Tuesday, March 13, 2007
SOLAR SYSTEM FORMATION AND EVOLUTION
8:30 a.m. Marina Plaza Ballroom

Chairs: **J. N. Cuzzi**
N. M. Johnson

8:30 a.m. Ouellette N. * Desch S. J.
Injection of Supernova Dust Grains into Protoplanetary Disks **[#1909]**
We build on our previous simulations of supernova ejecta hitting protoplanetary disks. We show that supernova dust grains are efficiently (~30%) injected into the disk, yielding radionuclide abundances consistent with meteoritic values.

8:45 a.m. García-Hernández D. A. * Trigo-Rodríguez J. M. García-Lario P. Manchado A.
Massive AGB Stars in the Early Solar System? **[#1879]**
We present evidence that recently identified massive rubidium-rich AGB stars also played an important role as sources of certain long-lived and short-lived radionuclides to the early solar nebula, just during early stages of meteorite formation.

9:00 a.m. Takigawa A. * Miki J. Tachibana S. Huss G. R.
Contribution of a "Mixing-Fallback" Supernova to Short-Lived Radionuclides in the Solar System **[#1720]**
We propose a "mixing-fallback" supernova of a massive star (>20 solar mass), which explains the abundances of ^{26}Al, ^{41}Ca, ^{53}Mn, and ^{60}Fe in the solar system within a factor of 3, as a source of those short-lived radionuclides.

9:15 a.m. Cuzzi J. N. * Hogan R. C. Shariff K.
Towards a Scenario for Primary Accretion of Primitive Bodies **[#1439]**
We sketch a scenario for primary accretion of chondrite parent bodies based on turbulent concentration of chondrule-size constituents into dense clumps, followed by slow gravitational contraction. We note key elements of the physics and describe the statistical treatment of the process.

9:30 a.m. Kortenkamp S. * Weidenschilling S. J. Marzari F.
Modeling Planetesimal Accretion in Protoplanetary Disks Perturbed by Massive Companions **[#2283]**
We present results from a new code for modeling accretion in protoplanetary systems perturbed by massive companions. In a test case using Jupiter and Saturn as the perturbers, lunar-sized planetary embryos formed near 1 AU in about 25,000 years.

9:45 a.m. Weidenschilling S. J. *
Collisional Evolution of a Massive Planetesimal Disk During Slow Migration of the Outer Planets **[#2107]**
If the outer planets migrated by eroding a massive disk of planetesimals, collisional lifetimes in the disk had to be comparable to the migration timescale. This sets lower limits on the mean planetesimal size and mass of the debris disk.

10:00 a.m. Malhotra R. *
Dynamical Cause of the Late Heavy Bombardment **[#2373]**
We discuss some implications of the terrestrial planet crater record for the dynamical mechanism that caused the Late Heavy Bombardment.

10:15 a.m. Minton D. A. *
Solar Wind Lithium Enhancement During the Late Heavy Bombardment **[#2327]**
Asteroid impacts into the Sun and enhanced dust production during the Late Heavy Bombardment may have driven the solar wind lithium isotope ratio toward chondritic values. Evidence for the LHB may be found in implanted particles in lunar regolith.

10:30 a.m. Johnson N. M. * Steiner M. E. Nuth J. A. III
Fischer-Tropsch Reactions and Implications for Protostellar Systems **[#2183]**
Experiments that show changes in hydrocarbon production as initial sample is "contaminated" with an organic coating. Results hold implications for the formation of organics in the early solar system.

10:45 a.m. Nuth J. A. III* Ferguson F. T.
Differential Scanning Calorimetry Measurements of the Thermal Annealing of Amorphous Silicates **[#1642]**
We report measurements of the thermal annealing of amorphous silicates using differential scanning calorimetry (DSC). These measurements may aid interpretation of conditions under which crystalline materials formed in the primitive solar nebula.

11:00 a.m. Drake M. J. * Stimpfl M.
Water Matters **[#1179]**
The origin of water on Earth and the other rocky planets is uncertain. There are problems with commonly accepted sources such as comets and asteroids. We explore adsorption of water onto grains in the accretion disk as a source.

11:15 a.m. Lunine J. * Graps A. O'Brien D. P. Morbidelli A. Leshin L. Coradini A.
Asteroidal Sources of Earth's Water Based on Dynamical Simulations **[#1616]**
New dynamical simulations of the growth of the Earth from large planetary embryos indicate that the Earth received water from a range of reservoirs in the inner solar system throughout its growth history.

11:30 a.m. Stimpfl M. * de Leeuw N. H. Drake M. J. Deymier P.
Water in the Accretion Disk: Effect of Composition and Surface Structure on the Energy of Adsorption onto Olivine Grains **[#1183]**
The surface of olivine presents a variety of bonding environments for the adsorbed molecular water. Binding energies range from <44 kJ/mole to >200 kJ/mole. These interactions are strong enough to retain water on the surfaces at high temperature.