

Supplementary Information

Large-Scale and Patternable Graphene: Direct Transformation of Amorphous Carbon Film into Graphene/Graphite on Insulators via Cu mediation engineering and its Application on All-Carbon based Device

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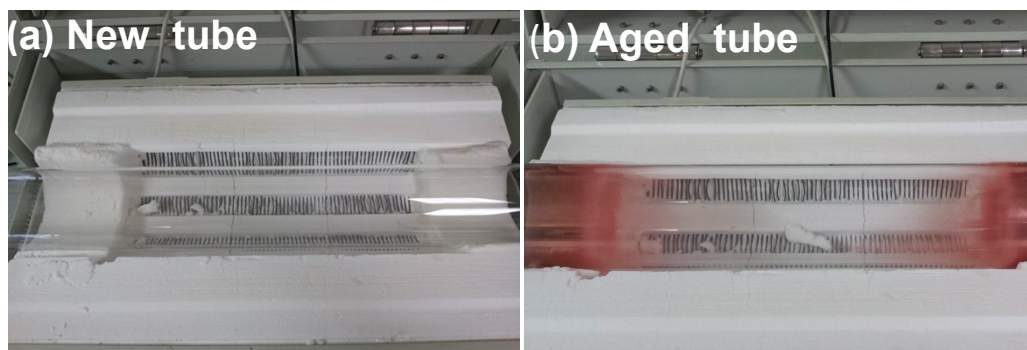


Figure S1 Optical images of (a) a new tube and (b) an aged tube after annealing of Cu foil at 1050 °C for 2 h.

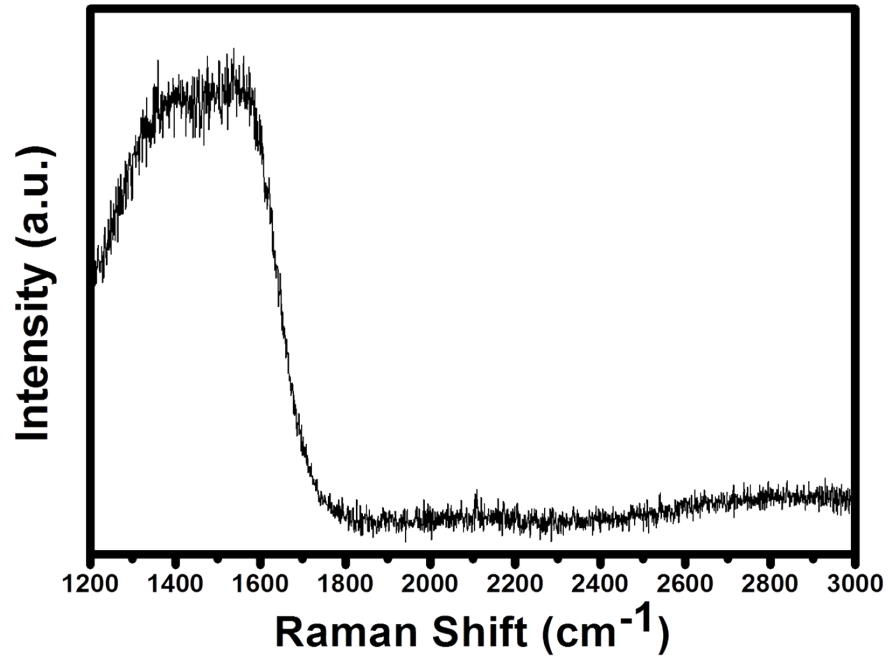


Figure S2 Raman spectrum of the as-deposited a-C film.

