Electronic Supplementary Material (ESI) for Analytical Methods.

A Novel Temperature-responsive Electrochemical Sensing Platform for Reversible Switch-Sensitive Detection of Acetamidophenol

Chao Chen[a,c*], Chenxi Wang[b,c], Pengcheng Zhao[c,d], Jin Zhang[a] , Yongjun Hu[a*],Junjie Fei[c*]

[a] School of Materials and Chemical Engineering, Hunan City University, Yiyang 413000, People's Republic of China
[b] Key Laboratory of Environmentally Friendly Chemistry and Applications of Ministry of Education, College of Chemistry, Xiangtan University, Xiangtan 411105, People's Republic of China
[c] Hunan Institute of Advanced Sensing and Information Technology, Xiangtan University, Xiangtan 411105, People's Republic of China
[d] Key Laboratory for Green Organic Synthesis and Application of Hunan Province, Xiangtan University, Xiangtan 411105, People's Republic of China
* Chao Chen, Ph.D., School of Materials and Chemical Engineering, Hunan City University, Yiyang, China
E-mail: chenchaohncu@qq.com
* Junjie Fei, Ph.D., College of Chemistry, Xiangtan University, Xiangtan, China
E-mail: fei_junjie@xtu.edu.cn
* Yongjun Hu, Ph.D., School of Materials and Chemical Engineering, Hunan City University, Yiyang, China
E-mail: 416064395@qq.com

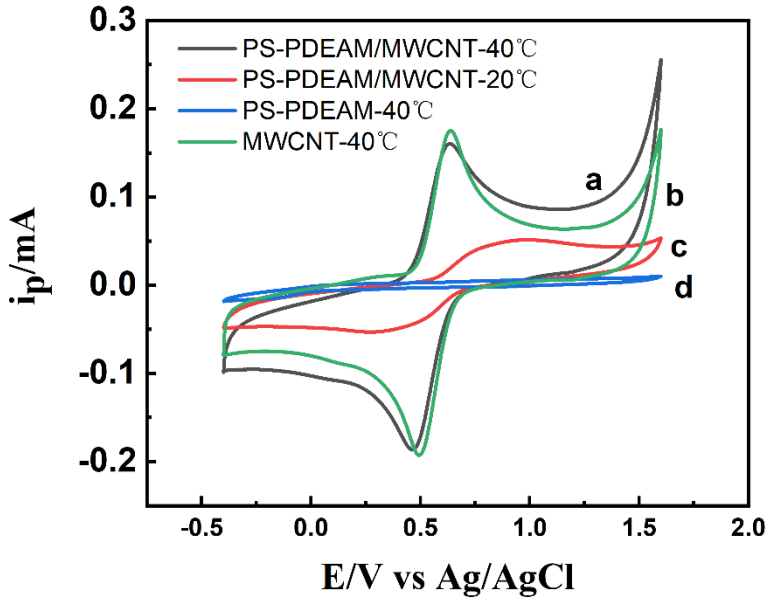

Fig.S1 Cyclic voltammogram of (a)PS-PDEAM/MWCNTs,(c)PS-PDEAM, (d)MWCNTs at 40°C and (b)PS-PDEAM /MWCNTs at 20°C in 5 mM $K_3Fe(CN)_6/K_4Fe(CN)_6$ solutions.

