Electronic Supplementary Material (ESI) for Nanoscale.

Supplementary information

Photoluminescence enhancement of aligned arrays of single-walled carbon nanotubes by polymer transfer

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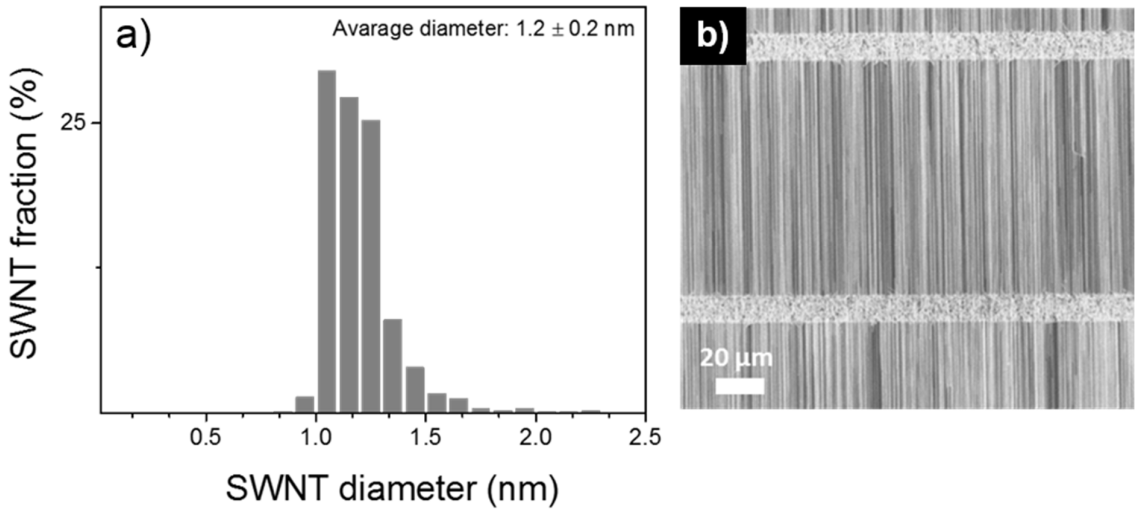

Figure S1. SWNT arrays: a) Diameter distribution of SWNTs arrays based on the Raman analysis of the radial breathing mode (content of semiconducting SWNTs: 60-70%). b) SEM image of as grown SWNT array on quartz.

