Figure Captions

Fig. S1. The work function (W) determined by the difference between the photo energy and the binding energy of the secondary cutoff edge. (W = 21.2 eV - 16.6 eV = 4.6 eV)

Fig. S2. (a) Typical C-V curve of 3D Ni/NiO/MoS_2 foam with continuous addition of DA under continuous agitation. (b) Typical C-V curve of rGO with continuous addition of DA under continuous agitation.

The scan rage is from -0.6V to 0.6V at a rate of 100 mV·S^{-1} and the number of sweep segments is 4.

Fig. S3. (a) The electrochemical response of the single MoS_2 to 1 mM DA, UA and AA in 0.01 M PBS at pH = 7.4. (b) The electrochemical response of the single rGO to 1 mM DA, UA and AA in 0.01 M PBS at pH = 7.4. The scan rage is from -0.6V to 0.6V at a rate of 100 mV·S^{-1} and the number of sweep segments is 4.

Fig. S4. CV curves of Ni/NiO (a), Ni/NiO/MoS_2 (b), and Ni/NiO/MoS_2/rGO (c) against different scan rates.

Annotation: The the actual electrochemically active surface area was performed at room temperature in 0.1 M PBS (pH 7.4) using a standard three-electrode cell, where a Ag/AgCl electrode served as the reference electrode, a Pt wire served as the counter electrode, and the Ni/NiO or Ni/NiO/MoS_2 or Ni/NiO/MoS_2/rGO (typically 1×1.5 cm^2) covered with products served as the working electrode. All potentials were measured against the Ag/AgCl electrode and converted to the reversible hydrogen electrode (RHE) reference scale using ERHE (V) = $E_{Ag/AgCl}$ + 0.197 + 0.059 × pH. Cyclic voltammetry was measured from 0 to 0.1 V vs RHE at different scan rates from 20 mV·s-1 to 200 mV·s^{-1}.

Fig. S5. Nyquist plots of EIS of the Ni/NiO (a), the Ni/NiO/MoS_2 (b) and the Ni/NiO/MoS_2/rGO (c) with the addition of 3 µM DA in the frequency ranges from 0.01 Hz to 100 KHz.

Fig. S6. Reproducibility of 3D Ni/NiO/MoS_2/rGO foam after 100 successive cyclic voltammograms measurement for 1 mM DA.

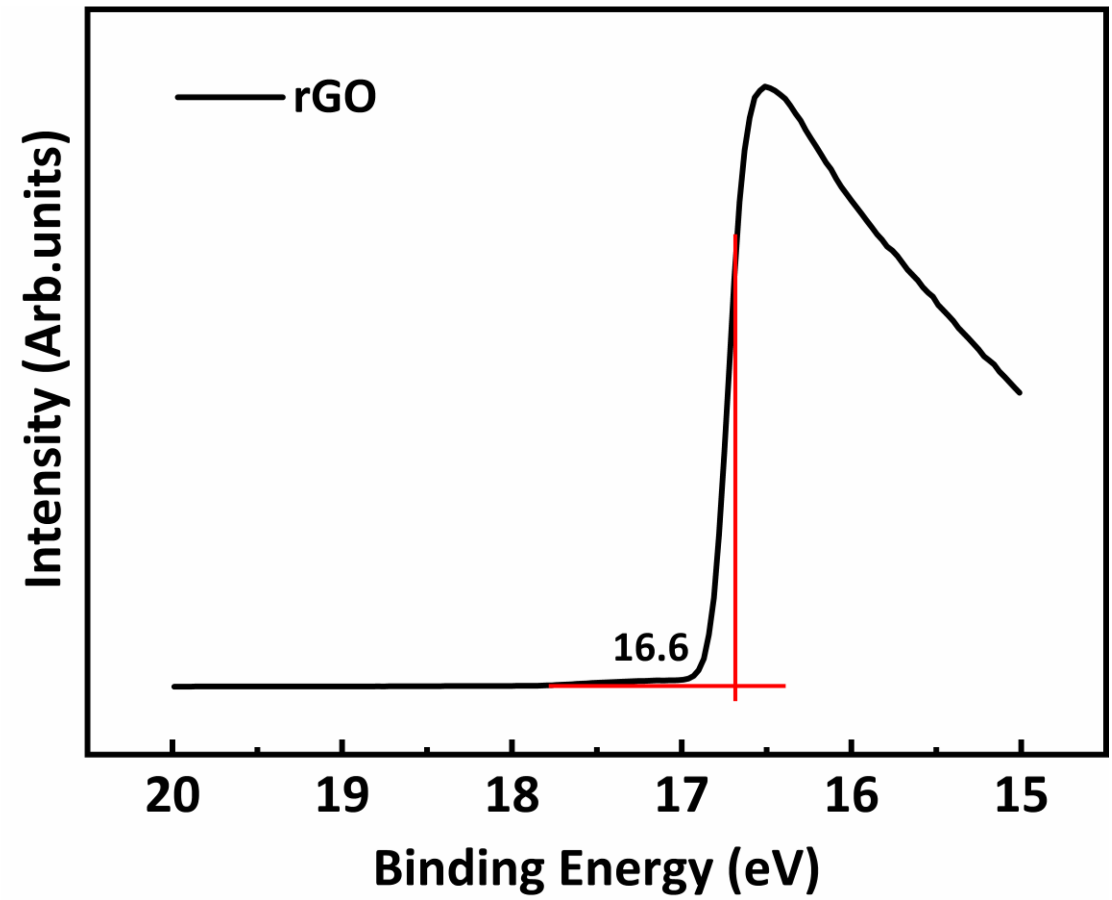
rGO
Intensity (Arb.units)
16.6
20
19
18
17
16
15
Binding Energy (eV)

