

## Supplementary information

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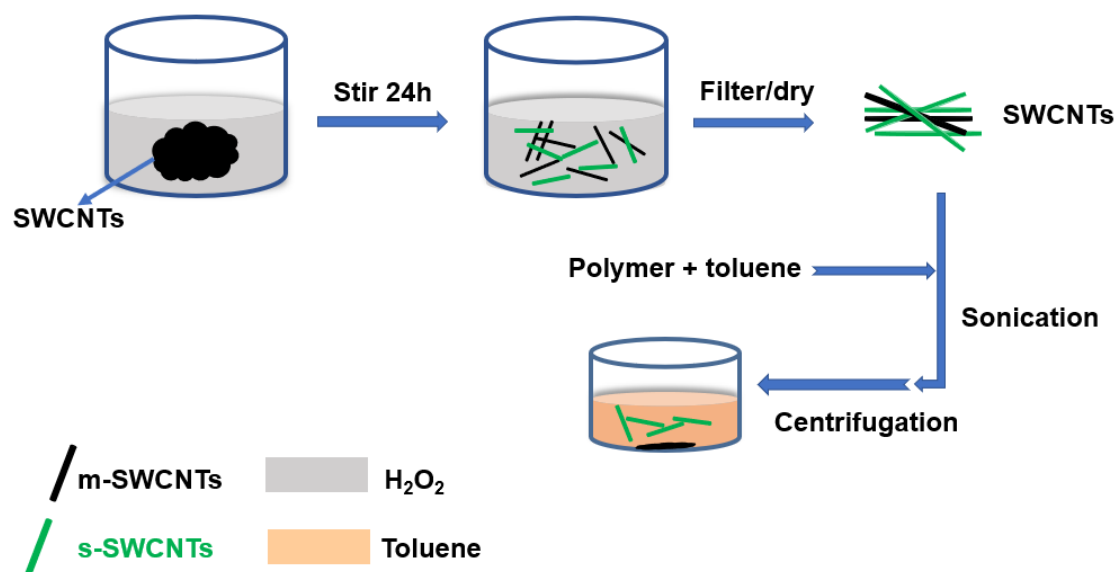


Figure S1. Schematic showing s-SWCNT separation process using the conjugated rr-P3DDT polymer wrapping method.

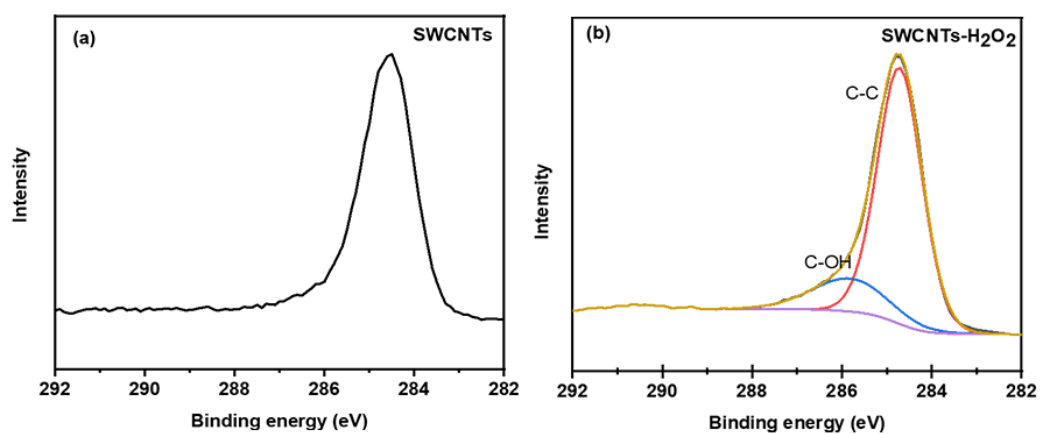


Figure S2. XPS C 1s spectra of (a) untreated SWCNTs, and (b) treated SWCNTs with H<sub>2</sub>O<sub>2</sub>.

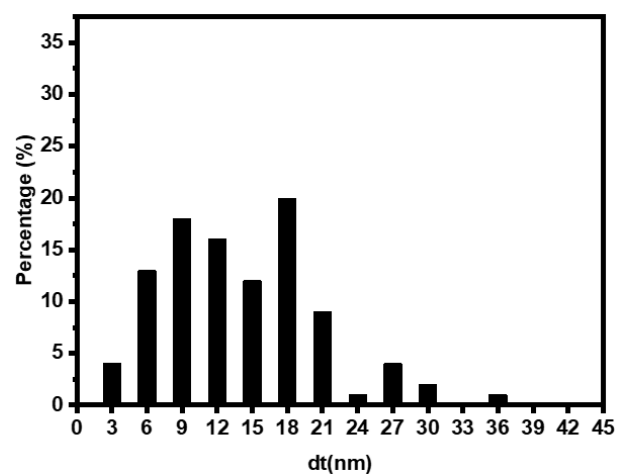


Figure S3. Statistics of bundle diameter in the raw SWCNTs.

