Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Shear stress measurements on InAs nanowires by AFM manipulation HAKAN PETTERSSON, Halmstad University, M. BORDAG, Leipzig University, A. RIBAYROL, G. CONANCHE, L.E. FRÖBERG, L. SAMUELSON, L. MONTELIUS, Lunds University — In this paper, we report on a novel approach to measure shear stress between elastic nanowires and a SiO_2 surface. The method is based on the fact that the curvature of an elastically deformed nanowire pinned to a flat surface contains information about the maximal static friction force, i.e., the shear stress between the wire and the surface. At rest, the deformed wire is kept in equilibrium by counterbalancing static friction forces and restoring elastic forces. In the present work, $InAs$ nanowires are bent in a controlled manner using the tip of an atomic force microscope (AFM). After the manipulation, the curvature of the most bent state can be determined from AFM micrographs. Assuming bulk values for the Young's modulus, the shear stress can be obtained from straight- forward analyses according to standard theory of elasticity.

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Date submitted: 04 Dec 2006 Electronic form version 1.4