

## Molecular Clouds associated with UC HII Regions with Extended Envelopes

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We carried out  $^{13}\text{CO}$  J=1-0, CS and C  $^{34}\text{S}$  J=2-1 and J=3-2 line observations of 15 molecular clouds that contain UC HII regions with extended radio continuum emission.

$^{13}\text{CO}$  line observations show that the molecular clouds have sizes of 7-52pc, masses of  $(1-83) \times 10^4 M_{\odot}$ , and densities of  $(1-9) \times 10^2 \text{ cm}^{-3}$ . CS emitting regions are always correlated with UC HII regions and have masses of  $(0.4-59) \times 10^4 M_{\odot}$  and densities of  $(1.1-7.2) \times 10^3 \text{ cm}^{-3}$ . We examine the physical characteristics of the massive star forming clouds, such as D-  $n_{\text{H}_2}$ , D-  $\Delta v$  relations, and star formation rate.

All the UC HII regions but one correspond to the  $^{13}\text{CO}$  (or CS) peaks, while nearby compact *HII* regions (without UC cores) are usually shifted from the peaks. The morphology of the extended envelopes is largely determined by the distribution of the ambient molecular gas. Comparison of our molecular line data with radio continuum and recombination line data suggests that eight *HII* are likely to be in the Champagne flow phase. We investigate excitation condition of the CS molecule in the vicinity of *UCHII* regions with a Monte Carlo radiative transfer code. We discuss some individual sources.