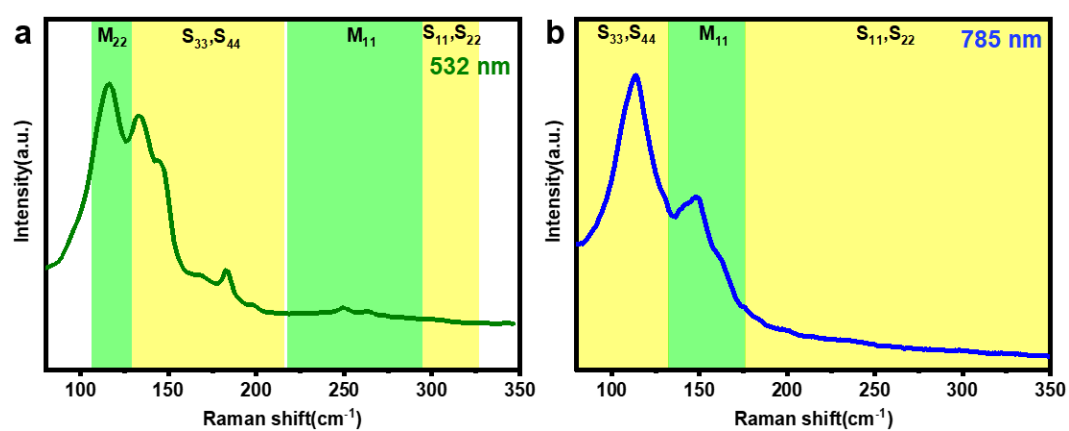


Figure S4. Radial breathing mode (RBM) Raman spectra of SWCNTs excited with (a) 532 nm and (b) 785 nm lasers.

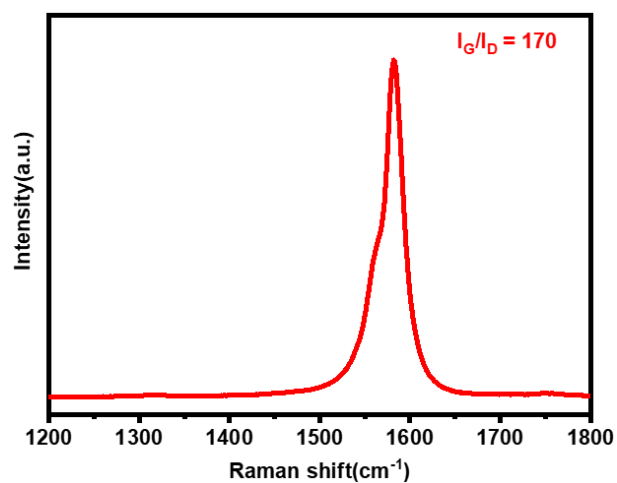


Figure S5. Raman spectra of SWCNTs excited with 633 nm laser.

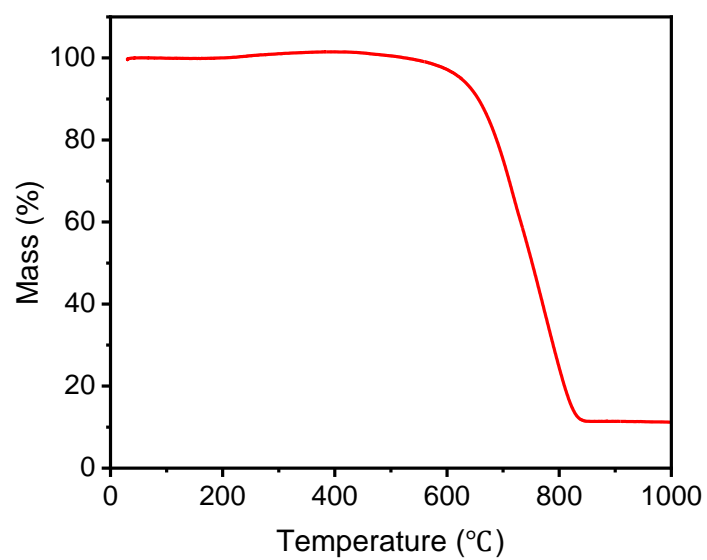


Figure S6. Thermogravimetric curve of the untreated SWCNTs.

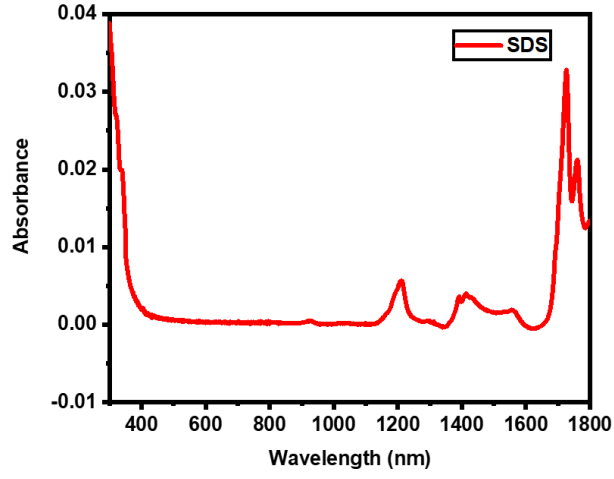


Figure S7. The absorption spectra of SDS.

