ***POSTER LOCATION #150***
Water Incorporation Mechanisms and Mechanical Properties of Hydrous Olivine Single Crystals: Insight into the Rheological Properties of Mantle Rocks of Terrestrial Planets **[#2738]**
We investigated the influence of silica activity on water incorporation and evaluated the climb-controlled dislocation creep model in olivine.

Haines A. J. Dimitrova L. L. ***POSTER LOCATION #151***
Fully-3D Models for Lithospheric Deformation: A Comparison with the Thinsheet and Flexure Approximations **[#2441]**
Compared to 3-D Mars models, thin sheet models match only the style but not magnitude of horizontal displacement while flexure fits only the radial displacement.

Dimitrova L. L. Haines A. J. ***POSTER LOCATION #152***
Constraining the Long Term Poisson's Ratio of the Martian Lithosphere From 2D and 3D Dynamic Modeling of Lithospheric Stress and the Surface Faulting Record **[#1730]**
We constrain the long term Poisson's ratio of the martian crust from dynamic models and surface faults, and discuss implications on elastic thickness estimates.

McMillin A. M. Kattenhorn S. A. ***POSTER LOCATION #153***
Geometry and Evolution of Segmented Normal Fault Systems on Mars **[#1099]**
Relay zones between segmented normal faults on Mars were analyzed to determine how relay zone geometry relates to segment linkage and evolution.

Watkins J. Yin A. ***POSTER LOCATION #154***
Progressive Evolution of Valles Marineris Fault Zone and its Role in Controlling Interior Layered Deposits and Outflow Channels **[#3071]**
The role of the progressive opening of Valles Marineris in the evolution of ILDs and the outflow channels is investigated through systematic geologic mapping.

Oosthoek J. H. P. Rossi A. P. Carranza E. J. Unnithan V. ***POSTER LOCATION #155***
Developing Strategies for Predicting Locations of Past Hydrothermal Activity on Mars **[#2565]**
We investigate the spatial pattern of known past martian hydrothermal activity signals and their possible association with geology to predict unknown locations.

Dehant V. Van Hoolst T. Breuer D. Claeys P. Debaille V. et al. ***POSTER LOCATION #156***
Planet TOPERS: Planets, Tracing the Transfer, Origin, Preservation, and Evolution of Their Reservoirs **[#2052]**
An overview is given of the Planet TOPERS project addressing habitability in our solar system.

Liu Z. Y. C. Radebaugh J. Harris R. Christiansen E. H. ***POSTER LOCATION #157***
Liquid Hydrocarbons and Fluid Overpressures Explain Contractional Structures on Titan **[#1851]**
Liquid hydrocarbons and fluid overpressures reduce shear strength of Titan's icy crust and enable contractional structures to form without the large stresses.

Martin E. S. Kattenhorn S. A. ***POSTER LOCATION #158***
Probing Regolith Depths on Enceladus by Exploring a Pit Chain Proxy **[#2047]**
We explore results from two independent proxies for regolith depth using pit chains to further our understanding of Enceladus' surface modification processes.

Beddingfield C. B. Burr D. M. Dunne W. M. ***POSTER LOCATION #159***
Evidence for Contraction Within the Leading Hemisphere Section of the South Polar Terrain Boundary, Enceladus **[#1254]**
We test for both extensional and contractional origins of Enceladus' south polar terrain boundary. Our results support the hypothesis of contraction.

Beddingfield C. B. Emery J. P. Burr D. M. ***POSTER LOCATION #160***
Testing for a Contractional Origin of Janiculum Dorsa on the Northern, Leading Hemisphere of Saturn's Moon Dione **[#1301]**
We test for both extensional and contractional origins of Janiculum Dorsa on Dione. Our results better support the hypothesis of contraction over extension.

Czechowski L. Leliwa-Kopystynski J. ***POSTER LOCATION #161***
Isoastasy and the Shape of Iapetus **[#1766]**
Investigation of shape of Iapetus indicates that its equatorial bulge could be an isostatic structure instead of fossil bulge resulting from fast rotation.

Matsuyama I. Nimmo F. ***POSTER LOCATION #162***
Pluto's Tectonic Pattern Predictions **[#1399]**
We make predictions for Pluto's global tectonic pattern due to despinning, orbital migration, contraction, and expansion.

Tuesday, March 19, 2013 **[T613]**
POSTER SESSION: MERCURY
6:00 p.m. Town Center Exhibit Area

Mazarico E. M. Goossens S. J. Lemoine F. G. Smith D. E. Zuber M. T. et al. ***POSTER LOCATION #163***
The Gravity Field of Mercury Derived from Two Years of MESSENGER Data **[#2429]**
We present an updated gravity field of Mercury based on nearly two years of MESSENGER tracking data.

Neumann G. A. Cavanaugh J. F. Sun X. Mazarico E. Smith D. E. et al. ***POSTER LOCATION #164***
The Topography of Mercury Derived from two Years of MESSENGER Data **[#2842]**
The Mercury Laser Altimeter has confirmed that near-polar impact craters contain both water ice and unusually dark material postulated to include organic compounds.

Levy C. L. Blewett D. T. Denevi B. W. Ernst C. M. Chabot N. L. et al. ***POSTER LOCATION #165***
Phase-Ratio Images of Mercury Surface Features: Assessing Effects of Sub-Resolution Texture **[#1228]**
Ratios of MESSENGER images at different phase angles may reveal textural differences among Mercury surfaces including hollows, pyroclastics, and impact melt.

Watters T. R. Solomon S. C. Oberst J. Preusker F. Hauck S. A. II et al. ***POSTER LOCATION #166***
The Rembrandt Trough: Evidence of Lithospheric Folding on Mercury? **[#2673]**
A broad valley flanked by lobate scarps associated with the Rembrandt basin may be evidence of long-wavelength deformation of Mercury's lithosphere.

Watters T. R. Solomon S. C. Klimczak C. Selvans M. M. Walsh L. S. et al. ***POSTER LOCATION #167***
Distribution of Prominent Lobate Scarps on Mercury: Contribution to Global Radial Contraction **[#2213]**
MESSENGER orbital images and topographic data are used to map prominent lobate scarps and characterize the globally contractional strain on Mercury.

Giacomini L. Massironi M. Marchi S. Cremonese G. ***POSTER LOCATION #168***
Dating Thrust System on Mercury **[#1481]**
We dated an Hermean smooth plain deformed by a thrust system. The age obtained through the crater count allowed us to fix an upper limit to the fault activity.

Rothery D. A. Massironi M. ***POSTER LOCATION #169***
A Spectrum of Tectonised Basin Edges on Mercury **[#1175]**
Many >200-km basins show basin-fill lavas overthrusting the basin edge. Low-latitude examples are dominated by E-W thrusting, implicating late tidal despinning.

Susorney H. S. Barnouin O. S. Ernst C. M. Head J. W. III ***POSTER LOCATION #170***
Impact Crater Morphology on Mercury from MESSENGER Observations **[#1650]**
We combine altimetry and images from MESSENGER to measure crater shape, to further the understanding of crater formation and modification on Mercury.

Pedrosa M. M. Silva E. A. ***POSTER LOCATION #171***
Impact Crater Detection on Mercury Surface from Digital Image **[#2976]**
This paper is about the use of Mathematical Morphology and template matching to detect impact craters on Mercury surface from digital images.

Ferrari S. Massironi M. Marchi S. Byrne P. K. Klimczak C. et al. ***POSTER LOCATION #172***
Age Relations of the Rembrandt Basin and Scarp System, Mercury **[#2102]**
Crater count-derived ages of the Rembrandt basin area have been determined by means of the Model Production Function (MPF) chronology of Mercury.

Bruck Syal M. Schultz P. H. Riner M. A. ***POSTER LOCATION #173***
Painting Mercury by Comet-Delivered Carbon **[#2496]**
We propose that the enhanced cometary flux at Mercury delivers substantial amounts of excess carbon, which functions as a global darkening agent.

Gillis-Davis J. J. Goudge T. A. Head J. W. Xiao Z. Byrne P. K. ***POSTER LOCATION #174***
The Spatial and Topographic Distribution of Pit Craters on Mercury **[#2422]**
Spatial and topographic distribution of Mercury's pit craters reveals that structure plays an important role while elevation appears to have little/no influence.

Xiao Z. Strom R. G. Blewett D. T. Domingue D. L. Murchie S. L. et al. ***POSTER LOCATION #175***
Dark Spots on Mercury: A Distinctive Low-Reflectance Material and its Relation to Hollows **[#1809]**
Dark spots on Mercury are small young surficial low-reflectance deposits. They form from volatile activity during the initial stages of formation of hollows.

Keller M. R. Ernst C. M. Denevi B. W. Murchie S. L. Chabot N. L. et al. ***POSTER LOCATION #176***
Time-Dependent Calibration of Messenger's Wide-Angle Camera Following a Contamination Event **[#2489]**
A time-dependent correction function was developed to handle contamination of WAC imagery acquired during the first year of MESSENGER's orbital phase.

Domingue D. L. Murchie S. L. Denevi B. W. Chabot N. L. ***POSTER LOCATION #177***
MESSENGER's Mercury Global Color Mosaic: Photometric Update **[#1324]**
Based on orbital observations by the MESSENGER camera, updated photometric corrections are derived and applied to create an improved global color mosaic.

D'Amore M. Helbert J. Holsclaw G. M. Izenberg N. R. McClintock W. E. et al. ***POSTER LOCATION #178***
Exploiting the Mercury Surface Reflectance Spectroscopy Dataset from MESSENGER: Making Sense of Three Million Spectra **[#1900]**
The MASCS Spectrometer has mapped the surface of Mercury producing more than three million spectra. We make use of our recently developed advanced DB system.

Izenberg N. R. Weider S. Z. Nittler L. R. Solomon S. C. ***POSTER LOCATION #179***
Correlating Reflectance and X-Ray Spectroscopic Data from MESSENGER **[#3018]**
A comparison of UV through near-IR reflectance spectra with X-ray fluorescence observations from MESSENGER instruments reveals possible Fe correlation.

D'Amore M. Helbert J. Holsclaw G. M. Izenberg N. R. McClintock W. E. et al. ***POSTER LOCATION #180***
Unsupervised Clustering Analysis of Spectral Data for the Rudaki Area on Mercury **[#1896]**
Study of Mercury MASCS spectral reflectance on area including craters Kuiper, Rudaki, and Waters. We analyze possible connections among different terrain types.

Helbert J. D'Amore M. Head J. W. Byrne P. K. Holsclaw G. M. et al. ***POSTER LOCATION #181***
A Comparison of the Spectral Properties of the Caloris and Rembrandt Impact Basins **[#1496]**
Recent results from MASCS instrument on MESSENGER indicate spectral difference between Caloris and Rembrandt basin and between Caloris and the northern plains.

D'Incecco P. Helbert J. D'Amore M. Maturilli A. Head J. W. et al. ***POSTER LOCATION #182***
Spectral Properties and Geology of Two Impact Craters on Mercury **[#1499]**
We combine spectral analysis and geologic interpretation of two study areas on Mercury in order to assess the presence of compositional heterogeneities.

Vaughan W. M. Head J. W. Parman S. W. Helbert J. ***POSTER LOCATION #183***
What Sulfides Exist on Mercury? **[#2013]**
Mainly CaS and FeS, according to thermochemical theory and experimental evidence.

Klima R. L. Izenberg N. R. Murchie S. Meyer H. M. Stockstill-Cahill K. R. et al. ***POSTER LOCATION #184***
Constraining the Ferrous Iron Content of Silicate Minerals in Mercury's Crust **[#1602]**
In a survey of fresh craters on Mercury, no evidence for ferrous iron in silicates has been found. Modeling suggests that silicates contain <1 wt % ferrous iron.

Maturilli A. Helbert J. Head J. W. Vaughan W. M. D'Amore M. et al. ***POSTER LOCATION #185***
Komatiites as Mercury Surface Analogues: Spectral Measurements at PEL **[#1887]**
VIS (0.45–1.1 μm) and IR (1.5–16 μm) reflectance of three natural + one synthetic komatiite measured at PEL, on fresh and T processed (at 700 K in vacuum) samples.

Tuesday, March 19, 2013 **[T614]**
POSTER SESSION: MARS SCIENCE LABORATORY:
GEOLOGY REGIONAL AND LOCAL
6:00 p.m. Town Center Exhibit Area

Gondet B. Audouard J. Bibring J. -P. Langevin Y. Poulet F. et al. ***POSTER LOCATION #186***
OMEGA/MARS Express Observation of Gale Crater **[#2175]**
OMEGA/MEx has covered Gale Crater, and monitored the thermal evolution over seasons and local times.

Garvin J. B. Malin M. C. Ravine M. A. ***POSTER LOCATION #187***
Granulometry of the Surface of Mars from the Mars Descent Imager (MARDI) on Curiosity: Preliminary Comparisons with Earth **[#2493]**
Analysis of clast size distributions from MARDI images (Curiosity) during and after descent suggests that gravel-cobble-sized particles are similar to Viking 1.

Arvidson R. E. Fuller D. Heverly M. Iagnemma K. Lin J. et al. ***POSTER LOCATION #188***
Mars Science Laboratory Curiosity Rover Terramechanics Initial Results **[#1193]**
Initial results are presented using the MSL Curiosity rover as a virtual terramechanics instrument to sense terrain properties during drives at Gale Crater.

Rice M. S. Ayoub F. Ehlmann B. L. Leprince S. Grotzinger J. P. et al. ***POSTER LOCATION #189***
Co-Registration of CRISM and HiRISE Observations for Interpreting Mineral Stratigraphy at Gale Crater, Mars **[#2323]**
We present a new methodology for co-registering CRISM and HiRISE observations for better interpreting the complex mineral stratigraphy at Gale Crater, Mars.

Parker T. J. Malin M. C. Calef F. J. Deen R. G. Gengl H. E. et al. ***POSTER LOCATION #190***
Localization and 'Contextualization' of Curiosity in Gale Crater, and Other Landed Mars Missions **[#2534]**
Site locations are used for drive and science planning and map compilation. "Contextualization" is placement of location data into regional (orbiter) context.

Sumner D. Y. Palucis M. Dietrich B. Calef F. Stack K. M. et al. ***POSTER LOCATION #191***
Preliminary Geological Map of the Peace Vallis Fan Integrated with In Situ Mosaics from the Curiosity Rover, Gale Crater, Mars **[#1699]**
Map relationships suggest that bedded rocks east of the MSL landing site, which are being investigated by Curiosity, are likely associated with an alluvial fan.

Calef F. J. III Dietrich B. Edgar L. Farmer J. Fraeman A. et al. ***POSTER LOCATION #192***
Geologic Mapping of the Mars Science Laboratory Landing Ellipse **[#2511]**
We present the geologic map of the MSL landing ellipse constructed from HiRISE imagery, identifying six major geologic units to guide science investigations.

Fraeman A. A. Arvidson R. E. Bell J. F. III
Ehlmann B. L. Grotzinger J. P. et al. ***POSTER LOCATION #193***
Curiosity's Traverse to Mount Sharp: Enhancing Scientific Investigation with Hyperspectral Orbital Data **[#1221]**
We interpret CRISM observations over Curiosity's likely traverse to the base of Mount Sharp and describe how they can enhance Curiosity's science campaign.

Rice M. S. Williams J. M. Calef F. Anderson R. B. Edgar L. et al. ***POSTER LOCATION #194***
Detailed Geologic Mapping Along the Mars Science Laboratory (MSL) Curiosity Traverse Path from Glenelg to Mount Sharp **[#2892]**
We have identified geologic unit boundaries along the MSL traverse path to Mt. Sharp to better understand the stratigraphy and identify potential waypoints.

Siebach K. L. Grotzinger J. P. ***POSTER LOCATION #195***
Formation of Boxwork Structures on Mount Sharp, Gale Crater, Mars **[#1875]**
Boxwork cement structures on Mount Sharp in Gale Crater are mapped and described in detail, and the volume of water required to form the boxwork is estimated.

Korn L. Allen C. C. ***POSTER LOCATION #196***
The Gale Crater Mound in a Regional Geologic Setting: Mapping and Probing Surrounding Outcrops for Areas Akin to the Central Mound at Gale **[#1094]**
A 1000-km area encircling Gale Crater was mapped using ArcGIS and remote sensing datasets to determine if areas analogous to the central mound exist.

Dietrich W. E. Parker T. Sumner D. Y. Hayes A. G. Palucis M. C. et al. ***POSTER LOCATION #197***
Topographic Evidence for Lakes in Gale Crater **[#1844]**
Topographic data for the MSL mission to Gale Crater reveal benches and deltas supporting prior hypotheses for multiple lake levels in the Crater.

Seelos K. D. Seelos F. P. Murchie S. L. Arvidson R. E. Fraemann A. A. ***POSTER LOCATION #198***
Mosaicked Hyperspectral CRISM Data: Mineralogic Variability of the MSL Landing Site and Possible Traverse in Gale Crater **[#2814]**
New CRISM hyperspectral targeted mosaics of Gale Crater, Mars, reveal both local mineralogic detail and regional context for MSL science.

Kraft M. D. Christensen P. R. ***POSTER LOCATION #199***
Tectonic Formation of Mount Sharp, Gale Crater, Mars **[#3106]**
The mound of material in Gale Crater formed by tectonic uplift rather than sedimentary deposition and erosion.

Buz J. Ehlmann B. L. ***POSTER LOCATION #200***
Bedrock Composition and Surface Mineralogy of the Greater Gale Region **[#2549]**
We analyzed CRISM images along the Gale Crater rim in an effort to determine the bedrock composition of Gale and the surrounding region.

Smith R. J. Christensen P. R. ***POSTER LOCATION #201***
Quantitative Mineral Abundances in Gale Crater Using THEMIS **[#2925]**
THEMIS is used to attempt to quantify mineral abundances in the central mound of Gale Crater where weathering products have been detected by CRISM.

Bierhaus E. B. McEwen A. S. Wade D. W. Ivanov B. A. ***POSTER LOCATION #202***
A Fortuitous Impact Experiment at Mars **[#2800]**
We describe the impact conditions for the MSL CBMD, and an initial analysis of the craters formed by the CBMD and cruise stage.

Tuesday, March 19, 2013 **[T615]**
POSTER SESSION: MARS SCIENCE LABORATORY:
INSTRUMENTS AND CALIBRATIONS
6:00 p.m. Town Center Exhibit Area

Buch A. Freissinet C. Szopa C. Glavin D. P. Coll P. et al. ***POSTER LOCATION #203***
Detection of Organics at Mars: How Wet Chemistry Onboard SAM Helps **[#1512]**
Sample analysis at Mars, on the Curiosity rover of the MSL mission, has two wet chemistry experiments onboard: derivatization and thermochemolysis.

Cabane M. Coll P. Szopa C. Coscia D. Buch A. et al. ***POSTER LOCATION #204***
Initial Performances/Observations/Results of the SAM Gas Chromatograph (SAM-GC) at Rocknest Site **[#2334]**
How the French contribution (a gas chromatograph) to the SAM suite of instruments is working at Mars, and how it is addressing the quest for organic matter.

Brunner A. E. Johnson M. S. Mahaffy P. M. Raaen E. Teinturier S. ***POSTER LOCATION #205***
SAGE and GATES: How SAM Scientists Analyze GCMS Data **[#2053]**
An overview of two data analysis software tools in use by the SAM team.

Wong M. H. LeFavor M. Newman C. Prats B. Kahanpää H. et al. ***POSTER LOCATION #206***
MSL/REMS Measurements of Conditions During MSL/SAM Atmospheric Ingestion Events **[#1697]**
Pressure/temperature measurements from REMS, at the times when SAM ingested samples of the Mars atmosphere in the first 100 sols of the MSL mission.

Rampe E. B. Bish D. L. Chipera S. J. Morris R. V. Achilles C. N. et al. ***POSTER LOCATION #207***
Detecting Nanophase Weathering Products with CheMin: Reference Intensity Ratios of Allophane, Aluminosilicate Gel, and Ferrihydrite **[#1188]**
We measured XRD patterns and RIRs of nanophase weathering products using the CheMinIV lab instrument to help constrain their abundances in Rocknest samples.

Vaniman D. T. Blake D. F. Morookian J. M. Yen A. S. Ming D. W. et al. ***POSTER LOCATION #208***
CheMin Instrument Performance and Calibration on Mars **[#1369]**
The CheMin X-ray diffraction and X-ray fluorescence instrument on Mars Science Laboratory has been performing within mission design requirements.

Achilles C. N. Morris R. V. Chipera S. J. Ming D. W. Rampe E. B. ***POSTER LOCATION #209***
X-Ray Diffraction Reference Intensity Ratios of Amorphous and Poorly Crystalline Phases: Implications for CheMin and the Mars Science Laboratory **[#3072]**
Amorphous phases, likely to be analyzed by the MSL CheMin XRD instrument, are characterized using the Reference Intensity Ratio (RIR) method.

Kinch K. M. Madsen M. B. Bell J. F. III Johnson J. R. Goetz W. et al. ***POSTER LOCATION #210***
Dust on the Curiosity Mast Camera Calibration Target **[#1061]**
Deposition of aeolian dust is monitored on Curiosity's Mast Camera calibration target. Magnets help to keep parts of the target dust-free.

Maki J. Culver A. Murdock R. Pariser O. Powell M. et al. ***POSTER LOCATION #211***
Mars Science Laboratory Navcam/Hazcam Operations and Results **[#1236]**
This paper describes the early results from the Mars Science Laboratory (MSL) Hazcam and Navcam instruments.

Edgett K. S. Yingst R. A. Minitti M. E. Robinson M. L. Kennedy M. R. et al. ***POSTER LOCATION #212***
Curiosity's Mars Hand Lens Imager (MAHLI): Initial Observations and Activities **[#1199]**
Viewing targets near and far, Curiosity's MAHLI was used for science and engineering support during the first 100 sols at the Gale Crater, Mars, field site.

Anderson R. C. Beegle L. W. Hurowitz J. A. Limonadi D. Jandura L. et al. ***POSTER LOCATION #213***
Results to Date for the Mars Science Laboratory Sample Acquisition, Sample Processing and Handling System (SA/SPaH) **[#1728]**
The MSL SA/SPaH subsystem is designed to acquire interior rock and soil samples and then process and distributed to the onboard analytical science payload.

Eigenbrode J. L. McAdam A. Franz H. Freissient C. Bower H. et al. ***POSTER LOCATION #214***
Fluorocarbon Contamination from the Drill on the Mars Science Laboratory: Potential Science Impact on Detecting Martian Organics by Sample Analysis at Mars (SAM) **[#1652]**
Teflon has been detected in rocks drilled during terrestrial testing of the MSL hardware. Complications to SAM experiments were studied.

Fabre C. Cousin A. Sirven J. B. Sautter S. Forni O. et al. ***POSTER LOCATION #215***
From Univariate Analyses of the Onboard Chemcam Calibration Targets to Estimates of Martian Rock and Soil Compositions **[#1170]**
This paper presents the potential of using the onboard ChemCam calibration targets to assess martian rock and soil compositions using univariate analysis.

Freissinet C. Buch A. Glavin D. P. Cabane M. Coll P. et al. ***POSTER LOCATION #216***
From Background to Signal: Challenges of a Solid Sample Analysis Using SAM GC-MS **[#1249]**
The identification of the compounds present in SAM background is necessary to perform qualitative and quantitative analysis of Mars solid samples.

Lasue J. Forni O. Anderson R. B. Berger G. Clegg S. M. et al. ***POSTER LOCATION #217***
Partial Least Squares Sensitivity Analysis and Improvements for ChemCam LIBS Data Analysis on Mars **[#2230]**
In this work, we report on the current status of the PLS technique used to quantify the elemental composition of ChemCam's targets.

Ehlmann B. L. Clegg S. M. Anderson R. B. Forni O. Lasue J. et al. ***POSTER LOCATION #218***
An Expanded Training Set for Processing of MSL ChemCam and LIBS Data: Spectral Library Samples Added and Effects on Elemental Composition Results from Mars **[#2600]**
Alkali volcanics, clay-bearing volcanics, and salt-bearing mixtures were measured to determine detectability thresholds and improve ChemCam geochemical results.

