

Abstract Submitted
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Disruptive Approach Towards 10nm Spatial Resolution In X-PEEM Using Diamondoids HENDRIK OHLDAG, SLAC National Accelerator Laboratory, HITOSHI ISHIWATA, Stanford University, YVES ACREMANN, ETH Zuerich, OLAV HELLWIG, Hitachi Global Storage Technologies, PETER SCHREINER, Justus-Liebig University, NICK MELOSH, ZHI-XUN SHEN, Stanford University — Diamondoids are unique molecular nano-materials with diamond structure and fascinating new properties such as negative electron affinity (NEA) and short electron mean free paths. A thin layer of diamondoids deposited on a cathode is able to act as an electron monochromator, reducing the energy spread of photo-emitted electrons from a surface. This property can be applied effectively to improve the spatial resolution in x-ray photoemission electron microscopy (X-PEEM), which is limited by chromatic aberration of the electron optics. In this talk we will present X-PEEM measurements reaching the technological relevant spatial resolution of 10-nm without the need of expensive and complex corrective optics. Our results provide a simple approach to image surface chemical and magnetic information at nanometer scales by employing diamondoid. [1] H. Ishiwata et al. Appl. Phys. Lett. **101**, 163101 (2012)

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