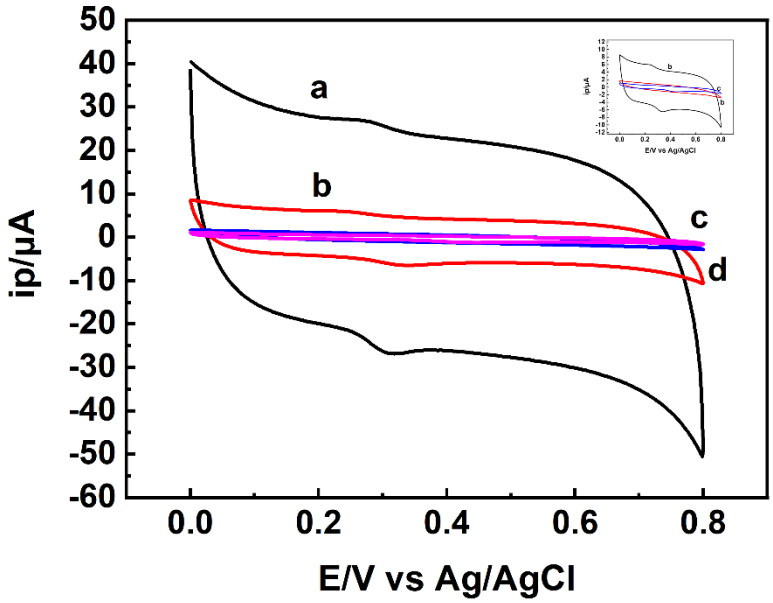

Fig.S2 Cyclic voltammogram of (a) MWCNTs, (b) PS-PDEAM /MWCNTs (c) bare GCE, (d) PS-PDEAM with 30 μM AP, Solution temperature: 40°C. Inset shows the enlarged view of (b) (c) and (d).

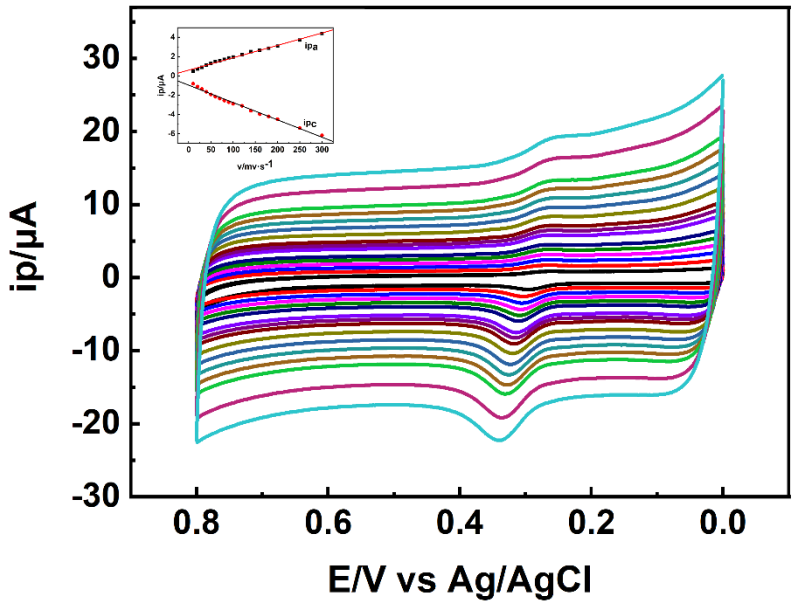

Fig.S3 CV of 30 μM AP at the PS-PDEAM /MWCNTs at different scan rates (from10, 20, 30, 40, 50, 60, 70, 80, 90,100,120,140,160, 180,200, 250 to 300 $mV \cdot s^{-1}$ in 0.1 M PBS (pH 7.0). Testing temperature: 40°C. Inset： The dependence of redox peak currents on the scan rates

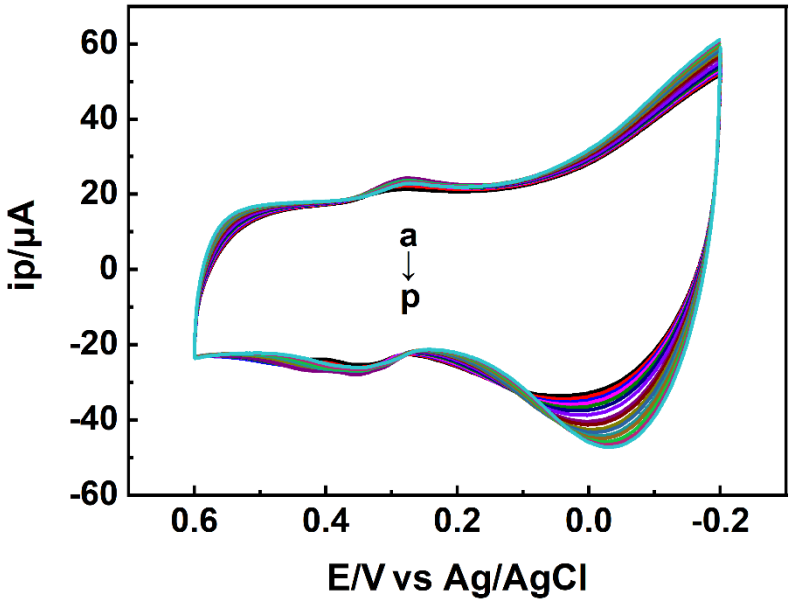

Fig.S4 Temperature-dependent CVs of AP at the MWCNTs electrode from a to p: 10 to 40°C. Concentration of AP: 30 μM

