

Abstract Submitted
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Simultaneous Raman and electrical transport measurements of disordered graphene in situ in ultra-high vacuum¹

JACOB TOSADO, University of Maryland, VINCE BALLAROTTO, Laboratory for Physical Sciences, WILLIAM G. CULLEN, MICHAEL S. FUHRER, University of Maryland — Resonant Raman scattering in graphene gives unique information about disorder, as the D peak is observed only in the presence of disorder which produces intervalley scattering of the electrons. The nature of disorder in graphene prepared by various techniques and on various substrates of the subject of significant research, with significant attention being paid to scattering by charged impurities; resonant scatterers due to vacancies, chemisorbed impurities, etc.; and non-resonant short-range impurities. In order to study the effect of these types of disorder on graphene's electronic properties and Raman spectra simultaneously, we have developed a facility combining thermal deposition, ion bombardment, electrical transport and micro-Raman measurements in an ultra high vacuum environment. We will discuss the capabilities of this facility and present the results of Raman and electrical transport measurements on controllably disordered graphene.

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