

Electronic Supplementary Information

Platinum Nanoparticles-Deposited Multiwalled Carbon Nanotubes as a NADH Oxidase Mimic: Characterization and Application

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Figures

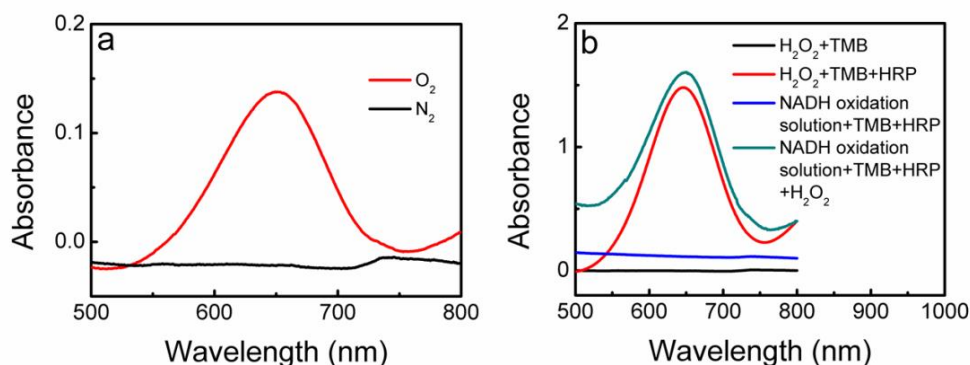


Fig. S1. UV-Vis absorbance spectra. (a) Influences of O_2 and N_2 for the oxidation of TMB by PtNPs@MWCNTs. (b) Test whether H_2O_2 was produced in the oxidation of NADH by PtNPs@MWCNTs. TMB: $5 \mu\text{g mL}^{-1}$, PtNPs@MWCNTs: 0.4 mg mL^{-1} , H_2O_2 : 0.2 mM , HRP: $1 \mu\text{g mL}^{-1}$, NADH oxidation solution: 0.2 mM NADH was oxidized for 5 min by PtNPs@MWCNTs, followed by the removal of the catalyst and N_2 purging for 30 min.

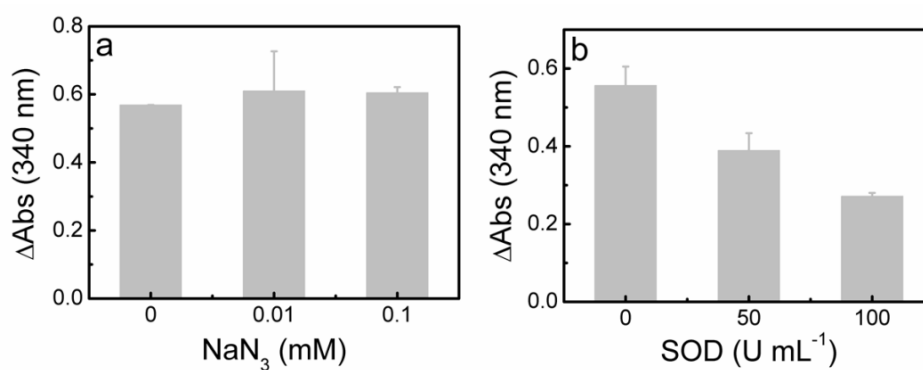


Fig. S2. The effect of radical scavengers (a) NaN_3 and (b) SOD on the oxidation of NADH by PtNPs@MWCNTs.

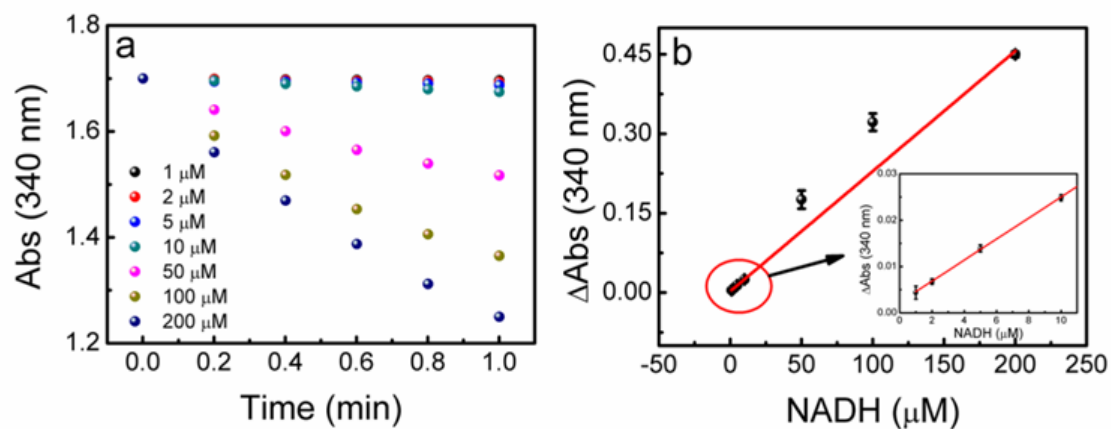


Fig. S3. (a) Time-dependent absorbance changes at 340 nm for NADH at different concentrations, (b) Calibration plot for NADH sensing with the nanozyme.

