THE VIBRATIONAL PREDISSOCIATION AND INTRAMOLECULAR VIBRATIONAL REDISTRIBUTION OF THE $\tilde{A}$ STATE OF THE C_3Ar VAN DER WAALS COMPLEX

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The vibrational predissociation (VP) products of eighteen rovibrational levels of the $\tilde{A}$ state of the C_3Ar complex have been studied.[a,b] These complex levels are associated with the 0 2^- 0, 0 2^+ 0, 0 4^- 0, 0 8^- 0, 0 4^+ 0, and 0 0 2 vibrational levels of $C_3(\tilde{A})$. The distributions of the fragment branching ratios versus the square root of the excess energies (the sum of the translational and rotational energy of the VP product) obtained from these complex levels do not necessarily follow the momentum gap law [c] or energy gap law. [d] Effects such as spectroscopic perturbation,[e] energy gap,[c,d] angular momentum,[a] threshold predissociation,[a] and intramolecular vibrational redistribution[f] on the VP processes have been previously reported. In this work, these effects will be examined and the VP mechanism of the $\tilde{A}$ state of the C_3Ar complex will be proposed.

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