

Abstract Submitted
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Metastable Detection Using Cold Solid Matrices¹ WILLIAM MC-
CONKEY, WLADEK KEDZIERSKI, FATIMAH ALSAIARI, University of Wind-
sor — Metastable particles produced in the interaction of electrons of carefully
controlled energy with thermal gaseous target beams in a crossed beam set-up have
been studied in the energy range from threshold to 300 eV. The e-beam is pulsed
and the metastables produced drift to a solid nitrogen or rare gas detector 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 elec-
tron collision. With N₂ as both target and detection matrix, 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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William McConkey
University of Windsor

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