

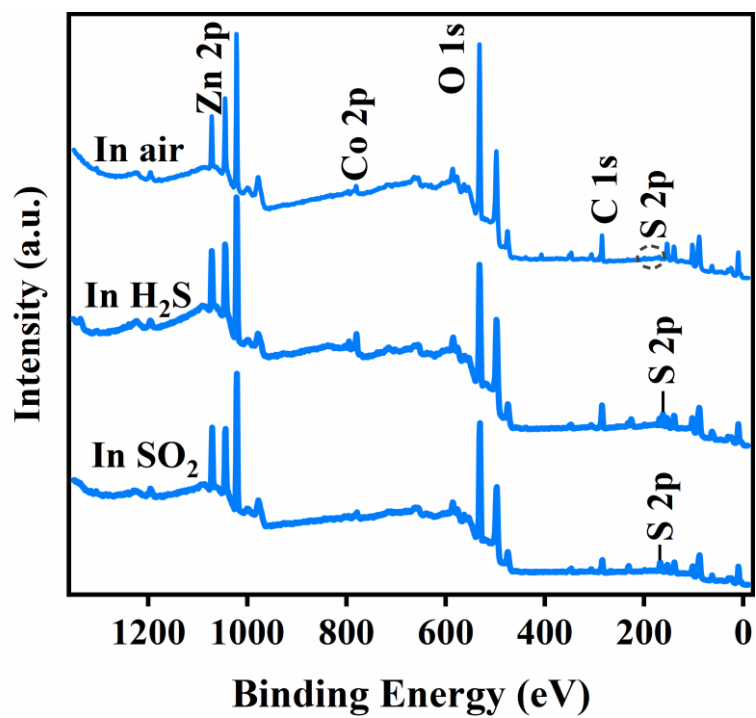


Figure S1. XPS survey spectra of the ZnO/Co₃O₄ heterostructure before and after exposure to H₂S and SO₂ gases.

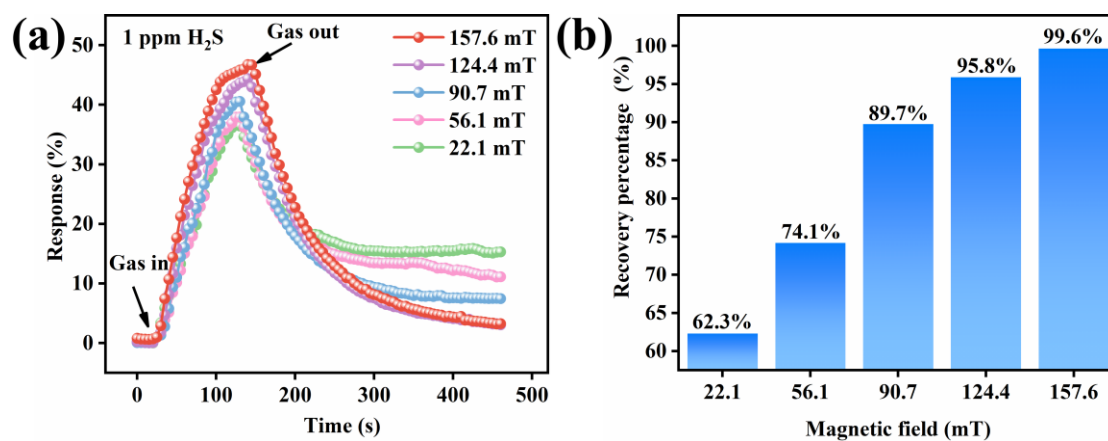


Figure S2. H₂S sensing performance of the ZnO/Co₃O₄ heterostructure sensor under magnetic field regulation. (a) Dynamic response curves of the sensor toward 1 ppm H₂S under different magnetic field intensities; (b) corresponding recovery percentage after H₂S purging.

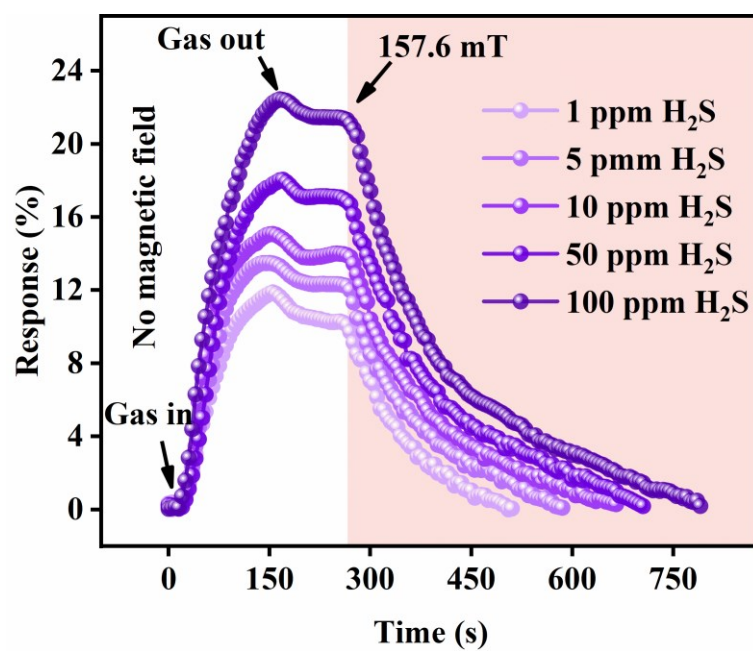


Figure S3. Dynamic response curves of the sensor toward different H_2S concentrations with and without an applied magnetic field.

