

## **Supporting information**

### **One pot fabrication of fluorescein functionalized manganese dioxide for fluorescence “Turn OFF-ON” sensing of hydrogen peroxide in water and cosmetic samples**

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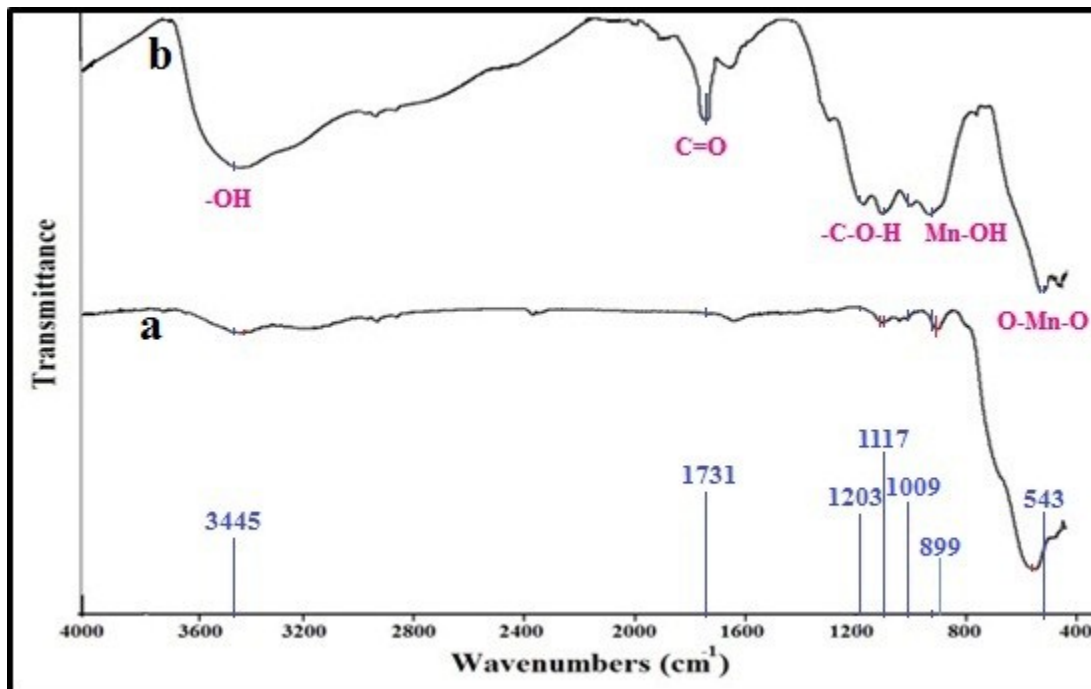


