Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary materials

Well-defined gold nanoparticles@N-doped porous carbon prepared from metal nanoparticles@metal–organic frameworks for electrochemical sensing of hydrazine

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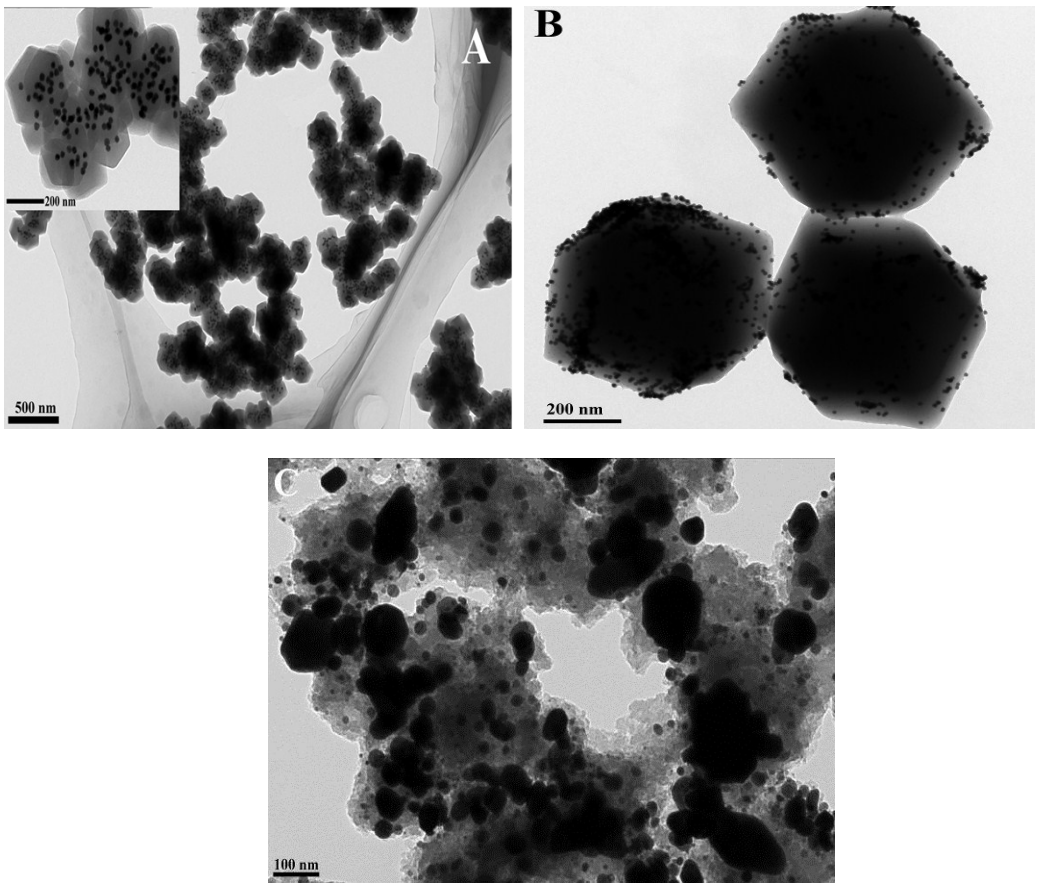

Figure S1. TEM images of large visual scale of Au@ZIF-8-2 (A), Au-ZIF-8 (B) and Au/NPC-700 (C). Inset: the amplification map of Au@ZIF-8-2.