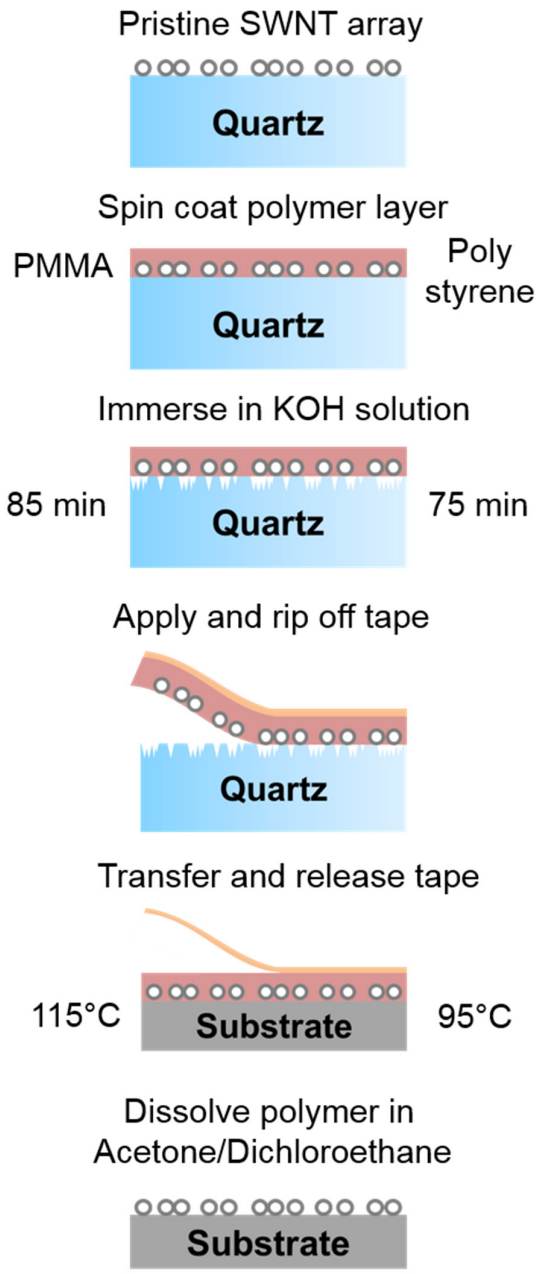

Figure S2. Flow chart of polymer assisted transfer process: Left column: PMMA process parameter; right column: Polystyrene process parameter.

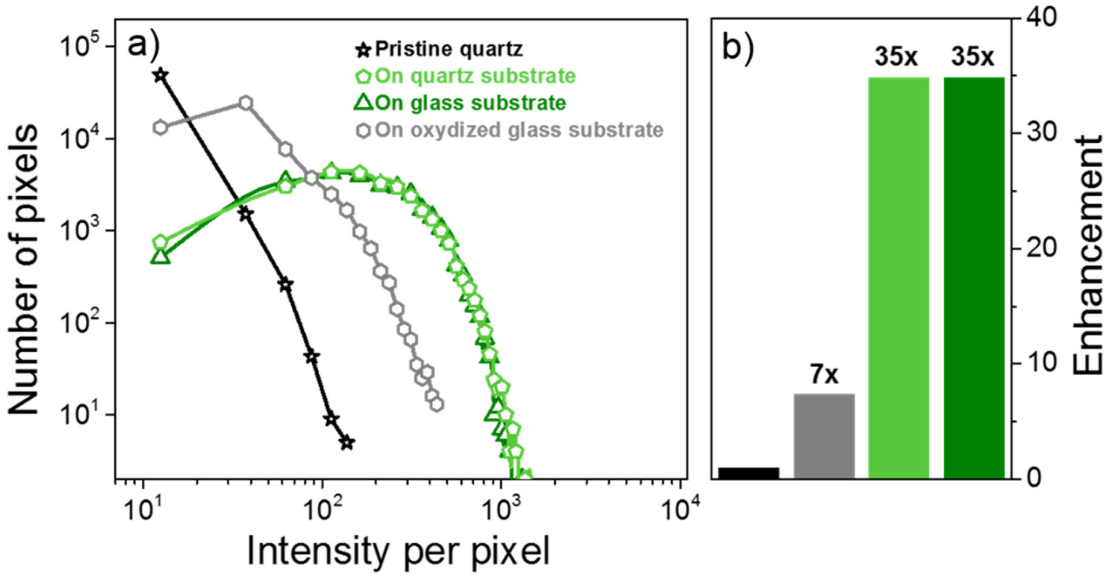

Figure S3. Influence of substrates on PL characteristics: a) Number of pixels versus their PL intensity for SWNT arrays transferred to oxidized glass, annealed quartz, and glass compared to pristine SWNTs on quartz. b) Corresponding overall PL enhancement versus pristine SWNTs.

