

Abstract Submitted  
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**Electron impact dissociative ionization of nitrosyl chloride**

PENGQIAN WANG, Western Illinois University — The study of the dissociation dynamics of molecular ions provides valuable information on the electronic states and the potential energy surfaces of molecules. Electron impact is a widely used method to excite and ionize molecules. In this presentation we report our experiment on electron impact dissociative ionization of nitrosyl chloride (NOCl), studied at an electron beam kinetic energy of 200 eV. The dissociation channels of up to triply ionized NOCl are investigated by two- and three-dimensional covariance mapping methods. The absolute cross sections for the different dissociation channels are measured. The major ionic fragments from the dissociation of singly charged nitrosyl chloride are  $\text{NO}^+$ ,  $\text{N}^+$  and  $\text{O}^+$ . No considerable parent ions of NOCl have been observed. The NOCl dications dissociate mainly into ion pairs, among which the major abundant channels are  $\text{N}^+\text{O}^+$  and  $\text{NO}^+\text{Cl}^+$ . The NOCl trications dissociate into both ion pairs and ion triples. The experimental cross sections are compared with ab initio calculation on the energies of molecular orbitals. Project supported by the WIU-URC grant.

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