

Supporting Information

Platinum Nanoparticles Immobilized on polypyrrole nanofibers for Non-Enzyme oxalic Acid Sensor

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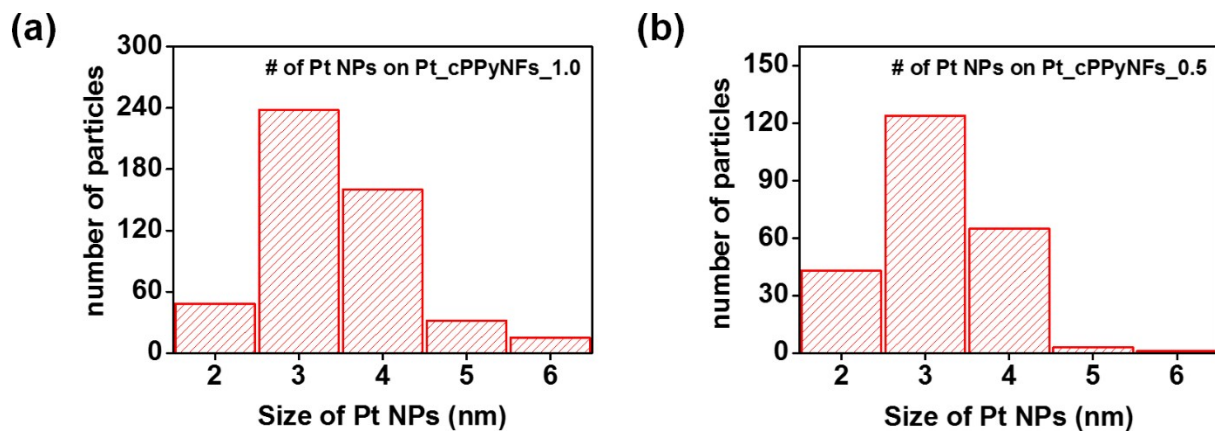


Fig. S1. Histograms of the size for immobilized Pt nanoparticles of (a) Pt_cPPyNFs_0.5 (red), and (b) Pt_cPPyNFs_1.0 (blue).

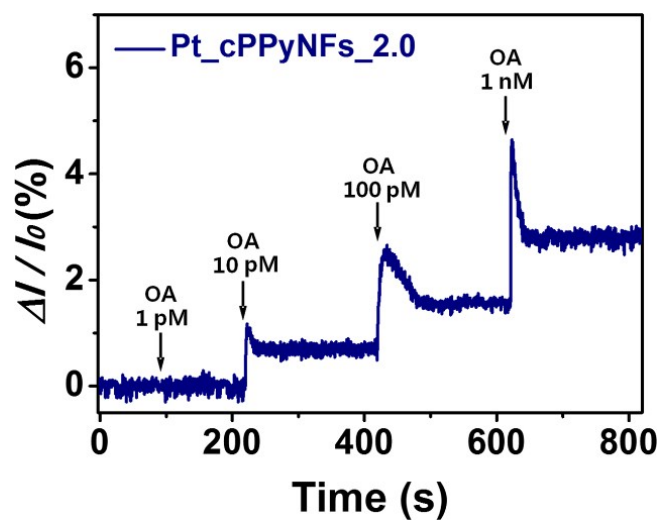


Figure S2. Real-time response of Pt_cPPyNFs_2.0 based FET-sensor

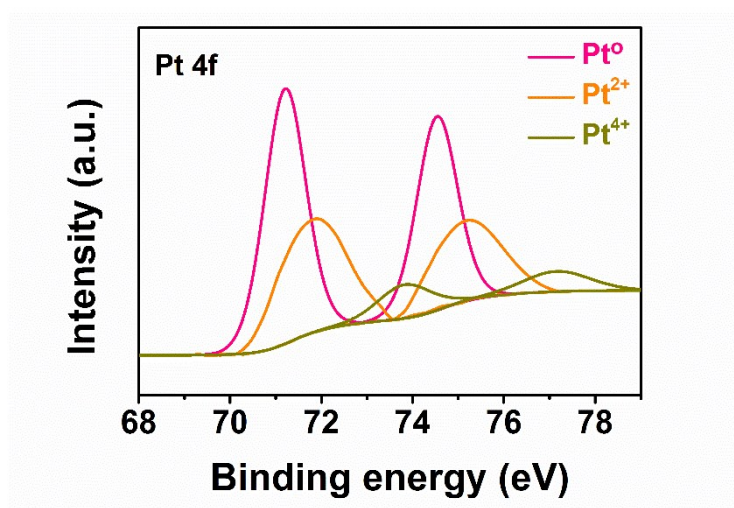


Figure S3 X-ray photoelectron spectroscopy (XPS) of Pt 4f spectra of Pt_cPPyNFs_0.5

