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**Local X-ray Magnetic Circular Dichroism of Fe/Cu(111) using Synchrotron STM**[1] HAO CHANG, Ohio University / Advanced Photon Source (APS), Argonne National Lab, ANDREW DILULLO, Center for Nanoscale Materials (CNM), Argonne National Lab, NOZOMI SHIRATO, CNM, Argonne National Lab, MARVIN CUMMINGS, APS, Argonne National Lab, HEATH KERSELL, Ohio University / CNM, Argonne National Lab, DANIEL ROSENMANN, CNM, Argonne National Lab, DEAN MILLER, Electronic Microscopy Center, Argonne National Lab, JOHN FREELAND, APS, Argonne National Lab, SAW-WAI HLA, Ohio University / CNM, Argonne National Lab, VOLKER ROSE, APS, Argonne National Lab — Synchrotron X-ray Scanning Tunneling Microscopy (SX-STM) combines two of the most powerful materials characterization methods; synchrotron X-ray and STM, and it has a great potential to revolutionize X-ray chemical imaging at the atomic limits. Here, we use SX-STM to study the x-ray magnetic circular dichroism (XMCD) on the Fe L2 and L3 edges of a thin iron film deposited on Cu (111) surface in room temperature. Polarization dependent x-ray absorption spectra have been obtained through a specially fabricated tip that captures photo-electrons. Unlike conventional spin-polarized STM, x-ray excitations provide magnetic contrast even with a non-magnetic tip. Intensity changes in the photo-excited current indicate chemical variations within a single magnetic Fe domain thereby opening up exciting opportunities to study local magnetic properties of materials using the SX-STM-XMCD method.

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