

# Single-Stranded DNA Recognition over Fluorescent Gold-Aryl Nanoparticles

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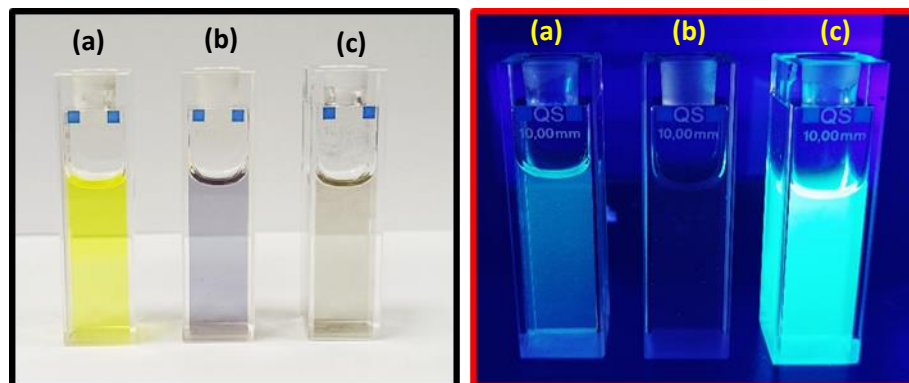
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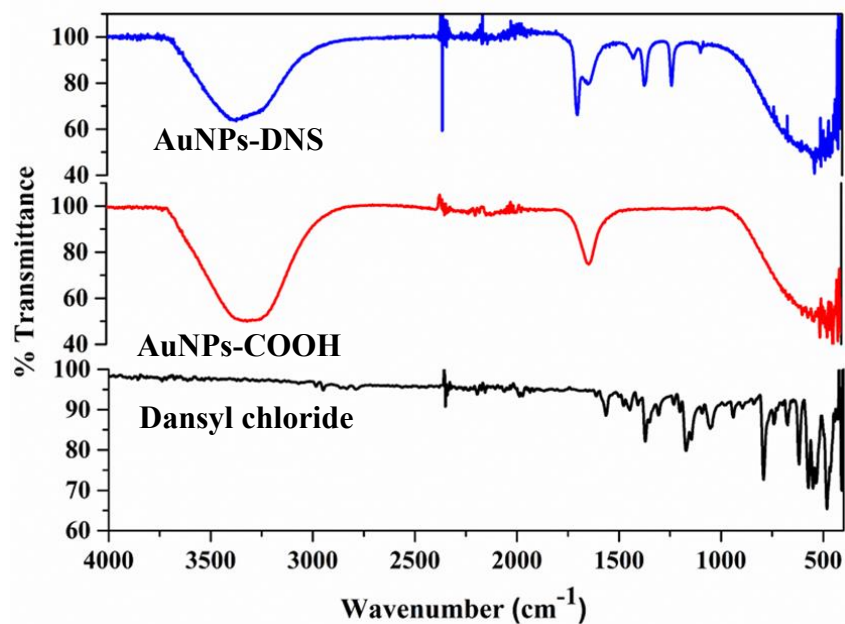
- S1.** Visible light and UV irradiated photographs
- S2.** ATR-FTIR spectra
- S3.** Fluorescent emission spectra
- S4.** Time resolved photoluminescence measurements
  - S4.1 Table: Time-resolved fluorescent lifetime measurements
- S5.** P-XRD spectra
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- S6.1 Table:** Time-resolved fluorescent lifetime measurements

## S1. Visible and UV irradiated photographs



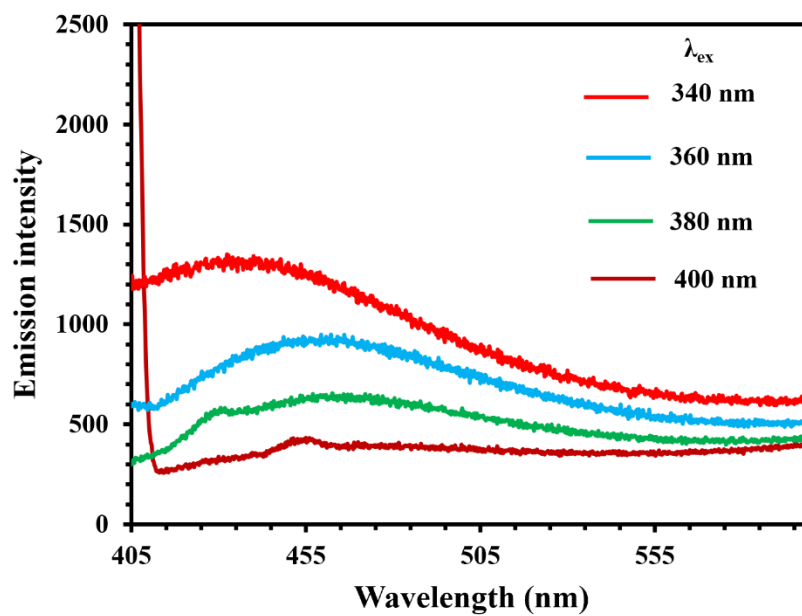
**Figure S1.** Visible and UV irradiated photographs showing (a) dansyl chloride, (b) AuNPs-COOH and (c) AuNPs-DNS.

