

Abstract Submitted
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Study of Metastable N₂ Production Using an N₂ Matrix Detector¹ WILLIAM MCCONKEY, WLADEK KEDZIERSKI, CYRUS CERKAUSKAS, University of Windsor — Metastable N₂ molecules produced in the interaction of electrons of carefully controlled energy with a thermal beam of N₂ in a crossed beam set-up have been studied in the energy range from threshold to 400 eV. The e-beam is pulsed and the metastables produced drift to a solid nitrogen target held at 10 K. Here they form excimers which immediately radiate. The resultant photons are detected using a photomultiplier-filter combination. Time-of-flight techniques are used to separate these photons from prompt photons produced in the initial electron-N₂ collision. The excimer emission is strongest in the green but still significant in the red spectral region. Excitation functions will be presented together with threshold measurements. These help to identify the metastable states being observed and the excitation mechanisms which are responsible.

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