

Supporting information

For

**A rapid and sensitive method for hydroxyl radicals detection  
on a microfluidic chip using an N-doped porous carbon  
nanofiber modified pencil graphite electrode**

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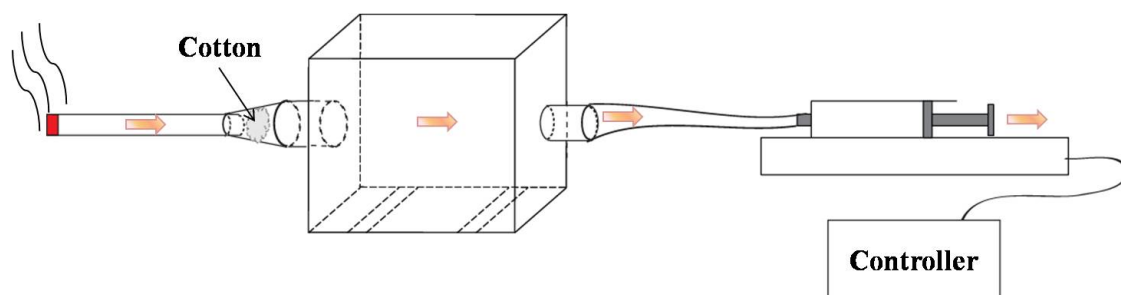


Figure S1. Laboratory-made device for capture of  $\bullet\text{OH}$  in cigarette smoke.

Table S1. Elemental composition of the PGE and NPCN-PGE.

Elements	C (%)	N (%)	O (%)
PGE	98.32		1.68
NPCN-PGE	93.29	2.75	3.96

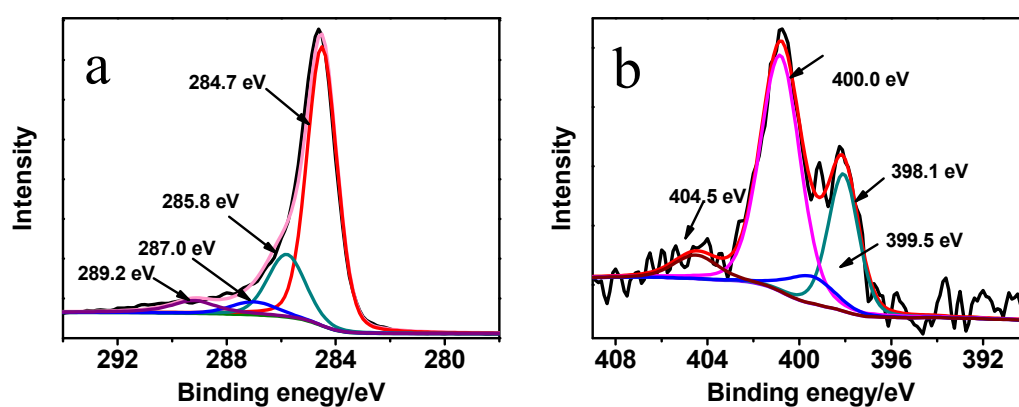


Figure S2. High-resolution C1s (a) and N1s (b) XPS spectra of the NPCN-PGE.

