

Supporting Information

for

Selective detection of Mg^{2+} ions via enhanced fluorescence emission using Au–DNA nanocomposites

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Additional experimental details

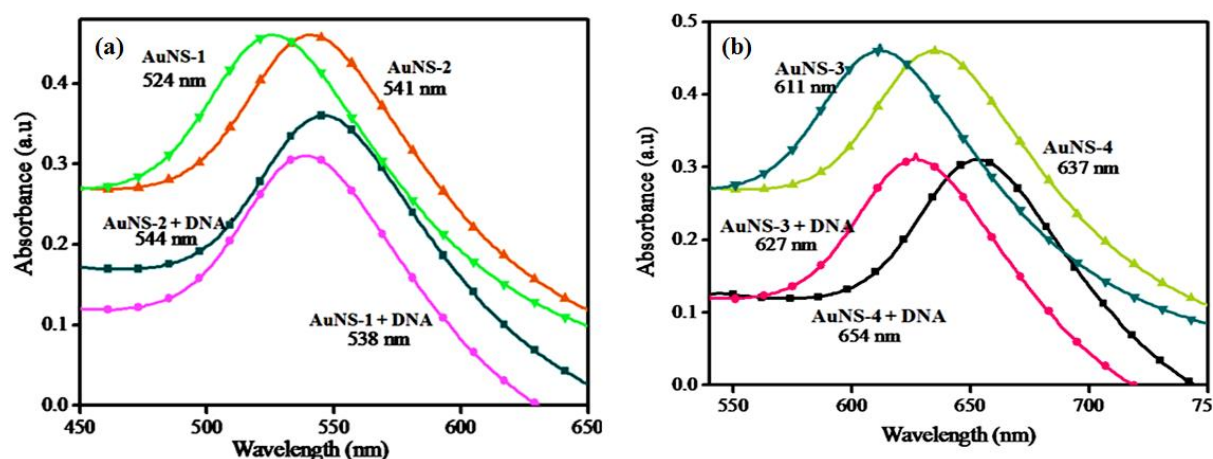


Figure S1: Shift in UV-Vis absorption spectra of different of Au nanospheres (a) AuNS-1 and AuNS-2 & (b) AuNS-3 and AuNS-4, before and after DNA addition.