Figure 1S: FT-IR spectra of (a) MnO<sub>2</sub> NS (b) FLS@MnO<sub>2</sub> NS

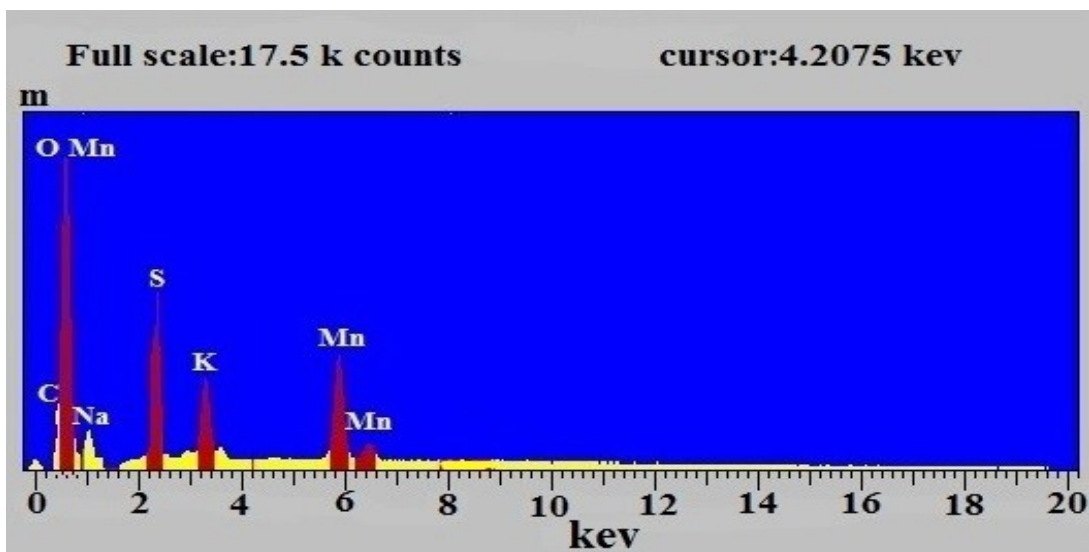
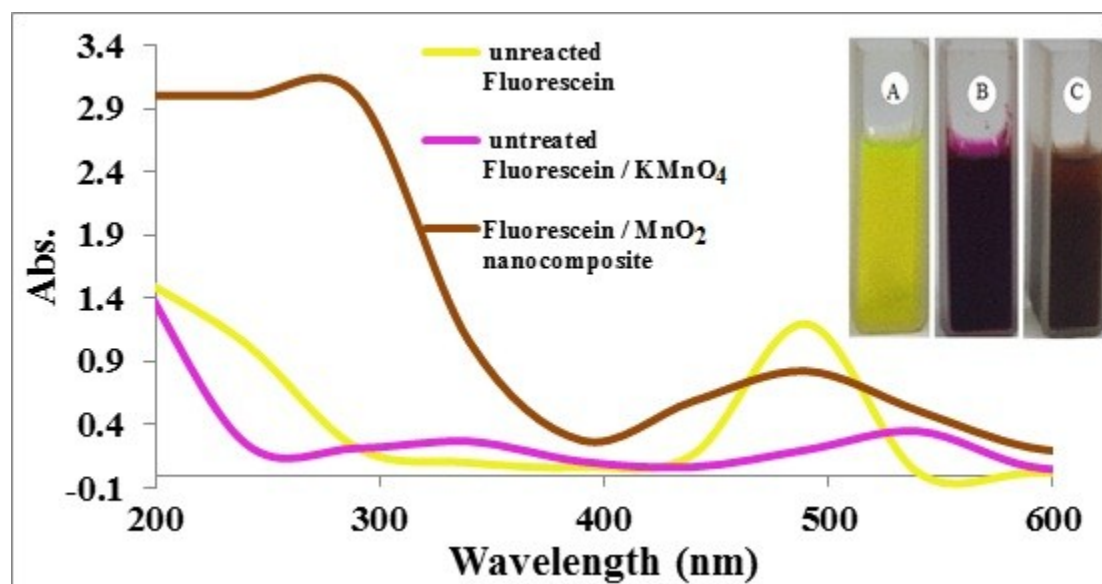


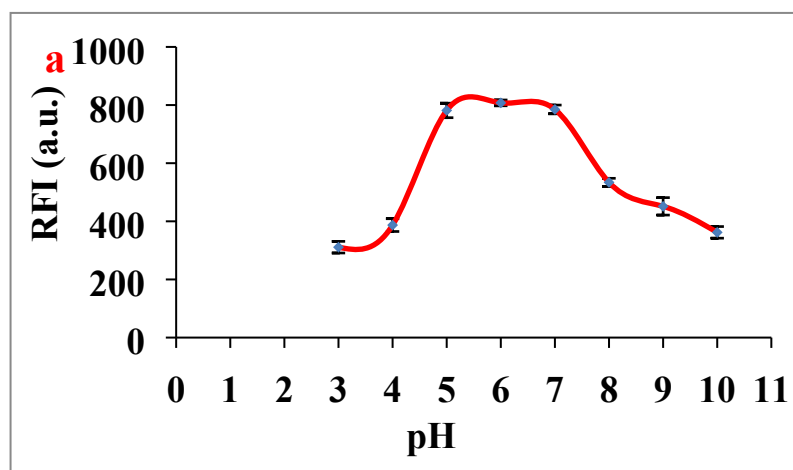
Figure 2S: EDX analysis of the synthesized FLS@MnO<sub>2</sub> NS.

