# Sintering fragmentation of a dust aggregate

# Sin-iti Sirono[1]

[1] Earth and Planetary Sci., Nagoya Univ.

One of the most important unknown processes in planet formation is the formation of planetesimals. If the dust surface density is increased by a factor of 10 from its standard value, gravitational instability takes place resulting in the planetesimal formation (Sekiya 1998).

The temperature of a dust aggregate rises as infalling to the Sun. Sintering by surface diffusion proceeds, which induces fragmentation of the aggregate. The infalling velocity is substantially decreased by the fragmentation. As a result, the dust surface density increases locally. In this study, I show the fragmentation of a dust aggregate by a 3-dimensional numerical simulation.