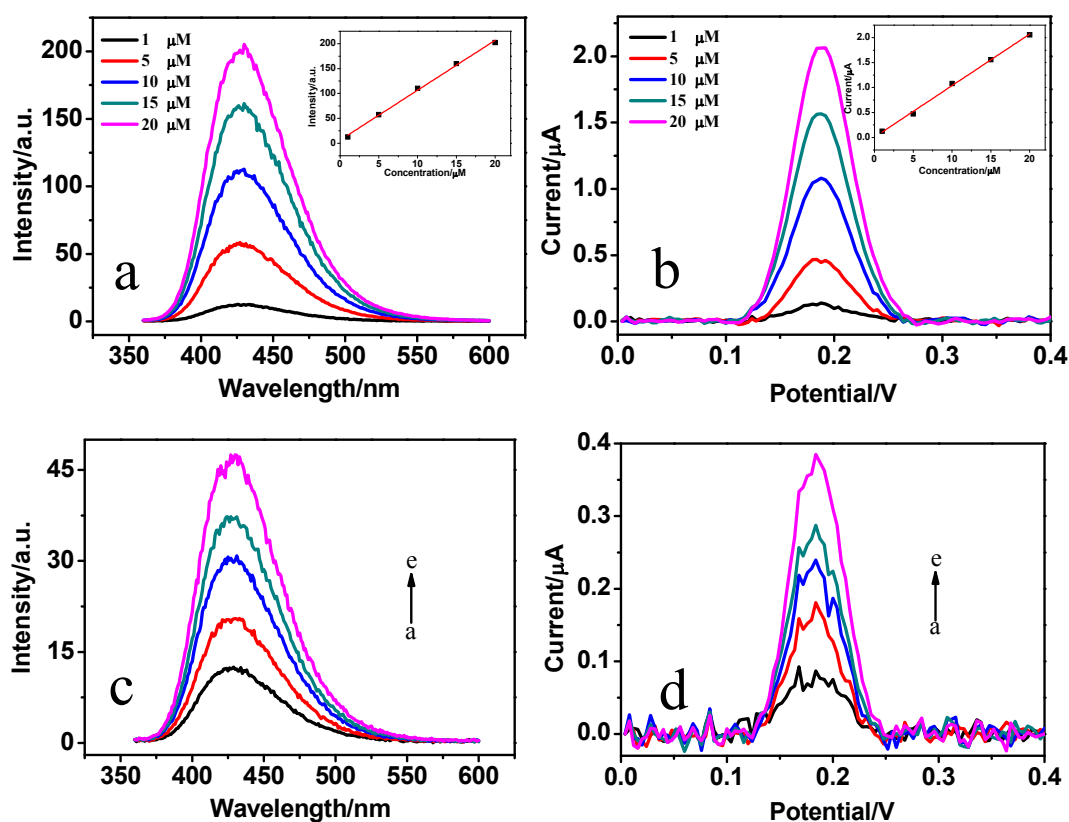


Figure S3. (a) Fluorescent spectra of standard solutions of HTPA range from 1 to 20  $\mu\text{M}$  in 5mM PBS solution (pH 7.4). (b) Differential pulse voltammetry of standard solutions of 3,4-DHBA range from 1 to 20  $\mu\text{M}$  in 5mM PBS solution (pH 7.4). (c) Fluorescent spectra of the capture product (HTPA) in Fenton reaction (a-e, 100, 200, 300, 400, 500  $\mu\text{M}$   $\text{H}_2\text{O}_2$ ,  $[\text{Fe}^{2+}]/[\text{H}_2\text{O}_2]=1:1$ , 5mM PBS, pH 7.4). (d) Differential pulse voltammetry of the capture product (3,4-DHBA) in Fenton reaction (a-e, 100, 200, 300, 400, 500  $\mu\text{M}$   $\text{H}_2\text{O}_2$ ,  $[\text{Fe}^{2+}]/[\text{H}_2\text{O}_2]=1:1$ , 5mM PBS, pH 7.4).

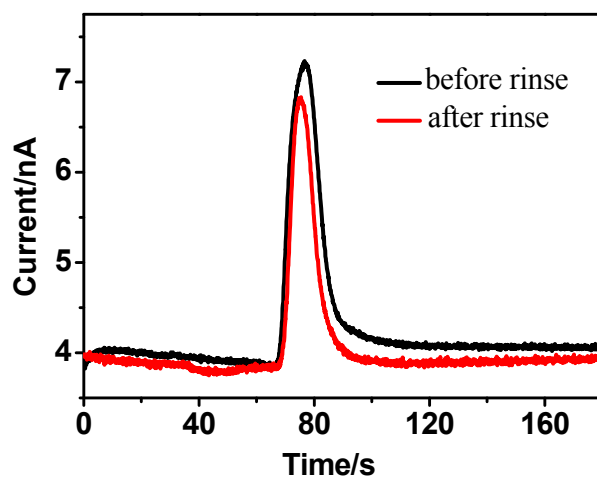


Figure S4. Amperometric detection of 100  $\mu\text{M}$  3,4-DHBA before and after rinse with PBS buffer (5 mM, pH 7.4) for 24h at a separation voltage of 500 V.

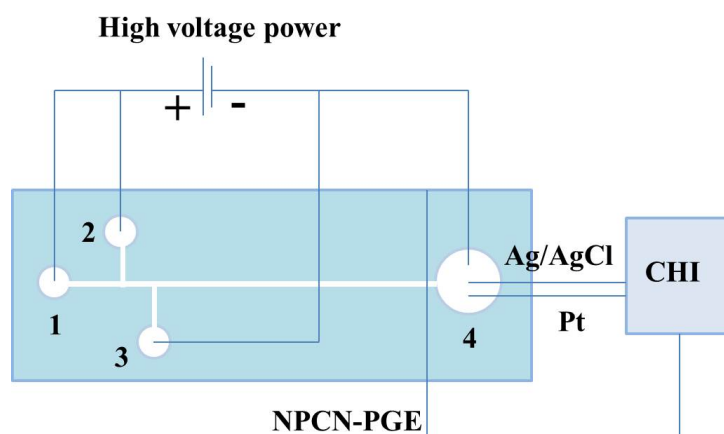


Figure S5. The circuit diagram for sample loading, separation and detection. Platinum electrodes were inserted into the reservoirs 1 to 4 for sample loading and separation. NPCN-PGE embedded in the chip was used as the working electrode. A saturated Ag/AgCl and a platinum wire placed in reservoirs 4 were used as the reference and counter electrodes, respectively. Sample loading and separation were controlled by the high voltage power supply. Amperometric detection was performed using an electrochemical station (CHI 650a).