LASER FLUORESCENCE EXCITATION SPECTROSCOPY OF THE Ar–HCO COMPLEX

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The fluorescence excitation spectrum of the Ar–HCO van der Waals complex in the vicinity of the $\tilde{B}^2A'(000)$ – $\tilde{X}^2A'(000)$ band of free HCO is reported. At least 8 bands associated with the complex have been detected. We observe a spectral shift of the lowest energy Ar–HCO band with respect to the origin of the free HCO transition, and from this estimate the binding energy in the excited electronic state to be at least 10 cm^{-1} greater than that in the ground state. Rotational analysis of some of the bands has been carried out, and average Ar– HCO separations in both electronic states determined. Several of the bands were assigned as hot bands from the first excited bend-stretch level ($K'' = 1$) in the ground electronic state. Decay lifetimes of several Ar– HCO ($\tilde{B}$) levels were measured and were found to be somewhat smaller than those previously measured for free HCO.