Langevin Y. Gondet B. Le Mouélic S. Gasnault O. Herkenhoff K. E. et al. ***POSTER LOCATION #219***
Processing Approaches for Optimal Science Exploitation of the Chemcam Remote Microscopic Imager (RMI) During the First 90 Days of Curiosity Operations **[#1227]**
The RMI camera of ChemCam uses a camera head inherited from the Rosetta mission. Specific processing approaches will be presented for optimal interpretation of the data.

Thompson L. M. King P. L. Burkemper L. Spray J. G. Yen A. S. et al. ***POSTER LOCATION #220***
BT-2 Calibration Target for Mars Science Laboratory Alpha Particle X-Ray Spectrometer: Characterization and Alkali Basalt Martian Analogue **[#2190]**
We describe the selection, context, and characterization of the APXS MSL calibration target and compare with initial MSL APXS rock analyses at Gale Crater.

Berger J. A. King P. L. Gellert R. Campbell J. L. Boyd N. et al. ***POSTER LOCATION #221***
MSL Titanium Observation Tray Measurements with APXS **[#1321]**
The MSL rover, Curiosity, has a titanium tray for APXS analyses of samples delivered to SAM and CheMin. We evaluate APXS spectra of samples on the Ti tray.

Campbell J. L. Berger J. A. Gellert R. King P. L. Perrett G. M. et al. ***POSTER LOCATION #222***
First Measurements of the MSL APXS Calibration Target on Mars **[#1506]**
Post-landing spectra of the APXS calibration target reveal contamination. Modeling of this material suggests that the lab calibration is largely unchanged.

Stein T. C. Arvidson R. E. ***POSTER LOCATION #223***

PDS Analyst's Notebook for MSL **[#1570]**

The Analyst's Notebook enriches MSL data archives to facilitate "mission replay."

Tao Y. Muller J.-P. ***POSTER LOCATION #224***

A Machine Vision Toolkit for MSL Imagery: Demonstration Using PIO Pictures **[#1573]**

We demonstrate here a layer and rock detection toolkit and how it may be used to collect and analyze key marker information about a particular scene from MSL imagery.

Tuesday, March 19, 2013 **[T616]**
POSTER SESSION: MARS SCIENCE LABORATORY:
THE ATMOSPHERE AND ENVIRONMENT
6:00 p.m. Town Center Exhibit Area

McCullough E. M. Moores J. E. Francis R. MSL Science Team ***POSTER LOCATION #225***
Inferences of Martian Atmospheric Dust and Water Ice Content Derived from Radiative Transfer Models of Passive MSL Observations by MastCam **[#1288]**
Bispectral MSL MastCam images of the martian sky are used with a radiative transfer model to infer the dust and ice water content of the martian atmosphere.

Harri A-M. Genzer M. Schmidt W. Gómez-Elvira J. Haberle R. M. et al. ***POSTER LOCATION #226***
Mars Science Laboratory (MSL) — First Results of Pressure and Humidity Observations **[#1482]**
The first results from the MSL REMS pressure and humidity observations and comparison of the measurements with modeling results.

Francis R. Moores J. Maki J. Choi D. McCullough E. et al. ***POSTER LOCATION #227***
Observations of Clouds and Winds Aloft at Gale Crater **[#1717]**
MSL's campaign of regular imaging of the atmosphere to study clouds, winds aloft, and atmospheric dynamics is described, along with some initial results.

Kahanpää H. de la Torre Juárez M. Moores J. Rennó N. Navarro S et al. ***POSTER LOCATION #228***
Convective Vortices in Gale Crater **[#3095]**
Sudden drops in atmospheric pressure, probably caused by dust devils or dustless convective vortices, have been detected by the REMS instrument onboard MSL.

Gómez-Elvira J. Armiens C. Carrasco I. Genzer M. Gómez F. et al. ***POSTER LOCATION #229***
Rover Environmental Monitoring Station. Overview of First 100 Sols on Mars **[#1532]**
Presentation of REMS instrument performance, and science findings during the first 100 sols of operations.

Atreya S. K. Squyres S. W. Mahaffy P. R. Leshin L. A. Franz H. B. et al. ***POSTER LOCATION #230***
MSL/SAM Measurements of Non-Condensable Volatiles in the Atmosphere of Mars -Possibility of Seasonal Variations **[#2130]**
MSL/SAM finds 30% lower N_2, 21% greater ^{40}Ar, and 40% lower N_2/Ar compared to Viking, which seem to be related to observing conditions, seasons, or both.

Webster C. R. Mahaffy P. R. Atreya S. K. Flesch G. J. Christensen L. E. et al. ***POSTER LOCATION #231***
Measurements of Mars Methane at Gale Crater by the SAM Tunable Laser Spectrometer on the Curiosity Rover **[#1366]**
We report on the non-detection of methane in the martian atmosphere using SAM's Tunable Laser Spectrometer (TLS) on the Curiosity Rover.

Franz H. B. Stern J. C. Raaen E. Trainer M. G. Wong M. H. et al. ***POSTER LOCATION #232***
Preliminary Results for the Isotopic Composition of Martian Atmospheric CO_2 as Determined with the Sample Analysis at Mars (SAM) Quadrupole Mass Spectrometer **[#2057]**
We present measurements of the martian atmospheric CO_2 composition obtained with SAM's quadrupole mass spectrometer during Curiosity's first 100 sols on Mars.

Conrad P. G. Malespin C. Manning H. Schwenzer S. P. Atreya S. K. et al. ***POSTER LOCATION #233***
Heavy Noble Gas Measurements on Mars with SAM **[#2149]**
Here we discuss the Sample Analysis at Mars experimental approach to the measurement of heavy noble gases Xe and Kr.

Ehresmann B. Hassler D. M. Wimmer-Schweingruber R. F.
Zeitlin C. Boettcher S. et al. ***POSTER LOCATION #234***
Analyzing the Present-Day Martian Radiation Environment with MSL/RAD — Implications for Differences in the Early-Mars Period **[#2324]**
A radiation environment has a significant influence on chances for an emergence of life. What indications can be gained from present-day measurements on Mars?

Wimmer-Schweingruber R. F. Hassler D. M. Böttcher S. I.
Martin C. Zeitlin C. et al. ***POSTER LOCATION #235***
Onset Times of Solar Particle Events Observed by MSL/RAD — Constraints on Particle Transport **[#1450]**
En route to Mars, MSL's RAD was already operational and observed a number of solar particle events. We report on a preliminary analysis of their onset times.

Jun I. Mischna M. Tate C. Behar A. Boynton W. V. et al. ***POSTER LOCATION #236***
Neutron Background Environment Measured by the Mars Science Laboratory's (MSL) Dynamic Albedo of Neutrons (DAN) Instrument During the First 100 Sols **[#1608]**
Neutron background measurement from MSL's DAN instrument during the first 100 sols is described.

Tate C. G. Moersch J. Jun I. Hardgrove C. J. Michna M. et al. ***POSTER LOCATION #237***
Diurnal Variations in MSL DAN Passive Measurements with Atmospheric Pressure and Soil Temperature **[#1601]**
Modelling and investigation of the effects of atmospheric pressure and soil temperature changes on MSL DAN passive measurements.

Tuesday, March 19, 2013 **[T617]**
POSTER SESSION: MARS SCIENCE LABORATORY: SOILS AND ROCKS
6:00 p.m. Town Center Exhibit Area

Lewin E. Ollila Toplitz Meslin P.-Y. Maurice S. et al. ***POSTER LOCATION #238***
Modal Mineralogy of Igneous Rocks with ChemCam at Gale Crater **[#3102]**
ChemCam spectra shot sequences give clues upon rock mineralogy.

Gasnault O. Forni O. Meslin P.-Y. Maurice S. Wiens R. C. et al. ***POSTER LOCATION #239***
ChemCam Target Classification: Who's Who from Curiosity's First Ninety Sols **[#1994]**
Compositions measured by ChemCam reveal multimodal distributions, suggesting the existence of several uniform groups. We confirm it with a clustering analysis.

Clegg S. M. Mangold N. Le Mouélic S. Olilla A. Anderson R. et al. ***POSTER LOCATION #240***
High Calcium Phase Observations at Rocknest with ChemCam **[#2087]**
ChemCam observed several Ca-rich phases at Rocknest that suggest the presence of anhydrite, phosphates such as apatite, and Ca-perchlorate.

Sautter V. Cousin A. Dromard G. Fabre C. Forni O. et al. ***POSTER LOCATION #241***
Is Bathurst Inlet Rock an Evidence of Explosive Volcanism in the Rocknest Area of Gale Crater? **[#1985]**
Bathurst Inlet, a fine-grained sandstone-like rock with K-rich basaltic composition, could be volcaniclastic, which may indicate explosive volcanism at Gale.

Bridges J. C. Schwenzer S. P. Westall F. Dyar M. D. ***POSTER LOCATION #242***
Gale Crater's Bathurst Inlet and Rocknest$_3$ Compositions **[#1973]**
Bathurst and Rocknest$_3$ in Gale Crater are low SiO_2, high Ni, derived from an olivine-rich, mildly alkaline basalt sediment source with little chemical weathering.

Tokar R. L. Wiens R. C. Maurice S. Lasue J. Johnson J. R. et al. ***POSTER LOCATION #243***
Searching for Chemical Variation Across the Surface of RockNest$_3$ Using MSL ChemCam Spectra **[#1283]**
MSL ChemCam LIBS spectra for the rock "RockNest$_3$" indicate either a fine-grained sediment or a homogenous tuff deposit, both with Ca-sulfate enrichment.

Blaney D. L. Anderson R. Berger G. Bridges J. C. Bridges N. T. et al. ***POSTER LOCATION #244***
Assessment of Potential Rock Coatings at Rocknest, Gale Crater with ChemCam **[#1568]**
ChemCam was used to investigate possible rock coatings at Gale Crater. Observed variations in CaO, Fe_2O_3, and SiO_2 may be associated with rock coatings.

Berger G. Blaney D. Bridges J. C Cousin A. Forni O. et al. ***POSTER LOCATION #245***
Possible Alteration of Rocks Observed by Chemcam Along the Traverse to Glenelg in Gale Crater on Mars **[#1502]**
The possibility that rocks and soils (90 first sols) have been altered is evaluated through the ChemCam observations and theoretical chemical considerations.

Lanza N. L. Anderson R. B. Blaney D. Bridges N. T. Clark B. et al. ***POSTER LOCATION #246***
Evidence for Rock Surface Alteration with ChemCam from Curiosity's First 90 Sols **[#1723]**
Here we present examples of chemical depth profiles obtained on rocks by ChemCam, some of which suggest the presence of surface alteration.

Cousin A. Wiens R. C. Sautter V. Mangold N. Fabre C. et al. ***POSTER LOCATION #247***
ChemCam Analysis on Jake Matijevic, Gale Crater **[#1409]**
Jake Matijevic is the first target analyzed by ChemCam and APXS, on sol 45/48. This study focuses on the ChemCam results, using several kinds of approaches.

Wong M. H. Atreya S. K. Mahaffy P. R. Trainer M. Franz H. et al. ***POSTER LOCATION #248***
MSL/SAM Measurements of Nitrogen and Argon Isotopes in the Mars Atmosphere **[#1712]**
Direct measurements of the martian atmosphere by the SAM mass spectrometer give a preliminary upper limit of 277 for the $^{14}N/^{15}N$-isotopic ratio.

Le Mouélic S. Gasnault O. Herkenhoff K. E. Langevin Y. Maurice S. et al. ***POSTER LOCATION #249***
Mars Imaging by the ChemCam Remote Microscopic Imager (RMI) Onboard Curiosity: The First Three Months **[#1213]**
This work presents the imaging capabilities of the ChemCam instrument onboard Curiosity, with examples of images, mosaics, colorized products, and 3-D reconstruction.

Bridges N. T. Le Mouélic S. Langevin Y. Herkenhoff K. E. Maurice S. et al. ***POSTER LOCATION #250***
Rock Abrasion Textures Seen by the ChemCam Remote Micro-Imager on MSL **[#1214]**
We summarize observations of ventifacts and abrasion textures seen by RMI through sol 100 of MSL's mission.

Johnson J. R. Wiens R. C. Maurice S. Bender S. DeFlores L. et al. ***POSTER LOCATION #251***
Chemcam Passive Reflectance Spectroscopy at Bradbury Landing, Mars **[#1372]**
The MSL ChemCam instrument has been successfully used to acquire high-spectral-resolution passive VIS/NIR reflectance spectra of surface dust, soils, and rocks.

Maurice S. Wiens R. C. Blaney D. Bridges J. C. Bridges N. T. et al. ***POSTER LOCATION #252***
Overview of 100 Sols of ChemCam Operations at Gale Crater **[#1979]**
The ChemCam instrument on MSL is performing very well at the surface of Mars. The first 100-sol dataset is rich of thousands of spectra and hundreds of images.

Ollila A. M. Newsom H. E. Wiens R. C. Lasue J. Clegg S. M. et al. ***POSTER LOCATION #253***
Early Results from Gale Crater on ChemCam Detections of Carbon, Lithium, and Rubidium **[#2188]**
Univariate calibration models were built from ChemCam calibration sets for C, Li, and Rb. Preliminary results from Gale Crater are presented.

Forni O. Gasnault O. Meslin P.-Y. Sautter V. Mangold N. et al. ***POSTER LOCATION #254***
Chemical Variability and Trends in ChemCam Mars Observations in the First 90 Sols Using Independent Component Analysis **[#1262]**
We apply a MVA technique, called independent component analysis, to analyse and decipher the chemical trends and variability of the 90 first sols ChemCam data.

Anderson R. B. Lasue J. Wiens R. C. Clegg S. M. Lanza N. L. et al. ***POSTER LOCATION #255***
Spectral Classification and Variability in ChemCam Data from Bradbury Landing to Rocknest **[#2750]**
Principal components analysis and k-means clustering are used to identify compositional trends in ChemCam data collected during the first 100 sols.

Newsom H. E. Berger J. Ollila A. Gordon S. Wiens R. C. et al. ***POSTER LOCATION #256***
Regional and Global Context of Soil and Rock Chemistry from Chemcam and Apxs at Gale Crater **[#1832]**
The first geochemical data from Curiosity reveals two different compositions, which may reflect the dichotomy between the SNC type and Adirondack type magmas.

de la Torre Juárez M. Ramos M. Sebastian E.
Armiens C. Gómez-Elvira J. et al. ***POSTER LOCATION #257***
Preliminary Interpretation of the REMS Ground Temperature Sensor in Gale: Exploring the Thermodynamic Processes Behind the Thermal Wave **[#2553]**
We explore the ground-temperature data from REMS on MSL to characterize their diurnal cycle and possible balances with solar radiation and air temperature.

Moersch J. Hardgrove C. J. Kah L. C. Gupta S. Tate C. et al. ***POSTER LOCATION #258***
Detection of Subsurface Vertical Geochemical Inhomogeneity with the MSL DAN Experiment: Modeling and Results from Bradbury Landing to Rocknest **[#1852]**
Early results from MSL DAN show evidence for buried enhancements in hydrogen. Closely spaced traverse measurements can reveal subsurface contact geometries.

Litvak M. L. Mitrofanov I. G. Behar A. Boynton W. V. DeFlores L. et al. ***POSTER LOCATION #259***
Estimation of Natural Neutron Emission from the Surface of the Gale Crater from the Ground Data from DAN and the Orbital Data from HEND **[#1864]**
Latest DAN/MSL estimations of water abundance at Gale Crater are compared with predictions obtained from orbital observations performed by HEND/Odyssey.

Kuzmin R. O. Mitrofanov I. G. Litvak M. L. Sanin A. B. Varenikov A. et al. ***POSTER LOCATION #260***
Searching for Correlation of the MSL DAN Active Measurement Results with Local Diversity of the Surface Micro-Morphology and Regolith Texture Along the Rover Curiosity Traverse **[#1484]**
Presented initial results of searching for correlation of MSL DAN active measurement with micromorphology and regolith texture along the Curiosity traverse.

Johnson J. R. Bell J. F. III Hayes A. G. Deen R. Godber A. et al. ***POSTER LOCATION #261***
Preliminary Mastcam Visible/Near-Infrared Spectrophotometric Observations at the Curiosity Landing Site, Mars **[#1374]**
The MSL Mastcam acquired multiple time-of-day images to investigate light scattering properties at multiple wavelengths within and outside the landing zone.

Bell J. F. III Godber A. Rice M. S. Fraeman A. A. Ehlmann B. L. et al. ***POSTER LOCATION #262***
Initial Multispectral Imaging Results from the Mars Science Laboratory Mastcam Investigation at the Gale Crater Field Site **[#1417]**
We report initial results of MSL/Mastcam 445-nm to 1013-nm multispectral imaging observations along the early Gale Crater traverse from Bradbury to Glenelg.

Lane M. D. ***POSTER LOCATION #263***
Testing a Technique for Identifying Olivine Composition from Remote Sensing Data: Awaiting Ground Truth from Gale Crater, Mars **[#2596]**
Gale's dark basalt dunes / Olivine index tested / Fo no. predicted.

Schieber J. Malin M. C. Olson T. S. Calef F. Comeaux K. et al. ***POSTER LOCATION #264***
The Final 2½ Minutes of Terror — What we Learned About the MSL Landing from the Images Taken by the MARDI Descent Imager **[#1260]**
MARDI imaging documents MSL interaction with atmosphere/winds and rocket exhaust modification of surface sediments and rocks at the landing site.

Tuesday, March 19, 2013 **[T618]**
POSTER SESSION: MARS SCIENCE LABORATORY: RESULTS FROM ROCKNEST
6:00 p.m. Town Center Exhibit Area

Hamilton V. E. Vasavada A. R. Haberle R. M.
de la Torre Juárez M. Zorzano-Mier M.-P. et al. ***POSTER LOCATION #265***
Preliminary Results from the Mars Science Laboratory REMS Ground Temperature Sensor at Rocknest **[#1364]**
The MSL REMS ground temperature sensor (GTS) provides insight into the thermophysical properties of the surface materials observed along the rover's traverse.

Treiman A. H. Bish D. L. Ming D. W. Morris R. V. Schmidt M. E. et al. ***POSTER LOCATION #266***
Basaltic Soil of Gale Crater: Crystalline Component Compared to Martian Basalts and Meteorites **[#1113]**
Crystalline material in Gale Crater eolian fines is similar to that in martian basalts and meteorites, especially the Adirondack-type basalts of Gusev Crater.

Yen A. S. Gellert R. Clark B. C. Ming D. W. King P. L. et al. ***POSTER LOCATION #267***
Evidence for a Global Martian Soil Composition Extends to Gale Crater **[#2495]**
Martian basaltic fines appear to be a distinct global unit. MSL results from soil analyses within Gale Crater can be applied at the planetary scale.

Yingst R. A. Edgett K. S. Hamilton V. E. Kah L. C. Rowland S. K. et al. ***POSTER LOCATION #268***
A Preliminary Assessment of Sub-mm Spherules at Rocknest, Gale Crater, Mars **[#1257]**
Round, glassy spherules / Impact melt? Volcanic glass? / Or just some marbles?

Fisk M. Popa R. Meslin P.-Y. Lasue J. Mangold N. et al. ***POSTER LOCATION #269***
Missing Components in Chemical Profiles of a Sand Drift in Gale Crater **[#2156]**
Chemical analysis of sand at Rocknest suggests that CaO is associated with a component, possibly sulfate, that is not quantified by ChemCam.

Sullivan R. Goetz W. Hallet B. Madsen M. B. Roland S. et al. ***POSTER LOCATION #270***
Wind-Driven Evolution of Martian Near-Subsurface Regolith **[#2198]**
MSL observations of "Rocknest" regolith similar to MER sites suggest grain size-frequency has evolved via wind to an end state that might be common across Mars.

Leshin L. A. Grotzinger J. P. Blake D. F. Edgett K. S. Gellert R. et al. ***POSTER LOCATION #271***
Integrated Results from Analysis of the Rocknest Aeolian Deposit by the Curiosity Rover **[#1774]**
An integrated view of the results of the comprehensive analysis of the fines from the Rocknest aeolian deposit, including results from many MSL instruments.

Archer P. D. Jr Franz H. B. Sutter B. McAdam A. Ming D. W. et al. ***POSTER LOCATION #272***
Abundances of Volatile-Bearing Species from Evolved Gas Analysis of Samples from the Rocknest Aeolian Bedform in Gale Crater **[#1720]**
Molar abundances of volatile species outgassed during pyrolysis of Rocknest aeolian bedform material by the Sample Analysis at Mars instrument suite on MSL.

Sutter B. Archer D. McAdam A. Franz H. Ming D. W. et al. ***POSTER LOCATION #273***
Detection of Evolved Carbon Dioxide in the Rocknest Eolian Bedform by the Sample Analysis at Mars (SAM) Instrument at the Mars Curiosity Landing Site **[#2095]**
The (SAM) instrument detected four releases of carbon dioxide from the Rocknest eolian bedform material. Possible sources will be discussed.

Wray J. J. Archer P. D. Jr. Brinckerhoff W. B.
Eigenbrode J. L. Franz H. B. et al. ***POSTER LOCATION #274***
The Search for Ammonia in Martian Soils with Curiosity's SAM Instrument **[#2942]**
Curiosity's first evolved gas analysis of martian soil showed a release of particles with mass 15, to which NH^+ fragments from ammonia may contribute.

Navarro-González R. Stern J. Sutter B. Archer D. McAdam A. et al. ***POSTER LOCATION #275***
Possible Detection of Nitrates on Mars by the Sample Analysis at Mars (SAM) Instrument **[#2648]**
The SAM Instrument data is analyzed to search for the possible presence of nitrates in the global dust collected from the Rocknest location at Gale Crater.

Stern J. C. McAdam A. C. Archer P. D. Jr. Bower H. Buch A. et al. ***POSTER LOCATION #276***
Carbon Isotopic Composition of CO_2 Evolved During Perchlorate-Induced Reactions in Mars Analog Materials: Interpreting SAM/MSL Rocknest Data **[#2654]**
CO_2 from pyrolysis of Rocknest samples at Gale Crater represent a mixture of sources, including carbon from perchlorate-induced combustion of organics.

Sutter B. Archer D. Ming D. W. Eigenbrode J. L. Franz H. et al. ***POSTER LOCATION #277***
The Detection of Evolved Oxygen from the Rocknest Eolian Bedform Material by the Sample Analysis at Mars (SAM) Instrument at the Mars Curiosity Landing Site **[#2046]**
The SAM instrument onboard the Curiosity rover detected an O_2 gas release from the Rocknest eolain bedform. Possible O_2 producing phases will be discussed.

Eigenbrode J. L. Glavin D. Coll P. Summons R. E. Mahaffy P. et al. ***POSTER LOCATION #278***
Detection of Organic Constituents Including Chloromethylpropene in the Analyses of the Rocknest Drift by Sample Analysis at Mars (SAM) **[#1666]**
SAM detected hydrocarbons in gases thermally evolved from the Rocknest drift sample. The nature and possible sources are discussed.

Steininger H. Goesmann F. Goetz W. ***POSTER LOCATION #279***
Pyrolysis of Organic Material and Perchlorate **[#2004]**
The discovery of chloromethanes with SAM makes it necessary to find a chemical pathway to create this compound during pyrolysis of organics and perchlorates.

McAdam A. C. Franz H. Archer P. D. Jr. Freissinet C. Sutter B. et al. ***POSTER LOCATION #280***
Insights into the Sulfur Mineralogy of Martian Soil at Rocknest, Gale Crater, Enabled by Evolved Gas Analyses **[#1751]**
MSL SAM analyses of Rocknest soil fines have enabled the first detection of SO_2 and H_2S evolved from in situ thermal analysis of martian surface materials.

Tuesday, March 19, 2013 **[T619]**
POSTER SESSION: MARS THERMAL PROPERTIES
6:00 p.m. Town Center Exhibit Area

Fergason R. L. Lee E. M. Weller L. ***POSTER LOCATION #281***
THEMIS Geodetically Controlled Mosaics of Mars **[#1642]**
This work describes the accuracy and availability of geodetically controlled THEMIS daytime and nighttime IR images and resulting mosaics.

