

Analysis of Ice Absorption Features towards YSOs Candidates Using AKARI

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We present a study of near- to mid-infrared spectra (2.5–12 μ m) of two galactic YSO candidates, which have been identified in serendipitous spectroscopy in the Galactic plane using the slit-less mode of the InfraRed Camera (IRC) on board AKARI. Absorption bands of molecular species, including solid phase H₂O, CO₂, CO, XCN-, silicates, and possibly gas phase CO, are seen in the spectra towards both sources.

We estimate the column densities of the above detected species and found the quite large column densities of XCN-. These results suggest that the objects are highly embedded class I protostars. However, these sources do not belong to any known star-forming region. Their SEDs are peculiar as YSOs since their peaks are located at around 4 μ m, while usual YSOs show a peak at a much longer wavelength. Their spectral energy distributions (SED) are quite blue as YSOs and no FIR emission has been detected. Existing SED models of YSOs cannot account for them. On the other hand, the presence of the XCN- feature and no apparent associated nebulosity in the regions suggest that they are not likely background stars.

In this presentation, we will discuss the properties of these objects and their physical implications.