Friday, March 18, 2005
CHRONOLOGY OF A PROTOPLANETARY DISK
1:30 p.m. Marina Plaza Ballroom

Chairs: A. M. Davis
M. Wadhwa

1:30 p.m. Davis A. M. * Richter F. M. Mendybaev R. A. Janney P. E. Wadhwa M. McKeegan K. D.
Isotopic Mass Fractionation Laws and the Initial Solar System $^{26}Al/^{27}Al$ Ratio **[#2334]**
A variety of mass fractionation laws have been used to correct Mg isotopic data for natural mass fractionation effects. Using evaporation experiments, we have determined the proper law to use and we explore effects on ^{26}Al-^{26}Mg systematics.

1:45 p.m. Liu M.-C. * Iizuka Y. McKeegan K. D. Tonui E. Young E. D.
Supra-Canonical $^{26}Al/^{27}Al$ Ratios in an Unaltered Allende CAI **[#2079]**
Mg isotope distributions provide clues for CAI formations. However, due to isotopic disturbance, the original isotopic signals and $^{26}Al/^{27}Al$ are not necessary preserved. Here we present data for two inclusions from Allende that exhibit contrasting levels of preservation of initial $^{26}Al/^{27}Al$ signals.

2:00 p.m. Young E. D. * Simon J. I. Galy A. Russell S. S. Tonui E. Lovera O.
Supra-Canonical Initial $^{26}Al/^{27}Al$ Indicate a 10^5 Year Residence Time for CAIs in the Solar Proto-Planetary Disk **[#1525]**
We present new UV laser ablation and acid digestion MC-ICPMS analyses of 8 CAIs showing that there was more ^{26}Al in the early solar system than previously thought, and that the canonical initial $^{26}Al/^{27}Al$ represents a ~300,000 yr residence time for CAIs in the protoplanetary disk.

2:15 p.m. Tonui E. K. * Russell S. S. Simon J. I. Young E. D.
Canonical Anorthite in a Grosnaja Forsterite-bearing CAI **[#1530]**
Anorthite in a Grosnaja forsterite-bearing inclusion with canonical initial $^{26}Al/^{27}Al$ supports a new model for CAI evolution by Young et al. (this meeting) in igneous objects that show evidence for supercanonical initial $^{26}Al/^{27}Al$ of at least 6.0×10^{-5}.

2:30 p.m. Krot A. N. * Yurimoto H. Hutcheon I. D. MacPherson G. J.
Relative Chronology of CAI and Chondrule Formation: Evidence from Chondrule-bearing Igneous CAIs **[#1482]**
Type C CAIs ABC, TS26, and 93 from Allende experienced remelting with addition of chondrule Fe-Mg-silicates and incomplete O-isotopic exchange in an ^{16}O-poor gaseous reservoir ~2 Myr after formation of CAIs with the canonical $^{26}Al/^{27}Al$ ratio.

2:45 p.m. Ito M. * Ganguly J.
Closure Temperatures of the Short-lived Decay Systems, Be-B in Melilite and Al-Mg in Anorthite: Implications for the Chronology of CAIs and Early Solar System Events **[#1552]**
We have determined the closure temperatures of the decay systems to evaluate their effectiveness for the chronology of early solar system events.

3:00 p.m. Fagan T. J. * Guan Y. MacPherson G. J. Huss G. R.
Al-Mg Isotopic Evidence for Separate Nebular and Parent-Body Alteration Events in Two Allende CAIs **[#1820]**
Most secondary phases in two CAIs from Allende have no detectable radiogenic ^{26}Mg, but grossular in one Type A CAI has canonical radiogenic ^{26}Mg. The data indicate two discrete alteration events: possibly one nebular and one asteroidal.

3:15 p.m. Papanastassiou D. A. * Wasserburg G. J. Bogdanovski O.
The ^{53}Mn-^{53}Cr System in CAIs: An Update **[#2198]**
New high precision and high sensitivity techniques for Cr have been developed and applied to refractory inclusions. The usefulness of the Mn-Cr chronometer will depend on finding pristine inclusions, because, at present, the Al-Mg and Mn-Cr chronometers appear at variance with each other.

3:30 p.m. Pravdivtseva O. V. * Hohenberg C. M. Meshik A.
I-Xe Dating: The Time Line of Chondrule Formation and Metamorphism in LL Chondrites **[#2354]**
I-Xe ages of chondrules from LL chondrites of various metamorphic grades are considered relative to the revised absolute age of the Shallowater reference (4563.5 ± 1 Ma). They suggest long-lasting alteration on the parent body. The oldest I-Xe ages may reflect the time of chondrule formation.

3:45 p.m. Bizzarro M. * Baker J. A. Haack H.
Timing of Crust Formation on Differentiated Asteroids Inferred from Al-Mg Chronometry **[#1312]**
We report ^{26}Al-^{26}Mg data for basaltic meteorites from the angrite, eucrite and mesosiderite parent bodies, suggesting differentiation < 3 Myr of CAI formation. These planetesimals thus accreted while ^{26}Al was sufficiently abundant to drive melting.

4:00 p.m. Wadhwa M. * Amelin Y. Bogdanovski O. Shukolyukov A. Lugmair G. W.
High Precision Relative and Absolute Ages for Asuka 881394, a Unique and Ancient Basalt **[#2126]**
We present high precision Mg, Cr and Pb isotopic systematics in Asuka 881394. Our results demonstrate that Asuka 881394 formed within, at most, ~3 My of the formation of CAIs and that the Al-Mg, Mn-Cr and Pb-Pb chronometers are concordant in this sample.

4:15 p.m. Whitby J. A. * Crowther S. Busfield A. Gilmour J. D.
Inhomogeneity on the Lodranite Parent Body Inferred from I-Xe Systematics **[#1658]**
Measured model I-Xe ages for lodranite meteorites vary widely. It is suggested that this is due in part to migration of iodine in a fluid phase on the parent body whilst ^{129}I was still active.

4:30 p.m. Busemann H. * Busfield A. Gilmour J. D.
Ancient Volcanic Xenon in Single Glass Grains from the D'Orbigny Angrite **[#2299]**
We present high-sensitivity xenon data for single glass grains from the D'Orbigny angrite. These grains contain the first sample of volcanic gas from a planetary body other than the Earth and excess ^{129}Xe detected for the first time in angrites.