Christensen P. R. Fergason R. L. Edwards C. S. Hill J. ***POSTER LOCATION #282***
THEMIS-Derived Thermal Inertia Mosaic of Mars: Product Description and Science Results **[#2822]**
This work studies the variability of martian surface properties through the creation of a global thermal inertia map from THEMIS infrared images.

Heath S. H. Bell J. Christensen P. R. ***POSTER LOCATION #283***
High-Resolution Martian Soil Thickness Derived from THEMIS Thermal Measurements **[#2797]**
A two-layer thermal model combined with THEMIS thermal measurements to produce high-resolution maps of soil thickness on Mars' surface.

Audouard J. Poulet F. Vincendon M. Bibring J. -P. Gondet B. et al. ***POSTER LOCATION #284***
Thermal Inertia and Surface Heterogeneities of Mars Inferred from OMEGA/MEX **[#1525]**
We derive apparent thermal inertia from OMEGA surface temperature data. OMEGA provides a new diurnal sampling to assess the heterogeneity of the martian surface.

Pokuri J. Bushick K. M. Viswanathan A. V. Elam J. T. Oliver A. R. et al. ***POSTER LOCATION #285***
Thermal Modeling of Gravel and Sand at Different Saturation Levels **[#2411]**
This abstract discusses the measuring and modeling of thermal inertia of typical martian sediments at various levels of saturation.

Hassan S. Hernandez-Rodriguez S. VonZabern K. Pierce J. Kantesaria K. et al. ***POSTER LOCATION #286***
Thermal Inertia of Sand at Different Levels of Water Saturation **[#2016]**
The effect of water saturation on the thermal inertia of sand and gravel is studied and compared.

Baker A. Kang R. Vilen C. Perentis R. Williamson T. J. et al. ***POSTER LOCATION #287***
Thermal Inertia of Martian Sediments at Various Levels of Saturation **[#1575]**
The effect of water saturation on the thermal inertia of a gravel sample is investigated.

Peterson C. M. Zebely Z. T. Vinegar Z. Z. Garcia V. ***POSTER LOCATION #288***
Autonomous Thermal Data Collection **[#1537]**
This is about autonomous data collection using thermal probes made with thermistors and an Arduino.

Tuesday, March 19, 2013 **[T620]**
POSTER SESSION: MARS MAPPING AND STRUCTURAL ANALYSES
6:00 p.m. Town Center Exhibit Area

Pozzobon R. Mazzarini F. Massironi M. Pondrelli M. Rossi A. P. et al. ***POSTER LOCATION #289***
Fractal Analysis and Possible Fluid Source Depth in Crater Mounds, Arabia Terra (Mars) **[#2113]**
The fractal analysis of the size frequency distribution of mounds on spring deposits into Arabia Terra craters gives a clue about the depth of the fluid source.

Öhman T. McGovern P. J. ***POSTER LOCATION #290***
Strain Calculations for Circumferential Graben on Alba Mons, Mars **[#2966]**
Extensional strain is focused on the uppermost asymmetric graben of Alba Mons, with Alba Fossae (NW) accommodating more strain than Tantalus Fossae (E and SE).

Raaitala J. Kostama V.-P. Kukkonen S. Esestime P. Korteniemi J. ***POSTER LOCATION #291***
Structures that Add to our Understanding of the Development of Claritas Fossae, Mars **[#2017]**
Regional tectonic time span extends from 4-Ga-old highland to <3-Ga-old hanging wall faults and to Claritas Rupes activity 2.5 Ga ago.

Okubo C. H. ***POSTER LOCATION #292***
Large-Scale Geologic Mapping Through the Central Candor Colles, West Candor Chasma, Mars **[#1299]**
Results of the first 1:20,000-scale geologic map through the central part of the Candor Colles, in west Candor Chasma, are presented here.

Hore A. Fueten F. Flahaut J. Stesky R. Rossi A. P. et al. ***POSTER LOCATION #293***
Structural Analysis, Layer Thickness Measurements and Mineralogical Investigation of the Largest Interior Layered Deposit within Ganges Chasma, Valles Marineris, Mars **[#1070]**
Layering within HiRISE images covers 2.5 km of stratigraphy with average layer thicknesses of <1.5 m. Soft sedimentary deformation is visible near the base.

Novakovic N. Fueten F. Flahaut J. Stesky R. Rossi A. P. et al. ***POSTER LOCATION #294***
Layer Attitude and Thickness Measurements of the Three Interior Layered Deposits Mounds within Juventae Chasma, Mars **[#1068]**
Basal layers of mound C drape over basement topography. Average layer thicknesses for mounds A and C are <5 m while mound B averages 83.5 m.

Calvert L. Fueten F. Flahaut J. Stesky R. Rossi A. P. et al. ***POSTER LOCATION #295***
Layer Attitude and Thickness Measurements of Three Interior Layered Deposits Within Capri Chasma, Mars **[#1069]**
Dip directions vary between outcrops; several units compose a single massive outcrop. Layer thickness is on average less than 10 m but varies considerably.

Tuesday, March 19, 2013 **[T621]**
POSTER SESSION: MASS MOVEMENTS AND EROSION ON MARS
6:00 p.m. Town Center Exhibit Area

Hooper D. M. Smart K. J. ***POSTER LOCATION #296***
Characterization of Landslides on Mars and Implications for Possible Failure Mechanisms **[#1795]**
We examine geologic, geomorphic, structural, and hydrologic contextual relations of landslides on Mars to understand conditions likely to initiate failure.

Lucchitta B. K. ***POSTER LOCATION #297***
Floor Deposits and Landslides in West Candor Chasma, Mars **[#1684]**
Most landslides in the Valles Marineris are younger than ILD. In west Candor Chasma, layered floor deposits overlap landslides. Implications are discussed.

Chuang F. C. Crown D. A. Berman D. C. Joseph E. C. S. ***POSTER LOCATION #298***
Mapping Lobate Debris Aprons and Related Ice-Rich Flow Features in the Southern Hemisphere of Mars **[#2512]**
In an effort to produce a global inventory of lobate debris aprons, over 1000 aprons have been mapped thus far in the southern hemisphere of Mars using ArcGIS.

Joseph E. C. S. Crown D. A. Chuang F. C. Berman D. C. ***POSTER LOCATION #299***
Formation and Modification of Martian Debris Aprons: Insights from Surface Textures and Categorized Crater Counts **[#2774]**
This investigation examines the formation and modification of martian debris aprons using analyses of surface textures and categorized crater counts.

Sylvest M. E. Dixon J. C. Barnes A. Ito G. ***POSTER LOCATION #300***
Experimental Study of CO_2 Sublimation as a Trigger for Mass Wasting **[#1626]**
We examine the influence of CO_2 frost sublimation on martian gully initiation. Process controls and their relationships to triggering events are examined.

Smart K. J. Hooper D. M. ***POSTER LOCATION #301***
Discrete Element Modeling of Martian Landslides **[#1609]**
High-resolution image data and geomorphology from MOLA-derived topography are used for discrete-element models of landslides in Valles Marineris.

Brunetti M. T. Cardinali M. Fiorucci F. Santangelo M. Guzzetti F. et al. ***POSTER LOCATION #302***
Statistics of Mass Movements in Valles Marineris, Mars **[#1898]**
We mapped and characterized 219 mass movements in Valles Marineris. The statistics of landslide area and volume is compared to terrestrial distributions.

Howard A. D. ***POSTER LOCATION #303***
Quantifying Denudation on Planetary Surfaces **[#1618]**
Planetary landscapes evolve, but denudation is difficult to quantify. Erosion may or may not cause net elevation change. Denudation measurements are proposed.

Tanaka K. L. Fortezzo C. M. Skinner J. A. Jr. Hare T. M. Robbins S. ***POSTER LOCATION #304***
Updated Resurfacing History of Mars Based on the New Global Geologic Map **[#1588]**
The new global geologic map of Mars reveals how and where the planet has been resurfaced through time.

POSTER SESSION: IMPACT PROCESSES ON MARS
6:00 p.m. Town Center Exhibit Area

Michael G. G. ***POSTER LOCATION #305***
Planetary Surface Dating from Crater Size-Frequency Distribution Measurements: Differential Presentation of Data for Resurfaced Units **[#2181]**
The recent proliferation of interest in identifying resurfacing ages makes it worth emphasising the utility of the differential presentation of crater data.

El Maarry M. R. Dohm J. M. ***POSTER LOCATION #306***
Regional Morphologies of the Smooth Deposits in the Mountainous Regions of Argyre, Mars: Results from High Resolution Mapping **[#2806]**
We study the smooth deposits in Argyre Basin with CTX and HiRISE images to investigate their origin and possible compositional variability.

Bennett K. A. Bell J. F. III ***POSTER LOCATION #307***
Large Martian Craters with Central Mounds: Global Distribution and Occurrence of Layers **[#2652]**
We conduct a survey of craters containing central mounds including their location, the mound's offset from the crater center, and the occurrence of layers.

Hsu H. -J. Barlow N. G. ***POSTER LOCATION #308***
Investigation of the Relationship of Crater Depths and Diameters in Selected Regions of Mars **[#1304]**
We have investigated the role of terrain on depth-diameter and simple-complex transition diameter of martian impact craters in four regions of the planet.

Tewelde Y. Zuber M. T. ***POSTER LOCATION #309***
Determining the Fill Thickness and Densities of Mars' Northern Lowlands **[#2151]**
We use MOLA topography, MRO gravity model, and crater depth to diameter relationships to estimate the fill thickness and densities of Mars' northern lowlands.

Boyce J. M. Barlow N. G. Wilson L. ***POSTER LOCATION #310***
Martian LARLE Ejecta: Emplacement Mechanism **[#1004]**
We propose that the extensive ejecta layer of LARLE craters is a base surge deposit that incorporates secondary ejecta from fine-grained mantles.

Sánchez-Bayton M. Herraiz M. Kereszturi Á. Fodor E. ***POSTER LOCATION #311***
Comparison of Terrestrial Cinder Cones and Candidate Volcanic Cones in the Northern Circumpolar Region of Mars **[#1977]**
Comparing terrestrial cinder cones to martian candidate volcanic cones in the norhtern circumpolar region suggests martian ones are higher and more diverse.

Wilkes C. A. King D. T. Jr. Wright S. P. ***POSTER LOCATION #312***
Investigation of Siloe Patera and the Surrounding Area: Possible Evidence of an Ancient Volcanic Caldera on Mars **[#3034]**
Siloe Patera is a newly identified volcanic feature that resembles a caldera with multiple collapse features, possible subsidence, and lava flows.

McCarthy M. L. Zimbelman J. R. ***POSTER LOCATION #313***
Inflated Lava Flows East of Mars' Tharsis Montes **[#1153]**
673 THEMIS images of the volcanic plains east of the Tharsis Montes volcanoes were searched for inflated lava flows; >41% showed either good or possible inflated flows.

Wishard C. A. Zimbelman J. R. Hennig L. A. ***POSTER LOCATION #314***
Inflated Lava Flows West of Mars' Tharsis Montes **[#1631]**
A study of inflated lava flows on the western side of Mars' Tharsis Montes region. This study expands on previous studies conducted in other regions of Mars.

Brož P. Hauber E. ***POSTER LOCATION #315***
Amenthes Cones, Mars: Hydrovolcanic (Tuff) Rings and Cones from Phreatomagmatic Explosive Eruptions on Mars **[#2430]**
Left phreatomagmatic explosive eruptions some visible evidences on martian surface as tuff rings or tuff cones? Insight from Amenthes region.

Pendleton M. W. Kattenhorn S. A. ***POSTER LOCATION #316***
Localized Erosion by Fluid Flow Preceded Development of Cerberus Fossae Fissures, Mars **[#2525]**
We characterize erosional morphologies that formed in response to dike intrusion and propose a timeline of their formation relative to tectonic activity.

Mouginis-Mark P. J. ***POSTER LOCATION #317***
A Unique Young Flow Southwest of Cerberus Fossae, Mars **[#1203]**
A very unusual, fresh, flow has been identified SW of Cerberus Fossae, Mars. This flow appears to be a mud flow rather than a lava flow.

Keske A. L. McEwen A. S. Daubar I. J. ***POSTER LOCATION #318***
Distinguishing Volcanic and Fluvial Activity in Mangala Valles, Mars via Geomorphic Mapping **[#2356]**
Using CTX images to produce a map of Mangala Valles and to interpret and date each geological unit to determine the order of events in its geological history.

Tuesday, March 19, 2013 **[T624]**
POSTER SESSION: VOLCANISM ON MARS:
FROM ANALOGUES TO FLOW MORPHOLOGIES TO MAPPING
6:00 p.m. Town Center Exhibit Area

Wall K. T. Rowe M. C. Ellis B. S. ***POSTER LOCATION #319***
Differentiating Basaltic Eruption Style with X-Ray Diffraction Analysis **[#2547]**
A new method of quantifying crystallinity through X-ray diffraction may provide a useful technique for determining sources of volatiles in eruptions on Mars.

Fawdon P. Balme M. R. Vye-Brown C. L. Rothery D. A. Jordan C. J. ***POSTER LOCATION #320***
The Evolution of Volcanism in Syrtis Major Planum (Mars): Drawing Insight from Terrestrial Analogues **[#2232]**
Using two rheological models we calculate eruption parameters and rheological properties for lava flows on Syrtis Major Planum.

Harvey R. P. Karner J. M. ***POSTER LOCATION #321***
"Blueberries", "Newberries" and Accretionary Lapilli; Lessons from the Antarctic Prebble Formation on Diagnosing the Origins of Dark Lustrous Spherical Thingies **[#2064]**
The spheres that we call "lapilli," pretend like they're Milli Vanilli. They are not "blueberries," or even "new berries," but comparing them isn't too silly.

Bleacher J. E. Orr T. Garry W. B. Hamilton C. W. Zimbelman J. R. et al. ***POSTER LOCATION #322***
Sinuous Ridges and Plateaus as Evidence for Lava Flow Inflation in the Tharsis Plains of Mars: Insights from Analogous Features on the Coastal Plain of Kilauea Volcano, HI **[#2090]**
A volcanic origin for sinuous ridges and plateaus in the plains east of the Tharsis Montes is discussed and compared with Hawaiian volcanic features.

Zimbelman J. R. Garry W. B. Bleacher J. E. Crumpler L. S. Self S. et al. ***POSTER LOCATION #323***
Inflation Processes at the McCartys Lava Flow Field, New Mexico, with Application to Identifying Inflated Lava Flows on Planetary Surfaces **[#2120]**
The McCartys lava flow has abundant inflation plateaus, lava-rise pits, flow textures, and terraced margins, all helpful for identifying inflated flows on planetary surfaces.

Glaze L. S. Baloga S. M. ***POSTER LOCATION #324***
Simulation of Inflated Pahoehoe Lava Flows **[#1230]**
A completely new modeling approach is developed that provides a framework for exploring effects of random and ambient influences on pahoehoe lava emplacement.

Crown D. A. Anderson S. W. Finnegan D. C. LeWinter A. L. Ramsey M. S. ***POSTER LOCATION #325***
Topographic and Thermal Investigations of Active Pahoehoe Lava Flows: Implications for Planetary Volcanic Processes from Terrestrial Analogue Studies **[#2184]**
This study uses LiDAR and FLIR data to document the topographic and thermal characteristics of active pahoehoe lava flows.

Diniega S. Smrekar S. E. Anderson S. Stofan E. ***POSTER LOCATION #326***
From Form, Function: Deriving Planetary Lava Flow Characteristics from Flow Morphometrics **[#1660]**
We model a generic dynamic-instability of lava flow that forms channels and tubes, and estimate flow parameters on Venus and Mars based on flow morphometrics.

Sangha S. S. Diniega S. D. Smrekar S. S. ***POSTER LOCATION #327***
Interfield Analysis of Tumuli on Martian Inflated Lava Flows **[#1634]**
By studying tumuli metrics within martian flows that contain discernible margins, we aim to identify tumuli morphometrics associated with specific flow regimes.

Hamilton C. W. ***POSTER LOCATION #328***
Flood Lavas Associated with the Cerberus Fossae 2 unit in Elysium Planitia, Mars **[#3070]**
Reexamination of the Cerberus Fossae 2 unit using new MRO imagery reveals a previously undocumented lava flow extending ~1300 km northeast from Grjótá Valles.

Keszthelyi L. P. ***POSTER LOCATION #329***
A Facies Model for Primary Mafic Volcanic Deposits **[#2567]**
A framework to assist the interpretation of the vast array of basaltic landforms on Earth, the Moon, Mars, and beyond is presented.

Ramsey M. S. Gillespie A. R. ***POSTER LOCATION #330***
The Failure of the Immutable Emissivity Assumption **[#2101]**
Infrared emissivity is assumed constant and a fundamental property used to identify planetary surfaces. We describe scenarios where this assumption fails.

Morgan G. A. Campbell B. A. Carter L. M. Plaut J. J. ***POSTER LOCATION #331***
3D Visualization of the Internal Structure of the Youngest Volcanic Plain on Mars **[#2640]**
We have used SHARAD to derive estimates of the volume of Late Amazonian volcanic flows and reconstruct paleolandscapes buried in Elysium Planitia.

Pozzobon R. Bistacchi A. Massironi M. Marinangeli L. Cremonese G. ***POSTER LOCATION #332***
FEM Modeling and Fractal Analysis of Concentric and Radial Structures on Ascraeus Mons: Implications for Magma Chamber Depth **[#2105]**
Spatial distribution and orientation of dykes propagating from a magma chamber are key elements to verify its depth through fractal analysis and FEM modeling.

Wyrick D. Y. Morris A. P. Todt M. K. ***POSTER LOCATION #333***
Physical Analog Modeling of Martian Dike Geometries and Subsurface Deformation **[#2603]**
Physical analog models show that distinct deformation styles, mainly contractional, are associated with igneous intrusions.

Carter L. M. Campbell B. A. Plaut J. J. Orosei R. Morgan G. A. et al. ***POSTER LOCATION #334***
Re-Assessing the Volume and Stratigraphy of the Eastern Medusae Fossae Formation **[#2386]**
Sounding radar data reveal new details of the interfaces beneath the eastern Medusae Fossae Formation hills and lead to revised estimates of volume.

Jodlowski P. Platz T. Michael G. G. ***POSTER LOCATION #335***
Eruption History of the Syrtis Major Volcanic Province, Mars **[#2322]**
We present an eruption frequency record based on crater populations on exposed lava flows.

Jozwiak L. M. Head J. W. ***POSTER LOCATION #336***
Glacial Loading and Unloading at Arsia Mons, Mars: Potential Influence on Intrusions, Eruptions, Locations and Orientations **[#2207]**
We use terrestrial analogs of modeled growth and decline of regional ice sheets to predict orientation of candidate dikes on Arsia Mons.

Leverington D. W. ***POSTER LOCATION #337***
Development of Kasei Valles Through Mechanical and Thermal Erosion by Voluminous Low-Viscosity Lava Flows **[#1355]**
The basic properties of the Kasei Valles outflow channel are consistent with volcanic origins.

Plescia J. B. ***POSTER LOCATION #338***
Olympica Fossae Valles — Newly Recognized Fluvial-Volcanic System **[#2478]**
Olympica Fossae and areas southwest (near Jovis Tholus) are formed by a combination of tectonic, fluvial, and volcanic processes in the latest Amazonian.

Kerber L. Michalski J. R. Bleacher J. E. Forget F. ***POSTER LOCATION #339***
Ash Sources in Arabia Terra? Implications for the Arabia Deposits **[#2290]**
A model is presented of the potential ash distribution from a newly proposed volcanic source region in Arabia Terra.

Mustard J. F. Herd C. D. K. Skok J. R. Cannon K. M. ***POSTER LOCATION #340***
Visible-Infrared Reflectance of the Tissint Meteorite: Impact Melt, Maskelynite and Implications for Mars Remote Sensing **[#2771]**
Abundant impact melt in the Tissint meteorite make it important for understanding remotely sensed data of Mars. We compare lab data and remote observations.

POSTER SESSION: VOLCANISM ON VENUS, MOON, AND IO
6:00 p.m. Town Center Exhibit Area

Airey M. W. Mather T. A. Pyle D. M. Glaze L. S. Ghail R. C. ***POSTER LOCATION #341***
Modelling Styles of Volcanism on Venus **[#1282]**
Conduit flow and subaerial plume buoyancy models are combined to model venusian volcanism under a range of conditions. Results are described using case studies.

Plescia J. B. ***POSTER LOCATION #342***
Plains Volcanism on the Lunar Mare **[#2487]**
Areas of the mare are characterized by small-volume, low-relief shield volcanoes that represent the terminal stages of mare volcanism.

Lu Y. Ping J. S. Shevchenko V. V. ***POSTER LOCATION #343***
Volcanic Activity of the Mare Moscoviense and Schrödinger Basin **[#1452]**
We used data from the Chang'e-1 and LRO for researching volcanic activity of the Mare Moscoviense and Schrödinger basins.

Enns A. C. Robinson M. S. ***POSTER LOCATION #344***
Basaltic Layers Exposed in Lunar Mare Craters **[#2751]**
We searched for layered basaltic deposits in lunar craters and found they are thin (6–25 m) relative to previous measurements of lunar basaltic flows.

Trang D. Gillis-Davis J. J. Cahill J. T. S. Thomson B. J. Hawke B. R. et al. ***POSTER LOCATION #345***
Characterization of Localized and Regional Lunar Pyroclastic Deposits for Compositional and Block Population **[#2694]**
We are developing a rock abundance model based upon Mini-RF and Diviner as well as a compositional map to identify volcanic vents in lunar pyroclastic deposits.

Gaither T. Gaddis L. R. Hare T. M. Garlant A. ***POSTER LOCATION #346***
Geologic Analysis of the Orientale Annular Pyroclastic Deposit **[#2125]**
A geologic analysis of the Orientale annular pyroclastic deposit using new, high-spatial resolution imaging data and derived topographic products.

Shank E. M. Klima R. L. Dyar M. D. ***POSTER LOCATION #347***
Characterizing Pyroxene Cooling Rate Using Reflectance Spectra **[#2371]**
We perform heating experiments on orthopyroxenes of different composition to calibrate the determination of site occupancy using infrared reflectance spectra.

Whitten J. L. Head J. W. ***POSTER LOCATION #348***
Ancient Lunar Mare Volcanism: Identification, Distribution, and Composition of Cryptomare Deposits **[#1247]**
Lunar cryptomaria are mapped using mainly Moon Mineralogy Mapper data to understand the total area and distribution of mare basalts.

Mills R. D. Ross D. K. Simon J. I. Irving A. J. ***POSTER LOCATION #349***
A Thorough Search for Elusive Lunar Granophyres **[#1796]**
Imaging of large sections of multiple lunar meteorites reveals that granophyres are quite rare. However, granophyre clasts make up ~1% of Dhofar 1442.

Decker M. C. Smith J. H. Radebaugh J. Christiansen E. H. Williams D. A. ***POSTER LOCATION #350***
Formation of Patarae on Io: Geologic Mapping and Experimental Models **[#2699]**
We explore constraints on the formation of volcanic features on Io called paterae by comparing experimental models with our geologic map of Tupan Patera.

Bunte M. K. Lin Y. Saripalli S. Bell J. F. III Greeley R. ***POSTER LOCATION #351***
Intelligent Detection of Large Scale Volcanism During a Spacecraft Flyby: Examples from Flybys of Io **[#2519]**
We demonstrate autonomous detection of Io's volcanic plumes and explore constraints on detecting similar features in future outer solar system missions.

Veeder G. J. Davies A. G. Matson D. L. Johnson T. V. ***POSTER LOCATION #352***
New Faint Thermal Sources on Io **[#1320]**
We identify four new hot spots on Io. An infrared ratio technique applied to Galileo NIMS data is shown to be sensitive to faint thermal sources.

Tovar D. Sanchez J. J. ***POSTER LOCATION #353***
Super-Eruptions on Io. A Classification Based in Earth's Analogues **[#2599]**
We suggest a classification of super-eruptions on Io based in the same methodology used for these events on Earth.

