

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Piezoresistivity of graphene-based thin films RAHUL RAVEENDRAN NAIR, K.S. NAVOSELOV, DA JIANG, SOREN NEUBECK, LEONID PONOMARENKO, A.K. GEIM, School of Physics and Astronomy, University of Manchester — Large-scale production of graphene films is of particular interest because of graphene's extraordinary electronic, mechanical and optical properties. We report the properties of graphene films produced by spraying or spinning of a graphene suspension obtained by ultrasound cleavage of graphite in organic solvents, the route that does not involve graphene oxide [1]. Wafer-scale uniform films of overlapping submicron graphene crystallites were made on transparent substrates and exhibited sheet resistivity of a few $k\Omega$ with more than 80% transmission with respect to white light. Electric measurements and Raman studies suggest that the films are p-doped. In particular, we have investigated the piezoresistive effect in such films by depositing them on flexible plastic substrates. Fully reversible changes in the resistance were observed as a function of strain that could exceed 8% before the films started losing their continuity. The piezoresistive gauge factor was up to ~ 30 for our films. [1] Peter Blake *et al.*, *Nano Lett.* 2008, 8,1704-1708.

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Date submitted: 22 Nov 2008

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