A specific electrochemiluminescence sensor for selective and ultra-sensitive mercury(II) detection based on dithiothreitol functionalized copper nanoclusters/carbon nitride nanocomposite

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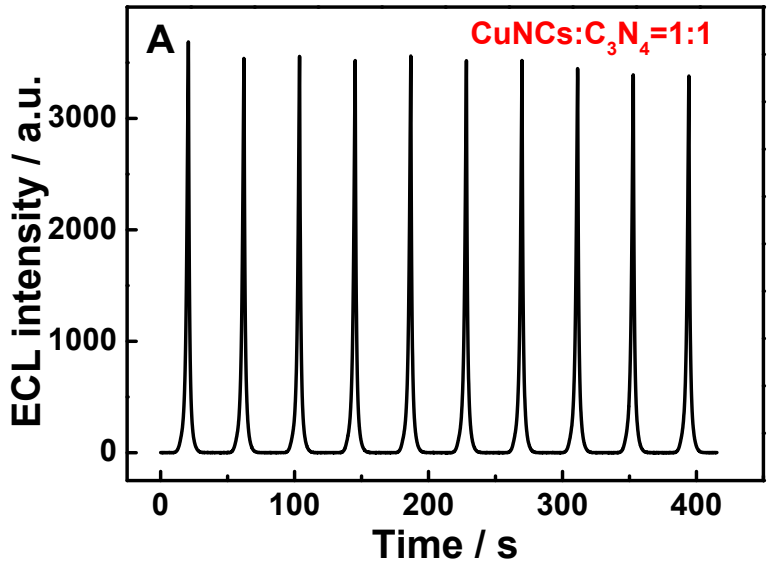
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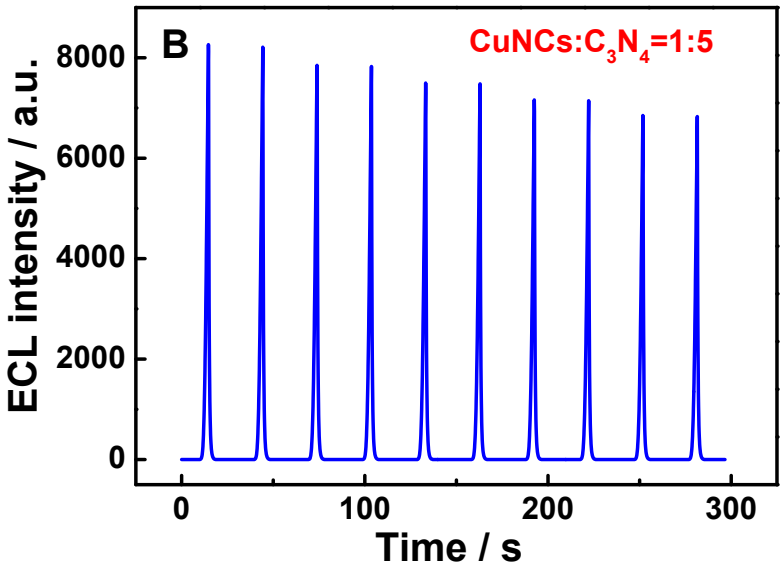
2000
3000
0
100
200
300
400
Time / s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ECL intensity / a.u.
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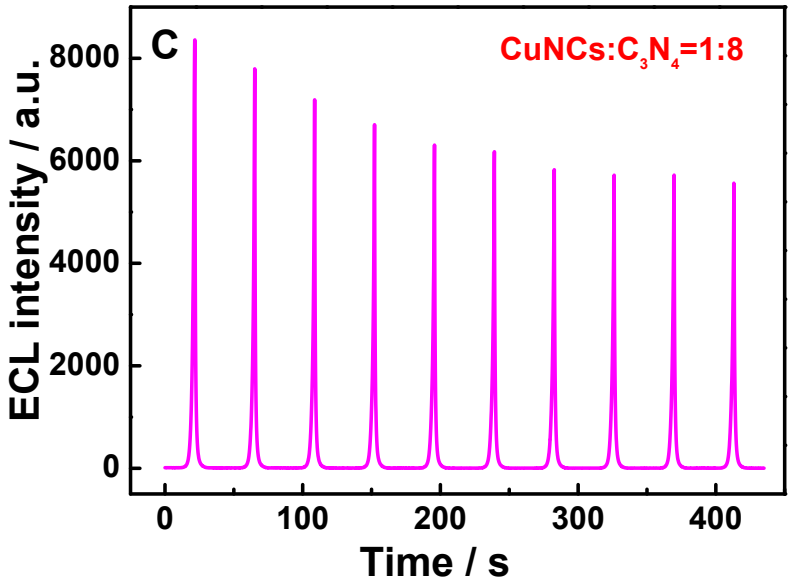
4000
6000
8000
0
100
200
300
Time / s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ECL intensity / a.u.
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6000
8000
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100
200
300
400
Time / s

