

Supporting Information

Increasing the peroxidase-like activity of MIL-100(Fe) by encapsulating Keggin-typed 12-phosphomolybdate and covering three-dimensional graphene

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Experiments

Peroxidase-like activity evaluation

The catalytic reaction was carried out at 45 °C using 100 μL of 0.6 mg mL^{-1} catalyst (MIL-100(Fe), MIL-100(Fe)@PMo₁₂, MIL-100(Fe)@3DGO and MIL-100(Fe)@PMo₁₂@3DGO) in 2 mL acetate buffer solution (pH=2) containing 2 ml of 1 mM TMB and 200 μL of 100 μM H₂O₂ for 6 min. And the oxidized product was evaluated by UV-Vis spectra with wavelength from 350-750 nm. The influence of pH (1.0-4.0), temperature (30-55 °C), time (1-12 min), and catalyst dosage (0.1-0.8 mg mL^{-1}) on the catalytic activity were investigated by using the same way as peroxidase-like activity evaluation of MIL-100(Fe)@PMo₁₂@3DGO except TMB (0.5 mM). The reaction kinetic was carried out by using 0.6 mg mL^{-1} catalyst with H₂O₂ or TMB as substrate at 50 °C in acetate buffer solution (pH=2). Kinetic data were collected by fixing the H₂O₂ (100 μM) while varying TMB (0.1, 0.5, 1.0, 1.5, 2.0 mM), and keeping the TMB (0.5 mM) while varying H₂O₂ (0.1, 0.2, 0.3, 0.4, 0.5 mM).

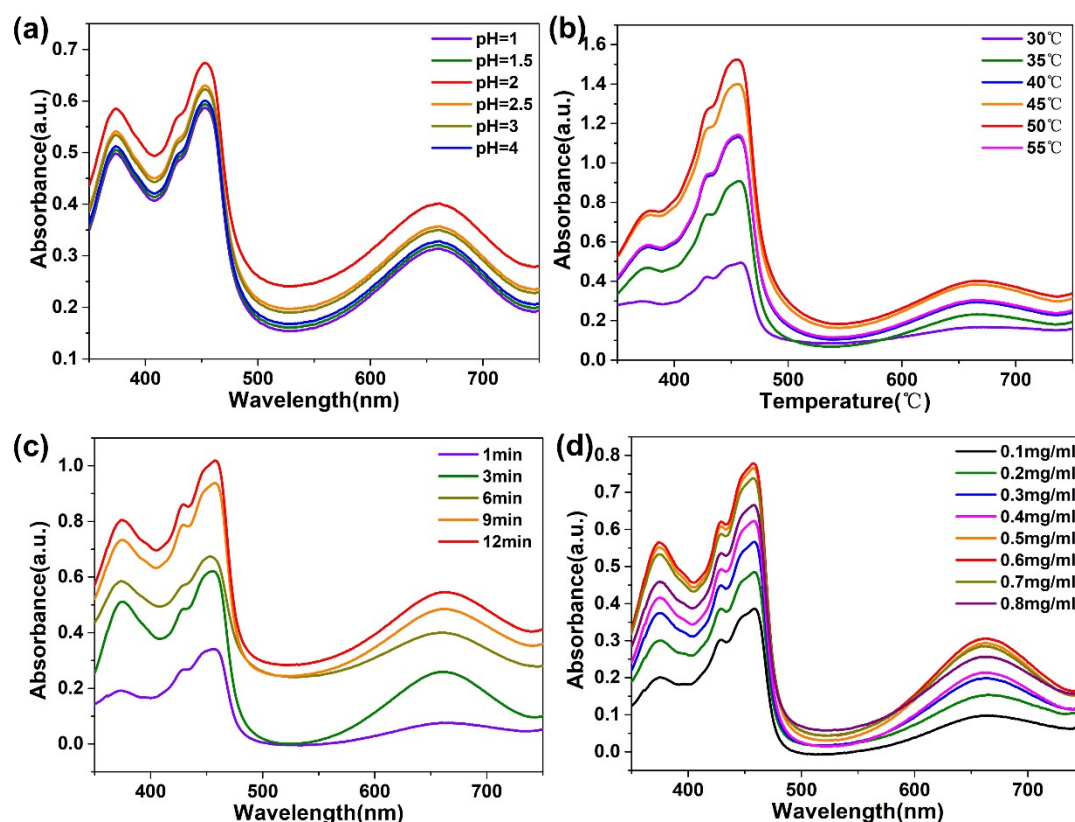


Fig. S1 UV-vis absorbance curves of different (a) reaction pH, (b) reaction temperature, (c) reaction time, (d) MIL-100(Fe)@PMo₁₂@3DGO dosage. Reaction conditions: MIL-100(Fe)@PMo₁₂@3DGO (0.6 mg mL^{-1}), acetate buffer solution (pH=2), H₂O₂ 100 μM , TMB 0.5 mM at 45 °C for 6 min.

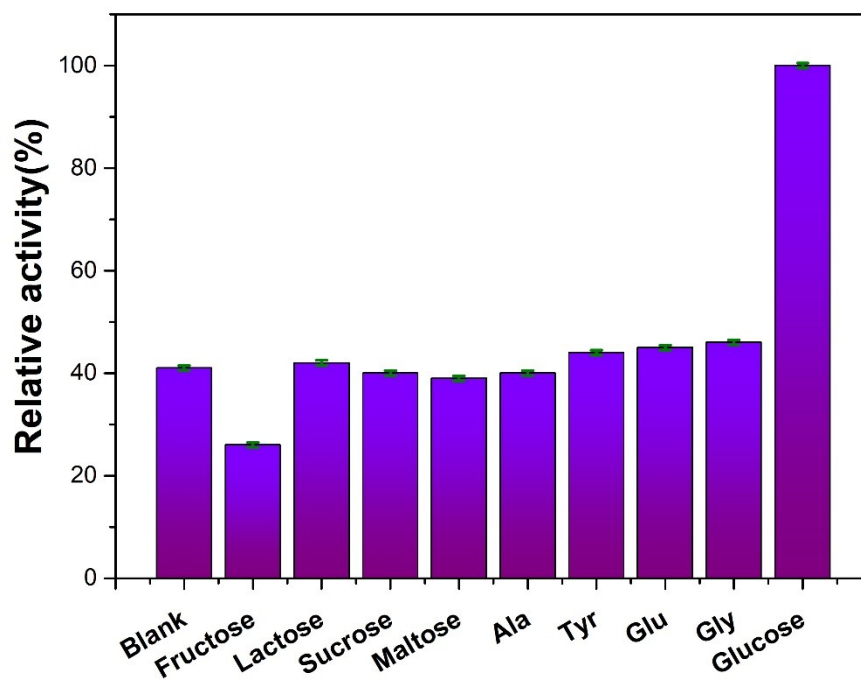


Fig. S2 Selectivity test of the sensor in the detection of glucose with another biomolecule. The concentrations of MIL-100(Fe)@PMo₁₂@3DGO were 0.6 mg mL⁻¹, acetate buffer solution (pH=2), H₂O₂ 100 μM, TMB 1 mM at 45 °C for 6 min.