

## Supporting Information

### **Oxygen Vacancy Enriched ZIF-8 Encapsulated Au Nanoparticles Boosts Electrochemical Dopamine Sensing**

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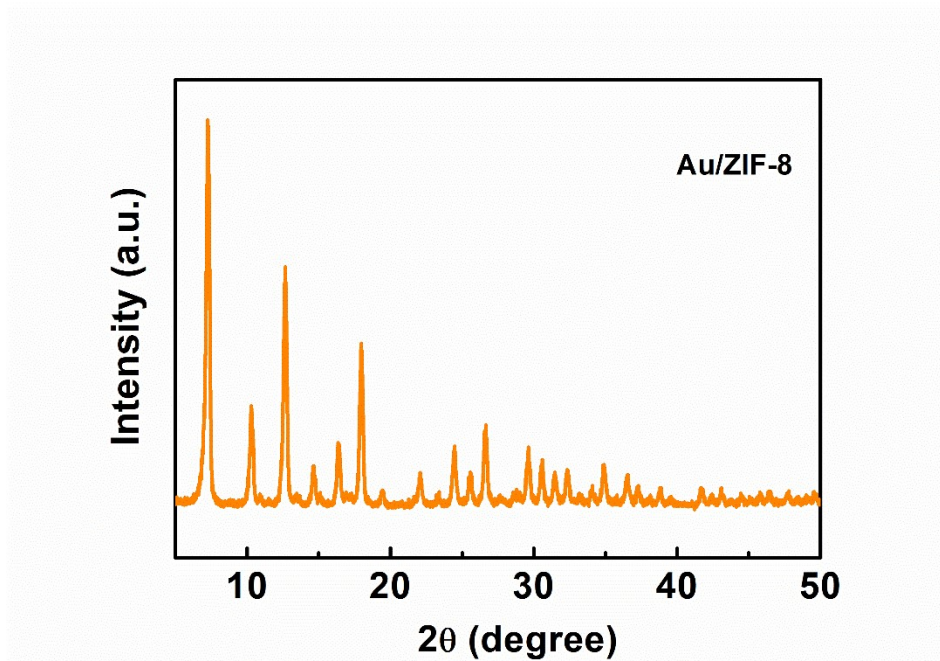


Figure S1. XRD pattern of the reference sample Au/ZIF-8.