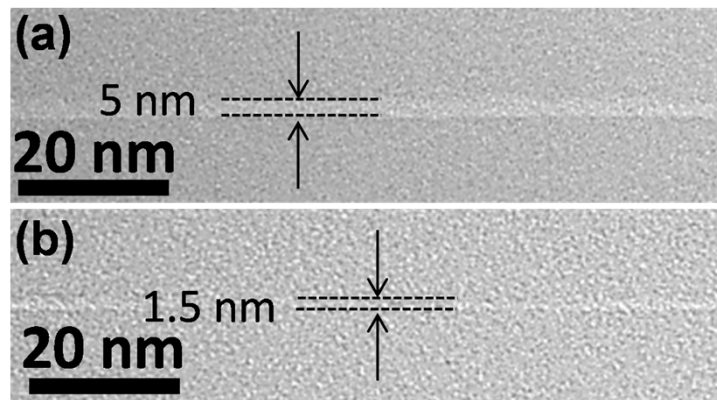


Figure S3 High resolution TEM iamges of (a) 5 nm-thick pre-deposited a-C layer before annealing and (b) after annealing at a temperature at 1000 °C.

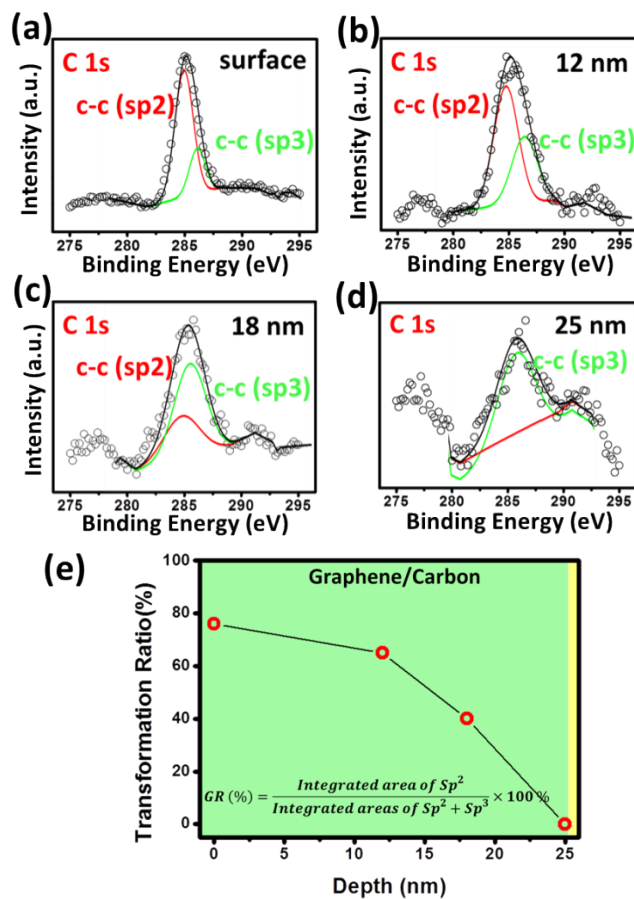


Figure S4 (a-d) XPS depth profile of 25 nm pre-deposited amorphous carbon after annealing in the presence of Cu vapor. (e) The transformation ratio dependence with depth below surface.

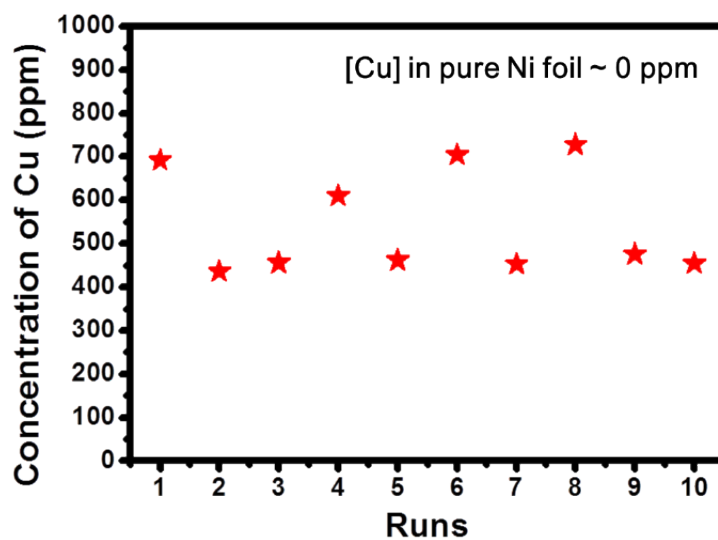


Figure S5 ICP-MS results of Cu gaseous molecules captured by Ni foil at 1020 °C.

