Supporting Information

Metal–Organic Frameworks-Derived FeCoZn-NC-1.5-800 as Dual-Enzyme Mimics for L-Cysteine Detection

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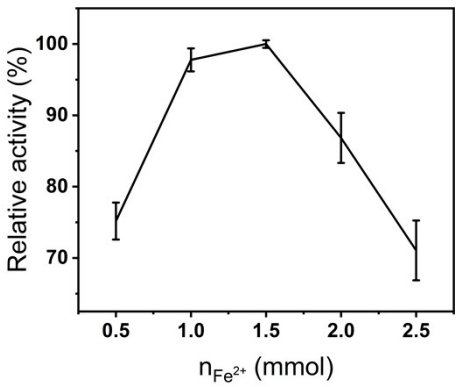

Figure S1. Influence of Fe^{2+} doping on the relative activity of FeCoZn-NC-1.5-800.

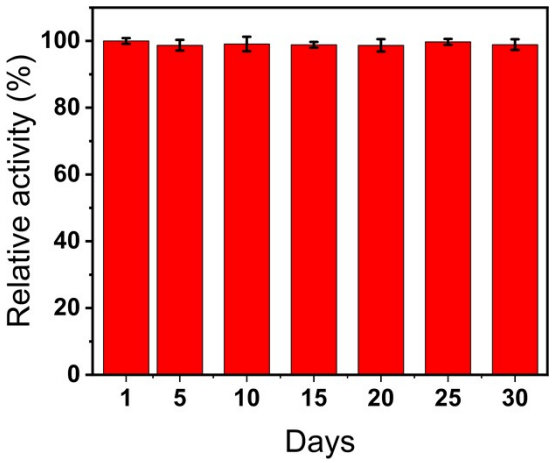

Figure S2. The storage stability of FeCoZn-NC-1.5-800 after dispersing in 0.1 M acetic acid buffer solution and storing in a refrigerator at 4 ℃ for 30 days. Reaction conditions: 2.0 mg/mL catalyst, 0.1 M acetate buffer (pH 4.0), 20 mM TMB, 40 ℃ for 10 min incubation.

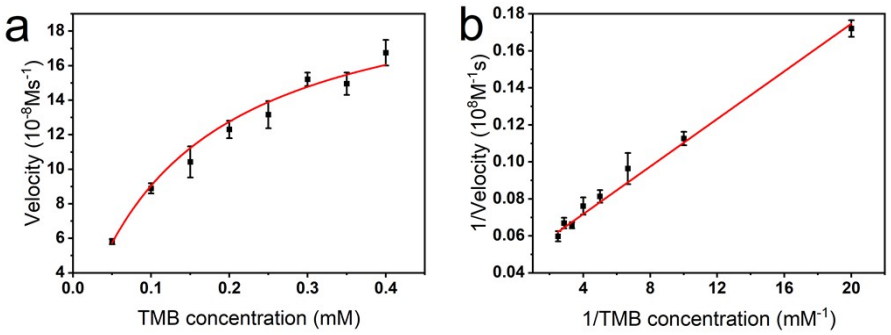

Figure S3. (a) Michaelis-Menten kinetic characterization of FeCoZn-NC-1.5-800 under steady-state conditions, (b) Double reciprocal plot derived from FeCoZn-NC-1.5-800 (2.0 mg/mL, 20 μL) with TMB concentrations ranging from 10.0 to 80.0 mM (10 μL per increment). Reaction conditions: acetate buffer (0.10 M, pH 4.0, 2.0 mL). Error bars denote the standard deviation calculated from three independent measurements.