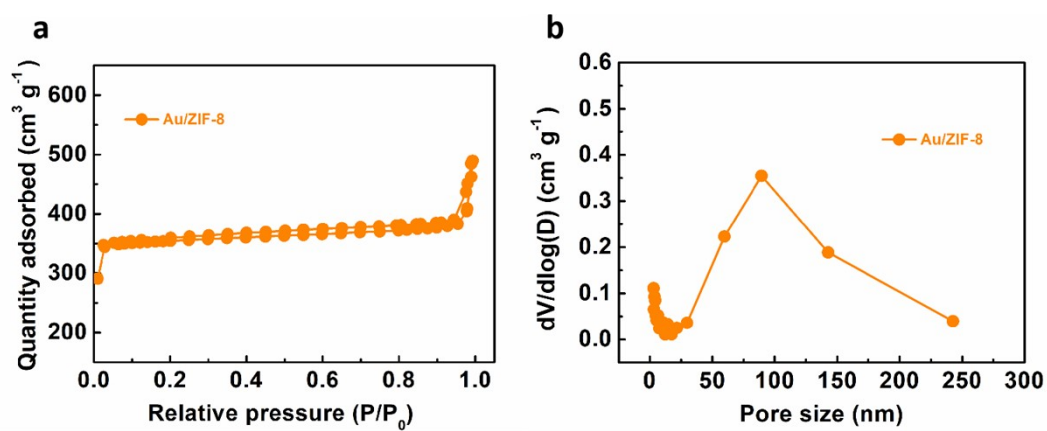
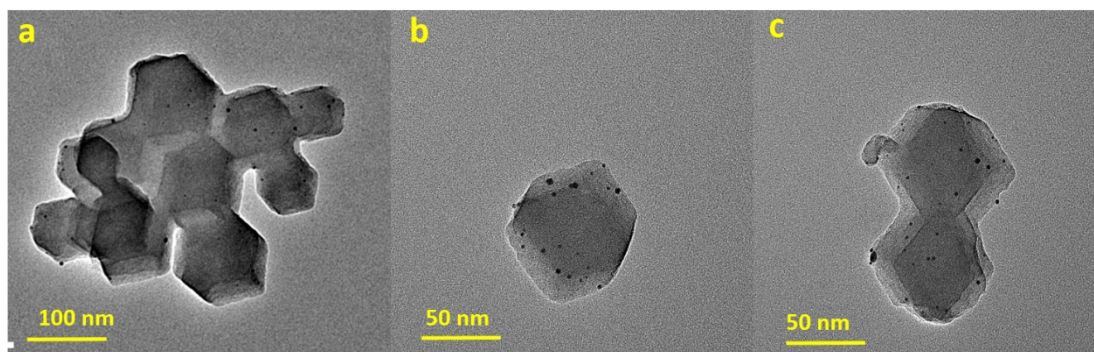
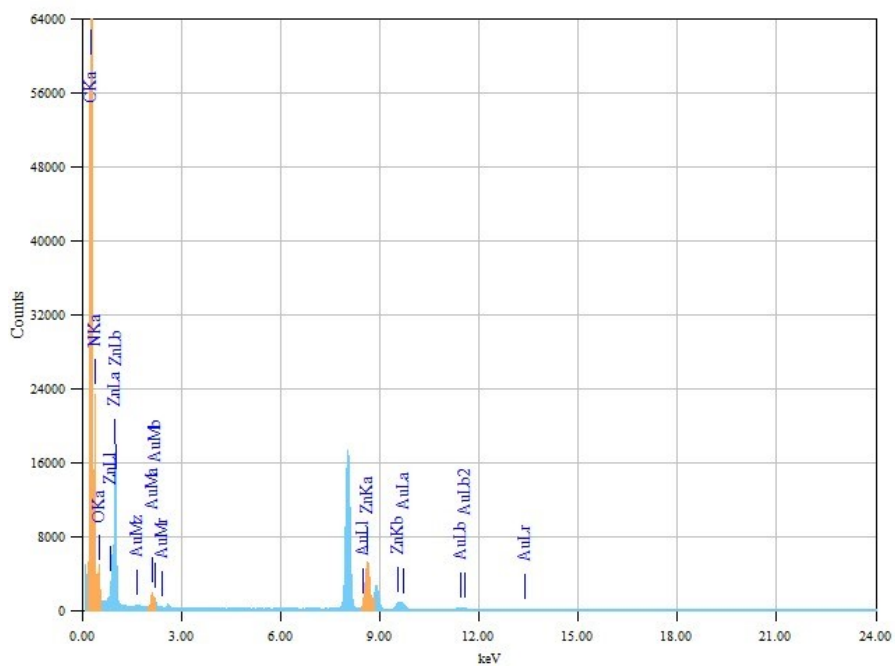


