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Supporting Information

for *Small*,DOI: 10.1002/smll.201201494

Nanoengineered Colloidal Probes for Raman-based Detection of Biomolecules inside Living Cells

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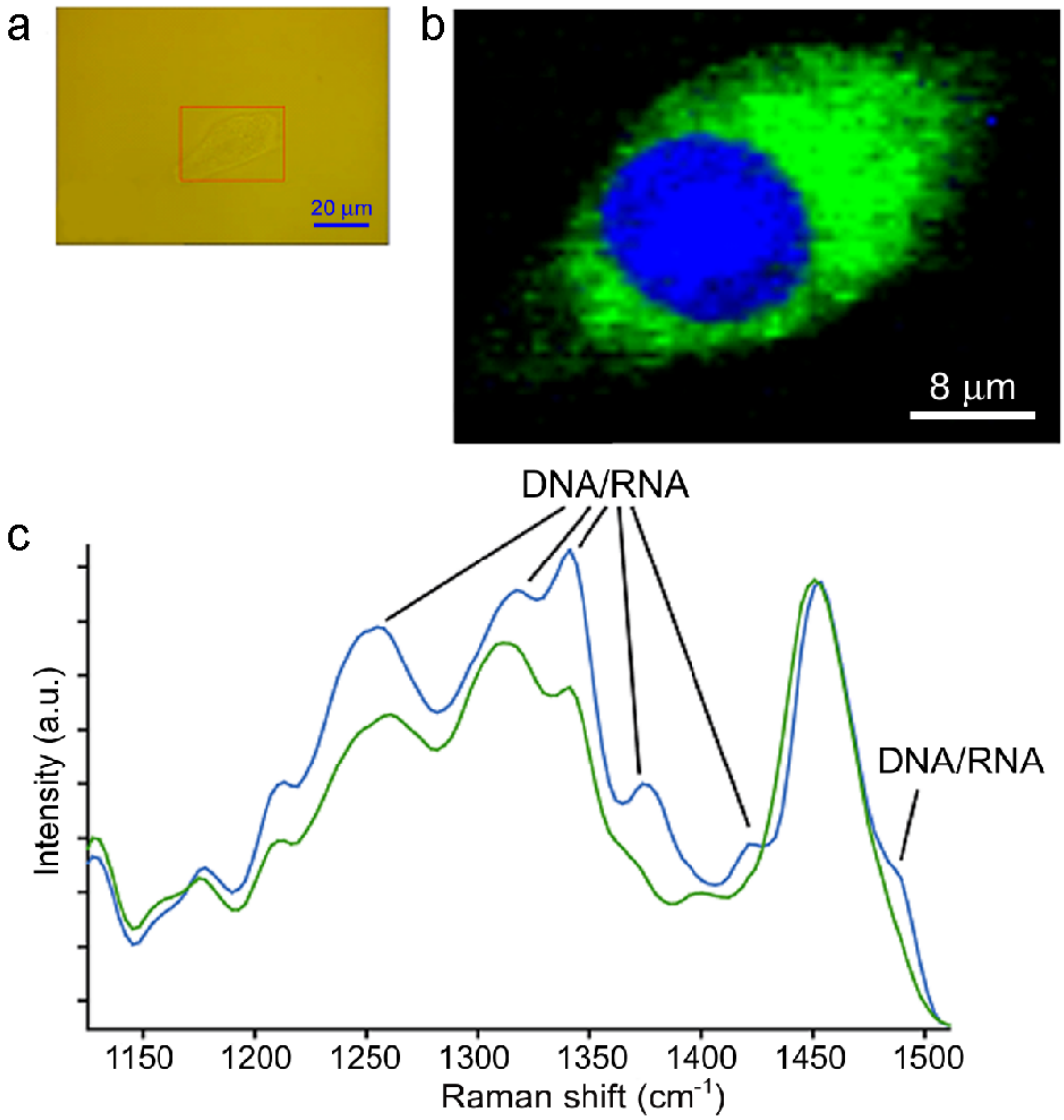

Figure S1. a) Optical image of the analyzed fixed fibroblast cell. b) Confocal Raman image of the same cell in (a) acquired at a specific depth. Color code refers to differences in Raman spectral features (c) in the original data set (green-cytosol, blue-nucleus) obtained by least square fitting. Main spectral differences are due to the characteristic bands of DNA/RNA molecular vibrations mainly found in the nucleus[1]. Laser power at the sample: 30mW.

