

RE-ANALYSIS OF THE DISPERSED FLUORESCENCE SPECTRA OF THE C₃-RARE GAS ATOM COMPLEXES

YI-JEN WANG, *Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan*; ANTHONY MERER, *Department of Chemistry, University of British Columbia, Vancouver, BC, Canada*; YEN-CHU HSU, *Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan*.

The dispersed fluorescence (DF) spectra of the C₃Ne, C₃Ar, C₃Kr, and C₃Xe complexes near the 0 2⁻ 0- 000, 0 4⁻ 0- 000, 0 2⁺ 0- 000 and 100-000 bands of the $\tilde{A}-\tilde{X}$ system of C₃^a have been revisited. Some of the DF spectra of the Ne and Ar complexes have been recently obtained with a slightly improved resolution of 6-10 cm⁻¹. All the DF spectra have been reassigned as emission from van der Waals (vdW) complexes and C₃ fragments. The optically excited C₃-Rg (Rg = rare-gas atom) complexes fluorescence and/or decay down to slightly lower (about 2-30 cm⁻¹) vibrational levels without changing the internal energy of C₃ and then predissociate via the continua of the nearby vibronic states of C₃. The available dissociation channels depend on the binding energy of the ground electronic state complex. Exceptions have been found at the vdW bands near the 0 4⁻ 0- 000 band of C₃. The binding energies of the ground electronic states of these four complexes will be discussed.

^aG. Zhang, B.-G. Lin, S.-M. Wen, and Y.-C. Hsu, *J. Chem. Phys.* **120**, 3189(2004); J.-M. Chao, K. S. Tham, G. Zhang, A. J. Merer, Y.-C. Hsu, and W.-P. Hu, *J. Chem. Phys.* **134**, 074313(2011)