

1. XPS characterization

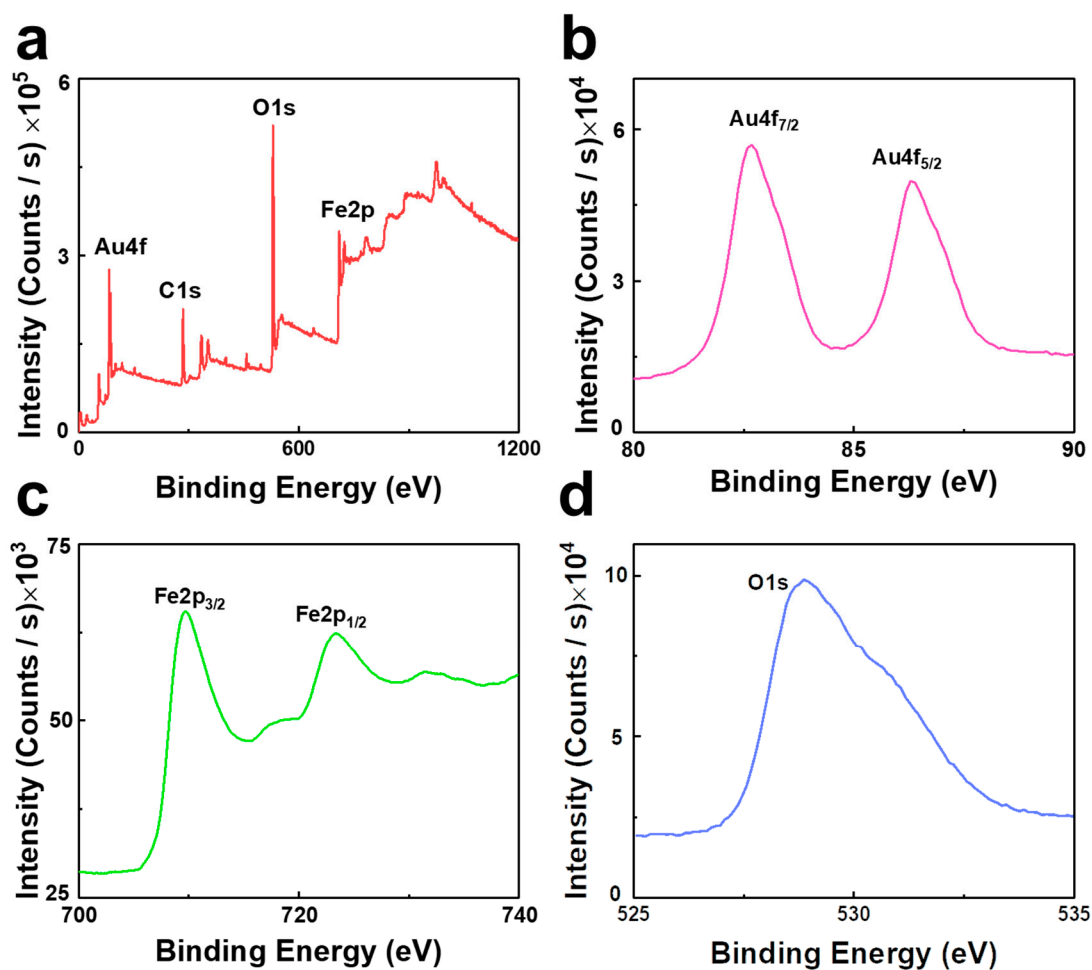


Figure S1. (a) XPS full spectrum of Au@Fe₃O₄ nanozymes. (b) The high-resolution XPS spectra of Au4f. (c) The high-resolution XPS spectra of Fe2p. (d) The high-resolution XPS spectra of O1s.

2. XRD characterization

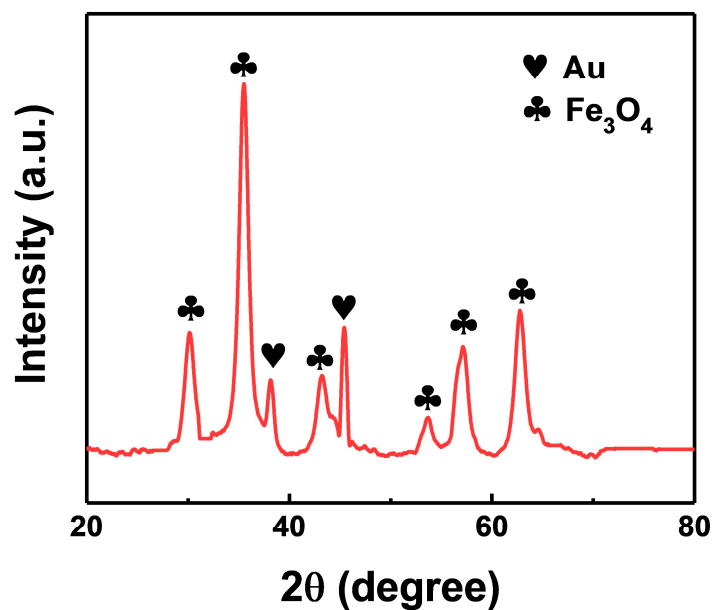


Figure S2. XRD spectra of Au@Fe₃O₄ nanocomposites.

