

## Formation of solidification structure in a melt droplet during rapid cooling

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Chondrules in meteorite are small silicate particles of the order of a few millimeters in radius, which were crystallized from melt droplets 4.6 billion years ago. As a simulation of solidification of chondrule, previously, we presented a model of the formation of rim of a melt droplet during rapid cooling using a phase field model in three dimensions, in which a small particle is introduced to the liquid surface to initiate solidification of the rim, and that supercooling, temperature and radius of droplet are given parameters as initial conditions. It was found that the reproduction of rim structure is very difficult for wide range of initial temperature. In this talk, we discuss the formation of rim structure and theoretically show that both the large temperature difference from periphery to the center of melt droplet and the large growth speed of interface are indispensable for the formation of rims.