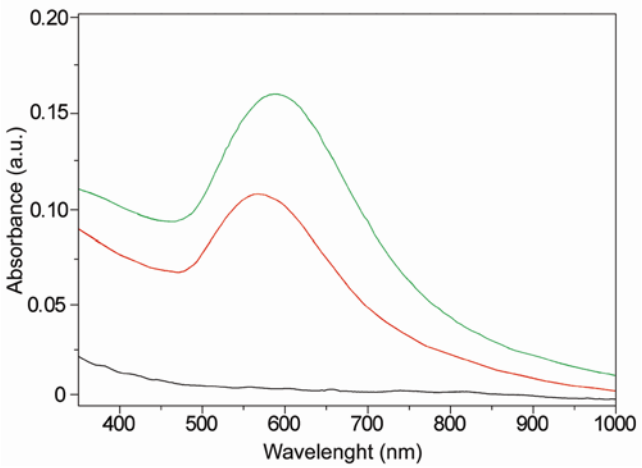

Figure S2. UV-vis absorption spectra of the polyelectrolyte films with single walled carbon nanotubes (black line), single walled carbon nanotubes with attached nanoparticles (red line); and same film after chemical growth of the gold nanoparticles (green line). The concentrations for deposition were used similar to those adsorbed on colloidal probes.

Stability of assembled AuNP and SWCNT functionalized colloidal silica probes was monitored in a series of experiments in a buffer without cells. Continuous Raman signal generation was observed after several days of incubation.

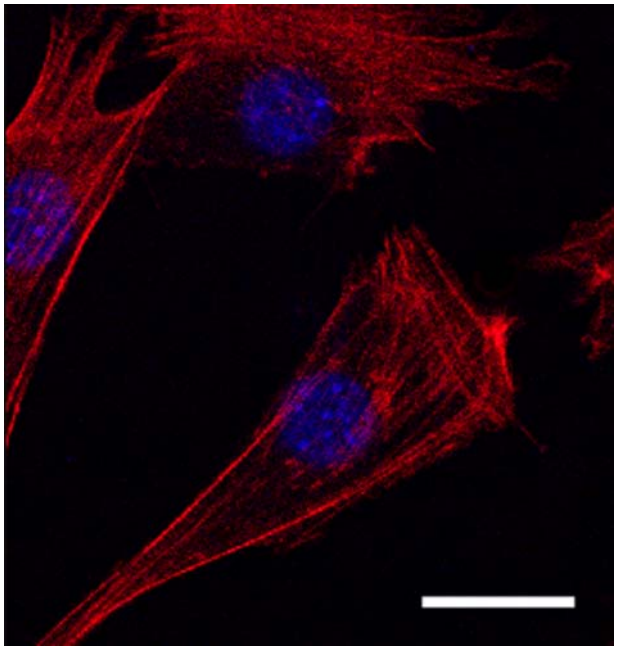

Figure S3. Confocal fluorescence image of the stained fibroblast cells. TRITC-phalloidin (red signal) and TO-PRO-3 iodide (dark blue color) were used for staining of the actin cytoskeleton and nuclei respectively. The scale bar corresponds to 15 µm.

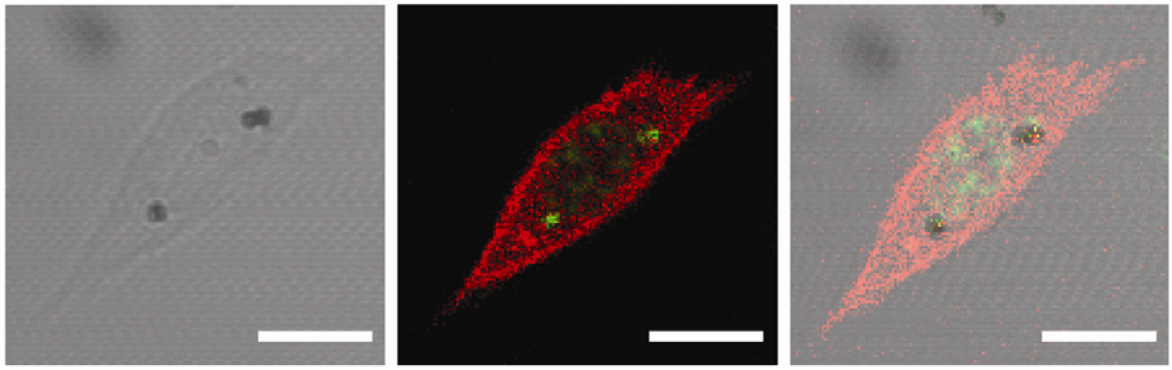

Figure S4. Transmission, fluorescence, and overlay confocal images of the stained fibroblast cells with incorporated colloidal probes. TRITC-phalloidin (red signal) and TO-PRO-3 iodide (dark blue color) were used for staining of the actin cytoskeleton and nuclei respectively. The scale bars correspond to 10 μm.

[1] Z. Movasaghi, S. Rehman, I.U. Rehman, *Appl. Spectrosc. Rev.* **2007**, 42, 493.