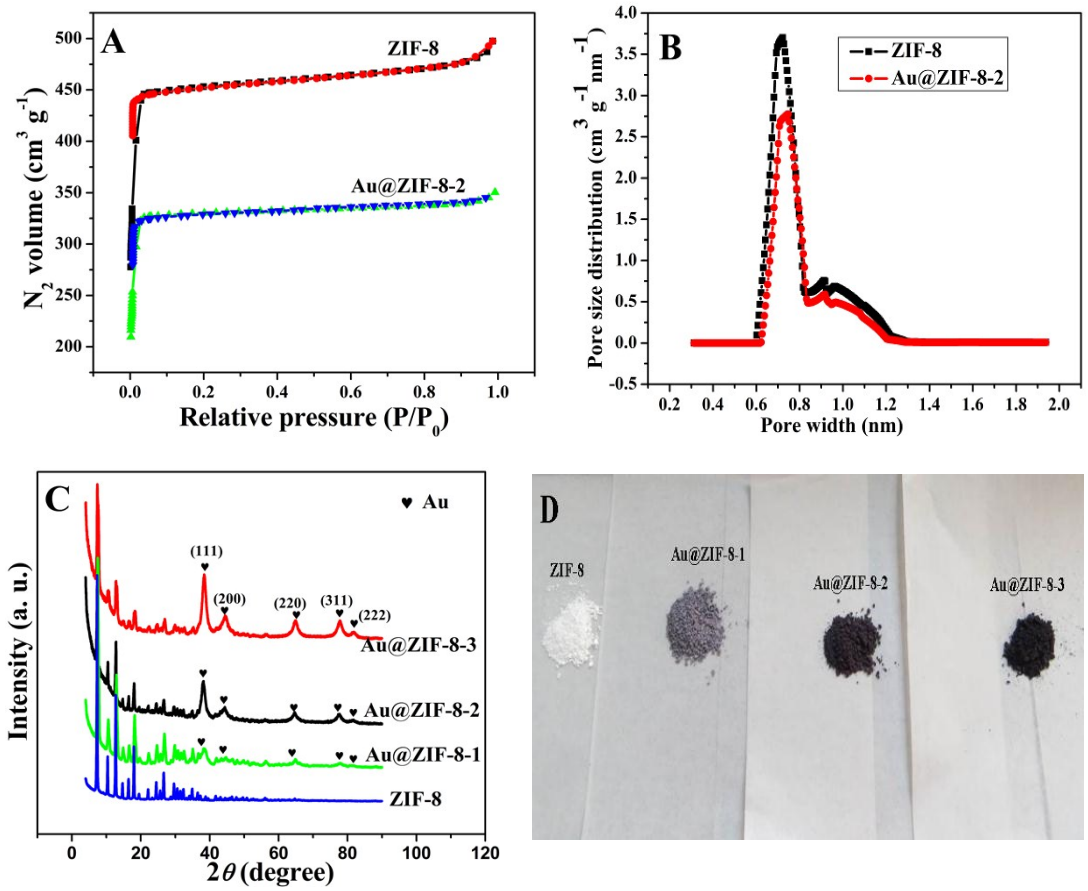

Figure S2. Nitrogen-sorption isotherms (A) and corresponding pore-size distributions (B) for ZIF-8 and Au@ZIF-8-2; XRD patterns of ZIF-8, Au@ZIF-8-1, Au@ZIF-8-2, Au@ZIF-8-3 (C) and corresponding photographs of them (D, from left to right).

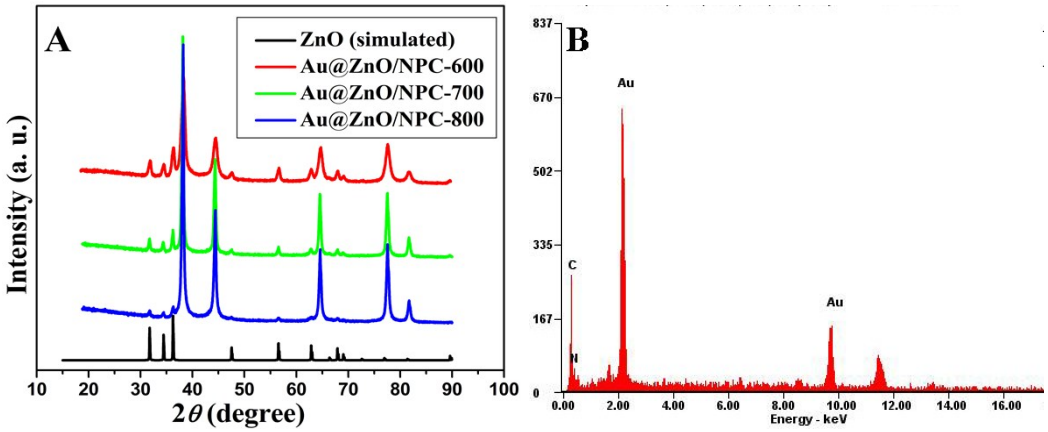

Figure S3. XRD patterns of simulated ZnO, Au@ZnO/NPC-800, Au@ZnO/NPC-700 and Au@ZnO/NPC-600 (A, from bottom to up), EDX spectrum of Au@NPC-700 (B).