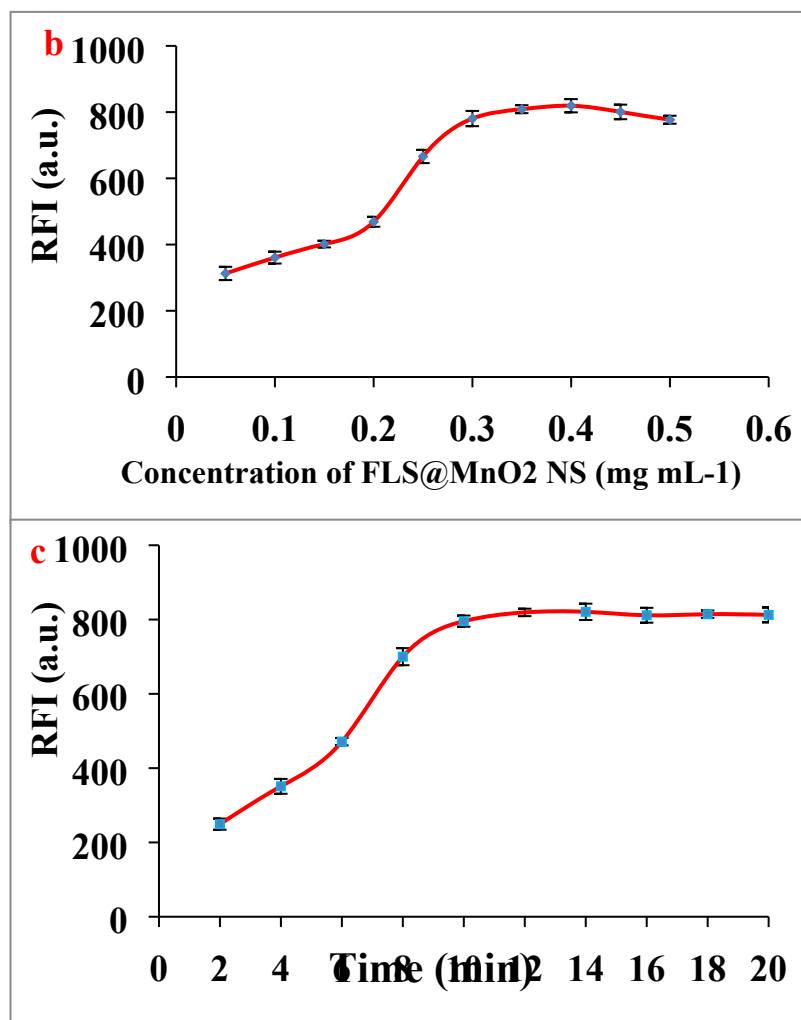
**Table 1S:** EDX analysis of elemental composition of synthesized FLS@MnO<sub>2</sub> NS.

Element	C K	O K	Na K	S K	K K	Mn K	Total
Weight %	3.12	31.23	1.97	9.41	7.22	47.05	100.00

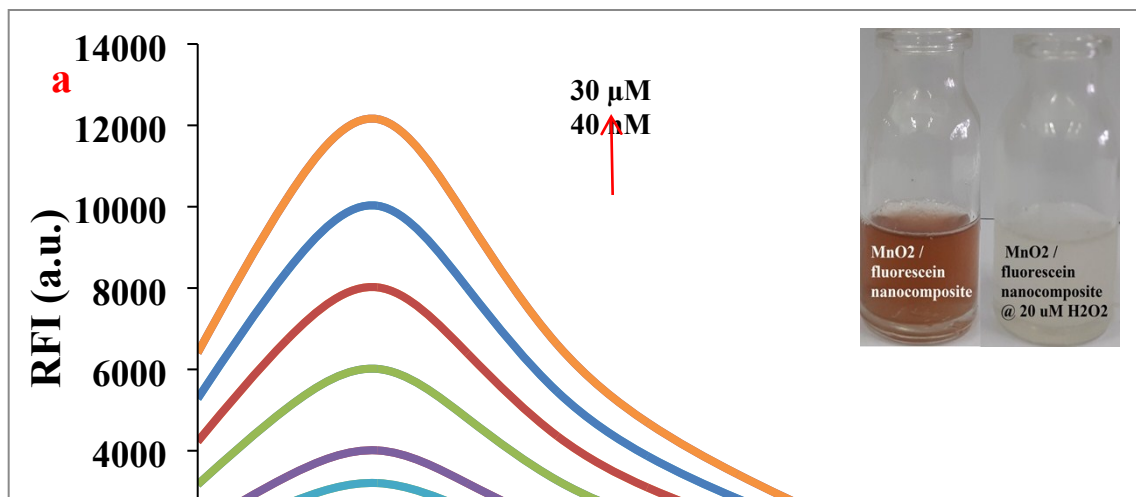


**Figure 3S:** Overlay UV-VIS spectra of: unreacted FLS, untreated FLS / KMnO<sub>4</sub> and FLS@MnO<sub>2</sub> NS. Inset: observable color images of (A) unreacted FLS (B) untreated FLS/KMnO<sub>4</sub> (C) FLS@MnO<sub>2</sub> NS





