

Studies on fluorescence determination of nanomolar Cr (III) in aqueous solutions using unmodified silver nanoparticles

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Supplementary information

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RESULTS

Spectral characterization of AgNP

Table S1. The effect of AgNP/Cr (III) volume ratio on fluorescence intensity measured at a range of Cr (III) concentrations [range: 10^{-3} M - 10^{-7} M]

Volume of AgNP (μ l)	Volume of Cr(III) (μ l)	AgNP/Cr(III) volume ratio	Different Cr (III) concentrations				
			10^{-3} M	10^{-4} M	10^{-5} M	10^{-6} M	10^{-7} M
700	200	3.5:1	324 \pm 1	155 \pm 1	138 \pm 3	163 \pm 1	110 \pm 2
700	300	2.3:1	252 \pm 4	150 \pm 2	172 \pm 1	163 \pm 1	147 \pm 3
700	500	1.4:1	603 \pm 1	452 \pm 2	307 \pm 1	234 \pm 1	152 \pm 1

Table S2. The effect of pH on fluorescence intensity measured at a range of Cr (III) concentrations [range: 10^{-3} M - 10^{-7} M]

pH	Different Cr (III) concentrations				
	10^{-3} M	10^{-4} M	10^{-5} M	10^{-6} M	10^{-7} M
5	203 \pm 6	141 \pm 2	152 \pm 2	117 \pm 2	160 \pm 1
6	603 \pm 1	452 \pm 2	307 \pm 1	234 \pm 1	152 \pm 1
7	195 \pm 2	195 \pm 3	117 \pm 2	156 \pm 2	188 \pm 3

Table S3. Fluorescence data for all the Cr (III) concentrations in the range 2×10^{-8} – 2×10^{-9} M

Chromium concentration (M)	Fluorescences Intensity (Mean \pm SD)
2×10^{-8}	80 \pm 1
1×10^{-8}	78 \pm 1
8×10^{-9}	76 \pm 1
6×10^{-9}	65 \pm 1
4×10^{-9}	45 \pm 1
2×10^{-9}	40 \pm 1

Table S4. The comparison of Cr concentration observed by the current method to that measured by AAS for tap water and groundwater

Source	Fluorescence Intensity (Mean \pm SD)	Chromium concentration range (ppb)	Chromium concentrations by AAS (ppb)
Tap water	353 \pm 3	500-50	187 \pm 1
Ground water(Suthipattu)	232 \pm 2	500-50	66. \pm 1

Figure S1. A Normalized graph of AgNP with Cr (III) at various concentrations

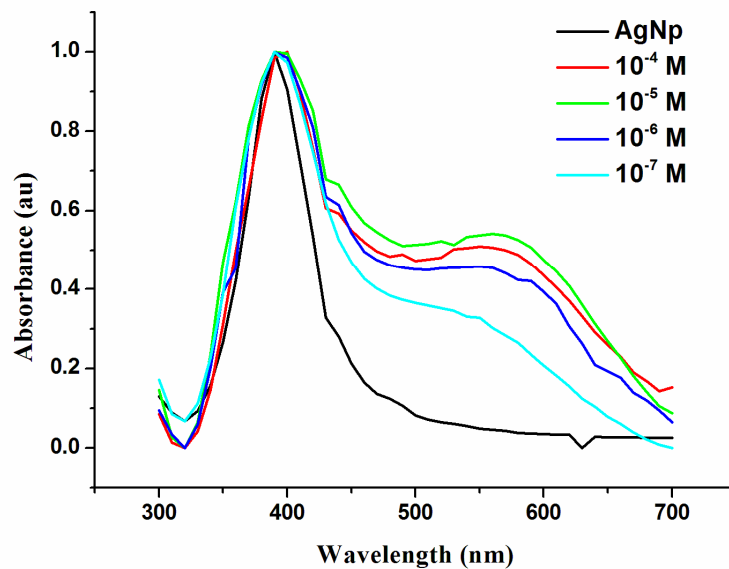


Figure S2. A fluorescence emission spectrum of un-interacted AgNP and AgNP interacted with Cr (III) at concentration range of 10^{-3} M

