

MILLIMETER/SUBMILLIMETER STUDIES OF IONS AND RADICALS OF ASTROPHYSICAL INTEREST USING A HOLLOW CATHODE SPECTROMETER

TREVOR CROSS, NADINE WEHRES, MARY RADHUBER, ANNE CARROLL, SUSANNA L. WIDICUS WEAVER, *Department of Chemistry, Emory University, Atlanta, GA, USA.*

Ions and radicals are important in astrochemical models because they act as key reaction intermediates in the interstellar medium. However, much laboratory work remains to determine the rotational spectra of most ions and radicals of astrophysical interest. This is especially true in the millimeter/submillimeter range, where small sample quantities limit spectral signal intensities. Hollow-cathode discharges have previously been used to create and study ions and radicals of astrophysical interest, but most of these instruments have been coupled with infrared spectrometers. We have developed a hollow-cathode spectrometer to investigate ions and radicals using (sub)millimeter spectroscopy. Spectrometer performance has been benchmarked using the N_2H^+ molecular ion, which has a known rotational spectrum. Initial results from these benchmarking studies, as well as new spectral results for other molecular targets, will be presented.