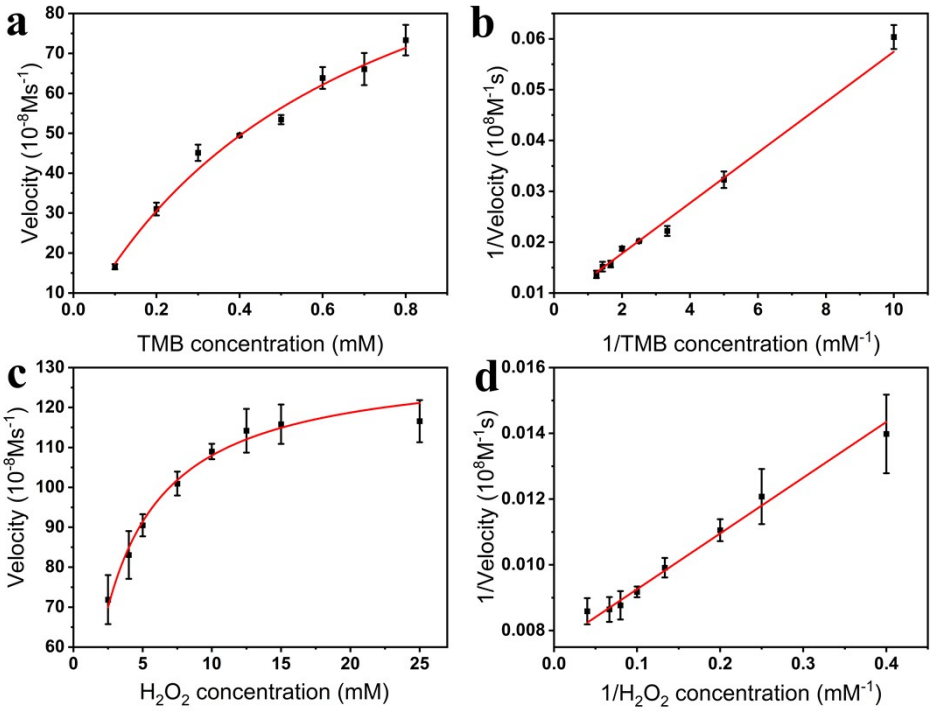

Figure S4. (a) Steady-state kinetic characterization of FeCoZn-NC-1.5-800 with TMB as the substrate. (b) Double reciprocal plot for TMB oxidation by FeCoZn-NC-1.5-800 (2.0 mg/mL, 20 μL) at 20.0-160.0 mM. Reaction conditions: acetate buffer (0.10 M, pH 4.0, 2.0 mL) and H_2O_2 solution (0.50 M, 10 μL). Error bars represent the standard calculated from three independent measurements. (c) Steady-state kinetic characterization of FeCoZn-NC-1.5-800 with H_2O_2 as the oxidant. (d) Double reciprocal plot of FeCoZn-NC-1.5-800 (2.0 mg/mL, 20 μL) with varying concentrations of H_2O_2 solution (0.50, 0.80, 1.00, 1.50, 2.00, 2.50, 3.00 and 5.00 M, 10 μL). Reaction conditions: acetate buffer (0.10 M, pH 4.0, 2.0 mL) and TMB (80.0 mM, 10 μL). Error bars represent the standard deviation calculated from three independent measurements.

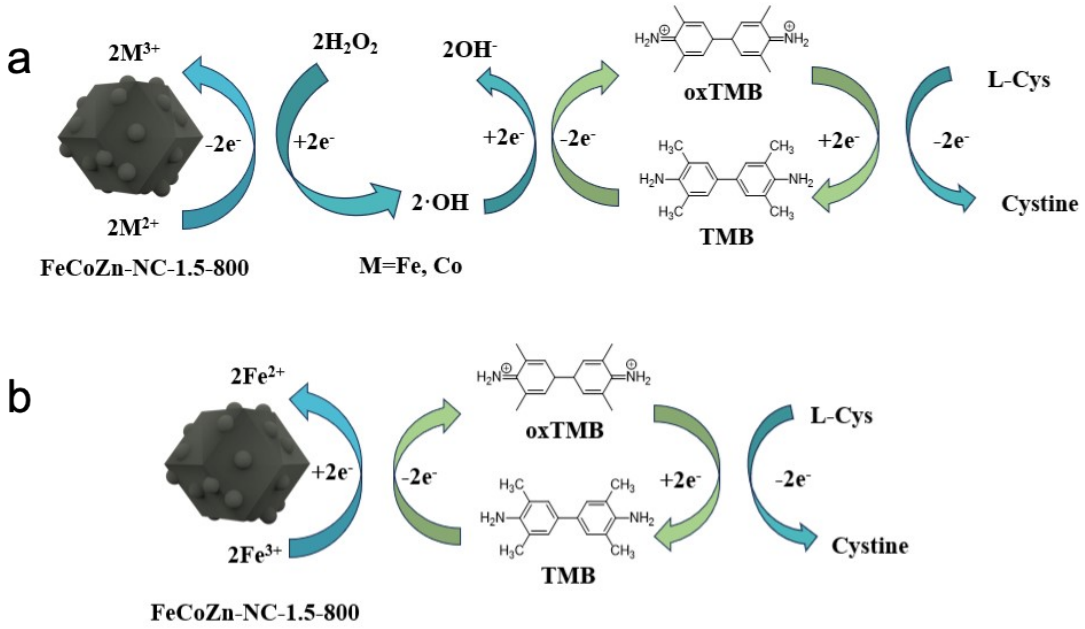

Figure S5. Possible mechanisms of FeCoZn-NC-1.5-800 for L-Cys detection in the (a) presence and (b) absence of H_2O_2.