

**Fluorescence anisotropic probe for sensing cardiac troponin-I antigen through  
Target-specific antibody-conjugated gold nanoclusters**

<sup>a</sup>S Madanan Anju, <sup>a</sup>Susan Varghese, <sup>a</sup>K Abraham Merin, <sup>a</sup>Ali Ibrahim Shkhair, Greeshma Rajeevan, Geneva Indongo, Arathy B.K and <sup>\*a</sup>Sony George

Corresponding author,

Dr. Sony George

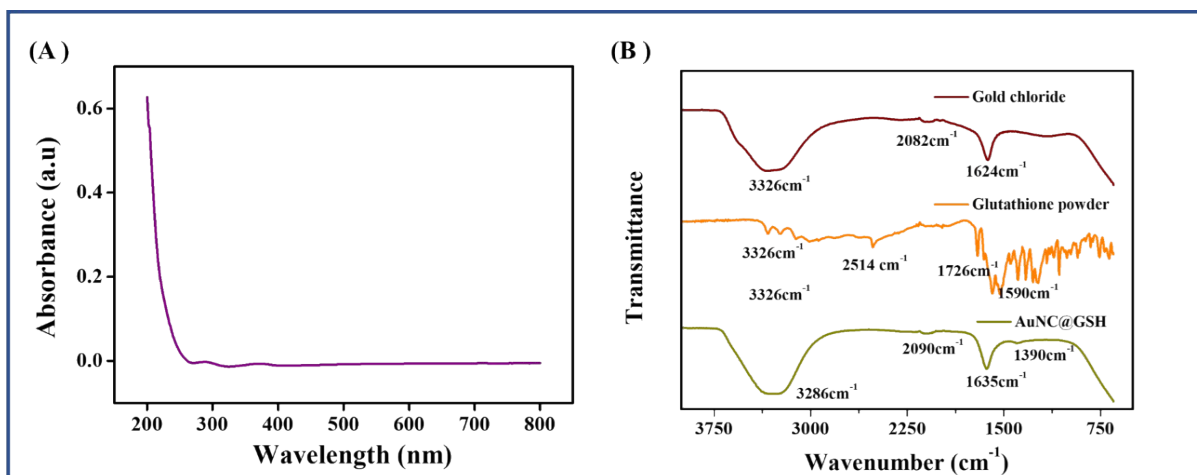
Associate Professor, Department of Chemistry, School of Physical and Mathematical Science,  
University of Kerala, Thiruvananthapuram, Kerala, India- 695581

Mob: +919446462933

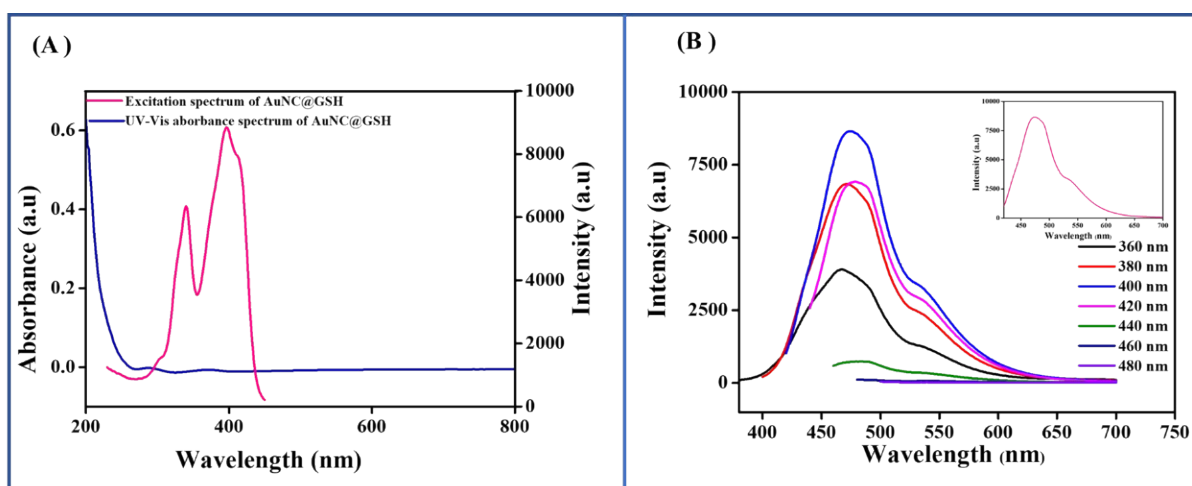
Email: emailtosony@gmail.com

<sup>a</sup> Department of Chemistry, School of Physical and Mathematical Science, University of Kerala, Thiruvananthapuram, Kerala, India- 695581

