Electronic supplementary information (ESI) for:

A carbon nanotube-based Raman-imaging immunoassay for evaluating tumor targeting ligands

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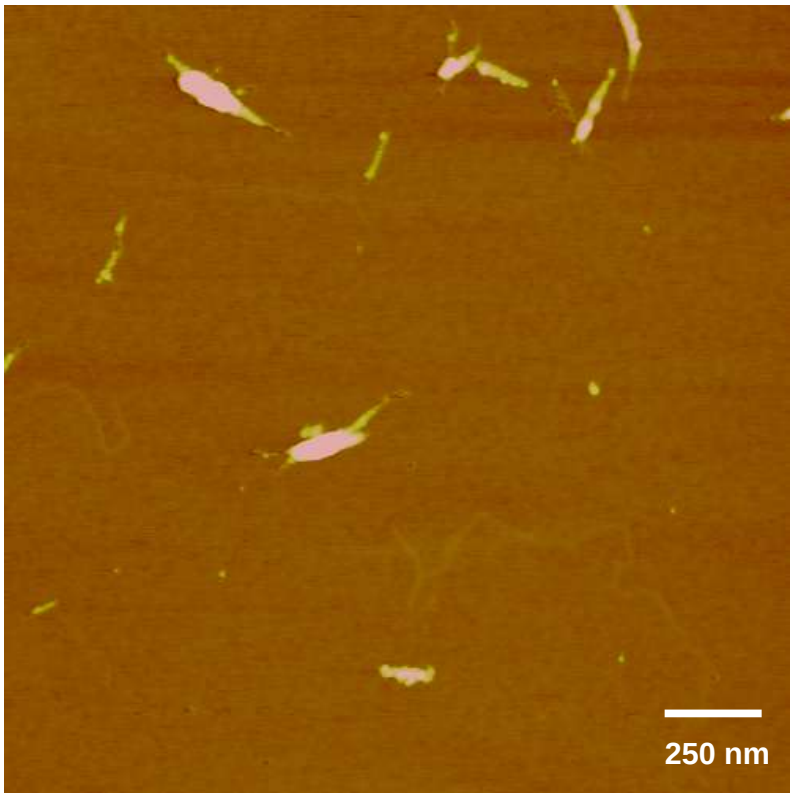

Fig. S1. AFM image (2 x 2 μm) of carboxylated SWNTs.

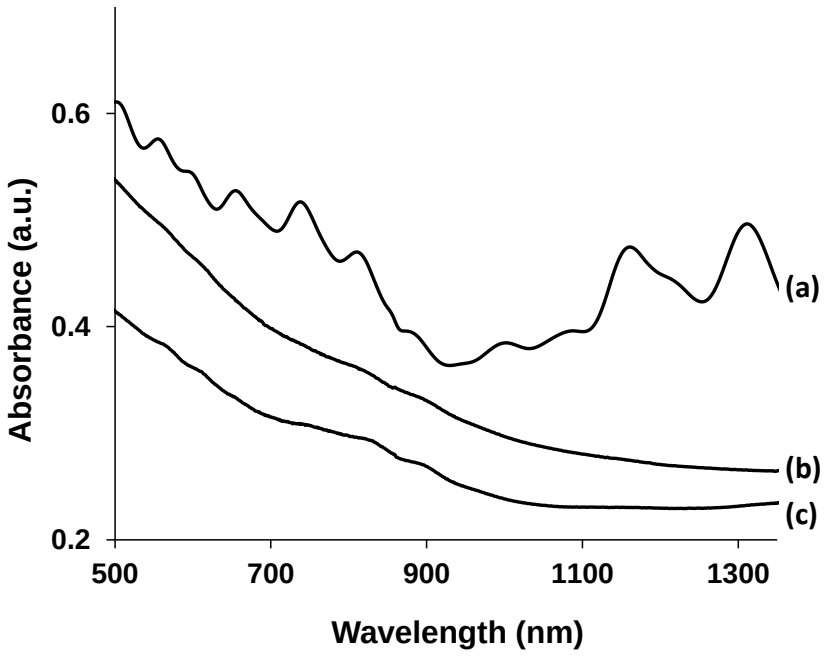

Fig. S2. Background-subtracted UV-Vis-NIR absorption spectra of (a) Triton X-100/SWNTs in D_2O, (b) C-SWNTs in D_2O, and (c) B-SWNTs in H_2O.

