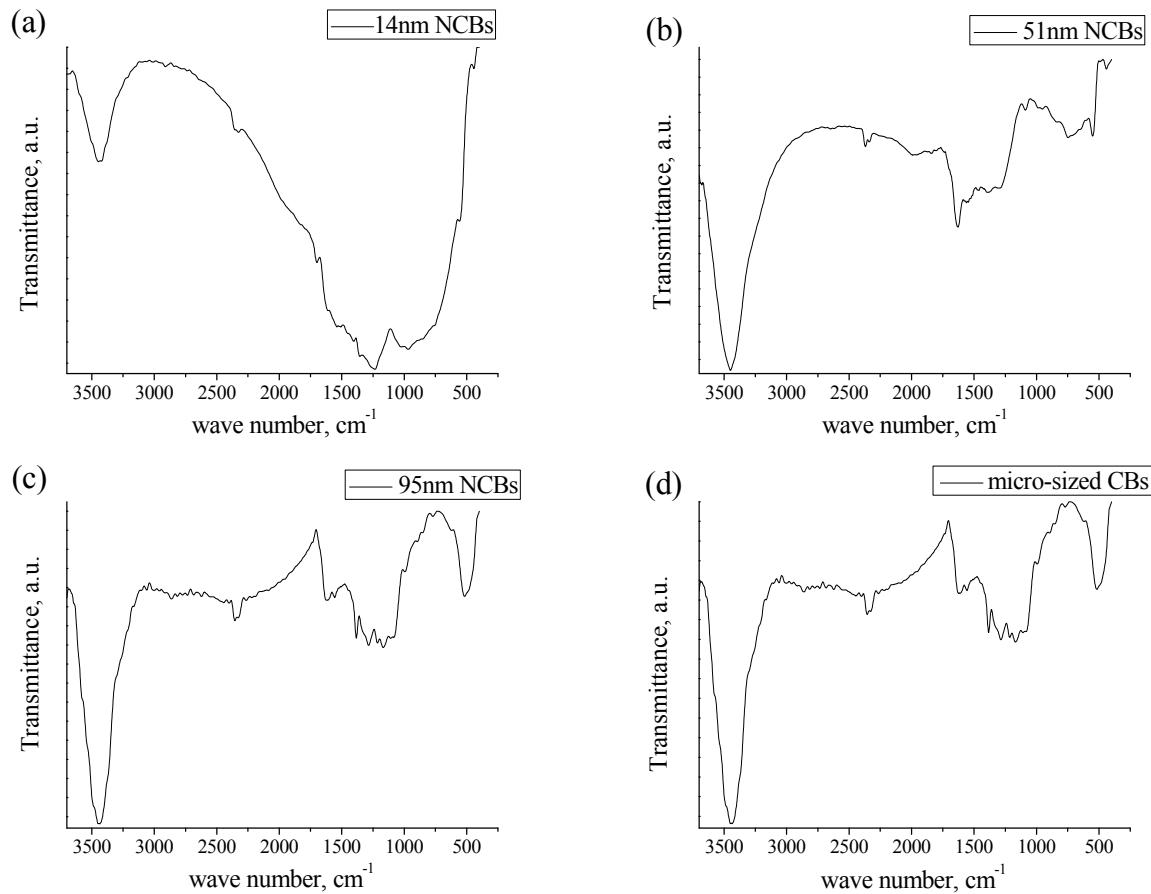
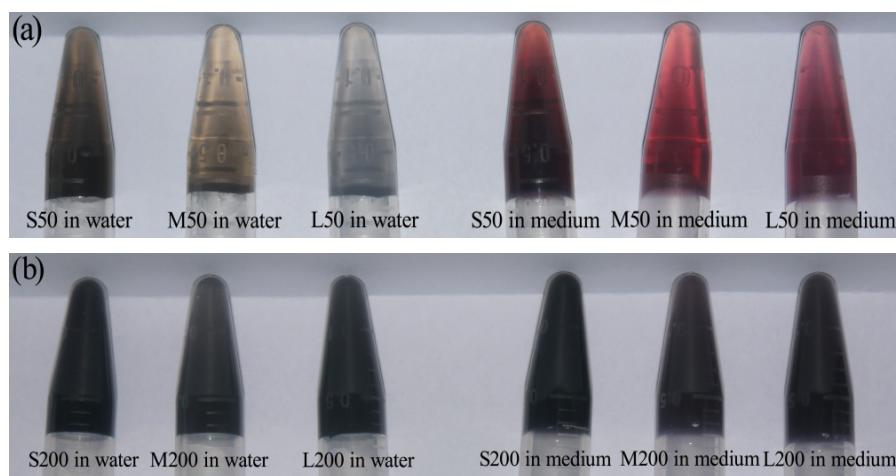


## Supplementary Information

**Figure S1.** FT-IR analysis of NCBs and micro-sized CBs. (a) Printex 90; (b) Printex G; (c) Flummass 101; (d) Micro-sized CBs.



