

Supplementary Information

**Sensitive and Simultaneous Determination of Hydroquinone and  
Catechol using an Anodized Glassy Carbon Electrode with  
Polymerized 2-(Phenylazo)chromotropic acid**

Miao Zhang<sup>1,†</sup>, Chuang-ye Ge<sup>1,2,†</sup>, Ya-feng Jin<sup>4</sup>, Liang-bin Hu<sup>1</sup>, Hai-zhen Mo<sup>1</sup>,  
Xiao-bo Li<sup>1,3,\*</sup> and Hao Zhang<sup>1,\*</sup>

<sup>1</sup>*College of Food Science , Henan Institute of Science and Technology, Xinxiang 453003, P.R.China,*

<sup>2</sup>*DePartment of Applied Chemistry, Konkuk University, Chungju 380-701, Republic of Korea*

<sup>3</sup>*State Key Laboratory of Luminescent Materials and Devices, South China University of Technology  
Guangzhou 510641, P.R.China,*

<sup>4</sup>*Key Laboratory of Natural Resources of the Changbai Mountain and Functional Molecular (Yanbian  
University), Ministry of Education, Park Road 977, Yanji City, Jilin Province, 133002, China*

† Both the authors contributed equally.

\* Corresponding authors. E-Mail address: [xbli@hist.edu.cn](mailto:xbli@hist.edu.cn) (X. Li);

[zh8941@126.com](mailto:zh8941@126.com) (H. Zhang).

## Materials and Methods

**Chemicals and reagents.** - CH, HQ, CT, sodium dihydrogen phosphate ( $\text{NaH}_2\text{PO}_4$ ), disodium hydrogen phosphate ( $\text{Na}_2\text{HPO}_4$ ) were purchased from Aladdin (Shanghai, China). All chemicals were used as received. The PBS solutions were prepared by mixing 0.1 M stock solutions of  $\text{Na}_2\text{HPO}_4$  and  $\text{NaH}_2\text{PO}_4$ . All solutions were prepared by using double-distilled (DD) water obtained from a water purifying system ( $18 \text{ M}\Omega\cdot\text{cm}$ ).

**Apparatus.** – All the electrochemical experiments were conducted with a CHI 430a electrochemical workstation (CH Instruments, USA). All measurements were performed by using a conventional three-electrode cell system including a GCE (ca. 3 mm in diameter) or a PCH/AGCE, a Ag/AgCl (3 M KCl) electrode and a platinum wire were used as working, reference and counter electrode, respectively. Differential pulse voltammetry (DPV) data were obtained by scanning the potential from  $-0.2$  to  $0.5 \text{ V}$  with  $100 \text{ mV/s}$  scan rate,  $2 \text{ ms}$  pulse width, and  $1000 \text{ ms}$  pulse period. All electrochemical experiments were conducted at room temperature in PBS (pH 7.0) unless specified otherwise. The surface morphology were characterized by Field-emission scanning electron microscopy (FE-SEM, JSM-6700F, JEOL).

**Electropolymerization of CH on AGCE surface.** – Before electrochemical anodization, the GCE was polished to a mirror-like finish by using 1, 0.3 and  $0.05 \mu\text{M}$  alumina/water slurry (Buekler, Germany) successively on a polishing cloth, and then rinsed with DD water. The electrochemical activation was performed at a constant potential of  $+1.8 \text{ V}$  for 400 s in PBS. Then, a thin layer of PCH was formed onto the

surface of the AGCE by repeating the cyclic voltammograms (CVs) from  $-0.5$  to  $+0.6$  V in PBS containing  $0.5$  mM CH for 20 cycles. Finally, the PCH/AGCE was washed with DD water and scanned in PBS to remove any unreacted CH monomer. After washing, we measured CV voltammograms until it became stable then it were used for the further experiment.