## S 2. ATR-FTIR spectra



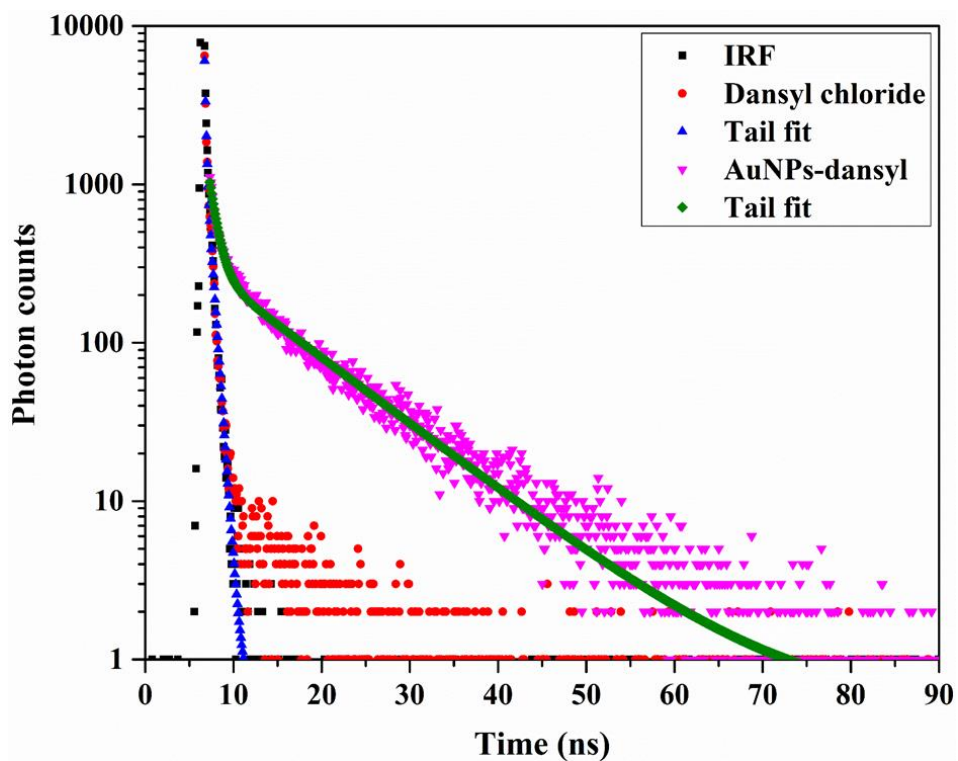
**Figure S2.** ATR-FTIR spectra of dansyl chloride, AuNPs-COOH, and AuNPs-dansyl