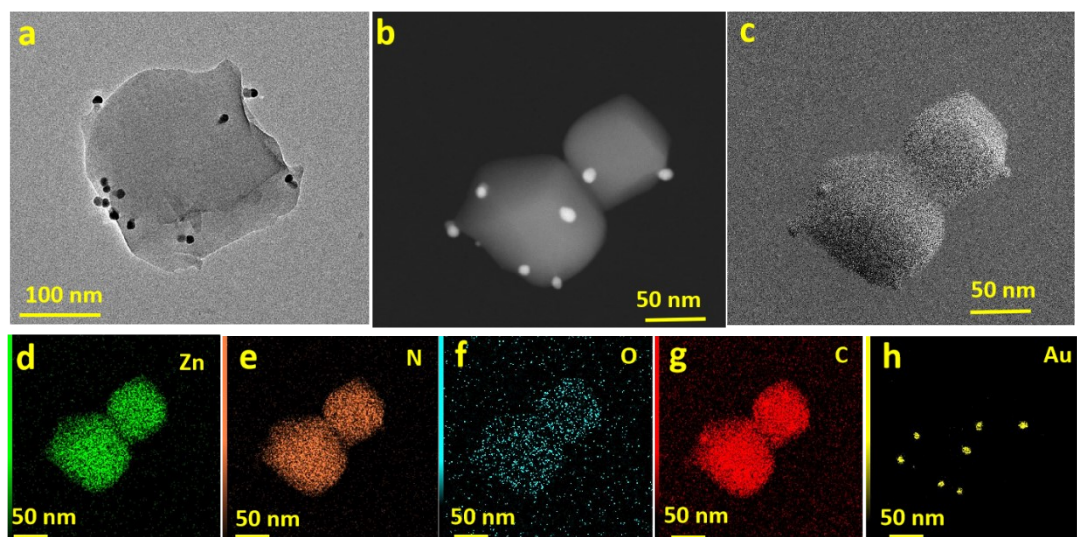
Figure S2.  $N_2$  adsorption/desorption isotherms (a) and the corresponding pore size distribution curves (b) of the reference sample Au/ZIF-8.



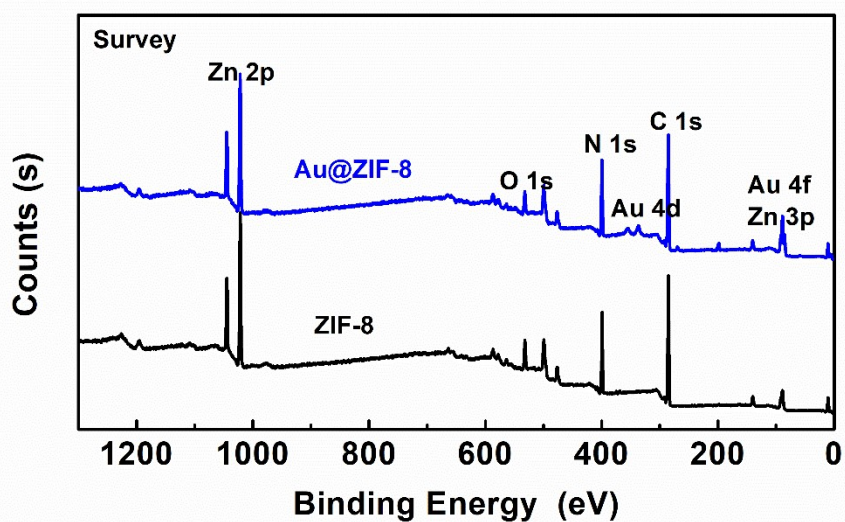
**Figure S3.** TEM image (a-c) and the corresponding EDS spectrum of the sample Au@ZIF-8.



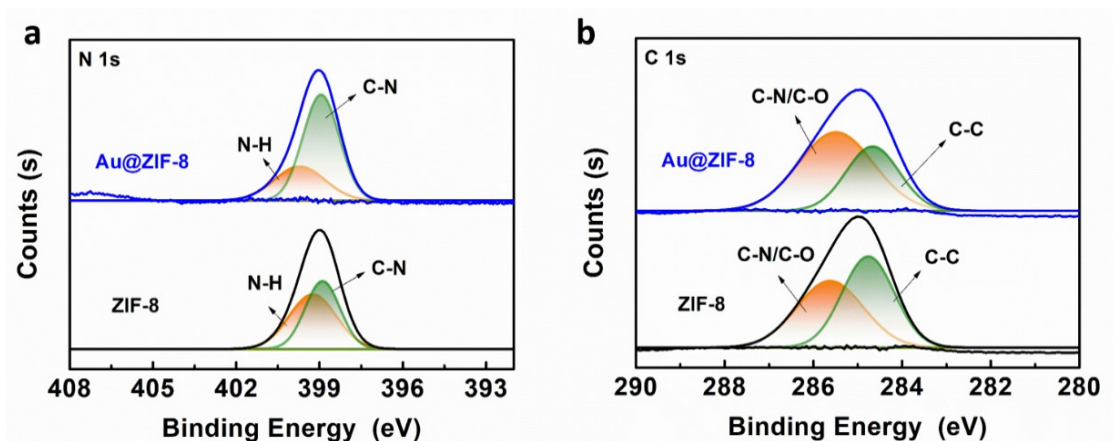
**Figure S4.** The corresponding EDS spectrum of the sample Au@ZIF-8.



