

# Chemistry in the Interstellar Medium

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The first detection of a polyatomic molecule in the interstellar medium (ISM) occurred about 40 years ago and since this time the known chemical inventory of the ISM has increased at a steady rate to include about 160 molecules, at present. These molecules include common organic and inorganic compounds as well as more exotic chemical species including ions and radicals. The vast majority of molecular detections have used molecular rotational spectroscopy in the microwave and mm-wave frequency regions. In the next few years, a new generation of telescopes for radio astronomy will be commissioned and will provide chemists with new tools to understand the mechanistic chemistry of the interstellar medium. In particular, two new telescope array facilities of the National Radio Astronomy Observatory (NRAO) will produce multi-species chemical maps of the interstellar medium with high spatial resolution. This seminar will describe research in the Center for Chemistry of the Universe that is examining how these new measurement capabilities can be used to gain insight on the chemical reaction processes at work in the ISM. A particular focus of the Center research effort is to assemble state-of-the-art tools from all areas of physical chemistry to provide an interdisciplinary research environment that can help reveal the initial chemistry of the universe.