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Chemical exfoliation procedure for graphene deposition[1]
MICHELLE ZIMMERMANN, MAHITO YAMAMOTO, BRAD CONRAD, JIAN-HAO CHEN, ELLEN WILLIAMS, Department of Physics and University of Maryland Materials Research Science and Engineering Center, University of Maryland, College Park, MD 20742 — Mechanical exfoliation techniques for graphene production yield flakes which are too small and too rare for feasible large-scale experiments or commercial device fabrication. We present a systematic evaluation of the steps involved in chemical exfoliation of graphite to generate suspended graphene sheets. The approach is based on the solubilizing of a graphite intercalation compound in a polar solvent, analogous to solubilization of CNT salts [1] and recently reported for graphene [2]. A shift in the Raman G peak of graphite provides a metric of the degree of intercalation of lithium and naphthalene into graphite flakes. To optimize deposition onto SiO_2 substrates, we compare drop casting, spin-coating and dip-coating, as well as the effects of different surface treatments (UV ozone, oxygen plasma, functionalization). [1] A. Pénicaud, et al., *J. Am. Chem. Soc.* **127**, 8 (2005). [2] C. Vallés, et al., *J. Am. Chem. Soc.* **130**, 15802 (2008).

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Michelle Zimmermann
Dept of Physics and University of Maryland Materials Research Science and Engineering Center, University of Maryland, College Park, MD 20742

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