Supporting Information

PdPt bimetallic nanowires with efficient oxidase mimics activity for colorimetric detection of acid phosphatase in acidic medium

LihuaJin*, Yanan Sun, Lulu Shi, Cong Li and Yehua Shen

Key Laboratory of Synthetic and Natural Functional Molecule Chemistry of the Ministry of Education, College of Chemistry & Materials Science, Northwest University, Xi'an 710069, People's Republic of China

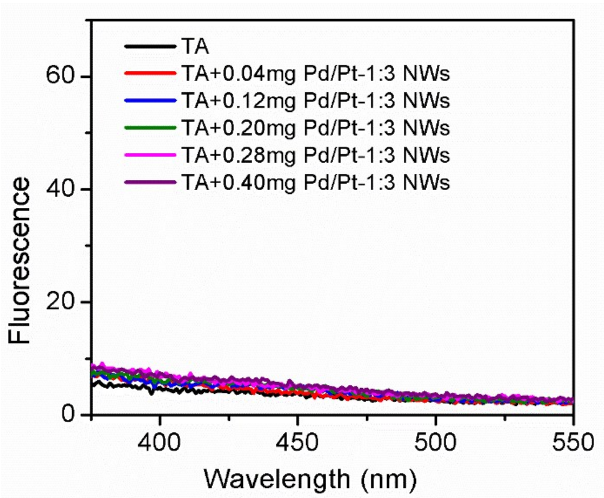

Fig. S1 The fluorescence intensity of solution with 0.625 mM terephthalic acid and different concentration of Pd/Pt-1:3 NWs in HAc-NaAc buffer (0.2 M, pH 4.0) at 30 °C for 8 h.

* To whom correspondence should be addressed. Fax: +86-029-88302635. E-mail: jinlihua@nwu.edu.cn.

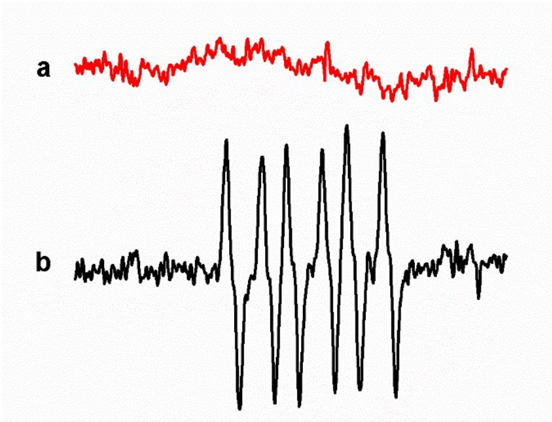

Fig. S2 ESR spectra of (a) 100 mM DMPO in methanol, (b) Pd/Pt-1:3 NWs + 100 mM DMPO in methanol.

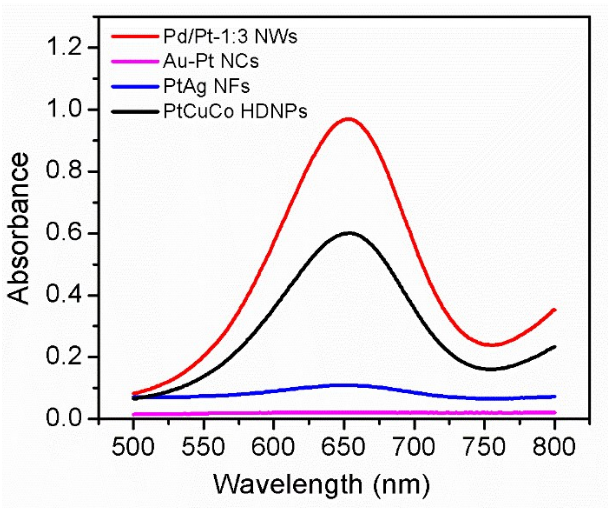

Fig. S3 Absorbance corresponding to different nanomaterial at the same mass concentration.

