Assessing the Feasibility of Using Photoelectron Imaging to Study Electronic Structure in Cu-

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Using photoelectron imaging, O–, O2–, O(CO2)–, O(CO2)2–, 63Cu–, and 65Cu– were probed to gain information about their internal electronic structures. This information may become useful in an eventual study of copper catalysts in the reduction of CO2 using the anion cluster [Cu(CO2)n]–. This study explores the concepts of anisotropy, vibrational structure, electron kinetic energy, and electron angular distribution. The electric discharge source used to produce gaseous anions may have destroyed most of the [Cu(CO2)n]– formed. Although [Cu(CO2)n]– did not appear in the time of flight tube during the experiments, a copper-containing compound that may have the capacity to perform carbon reduction was identified.

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