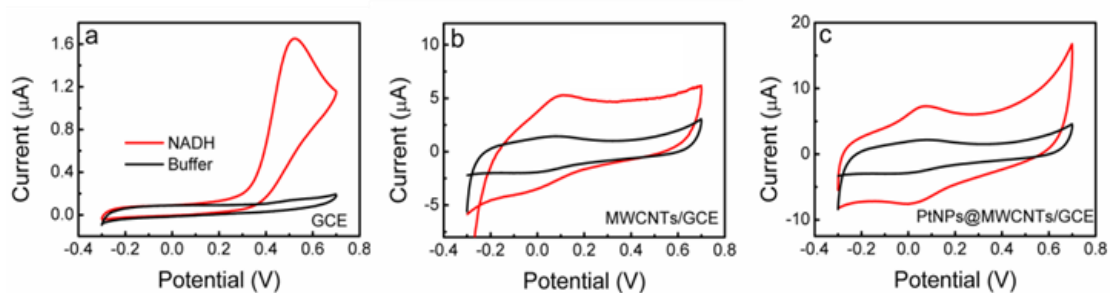


Fig. S4. CVs of (a) GCE, (b) MWCNTs/GCE and (c) PtNPs@MWCNTs/GCE in 0.1 M PBS without (black) or with (red) 1 mM NADH at 10 mV s^{-1} .

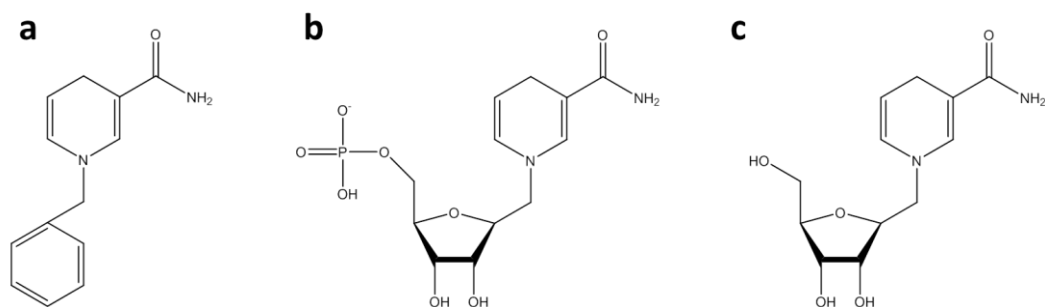


Fig. S5. Biomimetic cofactors (reduced form). (a) BANH, (b) NMNH, (c) NRH.

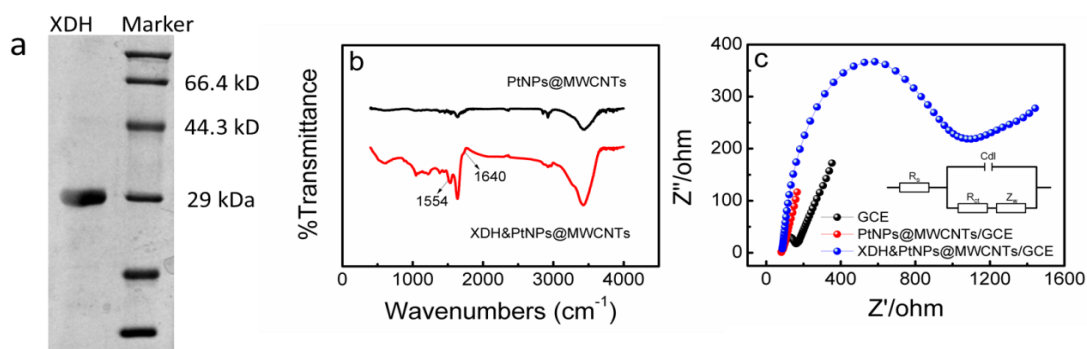


Fig. S6. (a) SDS-PAGE analysis of XDH, (b) FITR of PtNPs@MWCNTs and XDH&PtNPs@MWCNTs, (c) EIS of GCE, PtNPs@MWCNTs/GCE, XDH&PtNPs@MWCNTs/GCE in 5 mM $K_3Fe(CN)_6/K_4Fe(CN)_6$.

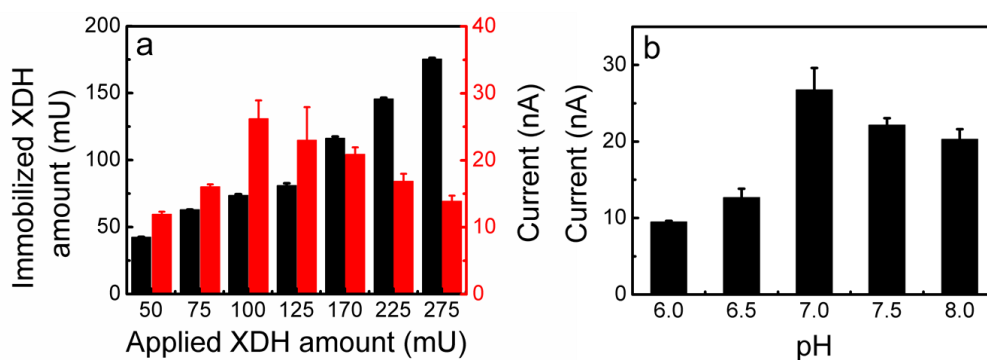


Fig. S7. Effects of (a) applied XDH amounts from 50 to 275 mU and (b) pHs from 6.0 to 7.0 on the performance of the xylose-sensing bioelectrode.

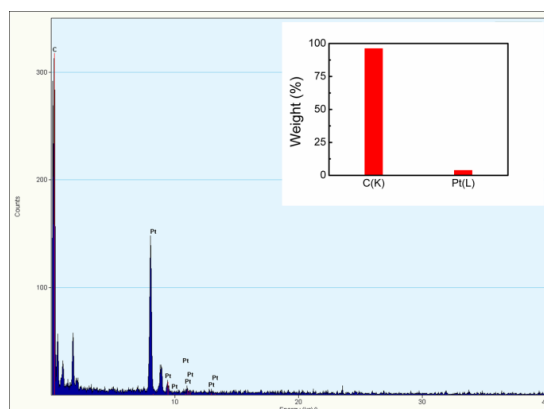


Fig. S8. EDS of PtNPs@MWCNTs (The insert is the weight percentage).