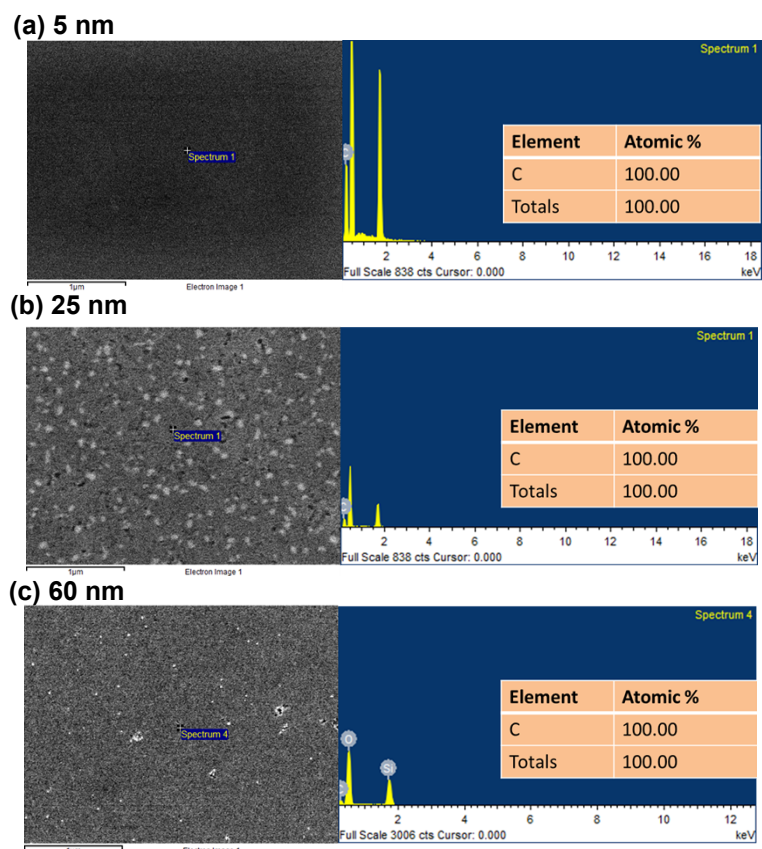


Figure S6 SEM-EDX of samples with (a) 5 nm, (b) 25 nm, and (c) 60 nm-thick pre-deposited a-C films.

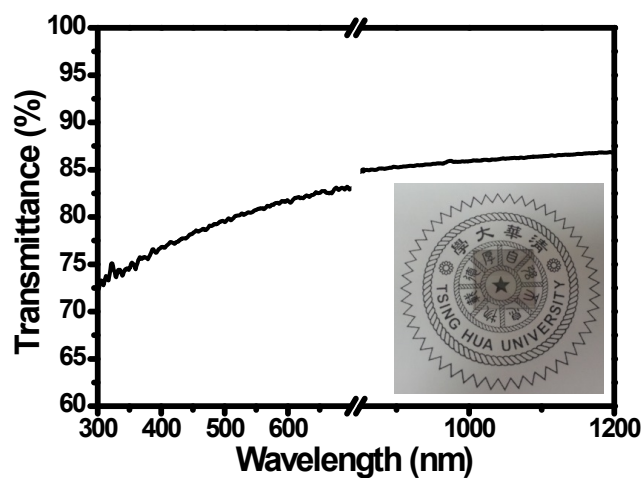


Figure S7 UV-Vis spectrum of graphene transformed directly on quartz