Tuesday, March 19, 2013 **[T626]**

POSTER SESSION: THE LUNAR INTERIOR FROM GRAVITY AND TIDES: GRAIL, LUNAR PROSPECTOR, CHANG'E AND LASER RANGING

6:00 p.m. Town Center Exhibit Area

Goossens S. J. Lemoine F. G. Sabaka T. J. Nicholas J. B. Mazarico E. et al. ***POSTER LOCATION #354***
High Degree and Order Gravity Field Models of the Moon Derived From GRAIL Primary and Extended Mission Data **[#2382]**
We present high-resolution lunar gravity field models derived from GRAIL primary and extended mission data.

Mazarico E. Goossens S. J. Lemoine F. G.
Neumann G. A. Torrence M. H. et al. ***POSTER LOCATION #355***
Improved Orbit Determination of Lunar Orbiters with Lunar Gravity Fields Obtained by the GRAIL Mission **[#2414]**
The lunar gravity field solutions obtained with the GRAIL data alone provide significant improvements to the orbit reconstruction quality of the LRO spacecraft.

Andrews-Hanna J. C. Freed A. M. Head J. W. III Melosh H. J. Neumann G. A. et al.***POSTER LOCATION #356***
The Compensation State and Ring Structures of Lunar Basins as Revealed by GRAIL Gravity **[#2823]**
We use GRAIL gravity to quantify the departures from isostasy of lunar basins, and investigate the subsurface nature of the basin rings.

Blair D. M. Johnson B. C. Freed A. M. Melosh H. J. Neumann G. A. et al. ***POSTER LOCATION #357***
Modeling the Origin of the Orientale Basin Mascon **[#2821]**
We model the formation of the Orientale basin mascon via a combination of hydrocode and finite-element methods, using GRAIL data as a constraint.

Baker D. M. H. Head J. W. Neumann G. A. Smith D. E. Zuber M. T. et al. ***POSTER LOCATION #358***
GRAIL Gravity Analysis of Peak-Ring Basins on the Moon: Implications for the Crater to Basin Transition **[#2662]**
We measure GRAIL gravity anomaly profiles of peak-ring basins on the Moon and compare these with their morphometries to better understand peak-ring formation.

Chappaz L. Melosh H. J. Howell K. C. ***POSTER LOCATION #359***
Strategies for Lava Tube Detection with GRAIL Data **[#2019]**
The high accuracy and resolution of the data collected by GRAIL potentially allows the detection of small-scale lunar features, specifically empty lava tubes.

Huang Q. Xiao L. ***POSTER LOCATION #360***
Density and Elastic Thickness Constraints at Lunar Volcanic Provinces: Implication for GRAIL **[#2645]**
Primary localized admittance spectrum analyses show that Marius Hills and Rümker Hills with high loading densities may be as original shield volcanic centers.

Ping J. Su X. Yan J. ***POSTER LOCATION #361***
Middle Size Lunar BGA Mascon Basins Identified by Using CE-1 LAM and Gravity Data **[#1326]**
Eight mid-sized lunar impact mascon basins were identified by using Chang'e-1 LAM and gravity data, four of the hidden topographic depressions were newly found.

Williams J. G. Boggs D. H. Ratcliff J. T. ***POSTER LOCATION #362***
Lunar Science from Lunar Laser Ranging **[#2377]**
Lunar Laser Ranging analysis compatible with GRAIL yields lunar GM, moment, CMB flattening, two dissipation sources, orientation, evidence of activity, and orbit.

Barker M. K. Mazarico E. Neumann G. A. Smith D. E. Zuber M. T. et al. ***POSTER LOCATION #363***
Searching for Lunar Tidal Deformations with LOLA **[#2394]**
We present preliminary results of efforts to use LOLA crossovers to detect the signature of tidal deformations on the Moon.

Qin C. Zhong S. Wahr J. M. ***POSTER LOCATION #364***
Tidal Response of a Laterally Varying Moon: An Application of Perturbation Theory **[#2459]**
We use analytic and numerical method together to explore the possibility of using GRAIL gravity field data to constrain the Moon's interior structure.

Currie D. G. Delle Monache G. O. Behr B. Dell'Agnello S. ***POSTER LOCATION #365***
Thermal Analysis of Lunar Corner Cube Retro-Reflectors **[#3111]**
Lunar laser retro-reflectors on the Moon must undergo extreme temperatures. Our thermal analysis program will be described.

POSTER SESSION: LUNAR GEOPHYSICS AND TECTONICS

6:00 p.m. Town Center Exhibit Area

Banks M. E. Watters T. R. Robinson M. S. Williams N. R. Walsh L. S. et al. ***POSTER LOCATION #366***
Displacement-Length Relationship of Thrust Faults Associated with Lobate Scarps on the Moon **[#3042]**
Revised displacement-length relationship of thrust faults associated with lobate scarps on the Moon using data from the Lunar Reconnaissance Orbiter.

Molaro J. L. Byrne S. ***POSTER LOCATION #367***
Microphysical Modeling of Thermoelastic Stresses on Airless Surfaces **[#1790]**
We model grain-scale stresses caused by thermal fatigue/shock on airless surfaces (Moon, Mercury, and NEAs) and explore implications for regolith production.

Schmerr N. C. Thorne M. S. Yao Y. ***POSTER LOCATION #368***
Seismic Properties of the Lunar Megaregolith **[#2438]**
We study the seismic properties of lunar megaregolith by adapting a 3-D wave propagation code for lunar conditions and compare results to Apollo seismograms.

Blanchette-Guertin J.-F. Johnson C. L. Lawrence J. F. ***POSTER LOCATION #369***
Effect of Variable Scatterer Length-Scales and Frequency Dependent Attenuation on the Decay of Lunar Seismic Coda **[#1234]**
The effects of various lunar scattering structures are investigated by studying the decay characteristics of synthetic signals generated with the phonon method.

Siegler M. A. Smrekar S. E. Paige D. A. Williams J-P. ***POSTER LOCATION #370***
Crustal Effects on Lunar Heat Flow **[#2516]**
We use new crustal thickness and radiogenic compositions models, combined with a 3-D thermal conduction model, to constrain heat flow from the lunar interior.

Wood S. E. ***POSTER LOCATION #371***
An Analytic Model for the Thermal Conductivity of Planetary Regolith: Uncemented, Non-Spherical Particulates **[#3077]**
A new analytic model is presented for estimating the effective thermal conductivity of planetary regolith composed of angular particles in gas or vacuum.

Yu S. Fa W. ***POSTER LOCATION #372***
A Preliminary Estimation of Lunar Heat Flow From Chang'e-2 Microwave Radiometer Observations **[#1379]**
This study focuses on inverting lunar heat flow based on microwave radiometer of Chang'e-2 spacecraft, which is an important issue in today's lunar exploration.

Gong X. Paige D. A. Seigler M. A. Jin Y. Q. ***POSTER LOCATION #373***
Lunar Regolith Dielectric Constant Inversion of Chang'e-1 Microwave Radiometer Results at Apollo 15 **[#2831]**
The observed CE-1 microwave data are fitted at the Apollo 15 site using a thermal model based on independently-derived surface and subsurface temperatures.

Kronrod E. V. Kuskov O. L. Kronrod V. A. ***POSTER LOCATION #374***
Analysis of Lunar Seismic and Temperature Profiles by Thermodynamic Modeling **[#1119]**
The main problem in this work is estimation of seismic model confidence and determination of lunar model constraints by methods of physic-chemical modeling.

Dygert N. J. Meyers C. Hirth G. Liang Y. ***POSTER LOCATION #375***
Weakness of Ilmenite Revealed by New Rheological Measurements with Implications for Lunar Cumulate Mantle Overturn **[#1591]**
We experimentally deformed ilmenite in dislocation creep and found it is much weaker than olivine. Implications for cumulate mantle overturn are significant.

Zhang N. Parmentier E. M. Liang Y. ***POSTER LOCATION #376***
The Present-Day Thermal and Chemical Structure with Vs Profiles Predicted from the Lunar Overturn Model **[#2702]**
Overturn model predicts a 3-D asymmetric thermochemical structure and the 1-D Vs profiles for the present-day Moon. Predicted Vs is compared to the observation.

Khan A. Pommier A. Connolly J. A. D. ***POSTER LOCATION #377***
On the Presence of a Titanium-Rich Melt-Layer in the Deep Lunar Interior **[#1272]**
We find strong evidence for a deep lunar melt-layer enriched in titanium from the inversion of a set of diverse geophysical data and thermochemical modeling.

Evans A. J. Zuber M. T. Weiss B. P. ***POSTER LOCATION #378***
The Possible Role of Water in Sustaining a Lunar Core Dynamo **[#2060]**
We investigate the influence of water in the deep lunar interior and the possible impact on the thermal and early core dynamo evolution.

Yi J. Karato S. ***POSTER LOCATION #379***
Evidence for the Presence of Water in the Lunar Interior from Electrical Conductivity **[#1574]**
The lunar conductivity is interpreted using mineral physics observations. The Al effect is small while hydrogen is needed to explain observed conductivity.

Wang X. Howes C. T. Horányi M. Robertson S. ***POSTER LOCATION #380***
Electric Potentials in Magnetic Dipole Fields Normal and Oblique to a Surface in Plasma: Understanding the Solar Wind Interaction with Lunar Magnetic Anomalies **[#1658]**
We performed laboratory experiments to investigate the solar wind plasma interaction with moderate strength magnetic anomalies on the lunar surface.

Szalay J. R. Likhanskii A. Wang X. Horányi M. ***POSTER LOCATION #381***
Modeling Solar Wind Interaction with Surface Dipole Magnetic Fields **[#2622]**
This research focuses on modeling the interaction of the solar wind with crustal magnetic fields on airless bodies.

Joyce C. J. Blake J. B. Case A. W. Golightly M. Kasper J. C. et al. ***POSTER LOCATION #382***
Validation of PREDICCS Using LRO/CRaTER Observations During Three Major Solar Events in 2012 **[#2707]**
We present a comparison between dose rates measured by the CRaTER instrument on the LRO spacecraft and predicted by the PREDICCS radiation system.

Cox R. G. Dunlop D. Clark P. E. ***POSTER LOCATION #383***
An International Lunar Geophysical Year **[#1564]**
We discuss a proposed International Lunar Geophysical Year (ILGY) to both harness and promote a new phase of lunar surface scientific exploration.

Riofrio L. M. ***POSTER LOCATION #384***
Calculating the Lunar Orbit Anomaly **[#2436]**
A large anomaly in lunar orbital evolution found by laser light ranging may be calculated using the speed of light.

Tuesday, March 19, 2013 **[T628]**
POSTER SESSION: LUNAR SAMPLES
6:00 p.m. Town Center Exhibit Area

Agee C. B. Korotev R. L. Irving A. J. ***POSTER LOCATION #387***
Petrology and Bulk Composition of Two Lunar Fragmental Breccias: Northwest Africa 7493 and Northwest Africa 7611 **[#2629]**
Two different lunar breccia meteorites recovered in Northwest Africa in 2011 and 2012 add considerably to our knowledge of the Moon.

Korotev R. L. Irving A. J. ***POSTER LOCATION #388***
Keeping Up with the Lunar Meteorites – 2013 **[#1216]**
Twelve new lunar meteorites are described. Four are paired with known meteorites, two are pairs or launch pairs, and six appear to represent new meteorites.

North S. N. Jolliff B. L. Korotev R. L. ***POSTER LOCATION #389***
Pyroxene Composition in Lunar Meteorite NWA 2727 and Comparison to NWA 7007 **[#3013]**
Our objective is to present the composition of a pyroxene-rich ferroan gabbro clast in lunar meteorite NWA 2727 and provide a comparison to NWA 7007.

Fagan T. J. Wakabayashi Y. Suginohara A. Kashima D. ***POSTER LOCATION #390***
Controls and Constraints on Tholeiite-Like and Calc-Alkaline-Like Igneous Trends on the Moon from Northwest Africa 773 and Apollo 15405 **[#1812]**
A tholeiitic magmatic suite is preserved in lunar breccia NWA 773. Apollo 15 QMD is more calc-alkaline. Trends formed by fractionation and immiscibility.

Elardo S. M. Shearer C. K. ***POSTER LOCATION #391***
The Origin of Oscillatory Zoning of Major and Minor Elements in Pyroxene Phenocrysts in Lunar Basaltic Meteorite NWA 032/479 **[#1701]**
Oscillatory zoning of pyroxene in NWA 032/479 provides a record of magma chamber processes and the cooling history of the youngest igneous lunar sample.

Zeigler R. A. Korotev R. L. ***POSTER LOCATION #392***
Petrography and Geochemistry of Feldspathic Lunar Meteorite Larkman Nunatak 06638 **[#1767]**
We report a detailed description of the petrography and geochemistry of LAR 06638, and discuss potential pairing relationships with other lunar meteorites.

Liu J. G. Walker R. J. ***POSTER LOCATION #393***
Multiple Impactors Evidenced in Apollo 16 Lunar Impact-Melt Breccias **[#1837]**
The HSE characteristics show that Apollo 16 lunar impact-melt breccias smaple ejecta of multiple, major impactors that created the surrounding basins.

Fagan A. L. Neal C. R. Beard S. P. Swindle T. D. ***POSTER LOCATION #394***
Bulk Composition and ^{40}Ar-^{39}Ar Age Dating Suggests Impact Melt Sample 67095 may be Exotic to the Apollo 16 Site **[#3075]**
Impact melt 67095 is chemically distinct from average Apollo 16 soil. Ar data suggest a thermal event ~700 Ma or less. It is likely exotic to the site.

Lawrence S. J. Taylor G. J. Norman M. D. ***POSTER LOCATION #395***
Trace Element Geochemistry of Mineral Clasts in Apollo 16 Impact Melt Breccias **[#2848]**
We present new trace-element geochemistry data for mineral clasts in Apollo 16 impact melt breccias.

Roberts S. E. Neal C. R. ***POSTER LOCATION #396***
Petrography is Still Relevant! Examination of Lunar Melt Rocks to Determine Formation and Evolution **[#2570]**
Crystal size distributions of plagioclase and olivine can be used to distinguish pristine melts of the lunar interior from impact melts.

Sharp M. Gerasimenko I. Loudin L. James O. B. Puchtel I. S. et al. ***POSTER LOCATION #397***
Characterizing the Dominant Impactor Signature of Apollo 17 Impact Melt Rocks and Metals **[#1280]**
We report highly-siderophile-element concentrations and $^{187}Os/^{188}Os$ ratios for seven additional Apollo 17 melt rocks and four metal separates from one sample.

Sridhar J. Cooper B. L. Mckay D. S. ***POSTER LOCATION #398***
Extraction of Meteoritic Metals from Lunar Regolith **[#2276]**
This research aims to develop and test ways to magnetically separate meteoritic metals from the lunar soil with different magnetic configurations.

Wittmann A. Korotev R. L. ***POSTER LOCATION #399***
Iron-Nickel(-Cobalt) Metal in Lunar Rocks Revisited **[#3035]**
Occurrences of metal particles with high Ni and Co concentrations in lunar rocks are compared with those in lunar meteorite Shişr 161.

Carpenter P. K. North S. N. Jolliff B. L. Donovan J. J. ***POSTER LOCATION #400***
EPMA Quantitative Compositional Mapping and Analysis of Lunar Samples **[#1827]**
We present the first fully quantitative EPMA WDS stage maps of lunar samples with methods for compositional mapping and processing of analytical data.

Guiza B. G. Day J. M. D. ***POSTER LOCATION #401***
Insights into Volcanism on the Moon from Quantitative Textural Analysis of Mare Basalts **[#1825]**
Quantitative textural analysis informs on crystallization processes during lava flow emplacement on the Moon.

Timms N. E. Reddy S. M. Nemchin A. A. Grange M. L. Pidgeon R. T. et al. ***POSTER LOCATION #402***
Applications of Electron Backscatter Diffraction to Lunar and Other Extraterrestrial Samples **[#1942]**
We discuss the benefits and limitations of electron backscatter diffraction analysis in the resolution of microstructures in lunar and meteorite samples.

Barmatz M. Steinfeld D. Winterhalter D. Rickman D. Weinstein M. ***POSTER LOCATION #403***
Microwave Heating Studies and Instrumentation for Processing Lunar Regolith and Simulants **[#1223]**
We show that in most cases sharper particle lunar simulants microwave heat more efficiently than rounder particle simulants. Enhanced heating was also observed.

Donohue P. H. Neal C. R. ***POSTER LOCATION #404***
Quantitative Petrography of Ilmenite in Lunar Mare Basalts **[#2497]**
Crystal size distributions of groundmass ilmenite quantifies relationships to cooling rates, position within a flow, and residence time.

Donohue P. H. Stevens R. E. Neal C. R. Zeigler R. A. ***POSTER LOCATION #405***
Testing the Origins of Basalt Fragments from Apollo 16 **[#2897]**
Quantitative textural analysis of olivine and plagioclase in basalt fragments 60603,10-16 and 65703,9-13 suggest affinities with an impact origin.

Snape J. F. Alexander L. Crawford I. A. Joy K. H. ***POSTER LOCATION #406***
Basaltic Regolith Sample 12003,314: A New Member of the Apollo 12 Feldspathic Basalt Suite? **[#1044]**
We present results of a petrologic analysis of an Apollo 12 basaltic chip (12003,314) that has been proposed as a new member of the feldspathic basalt suite.

Greenwood J. P. Itoh S. Sakamoto N. Warren P. H. Taylor L. A. et al. ***POSTER LOCATION #407***
The Moon: Getting Wetter all the Time (A Survey of Apatite in Apollo 12 Basalts) **[#2647]**
The evidence for a wet Moon continues with water- and hydrogen-isotope data from apatite in all four suites of Apollo 12 basalts.

Zellner N. E. B. Norman M. D. Jourdan F. ***POSTER LOCATION #408***
Compositions and Ages of Apollo 15 Lunar Impact and Volcanic Glasses: Next Results **[#2539]**
We present the first $^{40}Ar/^{39}Ar$ ages of Apollo 15 impact glasses, improved $^{40}Ar/^{39}Ar$ ages of Apollo 15 volcanic glasses, and the geochemistries of both.

Joy K. H. ***POSTER LOCATION #409***
Trace Elements in Lunar Plagioclase as Indicators of Source Lithology **[#1033]**
Trace elements in lunar plagioclase are diagnostic of provenance. Data are compared and contrasted from Apollo and lunar meteorite samples.

Graff M. A. Sun C. Liang Y. ***POSTER LOCATION #410***
Internally Consistent REE Partitioning Models for Anorthite and Low-Calcium Pyroxene: A Reappraisal of Subsolidus Reequilibration with Applications to Parent Magma Compositions of Lunar Ferroan Anorthosites **[#1641]**
We present new experimental results for REE partioning between anorthite and lunar basaltic melts to reassess compositions of the lunar magma ocean.

Sun C. Liang Y. ***POSTER LOCATION #411***
A REE-in-Plagioclase-Clinopyroxene Thermometer for Mafic and Ultramafic Rocks from the Earth, Moon, and Other Planetary Bodies **[#1627]**
We present a REE-in-plagioclase-clinopyroxene thermometer that can record thermal events close to magmatic temperatures for FANs, Mg-suite rocks, CAIs, and POIs.

Krawczynski M. J. Millet M.-A. Dauphas N. Van Orman J. A. ***POSTER LOCATION #412***
The Mare Basalt Fe-Isotope Dichotomy: A Preliminary Exploration into the role of Ilmenite Fractionation **[#2620]**
We present a preliminary evaluation on the feasibility of ilmenite crystallization causing the bulk Fe-isotope dichotomy between high- and low-Ti mare basalts.

DiFrancesco N. J. Nekvasil H. Ustunisik G. Lindsley D. H. ***POSTER LOCATION #413***
Evolved Melts from Lunar Highlands Basalts: Can they Produce Lunar Granites? **[#2619]**
Fractional crystallization of lunar basalt 14053 with added Cl and F shows evidence of Fe-enrichment and Si-depletion and increasing late liquid density.

Seddio S. M. Wang A. Jolliff B. L. Korotev R. L. ***POSTER LOCATION #414***
Raman Imaging of a Granitic Lunar Breccia **[#2568]**
Laser Raman images! X-ray maps! High-resolution! Apollo 12 granitic breccia! Silica polymorphs! Zoned clinopyroxene! Granophyre! Mg-Fe equilibration! Quartz!

Hui H. Neal C. R. ***POSTER LOCATION #415***
Alternative Interpretations for the Reversed Zoning in Plagioclase of Alkali Anorthosite 14305,303 **[#2880]**
We proposed alternative interpretations for the reversed zoning in plagioclase of alkali anorthosite 14305,303 that involves water in the KREEPy parent magma.

Cronbererger K. Neal C. R. ***POSTER LOCATION #416***
KREEP Basalts: Integrating Quantitative Textural Analysis with Chemical **[#3051]**
Combination of CSDs and in situ chemical analysis of mineral phases allows for a minimally destructive approach to study a dwindling supply of KREEP basalts.

Prissel T. C. Parman S. W. Head J. W. Wilson L. ***POSTER LOCATION #417***
Mg-Suite Plutons: Implications for Mantle-Derived Primitive Magma Source Depths on the Moon **[#3041]**
Geophysical models governing the ascent and emplacement of low-density primitive liquids (Mg-suite parental liquid) suggest shallow mantle source regions.

Piskorz D. Stevenson D. J. ***POSTER LOCATION #418***
Melt Migration in the Early Lunar Crust: Formation of the Primitive, Pure Lunar Ferroan Anorthosites **[#1704]**
We model a magma ocean with a flotation lid and find that escape of melt may occur for reasonable parameters, creating more nearly pure lunar anorthosites.

Sun C. Liang Y. Hess P. C. ***POSTER LOCATION #419***
A Parameterized Thermodynamic Model for Ilmenite Solubility in Silicate Melts **[#2295]**
We present an ilmenite solubility model and reexamine LMO crystallization. The new model has great implications for thermal and chemical evolution of the Moon.

Rask J. C. Zeidler-Erdely P. C. Meighan T. Barger M. W. Wallace W. T. et al. ***POSTER LOCATION #420***
The Chemical Reactivity of Lunar Dust Influences its Biological Effect in the Lungs **[#3062]**
Our results show that the chemical reactivity of Apollo 14 lunar dust influences its biological effect in the lungs of rats.

Tartèse R. Anand M. Delhaye T. ***POSTER LOCATION #421***
NanoSIMS Pb/Pb Dating of Tranquillityite in High-Ti Lunar Basalts: Constraints on Ages and Duration of High-Ti Volcanism on the Moon **[#1274]**
We report new tranquillityite Pb/Pb ages from three high-Ti basalts from Apollo collections, providing new constraints on the ages of high-Ti volcanism on the Moon.

Pidgeon R. T. Grange M. L. Nemchin A. A. ***POSTER LOCATION #422***
1950Ma Annealing of Radiation Damage in a Complex Zircon from an Apollo 15 Breccia **[#1819]**
A complex ~ 4345 Ma zircon from an Apollo 15 breccia has undergone disturbance of its U-Pb system and annealing of its radiation damage at ~1950 Ma.

Kleine T. Burkhardt C. Sprung P. ***POSTER LOCATION #423***
Chondritic Sm/Nd in Terrestrial Planets and the Origin of Nucleosynthetic 142Nd Variations **[#3020]**
Earth, Moon, and Mars have chondritic Sm/Nd and a $^{142}Nd/^{144}Nd$ slightly below that of the accessible silicate Earth. ^{142}Nd variations have nucleosynthetic origin.

Welten K. C. Owens T. L. DePaolo D. J. Nishiizumi K. ***POSTER LOCATION #424***
Regolith Exposure of Lunar Meteorites Based on Neutron Capture Induced Shifts in Samarium Isotopic Composition **[#2933]**
The isotopic composition of Sm in five lunar meteorites shows large shifts due to neutron capture, indicating CRE ages of 700–1200 Myr in the lunar regolith.

