

**Electronic supplementary information (ESI) for:**

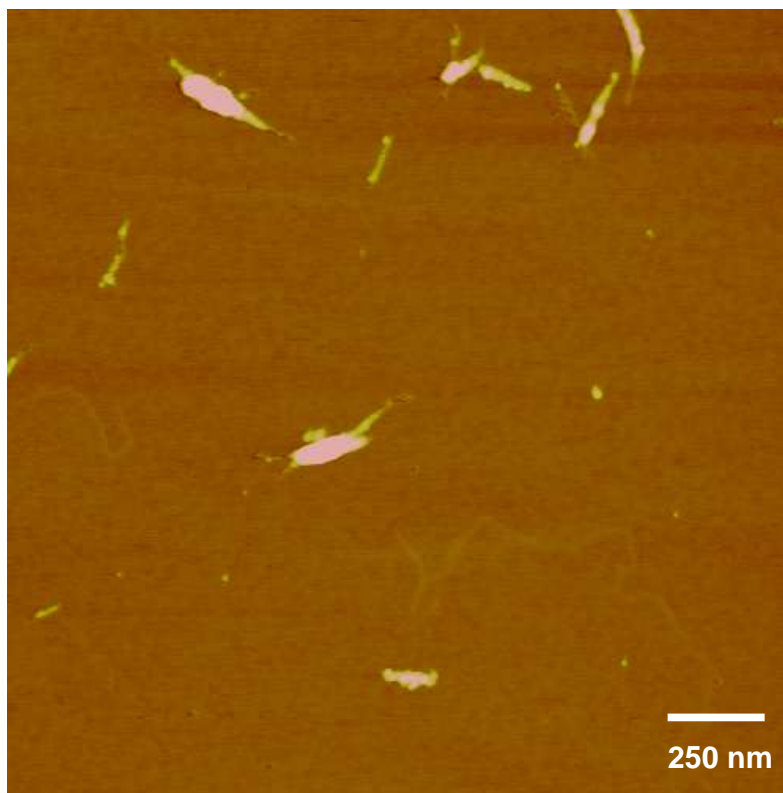
**A carbon nanotube-based Raman-imaging immunoassay for evaluating tumor targeting ligands**

**Pooja Bajaj,<sup>a</sup> Carole Mikoryak,<sup>b</sup> Ruhung Wang,<sup>ab</sup> David K. Bushdiecker II,<sup>a</sup> Pauras Memon,<sup>a</sup> Rockford K. Draper,<sup>abc</sup> Gregg R. Dieckmann,<sup>ac</sup> Paul Pantano,<sup>ac</sup> and Inga H. Musselman\*<sup>ac</sup>**

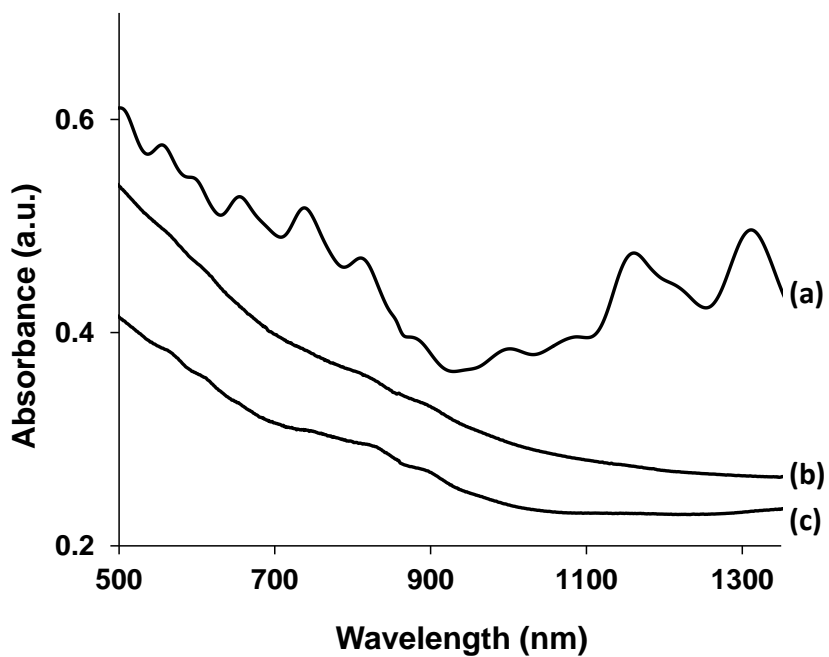
*<sup>a</sup>Department of Chemistry, The University of Texas at Dallas, Richardson, TX 75080-3021, USA.  
E-mail: [imusselm@utdallas.edu](mailto:imusselm@utdallas.edu)*

*<sup>b</sup>Department of Molecular and Cell Biology, The University of Texas at Dallas, Richardson, TX 75080-3021, USA*

*<sup>c</sup>The Alan G. MacDiarmid NanoTech Institute, The University of Texas at Dallas, Richardson, TX 75080-3021, USA*

