Abstract Submitted
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X-ray nanotomography study of insulator-coated tips with sub-micron conducting apex for the combination of scanning probe microscopy and synchrotron radiation[1] VOLKER ROSE, Argonne National Laboratory, TEYU CHIEN, Northwestern University, JOHN FREELAND, DANIEL ROSENMANN, ROBERT WINARSKI, Argonne National Laboratory — Hard X-ray nanotomography provides an important three-dimensional view of insulator-coated "smart tips" that can be utilized for modern emerging scanning probe techniques. Tips, entirely coated by an insulating SiO2 film except at the very tip apex, are fabricated by means of electron beam physical vapor deposition, focused ion beam milling and ion beam-stimulated oxide growth. Although x-ray tomography studies confirm the structural integrity of the oxide film, transport measurements suggest the presence of defect-induced states in the SiO2 film [1]. The development of insulator-coated tips can facilitate nanoscale analysis with electronic, chemical, and magnetic contrast by synchrotron-based scanning probe microscopy.

[1] Rose at al., Appl. Phys. Lett. 99, 173102 (2011).

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