3. Magnetization curves of Fe₃O₄ and Au@Fe₃O₄ nanocomposites

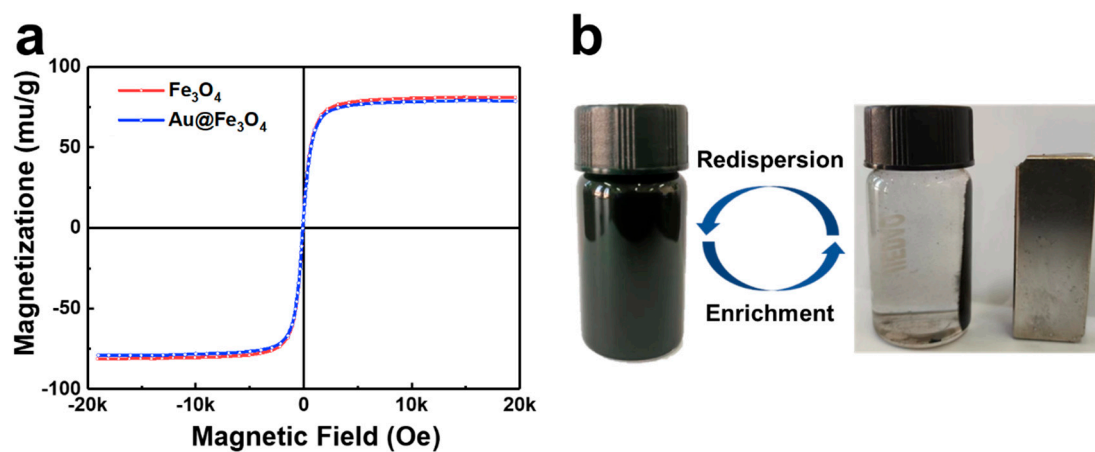


Figure S3. (a) Magnetization curves of Fe₃O₄ (red) and Au@Fe₃O₄ nanocomposites (blue) at 300 K. (b) Picture of the enrichment and redispersion process of Au@Fe₃O₄ nanocomposites: no external magnetic field applied (left) and external magnetic field applied (right).

4. Catalytic process

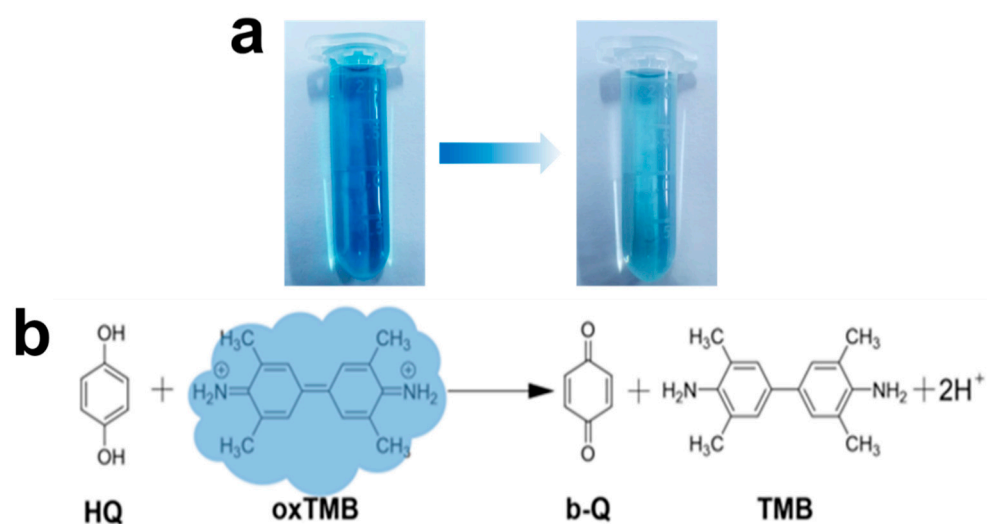


Figure S4. (a) Physical photographs of colorimetric reactions. (b) The reaction formula of HQ is determined by colorimetry.

5. Short-term stability

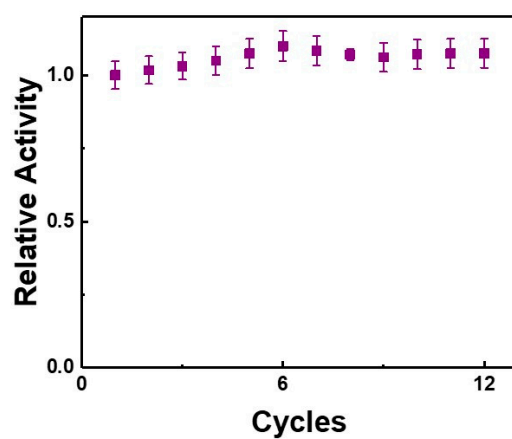


Figure S5. The short-term stability of Au@Fe₃O₄ nanozymes.