R21a Interstellar chemistry in extreme starburst environment

原田ななせ（台湾中央研究院）

Studies of galactic sources have shown chemical compositions differ in various stages of star formation. Regions influenced by shocks or external radiation such as UV-photons and cosmic rays also have unique chemical compositions. In environment of extreme starburst galaxies such as (ultra-) luminous infrared galaxies, these compositions are likely to change due to high cosmic-ray and UV-flux, as well as increased temperatures of dust. While chemical complexity of (U)LIRGs such as Arp 220 and NGC 4418 are being observed by Atacama Large Millimeter/sub-millimeter Array (ALMA), theoretical understanding of these chemical features are needed. Here we focus on the dependence of chemical composition on dust temperatures in cold molecular cloud and hot core situation using a chemical model including gas-phase and dust-related reaction such as adsorption, desorption, and surface reactions. Our results show that the hot core chemistry in (U)LIRG-like environment is different from the Galaxy because elevated dust temperatures make dust-surface reactions more inefficient. These results are compared with the observations of (U)LIRGs, Arp 220 and NGC 4418 by ALMA and/or submillimeter array (SMA). Other driving forces of chemistry such as high fluxes of UV-photons and cosmic rays, and shocks are also briefly mentioned.