Albalat E. Albarède F. ***POSTER LOCATION #425***
Epithermal Neutron Capture by 167Er in Lunar Samples **[#2330]**
Erbium neutron capture anomalies provide a robust dosimeter of epithermal neutron capture in lunar samples due to interaction of cosmic rays with the lunar regolith.

Fu X. H. Zou Y. L. He H. Y. Zheng Y. C. Li C. L. et al. ***POSTER LOCATION #426***
Diffusion Kinetic and Retentivity of Implanted Helium in Minerals **[#1389]**
This abstract introduced ion implantation and helium extraction experiments, aimed to better characterize helium diffusion in different minerals.

Burger P. V. Shearer C. K. Sharp Z. D. McCubbin F. M. Provencio P. et al. ***POSTER LOCATION #427***
Driving Fumarole Activity on the Moon 1. Chlorine Distribution and its Isotope Composition in "Rusty Rock" 66095. Implications for the Petrogenesis of "Rusty Rock," Origin of "Rusty" Alteration, and Volatile Element Behavior on the Moon **[#2812]**
We examine the Cl distribution and isotopic composition in 66095 to gain insights into the petrogenesis of the "rusty rock" and origin of "rusty" alteration.

Provencio P. P. Shearer C. K. Brearley A. J. ***POSTER LOCATION #428***
Driving Fumarole Activity on the Moon 2. Nano-Scale Textural and Chemical Analysis of Alteration in "Rusty Rock" 66095 **[#1664]**
We examine the nanoscale mineralogy and geochemistry of the alteration in 66095 to gain additional insights into the petrogenesis of the "rusty rock."

Tartèse R. Anand M. Barnes J. J. Starkey N. A. Franchi I. A. ***POSTER LOCATION #429***
Distinct Petrogenesis of Low- and High-Ti Mare Basalts Revealed by OH Content and H Isotope Composition of Apatite **[#2222]**
Our new data on the OH content and D/H ratio in apatites from low- and high-Ti Apollo mare basalts indicate involvement of distinct petrogenetic processes.

McCanta M. C. Krawczynski M. J. Grove T. L. Seaman S. J. ***POSTER LOCATION #430***
Hydrogen Speciation in Low fO_2 Lunar Melts **[#2348]**
Experiments were run to determine hydrogen speciation in low fO_2 lunar melts. OH is dominant though molecular H_2O does appear higher than in terrestrial melts.

Togashi S. Kita N. T. Tomiya A. Morishita Y. ***POSTER LOCATION #431***
Estimation of the Composition of Host Magmas from Plagioclase in Lunar Highland Rocks in Analogy with the Terrestrial Adcumulates **[#2280]**
The high Sc lunar plagioclases from FAN are less affected by post-cumulus processes and preserve the low Ti/Ba ratio of the host magma and their source mantle.

Barry P. H. Hilton D. R. Marti K. Taylor L. A. ***POSTER LOCATION #432***
Indigenous Lunar Nitrogen **[#2160]**
We present new N-isotope data for lunar basalts (n = 3) from the Apollo 12 and 17 missions in an order to better quantify the indigenous lunar nitrogen component.

Carmody L. Liu Y. Taylor L. A. ***POSTER LOCATION #433***
The Water Budget of the Moon: Essential Considerations **[#2159]**
We report in situ measurements of endogenous water and how overall abundances differ with the heterogeneous nature of mesostasis within lunar basalts.

Crites S. T. Lucey P. G. ***POSTER LOCATION #434***
Characterization of Lunar Soils Using Microscopic Hyperspectral Imaging **[#2473]**
We are using microscopic hyperspectral imaging to characterize the spectral and mineralogical properties of lunar soil samples at the individual grain level.

Byrne C. J. ***POSTER LOCATION #435***
Evidence for Earth-Accreting Planetesimals Intercepted by the Moon **[#1344]**
The Moon intercepted some of the last of the planetesimals attracted by Earth's gravity. Five such events are identified from topographic and mineral evidence.

Tuesday, March 19, 2013 **[T629]**
POSTER SESSION: ICY SATELLITES
6:00 p.m. Town Center Exhibit Area

Carter J. Gourgeot F. Dumas C. Poulet F. ***POSTER LOCATION #436***
Reconnaissance Compositional Mapping of the Icy Satellites of Jupiter Europa and Ganymede: Early Results **[#1748]**
We conducted a groundbased compositional mapping campaign of the icy moons of Jupiter to identify possible endogenous processes imprinting on their surfaces.

Cameron M. E. Smith-Konter B. R. Pappalardo R. T. Collins G. Nimmo F. ***POSTER LOCATION #437***
Tidally-Driven Strike-Slip Failure Mechanics on Ganymede **[#2711]**
Strike-slip tectonism may be important to the development of Ganymede's surface. Diurnal stress alone cannot drive motion; NSR shear stress may induce creep.

Bland M. T. McKinnon W. B. ***POSTER LOCATION #438***
Reevaluating Groove Formation on Ganymede: Forming Larger-Amplitude Grooves at Smaller Extensional Strains **[#2176]**
New models of groove formation yield large-amplitude, graben-like structures at smaller strains. Non-associated plasticity and strain weakening are the key.

Nahm A. L. Cameron M. E. Smith-Konter B. R. Pappalardo R. T. ***POSTER LOCATION #439***
Stress-Triggered Faulting Along Agenor Linea, Europa **[#2968]**
Fault segments making / Up Agenor cause triggered / Faulting on others.

Kattenhorn S. A. Hoyer L. Watkeys M. K. ***POSTER LOCATION #440***
Multi-Stage Dilational and Shearing History of Agenor Linea, Europa **[#1801]**
Agenor Linea formed in at least three stages under different stress conditions. The first two stages were dilational; the third stage dextral transtension.

Culha C. Hayes A. G. Manga M. Thomas A. ***POSTER LOCATION #441***
Identifying Contraction and Expansion Along Double Ridges and Bands on Europa with Strike-Slip Displacements **[#2085]**
Our research dissects the kinematics of each lineament on Europa's surface and defines the leading mechanisms of double ridges and bands.

Johnston S. J. Montési L. G. ***POSTER LOCATION #442***
The Role of Plastic Deformation and Crystallizating Water Intrusions in Europan Ridges **[#2932]**
Determining the potential role of crystallizing water intrusions in an elastic-plastic ice shell on ridge formation on Europa using finite-element modeling.

Craft K. L. Patterson G. W. Lowell R. P. ***POSTER LOCATION #443***
Sill Emplacement in Europa's Ice Shell as a Driving Mechanism for Double Ridge Formation **[#3033]**
We explore the viability of a sill emplacement mechanism involving fracturing and pressure-driven ascent of ocean water in a thickening ice shell on Europa.

Vance S. Goodman J. C. ***POSTER LOCATION #444***
The Structure and Evolution of Europa's Ocean and Ice Shell in the Presence of Aqueous MgSO4 **[#1877]**
Finite difference applied to ocean mixing stores heat at seafloor.

ElShafie A. Heggy E. ***POSTER LOCATION #445***
Radar Detection of the Brittle-Ductile Transition on Icy Satellites Based on Ice's Mechanical and Electrical Properties **[#2300]**
Detection of the brittle-ductile transition is challenging. We are proposing a detection method based on correlating mechanical and electrical properties of ice.

Hansen G. B. ***POSTER LOCATION #446***
Modeling of Galileo/NIMS Europa Spectra of the Anti-Jovian and Trailing Sides Using Two Endmembers and Water Ice **[#2998]**
We have sucessfully modeled Europa spectra from Galileo/NIMS with two endmembers, including an average hydrate and sulfuric acid hydrate, and water ice.

Hodyss R. Johnson P. V. Meckler S. M. ***POSTER LOCATION #447***
Far Ultraviolet Spectroscopy and Photochemistry of Sulfur Dioxide/Water Ice Mixtures **[#2328]**
Photolysis of sulfur dioxide/water ices at 280 nm results in significant photochemistry. This may be the dominant mechanism for SO_2 photochemistry on Europa.

Patthoff D. A. Kattenhorn S. A. ***POSTER LOCATION #448***
The Contribution of Ancient Tiger Stripes to Plume Activity and Energy Flux on Enceladus **[#1675]**
New model suggests ancient tigers erupt plumes, contribute to heat.

Khankhoje U. K. Mitchell K. L. Castillo-Rogez J. C. Janssen M. ***POSTER LOCATION #449***
Enceladus's Brilliant Surface: Radar Modeling **[#2531]**
Cassini RADAR reveals Enceladus to exhibit very high RADAR returns. Plausible scattering geometries are investigated by an electromagnetic computational tool.

Matson D. L. Davies A. G. Johnson T. V. Castillo-Rogez J. C. Lunine J. I. ***POSTER LOCATION #450***
Forming CO_2 Ice On Enceladus' Surface **[#1373]**
"We found traces of free CO_2 ice…" [Brown et al., 1976]. How did pure CO_2 ice come to be on the surface? We offer an explanation.

Roberts J. H. ***POSTER LOCATION #451***
Tidal Dissipation in a Frozen Enceladus **[#1317]**
Weak rubble-pile core / Tides may heat Enceladus / Ocean optional.

Czechowski L. Losiak A. ***POSTER LOCATION #452***
Differentiation, Mineralogy and Melting of Rhea **[#2558]**
Thermal history of Rhea is investigated including possible chemical reactions. The heat of these reactions could be a substantial factor determining evolution.

Phillips C. B. Hammond N. P. Roberts J. H. Nimmo F. Beyer R. A. et al. ***POSTER LOCATION #453***
Stereo Topography and Subsurface Thermal Profiles on Icy Satellites of Saturn **[#2766]**
Stereo topography, combined with numerical modeling, provides evidence for subsurface water on Saturn's satellites early in their history.

Johnston R. White O. ***POSTER LOCATION #454***
Crater Chain Classification and Origins on Rhea **[#2581]**
After observations of crater chains possibly formed by tidally disrupted comet impacts on jovian satellites, Rhea is searched for similar morphological features.

Herrick R. R. ***POSTER LOCATION #455***
The Shapes of Simple Craters in the Outer Solar System Determined with an Enhanced Shadow Measurement Technique **[#2825]**
I use an enhanced shadow measurement method to examine simple craters on outer planet moons. The method does not require the shadow to cross the crater center.

Singer K. N. McKinnon W. B. Schenk P. M. ***POSTER LOCATION #456***
Large Landslides on Icy Satellites: New Examples from Rhea and Tethys **[#2955]**
We present an extended dataset of long-runout landslides on icy satellites (now including Tethys!), which exhibit reduced effective coefficients of friction.

Royer E. M. Hendrix A. R. ***POSTER LOCATION #457***
Far-Ultraviolet Photometric Characteristics of Tethys, Dione and Mimas **[#2338]**
We investigate here the exogenic processes occurring on the surface of the larger icy satellites of Saturn located in the E ring, from the Cassini-UVIS dataset.

Galuba G. G. Denk T. ***POSTER LOCATION #458***
On the Thermal Feedback Process Leading to the Global Brightness Dichotomy of Iapetus Including the Effect of Orbital Precession **[#2195]**
Calculation of the global migration of water ice on Iapetus taking into account exogenic infall on the leading side and precession of the orbit.

Cartwright R. Emery J. P. Rivkin A. Trilling D. ***POSTER LOCATION #459***
Near-Infrared Spectroscopy of Uranian Satellites: Searching for Carbon Dioxide Ice on Umbriel, Titania, and Oberon **[#1195]**
We explore the distribution of CO_2 on uranian moons in order to investigate whether CO_2 is produced by charged particle bombardment of H_2O and C-rich material.

Dones L. Levison H. F. ***POSTER LOCATION #460***
The Impact Rate on Giant Planet Satellites During the Late Heavy Bombardment **[#2772]**
Comets fly through space / Icy moons live through troubled times / Whew, we see them still.

Mookherjee M. Castilo-Rogez J. Bassett W. Wang Z. ***POSTER LOCATION #461***
High Pressure Behavior of Hydrous Silicates: Insights into the Cores of Icy Planetary Bodies **[#1817]**
We will present results on static and thermal equation of state of serpentine. We will be using these results to develop new core models for Titan and Europa.

Walker M. E. Mitchell J. L. ***POSTER LOCATION #462***
Using Elastic Torque to Predict Libration on Icy Satellites **[#2763]**
An elastic restoring torque can predict a set of elastic libration amplitudes that are dependent on the layering and rheology of the ice shells on icy moons.

Van Hoolst T. Baland R.-M. ***POSTER LOCATION #463***
The Effect of Tides on the Forced Libration of Large Icy Satellites **[#2036]**
We study the effect of elastic tidal deformation on the libration of icy satellites. Deformation strongly reduces libration if a subsurface ocean exists.

Tian B. Y. Stanley S. ***POSTER LOCATION #464***
Interior Structure of Water Planets: Implications for Their Dynamo Source Regions **[#1638]**
Using interior structure modeling to determine the planetary dynamo source region geometries for “ice” giants of various masses and compositions.

Tuesday, March 19, 2013 **[T630]**
POSTER SESSION: TITAN
6:00 p.m. Town Center Exhibit Area

Misiura K. M. Czechowski L. ***POSTER LOCATION #465***
Evolution of Titan's and Earth's Rivers **[#2218]**
In our simulations we compare models of terrestrial and Titan's river. We have found that transport of sediments on Titan is more effective than on Earth.

Witek P. P. Czechowski L. L. ***POSTER LOCATION #466***
Formation and Evolution of River Deltas on Titan and Earth **[#2866]**
We simulate processes of sediment transport and deposition on Titan and Earth to determine similarities and differences of the formation of the river deltas.

Hayes A. G. Lorenz R. D. Donelan M. A. Manga M. Lunine J. I. et al. ***POSTER LOCATION #467***
Wind Driven Capillary-Gravity Waves on Titan: Hard to Detect or Non-Existent? **[#2009]**
We will investigate the conditions necessary for the emergence of capillary gravity waves on Titan's lakes using modern theories of wind wave generation.

Cordier D. Barnes J. W. Ferreira A. ***POSTER LOCATION #468***
Composition of Titan's Dry Lakebeds: What can be Inferred from the Solubility Theory **[#1468]**
Around Titan's poles, dry lakebeds seem to be poor in water ice. Using a model of solubility, we have found an enrichment in butane and acetylene.

Luspay-Kuti A. Chevrier V. F. Wasiak F. C. Roe L. A. Welivitiya W. D. D. P. et al.***POSTER LOCATION #469***
Experimental Constraints on Methane Evaporation at the Low Latitudes of Titan **[#2256]**
We present experimental results on CH_4 evaporation under simulated conditions similar to those at the Huygens landing site and the implications for Titan.

Singh S. Cornet T. Wagner A. Luspay-Kuti A. Chevrier V. F. et al. ***POSTER LOCATION #470***
Infrared Study of Hydrocarbons Mixtures Under Titan Simulated Conditions **[#2944]**
This study has investigated the infrared properties of several hydrocarbon mixtures of Titan's liquids and ices under Titan simulated conditions.

Cornet T. Le Mouélic S. Rodriguez S. Sotin C. Bourgeois O. et al. ***POSTER LOCATION #471***
Estimates of Titan's Surface Photometry in the 5 Microns Atmospheric Window Using the Cassini Visual and Infrared Mapping Spectrometer (VIMS) **[#2048]**
Titan's surface seems to behave as a Lambertian body at first order. We now try to refine its photometric function by testing several empirical photometry laws.

Cornet T. Singh S. Chevrier V. F. Luspay-Kuti A. Wasiak F. C. et al. ***POSTER LOCATION #472***
Acetylene on Titan: Laboratory Experiments for Remote Sensing Detection Using Cassini/VIMS Data **[#2056]**
We acquired infrared spectra of acetylene under Titan simulated conditions. We will compare these spectra to Cassini/VIMS spectra to detect acetylene on Titan.

Luspay-Kuti A. Mandt K. E. Waite J. H. de la Haye V. ***POSTER LOCATION #473***
The Effect of Photoabsorption Cross Section and Solar Flux on Ethane Production in Titan's Ionosphere **[#2312]**
Effects of varying solar flux and N_2 cross section resolutions on the global average C_2H_6 production in the upper atmosphere of Titan are presented.

Kuga M. Carrasco N. Marty B. Rigaudier T. ***POSTER LOCATION #474***
Nitrogen Isotopic Fractionation During RF-Plasma Gas Discharge Synthesis of Tholins: Implications for the Origin of Titan's Aerosols **[#2233]**
We have measured a ^{15}N-depletion in analogues of Titan's aerosols. This isotopic fractionation has strong implications for the chemistry of Titan's atmosphere.

Sciamma-O'Brien E. M. Salama F. ***POSTER LOCATION #475***
Investigating the Different Steps of Titan's Atmospheric Chemistry at Low Temperature: Gas Phase Analysis **[#1836]**
A mass spectrometry study of the gas phase in a lab experiment simulating the first and intermediate steps of Titan's atmospheric chemistry at low temperature.

Sciamma-O'Brien E. M. Nuevo M. Salama F. ***POSTER LOCATION #476***
Investigating the Different Steps of Titan's Atmospheric Chemistry at Low Temperature: Solid Phase Analysis **[#1839]**
Ex situ study of Titan tholins generated in a lab experiment simulating the first and intermediary steps of Titan's atmospheric chemistry at low temperature.

Teanby N. A. Irwin P. G. J. Nixon C. A. de Kok R. Vinatier S. et al. ***POSTER LOCATION #477***
Titan's Middle-Atmosphere Dynamical and Chemical Seasonal Changes at Northern Spring Equinox **[#1034]**
Seasonal variations of Titan's atmospheric temperature/composition from nine years of Cassini-CIRS infrared spectra indicate a general circulation reversal.

Marounina N. Tobie G. Monteux J. Carpy S. Grasset O. ***POSTER LOCATION #478***
Evolution of Titan's Atmosphere During a Late Heavy Bombardment **[#2242]**
We present a numerical model of the evolution of the atmosphere of Titan by impacts during an episode of intense cratering, the late heavy bombardment.

Lefèvre A. Tobie G. Choblet G. Cadek O. Le Mouélic S. et al. ***POSTER LOCATION #479***
Titan's Outer Ice Shell Structure and Dynamics Constrained from Cassini Data **[#2194]**
Using Cassini data, we developed an interior structure model for Titan and computed the stability of the outer ice shell considering different scenarios.

Hodyss R. P. Choukroun M. Beauchamp P. M. Sotin C. Cable M. ***POSTER LOCATION #638***
Titan's Beaches: An Examination of What is Possible and What is Chemically Feasible **[#1164]**
This presentation provides some of our initial thoughts on how to interpret the notion of "beaches" around the Titan mares.

Tuesday, March 19, 2013 **[T631]**
POSTER SESSION: PLANETARY RINGS
6:00 p.m. Town Center Exhibit Area

Esposito L. W. Bradley E. T. Colwell J. E. Madhusudhanan P. Sremcevic M. ***POSTER LOCATION #480***
Predator-Prey Model for Haloes in Saturn's Rings **[#1362]**
Bright "haloes" form around the locations of some of the strongest resonances in Saturn's A ring, from cyclic resonance forcing, diffusion spreads these.

Yasui Y. Ohtsuki K. Daisaka H. ***POSTER LOCATION #481***
Accretion of Particles onto Moonlets in Saturn's Rings **[#1791]**
Using local N-body simulations, we investigate the process of accretion of small ring particles onto a larger moonlet in Saturn's rings.

Hirata N. Miyamoto H. Showman A. P. ***POSTER LOCATION #482***
Particles from Ephemeral Plume Activities of Enceladus Deposit on Saturnian Satellites **[#1518]**
Deposits of the E-ring materials on saturnian satellites constrain cryovolcanic activities of Enceladus.

Tuesday, March 19, 2013 **[T632]**
POSTER SESSION: EDUCATION AND OUTREACH: HIGHER EDUCATION
6:00 p.m. Town Center Exhibit Area

Chan M. A. Robinson J. K. ***POSTER LOCATION #483***
Multi-Media Resources and 5E Pedagogy for a Coupled Earth and Mars Science Higher Education Curriculum **[#1800]**
A 5E pedagogical approach (engage, explore, explain, enhance, evaluate) and multimedia resources involve undergraduates in integrated Earth and Mars science.

Dalton H. A. CoBabe-Ammann E. A. Shipp S. S. ***POSTER LOCATION #484***
EarthSpace: A National Clearinghouse for Higher Education Materials and Information in Earth and Space Sciences **[#2579]**
EarthSpace is a higher-education clearinghouse for Earth and space sciences containing classroom assets, news, and the latest higher-education research.

Croft S. K. ***POSTER LOCATION #485***
Hands-On Activities for Introductory College Level Astronomy Classes **[#2065]**
Brief descriptions of a number of new hands-on activities in introductory astronomy classes available for use and testing in YOUR classes.

Saavedra F. Lozano L. ***POSTER LOCATION #486***
Planetary Science Multimedia: Animated Infographics for Scientific Education and Public Outreach **[#2961]**
The Planetary Science Multimedia is an interactive infographic tool designed to be used in E/PO for undergraduates and the general public.

Tuesday, March 19, 2013 **[T633]**
POSTER SESSION: EDUCATION AND OUTREACH: STUDENT RESEARCH
6:00 p.m. Town Center Exhibit Area

Saad M. E. Jackson K. Fevig R. Seelan S. Bieri S. ***POSTER LOCATION #487***
Near-Space Balloon Competition: Providing Hands-On STEM Education to Middle and High School Students **[#2922]**
Near-Space Balloon Competition: Providing hands-on STEM education to middle and high school students.

Klug Boonstra S. L. Christensen P. R. Swann J. L. Manfredi L. Zippay J. A. ***POSTER LOCATION #488***
Lessons Learned from the Mars Student Imaging Project: Elements for Success in Creating an Authentic Research Experience for K-12 Students **[#2725]**
The Mars Student Imaging Project (MSIP) is an inquiry-based activity allowing students to create and investigate their own research question.

Grigsby B. Turney D. Murchie S. L. McGovern A. Buczkowski D. L. et al. ***POSTER LOCATION #489***
Students Researching the Red Planet: Results and Ongoing Analysis with the Mars Exploration Student Data Teams **[#1207]**
The Mars Exploration Student Data Teams (MESDT) program trains teams of students to conduct data analysis and research using MRO's CRISM instrument.

Lineberger D. H. Fuerst S. I. Payne C. K. ***POSTER LOCATION #490***
MONS: The Mars Outreach for North Carolina Students; 2007–2013 **[#1538]**
MONS (Mars Outreach for North Carolina Students) is a scientific research/engineering team composed of high school students from the Triangle area of NC.

Shaner A. J. Shupla C. Shipp S. Allen J. Kring D. A. ***POSTER LOCATION #491***
Evaluating the High School Lunar Research Projects Program **[#2464]**
This paper discusses the evaluation results of the Center for Lunar Science and Exploration's High School Lunar Research projects program.

Gilbert A. M. Osinski G. R. Harrison T. N. Mader M. Nuhn A. et al. ***POSTER LOCATION #492***
Interactive Mapping of the Planets Using the Google Earth Platform **[#2045]**
The CPSX IMAPS outreach initiative is funded by NSERC PromoScience and consists of inquiry activities, summer camps, rock kits, and a web-based activity.

Tuesday, March 19, 2013 **[T634]**

POSTER SESSION: EDUCATION AND OUTREACH: PUBLIC OUTREACH

6:00 p.m. Town Center Exhibit Area

Buxner S. R. Wenger M. Jones A. J. P. Hsu B. C. Hessen K. ***POSTER LOCATION #493***

The Challenge of Evaluating Large Outreach Events: Results and Recommendations from Evaluation Efforts of International Observe the Moon Night (InOMN) **[#2479]**

We report challenges and recommendations of evaluating large public events using lessons learned from this year's International Observe the Moon Night (InOMN).

Aubele J. C. Crumpler L. S. ***POSTER LOCATION #494***

Ten Years of Exhibits, Education and Public Outreach Presenting the Mars Exploration Rover Mission at the New Mexico Museum of Natural History and Science **[#2926]**

Two million visitors, over the past ten years, have seen the MER exhibit and learned about Mars at the New Mexico Museum of Natural History and Science.

