

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Effects of Morphology on the Electronic Properties of Nanolithographic Thin Pb Wires U. KEMIKTARAK, Physics Dept., Boston University, Boston, MA, K.C. SCHWAB, Laboratory for Physical Sciences, College Park, MD , KAMIL EKINCI, Dept. of Aerospace and Mechanical Eng., Boston University, Boston, MA — Miniaturization of superconducting wires is being pursued aggressively for a number of applications as well as for studying the fundamentals of superconductivity in 1-dimensional systems. In this work, we have investigated the conductance of Pb wires with submicron widths and thicknesses as a function of temperature and wire morphology. Our wires are fabricated by electron beam lithography and thermal Pb deposition. In an effort to vary the morphology, we have deposited Pb upon substrates held at room temperature and at 77 K. We shall present from our latest measurements and discuss the effects of morphology upon the electronic properties of these wires, with particular emphasis on superconducting behavior. The authors gratefully acknowledge support from the NSF under grant No. 0315662.

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Date submitted: 01 Dec 2004

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