BROADBAND SCREENING FOR INTERSTELLAR SPECIES: ADDITIONAL LABORATORY MEASUREMENTS AND INTERSTELLAR DETECTION OF ETHANIMINE (CH_3CHNH) IN SGR B2(N)

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As the availability of publicly accessible spectral line surveys from radio astronomy increases, new approaches to the identification of molecules in the interstellar medium are possible. We have performed reaction product screening measurements using broadband rotational spectroscopy to identify potential matches in the laboratory and radio astronomy spectra. A broadband spectrum of an electrical discharge of CH_3CN and H_2S contained several matches to unidentified features in the GBT PRIMOS Survey[a] of Sgr B2(N) that did not have molecular assignments in the radio astronomy spectral catalogs. These transitions have been assigned to the E- and Z-isomers of ethanimine (CH_3CHNH). The rotational spectrum of the E and Z isomers of CH_3CHNH have been reported at mm-wave frequencies in 1980 by Lovas et al.[b] and then in 1981 by Brown et al.[c] The analysis of the rotational spectra of these two isomers has been extended to the microwave frequency region to verify the assignments from the GBT PRIMOS Survey. Combined fits over the range of 8 to 130GHz consisting of data from Lovas et al., broadband CP-FTMW measurements, and cavity double resonance measurements are presented for both isomers. Evidence for the detection of both isomers in Sgr B2(N) is shown along with a discussion of the method of their detection and a brief analysis of possible formation routes.

[a] GBT PRIMOS Survey, http://www.cv.nrao.edu/ aremijan/PRIMOS

[b] F. J. Lovas, R. D. Suenram, D. R. Johnson, F. O. Clark, E. Tiemann, *J. Chem. Phys.*, **72**, 4964-4972, (1980).

[c] R. D. Brown, P. D. Godfrey, D. A. Winkler, *Chem. Phys.*, **59**, 243-247, (1981).