Supplementary materials

Fluorescence sensing of tyrosinase activity based on amines riched carbon dots through direct interaction in homogeneous system: detection mechanism and application

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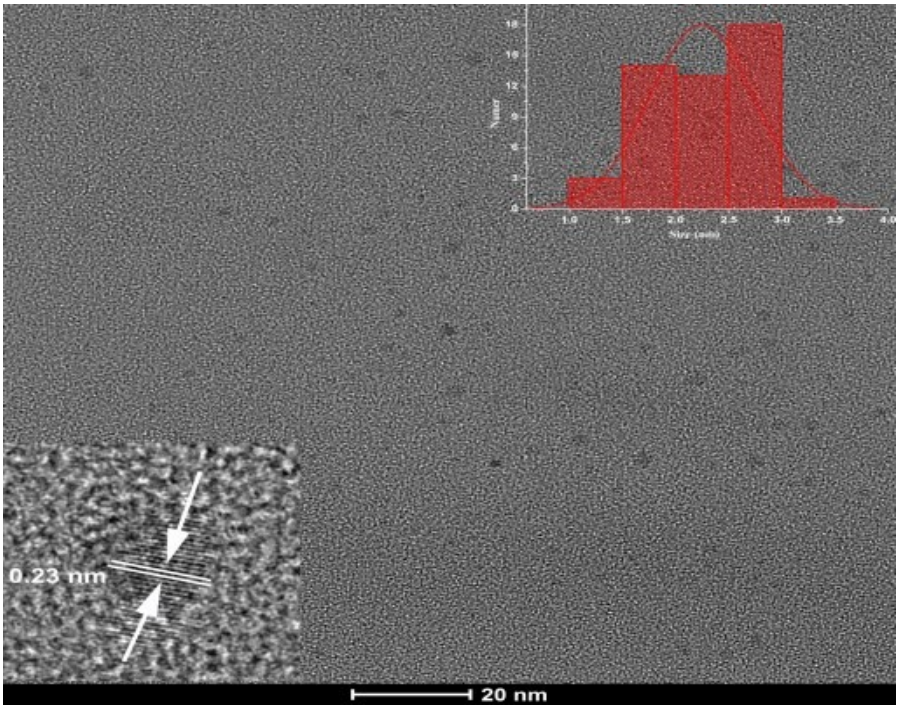

Figure S1. TEM image of N-CDs. The insets are the size distribution (upper) and high resolution TEM (below) of N-CDs.

