LASER-INDUCED FLUORESCENCE SPECTROSCOPY OF THE BaNC FREE RADICAL IN A SUPERSONIC JET

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Laser induced fluorescence spectra of the BaNC free radical in a supersonic jet have been recorded for the first time. A strong and rather complicated excitation spectrum was observed between 18000-19500 cm^{-1}. A partial assignment has been made but uncertainties remain. In the corresponding dispersed fluorescence spectra, long progressions in the bending mode have been identified. The low frequency of this mode, 70 cm^{-1} for the fundamental, demonstrates that BaNC is relatively floppy in the bending coordinate in its ground electronic state. The intensity profiles of the bending progressions suggest that BaNC undergoes a substantial change in its equilibrium bond angle on electronic excitation. This is most likely due to formation of a bent structure in the excited electronic state.