

DISPERSED FLUORESCENCE SPECTROSCOPY OF CHD_2O : A PSEUDO-JAHN-TELLER MOLECULE WITH INTERESTING EMISSION SPECTRA

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Methoxy radical (CH_3O) is an important intermediate in the combustion of hydrocarbon fuels. It is also an interesting target for theoretical studies, since the doubly degenerate ground \tilde{X}^2E electronic state exhibits Jahn-Teller (JT) activity. Upon asymmetric deuteration the electronic state splits into two pseudo-degenerate states. To address the issue of the reduction of symmetry in JT active systems we report the laser excited, dispersed fluorescence (DF) spectra of CHD_2O . A comprehensive model Hamiltonian which includes linear and quadratic JT coupling terms is developed and used to assign ground state vibronic levels up to 2000 cm^{-1} above the vibrationless level. The experimental observations and intensity simulations for 5 DF traces, from the 3^4 , $3^2 5'^1$, $3^2 5''^1$, $3^2 6'^1$, $3^2 6''^1$ vibrational levels of the \tilde{A}^2A' state, will be presented.

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