Electronic Supplementary Material (ESI) for RSC Advances

Electronic Supplementary Information

Gas transport controlled synthesis of graphene by employing a micro-meter scale gap jig

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Raman spectra were recorded for the graphene sample after the transfer. Using extended growth times, such as 30 min, continuous graphene films were successfully grown on the entire copper foil. The full width at half maximum of the 2D peak was 37 cm^{-1}, indicating a high-quality single layer of graphene (Fig. S1 (a)). For the case of partially grown graphene islands, the optical microscopy images were almost the same as the SEM images before the transfer (Fig. S1 (b) and (c)).

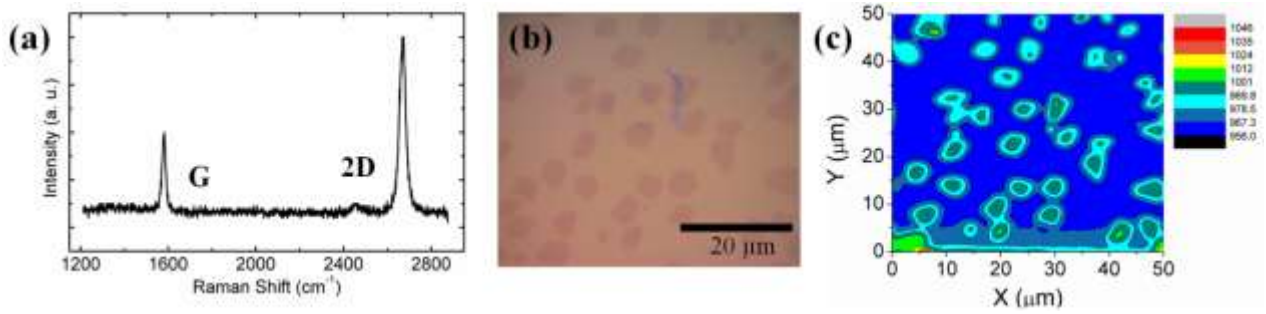

Fig. S1 - (a) Typical Raman spectrum of graphene fully grown on Cu foil after the transfer to a SiO_2 (285 nm)/Si substrate when the jig is applied after an extended growth time of 30 min. (b) Optical microscope image of graphene islands after transfer. (c) G-band micro-Raman mapping analysis over a 50 × 50 μm area with a step size of 1 μm for the area depicted in (b). A 532-nm DSSP laser and X100 objective lens were used.

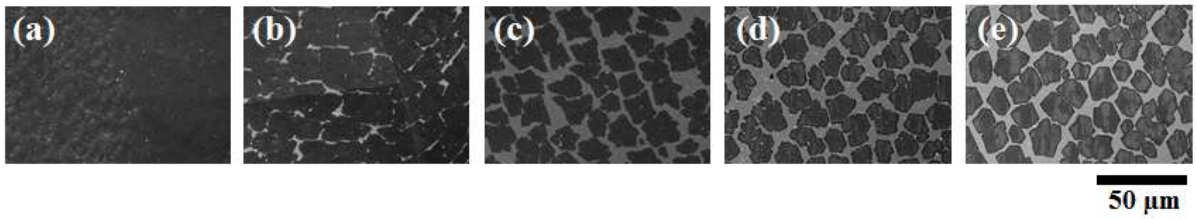

Fig. S2 - SEM images of graphene grown on Cu foil when a micrometer-gap jig is applied for gas transport control. SEM images of (a) the fully grown graphene film on the jig exterior, (b) 5 mm from the jig entrance, (c) 10 mm from the jig entrance, (d) 15 mm from the jig entrance, and (e) 20 mm from the jig entrance. CH_4 and H_2 flux: 2 sccm and 6 sccm, respectively. Scale bar indicates 50 μm.