Fig.S1

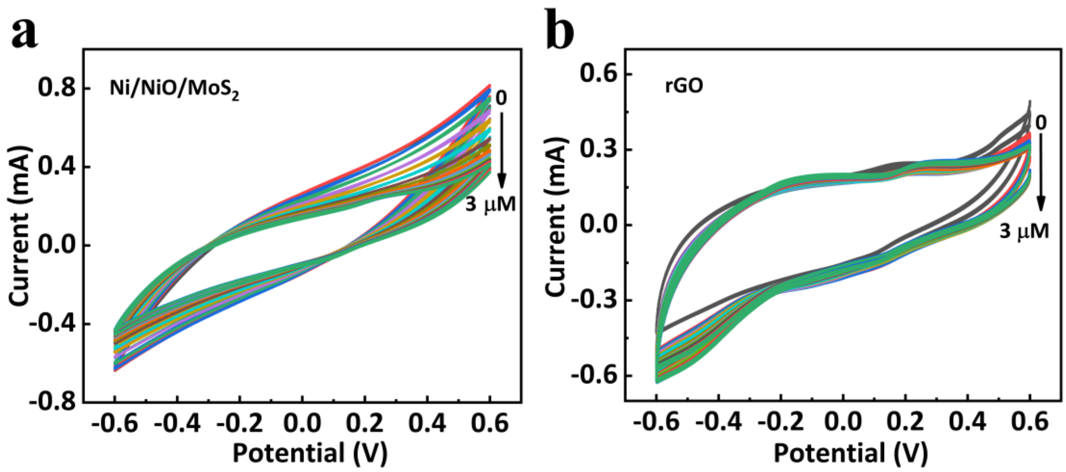
a
Ni/NiO/MoS2
0
3 μM
Current (mA)
Potential (V)
b
rGO
0
3 μM
Current (mA)
Potential (V)