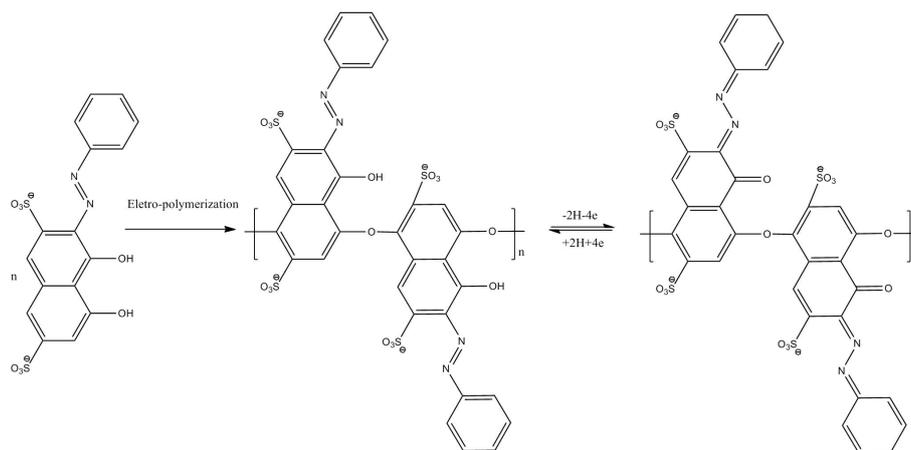


Fig S1. Eletropolymerzation process and redox reaction of PCH

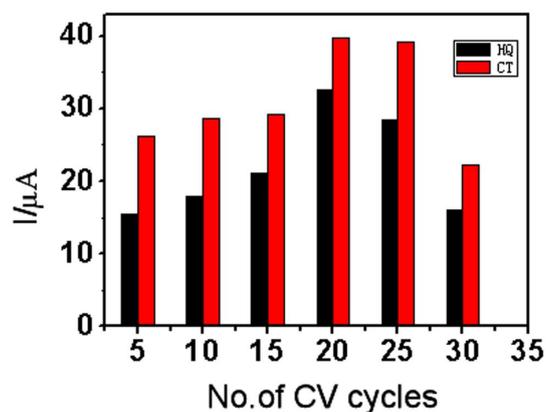


Fig S2. Dependency of the oxidation peak currents of both HQ and CT with the variation of the number of CV cycles (i.e., the thickness of PCH film) obtained from the CV measurement of the mixture of HQ and CT ( $100$   $\mu$ M each) in PBS); scan rate  $100$  mV/s.

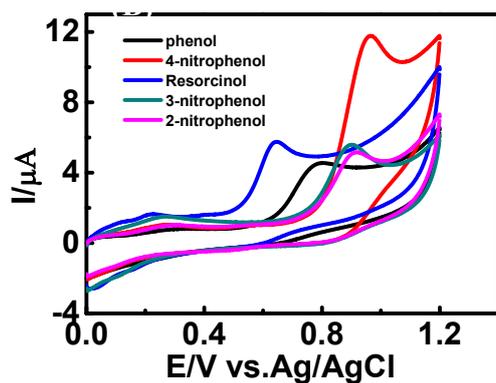


Fig S3. CVs of containing mixture HQ and CT ( $100\mu\text{M}$ ) with 2-nitrophenol, 3-nitrophenol, 4-nitrophenol, phenol, and resorcinol ( $1\text{ mM}$  each) at PCH/AGCE in PBS (pH 7.0); scan rate  $100\text{ mV/s}$ .

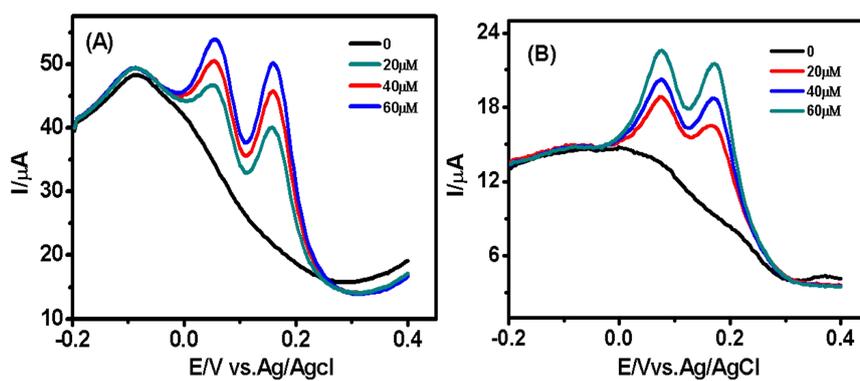


Fig S4. DPV profiles of tap water (A) and local lake water (B) containing of CT and HQ with different concentrations ( $0, 20, 40, 60\ \mu\text{M}$ ).