**Figure S2.** Photos of different sized NCB solution at various concentration. (a)  $50 \mu\text{g}\cdot\text{mL}^{-1}$ ; (b)  $200 \mu\text{g}\cdot\text{mL}^{-1}$ .

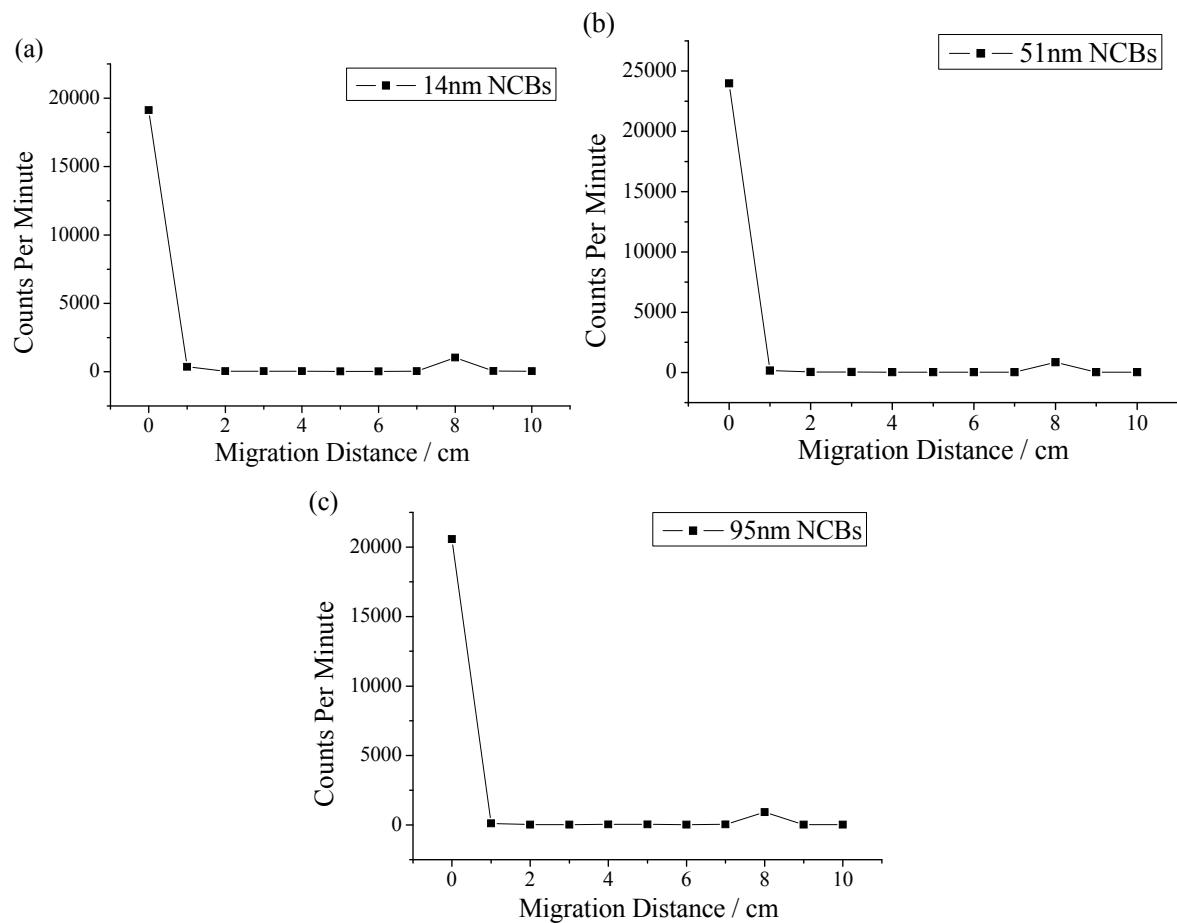


**Table S1.** The size distribution of NCBs and micro-sized CBs determined by DLS.

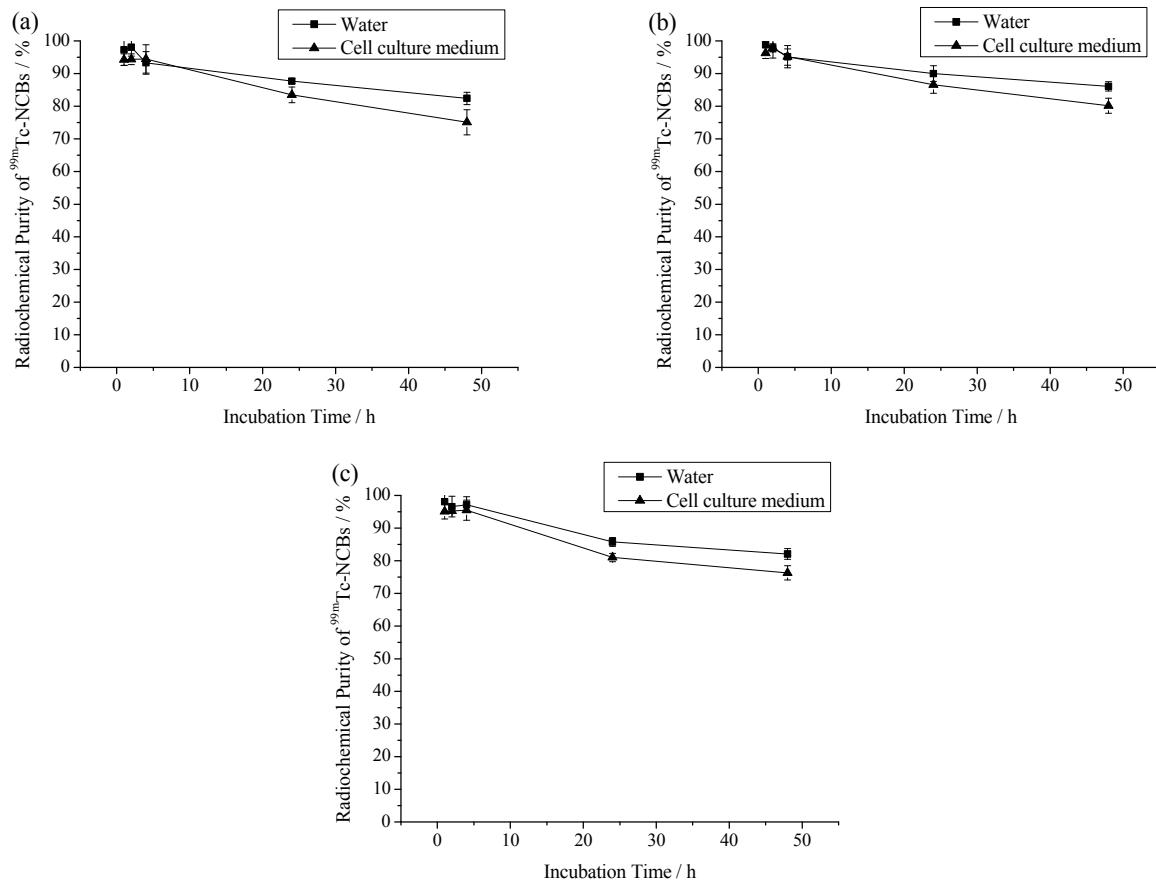
CBs	Mean partical size(nm)	
Dispersion medium	Water	Medium
14 nm NCBs	95.1	102.2
51 nm NCBs	158.8	176.4
95 nm NCBs	355.2	403.9
micro-sized CBs	2731.8	2917.8

**Table S2.** The zeta potential of NCBs and micro-sized CBs in cell culture medium.

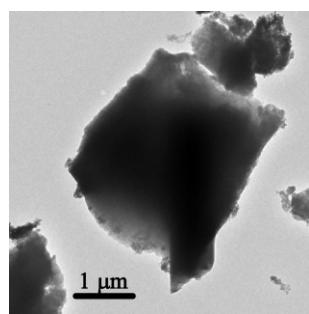
CBs	Mean zeta potential (mV)
