Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Electron transport measurement of graphene under one-dimensional local strain A. KANDA, H. TOMORI, Y. NUKUI, Y. TOYOTA, H. KARUBE, S. NIHEI, University of Tsukuba and CREST-JST, Y. OOTUKA, University of Tsukuba, K. TSUKAGOSHI, MANA-NIMS and CREST-JST, M. HAYASHI, Akita University, H. YOSHIOKA, Nara Women's University — Introducing a nonuniform strain is a promising technique for controlling electron transport in graphene. Theories have predicted the formation of band gaps with properly designed strain; however, reports on experimental transport properties of strained graphene are quite limited. In this presentation, we report the measurement of electron transport in graphene under one-dimensional local strain. The local strain was introduced by inserting a one-dimensional dielectric nanorod between a graphene film and its substrate, using a technique reported in [1]. We found that the conductivity across the strained region decreases around the Dirac point in comparison with the unstrained graphene attached to the substrate, although the mobility far from the Dirac point is almost unchanged. The results cannot be explained by the change of the capacitance between the graphene film and the gate electrode, indicating that the strain affects the electron transport. The experimental results on strained and unstrained graphene devices from the same graphene film as well as the numerical results will be discussed.

[1] H. Tomori *et al.*, Appl. Phys. Express **4**, 075102 (2011).

Akinobu Kanda
University of Tsukuba

Date submitted: 28 Nov 2011 Electronic form version 1.4