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Micro-Raman imaging spectroscopy of suspended graphene J. R. SIMPSON, Towson University, Towson, MD 21252, A. R. HIGHT WALKER, Physics Lab, National Institute of Standards and Technology, Gaithersburg, MD 20899 — The recent observation¹ of ultrahigh mobility, $> 200,000 \text{ cm}^2\text{V}^{-1}\text{s}^{-1}$, in suspended and annealed graphene underscores the importance of environmental effects on graphene electronic properties. We compare the Raman spectra of graphene and chemically modified graphite oxide both in contact with and suspended above substrate surfaces. Graphene samples were prepared using micromechanical cleavage and chemically modified² graphite flakes on silicon substrates with a thin, $\approx 300 \text{ nm}$, silicon oxide coating. Reactive ion etching patterns the substrates with circular holes, approximately $3 - 7 \mu\text{m}$ in diameter, etched through the oxide layer. We present spatially-resolved Raman spectra obtained in a scanning, confocal microscope configuration using 632.8 nm and 514.5 nm laser excitation.

¹K. I. Bolotin *et al.*, Solid State Commun. **146**, 351 (2008).

²J. T. Robinson *et al.*, Nano Lett. **8**, 3441 (2008).

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