

THE PURE ROTATIONAL SPECTRUM OF CuCH₃

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The pure rotational spectrum of CuCH₃ (\tilde{X}^1A_1) has been measured with millimeter-wave direct absorption techniques in the frequency range of 312 to 543 GHz. This work is the first spectroscopic observation of monomeric CuCH₃ in the gas-phase. Measurements have been made of the two Cu isotopomers, ⁶³Cu and ⁶⁵Cu, in the ground and $\nu_3=1$ (the Cu-C stretch) vibrational states. Copper monomethyl was formed by the reaction of Cu vapor produced in a Broida-type oven and Sn(CH₃)₄. Ten transitions of both isotopomers have been recorded with K components up to 13. Additional work is being conducted on Cu¹³CH₃ and CuCD₃. From this data, spectroscopic constants and structural information are being determined. Establishing the geometry of copper monomethyl is significant for organometallic chemistry.