Cohen J. P. Ding W. Sable J. Li R. Stepinski T. ***POSTER LOCATION #495***

Mars and Beyond: A Panel and Games at the Museum of Science Boston **[#1367]**

In the second year of this ongoing project we aim to grow the previous event via community participation and create a platform for local area researchers to engage the public.

Jones A. J. P. Bonaccorsi R. Kyriazis S. Baldino T. Bleacher L. V. et al. ***POSTER LOCATION #496***

Mars and the Mojave: A Planetary Analog Festival in Death Valley National Park **[#2846]**

Death Valley National Park martian analog festivals celebrate the rich heritage of martian analog research in Death Valley National Park.

Albin E. F. M. ***POSTER LOCATION #497***

Curiosity on Mars: Experiencing the Red Planet in the Fulldome / Immersive Planetarium Environment **[#2818]**

Fernbank Science Center's planetarium is featuring live weekly updates about Mars, featuring Curiosity Rover images with a new fulldome/immersive projection system.

Selvans M. M. Johnston A. K. Nagy K. ***POSTER LOCATION #498***

Storytelling in the Planetarium: Keeping it Casual and Making Connections **[#2828]**

Storytelling in a planetarium is a fun way for planetary scientists to connect with the public; we discuss guidelines for telling engaging (science) stories.

Williams S. H. Conway E. M. Edberg S. J. Lavery D. ***POSTER LOCATION #499***

"Mars is Hard": The NASA Scorecard for Mars Exploration **[#2792]**

The public is fascinated by Mars and its exploration. In sharing that excitement, a consistent use of terminology and performance statistics is required.

Williams S. H. ***POSTER LOCATION #500***

SPACE 365: An App Connecting You - and your Audience - to Space **[#2425]**

The "SPACE 365" app has been created to help learners/educators of all types use space-related historical events to enhance education/public outreach efforts.

POSTER SESSION: EDUCATION AND OUTREACH: SCIENTIST ENGAGEMENT
6:00 p.m. Town Center Exhibit Area

Budney C. J. Lowes L. L. Mitchell K. L. Sohus A. M. Stelzner T. D. et al. ***POSTER LOCATION #501***
NASA Planetary Science Summer School: 25 Years of Preparing the Next Generation of Planetary Mission Leaders **[#2938]**
In celebration of our 25th anniversary, we summarize the experience at NASA's Planetary Science Summer School, and highlight its impact on alumni's careers.

Dalton H. A. Shipp S. S. Buxner S. R. CoBabe-Ammann E. A. Shupla C. et al. ***POSTER LOCATION #502***
Get Involved in Planetary Science Education and Public Outreach! Here's How! **[#2753]**
The Planetary Science Education and Public Outreach Forum is here to help scientists get involved in E/PO through opportunities and resources. Join us!

Shupla C. Buxner S. R. Shipp S. S. CoBabe-Ammann E. A. Hsu B. et al. ***POSTER LOCATION #503***
NASA SMD Scientist Speakers Bureau **[#1211]**
Planetary scientists are invited to join the Speaker's Bureau, to connect them to specific speaker requests. Visit www.lpi.usra.edu/education/speaker/.

Fuqua H. A. Szalay J. Donaldson Hanna K. L. Donohue P. H. ***POSTER LOCATION #504***
LunGradCon: Lunar and Small Bodies Graduate Student Conference 2013, Call For Participation **[#1725]**
LunGradCon provides an opportunity for grad students and postdocs to present in a low-stress, friendly environment, being critiqued only by their peers.

Brock L. S. Melosh H. J. Stewart N. ***POSTER LOCATION #505***
The Implementation of Planetary Science at Purdue University **[#1747]**
Purdue University has recently developed and expanded the Department of Earth and Atmospheric Sciences to include Planetary Sciences.

Smith H. D. Bernstein M. P. Rall J. A. ***POSTER LOCATION #385***
A Summary of NASA Planetary Science R and A Program Statistics **[#3089]**
In this poster we present data on the Planetary Science Division Research and Analysis (R&A) Program Portfolio from 2005 up to current selections in ROSES 2012.

Tuesday, March 19, 2013 **[T636]**

POSTER SESSION: EDUCATION AND OUTREACH: CITIZEN SCIENCE

6:00 p.m. Town Center Exhibit Area

Mutchler M. J. Conti A. Deustua S. Viana A. Wong M. H. et al. ***POSTER LOCATION #506***

Planet Investigators: Citizen Scientists as key Collaborators in Processing and Mining Hubble Images of the Solar System **[#2633]**

Our "planet pipeline" reprocesses Hubble solar system images to make them more science-ready. Our steps engage citizen scientists to perform visual inspections.

Scully J. E. C. Schmidt B. E. Gay P. Hart R. Russell C. T. et al. ***POSTER LOCATION #507***

The Dawn Mission and Asteroid Mappers: Vesta Edition: The Impact of Crowd-Sourced Crater Counting **[#2860]**

The progress of the Asteroid Mappers: Vesta Edition citizen science website is reported, including public participation and scientific potential.

Jones J. H. Dyches P. ***POSTER LOCATION #508***

Jupiter Observation Campaign — Citizen Science at the Outer Planets: A Progress Report **[#1711]**

This program will connect more planetary scientists with imagers, use E/PO to connect amateur/professionals, and share amateur images of Jupiter with the public.

Tuesday, March 19, 2013 **[T637]**
POSTER SESSION: EDUCATION AND OUTREACH: EDUCATION PROGRAMS
6:00 p.m. Town Center Exhibit Area

Kortenkamp S. J. Baldridge A. M. Bleamaster L. F.
Buxner S. R. Canizo T. L. et al. ***POSTER LOCATION #509***
Computer Visualizations for K–8 Science Teachers in Professional Development Workshops at the Planetary Science Institute **[#2575]**
We highlight the development of enhanced computer visualizations for professional development workshops for elementary and middle-school science teachers.

Jones A. J. P. Hsu B. C. Hessen K. Buxner S. R. Canipe M. ***POSTER LOCATION #510***
Lunar Workshops for Educators: Evaluation Results from Year Three **[#2532]**
The Lunar Workshops for Educators (LWE) are designed to educate and inspire grade 6–12 science teachers about lunar science and exploration, sponsored by LRO.

Bleacher L. V. Farrell W. M. Gross N. Weir H. ***POSTER LOCATION #511***
DREAM Lunar Extreme Program and Workshop: An Effective Afterschool Program for High School Students **[#2342]**
Students in the DREAM Lunar Extreme Program and Workshop placed a high value on the interaction with scientists, demonstrating the importance of scientist involvement in E/PO.

Graff P. V. Achilles C. N. ***POSTER LOCATION #512***
Engaging Students Through Classroom Connection Webinars to Improve Their Understanding of the Mars Science Laboratory Mission **[#2097]**
MSL-focused webinars increase awareness and understanding of the mission by engaging students with scientists who share the story and science of the mission.

Bryan W. T. ***POSTER LOCATION #513***
A Journey Through the Solar System: Outreach at the Arkansas Center for Space and Planetary Sciences **[#2248]**
A new outreach activity developed by the Arkansas Center for Space and Planetary Sciences enables students to experience a scaled solar system and mission.

Vizi P. G. Sipos A. ***POSTER LOCATION #514***
Simulated Mars Rover Model Competition 2012-2013 **[#2850]**
Report about the Simulated Mars Rover Competition of 2012–2013. 2013 — To build well-balanced double wheels, to put and collect probes in a maze routed surface.

Lang Á. Szalay K. Horváth T. Prajczer P. Láng M. et al. ***POSTER LOCATION #515***
Planetary Rover Robotics Experiment in Education: Carbonate Rock Collecting Experiment of the Husar-5 Rover of the Széchenyi István High School, Sopron, Hungary **[#2353]**
Experiment for Husar-5 educational space probe rover consists of (1) carbonate by acid test, (2) measuring gases liberated by acid, and (3) magnetic test.

Hegyi S. Imrek Gy. Gocze Z. Markovics Z. Kereszturi Á. ***POSTER LOCATION #516***
Husar eRover — Web Accessible Planetary Probe in the Laboratory **[#2445]**
The autonomous Husar eRover is described that is used at the university education. It is controlled from the web to test remote work on planetary surfaces.

Resnick I. Davatzes A. Shipley T. F. ***POSTER LOCATION #517***
Teaching Large-Scale Temporal and Spatial Magnitudes Required in Planetary Science Classes Using Cognitive Principles **[#2450]**
The aim of this abstract is to outline cognitive science research on magnitude representation and analogical reasoning as it relates to planetary sciences.

Tuesday, March 19, 2013 **[T638]**
POSTER SESSION: PLANETARY MISSION CONCEPTS
6:00 p.m. Town Center Exhibit Area

Sharma P. Nuding D. Ozhogin P. Bell I. Bennett K. et al. ***POSTER LOCATION #518***
VADER: Venus Atmosphere, Descent and Environmental Researcher, a NASA Planetary Science Summer School Mission Concept **[#1674]**
We propose a mission concept, Venus Atmosphere, Descent and Environmental Researcher (VADER), to explore the lower atmosphere and surface of Venus.

Heather D. J. Barthelemy M. Manaud N. Martinez S. Szumlas M. et al. ***POSTER LOCATION #519***
ESA's Planetary Science Archive: Status, Activities and Plans **[#1930]**
The PSA is a repository of all planetary data from ESA missions. The abstract presents our status and plans for 2013, including international activities.

Calaway M. J. Burkett P. J. Allton J. H. Allen C. C. ***POSTER LOCATION #520***
Ultra Pure Water Cleaning Baseline Study on NASA JSC Astromaterial Curation Gloveboxes **[#1241]**
Two cleaned astromaterial curation gloveboxes were examined to better understand organic cleanliness in preparation for future sample return missions.

Calaway M. J. Allton J. H. Allen C. C. Burkett P. J. ***POSTER LOCATION #521***
Organic Contamination Baseline Study on NASA JSC Astromaterial Curation Gloveboxes **[#1242]**
Two astromaterial curation gloveboxes were examined to better understand organic contamination in preparation for future sample return missions.

Bell M. S. Calaway M. J. Evans C. A. Li Z. Tong S. et al. ***POSTER LOCATION #522***
Robotic Sample Manipulator for Handling Astromaterials Inside the GeoLab Microgravity Glovebox **[#2134]**
Innovative robotic sample handling concepts designed to meet rigorous curation requirements for preliminary examination in low-gravity space environments are presented.

Klaus K. Post K. E. ***POSTER LOCATION #523***
Science and Exploration Missions Enabled by the Space Launch System **[#1231]**
A number of concepts for science missions were explored during Constellation. We have selected a diverse set of missions that span the SLS design space.

Klaus K. Elsperman M. S. Rogers F. ***POSTER LOCATION #524***
Mission Concepts Enabled by Solar Electric Propulson and Advanced Modular Power Systems **[#1486]**
Using a common spacecraft for multiple missions reduces costs. Solar electric propulsion provides the flexibility required for multiple mission objectives.

Dankanich J. W. Kremic T. Hibbitts K. Young E. Landis R. ***POSTER LOCATION #525***
Planetary Science Balloon Based Platform Assessment **[#1194]**
NASA completed a study to assess the potential for stratospheric balloons to address planetary science goals and objectives; findings and results are presented.

Ishimaru R. Sakamoto Y. Kobayashi M. Namiki N. Senshu H. et al. ***POSTER LOCATION #526***
Shootingstar Sensing Satellite (S^3: S-Cube): Cubesat Project for Observation of Meteors from Low Earth Orbit **[#1944]**
We propose in this work to use a CubeSat in planetary sciences, specifically to observe meteoritic entry into Earth's atmosphere.

Berk J. Straub J. Nervold A. Whalen D. ***POSTER LOCATION #527***
Space Station 2.0: A Transformational Architecture for Space Development **[#1861]**
Space Station 2.0: a low-cost space station in lunar orbit built using Space Act agreements for in situ data collection and investigation by human astronauts.

Klesh A. T. Castillo-Rogez J. C. ***POSTER LOCATION #528***
Applicability of Nano-Spacecraft to Deep Space Exploration **[#3099]**
Assessment of possible concepts of exploration with nanospacecrafts.

Magyar I. Udvardi M. Szakolczai P. Varga R. K. Veres B. et al. ***POSTER LOCATION #529***
Inner Design of a Habitat Module for Planetary Surfaces **[#2893]**
Our study relates to an inner design of a habitat module that is capable of supporting prolonged stays on the surface of a planetary body, e.g., Moon or Mars.

Clark P. E. MacDowall R. Farrell W. M. Petro N. E. Cox R. et al. ***POSTER LOCATION #530***
LunarCube: Advancement of Solar System Exploration with the CubeSat Paradigm **[#1233]**
We are evaluating application of the CubeSat paradigm to high-priority space or surface payloads for planetary, heliophysics, and astrophysics disciplines.

Farrell W. M. Bleacher J. E. Ames T. J. Carter L. M. Cheung C. Y. et al. ***POSTER LOCATION #531***
"Where to Hide?": A Tele-Robotic Application for HEOMD's Earth-Moon L2 Mission **[#2514]**
A tele-robotic GPR study of farside pit features is a feed-forward investment in future long-duration human stays on the Moon.

Mahanti P. Robinson M. S. Boyd A. ***POSTER LOCATION #532***
Uncertain Viewsheds — A Peek into Probabilistic Line-of-Sight Visibility Analysis **[#1739]**
Probability associated with mutual visibility found using lunar DEMs is analysed to study the effects of elevation errors and topography on viewshed estimation.

Metzger P. T. Lane J. E. ***POSTER LOCATION #533***
Effects of Spacecraft Landings on the Moon **[#3093]**
The rocket exhaust of spacecraft landing on the Moon causes a number of observable effects. Research results on this topic are summarized and reviewed.

Tanaka S. Mitani T. Otake H. Ogawa K. Kobayashi N. et al. ***POSTER LOCATION #534***
Present Status of the Lunar Lander Project SELENE-2 **[#1838]**
We report updated status of the SELENE-2 project and some progress of development of technological aspect of the system and instruments on board.

Poole W. D. Tian B. French R. A. Garber J. M. Barnes J. J. et al. ***POSTER LOCATION #535***
Anchoring a Geophysical Network Around the A33 Moonquake Nest to Explore the Interior Structure and Thermal Evolution of the Moon **[#1513]**
We explore how the A33 moonquake nest can be used as an anchor for a geophysical network that can be used to explore the interior structure of the Moon.

Tian B. Y. Poole W. D. Garber J. M. French R. A. Smith P. H. et al. ***POSTER LOCATION #536***
Landing Sites Optimized for Geophysical Studies of the Structure and Thermal State of the Lunar Interior **[#1629]**
Survey of possible landing sites/geophysical array configurations for addressing Concept 2 of the NRC report "The Scientific Context for Exploration of the Moon."

French R. A. Barnes J. J. Garber J. M. Poole W. D. Tian B. Y. et al. ***POSTER LOCATION #537***
Sample Return Landing Sites that can Provide Information on the Composition, Structure, and Evolution of the Lunar Interior **[#2914]**
Sample return landing sites that provide information regarding the composition, structure, and evolution of the lunar interior are identified.

Jones H. L. Peterson K. M. Whittaker W. L. Wong U. Y. ***POSTER LOCATION #538***
Skylight: Mission to Investigate and Model a Lunar Pit **[#3080]**
Caves on planetary bodies beyond Earth have always been of great interest for science and exploration, but for many years there was no known way to enter.

Varga T. P. Kabai S. Bérczi Sz. Szilágyi I. Varga T. N. ***POSTER LOCATION #539***
ISRU Based Lunar Surface Habitat Module **[#2862]**
We create a quasi-icosahedron lunar surface habitat module that is built from the same building elements and complementary elements for the vertices.

Heldmann J. L. Colaprete A. Elphic R. C. Glass B. Gonzales A. et al. ***POSTER LOCATION #540***
Science and Exploration Enabled by Private Entity Mars Fly-by Mission Opportunities **[#1657]**
We identify specific science and exploration investigations that can be enabled through a Mars flyby mission on a private spacecraft.

Vizi P. G. Dulai S. Marschall M. Bérczi Sz. Horvath A. et al. ***POSTER LOCATION #541***
Possible Identification Method for Martian Surface Organism by Using a New Strategy of Nano-Robots **[#2281]**
New nanotechnology ideas to detect and measure characteristics on planetary surfaces. We show a probe to measure the dark dune spots during seasonal changes.

Orenstein N. P. ***POSTER LOCATION #542***
Autonomous Mars In-Situ Resource Utilization Robot for Water Recovery Using Centrifugal Processing **[#1843]**
Multipurpose Mars resource identification, acquisition, and utilization robot with centrifugal refining process for in situ water reclamation and storage.

Shiro B. R. Kwon D. W. Craparo E. M. Infeld S. I. Heldmann J. L. et al. ***POSTER LOCATION #543***
Mars Geophysical Lander Mission: A Mission Concept from the 2003 Nasa Planetary Science Summer School **[#1706]**
The 2003 NASA Planetary Science Summer School student team created a “Mars Geophysical Lander” mission concept to explore the martian interior and atmosphere.

Chicarro A. F. ***POSTER LOCATION #544***
INSPIRE — A Future European Mars Network Science Mission **[#1081]**
INSPIRE is a concept for a potential future European Mars Network science mission to be launched in the early 2020s, following the footsteps of NASA’s INSIGHT mission in 2016.

Hoftun C. Lee P. Johansen B. W. Glass B. J. McKay C. P. et al. ***POSTER LOCATION #545***
Deep Drilling on Mars: Two Concepts and Prospects **[#2817]**
Deep drilling will be an important activity in future Mars exploration. Our study identifies two promising concepts: (1) coiled tubing drilling, and (2) mole drilling.

DeSouza C. A. G. ***POSTER LOCATION #546***
Conceptual Design of an Unmanned Aerial Vehicle for Mars Exploration (M.I.S.C.A.V.) **[#1291]**
This abstract focuses on the use of aerial vehicles for Mars exploration, with a focus on large-scale water and mineral detection for pre-landing purposes.

Shirbhate A. A. ***POSTER LOCATION #547***
Celestial Army — Telecommunication Over Mars **[#1008]**
This paper presents an idea about setting up a communication portal on the martian surface that will enable telecommunication on Mars and on Earth.

Cheng A. F. ***POSTER LOCATION #548***
AIDA: Test of Asteroid Deflection by Spacecraft Impact **[#2985]**
AIDA will demonstrate asteroid deflection and characterize kinetic impact β and crater size to yield new constraints on asteroid physical properties.

Wenkert D. D. Landau D. F. Bills B. G. Elkins-Tanton L. T. ***POSTER LOCATION #549***
Explorations of Psyche and Callisto Enabled by Ion Propulsion **[#1553]**
Ion propulsion enables planetary missions that would otherwise be unaffordable in a cost-capped program. Two such missions are described here.

Grima C. Schroeder D. M. Blankenship D. D. ***POSTER LOCATION #550***
Identifying Surface Characteristics with an Ice Penetrating Radar Sounder at Europa: Potential for Landing Site Selection **[#2980]**
Information on surface roughness from the radar sounder in the Europa Clipper mission concept can identify and characterize potential landing sites.

Senske D. Prockter L. Pappalardo R. Mellon M. Patterson W. et al. ***POSTER LOCATION #551***
Science that can be Achieved from The Europa Clipper Mission Concept: A Means to Explore Europa and Investigate its Habitability **[#1600]**
The Europa Clipper, a Jupiter-orbiting spacecraft that makes many flybys of Europa, provides an excellent platform to investigate Europa's potential habitability.

Potter R. W. K. Cable M. L. Cumbers J. Gentry D. M. Harrison T. N. et al. ***POSTER LOCATION #552***
Flyby of Io with Repeat Encounters (FIRE): A New Frontiers Mission Designed to Study the Most Volcanic Body in the Solar System **[#2874]**
We outline a New Frontiers mission concept to study Io, the most volcanically active body in the solar system.

Laneuville M. Bocanegra T. Bracken C. Costa M. Dirkx D. et al. ***POSTER LOCATION #553***
Unveiling the Evolution and Formation of Icy Giants **[#1644]**
Mission concept for Uranus' exploration prepared by members of the 2012 edition of Alpbach's Summer School on mission design.

Badders B. D. Hill T. Straub J. Berk J. Long N. J. et al. ***POSTER LOCATION #554***
Small Spacecraft Exploration of Uranian Moons **[#1860]**
A mission to uranian moons to conduct observations and allow determination of their origin, constraining the possible evolution and history of the solar system.

Hill T. Berk J. Straub J. Schiralli J. Badders B. D. et al. ***POSTER LOCATION #555***
Deep Space Planetary Exploration Using Commercially Available Solar Electric Propulsion **[#1858]**
A bold and reach-extending mission to Uranus using solar electric propulsion that will enthrall a new generation of technologists, scientists, and enthusiasts.

Wright I. P. Andrews D. J. Barber S. J. Sheridan S. Morse A. D. ***POSTER LOCATION #556***
Ptolemy: Preparations for Scientific Investigations at the Surface of a Comet **[#2129]**
Ptolemy is a GC-MS system included on the Philae lander (Rosetta) and will make chemical/isotopic measurements of surface materials on Comet 67P/C-G in 2014.

Tuesday, March 19, 2013 **[T639]**
POSTER SESSION: BEPICOLOMBO MISSION TO MERCURY
6:00 p.m. Town Center Exhibit Area

Benkhoff J. ***POSTER LOCATION #557***
The BepiColombo Mission to Explore Mercury — Overview and Mission Status **[#2834]**
BepiColombo is an interdisciplinary mission to explore Mercury. In this paper a mission status update will be given.

Rodriguez-Ferreira J. Poulet F. Arondel A. Dassas K. Eng P. et al. ***POSTER LOCATION #558***
Radiometric Performances Measured at Orsay Facilities for the On-Ground Calibration of the SIMBIO-SYS Instrument of ESA/BepiColombo **[#2137]**
Calibration goals, setup, and preliminary results obtained during the radiometric validation and characterization of the calibration facilities at Orsay, France.

Morlok A. Ahmedi M. Hiesinger H. ***POSTER LOCATION #559***
IR/IS: An Infrared Laboratory for the Study of Planetary Materials **[#2157]**
We introduce IR/IS, a new facility for the study of planetary materials in the near- and mid-infrared, focusing on the BepiColombo/MERTIS mission to Mercury.

Kobayashi M. Shibata H. Nogami K. Fujii M. Miyachi T. et al. ***POSTER LOCATION #560***
Dust Observation in Mercurial Orbit by Mercury Dust Monitor of BepiColombo **[#2172]**
Mercury Dust Monitor will be on board the Mercury Magnetosphere Orbiter of BepiColombo and will perform the first in situ dust detection in Mercury's orbit.

Tuesday, March 19, 2013 **[T640]**

POSTER SESSION: MARS LANDING SITES: CURRENT AND FUTURE

6:00 p.m. Town Center Exhibit Area

Stooke P. J. ***POSTER LOCATION #561***

MER Early Traverse Mapping: MOC vs HiRISE Localization **[#1396]**

Spirit and Opportunity were located using MOC images before HiRISE became available. The accuracy of MOC localization is tested, errors up to 50 m are found.

Golombek M. Redmond L. Gengl H. Schwartz C. Warner N. et al. ***POSTER LOCATION #562***

Selection of the InSight Landing Site: Constraints, Plans, and Progress **[#1691]**

Sixteen prospective ellipses in western Elysium Planitia have been identified for landing InSight in 2016 that appear to meet the engineering constraints.

Golombek M. Warner N. Schwartz C. Green J. ***POSTER LOCATION #563***

Surface Characteristics of Prospective InSight Landing Sites in Elysium Planitia **[#1696]**

InSight landing sites in Elysium Planitia are similar to the Gusev cratered plains with a regolith >5 m thick for penetration of the heat flow probe.

Erkeling G. Reiss D. Hiesinger H. Poulet F. Carter J. et al. ***POSTER LOCATION #564***

Two New Candidate Landing Sites for the European 2018 ExoMars Mission Near Libya Montes Alluvial Fans, Layered Delta Deposits and Possible Coastal Cliffs **[#2378]**

We propose two new candidate landing sites in the Libya Montes for potential future missions to Mars, including the European ExoMars mission in 2018.

