Electronic Supplementary Information

A novel Ag(I)-calix[4]arene coordination polymer for sensitive detection and efficient photodegradation of nitrobenzene in aqueous solution

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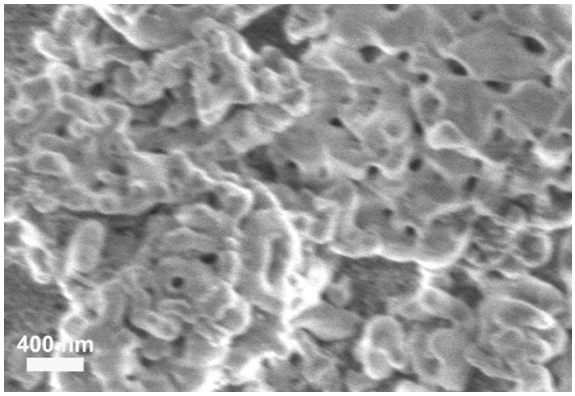


Figure S1. SEM image of the **1**-modified electrode.

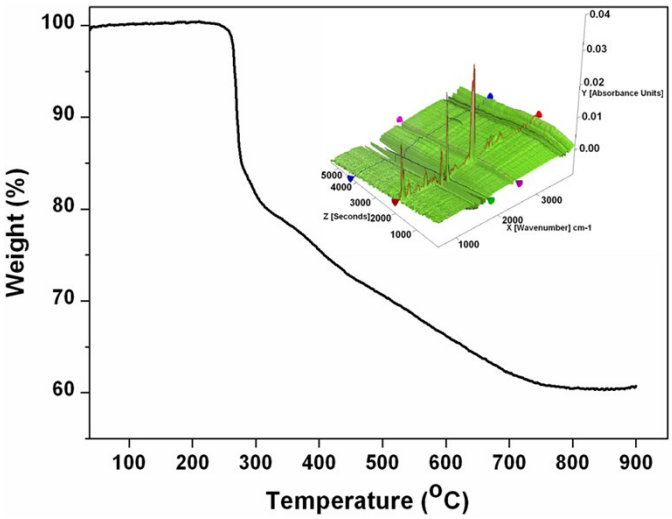


Figure S2. TG curve coupled with IR spectra of **1**.

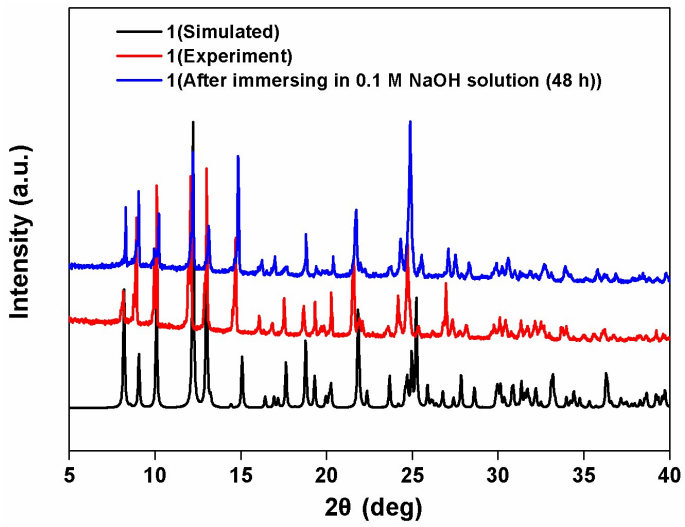


Figure S3. The PXRD patterns of simulated single crystal data **1**, as-synthesized **1** and as-synthesized **1** after immersing in 0.1 M NaOH solution for 48 h.