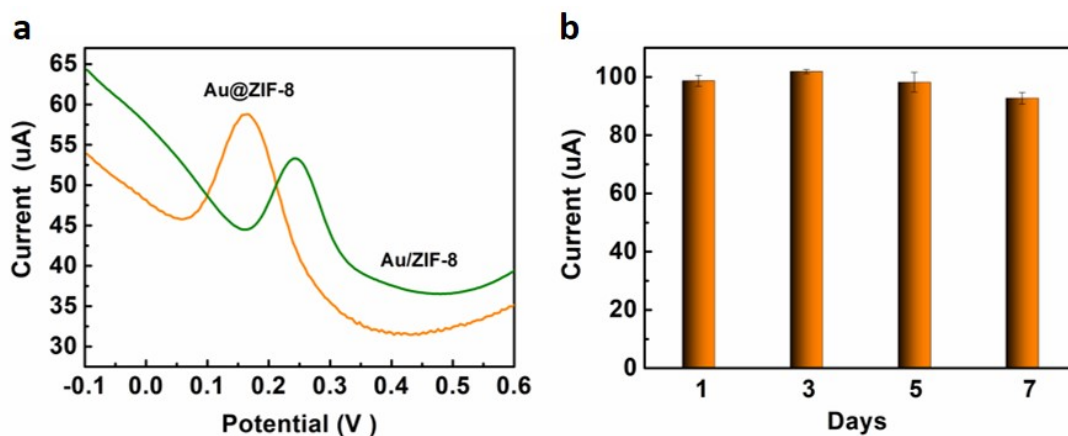
**Figure S5.** (a) TEM images, (b) bright-field image, (c) back scattering image and (d-h) the elemental mapping imaged and corresponding Zn, N, O, C, Au elements in the selected region of Au/ZIF-8.



