SUB-DOPPLER HIGH RESOLUTION EXCITATION SPECTROSCOPY OF DIBENZOFURAN

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Dibenzofuran (DF) is one of the prototypical molecules of toxic dioxins as well as dibenzo-p-dioxin.[a] Sub-Doppler high-resolution fluorescence excitation spectra of the $S_1 \leftarrow S_0$ transition of DF have been observed in a collimated molecular beam. Each rotational line was fully resolved and the rotational constants in both the S_0 and S_1 states were determined by the rotational analysis of the 0-0 band (33773.478 cm^{-1}). The DF molecule has shown to be planar both in the S_0 and S_1 states. All of the observed lines were the $\Delta K = \pm 1$ transition (B type). Therefore, the S_1 state is assigned to be the $^1A_1$ state in C_{2v} symmetry.

[a] M. Baba, A. Doi, Y. Tatamitani, S. Kasahara, and H. Katô, *J. Phys. Chem. A*, **108**, 1388 (2004)