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Depth-resolved ARPES of buried layers and interfaces via soft x-ray standing-wave excited photoemission ALEXANDER GRAY, Stanford Institute for Materials and Energy Sciences, SLAC Linear Accelerator Laboratory, JAN MINAR, Physical Chemistry Institute, Ludwig Maximillian University, LUKASZ PLUCINSKI, Research Center J?lich, MARK HUIJBEN, University of Twente, AARON BOSTWICK, ELI ROTENBERG, Advanced Light Source, LBNL, SEE-HUN YANG, IBM Almaden Research Center, CLAUS SCHNEIDER, Research Center J?lich, HUBERT EBERT, Physical Chemistry Institute, Ludwig Maximillian University, CHARLES FADLEY, Department of Physics, University of California Davis — We introduce a new depth-selective photoemission technique, achieved by combining soft x-ray ARPES with standing-wave (SW) excited photoelectron spectroscopy, wherein the intensity profile of the exciting x-ray radiation is tailored within the sample. This effect is accomplished by setting-up an x-ray standing-wave field within the sample by growing it on a synthetic periodic multilayer mirror substrate, which in first-order Bragg reflection acts as the standing-wave generator. The antinodes of the standing wave function as epicenters for photoemission and can be moved vertically through the buried layers and interfaces by scanning the x-ray incidence angle. The new SW-ARPES technique is then applied to the investigation of the electronic properties of the buried interface within a magnetic tunnel junction La0.7Sr0.3MnO3/SrTiO3. The experimental results are compared to the state-of-art one-step photoemission theory including matrix element effects.

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