

Z113a Star-formation and molecular cloud properties in a low metallicity environment:
Subaru/HSC-ALMA-ASTE observations of NGC 6822

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Recent ALMA observations start to capture spectral lines from the interstellar medium (ISM) in the epoch of re-ionization, where galaxies are deficient in metals (e.g., Hashimoto et al. 2018), motivating us to understand physical properties of molecular clouds, the direct birthplace of massive stars, in low-mass, low-metallicity galaxies.

Here we present the ALMA results of $0''.56$ (or 1.3 pc at $D = 474$ kpc) resolution ^{12}CO , ^{13}CO , and $\text{C}^{18}\text{O}(J = 2-1)$ observations toward Hubble V, one of the prominent H II regions in the nearby, low-metal ($\sim 1/5Z_{\odot}$) dwarf irregular galaxy NGC 6822. Although C^{18}O emission can not be detected in the observed region, these CO images have been compared with the *i*-band (stars) and $\text{H}\alpha$ (massive star-forming regions) images taken with the Subaru/HSC. In the ^{12}CO and $^{13}\text{CO}(J = 2-1)$ maps, we can find clumpy structures and we identified ≥ 20 clumps in the ^{12}CO map with a typical size of a few pc, which is similar to those of Galactic clumps or massive cores. Interestingly, we find that most of them mainly surround a bright $\text{H}\alpha$ nebula. We also identified starless clumps without $\text{H}\alpha$ and/or *i*-band counterpart. The detailed physical properties of these clumps and future prospects using ALMA and ASTE will be presented.