P120a Long cyanopolyynes at the G28.28-0.36 hot core

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Long cyanopolyynes (e.g., HC_5N and HC_7N) are thought to be deficient around high-mass star-forming cores, while saturated complex organic molecules (e.g., CH_3OH and CH_3CN) to be abundant, namely hot core chemistry. We reported a possibility of the chemical differentiation among the four high-mass star-forming cores from the observations using the Green Bank 100-m telescope and the Nobeyama 45-m radio telescope (Q21a, ASJ annual meeting, 2017 autumn). G28.28-0.36, one of the target sources, shows a unique chemical feature; the significantly high HC_5N abundance without thermal CH_3OH emission line. We carried out imaging observations of cyanopolyynes (HC_3N, HC_5N, and HC_7N) and CH_3CN, as a hot core tracer, toward G28.28-0.36 with the Karl G. Jansky Very Large Array (VLA; NRAO) in the Ka-band. In contrast to the general hot core chemistry, we found that the spatial distributions of HC_5N and HC_7N are roughly consistent with those of CH_3CN and 450 μm warm dust continuum emission. These results suggest not only existence of long cyanopolyynes in the hot core but also efficient formation of cyanopolyynes therein. We discuss possible formation mechanisms of cyanopolyynes in the hot core. Discovery of a hot core associated with long cyanopolyynes indicates the chemical diversity at the hot core stage suggestive of a variety of the intrinsic chemical diversity and/or the timescale of starless core phase of massive star formation.