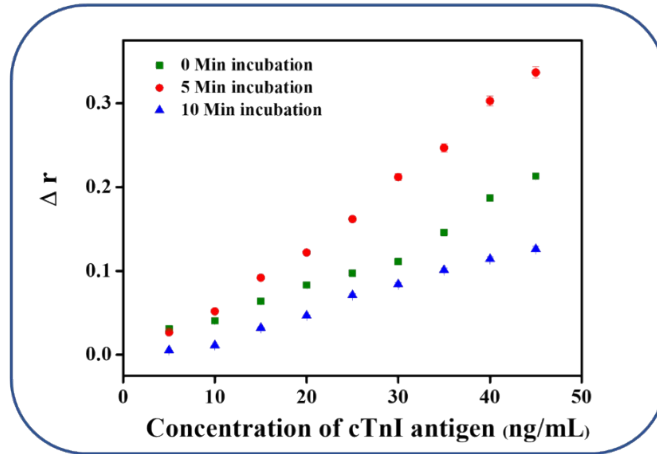
## Supporting documents



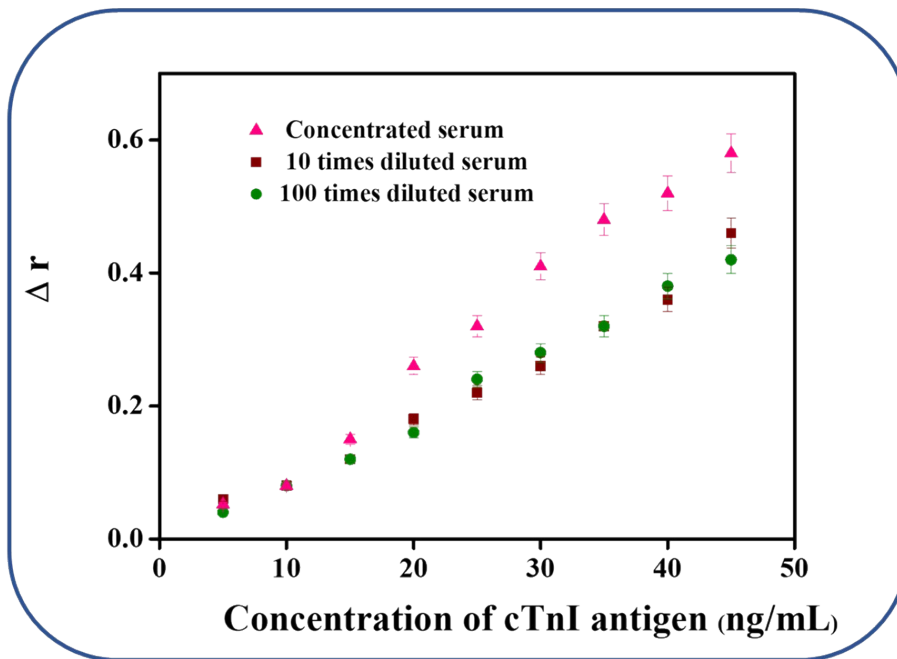
**Fig.S1.** (A) UV- Vis absorption spectrum of glutathione-capped gold nanoclusters (AuNC@GSH). (B) FTIR spectra of glutathione-capped gold nanoclusters and their precursors.



**Fig.S2.** (A) UV- Vis absorption spectrum and fluorescence excitation spectrum of glutathione-capped gold nanoclusters (AuNC@GSH) and (B) Fluorescence emission spectra of glutathione-capped gold nanoclusters with different excitation wavelengths ranging from 360 to 480nm, Fluorescence emission spectrum of AuNC@GSH at 400 nm excitation(inset).



**Fig.S3.** Fluorescence anisotropy response ( $\Delta r$ ) of 0.05  $\mu\text{g/mL}$  cTnI specific monoclonal antibody conjugated glutathione capped gold nanoclusters (AbcTnI@AuNC@GSH) towards sequential addition of cTnI antigen (from 0 to 45ng/mL) at different incubation times.



**Fig.S4.** Fluorescence anisotropy response of ( $\Delta r$ ) of 0.05  $\mu\text{g/mL}$  cTnI specific monoclonal antibody conjugated glutathione capped gold nanoclusters (AbcTnI@AuNC@GSH) towards sequential addition of cTnI antigen (from 0 to 45ng/mL) spiked serum and its diluted samples.

**Table S1:** Table of comparison of the analytical performance of the current FA method of detection of cTnI using antibody-conjugated gold nanoclusters with other previous reports.

Sl. No.	Probe	Method	LoD	Reference
1.	Fluorescent europium (III) chelate-dyed nanoparticle	Fluorescence	0.0020 $\mu$ g/L	[32]
2.	ECL functionalized metal-organic framework	Electrochemiluminescence	0.48fg/mL	[33]
3.	Gold nanoparticle labelled antibody platform	Fluorescence Anisotropy	0.50nM	[34]
4.	Carbon nanofiber nanoelectrode array	Electrochemical	0.20ng/mL	[35]
5.	Antibody-conjugated gold nanocluster	Fluorescence Anisotropy	0.91ng/mL	This work

**Table S2.** Table showing the recovery percentage of cTnI spiked serum sample with FA assay.

Sl. No.	Sample id	Spiked Conc. (ng/mL)	Recovered Conc.(ng/mL)	Recovery percentage (%)
1.	Conc. Serum sample 1	2.70	2.68	99.25
2.	Conc. Serum sample 2	20.00	20.19	100.91
3.	10 Times dil. Serum sample 1	10.85	10.32	94.90
4.	10 Times dil. Serum sample 2	28.50	29.20	102.45
5.	100 Times dil. Serum sample 1	30.86	31.5	102.07
6.	100 Times dil. Serum sample 2	35.65	34.45	96.63