**Figure 4S.** The effect of (a) pH of B.R. buffer, (b) concentration of FLS@MnO<sub>2</sub> NS (c) incubation time on fluorescence enhancement efficiency of the experimental procedure containing 2 μM H<sub>2</sub>O<sub>2</sub>



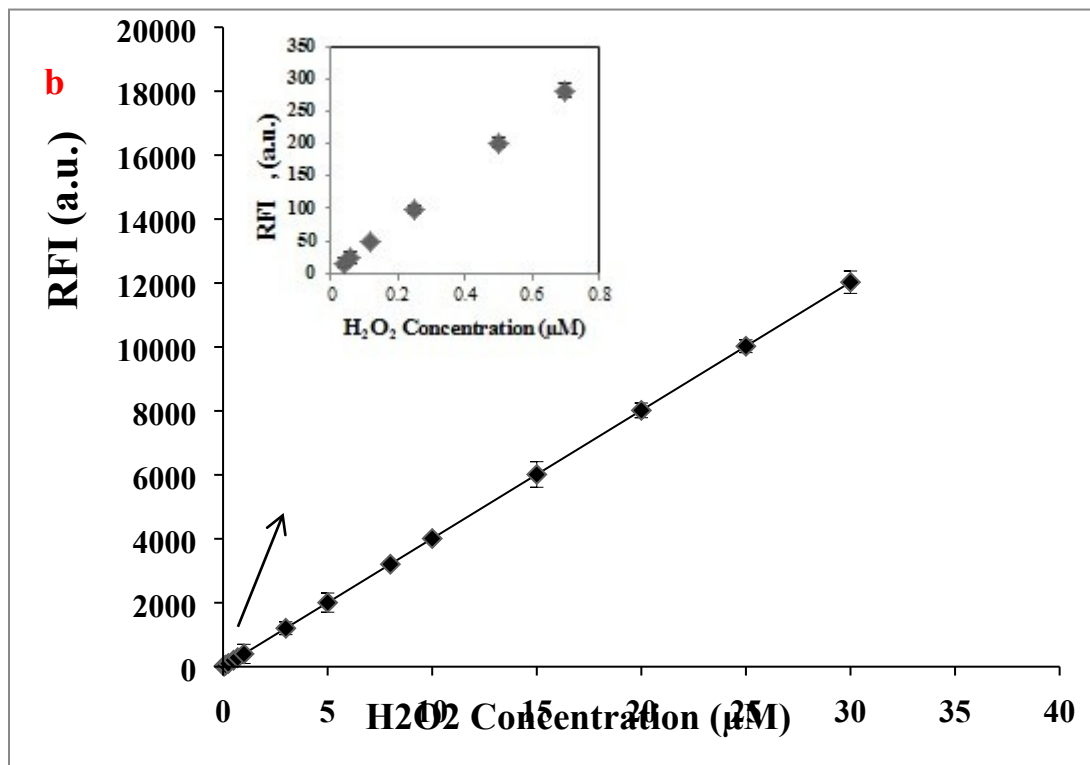
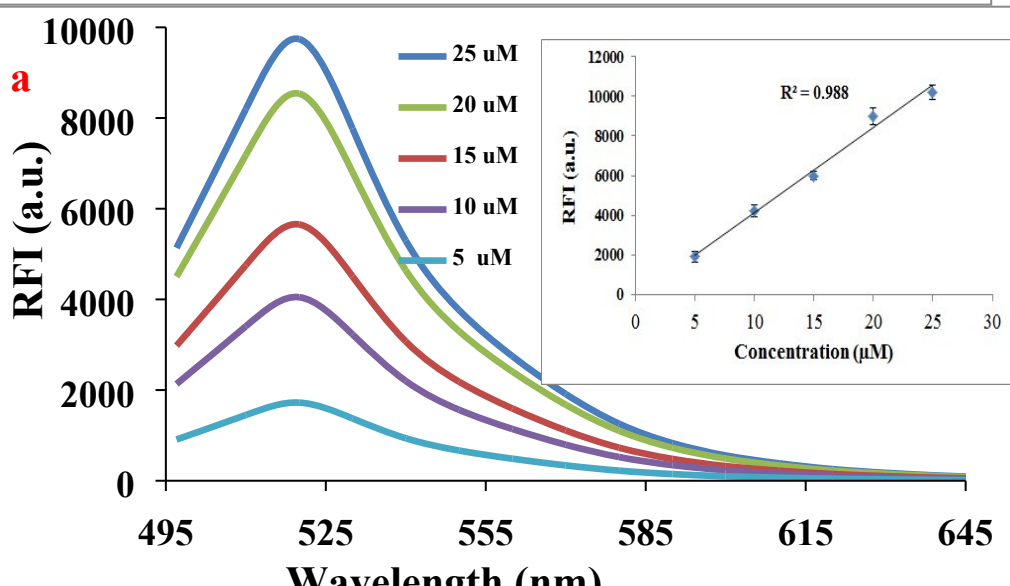


