

Abstract Submitted
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Graphene Made Easy: A Simple Method to Grow Large-Area Single-Layer Graphene on Copper Foils S. GADIPELLI, UPENN/NIST, I. CALIZO, NIST, J. FORD, UPENN/NIST, G. CHENG, A. H. WALKER, NIST, T. YILDIRIM¹, NIST/UPENN — In order to realize the remarkable properties of graphene in practical devices, an easy, scalable, and inexpensive synthesis method is necessary. Currently the most promising approach is through chemical vapor deposition (CVD). However, this method requires expensive CVD furnaces and flow controllers, as well as a large amount of explosive gases (H_2 and CH_4). Consequently, it is desirable to establish alternative methods to grow large-area, single-layer graphene that are simple and that can be carried out in an ordinary research laboratory. In this talk, we will discuss our systematic study of the parameters that are critical for high-quality, single-layer graphene formation. Our results not only shed light on the graphene growth mechanism, but have also yielded a straightforward synthesis method that requires neither H_2/CH_4 nor any special CVD equipment. We have prepared graphene samples at the inch scale that have been characterized by Raman spectroscopy, optical transmittance, and sheet resistance measurements. Our method is simple, safe, and economical and will be of value to both fundamental researchers and nanodevice engineers.

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