**Figure S6.** XPS survey spectra o for the as-prepared samples ZIF-8 and Au@ZIF-8.

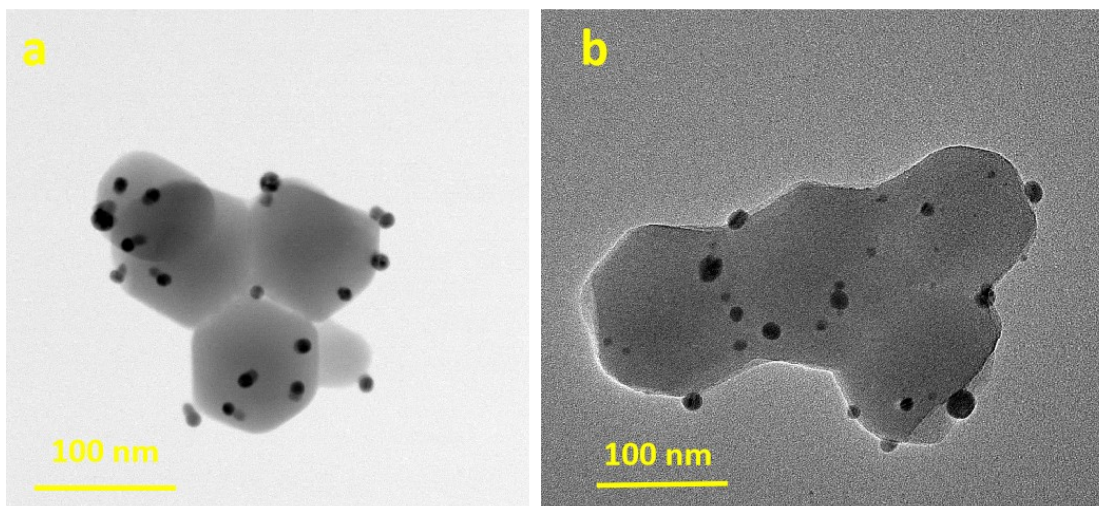


**Figure S7.** XPS survey spectra of C 1s (a) and N 1s (b) for ZIF-8 and Au@ZIF-8 samples.

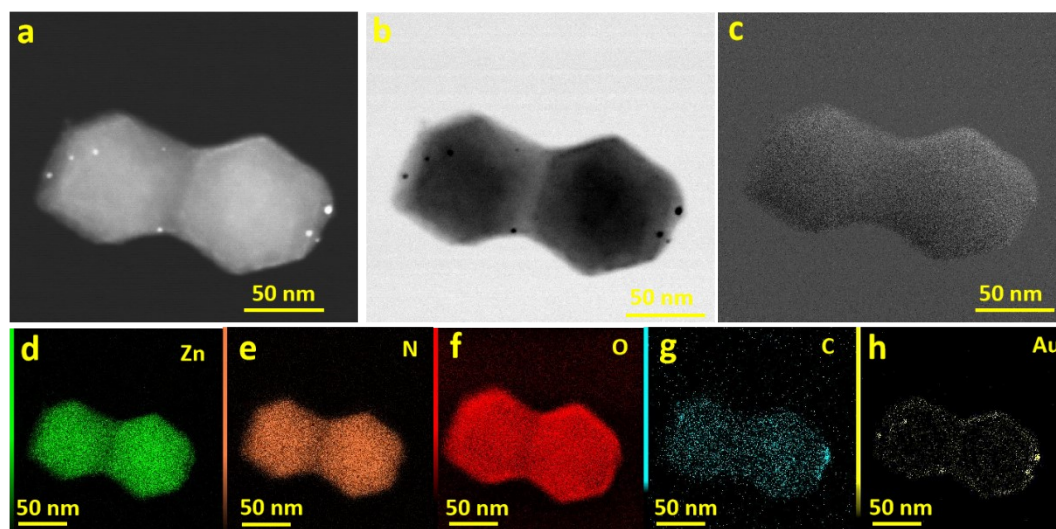


**Figure S8.** Electrochemical performance. (a) Differential pulse voltammetry (DPV) on the Au@ZIF-8 and Au/ZIF-8 in the absence and presence of 100  $\mu\text{M}$  DA. (b) Stability study of the reference Au/ZIF-8 based on the CV curves in 0.1 M PBS including 100  $\mu\text{M}$  DA (scan rate: 50  $\text{mVs}^{-1}$ ; pH = 7.4).





**Figure S9.** (a-b) TEM images of the reference Au/ZIF-8 after stability test.



**Figure S10.** Morphology characterization of Au@ZIF-8 after stability test. (a) bright-field image (b) dark-field image, (c) back scattering image and (d-h) the elemental mapping imaged and corresponding Zn, N, O, C and Au elements in the selected region of Au@ZIF-8.

**Table S1.** Texture properties and the content of Au of the ZIF-8 and Au@ZIF-8 samples.

Samples	BET (m <sup>2</sup> g <sup>-1</sup> )	V <sub>micro</sub> (cm <sup>3</sup> g <sup>-1</sup> )	Average pore size (nm)	V <sub>total</sub> (cm <sup>3</sup> g <sup>-1</sup> )	Au (wt %)
Au/ZIF-8	1164	0.48	3.1	0.75	1.07
ZIF-8	669	0.28	2.3	0.38	/
Au@ZIF-8	1217	0.49	3.1	0.90	1.02