

PPS004-01

Room: 201A

Time: May 25 09:00-09:15

## Sintering of icy grain aggregate and multiple snowlines

Sin-iti Sirono<sup>1\*</sup>

<sup>1</sup>Graduate school of environmental studies

Planets are formed from dust grains in a protoplanetary nebula. The grains are composed of silicates, organics, and ices. The ice contains various species other than H<sub>2</sub>O as revealed by observation of interstellar clouds. Dust grains covered by the ices form aggregates, and the aggregates drift to the central star due to gas drag. Sintering through sublimation+recondensation proceeds as temperature increases. The neck between grains grows by the molecular transportation. The sintering rate depends on the surface curvature of the icy grains. In this study, the growth of a neck is numerically simulated, and the timescale for the growth is determined. The ice contains various molecules such as CO<sub>2</sub> and NH<sub>3</sub>. There are regions where the nebula gas is saturated by the minor components. The boundary between the saturated region and the undersaturated region becomes a snowline. The timescale for the neck growth and the location of the snowlines lead to many sintering regions of several AU in width.

Keywords: grain aggregate, sintering, snowline