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Organic Molecules in Protoplanetary Disks

Thursday, 17 October 2019 15:00 (25 minutes)

Invited talk

Abstract:
Earth-like planets form mostly from dry refractory materials in the inner regions of protoplanetary disks; however, they might become habitable if water and organic molecules are delivered to their surfaces and atmospheres by planetesimals formed beyond the sublimation front of water. Complex organic molecules (COMs), which are the seeds of prebiotic material and precursors of amino acids and sugars, form in the icy mantles of dust grains but cannot be detected remotely unless they are heated and released to the gas phase. Around solar-mass stars, water and COMs only sublimate in the inner few AU of the disk, making them extremely difficult to spatially resolve and study. Sudden increases in the luminosity of the central star, as seen in FU Orionis objects (FUors), will quickly expand the snow line to larger radii. Therefore, we can take advantage of the rapid increase in disk temperature of FUors to detect and analyze COMs in spatially-resolved ALMA observations. I will present our recent ALMA detection of several COMs from material directly related to planet formation in an outbursting disk source, V883 Ori.

Presenter: Dr LEE, Jeong-Eun

Session Classification: Circumstellar Disks