Tempered direct growth of ultra-thin double-walled carbon nanotubes: supplementary information†

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Electronic Supplementary Information (ESI) available: [details of any supplementary information available should be included here]. See DOI: 10.1039/b000000x/
Fig. S1 RBM region of Raman spectra of pristine eDIPS-1.7 nm SWCNTs and annealed sample at 1500 °C excited by a 568 nm laser.

Fig. S2 RBM region of Raman spectra of annealed (a) and pristine (b) eDIPS-1.7 nm SWCNTs excited by multi-frequency Raman spectroscopy.
Fig. S3 Raman spectra of annealed samples at different temperatures excited by a 568 nm laser. (a) RBM, (b) D and G-bands, (c) 2D–band.
Fig. S4 RBM region of Raman spectra of annealed (a) and pristine (b) eDIPS-1.3 nm SWCNTs excited by multi-frequency Raman spectroscopy.
**Fig. S5** Raman spectra of the pristine HiPco SWCNTs and annealed sample at 1500 °C excited by 568 and 633 nm lasers. (a) RBM, (b) D and G-bands, (c) 2D–band.

**Fig. S6** TEM image of eDIPS-1.3 SWCNTs annealed at 1500 °C. The sample has high purity. Only very few catalyst particles could be observed.
**Fig. S7** Bundles of double-walled carbon nanotubes. The arrow in (b) indicates the transformation position between the double-walled carbon nanotube and triple-walled carbon nanotube with an addition inner tube.

**Fig. S8** HRTEM images of several isolated double-walled carbon nanotubes.
Fig. S9 Optical absorption spectra indicate the high-purity of separated metallic and semiconducting SWCNTs.

Fig. S10 RBM region of Raman spectra of annealed semiconducting arc-discharge SWCNTs at 1500 °C excited by multi-frequency Raman spectroscopy.
Fig. S11 RBM region of Raman spectra of annealed metallic arc-discharge SWCNTs at 1500 °C excited by multi-frequency Raman spectroscopy.