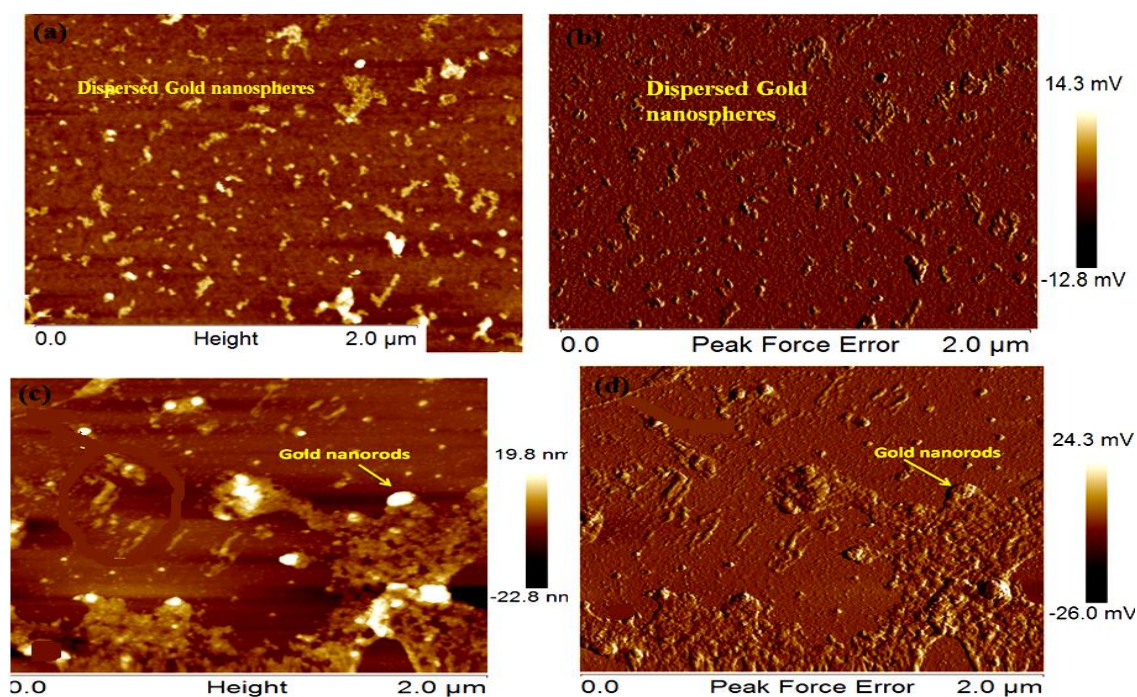


Figure S2: Images of AuNPs showing height Mode and amplitude mode (a-b) Au NS and (c-d) Au NRs.