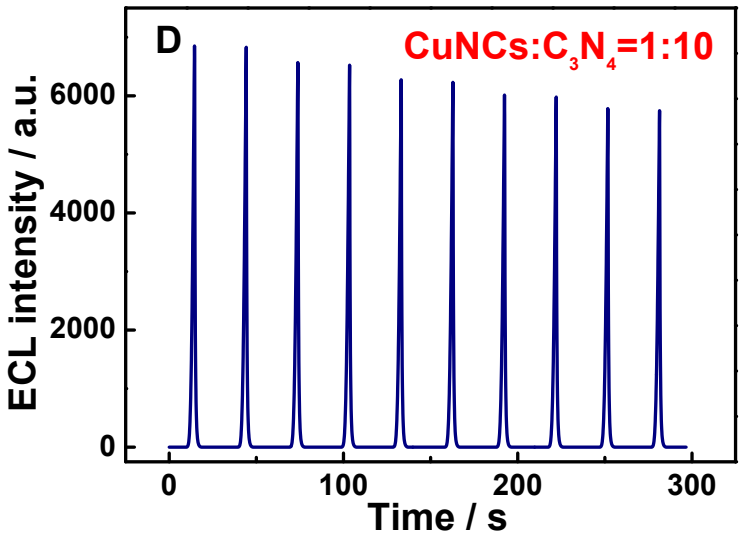

Fig. S1. Influence of the mass ratios of DTT-CuNCs and CNNS on the ECL intensity of resulting DTT-CuNCs/CNNS nanocomposites.

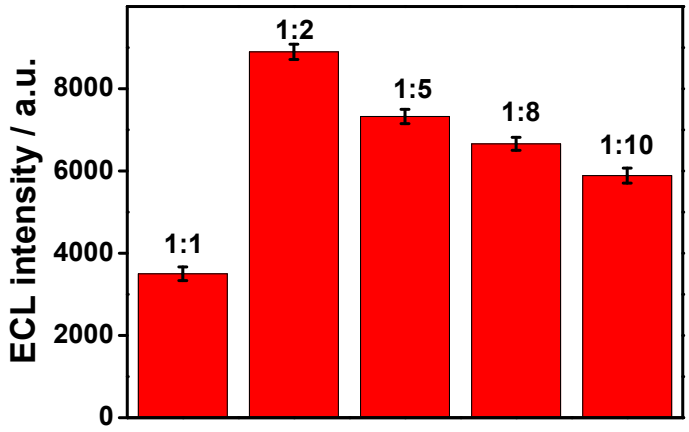

Fig. S2. Histogram of the ECL intensity for the different concentration ratios of DTT-CuNCs and CNNS in the DTT-CuNCs/CNNS nanocomposite, as indicated above each bar.

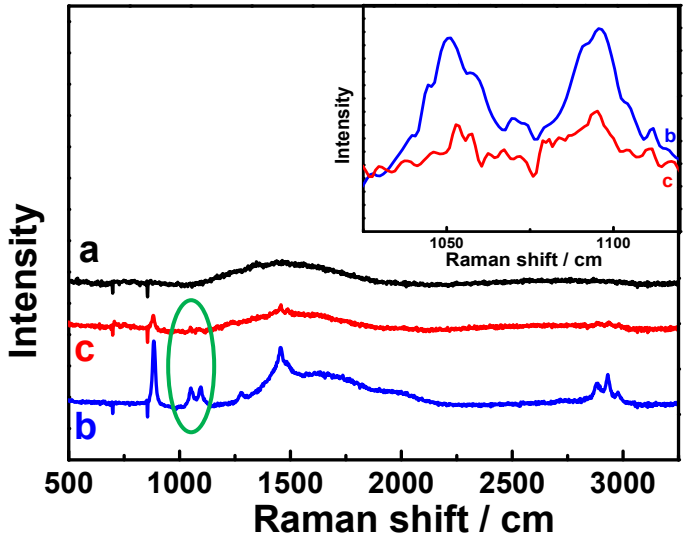

Fig. S3. Raman spectra of CNNS (a), DTT-CuNCs (b) and DTT-CuNCs/CNNS (c), and the green encircled area in exemplified by an inset.

