

MOLECULAR DISCOVERY ACROSS THE ALMA BANDS: FROM SALTY DISKS TO COMPLEX MOLECULES AT 900 GHz

BRETT A. McGUIRE, *NAASC, National Radio Astronomy Observatory, Charlottesville, VA, USA.*

The Atacama Large Millimeter/sub-millimeter Array (ALMA) provides a view of our molecular universe with unprecedented sensitivity and resolution over more than 850 GHz in bandwidth from 84 – 950 GHz. In this talk, I will cover three recent results that showcase not only ALMA's power to probe interstellar chemical evolution, but also the critical role of laboratory molecular spectroscopy efforts in interpreting ALMA observations. At lower frequencies, I will discuss our recent detections of the extraordinarily vibrationally excited inorganic salts NaCl and KCl in the disk of Orion Src I, which may prove to be a unique, and much needed, probe of embedded disks around high-mass protostars. Moving up both in frequency and complexity, I will highlight our detection of methoxymethanol ($\text{CH}_3\text{OCH}_2\text{OH}$) in the high-mass star-forming region NGC 6334I in very high abundance that was directly enabled by complementary laboratory spectroscopy work. Finally, I will discuss the first broadband line survey conducted with ALMA at Bands 9 and 10, again toward NGC 6334I. I will comment on not only the power and quality of high-frequency observations with ALMA but also the need for renewed laboratory efforts at these frequencies, as highlighted by glycolaldehyde ($\text{HC}(\text{O})\text{CH}_2\text{OH}$) and ethylene glycol ($(\text{CH}_2\text{OH})_2$).