AKARI Observation of Interstellar Ice

Y. Aikawa[1], AFSAS team

[1]*Department of Earth and Planetary Sciences, Kobe University, Japan*

In molecular clouds, a significant amount of Oxygen, Carbon and Nitrogen is in the form of molecule in ice mantle, such as H_2O, CO, CO_2, NH_3 and CH_3OH. These icy materials are formed by adsorption of gas-phase molecules onto grain surfaces and/or grain-surface reactions of the adsorbed species (e.g. [1]). Molecular evolution in the gas phase and ice mantle depends on the physical conditions such as temperature, density, and UV intensity. In order to understand the chemical processes of interstellar matter, it is important to observe the composition of gas and ice in various conditions. Composition of ice has been investigated by the absorption feature in the infrared. Spatial distribution of ice composition and its dependence on physical conditions are less constrained than the gas-phase molecules, because there are only a limited number of bright light sources behind or within the molecular clouds. In addition, some important bands cannot be observed from the ground.

We are observing near-infrared (2.5-5micron) spectrum of background stars using *AKARI* satellite. Compared with the ground-based telescopes and *Spitzer Space Telescope*, *AKARI* is unique in enabling us to observe the full NIR wavelength region towards faint background stars with < 14 mag at K band.

We will present preliminary results of our data analysis: spectrum of several background stars behind Taurus molecular clouds and determination of spectrum type and visual extinction (i.e. the continuum spectrum) of each star.

References

[1] Y. Aikawa, V. Wakelam, E. Herbst & R.T. Garrod 2008, ApJ, 674, 984