Supporting Information

Phenylsulfonic acid functionalized carbon quantum dots based biosensor for acetylcholinesterase activity monitoring and inhibitor screening

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1. Figure S1. (A) TEM image of CQDs. (B) TEM image of PSA-CQDs nanoprobe. Insets: high-resolution TEM images.
2. Figure S2. Comparison of XPS wide spectra between mere CQDs (A) and PSA-CQDs nanoprobe (B), and high-resolution S2p XPS spectrum for PSA-CQDs nanoprobe (C).
3. Figure S3. IR spectra of PSA-CQDs nanoprobe and CQDs.
4. Figure S4. Fluorescence spectra of PSA-CQDs nanoprobe with the change of excitation wavelengths in the range of 395 – 465 nm.
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7. Figure S7. The influence of amino acids and amines on the fluorescence of PSA-CQDs/Cu(II) solution.
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9. Figure S9. Fluorescence intensity of the sensing system containing PSA-CQDs nanoprobe, Cu^{2+} (12.0 μM), ATCh (1480.0 μM) and AChE (600.0 U/L) as a function of incubation time.
10. Figure S10. The reversibility of PSA-CQDs nanoprobe in response to Cu^{2+} and GSH. The concentration for each species is 20.0 μM.
11. Figure S11.Selectivity of the assay toward AChE with comparison to ACP, ALP, BSA, and IgG in buffer solution. I_0 and I represent the fluorescence intensity before and after the addition of analytes. Activity used for each enzyme is 600.0 U/L.

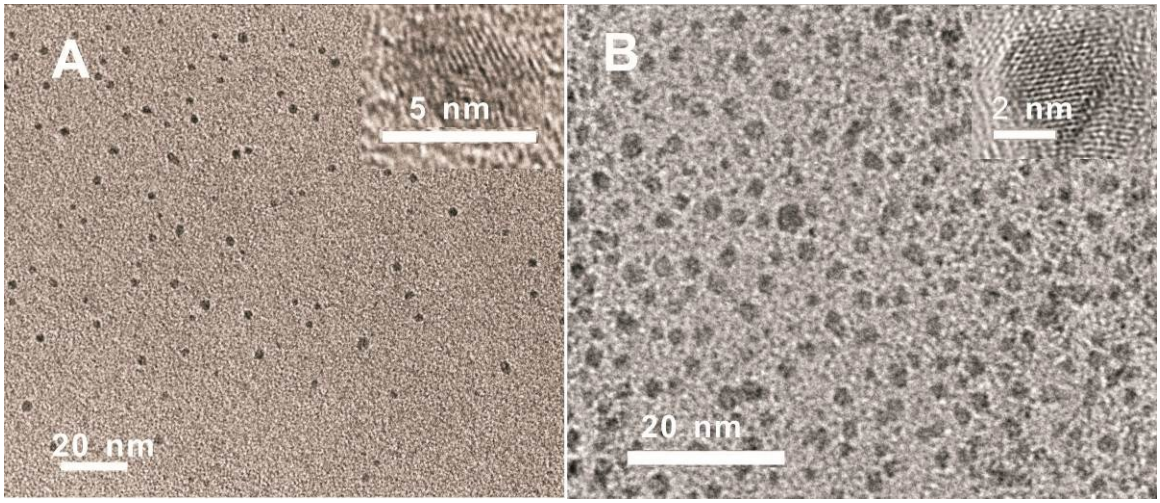

Figure S1. (A) TEM image of CQDs. (B) TEM image of PSA-CQDs nanoprobe. Insets: high-resolution TEM images.

