

Abstract Submitted
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Transfer of Graphene to Alternative Substrates¹ TRACY MOORE, J.H. CHEN, D.R. HINES, E.D. WILLIAMS, University of Maryland, J. SIMSPON, A.R.H. WALKER, NIST — Graphene transport properties are limited by charge defects in SiO₂, and by large charge density due strong interaction with SiC. We have investigated the transfer of graphene from one substrate to another using high pressures and temperatures to achieve control of the substrate interactions and thus their effects on graphene. The direct transfer from HOPG to alternative substrates PET and PMMA yields mostly multilayer, opaque graphite flakes. Raman signatures of the thinner, translucent flakes on PMMA can be clearly distinguished from the PMMA spectra and show a downshift in the G' peak that occurs around 2700 cm⁻¹ and a relative intensity of G to G' peak of approximately one; characteristics of graphene spectra. In addition the transfer from SiO₂ to alternative substrates occurs readily for PET substrates, and infrequently for PMMA substrates with thicker flakes transferring more readily than thin flakes. Graphene transfer from 1) direct HOPG, 2) flakes on SiO₂, and 3) the possibility of direct transfer from epitaxial graphene on SiC will be presented, along with the resulting device characteristics.

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