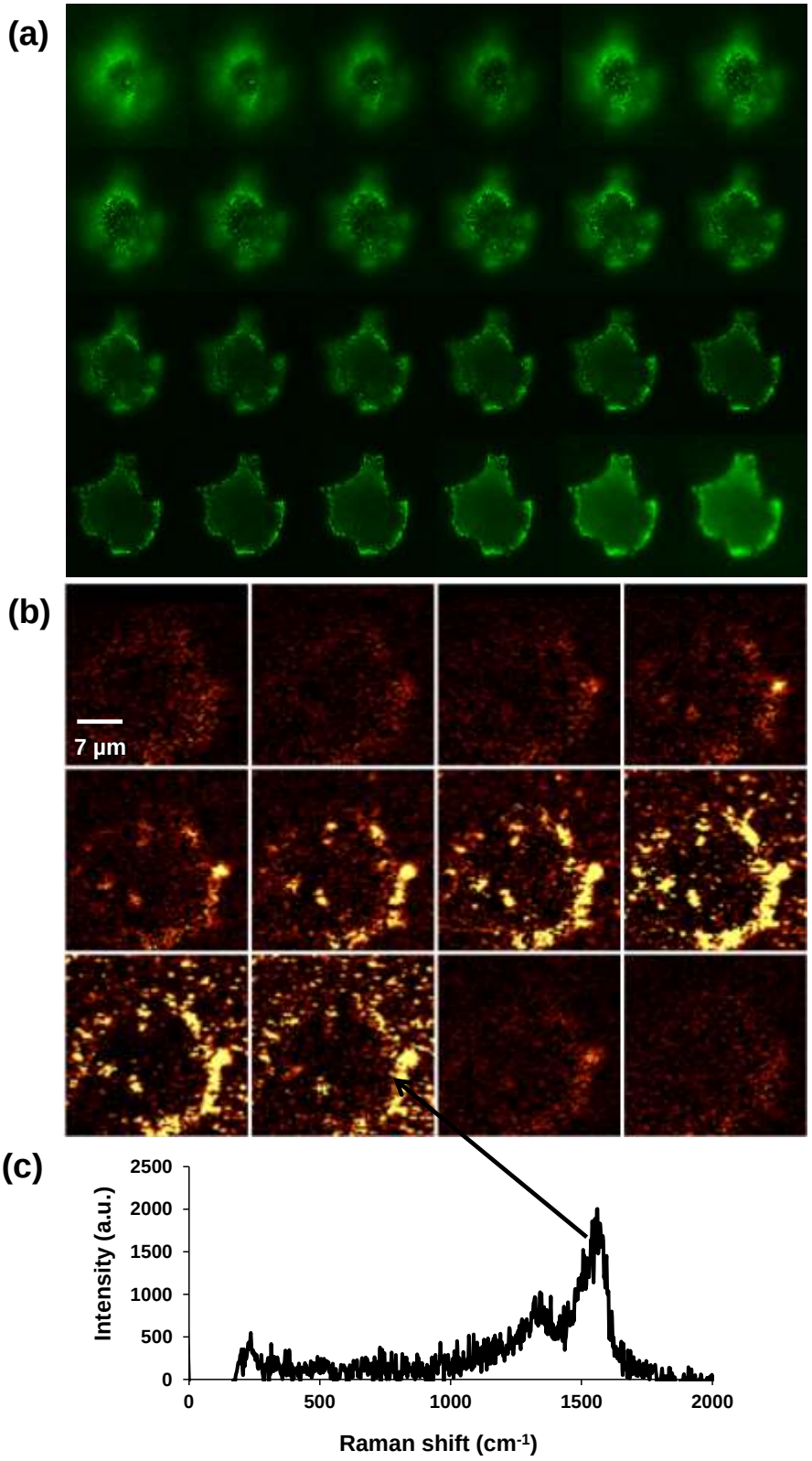
(a)
(b)
7 µm
(c)
2500
2000
1500
1000
500
0
Intensity (a.u.)
0
500
1000
1500
2000
Raman shift (cm-1)

Fig. S3. Immunofluorescence (a) and confocal Raman (b) imaging stacks of a BT-474 cell after performing the binding immunoassay at 15 °C (steps 1-4; Scheme-1). (a) Image stack of BT-474 cells showing immunofluorescence as a function of z-plane distance with a z-step of 296 nm. The immunofluorescence stack was acquired from a region starting ~3 μm above the cell surface by collecting 55 images over an approximate 10 μm cell depth and moving 3 μm below the cell region; only the middle 24 images are shown. The surface distribution of Her2 receptors at 15 °C is revealed in the immunofluorescence images by the NeutrAvidin^{TM}-FITC label via the linkage provided by the biotinylated secondary antibody and the primary antibody. The NeutrAvidin^{TM} sites are available for binding B-SWNTs, which are revealed in the Raman images. (b) The Raman stack was acquired over an approximate 8 μm cell depth with a z-step of 0.6 μm. Confocal Raman images of BT-474 cells after the binding immunoassay (steps 1-5; Scheme-1) showing surface binding of B-SWNTs at 15 ºC. The representative Raman spectrum (c) acquired from a cellular region in (b) displays the characteristic G-band signature of SWNTs.