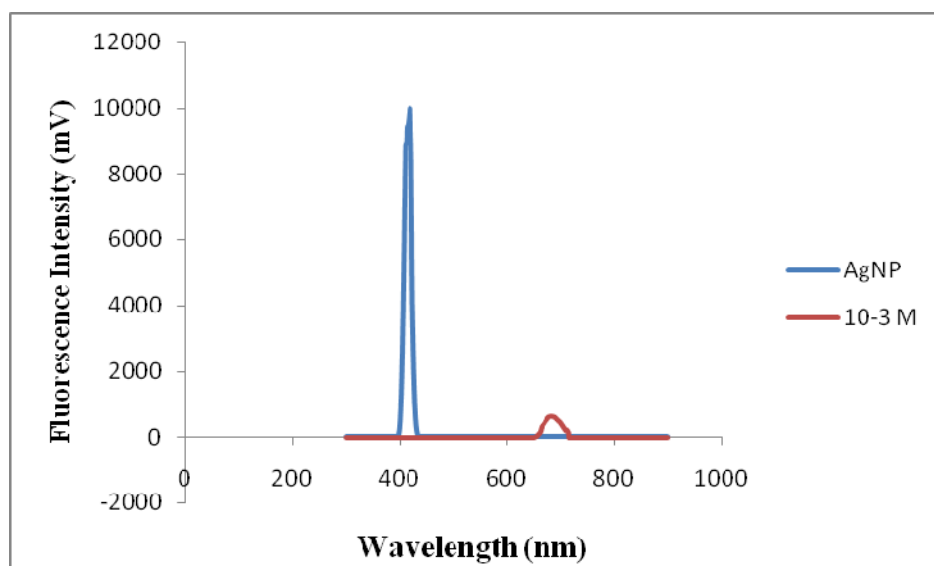


Figure S3. A fluorescence emission spectrum at different excitation wavelength

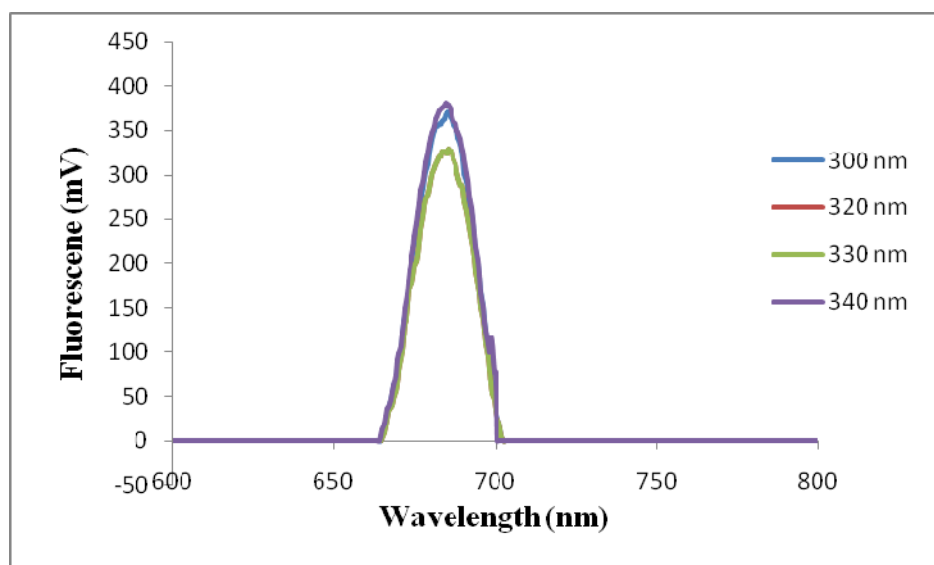


Figure S4. Variation of fluorescence intensity ratio measured against reaction time