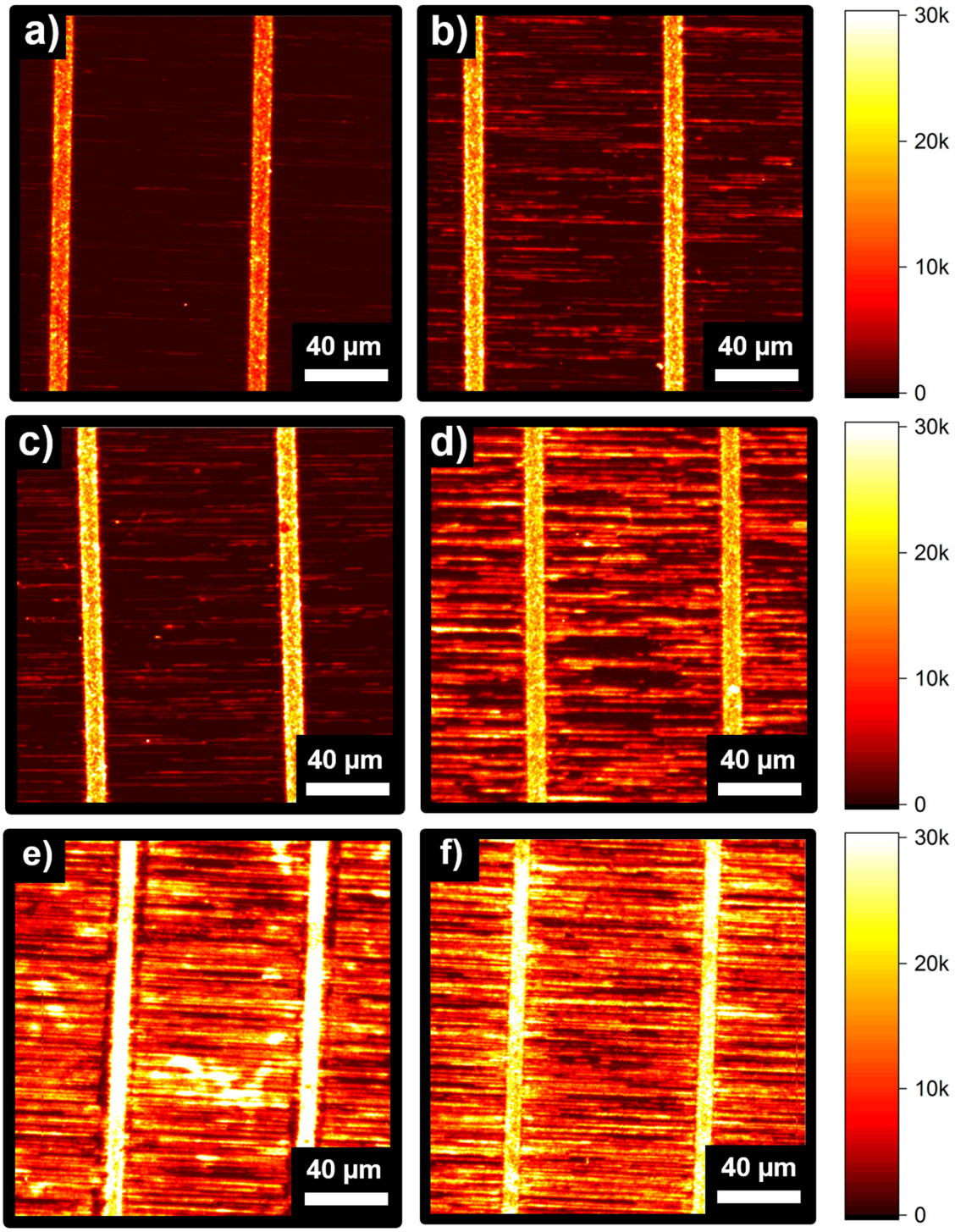

Figure S4. **Comparison of PL intensity maps of one sample after different process steps:** a) pristine SWNT array as-grown on quartz, b) SWNT covered with PMMA and annealed, c) after storage in air for three days, d) after KOH treatment but still on quartz substrate, e) transferred to a glass substrate with PMMA, f) after removal of PMMA. Detection range: 0.9 - 1.6 µm, excitation wavelength: 785 nm, excitation power 35 µW.

