

NAOJ ALMA Scientific Research Grant 2019

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■ Title

The Chemistry of Protoplanetary Disks

■ Summary

Dust and gas in protoplanetary disks are raw material of planetary systems. Volatile elements are either in solid or gas phase, depending on the molecular composition and temperature distribution in disks, while they play pivotal role in planetary system formation. Volatiles in solids could enhance the coagulation of dust particles and could also make atmosphere and ocean on rocky planets. Volatile elements in the disk gas are incorporate to gas giants, and could tell us the temperature environment in which the planets are formed. Molecular lines of volatiles are unique probe to observe disk mass, dispersal processes and kinetics. We investigate the spatial distribution and evolution of molecular abundances, isotope ratios, and gas/solid distributions of volatiles by observing disks around T Tauri stars, Herbig Ae stars, and FU Ors in ALMA cycle 6 Large Program "The Chemistry of Planet Formation", other regular programs, and archival data.

We are seeking candidates for a postdoc position. Candidates with expertise in reduction and analysis of the ALMA data, and/or modeling of disk structures and astrochemistry are welcome.