

Abstract Submitted
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Electron transport study of surface-supported nanostructures with a quadraprobe scanning tunneling microscope¹ TAE-HWAN KIM, JOHN WENDELKEN, AN-PING LI, Oak Ridge National Laboratory — We report the study of the electron transport and structural properties of nanostructured materials with a low temperature quadraprobe scanning tunneling microscope (STM) system. Self-assembled nanostructures including epitaxially grown nanowires and atomic chains have been fabricated by doping with small amounts of metal atoms (Au, Gd, Y, Ag) on a Si surface. The local electronic states and transport properties have been characterized in situ. This research took the advantage of our recent development of the quadraprobe STM system. As a “nano” version of a four-probe station, the quadraprobe STM system provides an integrated research platform with a low temperature four-probe STM, a molecular-beam epitaxy growth chamber, a high resolution scanning electron microscope, and a scanning Auger microscope. The four STM probes can be driven independently with sub-nanometer precision, enabling conventional STM imaging and four-point electrical transport study of surface electronic systems and nanostructured materials at temperatures down to 10 K. *Email: apli@ornl.gov

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Taehwan Kim
Oak Ridge National Laboratory

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