Wednesday, July 16, 2014
ROVER-SCALE GEOLOGY AND ORGANICS
8:00 a.m. Beckman Auditorium

Chairs: **Aileen Yingst**
Sanjeev Gupta

8:00 a.m. Des Marais D. J. * **[INVITED]**
Concepts of Life in the Contexts of Mars **[#1467]**
The search for evidence of life on Mars depends upon our concepts of life's most universal attributes and a consideration of which, if any, past or present martian environments had the capacity to fulfill life's requirements for long-term survival.

8:20 a.m. Grotzinger J. P. * **[INVITED]**
Habitability, Organic Taphonomy, and the Sedimentary Record of Mars **[#1175]**
Loosely defined, a habitable environment is one that has water, a source of carbon (to enable organism metabolism), and a source of energy (to fuel organism metabolism); in other words, the essential ingredients for life as we know it on Earth.

8:45 a.m. Newsom H. E. * Palucis M. C. Kah L. C. Mangold N. Williams J. M. Arvidson R. E. Stein N. Grant J. A. Bridges N. T. Wiens R. C.
Resurfacing Rates and Erosion Processes for Yellowknife Bay and the Hummocky Plains in Gale Crater **[#1304]**
The cratering record in Gale Crate suggests that since 3.2–3.3 Ga erosion of only 20–40 m has occurred with rates averaging 5–15 mm/m.y. Early burial by Mt. Sharp deposits prior to 3.3 and Gale formation at 3.6 Ga is possible but unconstrained.

9:00 a.m. Yen A. S. * Ming D. W. Gellert R. Vaniman D. Clark B. Morris R. V. Mittlefehldt D. W. Arvidson R. E. Athena Science Team MSL Science Team
Investigation of Martian Aqueous Processes Using Multiple Alpha Particle X-Ray Spectrometer (APXS) Datasets **[#1403]**
Calcium sulfate deposits found at Gusev Crater, Meridiani Planum and Gale Crater formed under different thermal and redox regimes.

9:15 a.m. Clark B. C. * Ming D. Vaniman D. Wiens R. Gellert R. Bridges J. C. Morris D.
Chemical Evidence for Smectites and Zeolites on Mars: Criteria and Limitations **[#1094]**
Evidence for aqueous alteration of igneous minerals on Mars can be gleaned from data on chemical composition, a capability that is critical for MER Opportunity rover exploration of Endeavour Crater and sample screening on the MSL rover Curiosity.

9:30 a.m. Vaniman D. T. * Bristow T. F. Bish D. L. Ming D. W. Blake D. F. Morris R. V. Rampe E. B. Chipera S. J. Treiman A. H. Morrison S. M. Achilles C. N. Downs R. T. Farmer J. D. Crisp J. A. Morookian J. M. Des Marais D. J. Grotzinger J. P. Sarrazin P. Yen A. S.
Mineralogy by X-Ray Diffraction on Mars: The CheMin Instrument on Mars Science Laboratory **[#1499]**
To obtain detailed mineralogy information, the Mars Science Laboratory rover Curiosity carries CheMin, the first x-ray diffraction (XRD) instrument used on a planet other than Earth.

9:45 a.m. Rampe E. B. * Morris R. V. Ruff S. W. Horgan B. Dehouck E. Achilles C. N. Ming D. W. Bish D. L. Chipera S. J. MSL Science Team
Amorphous Phases on the Surface of Mars **[#1239]**
We discuss orbital and *in-situ* detections of amorphous materials and their implications for geologic processes on the martian surface, questions that still remain about amorphous phases on Mars, and potential paths toward answering those questions.

10:00 a.m. *Morning Break*

10:15 a.m. Schröder S. * Meslin P.-Y. Cousin A. Gasnault O. Rapin W. Blank J. Lasue J. Maurice S.
ChemCam Hydrogen Detection in Soils and Dust Along Curiosity's Traverse **[#1214]**
We present hydrogen values obtained from a very uniformly obtained data set along the traverse during 270 sols. We focus on the H signal of the first shot spectra of dust on rocks and on the variation with depth of the H signal in the soils.

10:30 a.m. Lanza N. L. * Fischer W. W. Wiens R. C. Grotzinger J. Ollila A. M. Cousin A. Anderson R. B. Clark B. C. Gellert R. Mangold N. Maurice S. Le Mouelic S. Nachon M. Schmidt M. Berger J. A. Clegg S. M. Forni O. Hardgrove C. Melikechi N. Newsom H. E. Sautter V.
High Manganese Observations with ChemCam in Gale Crater, Mars **[#1460]**
Observations of high manganese concentrations on Mars suggest the past or present existence of more strongly oxidizing conditions than previously recognized, and points to the presence of a novel type of habitable martian environment.

10:45 a.m. Freissinet C. * Glavin D. P. Mahaffy P. R. Miller K. E. Eigenbrode J. L. Summons R. E. Brunner A. E. Buch A. Szopa C. Archer P. D. Franz H. B. Steele A. MSL Science Team
Organic Molecules in the Sheepbed Mudstone, Gale Crater, Mars **[#1349]**
Various chlorinated hydrocarbons (chloromethanes, chlorobenzene and dichloroalkanes) were detected at elevated levels above instrument background at the Cumberland drill site with the Sample Analysis at Mars (SAM) instrument onboard Curiosity rover.

11:00 a.m. Francois P. * Coll P. Szopa C. Georgelin T. Buch A. Freissinet C. Belmahdi I. McAdam A. Eigenbrode J. Glavin D. Kashyap S. Navarro-Gonzalez A. R. Mahaffy P. Cabane M.
Possible Origin of Chlorobenzene Detected by SAM Instrument at Gale Crater, Mars: Synergy of Iron Oxides and Perchlorate and Consequences for Organic Matter Analysis **[#1201]**
Chlorobenzene, potentially of martian origin, has been detected by the SAM experiment onboard Curiosity rover. We explore its potential formation by a synergy between oxychlorine phases and iron oxides in the presence of a carbon source.

11:15 a.m. Conrad P. G. * Archer P. D. Domagal-Goldman S. Eigenbrode J. Fisk M. Gupta S. Hamilton V. Kah L. Kahanpää H. Martin-Torres J. Martinez-Frias J. McKay C. P. Ming D. W. Minitti M. E. Navarro-Gonzalez R. Owen T. Pavlov A. Steele A. Stern J. Trieman A. Zorzano M.- P. Mahaffy P. R.
The Present Habitability Potential of Gale Crater: What we have Learned so far from Mars Science Laboratory **[#1279]**
This is a report of Curiosity's approach and progress in the assessment of Mars' present state of habitability potential as measured at Gale Crater.

11:30 a.m. *Lunch Break*