

Tuesday, March 24, 2009

**POSTER SESSION I: EARLY NEBULAR PROCESSES: MODELS AND ISOTOPES**  
**6:30 p.m. Town Center Exhibit Area**

Perret B. Timmes F. X.

[\*Supernova Bullets Impinging Upon Molecular Clouds\*](#) [#1999]

We present preliminary results of the contamination of molecular clouds by supernova ejecta in the form of bullets.

Muralidharan K. Stimpfl M. de Leeuw N. H. Deymier P. A. Runge K. Drake M. J.

[\*Some - Perhaps Most - Water in the Earth Must Result from Adsorption on to Grains in the Accretion Disk\*](#) [#1882]

We show that adsorption of water onto grains in the accretion disk must be a significant source of Earth's water. Using density functional theory we show that HDO may be preferentially retained relative to H<sub>2</sub>O in adsorption/desorption kinetics.

Nielsen S. G. Prytulak J. Halliday A. N.

[\*Vanadium Isotope Ratios in Meteorites: A New Tool to Investigate Planetary and Nebular Processes\*](#) [#1549]

This abstract presents the first method that produces high precision vanadium isotope data for terrestrial rocks and meteorites. Vanadium isotope ratios may be used as a tool to test the X-wind model or as an indicator of planetary core formation.

Birck J. L. Petitat M. Luu T. H. Gounelle M.

[\*<sup>54</sup>Cr Anomalies in the Tagish Lake and Orgueil Carbonaceous Chondrites\*](#) [#1683]

In this study we extend the survey of meteorites exhibiting Cr anomalies to Tagish Lake. We report the highest <sup>54</sup>Cr excess so far for the silicate fraction of this meteorite.

Chakrabarti R. Jacobsen S. B.

[\*A Combined Silicon and Magnesium Isotopic Study of Bulk Meteorites and the Earth\*](#) [#2089]

Si and Mg isotope ratios in bulk chondrites, Earth, Mars and achondrites are identical and suggests that the solar nebula was homogeneous with respect to Si and Mg isotopes.

Shi X. Yin Q.-Z. Ng C.-Y.

[\*Testing "Self-Shielding" Model with Laboratory Experiment for the Oxygen Isotope Evolution in the Early Solar Nebula\*](#) [#2251]

We point out weaknesses in recent experiments by Chakraborty et al (2008), and propose to use high-resolution VUV laser for photodissociation and photoionization of CO to directly test the self-shielding model under relevant temperature condition.

Barr A. C. Canup R. M.

[\*Constraints on an Outer Solar System Late Heavy Bombardment from Callisto's Interior State\*](#) [#1309]

A recent theory for the origin of late heavy bombardment impactors suggests an outer solar system source. Limits on the size of rocky core in Jupiter's moon Callisto are used to constrain the contribution of outer solar system impactors to the LHB.

Cuzzi J. N. Hogan R. C. Bottke W.

[\*Primary Accretion: The Birth Population in the Asteroid and KBO Regions\*](#) [#2418]

We explore the implications of a new theory of primary accretion, in which chondrule-sized objects are transformed directly into 10–100km size bodies in nebula turbulence, for the "birth function" of primitive bodies in the asteroid and Kuiper Belt regions.

Futó P. Gucsik A.

[\*Compaction and Sticking of Planetesimals due to Porosity\*](#) [#1008]

It was estimated using numerical methods that numbers, sizes and masses of planetesimals are ranging from 10<sup>16</sup>–10<sup>20</sup> kg in the boundary of the early inner solar system.

Ipatov S. I.

[\*Formation of Binaries at a Stage of Rarefied Preplanetesimals\*](#) [#1021]

The angular momentum of two identical collided rarefied preplanetesimals exceeded the angular momentum of the corresponding present binary that could be formed as a result of contraction of the rotating preplanetesimal originated at the collision.

Ciesla F. J. Collins G. S. Davison T. M.

[\*The Thermal Evolution of Post-Impact Planetesimals\*](#) [#1086]

We investigate the thermal evolution of energy that is deposited after the collision of two porous planetesimals. Regions of planetesimals can be shock heated to temperatures >1000 K, with the subsequent cooling lasting hundreds of thousands of years.

Korycansky D. G.

[\*Modeling Rubble-Pile Impacts: Spheres vs. Polyhedra\*](#) [#1124]

Rubble-pile collisions: spherical elements vs. polyhedra: does it make a difference?

Korycansky D. G. Asphaug E.

[\*Some Further Results from Rubble-Pile Impact Calculations\*](#) [#1320]

We present results on energy scaling and axis ratios of fragments from impact simulations of rubble-pile planetesimals.

Holland G. Ballentine C. J. Cassidy M.

[\*Primordial Krypton in the Terrestrial Mantle is Not Solar\*](#) [#1824]

Analysis of Kr isotopes in terrestrial well gas samples indicate the Earth's mantle contains a primitive component identical to the average value for carbonaceous chondrites, distinctly different from solar.

Tang H. Dauphas N. Craddock P. R.

[\*High Precision Iron Isotopic Analyses of Meteorites and Terrestrial Rocks:  \$^{60}\text{Fe}\$  Distribution and Mass Fractionation Laws\*](#) [#1903]

We present a new method for high precision Fe isotope analysis of bulk meteorites and terrestrial rocks to examine the  $^{60}\text{Fe}$  distribution in the protoplanetary disk and assess Fe mass fractionation laws among geo- and cosmochemical processes.

Burkhardt C. Kleine T. Oberli F. Bourdon B.

[\*Search for Mass-independent Molybdenum Isotope Anomalies in Iron Meteorites\*](#) [#2482]

We present improved analytical techniques for the precise measurement of Mo isotope compositions of meteorites. Our first results for magmatic iron meteorites do not show any resolvable mass-independent Mo isotope anomalies. Further analyses are in progress.

Sanders I. S.

[\*CAIs Made by Giant Impact\*](#) [#2275]

Since CAIs in metal-rich chondrites may have formed in an impact plume, a case is made for CAIs in CV chondrites originating in a very early impact between planetary embryos.

Young E. D. Gounelle M. Smith R. L. Morris M. R. Pontoppidan K. M.

[\*The Oxygen Isotopic Composition of the Solar System in a Galactic Context: New Results for CO in Young Stellar Objects and Implications for the Birth Environment of the Solar System\*](#) [#1967]

We compare newly-acquired oxygen isotope ratio data for young stellar objects with new data for molecular clouds to show that the birth-place of the solar system was polluted by supernova ejecta.