A New Chondrule Synthesis by Acoustic Levitation

Katsuo Tsukamoto [1], Hisao Satoh [2], Yuzuru Takamura [3], Kazuhiko Kuribayashi [4]

[1] Faculty of Science, Tohoku University, [2] Gological Survey of Japan (JST PD), [3] Material, Technology, Tokyo University, [4] ISAS

Nucleation in microgravity is reduced by the order of four and thus very high supercooled melt is stable. Forsterite chondrule was for the first time synthesized by acoustic levitation method, in which about 1000 degC of supercooling was achived followd by the rapid crystallization on the surface of the melt in 0.1s. This crystallization process led the increase of the surafce temperate up to the melting temperatuer due to the rapid release of latent heat. The rim and the internal texture was found to be formed only in such theremal conditions.