

Colorimetric and dynamic light scattering detection of DNA sequences by using positively charged gold nanorods and nanospheres

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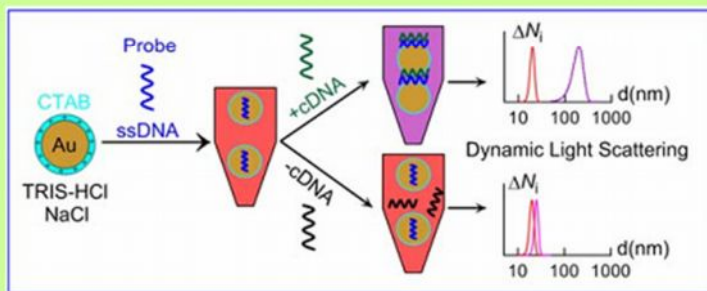
We compare two biosensing approaches employing (1) unmodified CTAB (cetyltrimethylammonium bromide)-coated **gold nanorods** (GNRs) and (2) positively charged **colloidal gold nanoparticles** (GNPs) to detect target DNA sequences by using single-stranded probe oligonucleotides (ssDNA), absorption spectroscopy, and dynamic light scattering.

Biospecific ssDNA models:

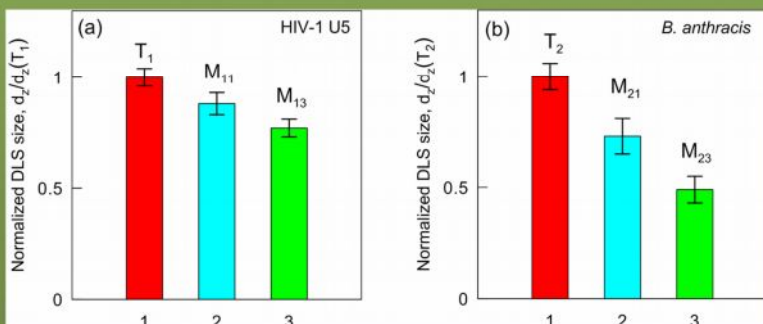
The human immunodeficiency virus type 1 **HIV-1 U5 long terminal repeat (LTR) sequence (21-mer)**

The *Bacillus anthracis* cryptic protein and protective antigen precursor (**pagA**) genes (23-mer)

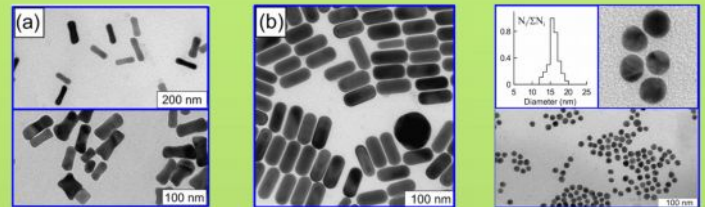
Colorimetric and DLS method for differentiating between the complementary (+cDNA) and noncomplementary (-cDNA) oligonucleotides by using **CTAB-coated positively charged gold nanospheres**



The discrimination of one- and three based mismatched targets from full complementary sequence



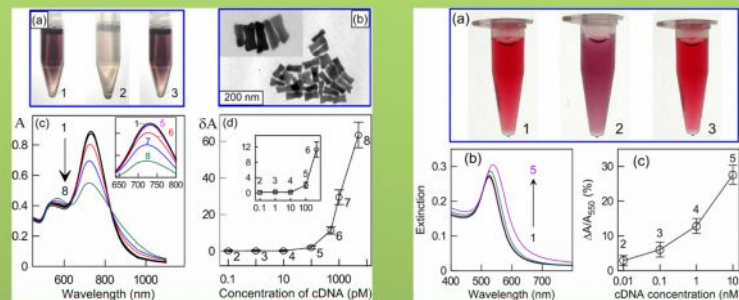
Fabricated nanoparticles:



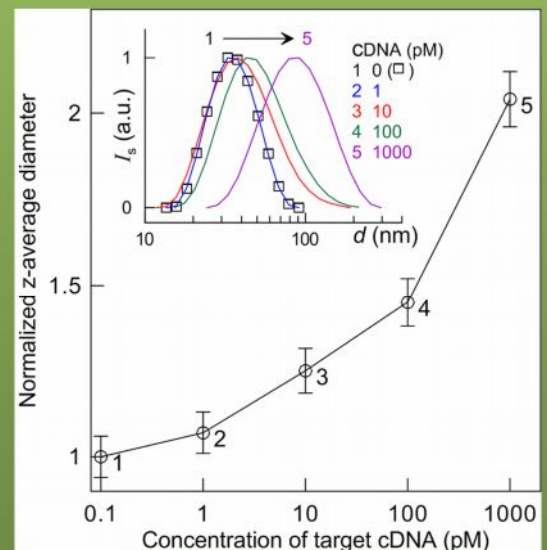
Gold nanorods (a) NRs-740, (b) NRs-690

CTAB-coated colloidal gold nanoparticles CG-16

Colorimetric data, TEM, extinction spectra and relative variations in the extinction for NR-740 and CTAB-coated CG-16



Dynamic light scattering data for estimating detection sensitivity of the method



Acknowledgement.

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