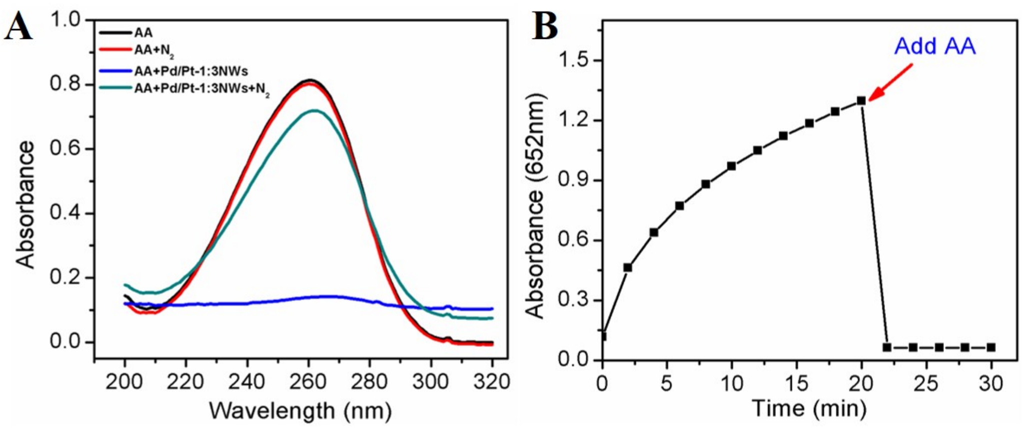

Fig. S4 (A) The absorption spectra of AA in the absent or present of Pd/Pt-1:3 NWs in control and saturated N_2 solution. **(B)**The absorbance change of the Pd/Pt-1:3 NWs -mediated TMB oxidized chromogenic reaction after the addition of AA.

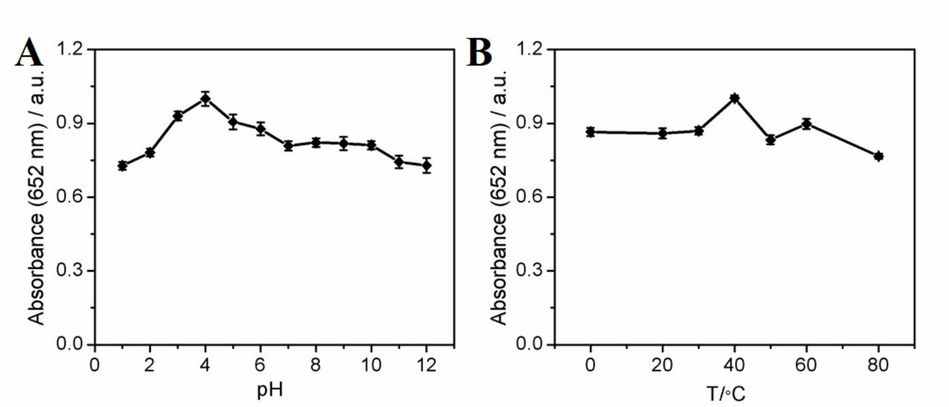

Fig. S5 The catalytic activity of Pd/Pt-1:3 NWs after incubated in pH 1-12 solution for 2 h **(A)** and 0 − 80 °C solution for 2 h **(B)**, and then their catalytic activities were measured under standard conditions;

Table S1. Comparison of Michaelis-Menten constants (K_m) and maximum reaction rates (V_m) of the oxidation reaction catalyzed by Pd/Pt1:3NWs and reported other nanomaterial-based oxidase mimics.

Catalyst	Substrate	K_m (mM)	V_m (10^{-8}M·s^{-1})	Reference
Nanoceria	TMB	0.42	10.04	[1]
Cit-AgNPs		0.23	38	[2]
Lysozyme-Pt NCs		0.63	270	[3]
MSN-AuNPs[a]		0.22	11.87	[4]
MOF(Co/2Fe)		0.199	0.39	[5]
Fluorescein		0.158	6.72	[6]
CNFs/$MnCo_2O_{4.5}$		0.04	6.45	[7]
$NiCo_2O_4$ MS[b]		0.127	0.999	[8]
Pd/Pt-1:3 NWs		0.058	11.40	This work

[a]mesoporous silica; [b]mesoporous spheres

Table S2 Comparison of different methods for the determination of ACP.

Materials	Methods	Linear range	Detection limit	Reference
AuNCs@GSH/MUA[a]	Fluorometry	1-30 nM	1 nM	[9]
MPA[b]-$CuInS_2$ QDs	Fluorometry	6.4-192 nU/mL	3.1 nU/mL	[10]
PPE4+/pNPP	Fluorometry	0-20 nM	0.17 nM	[11]
L-Cys-$CuInS_2$QDs	Fluorometry	75-1500 nU/mL	9.02 nU/mL	[12]
P1[c] -Fe^{3+}	Fluorometry	0-20 nM	0.18 nM	[13]
N-CDs-MnO_2	Fluorometry	5-40 U/L	0.1 U/L	[14]
GQDs@GSH-MnO_2	Fluorometry	0.1-9 U/L	0.027 U/L	[15]
SQ[d]-$(NaPO_3)_6$	Colorimetric and Fluorometry	0-553 nM	4.9 nM	[16]
Cu(BCDS [e])$_2{}^{2-}$	Colorimetry	0-220 U/L	3.16 U/L	[17]
Ch-PtNPs	Colorimetry	0.25-2.5 U/L	0.016 U/L	[18]
Pd/Pt NWs	Colorimetry	0.17-2.67 U/L	0.06 U/L	This work

[a]11-mercaptoundecanoic acid; [b] mercaptopropionic acid; [c] Squaraine; [d] novel anionic water soluble polymer; [e]bathocuproinedisulfonate

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