

## R14a Spatially and spectrally resolved HCN/HCO<sup>+</sup> ratios in ultraluminous and luminous infrared galaxies from the CON-quest sample

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Interacting ultraluminous and luminous infrared galaxies ((U)LIRGs) funnel large amounts of gas and dust into their nuclei and powerful activity occurs there. Particularly, massive outflows can regulate the growth of the central supermassive black hole and star formation activity in host galaxies. Some (U)LIRGs are known to host compact obscured nuclei (CONs), which is extremely dusty and thus optically thick at many wavelengths. Therefore, it is of fundamental importance to exploit molecular line tracers which can probe such extreme nuclear conditions. CON-quest is the survey conducted with ALMA to investigate the prevalence of CON in the local Universe and whether it depends on the properties of the host galaxy. The sample we focus here consists of 4 ULIRGs and 19 LIRGs. Along with the vibrationally-excited HCN line as a tracer of CON, the HCN(3 – 2) and HCO<sup>+</sup>(3 – 2) lines are observed with extremely high sensitivity, so that we could obtain the spatially and spectrally resolved HCN/HCO<sup>+</sup> luminosity ratio maps. We found that the HCN/HCO<sup>+</sup> ratio is elevated up to  $> 2.5$  in the region which is likely to be associated with outflows, while the ratio in the rest part of the gas disk is typically  $\sim 1$ . This result suggest that the high HCN/HCO<sup>+</sup> ratio could be used as a diagnostic method for molecular outflows which might otherwise not be identified. We also discuss the possible chemical mechanisms which can be responsible for the high HCN/HCO<sup>+</sup> ratio.