

## THE FUTURE OF ASTROCHEMISTRY

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In the last 30 years, molecular astronomy has made huge strides. More than 150 molecules have been discovered in the gas-phase in the interstellar and circumstellar media using high-resolution molecular spectroscopy. Lower resolution studies indicate the presence of polycyclic aromatic hydrocarbons as well as dust particles of silicates and carbonaceous material, with icy mantles in cold regions. In addition to this wealth of interesting molecular data, molecules have been used as probes of their environments in two senses. First, molecular spectra can be used to characterize the "current" physical conditions and motions of interstellar sources. Secondly, models, in which the chemistry of formation and depletion is simulated, can also tell us about the history of these sources. Both approaches have been used to yield much information on the interstellar medium in our galaxy and others, especially those portions involved in the formation of stars and planets. But our knowledge of the molecular universe is still limited. In my talk, I will discuss current outstanding problems and how the new generation of telescopes coupled with chemical modeling will lead to their solution.