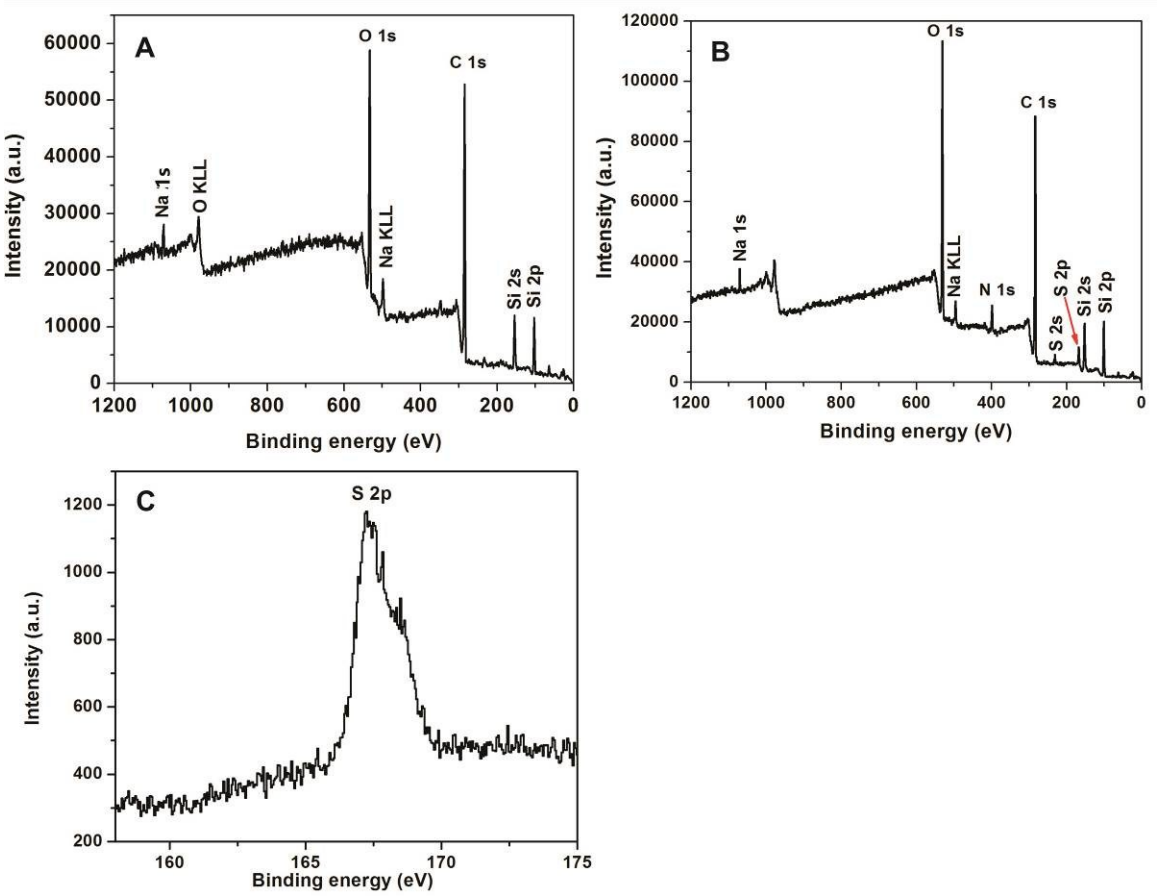

Figure S2. Comparison of XPS wide spectra between mere CQDs (A) and PSA-CQDs nanoprobe (B), and high-resolution S2p XPS spectrum for PSA-CQDs nanoprobe (C).