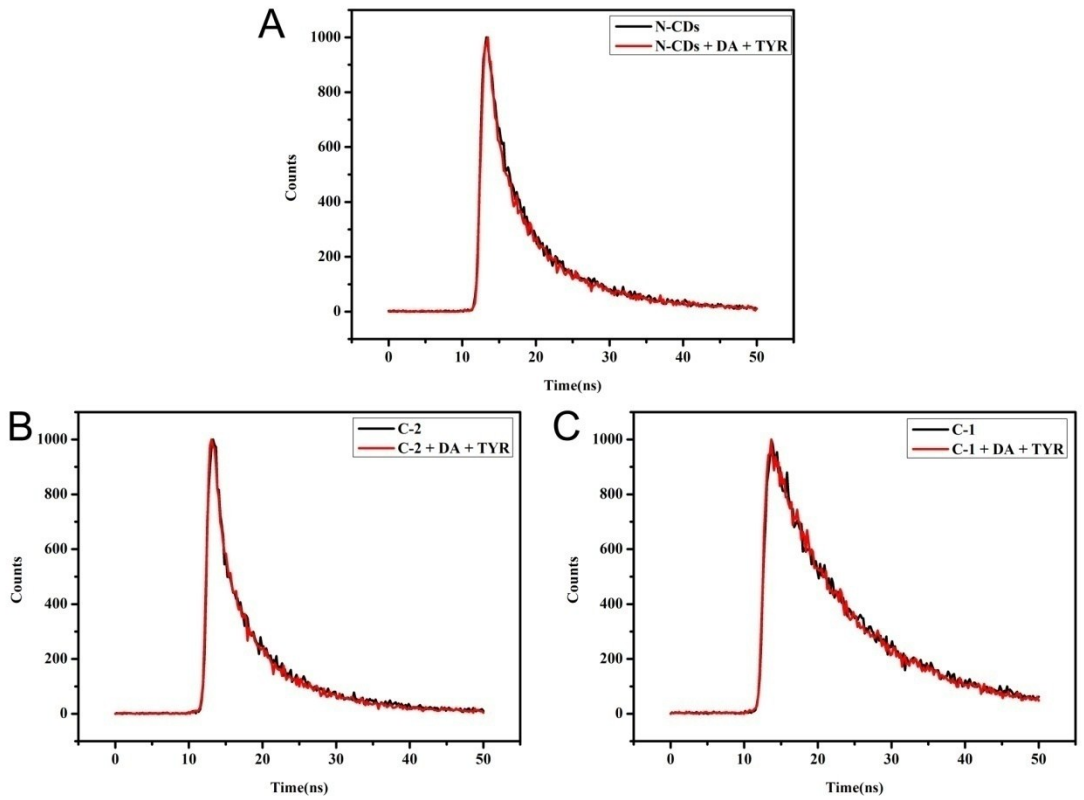

Figure S2. The lifetime decay of three kinds of carbon dots in the absence (black) and presence (red) of the mixture of TYR and DA. A: N-CDs, B: C-2, C: C-1.

Table S1.The comparison of lifetime of different carbon dots quenching or not quenching by the mixture of DA and TYR.

Samples	N-CDs	C-2	C-1
CDs	8.82 ns	8.86 ns	12.79 ns
CDs+DA+TYR	8.67 ns	8.01 ns	12.37 ns

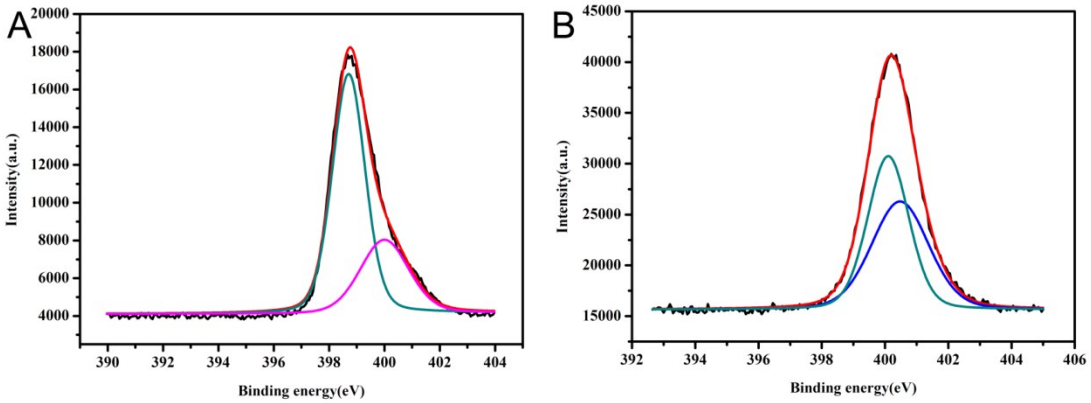

Figure S3. High-resolution XPS spectra of N-CDs (A) and C-2 (B) for N1s.

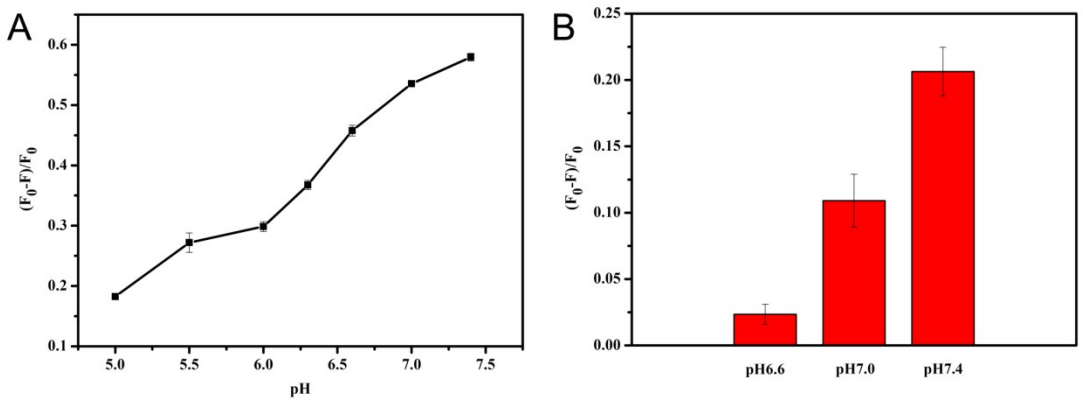

Figure S4. (A) Fluoresence intensity changes of N-CDs of the sensing platform with 10 U/mL TYR and 0.2 mM DA in different pH PBS, (B) Fluoresence intensity changes of N-CDs in the presence of 0.2 mM DA in different pH PBS.

