

ISOTOPIC SELECTIVITY IN THE ELECTRONIC PREDISSOCIATION DYNAMICS OF $CN - Ar_n$ CLUSTERS

YALING CHEN, WILLIAM G. LAWRENCE, and MICHAEL C. HEAVEN, *Department of Chemistry, Emory University, Atlanta, GA 30322.*

$CN - Ar_n$ clusters with an average size of $n=100$, were prepared in a supersonic expansion. Electronic excitation of the clusters to $CN(B^2\Sigma^+)-Ar_n$ was followed by electronic predissociation. In a previous low-resolution study^a, it was proposed that predissociation involved the ejection of free $CN(A^2\Pi)$ from the surface of the cluster. In the present work, OODR techniques were used to demonstrate that free $CN(A^2\Pi)$ was produced. Interestingly, although a natural isotopic mixture of CN was used (1% ^{13}CN), similar quantities of ^{12}CN and ^{13}CN fragments were detected. The product state distributions resulting from predissociation, and the isotopic selectivity of the dynamics will be discussed.

^aH.-S. Lin, M. G. Erickson, Y. Lin, W. H. Basinger, W. G. Lawrence, M. C. Heaven, *Chem. Phys.* **189**, 235 (1994)