Poster: The chemical study of 9 Planck Galactic cold clump cores embedded in filament structures

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The Planck Galactic cold clump cores (PGCC cores) are thought to be ideal laboratories for understanding the initial condition of star formation, because they have low dust temperature of 10-20 K in different environments. As one of follow-up studies of the PGCC cores, we are carrying out molecular line observations of PGCC cores with the 45 m Nobeyama telescope in order to investigate their chemical properties. First, we observed ∼200 PGCC cores in the single-pointing mode in N2D+, DNC, HN13C, and c-C3H2 lines, and listed up cores having high N2D+ intensities or high column densities for further observations. Then, we are mapping the selected cores in N2H+, HC3N, and CCS lines in the on-the-fly mapping modes. In this poster, we present the preliminary results of 9 PGCC cores in Orion region. We found that the spatial distribution of N2H+ line is similar to that of Herschel 500 micron continuum, but other three lines tend to surround the peak of N2H+ line. In particular, CCS line shows clumpy structure. N2H+ mapping data show that most PGCC cores seem to be embedded in three velocity-coherent filaments. From analysis of the ratio of CCS to N2H+ line as one of chemical evolutionary indicators, we found that six cores are young and the others are evolved.

Molecular Clouds