

## Electronic Supplementary Information

### **A rapid and sensitive turn-on fluorescent probe for ascorbic acid detection based on carbon dots-MnO<sub>2</sub> nanocomposites**

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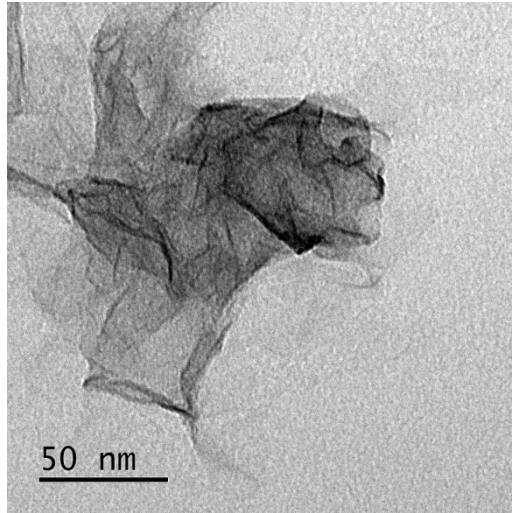
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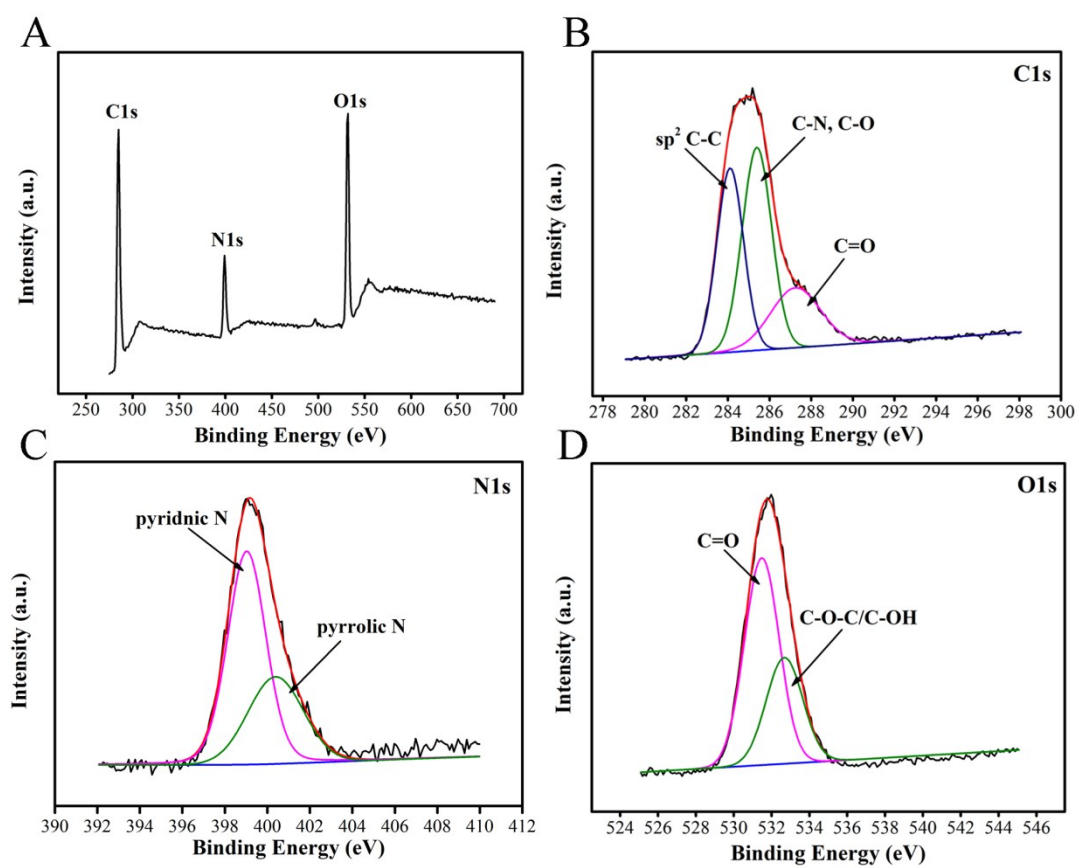
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## **XPS Characterization of carbon dots**