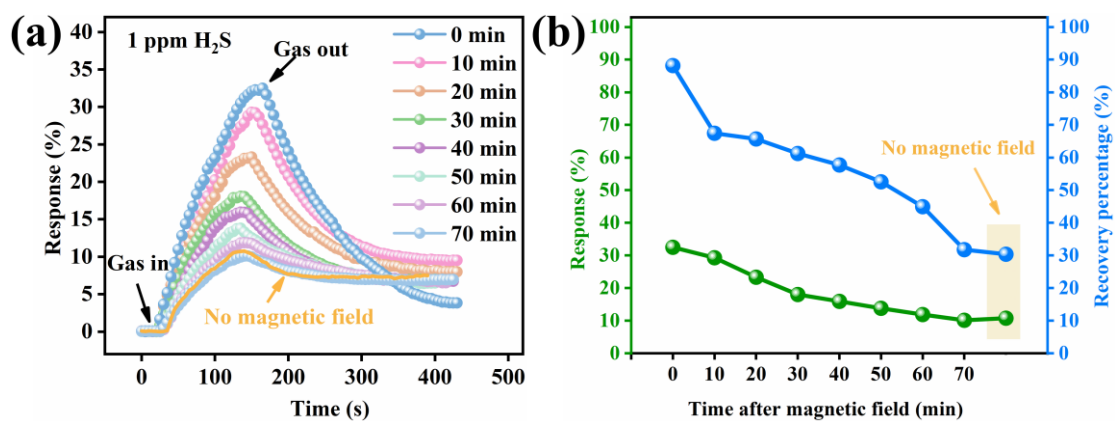


Figure S4. (a) Dynamic response curves of the sensor toward 1 ppm H₂S at different storage times after magnetization under a 157.6 mT magnetic field for 2 h; (b) corresponding response values and recovery percentage.

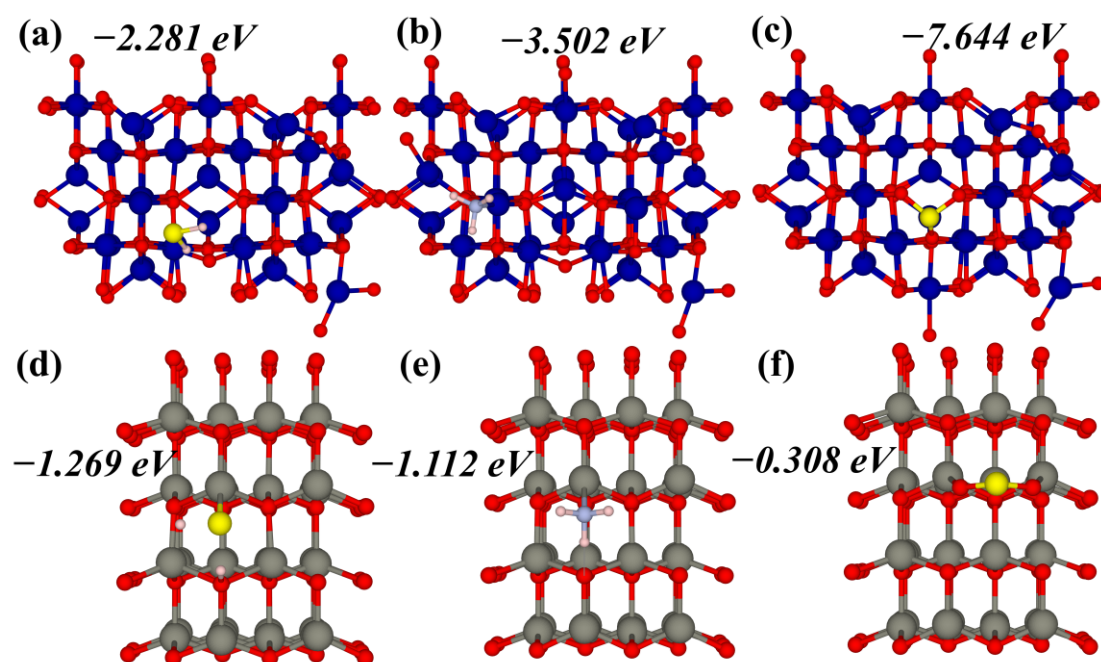


Figure S5. (a-c) Optimized adsorption states and adsorption energies of H_2S , NH_3 , and SO_2 molecules on Co_3O_4 surfaces. (d-e) Optimized adsorption states and adsorption energies of H_2S , NH_3 , and SO_2 molecules on ZnO surfaces.