Electronic supplementary information (ESI) for:

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

Pooja Bajaj, Carole Mikoryak, Ruhung Wang, David K. Bushdiecker II, Pauras Memon, Rockford K. Draper, Gregg R. Dieckmann, Paul Pantano, and Inga H. Musselman*

*Department of Chemistry, The University of Texas at Dallas, Richardson, TX 75080-3021, USA.
E-mail: imusselm@utdallas.edu

Department of Molecular and Cell Biology, The University of Texas at Dallas, Richardson, TX 75080-3021, USA

The Alan G. MacDiarmid NanoTech Institute, The University of Texas at Dallas, Richardson, TX 75080-3021, USA
**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$_2$O, (b) C-SWNTs in D$_2$O, and (c) B-SWNTs in H$_2$O.
**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™-FITC label via the linkage provided by the biotinylated secondary antibody and the primary antibody. The NeutrAvidin™ 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.