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Growth and Characterization of CVD Graphene ALFONSO REINA, XIAOTING JIA, JOHN HO, DANIEL NEZICH, HYUNGBIN SON, VLADIMIR BULOVIC, MILDRED S. DRESSELHAUS, JING KONG, Massachusetts Institute of Technology — Large-area ($\sim\text{cm}^2$) graphene films are grown by ambient pressure chemical vapor deposition (CVD) on evaporated Ni films. We show that proper engineering of the Ni film properties, such as grain structure and surface roughness, and the use of ultra-diluted hydrocarbon flow yield films consisting of 1 to ~ 10 graphene layers in thickness. Furthermore, the produced graphene can be transferred, by wet-etching the underlying Ni, to a variety of substrates allowing graphene coverage over large areas on different materials such as glass, polymers or other semiconductors. Raman Spectroscopy, electron diffraction and transmission electron microscopy suggest disordered stacking of regions with multilayer graphene. Growth mechanisms will also be discussed. Opto-electronic properties and ambipolar transfer characteristics of the produced material is also demonstrated.

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