

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**The Mechanical Properties of Graphene Oxide and Graphene Nanoribbons Probed by Single-Molecule Manipulation** SITARA WIJERATNE, CHING-HWA KIANG, Department of Physics and Astronomy, Rice University, WEI LU, AMANDA HIGGINBOTHAM, JAMES M. TOUR, Department of Chemistry, Rice University — The discovery of free standing graphene has attracted significant attention because of its band structure and its relevance to quantum electrodynamics in solid state systems. Graphene oxide nanoribbons (GONR), produced by lengthwise oxidative cutting of multiwalled carbon nanotubes (MWCNTs), have similar electronic structure to graphene oxide produced by chemical exfoliation from graphite. We use the atomic force microscopy (AFM) to pull single graphene oxide nanoribbons and their reduction products, graphene nanoribbons, in solution to study their mechanical properties. We found that the elasticity of the nanoribbons can be explained by the worm-like chain (WLC) model, which is used to explain the biopolymer behavior.

Sitara Wijeratne  
Department of Physics and Astronomy, Rice University

Date submitted: 02 Dec 2009

Electronic form version 1.4