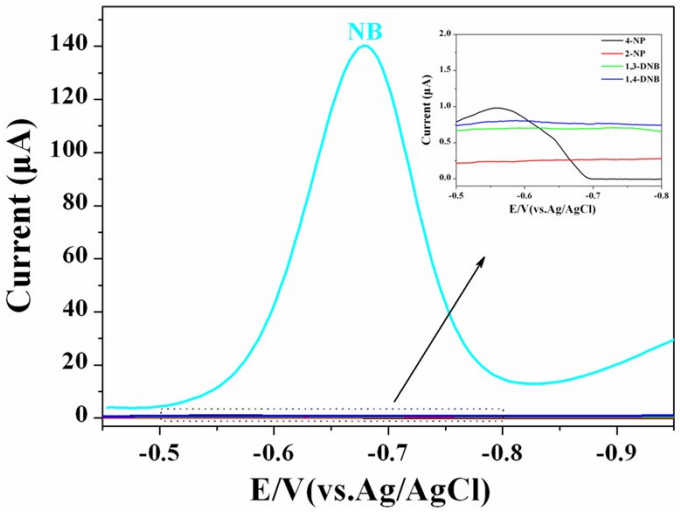


Figure S4. DPV curves obtained at **1**/GCE in 0.1 M NaOH solution containing 1 mM NB, 4-NP, 2-NP, 1,3-DNB or 1,4-DNB.

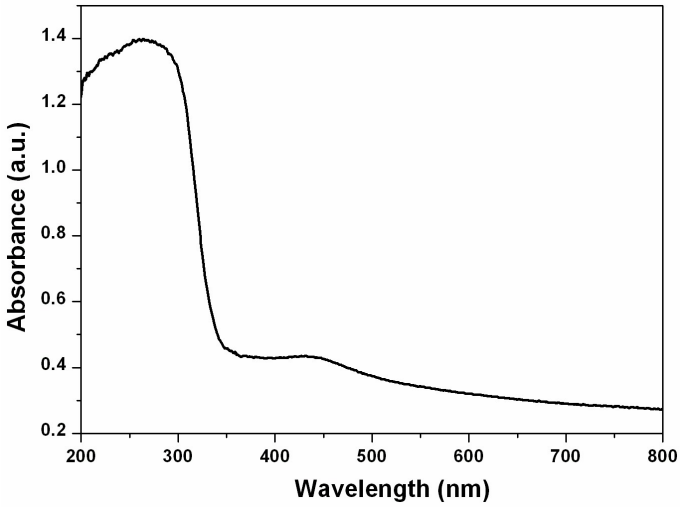


Figure S5. UV–vis adsorption spectra of **1** in the solid state at ambient temperature.

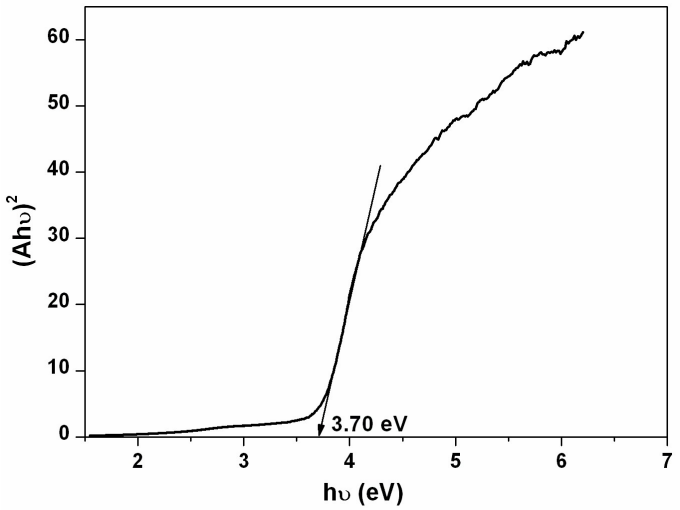


Figure S6. $(Ahν)^2$–hν curves of **1**.