Figure 58  
concentrat  
H<sub>2</sub>O<sub>2</sub> conc



H<sub>2</sub>O<sub>2</sub> of different  
515 nm against the  
nts.

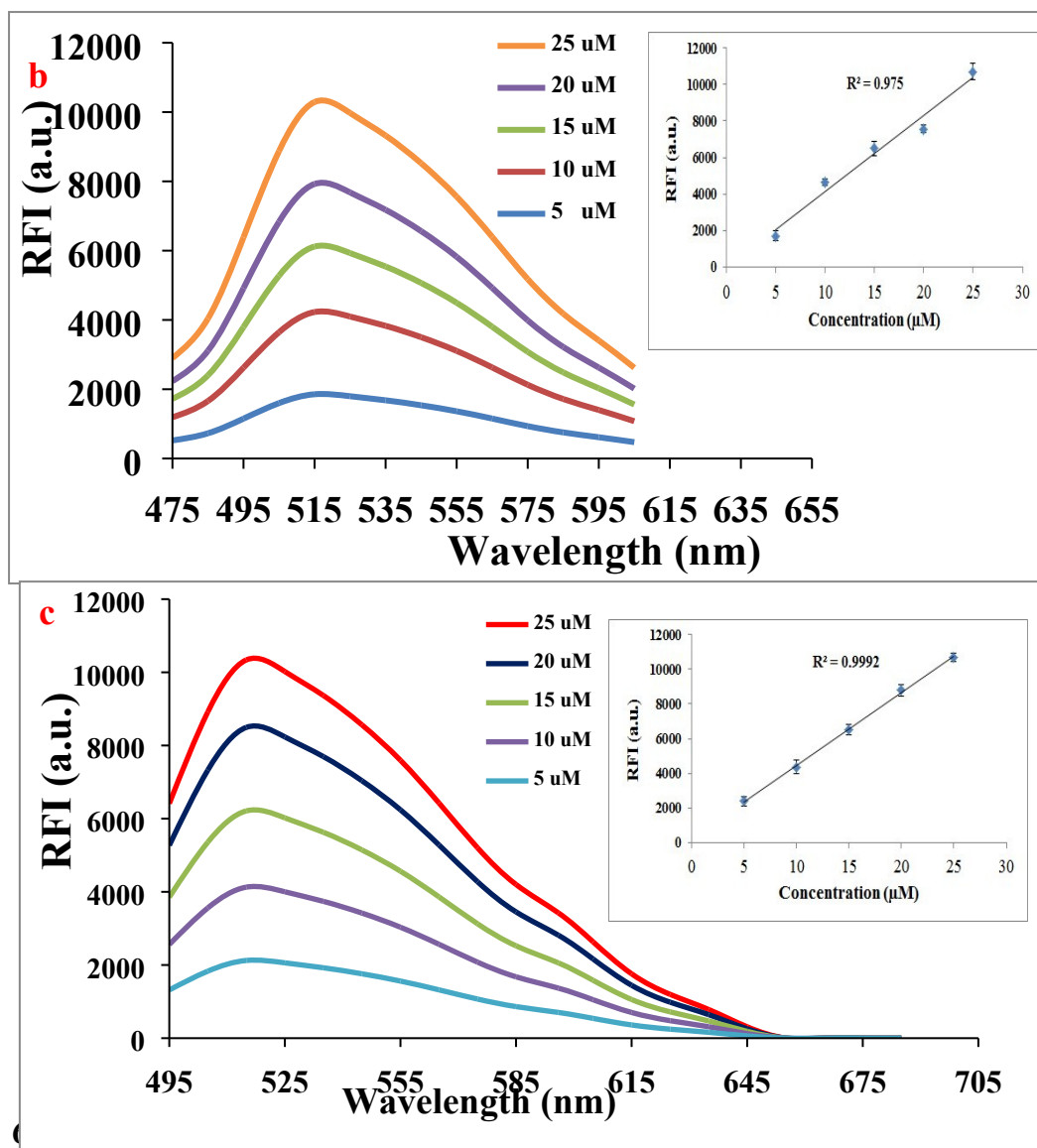
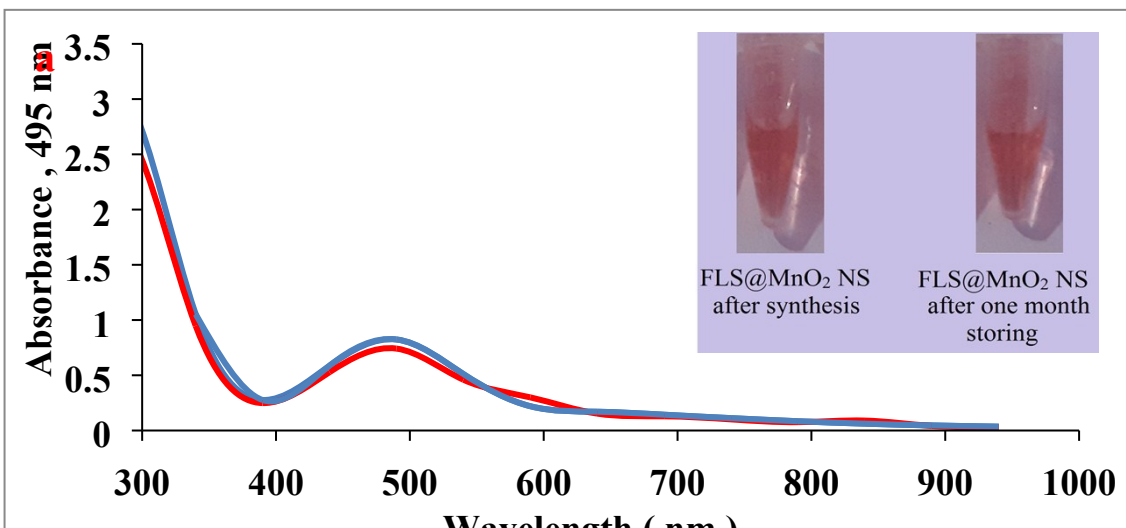
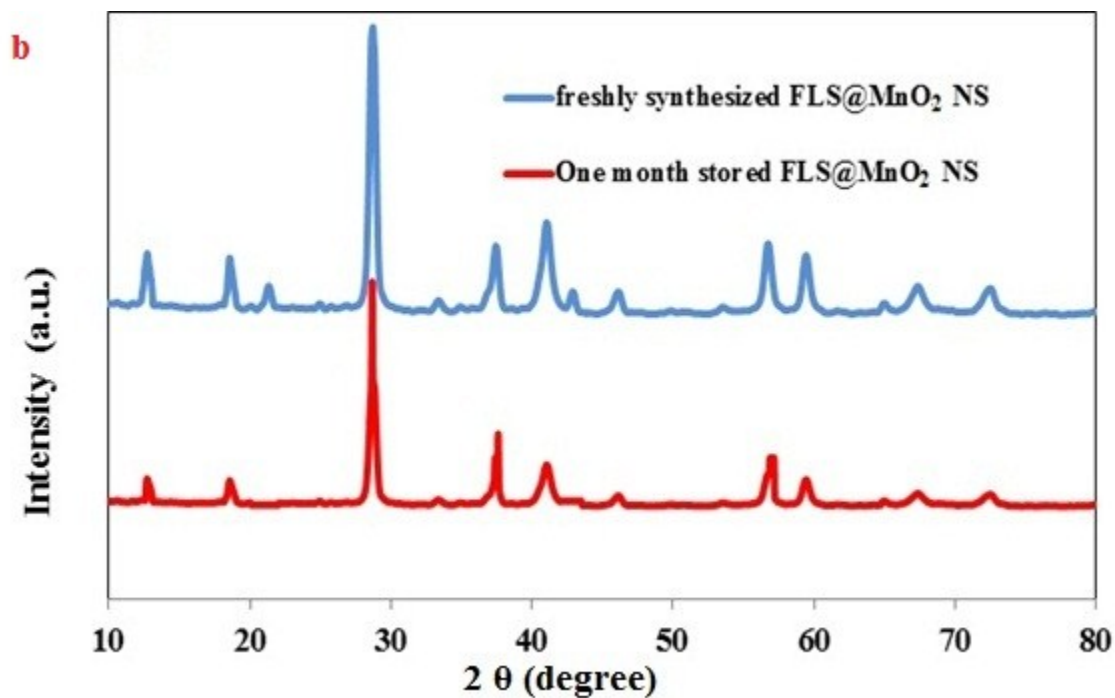


