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**Dissociation of multiply ionized small hetero-nuclear molecules through electron impact** PENGQIAN WANG, Department of Physics, Western Illinois University — The dissociation of multiply ionized molecules is interesting in the areas such as plasma physics and planetary atmospheric chemistry. The study of the dissociation dynamics of molecular ions provides valuable information on the electronic states and the potential energy surfaces of the ions. Electron impact is a widely used method to excite and ionize molecules because of its simple construction and excellent tunability. Also the absolute cross sections for electron impact ionization of molecules are needed in the areas such as plasma modeling in semiconductor manufacturing. In this presentation we report the dissociation of some small singly to triply ionized hetero-nuclear molecules (OCS, NOCl, COFCl and HNCO), investigated by two- and three-dimensional covariance mapping techniques at an electron energy of 200 eV. The absolute cross sections for the various dissociation channels of up to triply ionized molecules have been measured. The dissociation mechanisms, such as sequential dissociation and metastable decays have been revealed from the covariance maps. Project supported by the WIU-URC grant.

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