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New Technique for Fabrication of Scanning Single-Electron Transistor Microscopy Tips ERIC GOODWIN, STUART TESSMER, Michigan State University — Fabrication of glass tips for Scanning Single-Electron Transistor Microscopy (SSETM) can be expensive, time consuming, and inconsistent. Various techniques have been tried, with varying levels of success in regards to cost and reproducibility. The main requirement for SSETM tips is to have a sharp tip ending in a micron-scale flat face to allow for deposition of a quantum dot. Drawing inspiration from methods used to create tips from optical fibers for Near-Field Scanning Optical Microscopes, our group has come up with a quick and cost effective process for creating SSETM tips. By utilizing hydrofluoric acid to etch the tips and oleic acid to guide the etch profile, optical fiber tips with appropriate shaping can be rapidly prepared. Once etched, electric leads are thermally evaporated onto each side of the tip, while an aluminum quantum dot is evaporated onto the face. Preliminary results using various metals, oxide layers, and lead thicknesses have proven promising.

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