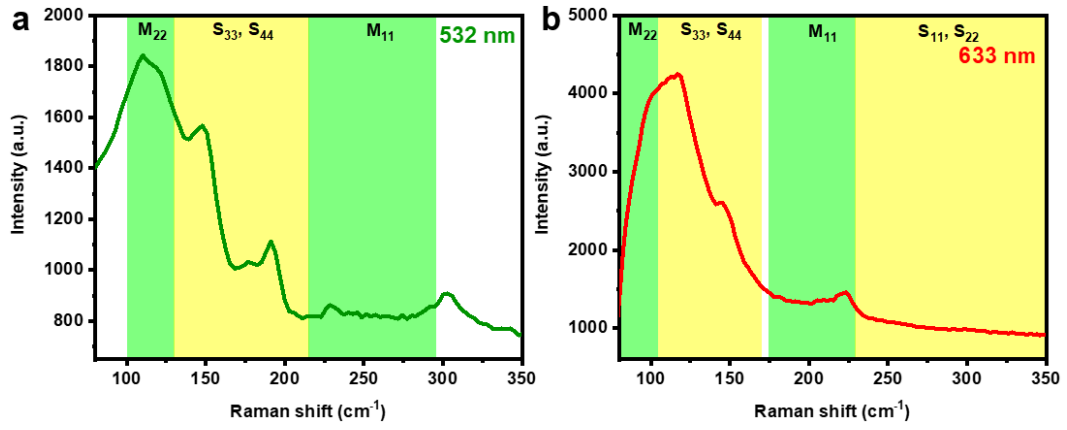


Figure S8. RBM Raman spectra of R-SWCNTs-SDS sample excited with 532 nm (a) and 633 nm (b) lasers.

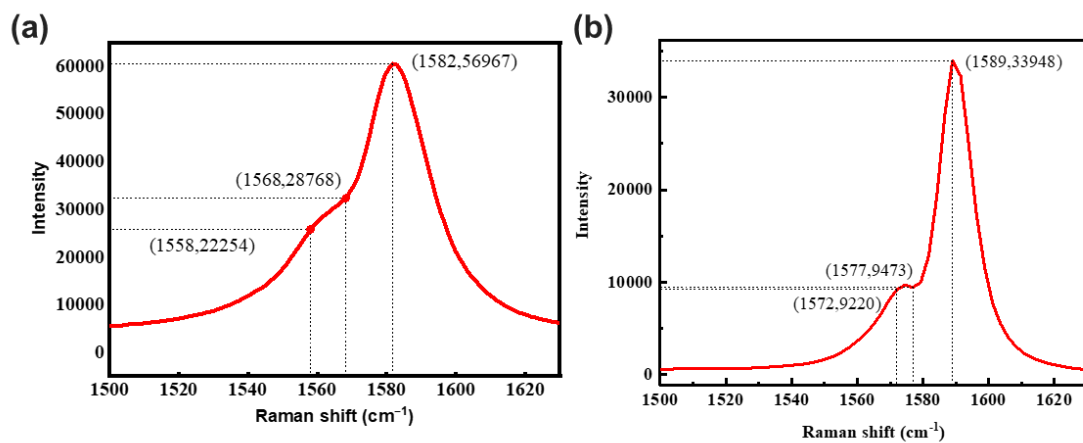


Figure S9. Enlarged G band of Raman spectra of (a) the raw SWCNTs and (b) s-SWCNTs-P3DDT.

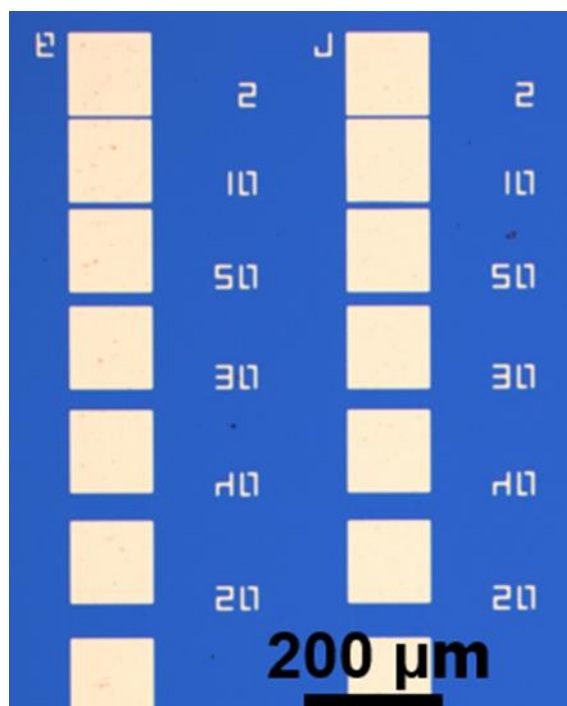


Figure S10. Optical image of the TFTs with different channel lengths.