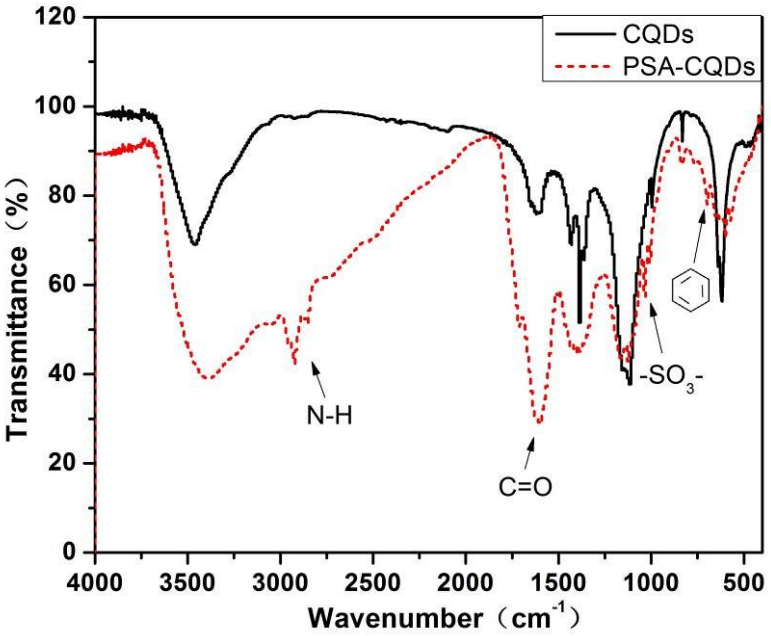

Figure S3. IR spectra of PSA-CQDs nanoprobe and CQDs.

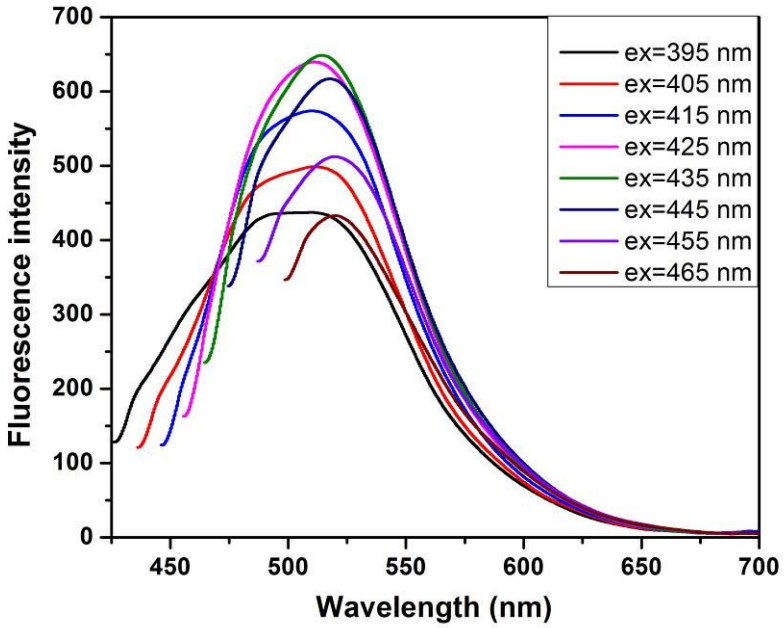

Figure S4. Fluorescence spectra of PSA-CQDs nanoprobe with the change of excitation wavelengths in the range of 395 – 465 nm.

