

Chondrules from Hypercooling Melt

Katsuo Tsukamoto[1], Hisao Satoh[2], Hidekazu Kobatake[3], Ken Nagashima[4]

[1] Faculty of Science, Tohoku University, [2] Geological Survey of Japan (JST PD), [3] Inst. Min. Pet. Econ. Geol. Tohoku Univ., [4] Geology, Sci., Tohoku Univ

Chondrules have been synthesized from the melt with large (500-1000K) supercooled melt. This large supercooling was obtained only when the silicate melt droplets (~3mm, diameter) were processed using containerless levitation method either by acoustic levitation or under microgravity, due to the suppression heterogeneous nucleation on the wall of the container.

It was found that recalescence and hypercooling play an important role for the formation of the texture and the forthcoming remelt of the barred-structure. The crystallization temperature was estimated to be 1200degC. This value is very close to the temperature estimated independently from the earlier experiments.

Chondrules have been synthesized from the melt with large (500-1000K) supercooled melt. This large supercooling was obtained only when the silicate melt droplets (~3mm, diameter) were processed using containerless levitation method either by acoustic levitation or under microgravity, due to the suppression heterogeneous nucleation on the wall of the container.

It was found that recalescence and hypercooling play an important role for the formation of the texture and the forthcoming remelt of the barred-structure. The crystallization temperature was estimated to be 1200degC. This value is very close to the temperature estimated independently from the earlier experiments.