

Tuesday, March 16, 2004
CHONDRULES: THE NEVER-ENDING STORY
1:30 p.m. Marina Plaza Ballroom

Chairs: A. M. Ruzicka
H. Nagahara

- 1:30 p.m. Miura H. * Nakamoto T.
Dust Size Distribution in Solar Nebula Inferred from Shock-Wave Heating Model for Chondrule Formation [#1612]
 We simulated chondrule formation by the shock-wave heating model. We could reproduce the size distribution of chondrules in ordinary chondrites from narrow-ranged precursor size distribution, not from a power-law precursor size distribution.
- 1:45 p.m. Nakamoto T. * Miura H.
Collisional Destruction of Chondrules in Shock Waves and Inferred Dust to Gas Mass Ratio [#1847]
 Destruction of chondrules by mutual collision in shock waves is examined. The dust to gas mass ratio before entering the shock should be less than about 0.01, otherwise, the chondrule size distribution in ordinary chondrites cannot be reproduced.
- 2:00 p.m. Tachibana S. * Huss G. R. Miura H. Nakamoto T.
Evaporation and Accompanying Isotopic Fractionation of Sulfur from Fe-S Melt During Shock Wave Heating [#1549]
 We have modeled evaporation and accompanying isotopic fractionation of sulfur from Fe-S melt during shock wave heating. Rapid heating due to shock wave can explain suppressed isotopic fractionations of sulfur observed in troilites within chondrules.
- 2:15 p.m. Wasson J. T. * Trigo-Rodriguez J. M.
Evaporation During Chondrule Formation, Recondensation as Fine Particles, and the Condensation of S and Other Volatile Elements [#2140]
 Evaporation is inherent to chondrule formation. The recondensation of evaporated materials may have produced all the nebular fine materials and provide the mechanism for the condensation of S as FeS.
- 2:30 p.m. Cohen B. A. * Levasseur S. Zanda B. Hewins R. H. Halliday A. N.
Fe Isotopes and the Formation of Chondrules [#1656]
 The nature of the Fe-isotopic mass fractionation measured in chondrules is controversial. Reduction and evaporation experiments of fayalite have shown that the formation of metal does not induce isotopic mass fractionation. The silicate portion, however, is strongly fractionated due to evaporation.
- 2:45 p.m. Schoenbeck T. W. * Palme H.
Pristine and Processed Metal in CR Chondrites: Condensation in the Solar Nebula and Partial Reequilibration During Chondrule Formation [#1706]
 We present metal analyses in Acfer 209. The moderately siderophile trace element composition suggests a multi-stage history of chondrule metal. In contrast, matrix metal is less altered and shows pristine properties.
- 3:00 p.m. Nagahara H. * Ozawa K.
Variation of the Condensation Path of Supercooled Silicate Melt [#1793]
 We have developed a kinetic condensation model and the compositional change of silicate melt is investigated. The model produces diversity of chondrule composition, but satisfactory variation is obtained with fractionated initial composition.
- 3:15 p.m. BREAK

- 3:30 p.m. Bland P. A. * Alard O. Gounelle M. Benedix G. K. Kearsley A. T. Rogers N. W.
Volatile and Moderately Volatile Trace Element Composition of Chondrules and Matrix from CM Chondrites: Implications for Chondrule Formation [#1737]
We have analysed trace element volatiles in chondrules and matrix from Mighei. Chondrules in Mighei are depleted compared to matrix. The volatile fractionation pattern in both materials suggests differing degrees of incomplete condensation.
- 3:45 p.m. Laurretta D. S. *
Opaque Mineral Assemblages at Chondrule Boundaries in the Vigarano CV Chondrite: Evidence for Gas-Solid Reactions Following Chondrule Formation [#1609]
Opaque mineral assemblages at chondrule boundaries can constrain the environment of chondrule formation, including temperature, gas composition, pressure, and cooling history.
- 4:00 p.m. Ruzicka A. * Floss C.
Forsterite and Olivine in Sahara-97210 (LL3.2) and Chainpur (LL3.4) Chondrules: Compositional Evolution and the Influence of Melting [#1422]
SIMS data for forsterite and olivine in chondrules suggest that chondrule melts evolved chemically and cooled rapidly during multiple chondrule-forming episodes.
- 4:15 p.m. Lofgren G. E. * Le L.
The Vagaries of Pyroxene Nucleation and the Resulting Chondrule Textures [#1732]
Chondrules that have porphyritic textures containing pyroxene most likely form as a result of melting significantly below the liquidus because of the difficulty of pyroxene nucleation from total melts.
- 4:30 p.m. Kurahashi E. * Kita N. T. Nagahara H. Morishita Y.
Contemporaneous Formation of Chondrules in the ^{26}Al - ^{26}Mg System for Ordinary and CO Chondrites [#1476]
Type I chondrules in CO3.0 Yamato 81020 formed 1–2.5 Myr after CAIs formation, suggesting contemporaneous formation age with ferromagnesian chondrules in OC. No relation among ages and textures or bulk compositions of the chondrules were observed.
- 4:45 p.m. Rudraswami N. G. Deomurari M. P. Goswami J. N. *
Al-Mg Isotopic Systematics in Ferromagnesian Chondrules from the Unequilibrated Ordinary Chondrite Adrar 003: Time Scale of Chondrule Formation [#1236]
Al-Mg isotopic systematics in chondrules from the unequilibrated (LL3.2) ordinary chondrite Adrar 003 show a spread in the initial $^{26}\text{Al}/^{27}\text{Al}$ ratio that argues for an extended duration of more than a million years for chondrule formation in the early solar system.