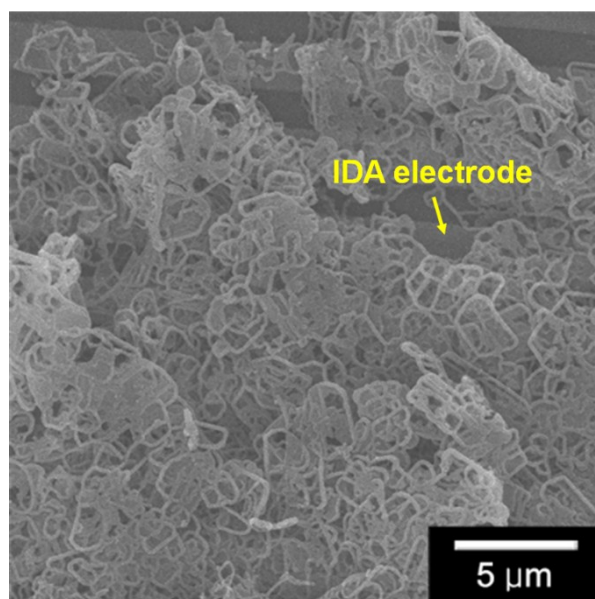


Figure S4 FE-SEM image of Pt_cPPyNFs_1.0 immobilized interdigitated array (IDA) electrode

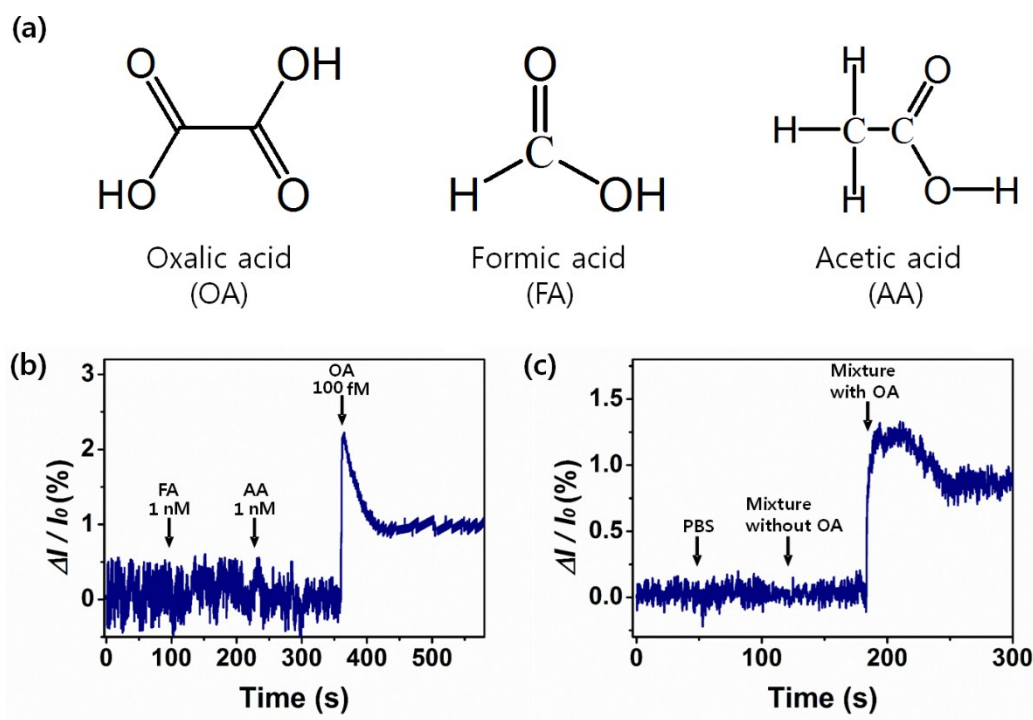


Figure S5 (a) Molecular diagram of target and non-target materials. (b) Selectivity test of Pt_cPPyNFs_1.0 based non-enzyme sensor toward non-target (ethylene glycol (EG), formic acid (FA) and acetic acid (AA)) and target (oxalic acid) analytes. (c) Real-time response of non-enzyme sensor with PBS, non-target materials mixture, and mixture solution including oxalic acid.

In order to confirm the selectivity of Pt_cPPyNFs_1.0 based oxalic acid sensor, formic acid (FA) and acetic acid (AA) were picked out as an interference molecules. The reason for selecting FA and AA as an interference molecules is that they have a molecular structure similar to OA as describe in **Figure S5 a**. The Pt_cPPyNFs_1.0 based sensor does not exhibit significant respond when adding non-target materials (10^{-9} M FA and 10^{-9} M AA). On the other hand, adding target material (10^{-10} M Oxalic acid) bring about significant I_{SD} change (**Figure S5 b**). Furthermore, more accurately confirm the selectivity of oxalic acid sensor, real time response with adding non-target materials mixture and non-target materials mixture with oxalic acid was investigated. After adding OA contained mixture, significant current change occurred compare to adding mixture OA without mixture and PBS buffer solution (**Figure S5 c**). The selectivity toward OA can be explained by number of carboxyl group. OA molecules have more number of carboxyl group than that of FA and AA, which means that oxalic acid has higher possibility to react with Pt nanoparticles on cPPyNFs based sensor array than interfering molecules