UNKNOWN BANDS OBSERVED IN THE 266 NM PHOTOLYSIS OF IODOMETHANES

JIA-JEN DU, CHIA-HSIN CHEN, and BOR-CHEN CHANG, *Department of Chemistry, National Central University, 300 Jhongda Road, Jhongli 32001, Taiwan*.

Unknown bands that were not seen in the nascent emission spectra following the near-UV photolysis of bromomathanes ($CHBr_{3-n}Cl_n$, n= 0, 1, 2 and CH_2Br_2)[a] were observed in the 520-820 nm region of the nascent emission spectra following the 266 nm photolysis of iodomethanes (CHI_3, CH_2I_2, and CH_3I) in a slow flow system at ambient temperature.[b] We have dramatically improved the signal-to-noise (S/N) ratios of these unknown bands for further data analyses. Pressure dependence and temporal waveforms of the unknown bands were also recorded. The analyses show that these bands have the vibrational intervals of roughly 400 cm^{-1} and possibly originate from the same upper level with emission to different lower levels. Moreover, the nascent emission spectra of photolyzing the deuterated or ^{13}C-substituted isotopomers (CD_2I_2, CD_3I, and $^{13}CH_2I_2$) were also acquired, and the results indicate that the carrier molecule probably does not contain any hydrogen or carbon atoms. Our current progress will be presented.

[a] S.-X. Yang, G.-Y. Hou, J.-H. Dai, C-.H. Chang, and B.-C. Chang, J. Phys. Chem. A **114**, 4785 (2010).

[b] C.-N. Liu, H.-F. Liao, G.-Y. Hou, S-.X. Yang, and B.-C. Chang, 65^{th} OSU International Symposium on Molecular Spectroscopy, MI10 (2010).