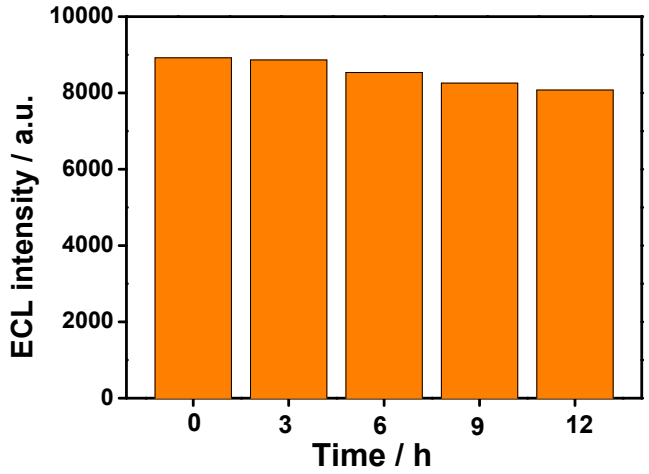

Fig. S4. The ECL intensity of proposed ECL sensor after immersion in the co-reactant at different times.

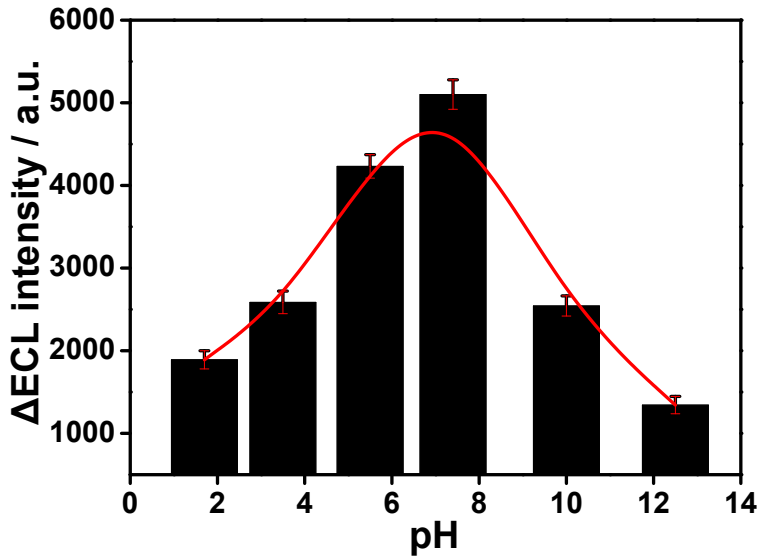

Fig. S5. The ECL decrement ($\Delta I = I_0 - I$) for the detection of 10 nM of Hg^{2+} at different pH of co-reactant.

The pH value of co-reactant from left to right: 1.7, 3.5, 5.5, 7.4, 10, 12.5.

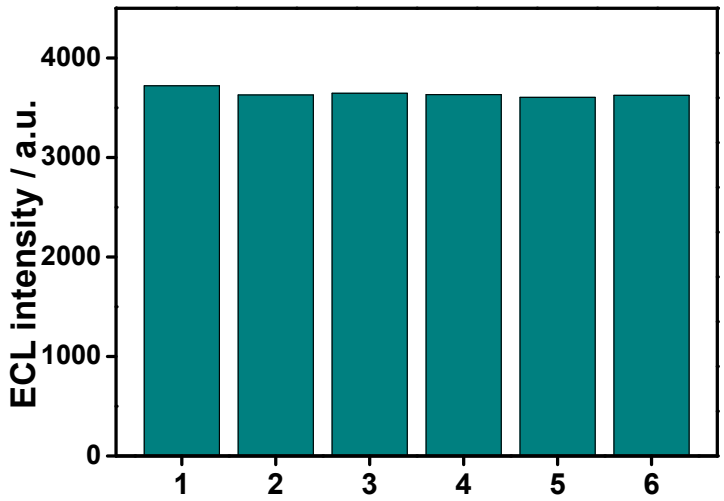

Fig. S6. The reproducibility of ECL sensor with six different electrodes.

Table S1 Performance comparison for the ECL detection (using the DTT-CuNCs/CNNS sensor developed here) with several other commonly used methods for Hg^{2+} detection.

Method	LOD	Reference
AAS	0.01 μg L^{-1}	3
Fluorescence	1.5 nM	4
AFS	1.4ng L^{-1}	5
ICP-MS	1.82 μg / g	6
Ultraviolet spectrophotometry	10 nM	7
Electrochemical	0.5 nM	8
ECL	**0.01 nM**	**This work**