MICROWAVE SPECTRA AND STRUCTURES OF OC-AuI AND $^{15}N_2$-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 $^{15}N_2$-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=Cu,Ag,Au; X=F,Cl,Br,I). An interim assignment of the spectrum of $^{15}N_2$-CuF is made on the basis of lines from a single isotopomer. The nuclear quadrupole coupling constant of the copper atom in $^{15}N_2$-CuF is of comparable magnitude to the value obtained in studies of OC-^{63}CuF. Lines in the pure rotational spectrum of $^{14}N_2$-CuF are also presented.