

FOURIER TRANSFORM MICROWAVE SPECTROSCOPIC INVESTIGATION OF CARBONYLSULFIDE LOOSELY BOUND TO TWO HELIUM ATOMS

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Rotational spectra of the van der Waals complex of carbonylsulfide (OCS) loosely bound to two helium atoms were investigated using a cavity Fourier transform microwave (MW) spectrometer and a MW-MW double resonance spectrometer. Seven isotopomers, namely those with $^{16}\text{O}^{12}\text{C}^{32}\text{S}$, $^{16}\text{O}^{12}\text{C}^{34}\text{S}$, $^{16}\text{O}^{13}\text{C}^{32}\text{S}$, $^{16}\text{O}^{12}\text{C}^{33}\text{S}$, $^{18}\text{O}^{13}\text{C}^{32}\text{S}$, $^{16}\text{O}^{13}\text{C}^{34}\text{S}$, and $^{17}\text{O}^{13}\text{C}^{32}\text{S}$ were studied. Nuclear hyperfine structures due to the quadrupolar ^{33}S and ^{17}O nuclei were observed and analyzed. The interesting dynamics associated with this cluster will be presented and discussed.