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**Enhanced depth-resolution in multilayer nanostructures from standing-wave excited photoemission** SVEN DOERING, DELTA, TU Dortmund, Germany, MIHAELA GORGOI, RUSLAN OVSYANNIKOV, BESSY, Berlin, Germany, SEE-HUN YANG, IBM Almaden, USA, MARK HUIJBEN, LBNL, Berkeley, USA, FRANZ SCHAEFERS, BESSY, Berlin, Germany, DANIEL BUERGLER, CLAUD SCHNEIDER, Forschungszentrum Juelich, Germany, CHARLES S. FADLEY, LBNL, Berkeley, USA; University of California, Davis, USA; Forschungszentrum Juelich, Germany, WALTER BRAUN, BESSY, Berlin, Germany, CARSTEN WESTPHAL, DELTA, TU Dortmund, Germany — The depth resolution for studying buried layers and interfaces in multilayer structures with photoemission can be enhanced by exciting with a standing-wave field created by reflection from a multilayer mirror substrate. Combining experiment with x-ray optical simulations can provide information on depth profiles of different chemical species and their magnetic properties. We have applied this method, using both rocking curves and sample scans over a wedge profile, to several types of samples: bare multilayers of Si/Mo and epitaxial SrTiO<sub>3</sub>/La<sub>0.7</sub>Sr<sub>0.3</sub>MnO<sub>3</sub>, and epitaxial MgO on a wedge of Fe on top of a GaAs/AlAs multilayer. Both soft x-ray excitation at the TU Dortmund DELTA facility and hard x-ray excitation at BESSY II in Berlin have been utilized, with the hard x-rays for the first time permitting the study of deeper layers and interfaces.

Sven Doering  
DELTA, TU Dortmund, Germany

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