POSTER SESSION: INSTRUMENT AND PAYLOAD CONCEPTS
6:00 p.m. Town Center Exhibit Area

Straub J. Berk J. Nervold A. Mohammad A. Korvald C. et al. ***POSTER LOCATION #565***
Open Orbiter: A Platform for Enabling Planetary Science **[#1424]**
A framework for developing the tools and staff required to support planetary science missions is presented which the Open Orbiter Spacecraft will space-qualify.

Saleh R. A. Kirk R. L. ***POSTER LOCATION #566***
Proposed Documentation Standards for Describing Specifications of Imaging Systems for Planetary Mapping **[#2857]**
A multiphase approach to develop standards for space imaging systems, involve documenting technical specs, geometric properties, and calibration procedures.

Saleh R. A. Kirk R. L. ***POSTER LOCATION #567***
Automated Image Matching Techniques for Planetary Photogrammetric Mapping **[#3008]**
Developing new and improving existing matching techniques for tiepoint and groundpoint measurement functions in support of planetary photogrammetric mapping.

Li Chen. Su Yan. Li Chunlai. Zhu Benxia. ***POSTER LOCATION #568***
Verification and Analysis to the Simulation Platform for Optimum Frame Synchronization in Deep Space Data Receiving Missions **[#1803]**
Frame synchronization simulation software was completed and verified,which is used to find optimal parameter setting strategy in deep space missions.

Feldkhun D. Braker B. Wagner K. H. Hynek B. M. Nesnas I. A. ***POSTER LOCATION #569***
Robust High-Speed 3D Imaging for Robotic Planetary Exploration **[#2594]**
The Structured Light Imaging Module uses a compact optical pattern generator for both 3-D imaging and remote microscopy for robotic planetary exploration.

Feldkhun D. Nowicki K. Wagner K. H. Hynek B. M. ***POSTER LOCATION #570***
Remote Microscopy for Robotic Planetary Exploration **[#2953]**
The structured-light remote microscope allows unprecedented 5-m-long working distance microscopy and enhances the resolution of existing rover cameras.

Thompson D. R. Abbey W. Allwood A. Bekker D. Bornstein B. et al. ***POSTER LOCATION #571***
TextureCam: A Smart Camera for Microscale, Mesoscale, and Deep Space Applications **[#2209]**
The TextureCam project is developing a “smart camera” to improve spacecraft autonomy by classifying geologic surfaces in planetary images.

Coulter A. B. Osinski G. R. Dietrich P. Tornabene L. L. Daly M. et al. ***POSTER LOCATION #572***
Demonstrating the Geological Applications of a Three Dimensional Exploration Multispectral Microscope Imager (TEMMI) **[#2398]**
The following summarizes the capabilities of a prototype instrument for future missions, TEMMI (Three Dimensional Exploration Multispectral Microscope Imager).

Poole W. D. Muller J.-P. Gupta S. ***POSTER LOCATION #573***
How Reliable are Surface Roughness Estimates from Planetary Laser Altimeter Pulse-Widths? An Assessment Using MOLA and LOLA Pulse-Width Data **[#1511]**
Here, we explore the reliability of surface roughness estimates derived from planetary laser altimeter pulse-width data from Mars and the Moon.

Maturilli A. Donaldson Hanna K. L. Helbert J. Pieters C. P. ***POSTER LOCATION #574***
A New Standard for Calibration of High Temperature Emissivity: Laboratory Intercalibration at PEL of DLR and ALEC of Brown University **[#1890]**
Two slag samples as references for emissivity measurements at high temperatures have been characterized at PEL of DLR and ALEC of Brown University laboratories.

Macke R. J. SJ Britt D. T. Consolmagno G. J. SJ ***POSTER LOCATION #575***
New Pycnometer Design for Thin-Sliced Meteorites **[#1398]**
We present a new pycnometer designed for meteorite grain density measurements, with an adaptor ideally suited for thin-sliced meteorites.

Ishibashi K. Wada K. Namiki N. Kameda S. Arai T. et al. ***POSTER LOCATION #576***
Elemental Analysis of Rocks with Short Range Fixed Focus Laser-Induced Breakdown Spectrometer (LIBS) **[#2117]**
We tested elemental composition prediction of igneous rocks with short range fixed focus LIBS with LIBS-to-sample distance changed around the focus position.

Blacksberg J. Maruyama Y. Alerstam E. Choukroun M. Charbon E. et al. ***POSTER LOCATION #577***
Combined Microscopic Raman and LIBS for Planetary Surface Exploration Using a Fast Time-Gated Detector **[#2393]**
We present a mineralogy instrument that could potentially perform phase and elemental analysis on planetary surfaces in conjunction with microscopic imaging.

Ishikawa S. T. Gulick V. C. ***POSTER LOCATION #578***
An Automated Classification of Mineral Spectra **[#3085]**
We present a robust, autonomous algorithm to classify Raman spectra of minerals. Our classifier performed with an accuracy of between 83 and 100%.

Arzoumanian Z. Bleacher J. E. Gendreau K. McAdam A. Shearer C. et al. ***POSTER LOCATION #579***
Chromatic Mineral Identification and Surface Texture (CMIST) Instrument: A Next Generation Contact XRD/XRF Tool **[#2116]**
We discuss the unique analysis capabilities enabled by contact XRD/XRF including science, safety, and crew health for future human spaceflight missions.

Scheld D. L. Ladner D. R. Martin J. P. ***POSTER LOCATION #580***
In-Situ Resource Analyzer (ISRA) **[#2272]**
An instrument is presented with a triple measurement system to work as a robotic field geologist on remote planetary surfaces such as the Moon or Mars.

Cohen B. A. Li Z.-H. Miller J. S. Brinckerhoff W. B. Clegg S. M. et al. ***POSTER LOCATION #581***
Update on Development of the Potassium-Argon Laser Experiment (KArLE) Instrument for In Situ Geochronology **[#2363]**
Peering back in time / Flight parts unite to measure / The age of planets.

Cho Y. Miura Y. Sugita S. ***POSTER LOCATION #582***
Development of an In-Situ K-Ar Isochron Dating Method Using LIBS-QMS Configuration **[#1505]**
An in situ K-Ar isochron dating method has been developed. We constructed a simulated isochron using LIBS and QMS techniques simultaneously.

Okabayashi S. Sakata S. Hirata T. ***POSTER LOCATION #583***
Isotopic Analysis of Nano-gram Amounts of Tungsten Using Electrothermal Vaporization (ETV)-MC-ICPMS Technique **[#1911]**
The ETV-MC-ICPMS technique has been developed for the W-isotope analysis of ng sample. The reliability of this technique was evaluated using iron meteorites.

Socki R. A. Niles P. B. Cabiran M. Rossi C. Sun T. ***POSTER LOCATION #584***
In-Situ Water Vapor Probe for a Robot Arm-Mounted, Compact Water Vapor Analyzer: Preliminary Results **[#2769]**
We are working to develop an instrument package for the in situ detection and isotope analysis of water ice on future solar system exploration missions.

Getty S. A. Brinckerhoff W. B. Cornish T. Li X. Floyd M. et al. ***POSTER LOCATION #585***
Two-Step Laser Time-of-Flight Mass Spectrometry to Elucidate Organic Diversity in Planetary Surface Materials **[#2676]**
We have demonstrated two-step laser mass spectrometry (L2MS) as a means of in situ detection and identification of key classes of organics in a complex sample.

Mora M. F. Stockton A. M. Willis P. A. ***POSTER LOCATION #586***
Handling of Solid Samples with Microfluidic Technology for End-to-End Analysis in a Single Device **[#3091]**
Integrating solids in microchip would allow end-to-end analysis in a simpler and smaller instrument. Here, an approach for this and results will be discussed.

Tissot F. L. H. Ireland T. J. Yokochi R. Dauphas N. ***POSTER LOCATION #587***
Introducing Teflon-HPLC **[#2867]**
We are developing the first Teflon-HPLC (High-Performance Liquid Chromatography) system for isotope geo/cosmochemistry, and application to return samples.

Ladner D. R. Scheld D. L. Agerton T. ***POSTER LOCATION #588***
Low-Gravity MAss GAuging System (MAGA) **[#2084]**
The MAGA fluid mass gauging system is a non-invasive method based on excitation and measurement of acoustical resonant frequency modes.

Briois C. Thissen R. Engrand C. Altwegg K. Bouabdellah A. et al. ***POSTER LOCATION #589***
Dust OrbiTrap Sensor (DOTS) for In-Situ Analysis of Airless Planetary Bodies **[#2888]**
We are developing a high-resolution Fourier Transform–Orbitrap-based mass spectrometer for in situ analysis of dust from airless solar system bodies.

Hines D. C. Hammel H. B. Lunine J. I. Milam S. N. Kalirai J. S. et al. ***POSTER LOCATION #590***
The James Webb Space Telescope: Solar System Science **[#1019]**
We discuss the capabilities of the James Webb Space Telescope for accomplishing solar system science.

Sonneborn G. Milam S. N. Hines D. C. Hammel H. B. Lunine J. I. ***POSTER LOCATION #591***
Operations Concept for Solar System Observations with the James Webb Space Telescope **[#1356]**
JWST is designed to obtain IR images and spectra (1–29 μm) of moving targets with rates of 0.030 arcsec/sec or less (Mars and beyond). Examples are given.

Jackson T. L. Farrell W. M. ***POSTER LOCATION #592***
Rover Wheel Charging Within a Lunar Crater **[#1569]**
We advance the wheel charging model by varying parameters and incorporating a new dust sticking term to determine how dust affects charge remediation.

Longobardo A. Palomba E. Bearzotti A. Zampetti E. Pantalei S. et al. ***POSTER LOCATION #593***
The MOVIDA Instrument: Measurement of Volatiles Content and Charging Processes of the Lunar Dust **[#2204]**
MOVIDA is a miniaturised, light, and low-power-consuming thermogravimeter under development that can have several applications in a lunar lander mission.

Mocker A. James D. Sternovsky Z. Kempf S. Srama R. et al. ***POSTER LOCATION #594***
LDEX Sensitivity Studies: Material and Impact Velocity Dependence of the Total Charge Yield Generated in Hypervelocity Impacts of Micron and Sub-Micron Sized Dust Particles **[#2663]**
The operational principal of LDEX is investigated with a lab model to gain a deeper understanding of the impact process and to compare with theoretical models.

Clark P. E. Whitaker S. Brown K. Cox R. Vasant A. ***POSTER LOCATION #595***
Compact Ultra Low Temperature Instrumentation for the Lunar Surface **[#1235]**
We discuss technologies essential for exploration of lunar polar regions, and ongoing development activities in crucial cold temperature electronics.

Warren T. J. Bowles N. E. Thomas I. R. ***POSTER LOCATION #596***
The Space Environment Goniometer **[#1958]**
The "Space Environment Goniometer" has been constructed to support thermal infrared remote sensing measurements of the lunar surface.

Nagihara S. Zacny K. Hedlund M. Taylor P. T. ***POSTER LOCATION #597***
A Compact, Deep-Penetrating Heat Flow Probe for Small Lunar Landers **[#1252]**
We report the progress and lab tests we made in developing a compact heat flow probe for future robotic lunar missions.

Glass B. J. McKay C. P. Dave A. Lee P. Mellerowicz B. ***POSTER LOCATION #598***
Planetary-Prototype Drilling and Sample Acquisition Tests at Analog Sites **[#1334]**
Automated 1-m rotary-percussive drills and sample transfer could fly on a planetary mission soon. These have been tested in the lab and at analog field sites.

Cloutis E. A. Whyte L. Qadi A. Anderson-Trocme L. Bell J. F. III et al. ***POSTER LOCATION #599***
The Mars Methane Analogue Mission (M^3): Results of the 2012 Field Deployment **[#1579]**
A simulated rover mission to detect Mars methane suggests that search for enhanced methane is less effective than searching for suitable geological structures.

Ralchenko M. Perrot M. Samson C. Tremblay A. Holladay S. et al. ***POSTER LOCATION #600***
Mars Methane Analogue Mission (M3): Geological Mapping with an Electromagnetic Induction Sounder **[#1027]**
The Electromagnetic Induction Sounder (EMIS) was used alongside a microrover to detect structural variations in an analogue terrain.

Cabrol N. A. Wettergreen D. S. LITA Project Science Team ***POSTER LOCATION #601***
Life in the Atacama: Science and Technology Pathways to the Robotic Search for Life on Mars **[#1190]**
Multiplying the number of sites visited per mission through mobility and subsurface access may give us a greater chance of success of finding life on Mars.

Wang Alian. Lambert J. L. Sobron P. S. ***POSTER LOCATION #602***
An Instrument Suite for Mineral ID and Biomarker Seeking in Atacama **[#2586]**
Three active sensors, MMRS, WIR, and BUF, were used in an Atacama field test. They provided complimentary science and suitable for next planetary surface exploration.

Zacny K. Paulsen G. Mellerowicz B. Craft J. Wettergreen D. et al. ***POSTER LOCATION #603***
Life in the Atacama: The Drill and Sample Delivery System **[#1332]**
We describe development of a 1-m-class rotary percussive drill and sample delivery system for Life in the Atacama, the ASTEP-funded project.

Li R. Li D. Di K. Paar G. Coates A. et al. ***POSTER LOCATION #604***
Experimenetal Results of Geometric Modeling and Accuracy Assessment of an ExoMars Rover PanCam Prototype **[#2779]**
Uncertainty levels for the European Space Agency (ESA) ExoMars 2018 mission panoramic camera vision system (PanCam) for mapping and localization are quantified.

Motamedi K. Colin A. Hutchinson I. Ingley R. Davies G. ***POSTER LOCATION #605***
The Effect of Martian Condition on the Stoichiometry Calculation of Olivine (Fo-Fa) Composition Using a Combined Raman-Laser Induced Breakdown Spectroscopy Instrument **[#2264]**
We study olivine structure by using RLS inside a Mars atmosphere simulation chamber, to assess the effect of temperature and pressure on olivine Raman spectra.

Lopez-Reyes G. Sobron P. Lefevbre C. Rull F. ***POSTER LOCATION #606***
Application of Multivariate Analysis Techniques for the Identification of Sulfates from Raman Spectra — Implications for Exomars **[#2135]**
Evaluation of multivariate techniques (PCA, PLS, ANN) for the ID/quantification of minerals from Raman spectra. Implications for the Exomars Raman instrument (RLS).

Rull F. Maurice S. Diaz E. Lopez G. Catala A. ***POSTER LOCATION #607***
Raman Laser Spectrometer (RLS) for ExoMars 2018 Rover Mission: Current Status and Science Operation Mode on Powdered Samples **[#3110]**
The Raman instrument is part of the analytical suite in the Exomars mission. It is able to address the mineralogical and exobiological goals of the mission.

Ciarletti V. Clifford S. M. Plettemeier D. Dorizon S. Statz C. et al. ***POSTER LOCATION #608***
WISDOM GPR Investigations of Ice Thickness, Stratigraphy, Structure and Basal Topography in an Alpine Ice Cave in Dachstein, Austria **[#2365]**
Prototypes of the WISDOM GPR designed for the ExoMars rover mission have been tested in an ice cave.The experimental results show the instrument performance.

Brinckerhoff W. B. Pinnick V. T. van Amerom F. H. W.
Danell R. M. Arevalo R. D. Jr. et al. ***POSTER LOCATION #609***
Mars Organic Molecule Analyzer (MOMA) Mass Spectrometer for ExoMars 2018 and Beyond **[#2912]**
We describe the Mars Organic Molecule Analyzer (MOMA) mass spectrometer on the 2018 ExoMars rover mission to seek the signs of past or present life on Mars.

Smith H. D. ***POSTER LOCATION #610***
Detection of Biomolecules, Organics, and Minerals on Mars Using Fluorescence **[#3061]**
We propose a fluorescence instrument, adapted from ChemCam, as a non-contact detection method for organics and an excellent triage instrument for sample return.

Misra A. K. Sharma S. K. Abedin M. N. Acosta T. E. Porter J. N. et al. ***POSTER LOCATION #611***
Remote Detection of Minerals and Biomarkers Using RALLF: A Compact Raman, Atmospheric Lidar, LIBS and Fluorescence Sensor **[#1328]**
Integrated Raman, atmospheric lidar, LIBS, and fluorescence (RALLF) sensor suitable for Mars rover is described for remote detection of minerals and biomarkers.

Becker K. J. Anderson J. A. ***POSTER LOCATION #612***
ISIS Support for the MRO/CRISM Instrument **[#2366]**
The USGS ISIS team is working on data ingestion software and a camera model for the MRO/CRISM instrument that complements HiRISE, CTX, and MARCI now in ISIS.

Lawrence D. J. Peplowski P. N. ***POSTER LOCATION #613***
Measurements of Elemental Stratigraphy on Mars with a Rover-Mounted Gamma-Ray Spectrometer **[#2282]**
Laboratory data is presented to illustrate how surface gamma-ray spectroscopy can obtain measurements of compositional stratigraphy to depths of tens of centimeters.

Anderson F. S. Whitaker T. Hamilton V. Nowicki K. ***POSTER LOCATION #614***
Rb-Sr Dating with Accuracy of Better than ±150 Ma Using a Portable LDRIMS for the Mars-2020 Rover **[#1762]**
We demonstrate repeatable dates using portable LDRIMS hardware that could be carried on MER- or MSL-sized rovers.

Cartwright J. A. Farley K. A. Hurowitz J. A. Asimow P. D. Jacobson N. S. ***POSTER LOCATION #615***
Dating Planetary Surfaces Including Mars Using a New K-Ar Technique — ID KArD **[#1744]**
With ID KArD, K-Ar dating planetary surfaces is readily achievable, as shown by low age uncertainty, and without requiring high temperature or mass measurement.

DeWitt R. McKeever S. W. S. ***POSTER LOCATION #616***
ODIN — A Prototype Mars In-Situ Luminescence Reader for Geochronology and Radiation Measurements **[#1665]**
ODIN is a prototype Mars in situ luminescence instrument for geochronology and radiation measurements, intended to be mounted on a lander.

Zacny K. Chu P. Paulsen G. Craft J. ***POSTER LOCATION #617***
Core Acquisition and Caching for the 2020 Mars Mission **[#1331]**
We present a core acquisition and architecture for the planned Mars 2020 mission.

Younse P. Aveline D. Bao X. Berisford D. Bhandari P. et al. ***POSTER LOCATION #618***
Sample Tube Sealing for Future Proposed Mars Sample Return Missions **[#1198]**
Sample tube sealing methods for sample collection tubes were developed and tested to preserve the scientific value for future sample return missions.

Dandonneau P-A. Lognonne P. Banerdt W. B. Deraucourt S. Gabsi T. et al. ***POSTER LOCATION #619***
The SEIS InSight VBB Experiment **[#2006]**
Description of the primary payload of the next NASA martian mission: SEIS InSight. Description, heritage, performance.

Naudet C. Tanaka H. Kedar S. Plaut J. Jones C. E. et al. ***POSTER LOCATION #620***
Interrogating the Martian Subsurface Using Muon Radiography **[#1605]**
Muon Radiography is a novel, passive and deeply penetrating imaging technique, which will allow direct exploration of subsurface habits and ice reservoirs.

Conway S. A. Strong K. Walker K. A. Olsen K. S. Wennberg P. O. et al. ***POSTER LOCATION #621***
The Mars Atmospheric Trace Molecule Occultation Spectrometer (MATMOS): An Overview **[#2227]**
We present an overview of the design and projected capabilities of the MATMOS instrument and discuss the instrument's present status and some test results.

Olsen K. S. Boone C. D. Toon G. C. Strong K. ***POSTER LOCATION #622***
Atmospheric Retrievals in Preparation for a Solar-Occultation High-Resolution Fourier Transform Spectrometer at Mars **[#2244]**
The CSA and JPL's MATMOS is a high-resolution Fourier transform spectrometer intended to orbit Mars. We present work on temperature retrievals and dust effects.

Simon-Miller A. A. Reuter D. C. ***POSTER LOCATION #623***
OSIRIS-REx OVIRS: A Scalable Visible to Near-IR Spectrometer for Planetary Study **[#1100]**
Details of the OSIRIS-REx visible and near IR spectrometer are presented. This instrument can be easily adapted for other planetary missions.

Smith P. H. Rizk B. Kinney-Spano E. Fellows C. d'Aubigny C. et al. ***POSTER LOCATION #624***
The OSIRIS-REx Camera Suite (OCAMS) **[#1690]**
OCAMS, the primary instrument on the NF OSIRIS-REx mission to NEO 1999RQ36, has three cameras designed to map surface characteristics to find a safe sampling site.

Arakawa M. Saiki T. Wada K. Kadono T. Takagi Y. et al. ***POSTER LOCATION #625***
Small Carry-On Impactor (SCI): Its Scientific Purpose, Operation, and Observation Plan in Hayabysa-2 Mission **[#1904]**
SCI and DCAM3 are prepared in Hayabusa-2 mission to elucidate the subsurface feature of the asteroid 1999JU3 and the scaling rule of the impact crater.

Sugita S. Morota T. Kameda S. Honda R. Honda C. et al. ***POSTER LOCATION #626***
Science Observation Strategy for Hayabusa-2 Optical Navigation Cameras (ONC) **[#3026]**
The flight units of ONC are currently developed for the Hayabusa-2 mission. The outline of the instrument and science observation plans will be discussed.

Namiki N. Mizuno T. Hirata N. Noda H. Senshu H. et al. ***POSTER LOCATION #627***
Scientific use of LIDAR Data of Hayabusa-2 Mission **[#1945]**
Range data taken by Hayabusa-2 LIDAR are scientifically important for analysis of the shape, mass, and surface properties of the asteroid.

Tachibana S. Sawada H. Okazaki R. Takano Y. Okamoto C. et al. ***POSTER LOCATION #628***
The Sampling System of Hayabusa-2: Improvements from the Hayabusa Sampler **[#1880]**
We will report the current status of development of the Hayabusa-2 sampler.

Okada T. Fukuhara T. Tanaka S. Taguchi M. Imamura T. et al. ***POSTER LOCATION #629***
Thermal-Infrared Imager TIR on Hayabusa2: Science and Instrumentation **[#1954]**
Purposes of the TIR on Hayabusa 2 are to investigate the nature, origin, and evolution processes of C-class NEA 1999JU3 through thermophysical properties.

Grott M. Knollenberg J. Hänschke F. Kessler E. Müller N. et al. ***POSTER LOCATION #630***
The MASCOT Radiometer MARA for the Hayabusa 2 Mission **[#1586]**
The instrument concept for the MASCOT radiometer MARA, one of the payloads of the Hayabusa II mission, is presented.

Grott M. Knollenberg J. Maturilli A. Helbert J. Müller N. et al. ***POSTER LOCATION #631***
Mineralogical Surface Characterization Using the MASCOT Radiometer MARA on the Hayabusa 2 Mission **[#1597]**
The expected performance of the MASCOT Radiometer MARA, one of the payloads of the Hayabusa 2 mission, is presented.

Parsons A. M. Evans L. Lim L. Starr R. ***POSTER LOCATION #632***
Capabilities of Gamma Ray and Neutron Spectrometers for Studying Trojan Asteroid Composition **[#2082]**
We will discuss the capabilities of high heritage gamma ray and neutron spectrometers for determining the surface and subsurface composition of Trojan asteroids.

Sava P. Grimm R. E. Ittharat D. Stillman D. E. ***POSTER LOCATION #633***
Radar Imaging the Interiors of Small Bodies: Initial Migration Studies **[#1350]**
Transmission between an orbiter and a subsatellite and processing by full migration tomography will optimize internal imaging of asteroids and comets.

Bajo K. Itose S. Matsuya M. Ishihara M. Uchino K. et al. ***POSTER LOCATION #634***
Development of Novel Sputtered Neutral Mass Spectrometer to Analyze Solar Wind Noble Gas **[#2285]**
Solar-gas-rich meteorites that were irradiated by solar wind have been studied. We have developed a novel SNMS to analyze solar noble gases in the meteorites.

