

## FLUORESCENCE EMISSION AND EXCITATION SPECTRA OF PHOTO-FRAGMENTED NITROBENZENE.

CHRISTOPHER J. LUE, CHAKREE TANJAROON, J. BRUCE JOHNSON, SUSAN D. ALLEN, SCOTT W. REEVE, *Arkansas Center for Laser Applications and Science and Department of Chemistry and Physics, P.O. Box 419 State University, AR 72467.*

Upon absorption of a UV photon, nitrobenzene readily dissociates into  $C_6H_5$ ,  $NO_2$ ,  $C_6H_5NO$ ,  $O$ ,  $C_6H_5O$ , and  $NO$  through three different channels.<sup>a</sup> We have recorded high resolution emission and excitation spectra of the  $NO$  resulting from photo-fragmented nitrobenzene using a pulsed picosecond tunable laser and a nanosecond dye laser. Specifically, the lasers probed the  $A^2\Sigma^+ \rightarrow X^2\Pi_{(1/2,3/2)}$   $NO$  band system between 225-260 nm using an one or two color process. In a one color process, the same energy (wavelength) photon is used to dissociate nitrobenzene and excite  $NO$ . In a two color process, photons of a particular energy are used to dissociate the nitrobenzene while photons of a different energy are used to probe the resultant  $NO$ . We have determined the rotational and vibrational temperatures of the nascent  $NO$ . And, we have examined the effect of the relative timing of the two photons on the fluorescence spectra to extract information about the photodissociation dynamics.

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<sup>a</sup>Lin, M.-F.; Lee, Y. T.; Ni, C.-K.; Xu, S. and Lin, M. C. J. Chem. Phys., AIP, 2007, 126.