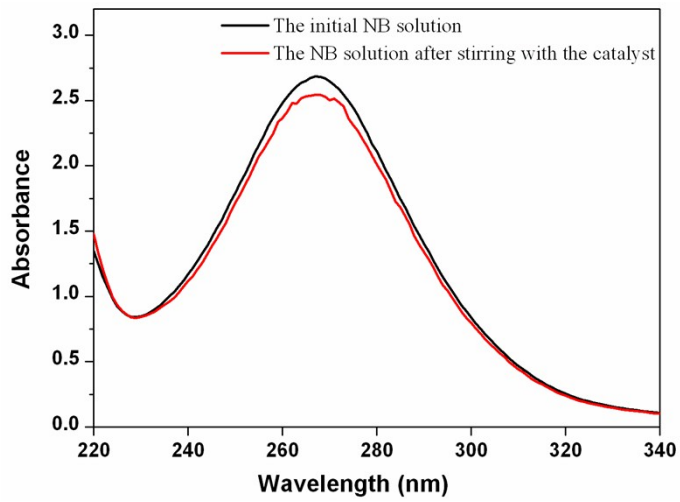
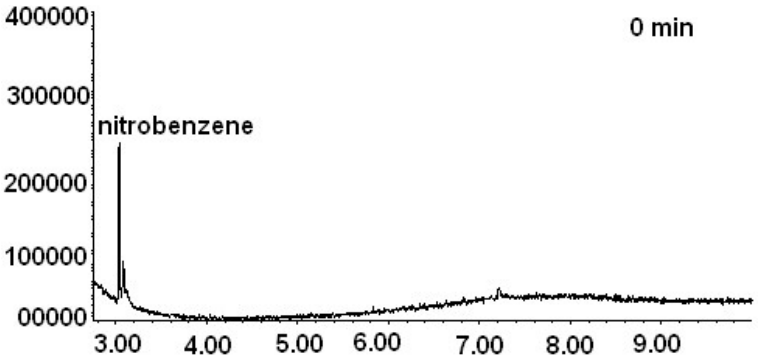


Figure S7. The UV–vis adsorption spectra of the initial NB solution and the NB solution after stirring with the catalyst about 140 min.

(a)



(b)

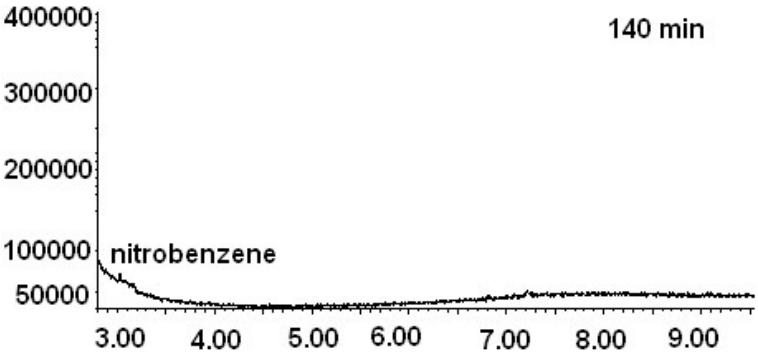


Figure S8. The GC chromatogram of the NB solution (5×10^{-4} M) during the decomposition reaction under the UV irradiation in the presence of **1**.

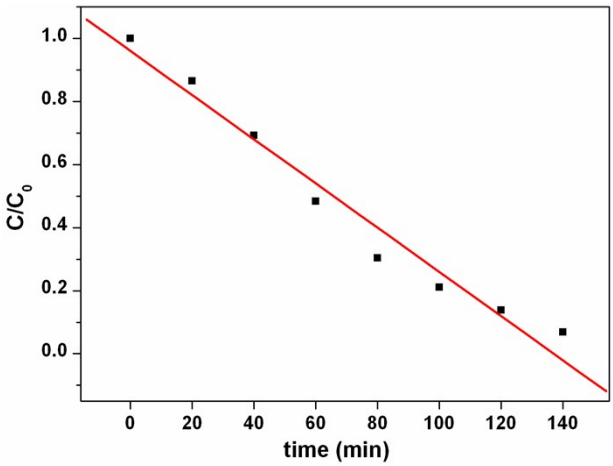
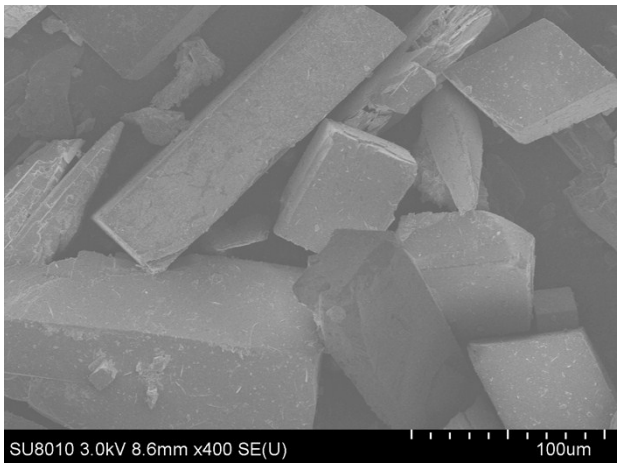


Figure S9. The pseudo-zero-order plot for the photodegradation of NB in the presence of **1** under UV light irradiation. The square dots and the red line represent the experimental data and the fitted least-square line, respectively.