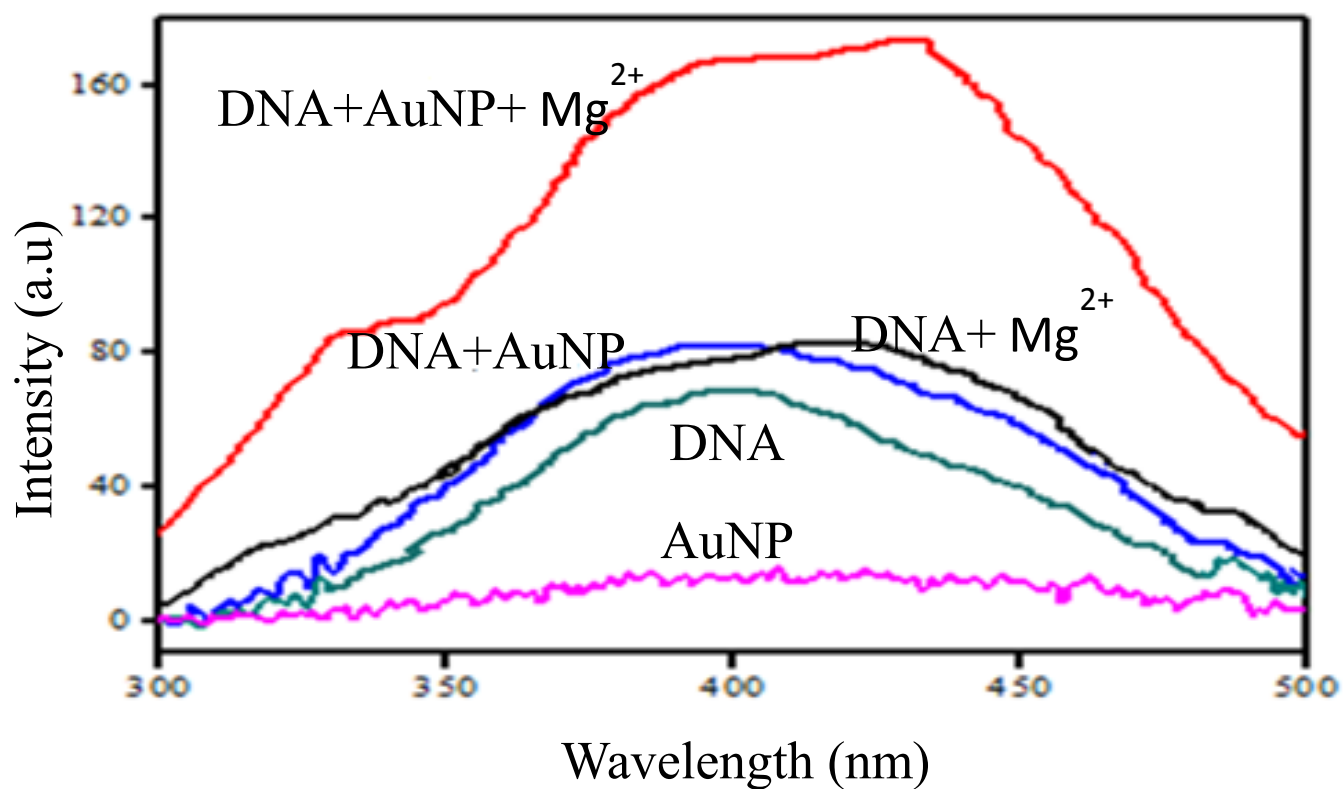


Figure S3: Fluorescence spectra of DNA-AuNPs with and without Mg^{2+} ions.

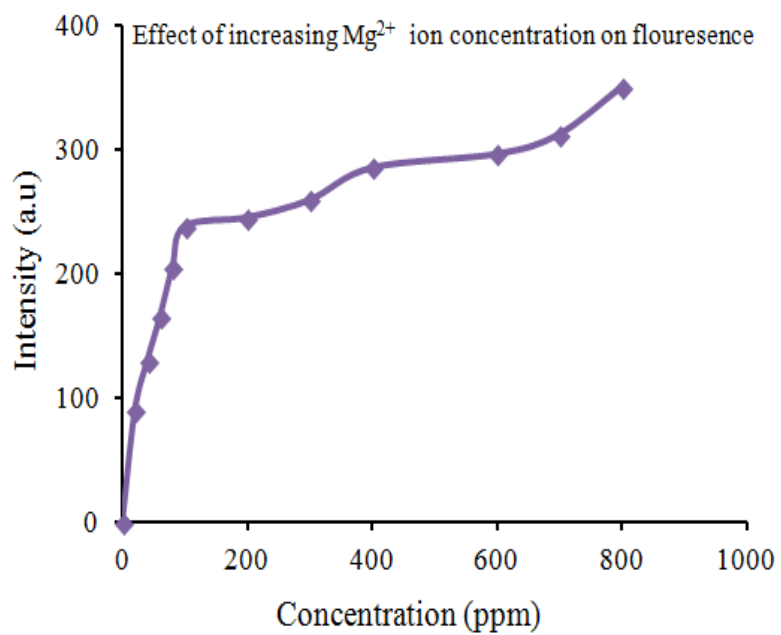


Figure S4: Graph showing change in fluorescence with increase in Mg^{2+} ion concentration.

Table S1: Showing shift in $\lambda_{\max}$ on adding DNA to AuNS.

S.No.	Sample	$\lambda_{\max}$ before addition of DNA (nm)	$\lambda_{\max}$ after addition of DNA (nm)	Shift in wavelength (nm)
1.	AuNS-1	524	538	14
2.	AuNS-2	541	544	3
3.	AuNS-3	611	627	15
4.	AuNS- 4	637	654	17
5.	AuNR	539, 697	552, 729	13, 28

Table S2: Variation in zeta potential, conductance and mobility of AuNP on addition of DNA.

S.No	Sample Name	Zeta Potential (mV)	Conductance (μ S)	Mobility ($\text{m}^2\text{V}^{-1}\text{s}^{-1}$)
1.	DNA	-16.84	183	- 1.28
2.	DNA + MPA	-7	20	1.78
3.	AuNS	+ 22.8	277	1.30
4.	AuNS + DNA	+16.67	270	- 6.17
5.	AuNR	+26.16	348	2.04
6.	AuNR + DNA	+10.40	305	0.81

Table S3: Determination of Mg^{2+} ion concentration.

S.No	Sample	Intensity	Mg^{2+} ions Conc. (ppm) obtained from standard graph ($\pm 5\%$)	Real concentration (ppm) of Mg^{2+} ions
1.	Gelusil	900 a.u	360	300
2.	Tap water	150 a.u	52	--
3.	Sample 1	180 a.u	62	50
4.	Sample 2	310 a.u	120	150