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Transport on gated C-face epitaxial graphene

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We present transport and electronic properties on single layer and multilayered epitaxial graphene layers grown on 4H-SiC-(000-1) (C-face) by the Confinement Controlled Sublimation method [1]. Single layers present all the characteristics of isolated graphene layers. In particular quantum Hall effect plateaus develop at half-integer values, concomitant with vanishing longitudinal resistivity. High mobility up to μ=14,000 cm^2/V.s at 300 K is achieved despite contamination and substrate steps. Multilayered epitaxial graphene (MEG) on the C-face consists of non-graphitic rotationally stacked graphene layers, exhibiting the band structure of a single graphene layer [2]. Transport in MEG presents also graphene characteristics. In some cases transport anomalies are observed indicating a much richer picture.

[1] R. Ming et al. Materials Science and Engineering – Reports (submitted)
[2] M. Sprinkle et al, Phys. Rev. Lett. 103, 226803 (2009).