Sobron P. Bamsey M. Thompson C. Berinstain A. Caron S. et al. ***POSTER LOCATION #635***
Ion-Selective Optical Sensors for the Characterization of Europa's Oceans **[#2740]**
We describe a method for characterizing the chemistry of water bodies in the solar system using optical sensors equipped with ion-selective membranes.

Sobron P. Lefebvre C. Koujelev A. Wang A. ***POSTER LOCATION #636***
Why Raman and LIBS for Exploring Icy Moons? **[#2381]**
The elemental and molecular features of water ice mixed with salts and organics relevant to Europa have been analyzed using laser Raman and LIBS instruments.

Paulsen G. Zacny K. Mellerowicz B. Bar-Cohen Y. Beegle L. W. et al. ***POSTER LOCATION #637***
Wireline Deep Drill for the Exploration of Icy Bodies **[#1333]**
We describe development and testing of a wireline core drill system capable of penetration hundreds of meters in icy bodies such as Mars, Europa, and Enceladus.

POSTER SESSION: WHEN THE PLANETS COME TO EARTH: TERRESTRIAL ANALOGS FOR EXTRATERRESTRIAL ENVIRONMENTS
6:00 p.m. Town Center Exhibit Area

Carli C. Serrano L. M. Maturilli A. Massironi M. Capaccioni F. et al. ***POSTER LOCATION #639***
VNIR AND TIR Spectra of Terrestrial Komatiites Possibly Analogues of some Hermean Terrain Compositions **[#1923]**
Spectra of terrestrial komatiite and komatiitic basalt are measured in the VNIR and TIR and their signatures will be discussed as comparison to Hermean terrains.

Cabrol N. A. Fountain A. G. Kargel J. S. Deglaciation Study Steering Group ***POSTER LOCATION #640***
Impact and Signatures of Deglaciation on the Cryosphere, Landscape, and Habitability of Earth and Mars **[#1295]**
The very active effect of climate change on Earth's cryosphere may provide a proxy for what has cyclically happened on Mars.

Szynkiewicz A. Borrok D. M. Vaniman D. T. Goff F. ***POSTER LOCATION #641***
Hydrological Sulfur Cycling in the Volcanic Complex of Valles Caldera, New Mexico — Geochemical Implications for Mars **[#1144]**
We have studied hydrological S cycle related to volcanic S emission and chemical weathering of terrestrial volcanic system to understand sulfate origin on Mars.

Farrand W. H. Wright S. P. Glotch T. D. Schroder C. ***POSTER LOCATION #642***
Spectral, Chemical, and Petrographic Comparisons of Hydrovolcanic Tephras with Basaltic Impact Ejecta: Relevance for Mars **[#2249]**
Basaltic hydrovolcanic tephras and impact melt samples from Lonar Crater have been examined using instrumentation comparable to that on Mars rovers.

Bost N. Ramboz C. Foucher F. Westall F. ***POSTER LOCATION #643***
The Skouriotissa Mine: A New Terrestrial Analogue for Hydrated Mineral Formation on Early Mars **[#1400]**
In this investigation, we present a mineralogical study of altered crustal basalts exposed at the Skouriotissa mine on Cyprus analog to martian surface.

Sansano A. Medina J. Rull F. ***POSTER LOCATION #644***
Raman Profiling of Carbonates Layers from Hydrothermal Analogs of Mars **[#2336]**
Raman study of selected carbonated samples from Svalbard, a well known Mars analog. This study shows the differences in the cations precipitation.

Morgan A. M. Howard A. D. Hobley D. E. J. Matsubara Y. Moore J. M. et al. ***POSTER LOCATION #645***
Alluvial Fans of Northern Chile as an Analog to Mars **[#2833]**
Alluvial fans in the Atacama may constitute a strong analog to those on Mars, with fans in both environments forming from hundreds of individual runoff events.

Head J. W. III Marchant D. R. ***POSTER LOCATION #646***
Antarctic Dry Valley Streams and Lakes: Analogs for Noachian Mars? **[#1583]**
Mars fluvial/lacustrine processes suggest a "warm and wet" Noachian: Antarctic streams and lakes show how they might also form in "cold and icy" climates.

Lynch K. L. Munakata Marr J. Horgan B. Rey K. A. Schneider R. J. et al. ***POSTER LOCATION #647***
Reflectance Spectra of Great Salt Lake Desert Sediments as Analogue Materials for Martian Paleolake Basins **[#2973]**
VNIR mineralogical identification of lacustrine sediments from the Pilot Valley, Utah, Mars analog environment are compared to in situ methods: XRD and QEMSCAN.

Schorghofer N. Hermalyn B. Yoshikawa K. ***POSTER LOCATION #648***
Permafrost Enabling Microclimates in Craters on Mauna Kea, Hawaii **[#1695]**
We study the microclimate of a crater on Mauna Kea, Hawaii that harbors patches of permafrost and may serve as an analogue to tropical craters on Mars.

Hynek B. M. McCollom T. M. Marcucci E. C. Brugman K. K. Rogers K. L. ***POSTER LOCATION #649***
Assessing Environmental Controls on Acid-Sulfate Alteration at Active Volcanoes in Nicaragua: Applications to Relic Hydrothermal Systems on Mars **[#1633]**
We studied active acidic volcanoes in Nicaragua to assess controls on secondary mineralogy and elucidate the paleoenvironments of martian hydrothermal systems.

Englert P. Bishop J. L. Gibson E. K. Koeberl C. ***POSTER LOCATION #650***
Subsurface Salts in Antarctic Dry Valley Soils **[#1804]**
Sets of Antarctic Dry Valley sediment samples were analyzed by geochemical analysis methods. Similarities in chemical properties to Mars soils were found.

Kong F. J. Kong W. G. Hu B. Zheng M. P. ***POSTER LOCATION #651***
Meterological Data, Surface Temperature and Moisture Conditions at the Dalantan Mars Analogous Site, in Qinghaitibet Plateau, China **[#1743]**
The meteorological data of Dalangtan Playa for the past 30 years has been presented to serve environmental background for further Mars analogue studies.

Kong W. G. Zheng M. P. Kong F. J. Wang A. Chen W. X. et al. ***POSTER LOCATION #652***
Sedimentary Salts at Dalangtan Playa and its Implication for the Formation and Preservation of Martian Salts **[#1336]**
The occurrence of Mg-sulfates (e.g., kieserite) at DLT Playa, China, has been described and its implication for the martian Mg-sulfates was discussed.

Marcucci E. C. Hynek B. M. Kierein-Young K. S. Rogers K. L. ***POSTER LOCATION #653***
Visible to Near-Infrared Spectroscopy of Acid-Sulfate Weathering Sites in Nicaraguan Volcanic Systems: An Early Mars Analog **[#1677]**
We compared the VIS-NIR spectroscopy of four Nicaraguan fieldsites to understand the controls of acid-sulfate weathering processes as related to early Mars.

Cannon K. M. Salvatore M. R. Mustard J. F. ***POSTER LOCATION #654***
Weathering Rinds on Basalts and Basaltic Sandstones in the Antarctic Climate: Spectroscopic Implications for Mars **[#1358]**
Weathering in the Amazonian-like climate of Antarctica can produce surficial rinds on both igneous and sedimentary rocks that alter their VNIR and MIR spectra.

Wheatley D. F. Chan M. A. Okubo C. H. ***POSTER LOCATION #655***
Clastic Pipes and Deformation Features: Terrestrial Analogs to Candor Chasma **[#1561]**
Comparisons of terrestrial pipes with massive circular features in west Candor Chasma suggest synsedimentary deformation prior to lithification.

Pedersen G. B. M. Grosse P. ***POSTER LOCATION #656***
Topographic Fingerprint of Eruption Environment: Evidence from Reykjanes Peninsula, Iceland **[#2238]**
Geomorphometric classification based on slope values proves successful in discriminating subaerial edifices from subglacial edifices based on DEMs.

White J. R. Webster K. D. Pratt L. M. ***POSTER LOCATION #657***
Methane Concentration Gradients Associated with Small, Thermokarst Lake on the Ice-Free Margin of Western Greenland **[#3105]**
Methane concentrations from water column of shallow thermokarst lake, air, soils are used to interpret local affects on atmospheric methane concentrations.

Cadieux S. B. Pratt L. M. White J. R. ***POSTER LOCATION #658***
Methane Cycling in Small, Thermokarst Lakes in Southwestern Greenland as an Analog for Early, Wet Mars **[#2166]**
Methane cycling in small, bedrock controlled, thermokarst lakes in SW Greenland as an analog for putative martian ecologies in seasonally ice-covered paleolakes.

Nikitczuk M. P. C. Schmidt M. E. Flemming R. L. ***POSTER LOCATION #659***
Altered Vesicular Basaltic Tuffs as Potential Habitable Environments: Implications for Mars **[#1680]**
Textural features within coarse-grained basaltic pyroclasts suggest that vesicle micro-environments may be conducive to habitable conditions on Mars.

Greenberger R. N. Mustard J. F. Cloutis E. A. Mann P. Turner K. ***POSTER LOCATION #660***
Iron Oxidation State in Serpentines from Visible Imaging Spectroscopy: Implications for Planetary Exploration and Assessment of Astrobiological Potential **[#1296]**
Determination of iron oxidation state, hydrogen production, and astrobiological potential of serpentines may be possible with hyperspectral visible imaging.

Schumann D. Andersen D. T. Kunzmann M. Sears S. K. Vali H. ***POSTER LOCATION #661***
Calcite Crystals and Concretions in Modern Conical Stromatolites from Lake Untersee, East Antarctica **[#2075]**
This study investigated the mineralogy and formation of calcite crystals and concretions from modern conical stromatolites from Lake Untersee, East Antarctica.

Williams A. J. Sumner D. Y. ***POSTER LOCATION #662***
Development and Preservation of Filamentous Mineral Biosignatures: Implications for Detection with the Mars Science Laboratory **[#1741]**
Surface gossan microbial community characterization and mineral filament preservation provides insight into biosignatures detectable by Mars Science Laboratory.

Sharma P. Heggy E. Farr T. G. Radebaugh J. ***POSTER LOCATION #663***
Exploring the Inner Structure of Titan's Dunes: Implications for Understanding Paleo-Wind Regimes **[#1821]**
We analyze radar backscatter and elevation variation over linear dunes observed on Titan and Earth, to examine the inner structure of these features.

Schmidt B. E. Kim S. Greenbaum J. S.
Soderlund K. M. Blankenship D. D. et al. ***POSTER LOCATION #664***
Living on the Edge: Understanding the Habitability of Europa's Ice-Ocean Interface with Help from Earth **[#3054]**
We present the first results from NASA's SIMPLE project exploring beneath McMurdo Ice Shelf.

Walker C. C. Bassis J. N. ***POSTER LOCATION #665***
Fractures in Structurally-Compromised Ice: Observations of Rift Behavior at the Highly Fractured Amery Ice Shelf, East Antarctica and Implications for the Icy Shells of Enceladus and Europa **[#2139]**
We study fracture arrays, and demonstrate that single rift models at the icy moons may significantly underestimate stresses required for propagation of rifts.

Williamson M. C. Garry W. B. Carey R. J. Shepherd J. Germain M. ***POSTER LOCATION #666***
Geologic Mapping of Askja Volcano, Iceland, Using WorldView-2 High Resolution Satellite Imagery **[#1779]**
Geologic mapping of Askja Volcano using WorldView-2 images reveals that the area is an excellent environmental analog for volcanic regions of the Moon and Mars.

POSTER SESSION: PLANETS IN THE LABORATORY: LABORATORY STUDY OF TERRESTRIAL ANALOGS
6:00 p.m. Town Center Exhibit Area

Zhou Yuhang. Wang Alian. ***POSTER LOCATION #667***
A Laboratory Simulation Experiment of Hydrothermal Processes on Mars **[#2638]**
An experiment simulates volcanic basalt reacting with acid in CO_2 atmosphere. Hydrous Ca-, Mg-, and Fe-sulfates were found as secondary mineral products.

Zhou Yuhang. Wang Alian. ***POSTER LOCATION #668***
A Comparison of the Dehydration Processes of Al-, Fe2+, and Mg-Sulfates Under Mars Relevant Pressures and Three Temperatures **[#1797]**
A comparison of the dehydration processes of alunogen, melanterite, and epsomite reveals the large differences in pathways and the induced structural changes.

Léveillé R. J. Cloutis E. A. Mann P. Sobron P. Lefebvre C. et al. ***POSTER LOCATION #669***
Spectral Reflectance and Chemical Properties of Magnesium-Rich Phyllosilicates **[#2939]**
Mg-rich phyllosilicates may be important indicators of past habitable conditions on Mars. Spectral reflectance and LIBS characteristics of Mg-clays are described.

De Angelis S. De Sanctis M. C. Ammannito E. Di Iorio T. Carli C. et al. ***POSTER LOCATION #670***
A VIS-NIR Laboratory Spectral Library of Terrestrial Mars Analogs: Support for the ExoMars – Ma_{Miss} Instrument **[#1544]**
The Ma_{Miss} (Mars Multispectral Imager for Subsurface Studies) instrument onboard the ExoMars 2018 mission will investigate the martian subsoil in the VNIR range.

Lu Yanli. Wang Alian. ***POSTER LOCATION #671***
Stability and Phase Transition Pathways of OH-Bearing Ferric Sulfates Under the Conditions Relevant to Diurnal, Seasonal, and Obliquity Cycles on Mars **[#2634]**
Results from three systematic experimental investigations on OH-bearing ferric sulfates are consistent with their occurrence at the surface of Mars.

Westall F. Bost N. Loiselle L. Ramboz C. Foucher F. ***POSTER LOCATION #672***
The International Space Analogue Rock Collection (ISAR) for In Situ Instrument Testing: Relevance for Martian Missions **[#1397]**
ISAR (www.isar.cnrs-orleans.fr) contains relevant lab characterised igneous and sedimentary rocks and minerals for testing instruments for in situ Mars missions.

Brachfeld S. Cuomo D. Shah D. Petrochilos L. T. Hammer J. et al. ***POSTER LOCATION #673***
Effects of Variable Duration Annealing on the Rock Magnetic and Remanence Properties of Synthetic Basalts: Implications for the Intensity and Stability of Crustal Magnetism **[#1814]**
We use synthetic basalts to investigate the magnetic properties and remanence-carrying abilities of materials likely to be present in the martian crust.

Basavaiah N. Chavan R. S. ***POSTER LOCATION #674***
Spectral Results From Mid-IR DRIFT Analysis of Lonar Impact Crater,India **[#2636]**
Spectral variations with direction of impact at Lonar Impact crater, India, are documented using mid-IR diffuse reflectance spectroscopy.

Borchardt J. D. Rygalov V. Y. Bebout B. M. ***POSTER LOCATION #675***
A Comparative Rhizosphere and Morphological Study of a Brassica rapa on JSC-1A Lunar Regolith Simulant **[#2610]**
Determine how plant morphology and rhizosphere geochemistry may be indicators of soil-forming processes using in situ resources from an early lunar base model.

Dropmann M. Laufer R. Herdrich G. Hyde T. W. Cook M. et al. ***POSTER LOCATION #676***

Lunar Environment Simulation Capabilities at CASPER **[#2552]**

An inductively heated plasma source in combination with additional hardware as part of a hybrid plasma simulation facility for lunar environment simulation.

POSTER SESSION: MATERIAL ANALOGS: MATERIALS AND PROPERTIES
6:00 p.m. Town Center Exhibit Area

Butterworth A. L. Becker N. Gainsforth Z. Lanzirotti A. Newville M. et al. ***POSTER LOCATION #677***
Update to New Homogeneous Standards by Atomic Layer Deposition for Synchrotron X-Ray Fluorescence and Absorption Spectroscopies **[#3007]**
New homogeneous multi-layer film standards are available for the quantitative analysis community, compatible with synchrotron XRF, STXM, and TEM.

Carli C. Roush T. Capaccioni F. ***POSTER LOCATION #678***
Retrieving Optical Constants of Glasses with Variable Iron Abundance **[#1918]**
We calculated optical constants of volcanic glasses from VNIR spectra using a radiative transfer model. We'll investigate how the grain size affect the model.

Peng Y. Bao H. Pratt L. M. Kaufman A. J. Jiang G. et al. ***POSTER LOCATION #679***
Widespread Contamination of Carbonate-Associated Sulfate by Present-day Secondary Atmospheric Sulfate: Evidence from Triple Oxygen Isotopes **[#2427]**
Our studies show that carbonate-associated sulfate signal can be severely contaminated by recent atmospheric sulfate by triple oxygen-isotope measurement.

Tuesday, March 19, 2013 **[T645]**

POSTER SESSION: TOMORROW'S MISSIONS TODAY:
OPERATIONS TESTING AT TERRESTRIAL ANALOG SITES
6:00 p.m. Town Center Exhibit Area

Skinner J. A. Jr. Koenders R. Hare T. M. ***POSTER LOCATION #681***
Assessing the Value of Analog "Mission" Data Sets Beyond the Testing Timeline **[#2791]**
We promote a discussion focused on how analog mission datasets can be a resource for cross-discipline investigation after actual tests have been completed.

Deans M. C. Smith T. Lees D. S. Scharff E. B. Cohen T. E. ***POSTER LOCATION #682***
Real Time Science Decision Support Tools: Development and Field Testing **[#2847]**
We tested our xGDS science tools in an analog lunar rover test, demonstrating that real time lunar surface science is possible with xGDS capabilities.

Hipkin V. Dubreuil-Laniel G. Gonthier Y. Haltigin T. Léveillé R. et al. ***POSTER LOCATION #683***
Canadian Space Agency Analogue Missions — Approach to Evaluation and Lessons Learned **[#2952]**
Four analogue missions supported by the Canadian Space Agency in 2011 and 2012 are presented, with focus on the approach to evaluation and lessons learned.

Foing B. H. Stoker C. Rodrigues L. Svendsen Å. Rammos I. et al. ***POSTER LOCATION #684***
Astrobiology, Geology and Habitability Field Studies Supporting Mars Research **[#3057]**
We conducted field campaigns (EuroGeoMars and ILEWG EuroMoonMars) in the Utah desert to study geology, habitability, and samples in support of Mars-X, MRO, MER, and MSL.

Johnson J. E. Janoiko B. A. Reagan M. L. ***POSTER LOCATION #685***
Reasearch and Technology Studies (RATS) 2012 Mission Overview **[#3097]**
2012 marked the 15th year of Research and Technology Studies (RATS) testing and the first to evaluate near-Earth asteroid operations from Johnson Space Center.

Abercromby A. F. J. Chappell S. P. Litaker H. L. Gernhardt M. L. ***POSTER LOCATION #686***
NASA Research and Technology Studies (RATS) 2012: Evaluation of Human and Robotic Systems for Exploration of Near-Earth Asteroids **[#1671]**
Operations concepts for human exploration of a near-Earth asteroid were tested using human subjects, prototype hardware, and a software simulation of Itokawa.

Evans C. A. Bell M. S. Calaway M. J. ***POSTER LOCATION #687***
GeoLab Results from Three Years of Analog Mission Tests **[#1357]**
Summary of results from three years of analog tests of NASA's GeoLab workstation, including operational lessons, science benefits, and human-robotic interfaces.

Chappell S. P. Abercromby A. F. J. Reagan M. L. Gernhardt M. L. ***POSTER LOCATION #688***
NEEMO 16: Evaluation of Techniques and Equipment for Human Exploration of Near-Earth Asteroids **[#1724]**
The NEEMO 16 mission was performed at the Aquarius undersea research habitat and focused on near-Earth asteroid (NEA) human exploration techniques and systems.

Graham L. D. Graff T. G. MMAMA (2012) Team ***POSTER LOCATION #689***
Rover-Based Instrumentation and Scientific Investigations During the 2012 Analog Field Test on Mauna Kea Volcano, Hawaii **[#2269]**
We report the integration and operation of the rover-mounted instruments and scientific investigations conducted during the 2012 MMAMA analog field test.

Graff T. G. Morris R. V. Klingelhofer G. Blumers M. ***POSTER LOCATION #690***
Mössbauer/XRF MIMOS Instrumentation and Operation During the 2012 Analog Field Test on Mauna Kea Volcano, Hawaii **[#2974]**
We report the results from the two MIMOS (II and IIA) instruments deployed as part of the 2012 MMAMA analog field test.

Coutrot G. L. Arvidson R. E. Zhou F. ***POSTER LOCATION #691***
Mars Exploration Rover Opportunity Mobility Simulation of Traverses on Matijevic Hill, Cape York, Mars **[#1142]**
We studied how the Mars Rover Opportunity responded on tilted surfaces to understand soil properties and plan more difficult drives on steeper slopes.

Zhou F. Arvidson R. E. Bennett K. Iagnemma K. Senatore C. et al. ***POSTER LOCATION #692***
Simulating Mars Exploration Rover Opportunity Drives Using Artemis **[#1540]**
Summarizing simulations of Opportunity's drives using Artemis, including the ripple crossing on sol 2143, and driving on a tilted bedrock surface on sol 2808.

Gallegos Z. E. Newsom H. E. Ollila A. M. Berger J. Lanza N. L. et al. ***POSTER LOCATION #693***
Summary of the Mars Science Laboratory Rover Simulation at the Haughton Impact Structure **[#2557]**
Mars Science Lab rover simulation study. Objectives: test MSL mission scientists, understand the local geology, and evaluate simulations in planetary exploration.

Badders B. D. ***POSTER LOCATION #694***
NDX-2 Lunar Space Suit PLSS Development for Analog Operations **[#2856]**
The Human Spaceflight Laboratory at the University of North Dakota is developing a Portable Life Support System for analog testing of the NDX-2 Lunar Spacesuit.

Ono A. Schlacht I. L. Hendrikse J. Battler M. ***POSTER LOCATION #695***
Habitability in Mars Mission Simulation: Sounds as Stress Countermeasures **[#1807]**
I present the habitability research performed at the Mars Desert Research Station to increase crew performance, safety, and well-being, in human Mars missions.

Willson D. Stocker C. R. ***POSTER LOCATION #696***
Space Suit Impact on Efficiency and Performance of Field Science Tasks **[#3088]**
We conducted pressurized space suit field trials to quantify scientist astronaut performance doing off-world field science.

Tuesday, March 19, 2013 **[T646]**

POSTER SESSION: INTO THE FIELD WITH THE LABORATORY: ANALOG TESTS OF LABORATORY TECHNIQUES

6:00 p.m. Town Center Exhibit Area

Bramble M. S. Flemming R. L. Hutter J. L. ***POSTER LOCATION #697***

A Temperature-Controlled Sample Stage for Micro-X-Ray Diffraction of Mirabilite-Containing Samples from Wolf Spring, Axel Heiberg Island, Nunavut, Canada **[#1729]**

A temperature-controlled sample stage was created for a micro-X-ray diffractometer to analyse samples from an Arctic saline spring at an in situ temperature.

Lalla E. Lopez-Reyes G. Rull F. Martinez-Frías J. Sansano A. et al. ***POSTER LOCATION #698***

Raman Analysis of Basaltic Samples from Tenerife Island (Cañadas, Azulejos, and Historical Eruptions) with the Exomars RLS Instrument **[#2403]**

Analysis of selected samples from Tenerife, where it has been compared with result obtained by the ExomarsRLS Simulator and conventional laboratory MicroRaman-XRD.

Catalá-Espí A. Lefebvre C. Sobrón P. Léveillé R. Koujelev A. et al. ***POSTER LOCATION #699***

3D Chemical Mapping Using LIBS: Implications for Geochemical Investigations on Mars **[#2726]**

In this paper, we show a geochemical investigation of a natural coated basalt that demonstrates the capability of LIBS to produce 3-D chemical maps of targets.

Winebrenner D. P. Elam W. T. Miller V. Carpenter M. ***POSTER LOCATION #700***

A Thermal Ice-Melt Probe for Exploration of Earth-Analogs to Mars, Europa and Enceladus **[#2986]**

We describe a thermal melt-probe for inexpensive access to terrestrial subglacial analogs for Mars, Europa, Enceladus, and prospectively other locations.