Friday, March 18, 2005
EARLY SOLAR SYSTEM EVOLUTION
8:30 a.m. Marina Plaza Ballroom

Chairs: A. P. Boss
F. A. Albarède

8:30 a.m. Boss A. P. *
Mixing and Transport of Chondrules and CAIs in the Solar Nebula **[#1024]**
The solar nebula was able to transport rapidly solids from the innermost regions to the asteroidal region, where chondrules, CAIs, and matrix grains were assembled in the chondritic meteorites, and beyond, possibly explaining crystalline silicates in comets.

8:45 a.m. Jacobsen S. B. * Ranen M. C. Petaev M. I. Smoliar M. I. Adams E. R.
The Problem of Incomplete Mixing of Interstellar Components in the Solar Nebula: Very High Precision Isotopic Measurements with Isoprobes P and T **[#2276]**
We discuss new chemical and isotopic data obtained with new generation mass spectrometers for bulk carbonaceous chondrites and CAIs. The data point to incomplete mixing of presolar materials in the solar nebula.

9:00 a.m. Simon J. I. * Russell S. S. Tonui E. Dyl K. A. Manning C. E. Young E. D.
Wark-Lovering Rims Record a Short Timescale for Changing Conditions in the Early Solar Nebula **[#2068]**
We present Mg isotope data that, when coupled with oxygen barometry data, show that Wark-Lovering rims formed by condensation in places resembling chondrite-forming regions of the solar nebula within ~300 k.y. after initial CAI formation.

9:15 a.m. Kita N. T. * Tomomura S. Tachibana S. Nagahara H. Mostefaoui S. Morishita Y.
Correlation Between Aluminum-26 Ages and Bulk Si/Mg Ratios for Chondrules from LL3.0–3.1 Chondrites **[#1750]**
We present new and re-measured data set for high precision ion microprobe ^{26}Al ages of chondrules from Bishunpur and Krymka (LL3.1). Correlation between ^{26}Al ages and their bulk Si/Mg ratios is examined and discussed.

9:30 a.m. Desch S. J. * Ouellette N.
The Meaning of Iron 60: A Nearby Supernova Injected Short-lived Radionuclides into Our Protoplanetary Disk **[#1327]**
We explain why the presence of short-lived radionuclides like ^{60}Fe in the early solar system demands a nearby supernova. Observations suggest the solar system disk had already formed and was < 1 pc from the supernova. We discuss the consequences.

9:45 a.m. Yin Q.-Z. *
Extinct Radioactivities in the Early Solar System and the Mean Age of the Galaxy **[#2091]**
I derived the mean age of the galaxy to be 12.3±3.6 Ga from the meteoritic records of extinct radioactivities at the beginning of the solar system. Unlike the U/Th cosmochronometer, this age constraints is independent of production ratios of nucleosynthetic models.

10:00 a.m. Albarède F. A. * Rosing M. Simionovici A. Blichert-Toft J. Bizzarro M. Scherer E. E.
Gamma-Ray Irradiation in the Early Solar System and the Conundrum of the ^{176}Lu Decay Constant **[#1528]**
The ^{176}Lu decay constants inferred from well-dated terrestrial rocks and meteorites are inconsistent by 3%. Excitation of the isomeric state (T1/2 = 3.7 h) in nebular gas and dust by gamma-rays from the nascent Sun accounts for this discrepancy.

10:15 a.m. Hood L. L. * Ciesla F. J.
The Planetesimal Bow Shock Model for Chondrule Formation: More Detailed Simulations in the Near Vicinity of the Planetesimal **[#1964]**
For plausible nebula gas densities, strong planetesimal bow shocks will lead to low-velocity impacts (and therefore accretion) of formed chondrules with sizes comparable to observed chondrule sizes.

10:30 a.m. Quitté G. * Latkoczy C. Halliday A. N. Schönbächler M. Günther D.
Iron-60 in the Eucrite Parent Body and the Initial $^{60}Fe/^{56}Fe$ of the Solar System **[#1827]**
We show that the ^{60}Fe-^{60}Ni chronometer dates both the crystallization and a later thermal metamorphic event in eucrites. A new estimate of 4.4×10^{-6} for the initial ^{60}Fe/^{56}Fe of the solar system, higher than generally assumed, is also proposed.

10:45 a.m. Ciesla F. J. * Cuzzi J. N.
The Distribution of Water in a Viscous Protoplanetary Disk **[#1479]**
We will present a new model to track the distribution of water in a viscously evolving protoplanetary disk and compare results to the inferred distribution of water vapor and ice in our own solar nebula.

11:00 a.m. Ebel D. S. * Alexander C. M. O'D.
Condensation from Cluster-IDP Enriched Vapor Inside the Snow Line: Implications for Mercury, Asteroids, and Enstatite Chondrites **[#1797]**
Cluster-IDPs are a better protoplanetary dust analog than chondritic CI dust. Condensation with C-IDP enrichments yields silicates with FeO ~0, plus CaS + MgS above 1000 K. Enstatite chondrites formed inside the snow line near a C-enriched midplane.

11:15 a.m. Kortenkamp S. J. *
The Fate of Neptune's Primordial Trojan Companions Lost During Planetary Migration **[#2242]**
Trojan-type companions of Neptune can be lost during primordial migration of the giant planets. These lost Neptune Trojans suffer many interesting fates including impact with Neptune and scattering into Neptune's outer mean motion resonances.

11:30 a.m. Bogard D. D. *
Characterizing the Early Impact Bombardment **[#1131]**
Different experimental approaches help characterize the nature and chronology of the enhanced impact bombardment of the inner solar system in the first billion years.