Tuesday, March 8, 2011
POSTER SESSION I: COSMOCHEMICAL ORIGINS I:
PHOTOCHEMISTRY, TRANSPORT, AND DISK EVOLUTION
6:00 p.m. Town Center Exhibit Area

Riofrio L. M.
Lunar Orbit Anomaly and GM=tc^3 Cosmology **[#1630]**
The Lunar Laser Ranging Experiment reports the Moon receding at an anomalous rate. Independent experiments show a lower rate. A cosmology where GM=tc^3 may explain the anomaly. As with Mercury, orbital discrepancies may have great implications.

Blome H.-J. Wilson T. L.
Did Cosmology Trigger the Origin of the Solar System? **[#1004]**
Cosmological perturbations appearing as tidal forces in the local dynamics of the presolar nebular cloud are shown to correlate with the onset of acceleration in Friedmann-Lemaitre cosmology, using the deceleration parameter and Hubble tidal term.

Johnson T. V. Luninie J. I. Mousis O.
Planetesimal Compositions Around Other Stars **[#1553]**
Planetesimals formed beyond the snow-line around exoplanet host stars may have a greater range of rock and metal, carbon, and ice proportions than solar system planetesimals. In carbon-rich systems, condensates may be water-free.

Gaidos E.
Kepler Planets and a Model of Planet Accretion from an Evolving Disk **[#1248]**
Kepler is expected to detect hundreds of planets and can test predictions from formation models. Here, I describe an integrative planet formation model to make such predictions.

Suetsugu R. Ohtsuki K. Tanigawa T.
Effects of Planetesimals' Random Velocity on Temporary Capture by a Planet **[#1154]**
Using three-body orbital integration (i.e. the Sun, a planet, and a planetesimal), we examine temporary capture of planetesimals initially on eccentric and inclined orbits about the Sun, and evaluate the rate of temporary capture.

Collins G. S. Davison T. M. Ciesla F. J.
Numerical Simulations of Sub-Catastrophic Porous Planetesimal Collisions **[#1933]**
Numerical simulations show that large sub-catastrophic collisions between porous planetesimals at speeds greater than 4 km/s can generate significant volumes of heated material that is retained on the surviving planetesimal.

Davison T. M. Ciesla F. J. Collins G. S. O'Brien D. P.
The Role of Impacts in the Thermal Evolution of Planetesimals **[#2254]**
We calculate the post-impact thermal evolution of a planetesimal that has been heated in a hypervelocity collision, in order to determine the total volume of material that is heated by the impact and the resulting peak temperatures and cooling rates.

Lipman M. D. Strait M. M. Flynn G. J. Durda D. D.
Investigation of Crystal Structure End-Members in Fragmentation Patterns of Disrupted Meteorites **[#1303]**
Comparing disruption distributions of hydrous and anhydrous chondritic meteorites.

Morlok A. Sutton Y. C. Braithwaite N. St. J. Grady M. M.
Even More Chondrules Born in Plasma: Simulation of Gas-Grain Collisions **[#1081]**
We used plasma arcs to simulate gas-grain collisons in the solar nebula. Analyses of resulting droplets show similarity to chondrules. Also, first results of experiments under solar nebula conditions are presented.

Ma Q. Matthews L. S. Hyde T. W.
Charging of Interplanetary Dust Grains and Consequences for Aggregation **[#1981]**
Charging of interplanetary dust grains including the effects of ambient plasma, UV photoemission, and secondary electron emission is studied. Fractal aggregates in the same environment with different charging histories can have charges of opposite sign.

Wada K. Tanaka H. Suyama T. Kimura H. Yamamoto T.
Growth Efficiency of Dust Aggregates through Collisions with a Great Difference in Their Sizes **[#1730]**
We carry out numerical simulations of collisions between different-sized dust aggregates to investigate the growth feasibility of dust at high velocity collisions in protoplanetary disks.

Hughes A. L. H. Armitage P. J.
Outward Mixing of Hot Grains. Dependence of Crystallinity Compositions on Disk Parameters **[#2058]**
Here we present a follow-up to our study of the outward mixing of hot grains in evolving protoplanetary disks presented in Hughes and Armitage 2010, considering the influence of other disk parameters, including the initial disk mass and the alpha-scaling of disk viscosity.

Ciesla F. J.
A High Resolution Model of Water Transport in an Evolving Protoplanetary Disk **[#1583]**
Here we explore a new model for material transport in evolving protoplanetary disks, examining how the movement of particles of a wide variety of sizes impacts the overall distribution of water in a protoplanetary disk.

Yang L. Ciesla F. J. Lyons J. R. Lee J.-E. Bergin E. A.
Oxygen Isotope Anomalies in the Solar Nebula Inherited from the Proto-Solar Cloud **[#1602]**
We model the formation and evolution of a protoplanetary disk and apply it to study how the isotopic variations in oxygen produced via CO self-shielding in the parent cloud core translate into variations in the solar nebula.

Dominguez G. Jackson T. Chakraborty S. Thiemens M.
Measuring and Modeling Equilibrium and Non-Equilibrium Isotope Effects on Cold Dust Grain Surfaces **[#2485]**
Following the suggestion of recent theoretical modeling, we present laboratory measurements of the triple-oxygen isotopic fractionations associated with molecular cloud processes such as evaporation and condensation.

Yamada A. Nanbu S. Kasai Y. Ozima M.
Quantum Chemical Calculations on Photo-Dissociation of CO: $D^1\Delta \leftarrow X^1\Sigma^+$ **[#1707]**
CO self-shielding model assume photo-dissociation spectra of minor isotopologues shift from that of major isotopologue in wavelength. We report photo-dissociation spectra of CO molecules by using quantum chemical calculations.

Chakraborty S. Davis R. Ahmed M. Jackson T. L. Thiemens M. H.
Temperature and Wavelength Dependent Oxygen Isotopic Fractionation in the VUV Photodissociation of CO: Implications for the Solar Nebula **[#1559]**
New oxygen-isotopic data on temperature and pressure dependency during photodissociation of CO at various VUV bands have been obtained. Effective oxygen-isotopic composition of the solar nebula will be discussed due to this photochemical process.

Ozima M. Yamada A.
The Origin of the Primordial Noble Gas Isotopic Composition in the Solar System **[#1088]**
In contrast to conventional wisdom, the solar noble gas is represented by the post-D burning Q-noble gas, from which the solar wind noble gas was fractionated.

Milam S. N. Charnley S. B.
Observations of Isotope Fractionation in Prestellar Cores: Interstellar Origin of Meteoritic Hot Spots? **[#2378]**
Fractionated isotopic material is found in many solar system objects, and suggested as tracers of interstellar chemistry. We present observations of the nitrogen and carbon isotopologues in cores where substantial molecular freeze-out has occurred.