# SMALL NEAR-INFRARED NANOPARTICLES FOR ONCOGENIC PROTEIN DETECTION IN CELLS USING PHOTOTHERMAL MICROSCOPY

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Photothermal imaging is a sensitive technique allowing optical detection of absorbing single nanoparticles on a dark background even in scattering media [1]. For applications in bioimaging, gold nanospheres are the most common probes due to their high optical resonances in the visible and their biocompatibility. However, a limitation arises from the intrinsic photothermal signal due to residual absorption of green light by cell organelles, which lead to a background signal. Here, we report two approaches to circumvent this problem based on the preparation and use of tiny gold nanorods [2] or ultra-short carbon nanotubes [3] which display strong and tunable red-shifted and near-infrared optical resonance, in a region where cellular absorption is reduced. A dual color PhI microscope was developed to image them down to the single particle level. Bio-conjugation approaches to target these near-infrared nanoprobes in cells over-expressing EGF receptors will be presented for applications in oncology [4-5].

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