

MICROWAVE SPECTROSCOPY OF ISOTHIAZOLE

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Recently, cyclic molecules such as benzonitrile ^a and 2-cyanocyclopentadiene ^b have been discovered in the interstellar medium. Cyclic molecules with large dipole moments are considered good candidates for future search. Isothiazole (C₃H₃NS) is a five-membered ring molecule with two adjacent hetero atoms, nitrogen and sulfur. Previous studies of millimeter-wave spectroscopy have been conducted below 35 GHz ^{c, d, e}, and data at higher frequencies are desired. Therefore, we performed a new measurement in the region of 40-360 GHz at room temperature.

The ground state, and the vibrational excited states ($\nu_{18} = 1$, $\nu_{17} = 1$, $\nu_{13} = 1$, $\nu_{16} = 1$, $\nu_{12} = 1$, $\nu_{11} = 1$, $\nu_{15} = 1$, $\nu_{10} = 1$, and $\nu_{14} = 1$) were analyzed by using AABS ^f, and SPFIT/SPCAT ^g packages. More than 10000 lines were assigned and analyzed using Watson's A-reduced Hamiltonian.

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