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Title: FLUORESCENCE EXCITATION-FUNCTION OF NI 1200-ANGSTROM A AND CROSS-SECTIONS FOR FLUORESCENCE PHOTON-PHOTOION COINCIDENCE PRODUCED THROUGH PHOTOEXCITATION OF N2

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Abstract: The absolute fluorescence excitation function of the NI 1200-angstrom emission through photoexcitation of N2 has been measured in the 250-620 angstrom region using synchrotron radiation as the continuous tunable light source. The dissociative photoionization excitation of N2 involving the production of NI 1200-angstrom emission and N+ ion has also been studied at several selected photon wavelengths shortward of 360 angstrom using a coincidence technique to detect the NI 1200-angstrom fluorescence photon and the N+ ion. The maximum quantum yields for producing these processes are of the order of 6×10^{-2} . It was found that dissociative excitation processes can be competitive with the dissociative ionization excitation processes for the multiple-electron transition states. The present results suggest that the electronic states of N2 in the 320-340 angstrom region consist of both ion states of N2+ (Langhoff et al., 1981) and neutral states of N2, which could be the Rydberg states converging to N2++ (Sambe and Ramaker, 1986).

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