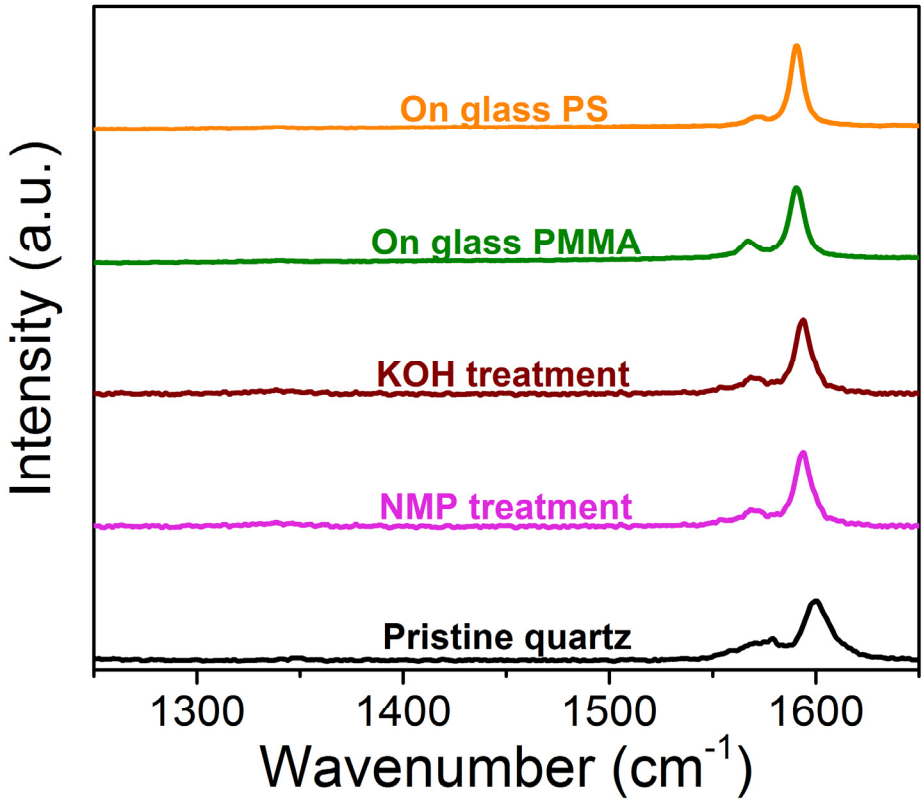

Figure S5 Influence of the process steps on Raman G^+-mode position: A red shift of the G^+-mode (1590 – 1600 cm^{-1}) is observed after different transfer steps and solvent treatment versus pristine, as-grown SWNTs on quartz. Representative Raman spectra showing no D-band (1300-1350 cm^{-1}).

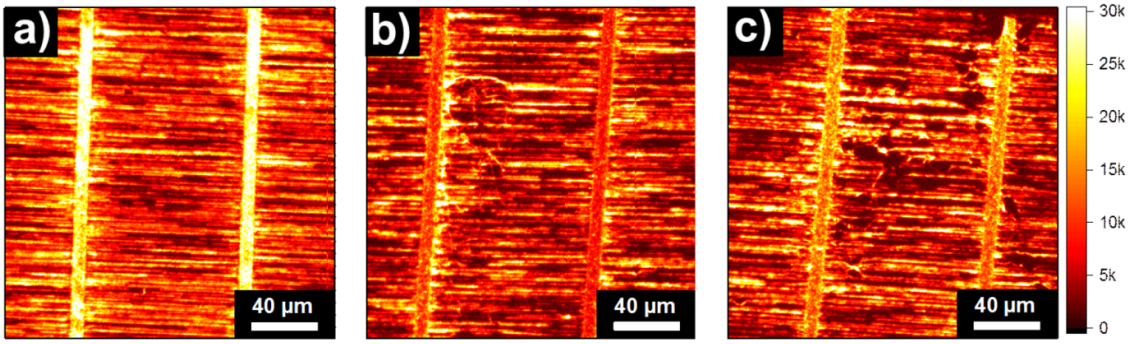

Figure S6. Transfer method reproducibility test: (a-c) PL intensity maps of three different SWNT samples transferred to glass after PMMA removal. Detection range: 0.9 - 1.6 µm, excitation wavelength: 785 nm, excitation power 35 µW.