

MICROWAVE SPECTRA AND STRUCTURES OF OC-AuI AND $^{15}\text{N}_2\text{-CuF}$

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A Fourier Transform microwave spectrometer coupled to a laser ablation source has been used to obtain the pure rotational spectra of OCAuI and $^{15}\text{N}_2\text{-CuF}$. Both molecules are generated via the ablation of a metal rod in the presence of a halogen precursor and are stabilized by supersonic expansion. Both spectra are consistent with linear structures. The rotational constants (B_0 , D_J) of OC-AuI have been measured to a high degree of precision permitting a determination of the molecular structure. The nuclear quadrupole coupling constants of the gold and iodine atoms are consistent with trends identified during studies of other OCMX species ($M=\text{Cu,Ag,Au}$; $X=\text{F,Cl,Br,I}$). An interim assignment of the spectrum of $^{15}\text{N}_2\text{-CuF}$ is made on the basis of lines from a single isotopomer. The nuclear quadrupole coupling constant of the copper atom in $^{15}\text{N}_2\text{-CuF}$ is of comparable magnitude to the value obtained in studies of OC- ^{63}CuF . Lines in the pure rotational spectrum of $^{14}\text{N}_2\text{-CuF}$ are also presented.