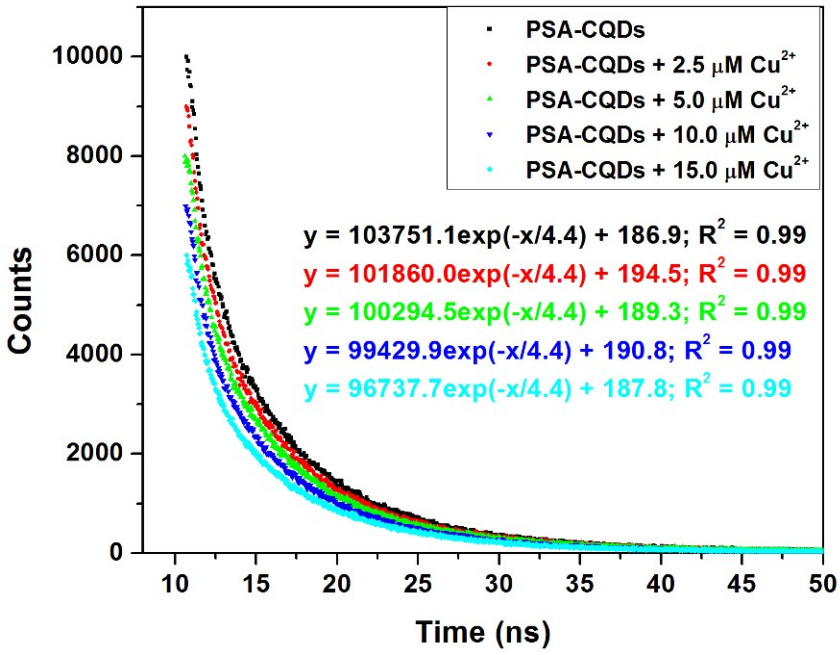

Figure S5. Time-resolved decay curves of PSA-CQDs nanoprobe in the presence of different amount of Cu^{2+}. The lifetimes are calculated to be 4.4 ns.

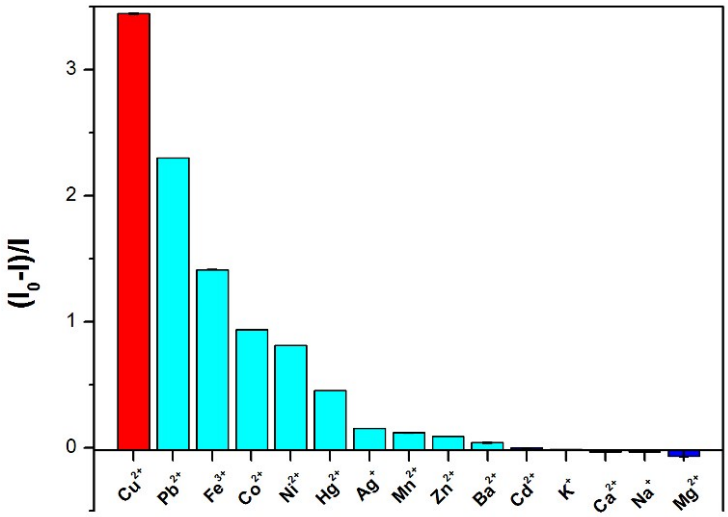

Figure S6. The influence of metal cations on the fluorescence of PSA-CQDs nanoprobe. The concentration for each metal ion is 40.0 μM.

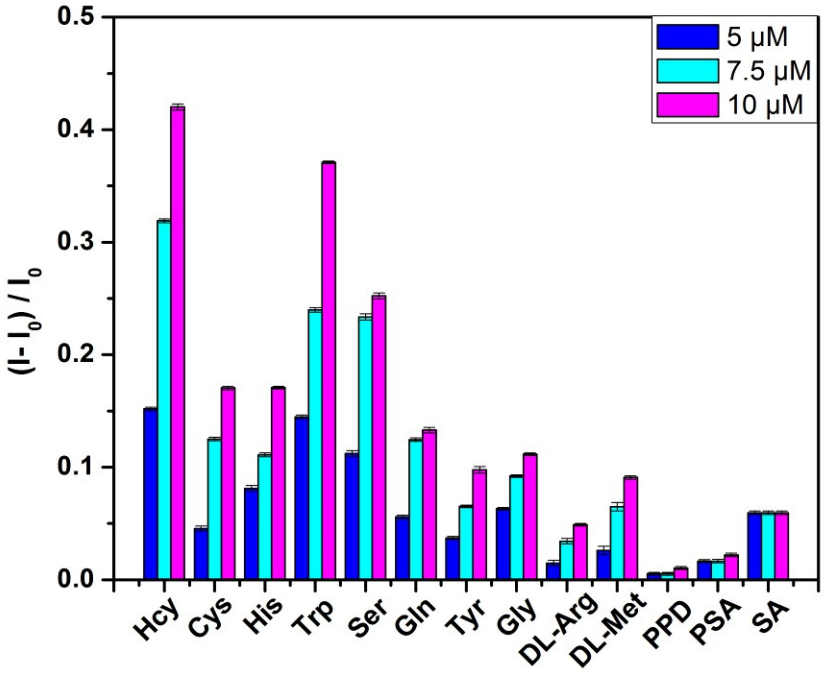

Figure S7. The influence of amino acids and amines on the fluorescence of PSA-CQDs/Cu(II) solution.

