SPECTROSCOPY AND DYNAMICS OF I_2-Ne[a]

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The spectroscopy and dynamics of I_2-Ne have been re-examined using OODR and fluorescence depletion techniques. Action spectra for I_2(B, ν)-Ne, detected by monitoring the I_2(B, ν-1) predissociation fragments, show that the $\Delta\nu$=-1 predissociation channel is suppressed for levels above ν=33, and closed for $\nu>36$. From these data we obtained a revised estimate for the dissociation energy for I_2(B)-Ne of D_0=57.5 cm^{-1}.

Action spectra for I_2(B, ν=34)-Ne, detected by monitoring I_2(B, ν=33) fragments, revealed a progression of nine intermolecular vibrational levels that had not been observed previously. These levels have been assigned to T-shaped or line ar geometries of I_2(B, ν=34)-Ne. Assignments were based on characteristic vibrational distributions exhibited by the I_2(B, ν-$\Delta\nu$) predissociation fragments. Fluorescence depletion measurements show that all of the bands in the action spectrum originate from a common ground state level. Furthermore, the one atom cage effect fluorescence from I_2(B)-Ne can be depleted by transitions from the zero-point level of I_2(X)-Ne. These observations show that the ground state wa vefunction is delocalized, sampling both the T-shaped and linear configurations of the complex.

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