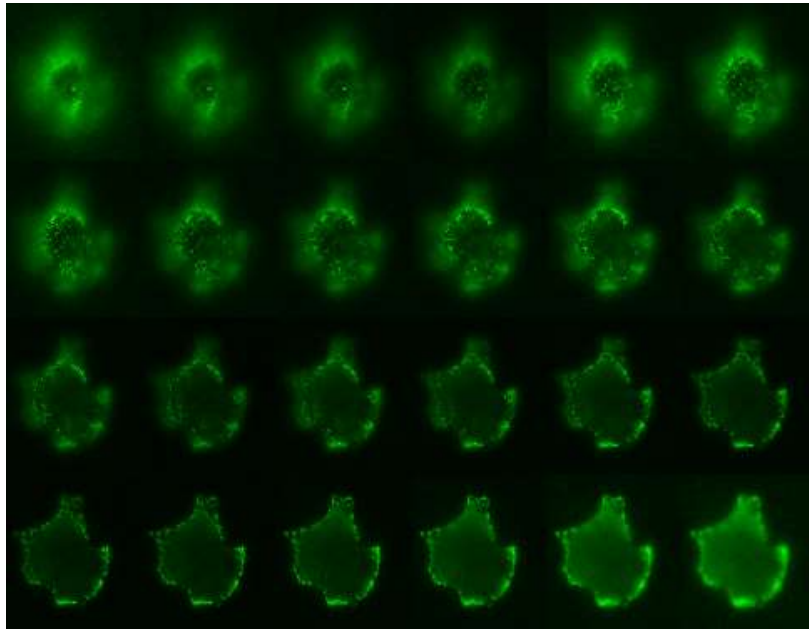


**Fig. S1.** AFM image ( $2 \times 2 \mu\text{m}$ ) of carboxylated SWNTs.

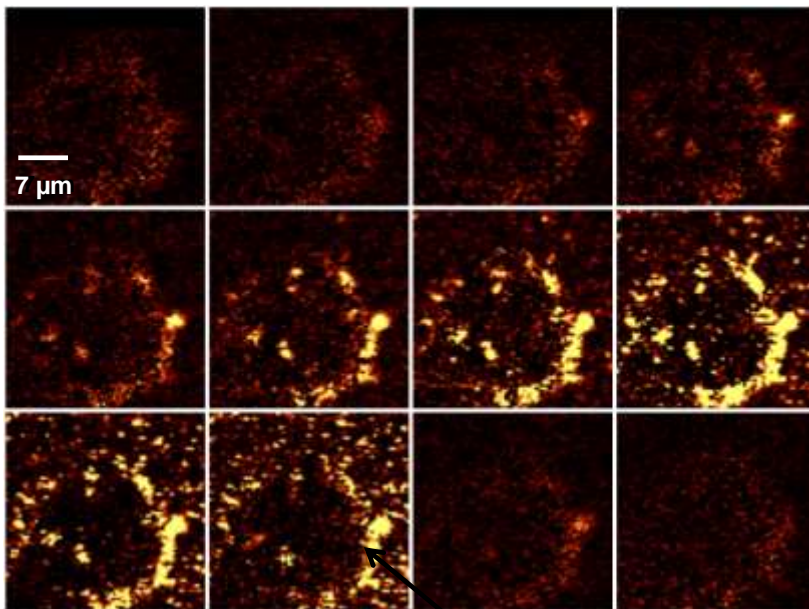


**Fig. S2.** Background-subtracted UV-Vis-NIR absorption spectra of (a) Triton X-100/SWNTs in D<sub>2</sub>O, (b) C-SWNTs in D<sub>2</sub>O, and (c) B-SWNTs in H<sub>2</sub>O.

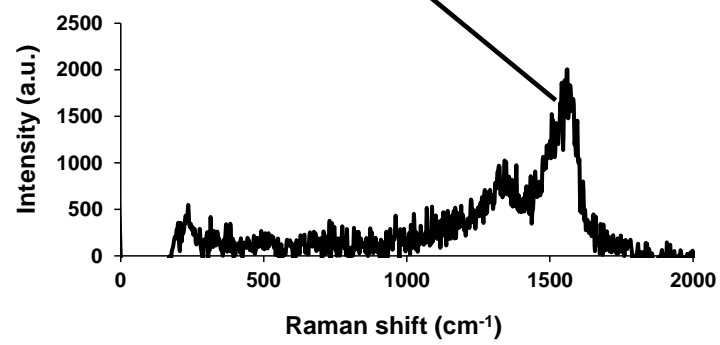
(a)



(b)



(c)



**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<sup>TM</sup>-FITC label via the linkage provided by the biotinylated secondary antibody and the primary antibody. The NeutrAvidin<sup>TM</sup> 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 °C. The representative Raman spectrum (c) acquired from a cellular region in (b) displays the characteristic G-band signature of SWNTs.