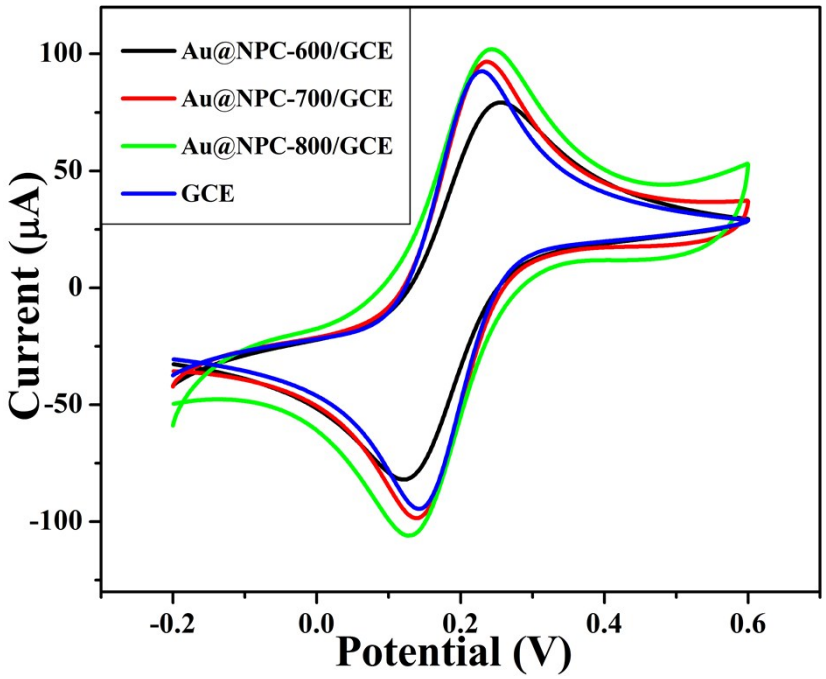

Figure S4. CVs of Au@NPC-800/GCE, Au@NPC-700/GCE, bare GCE and Au@NPC-600/GCE (from top to bottom) in 5.0 mM $K_3Fe(CN)_6$-$K_4Fe(CN)_6$ containing 0.1 M KCl. Scan rate: 50 mV/s.

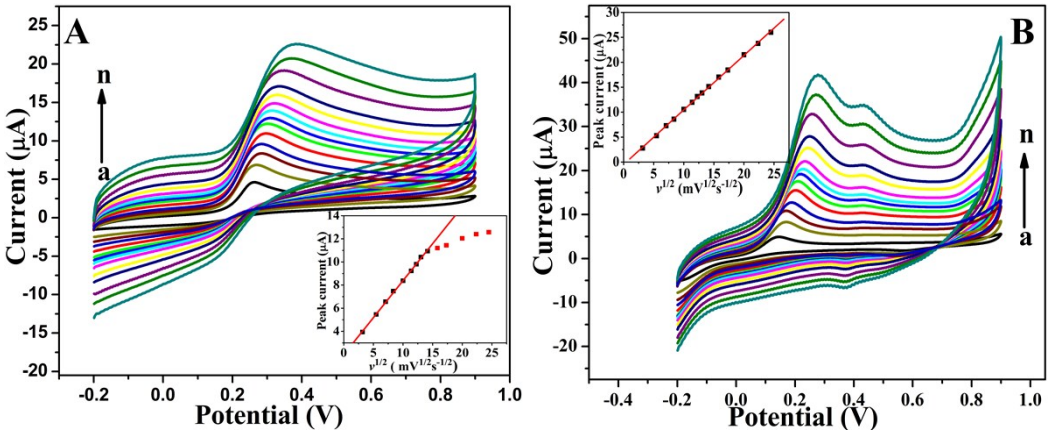

Figure S5. Influence of scan rate on peak current of Au@NPC-700/GCE (A) and PVP-stabilized Au/GCE (B). Scan rate (from a to n): 10, 30, 50, 70, 100, 130, 150, 170, 200, 250, 300, 400, 500 and 600 mV s^{-1}. Hydrazine concentration: 0.1 mM. The insets were plots of peak current vs $v^{1/2}$.

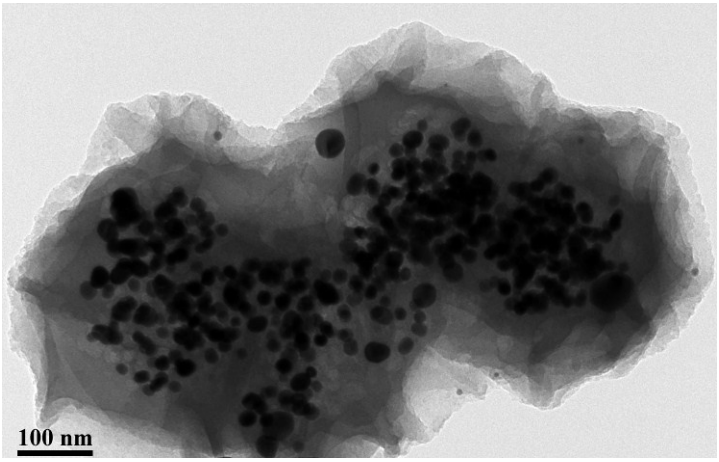

Figure S6. TEM image of the Au@NPC-700 after five cycles of electrochemical measurement.

Table S1 Au NPs size, surface area, total pore volume and Au content of Au@NPC-x (x=600, 700 and 800)

Sample	Au NPs size (nm)	Surface area ($m^2 g^{-1}$)	Pore volume ($cm^3 g^{-1}$)	Au content (at %)
Au@NPC-600	15-25	10.51	0.038	0.43
Au@NPC-700	25-40	146.52	0.212	0.56
Au@NPC-800	30-80	185.40	0.252	0.67