Astronomical detections of prebiotic molecules with the next generation Very Large Array

*Misato Fukagawa[1], Daisuke Iono[1], Munetake Momose[2]

1. National Astronomical Observatory of Japan, 2. Ibaraki University

The next generation Very Large Array (ngVLA) is the ground-based cm/mm-wave radio telescope, and one of the future astronomy projects led by US for the next decade. The dedicated study group for ngVLA has recently been launched in the National Astronomical Observatory of Japan to seek for the eventual Japanese participation in this project. The telescope will be composed of 214 18-m antennas with the baselines up to 9000 km (extending from Hawaii to the US Virgin Islands), providing the unprecedented sensitivity and angular resolution. The ngVLA will cover the cm/mm-wave range, which will become a great advantage to detect complex prebiotic molecules that are free from line blending. In fact, one of the key science goals of ngVLA is "Probing the Initial Conditions for Planetary Systems and Life with Astrochemistry". The simulations on biogenic molecules such as Glycine and Glyceraldehyde (McGuire et al. 2018) show that the lines from those molecules are below the detectability of the existing telescopes but will be discovered with ngVLA, enabling transformational science on the chemical building blocks of life.