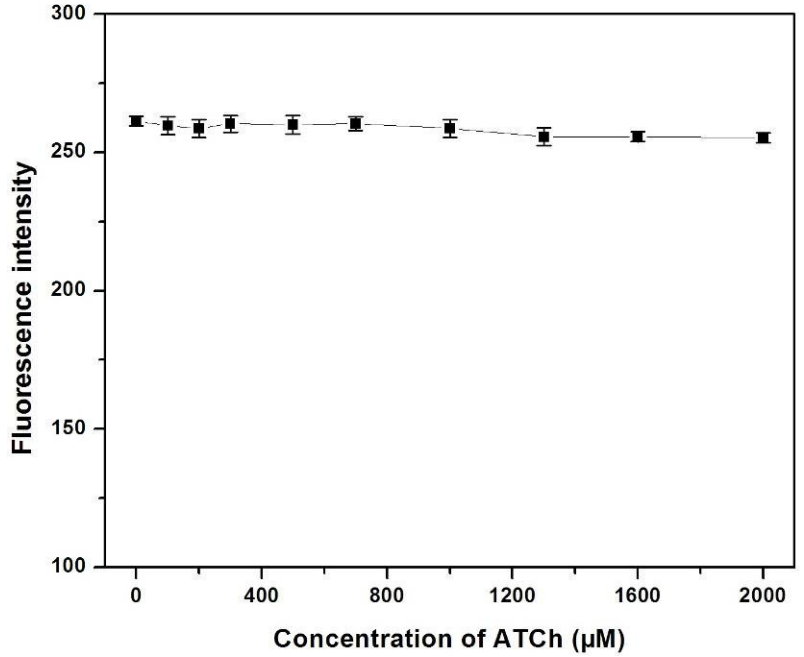

Figure S8. The influence of ATCh amount on the fluorescence of PSA-CQDs nanoprobe.

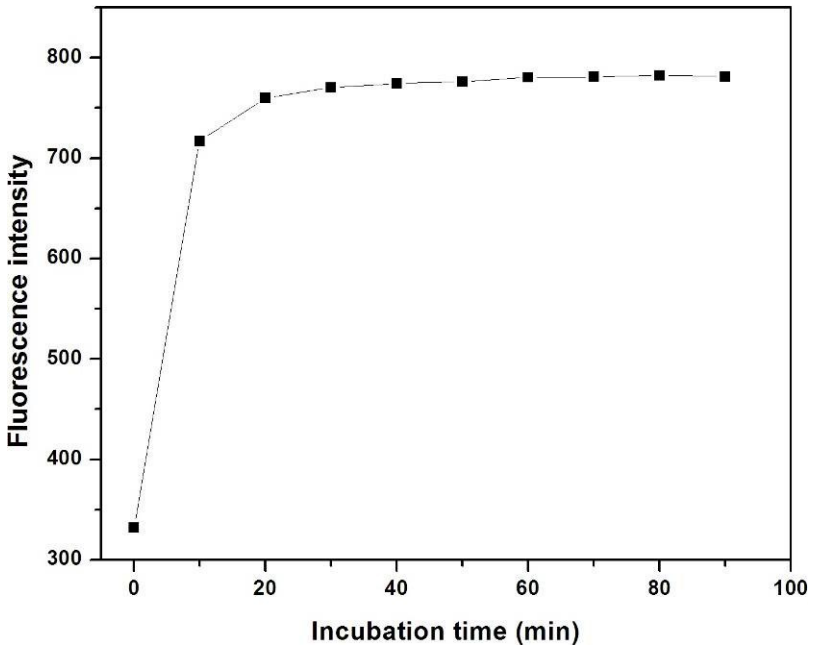

Figure S9. Fluorescence intensity of the sensing system containing PSA-CQDs nanoprobe, Cu^{2+} (12.0 μM), ATCh (1480.0 μM) and AChE (600.0 U/L) as a function of incubation time.

