Thursday, March 20, 2003
ORDINARY CHONDRITES: WHO COULD ASK FOR MORE?
1:30 p.m. Salon A

Chairs: G. K. Benedix
D. S. Lauretta

Lauretta D. S. * Benedix G. K. McCoy T. J.
Olivine-Orthopyroxene Equilibrium in Metal-rich Systems: Applications to Achondrites and Equilibrated Chondrites **[#1461]**
We present thermodynamic calculations that show that compositions of olivine and pyroxene in equilbrium is dependent on such factors as oxygen fugacity, equilibrium temperature and silica activity.

Baker L. Franchi I. A. * Wright I. P. Pillinger C. T.
The Oxygen Isotopic Composition of Water Extracted from Unequilibrated Ordinary Chondrites **[#1800]**
The oxygen isotopic composition of water extracted from the unequilibrated ordinary chondrites Semarkona and Bishunpur reveals differences in alteration mineralogy and levels of isotopic enrichment – reflecting key parameters in the alteration process.

Weber I. * Semenenko V. P. Stephan T. Jessberger E. K.
TEM Investigation of a "Mysterite" Inclusion from the Krymka LL-Chondrite: Preliminary Results **[#1535]**
We present preliminary results of TEM analyses of mysterite in Krymka. The occurrence of crystallized graphite in the fine-grained area is an indicator for metamorphism. The structures of enstatite and an FeS-phase may result from a quenching process.

Smoliar M. I. * Horan M. F. Alexander C. M. O'D. Walker R. J.
Re-Os Systematics and HSE Distribution in Metal from Ochansk (H4) Chondrite **[#1506]**
We report Re-Os isochron for metal separates from the Ochansk (H4) coupled with isotope dilution abundance data for Ru, Pd, Ir, and Pt. Our results demonstrate that the Re-Os system can be applied to dating multiple events in individual chondrites.

Glavin D. P. * Lugmair G. W.
Mn-Cr Isotope Systematics in the LL Type Ordinary Chondrite St. Séverin **[#1276]**
The dating of ordinary chondrites by the Mn-Cr system yields the times when these meteorites where metamorphosed. The time when this occurred for the LL chondrite St. Severin was 4554.6 ± 1.4 Ma ago. This age as that of other ordinary chondrites agrees quite well with other dating methods.

Pack A. * Shelley M. O'Neill H. St. C. Palme H.
An In-Situ Trace Element Study of Refractory Forsterites from Different Types of Unequilibrated Chondrites **[#1600]**
Refractory lithophile elements (RLE) and transition metals were analyzed by LA-ICP-MS in refractory forsterites of carbonaceous ordinary and R-chondrites. High RLE contents require an origin by condensation or crystallization from RLE-enriched melts.

Sharp T. G. * Xie Z. Aramovich C. J. De Carli P. S.
Pressure-Temperature Histories of Shock-Induces Melt Veins in Chondrites **[#1278]**
We are using melt-vein mineralogy combined with shock physics and thermal modeling to explore the pressure-temperature histories of the melt veins to constrain shock pressures and durations in chondrites.

Aramovich C. J. * Sharp T. G. Wolf G.
The Distribution and Significance of Shock-induced High-Pressure Minerals in Chondrite Skip Wilson **[#1355]**
S6 chondrite Skip Wilson contains a thick (1–4 mm) shock-induced melt vein. The products of both crystallization and solid-state transformations in the melt vein allow us to interpret the shock and post-shock conditions of Skip Wilson.

Rubin A. E. *

Post-Shock Annealing and Post-Annealing Shock: Implications for the Thermal and Shock Histories of Ordinary-Chondrite Parent Bodies **[#1263]**

All type-5 and -6 OC classified as shock-stage S1 or S2 on the basis of the sharp or undulose extinction of olivine appear to have been shocked to stage S3 or higher and then annealed. The S2 OC were probably shocked, annealed to stage S1 and shocked again to reach stage S2.

Benedix G. K. * Ketcham R. A. McCoy T. J. Wilson L.

Vesiculation in Ordinary Chondrites Due to Impact Melting: The "PAT" 91501 Answers **[#1947]**

Vesicular impact melt meteorites are indicative of burial in cold country rock. Movies will be shown at the talk. Bring your own popcorn.

Schultz L. Franke L. Welten K. C. * Nishiizumi K. Jull A. J. T.

Cosmogenic Records in 18 Ordinary Chondrites from the Dar Al Gani Region, Libya: I Noble Gases **[#1398]**

Noble gas results in 18 DaG meteorites show that contamination with atmospheric noble gases increases with the degree of weathering, whereas loss of cosmogenic ^{3}He and radiogenic gases is not due to weathering but to solar or impact-related heating.

Moore S. R. * Franzen M. Benoit P. H. Sears D. W. G. Holley A. Meyers M. Godsey R. Czlapinski J.

The Origin of Chondrites: Metal-Silicate Separation Experiments Under Microgravity Conditions **[#1046]**

The metal/silicate ratio is a distinctive attribute of the meteorite classes. Here, we describe the results of fluidization experiments in microgravity, showing that separation of metal and silicate grains occurs readily, and we suggest that this could occur on parent bodies.

Andre S. L. * McCoy T. J. McCamant J. E. Robinson M. S. Britt D. T.

Densities and Porosities of Ordinary Chondrites; Do High Porosity Meteorites Represent Regolith Materials? **[#1608]**

We investigate controls on OC porosity, examine the range of heterogeneity among stones of a single fall, and consider if friable OCs could be potential analogs for low density asteroids or secondary products from asteroids.