ROTATIONALLY RESOLVED LASER INDUCED FLUORESCENCE SPECTROSCOPY OF THE JET-COOLED α,α - DIFLUOROBENZYL RADICAL

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Jet-cooled α,α - difluorobenzyl radical was produced from the 193 nm laser photolysis of α,α,α -bromodifluorotoluene in a pulsed, supersonic expansion. A vibrationally resolved (0.07 cm $^{-1}$ resolution) laser induced fluorescence spectrum in the frequency range 21100 cm^{-1} to 22700 cm^{-1} was obtained with a pulsed dye laser. Rotationally resolved (0.008 cm^{-1} resolution), LIF spectra of the origin band of α, α - difluorobenzyl at 21185 cm^{-1}and four other vibronic bands at 22019, 22034, 22051, and 22136 cm^{-1}were obtained with a pulse-amplified, cw ring dye laser. A rotational analysis of all the bands has been performed and molecular parameters were determined. The results of the analysis will be presented and the implication of the molecular parameters for the geometric structure of the radical will be discussed.