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Interface Characterization of PEDOT:PSS on ITO Using Photoelectron Spectroscopy LYNETTE KOGLER, University of Nevada, Las Vegas (UNLV), MARC HAEMING, Institute for Photon Science and Synchrotron Radiation (IPS), Karlsruhe Institute of Technology (KIT), CLEMENS HESKE, University of Nevada, Las Vegas (UNLV); Karlsruhe Institute of Technology (KIT) —
Solution-processed organic materials are appealing for use in printable electronics as a means to lower production costs, but precise control of the process is crucial for the achieving the desired properties in the final material. Electronic interface properties depend on both the material and the fabrication process, impacting the development and commercialization of organic electronic materials. This research explores the surfaces of and the interface between two materials widely used in organic electronics: poly(3,4-ethylenedioxythiophene) polystyrene sulfonate (PEDOT:PSS) and indium tin oxide (ITO). Spin coating was used to make thin films of both PEDOT:PSS and ITO, the latter made with a metal-organic precursor solution. PEDOT:PSS films were applied to substrates of solution-processed ITO and commercially produced ITO, and the surfaces and interfaces were characterized using x-ray and ultraviolet photoelectron spectroscopy (XPS and UPS). Inhomogeneities in the PEDOT:PSS films have been observed within individual samples. The impact of these on the surface electronic properties and the implications for organic electronic devices will be discussed.

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