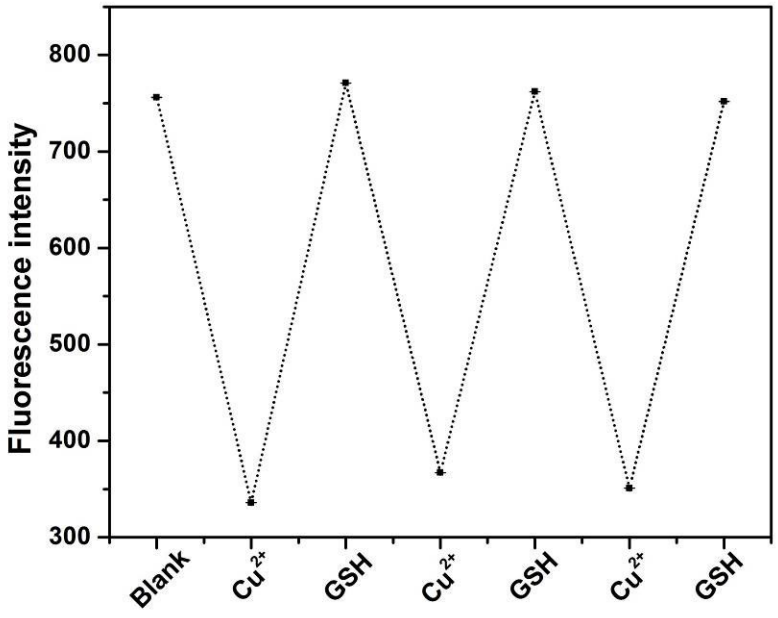

Figure S10. The reversibility of PSA-CQDs nanoprobe in response to Cu^{2+} and GSH. The concentration for each species is 20.0 μM.

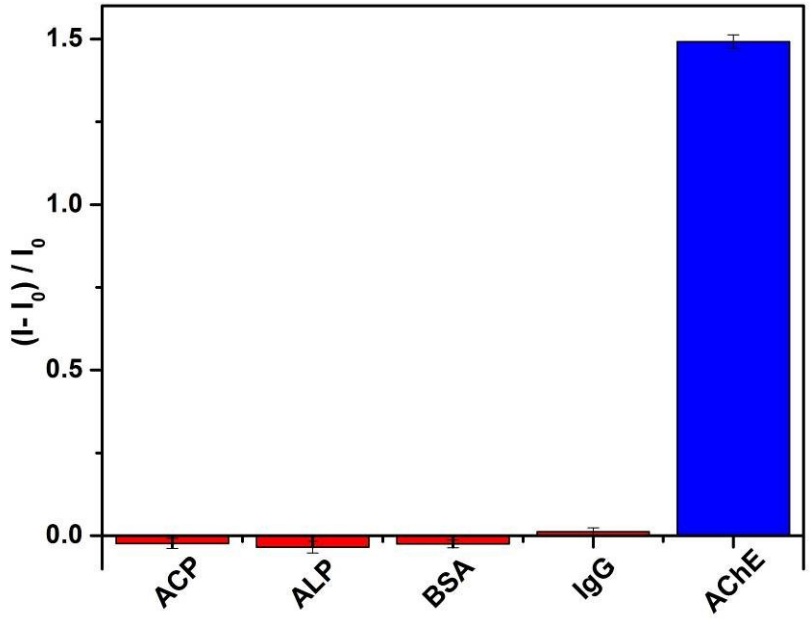

Figure S11.Selectivity of the assay toward AChE with comparison to ACP, ALP, BSA, and IgG in buffer solution. I_0 and I represent the fluorescence intensity before and after the addition of analytes. Activity used for each enzyme is 600.0 U/L.