14 nm NCBs	-17.6
51 nm NCBs	-9.7
95 nm NCBs	-8.0
micro-sized CBs	-7.4

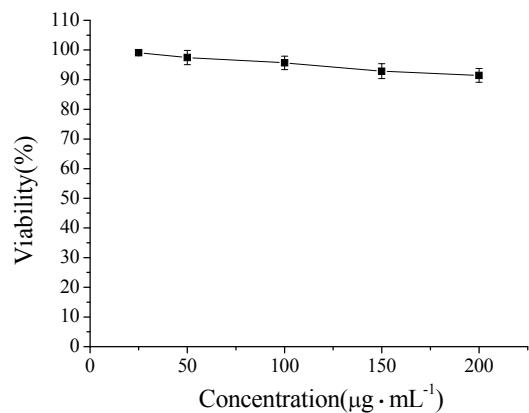
**Figure S3.** The radiochemical purity of  $^{99m}\text{Tc}$ -NCBs after purification. (a) Printex 90; (b) Printex G; (c) Flummass 101.

**Figure S4.** The radiochemical purity of  $^{99m}\text{Tc}$ -NCBs in millipore water and cell culture medium at the time points of 1, 2, 4, 24 and 48 h. (a) Printex 90; (b) Printex G; (c) Flummass 101.



**Figure S5.** TEM image of micro-sized CBs.



**Figure S6.** Viability determination of RAW264.7 cells exposed to micro-sized CBs for 24 h.

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