Multiple Generations of Fractionated Hibonite-Rich CAIs Sampled the Solar Nebula at Different Degrees of Isotopic Heterogeneity

We report O, Al-Mg, Ca, and Ti isotopic data for seven hibonite-rich CAIs with F(UN) characteristics. The CAIs record different stages in the evolution of the nebula.

Microstructures and Origins of Two Corundum-Hibonite Inclusions from ALH 77307 (CO3.0)

A TEM study of two corundum-hibonite inclusions in ALH 77307 (CO3.0) provides the context for the isotopic data and constraints on their formation histories.

Systematic Oxygen Isotope Variations Within a Single Vigarano CAI Surrounded by a Uniformly $^{16}$O-Rich Wark-Lovering Rim

We describe a Ca,Al-rich inclusion in the Vigarano CV3 chondrite that records diverse oxygen isotope compositions.

Crystallization Control on O Isotopes in Pyroxene from a Type B1 Ca-Al-Rich Inclusion

O isotopes in pyroxene from CAI 3529-Z correlate with TiO$_2$ content and location and evolve from $^{16}$O-poor to $^{16}$O-rich.

An Amoeboid Olivine Aggregate Surrounded by an Igneous Ferroan Olivine-Rich Rim from CO3.0 Chondrite DOM 08006

We report an AOA surrounded by a ferroan igneous rim from DOM 08006 CO3.0 chondrite, indicating the AOA was recycled in type II chondrule-forming region.

Refractory Inclusions Recycled During Formation of Porphyritic Chondrules from CH Carbonaceous Chondrites

We report on mineralogy, petrology, O- and Al-Mg isotope systematics of CH CAIs melted to various degrees during formation of CH porphyritic chondrules.

A Short Time Interval for the Formation of Chondrules’ Precursors

Analyses of radiogenic $^{26}$Mg excesses in bulk chondrules show that there is presumably no chondrule having precursors formed later than 1.5 m.y. after CAIs.

Enhancements of the solid/gas ratio above solar, as suggested by chondrule properties, may lead to problematically frequent destructive collisions in shocks.
10:30 a.m. Chaumard N.*  Humayun M.  Zanda B.  Hewins R. H.
*Cooling Rates of Type I Chondrules from the Renazzo CR2 Chondrite: Implications for Chondrule Formation [#1907]*
Our results are consistent with the predictions of shock wave models and suggest a common heating mechanism for the formation of type I chondrules in CCs.

*Oxygen Isotope Systematics of Chondrules in R3 Clasts: A Genetic Link to Ordinary Chondrites [#2053]*
Oxygen isotope analyses of chondrules in type 3 clasts in R chondrite breccias suggest similar isotope reservoirs for chondrules in O and R chondrites.

11:00 a.m. Oulton J.*  Humayun M.  Fedkin A.  Grossman L.
*Chemical Evidence from Gujba for Differentiation and Evaporation/Re-Condensation Processes During the CB-Impact Event [#1590]*
We report cerium anomalies in silicate clasts from Gujba that correlate with indices of differentiation and discuss mechanisms of their formation.

11:15 a.m. Fedkin A. V.*  Grossman L.  Humayun M.  Simon S. B.  Campbell A. J.
*A Kinetic Model for Chemical and Fe Isotopic Zoning of Metal Grains in CBb Chondrites by Condensation from a Plume Made by Impact Vaporization of Differentiated CR Chondrite Bodies [#1038]*
Ir, Ni, Co, and Cr elemental and Fe isotopic profiles in CB-zoned metal grains are well fit by incomplete condensation in an impact plume with falling P and T.

11:30 a.m. Schrader D. L.*  McCoy T. J.  Davidson J.
*Widespread Evidence for High-Temperature Formation of Pentlandite in Chondrites [#1604]*
We present compositional and textural evidence suggesting high-temperature formation of pentlandite is widespread in chondrites.