### S3. Emission spectra



**Figure S3.** Fluorescence emission spectra of dansyl chloride at different excitation wavelengths.

#### S4. Time resolved photoluminescence measurements

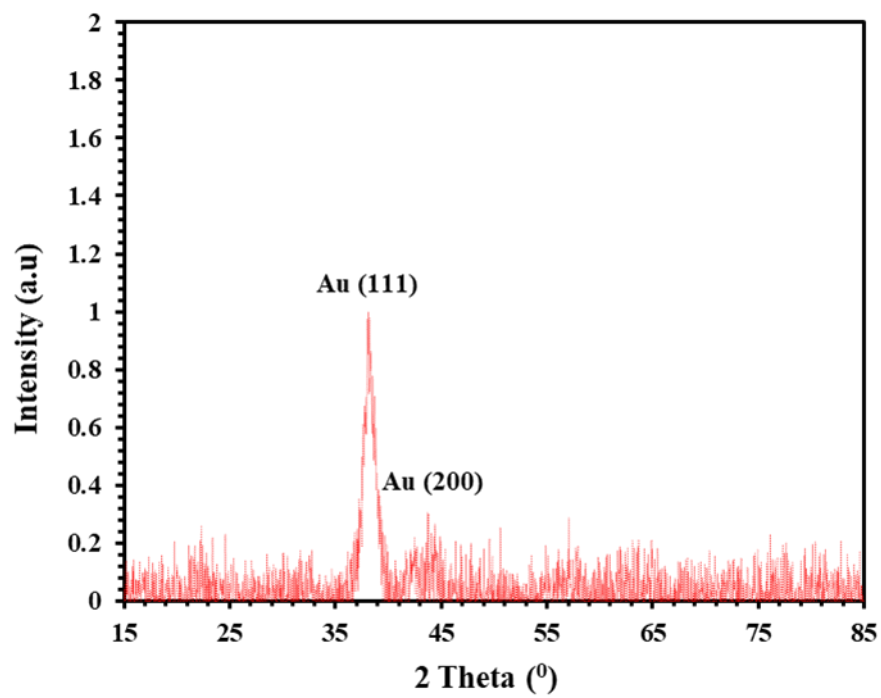


**Figure S4.** Solution state fluorescence lifetime decays for dansyl chloride and AuNPs-dansyl.

**Table S4.1.** Time-resolved fluorescent lifetime measurements showing decay time and  $\chi^2$  values for dansyl chloride and AuNPs-dansyl.

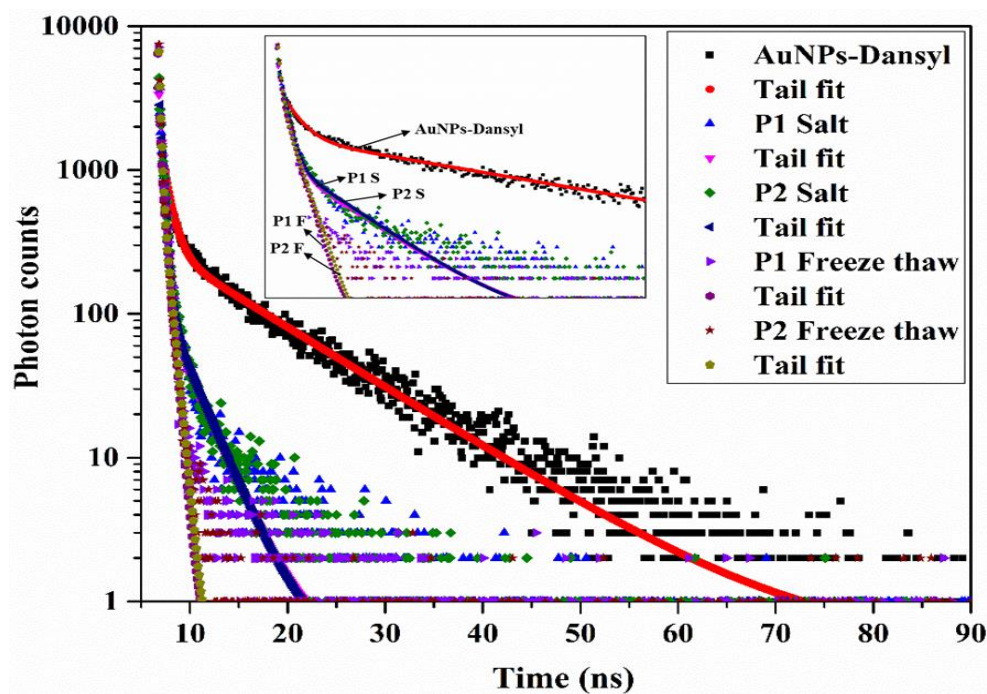
Solutions	$\tau_1$ (ns)	$\tau_2$ (ns)	$\chi^2$
Dansyl chloride	0.12	0.54	1.09
AuNPs-dansyl	0.89	10.37	1.10

## S5. P-XRD spectra



**Figure S5.** P-XRD pattern for AuNPs-DNS showing gold diffraction peaks.

## S6. Time resolved photoluminescence measurements for ssDNA recognition



**Figure S6.** Fluorescence lifetime decays of AuNPs-dansyl solution immobilized with ssDNA (P1 and P2) using freeze-thaw and salt-aging methods.

**Table S6.1.** Time-resolved fluorescent lifetime measurements showing decay time and  $\chi^2$  values for ssDNA immobilized on AuNPs-dansyl.

Solutions	$\tau_1$ (ns)	$\tau_2$ (ns)	$\chi^2$
AuNPs-dansyl	0.89	10.37	1.10
P1 Freeze-thaw	0.14	0.54	1.00
P2 Freeze-thaw	0.15	0.61	1.01
P1 Salt-aging	0.37	2.78	1.00
P2 Salt-aging	0.35	2.69	1.01