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Novel applications of X-ray photoelectron spectroscopy on unsupported nanoparticles OLEG KOSTKO, BO XU, MICHAEL I. JACOBS, MUSAHID AHMED, Lawrence Berkeley Natl Lab — X-ray photoelectron spectroscopy (XPS) is a powerful technique for chemical analysis of surfaces. We will present novel results of XPS on unsupported, gas-phase nanoparticles using a velocity-map imaging (VMI) spectrometer. This technique allows for probes of both the surfaces of nanoparticles via XPS as well as their interiors via near edge X-ray absorption fine structure (NEXAFS) spectroscopy. A recent application of this technique has confirmed that arginine's guanidinium group exists in a protonated state even in strongly basic solution. Moreover, the core-level photoelectron spectroscopy can provide information on the effective attenuation length (EAL) of low kinetic energy electrons. This contradictory value is important for determining the probing depth of XPS and in photolithography. A new method for determining EALs will be presented.

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