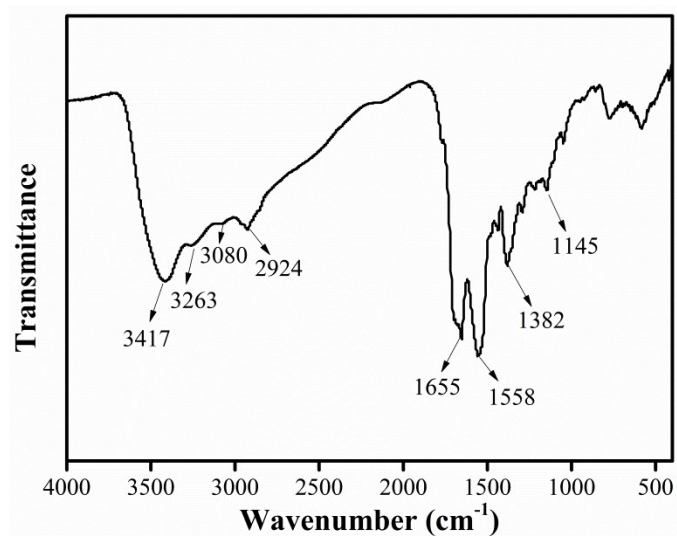
The surface composition and elemental analysis for the as-prepared carbon dots (C-dots) were determined by XPS. The full range XPS analysis (Fig. S2A) of the C-dots sample clearly shows three peaks at 284.8, 399.2 and 531.8 eV, which are associated with C1s, N1s, and O1s. The C1s spectrum (Fig. S2B) can be resolved into three components at 284.1, 285.4, and 287.2 eV, respectively, which are associated with sp<sup>2</sup> C-C, C-N/C-O, and C=O groups. The peaks at 399.0 and 400.4 eV in the N1s spectrum (Fig. S2C) reveal the presence of both pyridinic N and pyrrolic N. As shown in Fig. S2D, the O1s peaks at 531.5 and 532.6 eV indicated that nitrogen existed mostly in the form of C=O and C-O-C/C-OH, respectively.



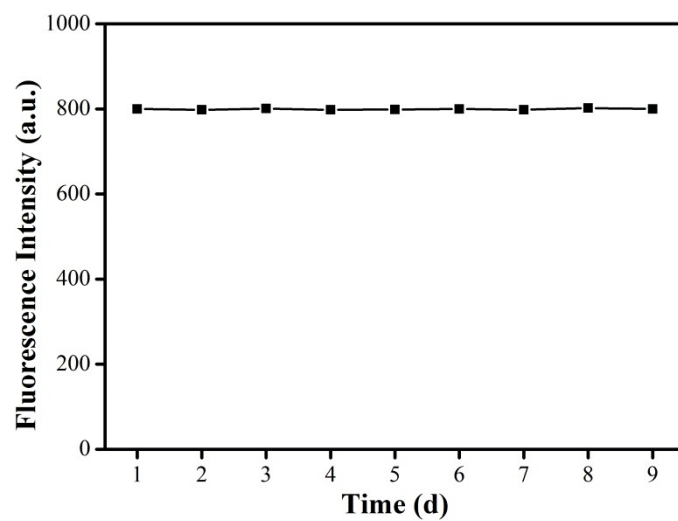
**Fig. S1.** TEM image of MnO<sub>2</sub> nanosheets.



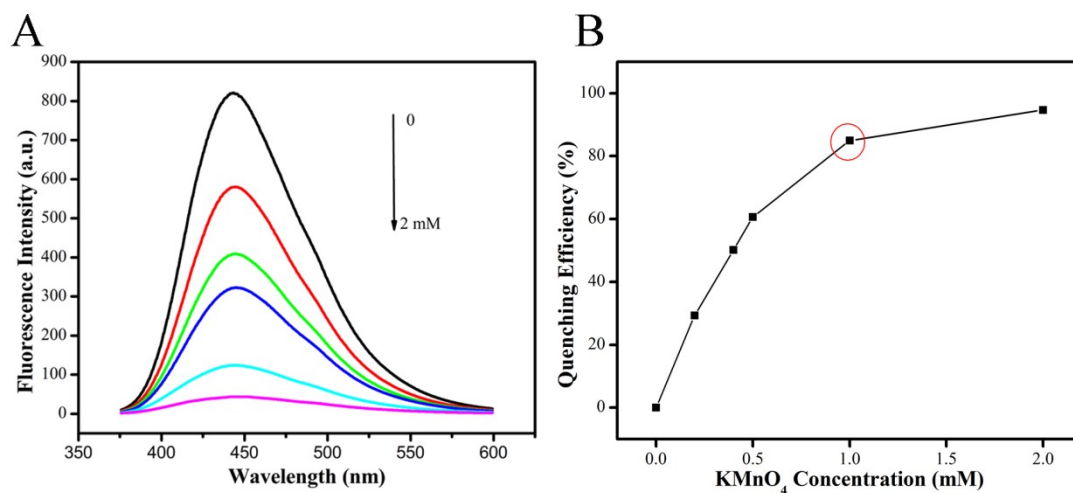
**Fig. S2.** XPS spectrum of the C-dots (A), high-resolution C-dots XPS spectra of C1s (B), N1s (C) and O1s (D).



**Fig. S3.** FTIR spectrum of the C-dots.



**Fig. S4.** Fluorescence stability of C-dots-MnO<sub>2</sub> nanocomposites in water.



**Fig. S5.** (A) Fluorescence emission spectra of C-dots at different concentrations of  $\text{KMnO}_4$  and (B) quenching efficiency versus the concentration of  $\text{KMnO}_4$ .