(a)



(b)

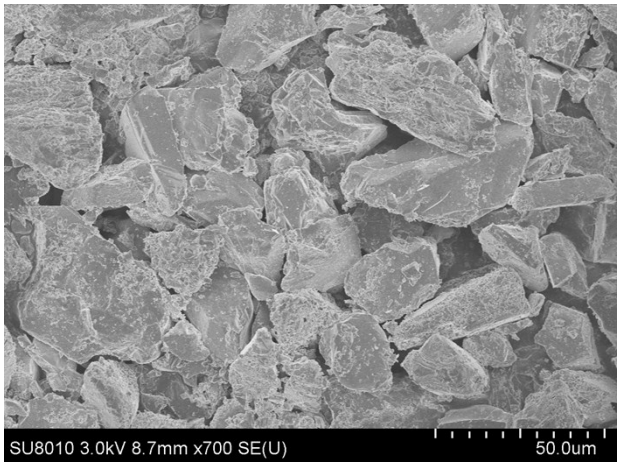


Figure S10. (a) SEM image of as-synthesized catalyst **1**. (b) SEM image of catalyst **1** after the photodegradation of NB.

Table S1. Summary of Crystallographic Data for **1**.

Empirical Formula	$C_{26}H_{22}AgN_3O_5$
Formula Weight	564.34
Crystal System	monoclinic
Space Group	*C*2/*c*
a (Å)	27.7874(10)
b (Å)	11.7457(7)
c (Å)	17.5147(9)
α (°)	90
β (°)	129.073(2)
γ (°)	90
V (Å^3)	4438.0(4)
Z	8
T (K)	293(2)
ρ_{calc} (g/cm^3)	1.689
F(000)	2288
μ (MoKα, mm^{-1})	0.954
Total reflections	11329
Unique reflections	2903 (R_{int} = 0.0422)
No. of observations	2735
No. of parameters	316
R_1[a]	0.1167
wR_2[b]	0.2873
GOF[c]	1.053

[a] $R_1 = \Sigma||F_o|-|F_c||/\Sigma|F_o|$. [b] $wR_2 = \{\Sigma w(F_o^2-F_c^2)^2/\Sigma w(F_o^2)^2\}^{1/2}$. [c] GOF = $\{\Sigma w(F_o^2-F_c^2)^2/(n-p)\}^{1/2}$, where *n* = number of reflections and *p* = total numbers of parameters refined.

Table S2. Comparison of the performance of the as-prepared sensor **1** with that of other sensors for the detection of NB.

Electrode	Method[a]	Linear range (μM)	Sensitivity (μA mM^{-1} cm^{-2})	LOD[b](μM)	References
SiO_2/AuNPs/GCE	CV	0.1-25	1130	0.1	1
OMC/DDAB/GCE	LSV	20-2900	–	10	2
OMCN/GCE	CV	0.5-1000	7500	0.18	3
ATP-Ag/GCE	LSV	3-30	–	1.1	4
TMPP/N-OMC/GCE	DPV	0.528-132	–	0.38	5
BiF/CPE	SWV	1-100	3210	0.83	6
HMDE	LSV	14.7-1000	–	5	7
GCE/Au-MOF-5	CV	20-500/500-6000	430	15.3	8
RGO-AgNPs/GCE	DPV	0.5-900	836	0.261	9
1/GCE	DPV	1-100/100-2450	2170/1298	0.62	this work

[a] CV = cyclic voltammetry; LSV = linear sweep voltammetry; DPV = differential pulse voltammetry; SWV = square wave voltammetry. [b] LOD = low detection limit.

References

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