Fig.S2

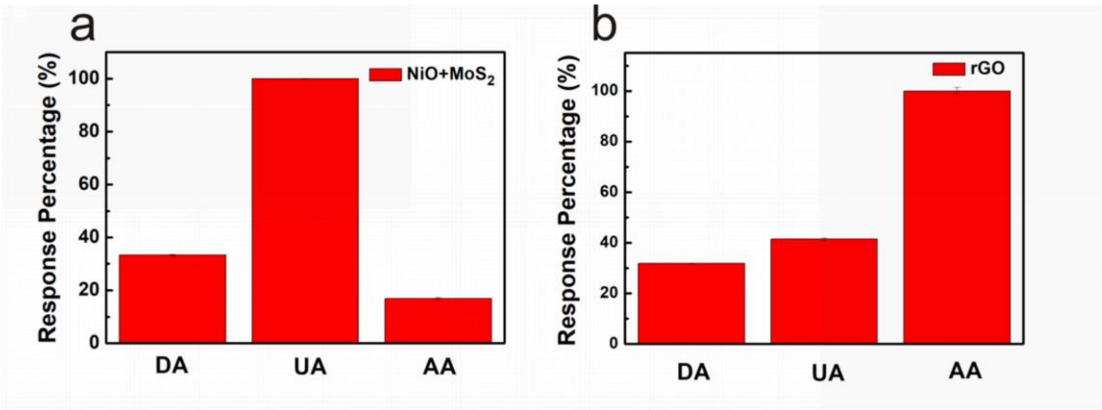

Fig.S3

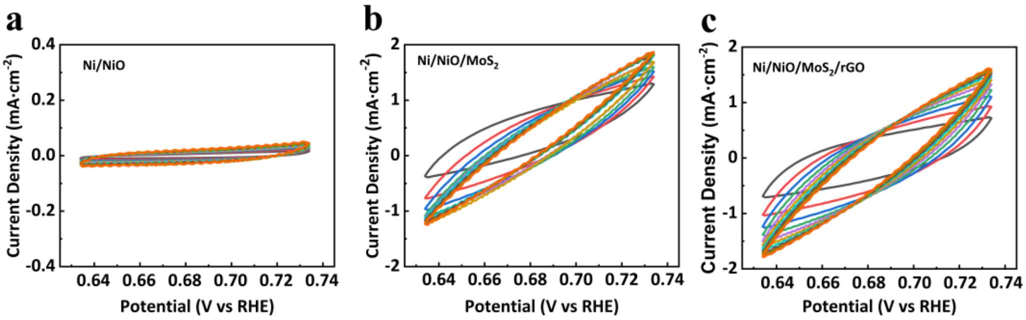

Fig.S4

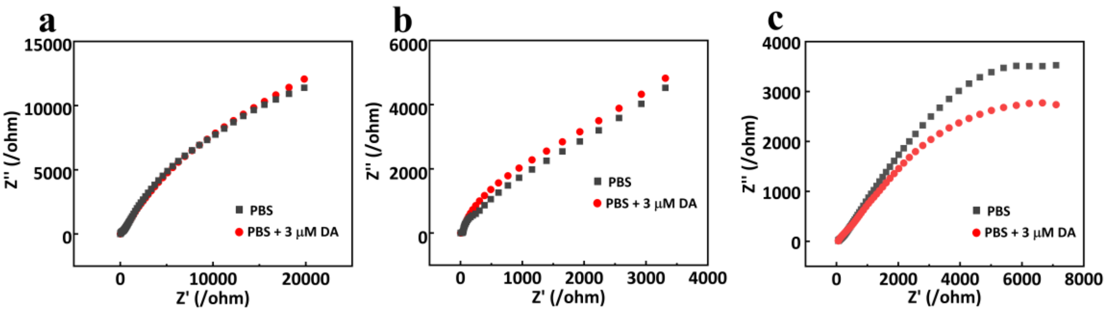

Fig.S5

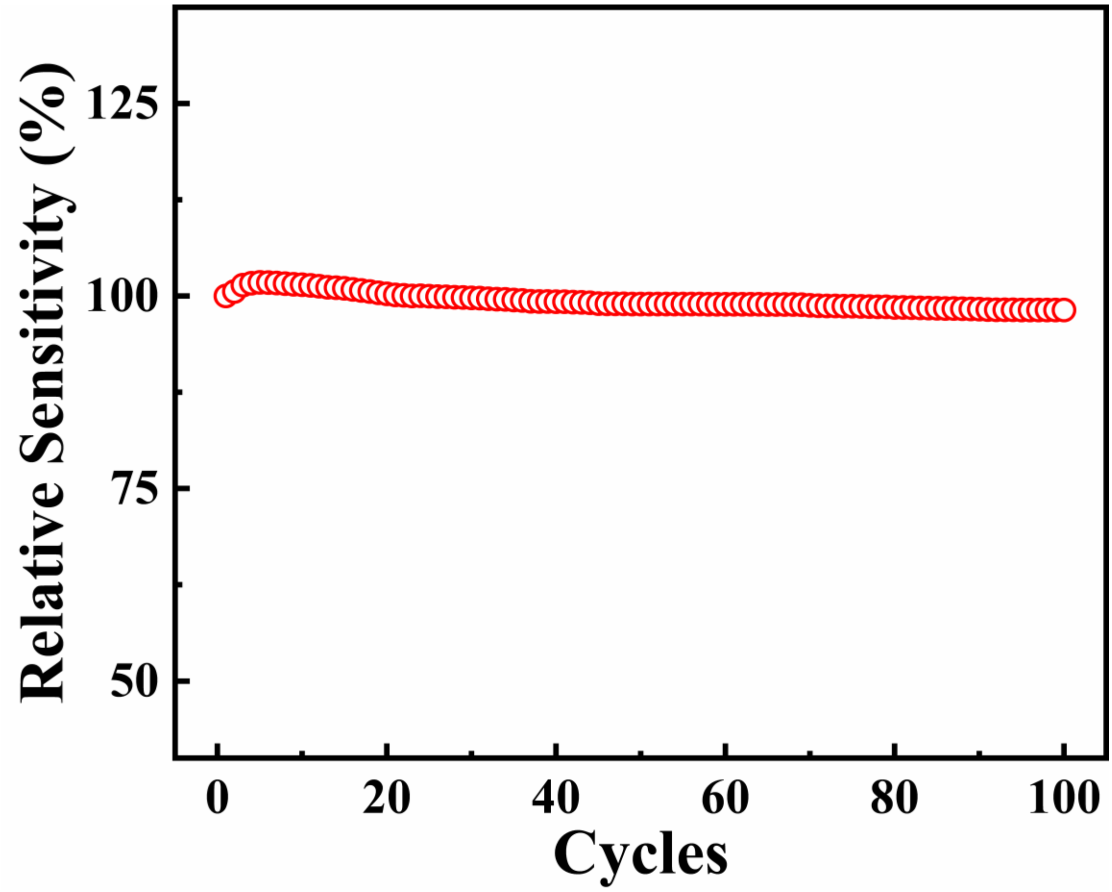

Fig. S6