

FAR-INFRARED LASER STARK SPECTROSCOPY OF METHANOL ISOTOPOMERS

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The Stark spectra of several methanol isotopomers (CH_3OD , $^{13}\text{CD}_3\text{OH}$, CD_3OH , and CD_3OD) have been investigated in the far-infrared region using the HCN and DCN lasers. The spectra were recorded at room temperature for both parallel and perpendicular polarizations using electric fields up to 60 000 V/cm. Numerous transitions have been observed with these laser lines for all isotopomers. The following transitions will be presented: for CH_3OD , $J_K = 6_4 \leftarrow 5_3 E_2 v_t = 0$, $J_K = 18_1 \leftarrow 18_0 E_2 v_t = 1$, $J_K = 14_6 \leftarrow 13_5 A v_t = 1$; for $^{13}\text{CD}_3\text{OH}$, $J_K = 18_2 \leftarrow 17_1 A^- v_t = 0$; and for CD_3OH , $J_K = 14_1 \leftarrow 15_0 E_2 v_t = 1$.

Analysis of the recently recorded FTFIR spectra for CD_3OD has yielded accurate zero-field frequencies belonging to the Q-branch multiplet for $K = 11 \leftarrow 10 E_2 v_t = 0$. By combining these results with the previously reported Stark fields for the $J = 11$ through 19 members, we have determined the electric dipole moment of this important molecular species for the first time.