Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Measurements of Thermal Conductivity and Thermopower in Suspended Single and Few Layer Graphene INSUN JO, Department of Physics, The University of Texas at Austin, Austin, TX78712, USA, MICHAEL PETTES, Department of Mechanical Engineering, The University of Texas at Austin, Austin, TX78712, USA, ZHEN YAO, Department of Physics, The University of Texas at Austin, Austin, TX78712, USA, LI SHI, Department of Mechanical Engineering, The University of Texas at Austin, Austin, TX78712, USA — Detailed study on thermal conductivity and thermopower in suspended single and few layer graphene has been hampered by experimental challenges mainly due to the difficulty of obtaining suspended samples larger than a few micrometers. Here, we report on a high-yield process for the fabrication of suspended graphene samples of one to few atomic layers on micro-thermometer devices, which allow us to investigate electrical and thermal conductivity, and thermopower from 4 K to 500 K. We find that the thermal conductivity values in suspended graphene are largely limited by scattering with surface residues in as-made devices, and they can reach values comparable to those of bulk graphite after thorough cleaning of the sample surfaces. In addition, temperature-dependent thermopower results in suspended graphene are reported.

Insun Jo
Department of Pyusics, The University of Texas at Austin

Date submitted: 23 Nov 2011 Electronic form version 1.4