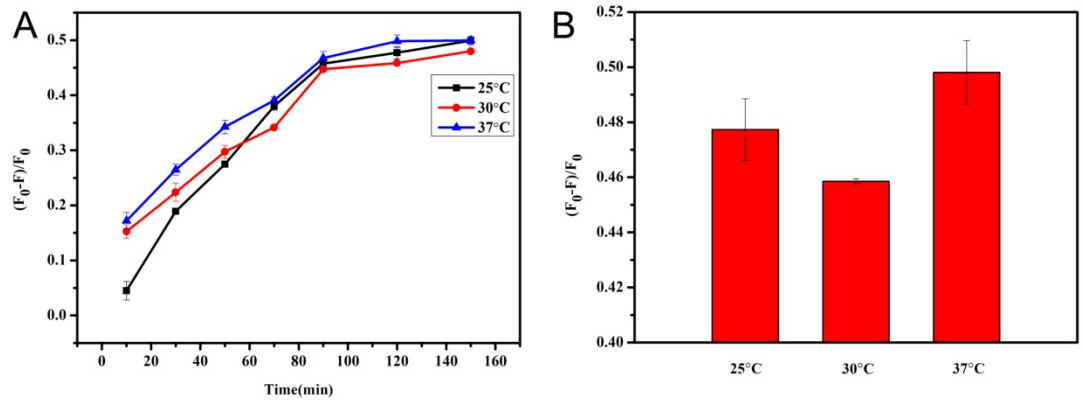

Figure S5. (A) Fluoresence intensity changes of N-CDs with 10 U/mL TYR and 0.2 mM DA in different reacting time and temperature, (B) Fluoresence intensity changes of N-CDs with 10U/mL TYR and 0.2 mM DA in 25, 30 and 37℃ after reacting 120 min.

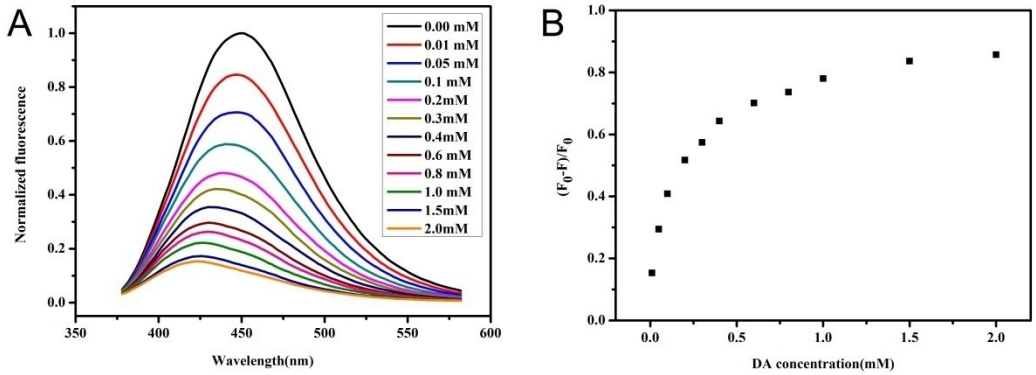

Figure S6. (A) Fluorescence emission spectra of the sensing system to different concentrations of DA with 10 U/mL TYR. (B) The relationship between the fluorescence quenching efficiency and the DA concentrations ranging from 0.01 to 2.0 mM with 10 U/mL TYR.

Table S2. Comparison of analytical performance of several fluorescence assays for TYR

Applied Materials	Linear range (U/mL)	Detection limit (U/mL)	References
Dopa-Au/Ag NCs	0.045-0.3195	0.0135	[S1]
Dopa-CQDs	0.0444-0.7111	0.0177	[S2]
Dopa-CQDs	0.0232-0.7935	0.007	[S3]
Dopa-Mn:ZnS QDs	0.018-0.36	0.0018	[S4]
PMNPs	0.4-7.0	0.1	[S5]
SiNPs	0.6-6.0	0.14	[S6]
N-CDs	0.05-6.0	0.039	This Work

References

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