

Thursday, March 13, 2008
POSTER SESSION II: CONDENSATION-EVAPORATION: STARDUST TIES
6:30 p.m. Fitness Center

Rietmeijer F. J. M. Pun A. Nuth J. A. III Kimura Y.

Refractory Deep Metastable Eutectic Vapor Phase Condensates Evolve to Amorphous, but Not Quite, Equilibrium Minerals [#1101]

We present the first experimental evidence for chemical evolution of binary-oxide vapor phase condensate into ternary-oxide CaFeSiO solids, including stoichiometric amorphous minerals of hedenbergite and kirschsteinite composition.

Tachibana S. Tamada S. Nagahara H. Ozawa K.

Experimental Study of Condensation in the System of Mg-Si-O by a Newly Developed Infrared Vacuum Furnace [#2531]

Condensation experiments in the system of Mg-Si-O by a newly developed infrared vacuum furnace showed that amorphous silicates condense in the stability region of crystalline forsterite under reducing conditions.

Nagahara H. Ozawa K.

Heterogeneous Nucleation and Growth of Metal on Silicates and its Astrophysical Implication [#1241]

Heterogeneous condensation of Fe on silicates was theoretically investigated. The results predict that silicate is covered by Fe, which results in condensation of SiO₂. The results are consistent with infrared astrophysical observation of dusts in discs around young stars.

Takigawa A. Tachibana S. Nagahara H.

Effects of Anisotropic Evaporation of Circumstellar Forsterite on Infrared Spectra [#1523]

Calculations of IR spectra for ellipsoidal forsterite showed the 10- μ m band can be a key to distinguish dust shapes, which we demonstrate by experiments to be results of anisotropic evaporation depending on temperature and hydrogen gas pressure.

Chiba H. Tachibana S. Nagahara H.

Experimental Study of Reaction Between Forsterite and Si-Rich Gas [#1992]

Experiments of reaction between forsterite and Si-rich gas at ~1070–1170 K at low pressures showed that formation of enstatite via the forsterite-gas reaction may not be expected in a mass-loss wind from an evolved star.

Nomura R. Nagahara H. Tachibana S.

Condensation of Metallic Iron: The Role of Temperatures of Gas and Condensed Phase [#2127]

We carried out condensation experiments of metallic iron. An importance of the difference in temperature between gas and dust in heterogeneous condensation is suggested. And small condensation coefficient at low supersaturation is obtained.

Le Gac Y. Roskosz M. Mysen B.

Experimental Study of Lithium Evaporation Under Circumstellar Conditions [#1542]

We present experimental data on the evaporation of lithium from a molten chondrule analog. Evaporation rates are determined and we show that surface evaporation controls the reaction, rather than volume diffusion.