

QUADRUPOLE COUPLING IN AlOH, AlCH₃, CuCN, CuOH, AND CuSH DETERMINED BY FOURIER TRANSFORM MICROWAVE TECHNIQUES

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The microwave spectra of AlOH ($X^1\Sigma^+$), AlCH₃ (X^1A_1), CuCN ($X^1\Sigma^+$), CuOH (X^1A'), and CuSH (X^1A') have been measured using Fourier transform techniques. Both aluminum species were created in a dc discharge by the reaction of a mixture of Al(CH₃)₃ in argon carrier gas. The copper species were created in a pulsed dc discharge using copper pin electrodes and a gas mixture with cyanogen (CuCN), methanol (CuOH) or H₂S (CuSH). Four rotational transitions for both ⁶³CuCN and ⁶⁵CuCN were measured in the frequency range of 8 to 34 GHz, while the $J = 1 \rightarrow 0$ rotational transitions were measured for the other species. From these data, aluminum and copper quadrupole coupling constants were determined for these species. The results will be discussed with the implications for bonding in these molecules.