

Electronic Supplementary information

for

Au@NH₂-MIL-125-based Multifunctional Platform for Colorimetric Detections of Biomolecules and Hg²⁺

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Table S1 Comparison of different methods for H₂O₂ sensors

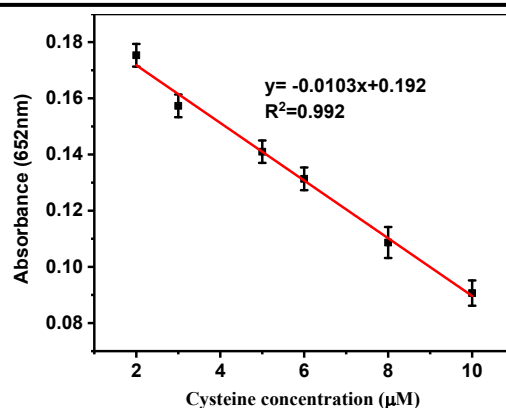
| Method Reference | Linear range | Detection limit (μM) |
|--|----------------|----------------------|
| Electrochemical analysis ^[1] | 20 μM to 20mM | 2.95 |
| Flow injection ^[2] | 0.1-1 mM | 20 |
| Fluorometry ^[3] | 80-420 μM | 11 |
| Batch injection ^[4] | 100-600 μM | 10 |
| Colorimetric ^[5] | 4-40 μM | 1.7-2 |
| Colorimetric ^[this work] | 2-10 μM | 0.24 |

Table S2 Comparison of the different methods for cysteine sensors

| Method Reference | Nanozyme | Linear range | Detection limit (μM) |
|-------------------------------------|----------------------------------|--------------|----------------------|
| Colorimetric ^[6] | UiO-66-NH ₂ | 5-120 μM | 0.306 |
| Colorimetric ^[7] | Ce-MOF | 0.1-1μM | 0.14 |
| Colorimetric ^[8] | MoS ₂ -polypyrrole-Pd | 1-10 μM | 0.08 |
| Colorimetric ^[9] | FeCo-CNFs | 1-20 μM | 0.15 |
| Colorimetric ^[10] | mesoporous NiO | 20-100 μM | 1.1 |
| Colorimetric ^[this work] | Au@NH ₂ -MIL-125 | 1-10μM | 0.14 |

Table S3 Comparison of the different methods for Hg²⁺ sensors

| Method Reference | Materials | Linear range | Detection limit |
|------------------------------------|---------------------------------|------------------|-----------------|
| Colorimetry ^[11] | BSA-AuNCs-EDTA | 0.2 -60 μ M | 30 nM |
| Fluorimetry ^[12] | TEA-CdSe-QDs | 4.0 -35 μ M | 190 nM |
| Fluorimetry ^[13] | Trypsin-AuNCs | 20-500 nM | 50 nM |
| Colorimetry ^[14] | DNA/AuNPs | 0-5 μ M | 500 nM |
| Colorimetry ^[15] | MVC-MOF | 0.05-6 μ M | 11 nM |
| Colorimetry ^[16] | G-quadruplex | 0.05-2.5 μ M | 50 nM |
| Colorimetry ^[17] | Ag@GO | 10-200 μ M | 338 nM |
| Colorimetry ^[this work] | Au@NH ₂ -MIL-125(Ti) | 1-5 μ M | 100 nM |

**Fig. S1.** Linear relationship of the absorbance intensity of A652 against Cys concentrations in fetal bovine serum sample (2.0 μ M, 3.0 μ M, 5.0 μ M, 6.0 μ M, 8.0 μ M, 10 μ M). Error bars are obtained according to five independent measurements.**References:**

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