P121a Observational Evidence for Cyanopolyyne Chemistry around High-Mass Stars

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Cyanopolyynes ($HC_{2n+1}N$), which are one of the carbon-chain series, were predicted to evaporate from dust grains, and to be abundant in hot gas with temperatures above 100 K, by chemical simulations. We have investigated spatial distributions of HC_5N using ALMA Band 3 data toward five massive young stellar objects (MYSOs), and compared to distributions of complex organic molecules (COMs), which are hot core tracers. The HC_5N line has been detected from three sources. The HC_5N emission associates with continuum cores, and its spatial distributions are consistent with the hot core tracers. We have derived chemical composition of HC_5N and several COMs at continuum cores, and compared to our latest chemical simulations with hot-core models including a warm-up stage. The observed abundances can be reproduced by the chemical simulations in the hot-core stage. We have derived physical parameters with a 0.5-pc scale by two-temperature modified blackbody model to investigate what a physical parameter is important to detect HC_5N around MYSOs. We find out that the hot or warm regions are much extended around the three MYSOs, in which HC_5N has been detected, compared to the other MYSOs without the HC_5N emission.