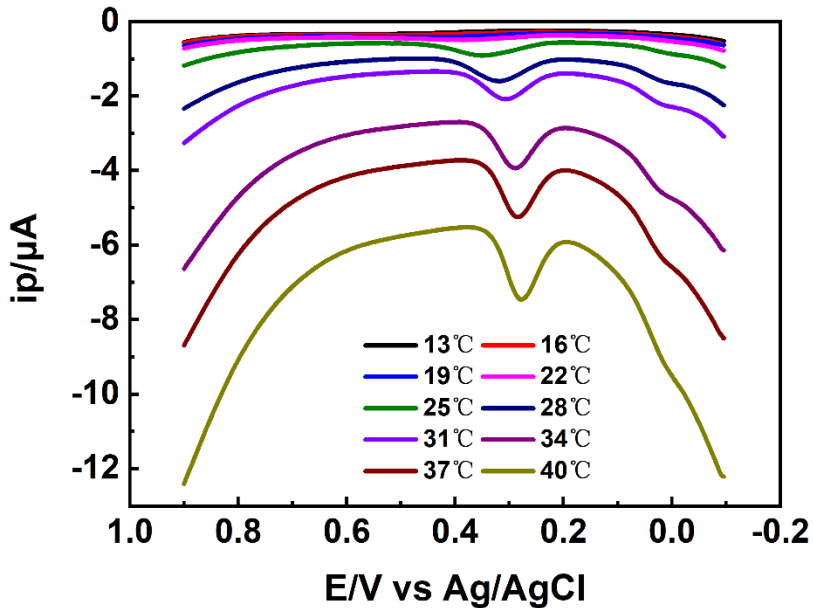

Fig.S5 Differential pulse voltammetry of AP at PS-PDEAM/MWCNTs modified electrodes in 0.1 M PBS (pH 7.0) toward temperature stimuli from 13 to 40°C.

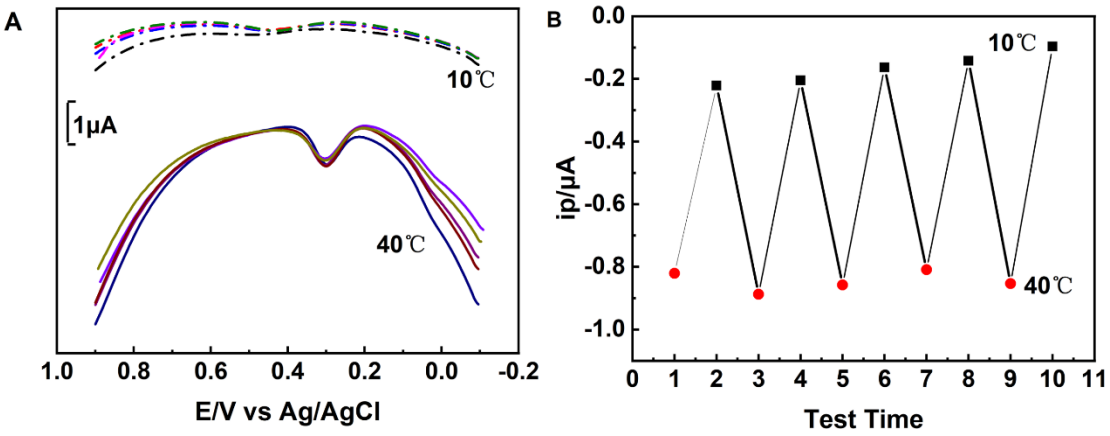

Fig.S6 (A)Reproducible switching "on–off" DPV of AP at the PS-PDEAM/MWCNTs electrode in 0.1 mol·L^{-1} PBS solution between 10°C and 40°C, Concentration of AP: 20μM.(B) The dependence of DPV's Ip on solution temperature is switched between 40°C (●) and 10°C (■).