## Determination of dopamine based on temperaturesensitive polymer PMEO<sub>2</sub>MA and Au@rGO-MWCNT nanocomposite modified electrode

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Fig.S1 XRD spectra of GO and Au@rGO

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Fig. S2 (A) Impedance diagram of PMEO2MA/Au@rGO-MWCNT modified electrode at different temperatures; (B) Impedance diagram of temperature "on-off" effect of PMEO2MA/Au@rGO-MWCNT modified electrode.



**Fig.S3** (A) Cyclic voltammograms of 20  $\mu$ M DA in 0.1 M PBS (pH = 7.0) at PMEO<sub>2</sub>MA/C<sub>60</sub>-RGO at various scan rates, from a to i is 10 to 200 mV·s<sup>-1</sup>. Inset: the oxidation peak current increases linearly with the scan rate (B) Redox peak current vs. square root of scan rate curve. Testing temperature: 40°C.



**Fig.S4** The molecular electrostatic potential distribution of DA. The blue dots are the minimum values of the electrostatic potential, and the yellow dots are the

maximum values



Fig. S5 The electrochemical oxidation mechanism of DA on PMEO<sub>2</sub>MA/Au@rGO-MWCNT.



**Fig.S6** Temperature-dependent cyclic voltammograms of DA at the Au@rGO-MWCNT electrode in 0.1 mol·L<sup>-1</sup> PBS solution (pH 7.0) from 16 to 42 °C. Scan rate: 50 mV·s<sup>-1</sup>; Concentration of DA: 20 μM



**Fig.S7** (A)Differential pulse voltammetry of DA at PMEO<sub>2</sub>MA/ Au@rGO-MWCNT modified electrodes in 0.1 M PBS (pH 7.0) toward temperature stimuli from 16 to 42 °C.(B) The relationship between peak current and corresponding temperature



**Fig.S8** (A) Influence of accumulation potential on the oxidation peak current of 20  $\mu$ M DA. Accumulation time: 20 s (B) Influence of accumulation time on the oxidation peak current of 20  $\mu$ M DA. Accumulation potential: 0 V. (the numbers of

experiments calculating standard deviations is 3)



**Fig.S9** (A)Reproducible switching "on–off" DPV of DA at the PMEO<sub>2</sub>MA/Au@rGO-MWCNT electrode in 0.1 mol·L<sup>-1</sup> PBS solution between 20 °C and 40 °C, Scan rate: 50 mV·s<sup>-1</sup>; Concentration of DA: 20  $\mu$ M.(B) Dependence of DPV Ip<sub>a</sub> on solution temperature switched between 20 °C (•) and 40 °C(•)



Fig.S10 Oxidation peak current of DPV on PMEO<sub>2</sub>MA/Au@rGO-MWCNT in PBS containing different substance.