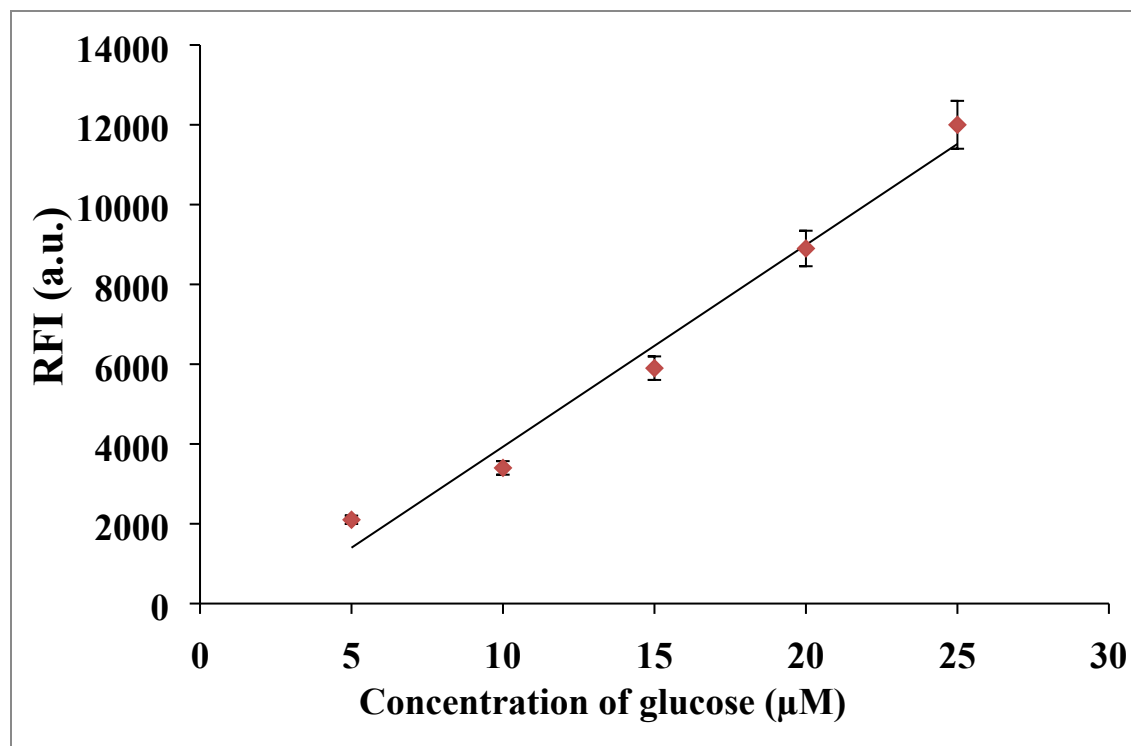
Figure (c) shows the RFI (a.u.) vs Wavelength (nm) for different concentrations (5, 10, 15, 20, 25 uM) in oxygen water sample (a), cosmetic cream sample (b) and natural water sample (C) using the proposed nanosystem at the optimum conditions.





**Figure 7S:** (a) absorption spectra of the freshly synthesized FLS@MnO<sub>2</sub> NS (blue) and the one month stored FLS@MnO<sub>2</sub> NS (red), inset: photograph images of color change (b) PXRD charts.





**Figure 8S:** Plot of the fluorescence intensity at 515 nm against the glucose concentration using the proposed nanoprobe with the intended modification.