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Exfoliated Bi2Sr2CaCu2O8+x thin flakes for electronic transport experiments MENYOUNG LEE, MICHAEL NEUMANN, DAVID GOLDHABER-GORDON, Stanford University, LUKE SANDILANDS, KENNETH BURCH, University of Toronto, ZHIJUN XU, ALINA YANG, GENDA GU, Brookhaven National Lab — Bismuth-based cuprates are the model high-temperature superconductor of choice for experimental probes that are spectroscopic and sensitive to the surface (STM, ARPES), while studies of transport properties have typically focused on rare-earth element-based compounds. We will first discuss preparation methods for and characterization of tape-exfoliated single crystal thin (few to tens nm) flakes of the $Bi_2Sr_2CaCu_2O_{8+x}$ compound, in particular focusing on protocols designed to produce exposed conducting surfaces that are atomically smooth over several microns, and addressing the factors that influence the surface morphology and Raman scattering properties of BSCCO thin flakes. In addition, data from electronic transport measurements, aimed at observing a modulation of critical temperature and an insulator to superconductor transition as a function of hole density in the compound, will be presented.

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