K-shell Ionization of Diatomics -Vector Correlation between Electrons and Fragment Ions Imaged with COLTRIMS

R. Dörner, T. Weber, O. Jagutzki, M. Hattass, A. Staudte, A. Nauert, L. Schmidt, M.H. Prior, A.L. Landers, A. Bräuning-Demian, H. Bräuning, C.L. Cocke, T. Osipov, I. Ali, A. Cassimi and H. Schmidt-Böcking

University of Frankfurt, GERMANY

We have used Cold Target Recoil Ion Momentum Spectroscopy (COLTRIMS) to measure the coincident vector momenta of all fragment ions, photo- and auger-electrons from K-shell ionization of CO, N_2 and small hydrocarbons. We present angular distributions of photo and auger electrons in the molecular frame for absorption of linear and circular polarized light. Topics such as circular dichroism, the validity of the axial recoil approximation and the two step model and core hole localization will be discussed guided by our comprehensive data.