Supplementary Information for:

## Gaseous Product Mixture from Fischer-Tropsch Synthesis as an Efficient Carbon Source for Low Temperature CVD Growth of Carbon Nanotube Carpets

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**Figure S1.** Raman spectra of CNT carpets from Fe-Cu catalysts with the sequence of Fe and Cu depositions reversed to investigate the effect of the different stacking order of metallic layers on CNT carpet growth properties. Fe-Cu/AlxOy catalysts with a thin Cu layer sandwiched between Fe and AlxOy show higher  $I_G/I_D$  ratio



**Figure S2.** XPS survey scans of Fe (A) and Fe-Cu catalysts with the optimal Cu thickness after CNT carpet growth. The nominal thickness of the Fe,  $Al_xO_y$ , and Cu films were 1.3, 30, and 0.12 nm, respectively; all the films were deposited by an ion beam sputter deposition and etching system.



**Figure S3.** Raman spectra of CNT carpets grown on a 2 nm-thick Fe catalyst deposited directly on Al foil (A) and on Al foil with a 30 nm-thick amorphous  $Al_xO_y$  barrier layer (B) at 450°C.



Figure S4. Temperature profile of the CVD reactor during low-temperature growth at 400°C.



Figure S5. Temperature profile of the CVD reactor during low-temperature growth at 500°C.



Figure S6. TEM images of CNT carpets grown from Fe (A and B,) and Fe-Cu (C and D) at 400°C.



Figure S7. TEM images of CNT carpets grown from Fe (A, B, and C) and Fe-Cu (D, E, and F) at 500°C.