

Breakup of liquids by high velocity flow and size distribution of chondrules

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Chondrules are igneous in texture, being once hot droplets of molten rock. However, the processes of heating and cooling are not well understood. As a new approach to understand chondrule formation process, we carry out aerodynamic experiments, in which liquid layer attaches to solid cores and the breakup of this layer occurs by the interaction with a high-velocity gas flow. The size distribution of dispersed droplets is investigated and compared with the size distributions of chondrules. Both distributions have a similar form. Using a relation between gas-flow conditions and droplet average size obtained by the experiments, hydrodynamic pressure to produce the chondrule size distributions is estimated.