Supplementary Data

On the nucleation of graphene in chemical vapor deposition

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Fig. S-1 SIMS analysis of C⁺ and Cu⁺ species as a function of etching time for the as-sputtered Cu film deposited on c-plane Al₂O₃. The data shows that the 500 µm thick Cu film is almost etched away after 100 min, and signal of C⁺ species is at a minimum level. We also studied C⁻ species, which is more sensitive than C⁺, but only minimum level C⁻ was detected (not shown here).
Fig. S-2 (a) Optical micrograph of transferred graphene film from the Cu/c-plane Al₂O₃ with the $^{13}$CH₄-CVD at 900°C ($^{13}$CH₄/H₂/Ar = 20/20/400 sccm). (b) Representative Raman spectra measured at 2 random points of graphene film (a), which indicate the separated $^{12}$C- and $^{13}$C-graphene domains. This suggests the different $^{12}$C source from the gas-supplied $^{13}$CH₄.