Amides inventory towards the G+0.693-0.027 molecular cloud

S. Zeng,[1] et al.
[1]*Star and Planet Formation Laboratory, RIKEN, Japan*

Interstellar amides, species that contain peptide-like bond, have attracted significant attentions as they are potential precursors for a wide variety of organics essential to life. However, detection of several amides from the same regions are still relatively sparse and they are mostly biased towards the physical conditions of star-forming regions (e.g. [1-3]. The chemical networks that include amides may therefore lack of further constraints to elucidate the chemical link between these species and the interplay with the physical conditions especially at earliest stage of star formation.

In this talk I will report the detection of a series of amide species, including $HC(O)NH_2$, $CH_3C(O)NH_2$, CH_3NHCHO, and $NH_2C(O)NH_2$ towards the chemically rich Galactic Centre molecular cloud G+0.693-0.027 [4]. From the comparison with other sources as well as works from laboratory experiments and chemical models, we find constant abundance ratios independently of the evolutionary stages, suggesting that amides related chemistry is triggered in early evolutionary stages of molecular cloud and remain unaffected by the warm-up phase during the star formation process.

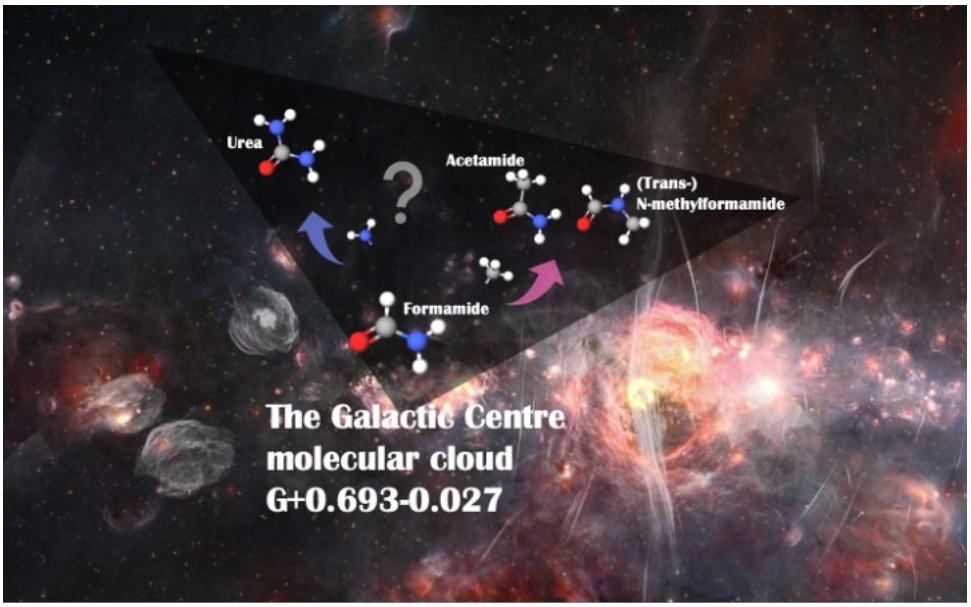

Figure 1: Amides species detected towards the molecular cloud G+0.693-0.027 as a result of the deep unbiased spectral survey conducted with the Yebes 40m and IRAM 30m telescope.

References

[1] Colzi L., et al., 2021, A&A, 653, A129
[2] Ligterink N. F. W., et al., 2020, ApJ, 901, 37
[3] Ligterink N. F. W., et al., 2022, ACS Earth and Space Chemistry, 6, 455
[4[] Zeng S., et al. 2023, MNRAS, 523, 1448