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Figure S1. (a) XPS analysis and high resolution XPS spectrum of (b) S 2p, (c) Cu 2p, (d) C 1s and (e) O 1s for a sample obtained after dialysis. The obtained C-O peak in the XPS data is understood to be derived from the defect of SWCNTs or unremoved thermoresponsive polymer, the residues of the sample.

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1 SEM image and EDS measurement of a dialysis tube.



3 Figure S2. SEM and EDS of the inside of a dialysis tube and a Visking membrane (MWCO: 3,500,

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4 cellulose tube). The EDS peak appearing at 2.3 keV corresponds to S K\alpha. The peak attributed to Al 5 is background due to the base material used.
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- 9 TEM images of samples after dialysis for with a pretreated dialysis tube.



**Figure S3.** TEM images of samples after dialysis for 48 h with a pretreated dialysis tube 13 (Spectra/Por®7 Biotech RC Tubing, MWCO: 3.5-5 kD).