MICROWAVE SPECTRUM OF THE FCO RADICAL IN THE $^2A'$ ELECTRONIC GROUND STATE

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The 1_{01}–0_{00}, 2_{02}–1_{01}, and 3_{03}–2_{02} rotational transitions of the FCO radical are observed at 22.3 GHz, 44.5 GHz, and 66.8 GHz, respectively, using a Fourier transform millimeter-wave spectrometer with a pulsed discharge nozzle. The FCO radical is produced by discharging F_2CO diluted in the Ar buffer gas. Twelve fine and hyperfine components for the three transitions are observed, and the effective rotational constant, the centrifugal distortion constant, the spin-rotation constant with its centrifugal correction term, and three hyperfine constants are determined. Furthermore the vibrational satellites for the ν_1, ν_2, ν_3, and $2\nu_3$ states are also observed in the 22.3 GHz region. From the dipolar interaction constants, the principal axis of the dipolar interaction tensor is estimated, and is discussed in relation to the distribution of the unpaired electron.

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