THE MILLIMETER- AND SUBMILLIMETER-WAVE SPECTRA OF KNOWN AND LIKELY INTERSTELLAR MOLECULES

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Although most organic molecules found in interstellar clouds are unsaturated in nature, saturated and near-saturated molecules are detected in so-called "hot core" sources near the sites of high-mass star formation. Using our fast-scan spectrometer ("FASSST"), we have measured and analyzed many new lines of the rotational-torsional spectra belonging to molecules either known to be or likely to be found in hot cores. The molecule glycolaldehyde (CH_2OHCHO) has only recently been detected in space; the previously unmeasured rest frequencies of the detected lines have been confirmed by our recent measurements. The molecules ethyl formate and methyl ethyl ether are somewhat larger analogues of the abundant hot core molecules methyl formate and dimethyl ether, respectively. Our new laboratory measurements will make it possible to search for these species in space.