chemosensors

MDPI

Article

Gold-platinum Core-shell Nanoparticles with Thiolated Polyaniline and Multi-walled Carbon Nanotubes for the Simultaneous Voltammetric Determination of Six Drug Molecules

Shaopei Li †, Jiayun Zhou †, Meissam Noroozifar and Kagan Kerman *

partment of Physical and Environmental Sciences, University of Toronto Scarborough, 1265 Military Trail, Toronto, ON M1C 1A4, Canada; shaopei.li@mail.utoronto.ca (S.L.); jiayun.zhou@mail.utoronto.ca (J.Z.); m.noroozifar@utoronto.ca (M.N.)

* Corresponding author: kagan.kerman@utoronto.ca

† These authors contributed equally to the work.

Supplementary Information

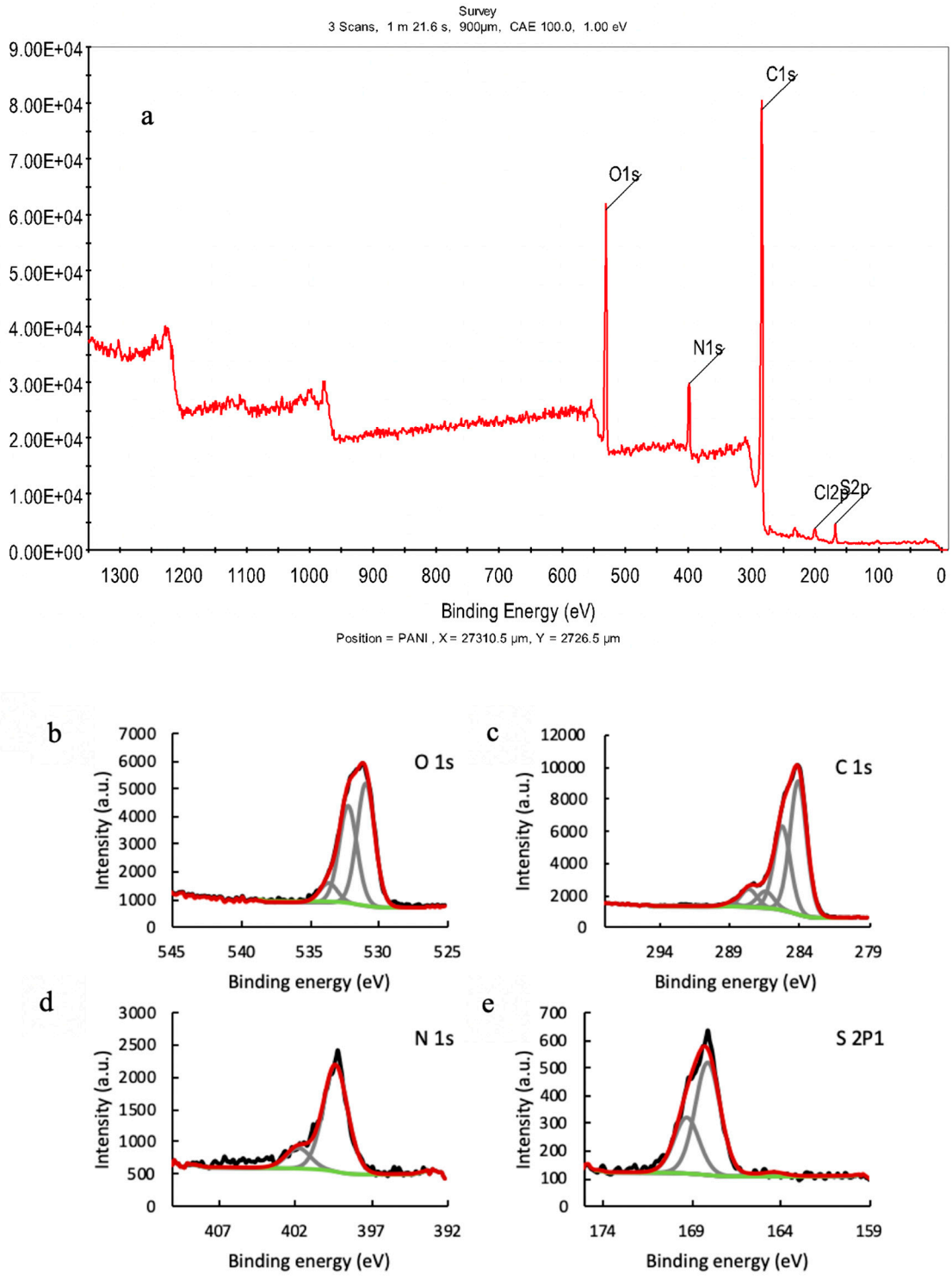

Figure S1. X-ray photoelectric spectroscopy survey spectra of (**a**) tPANI, (**b**) O 1s, (**c**) C1s, (**d**) N 1s, and (**e**) S 2p1.

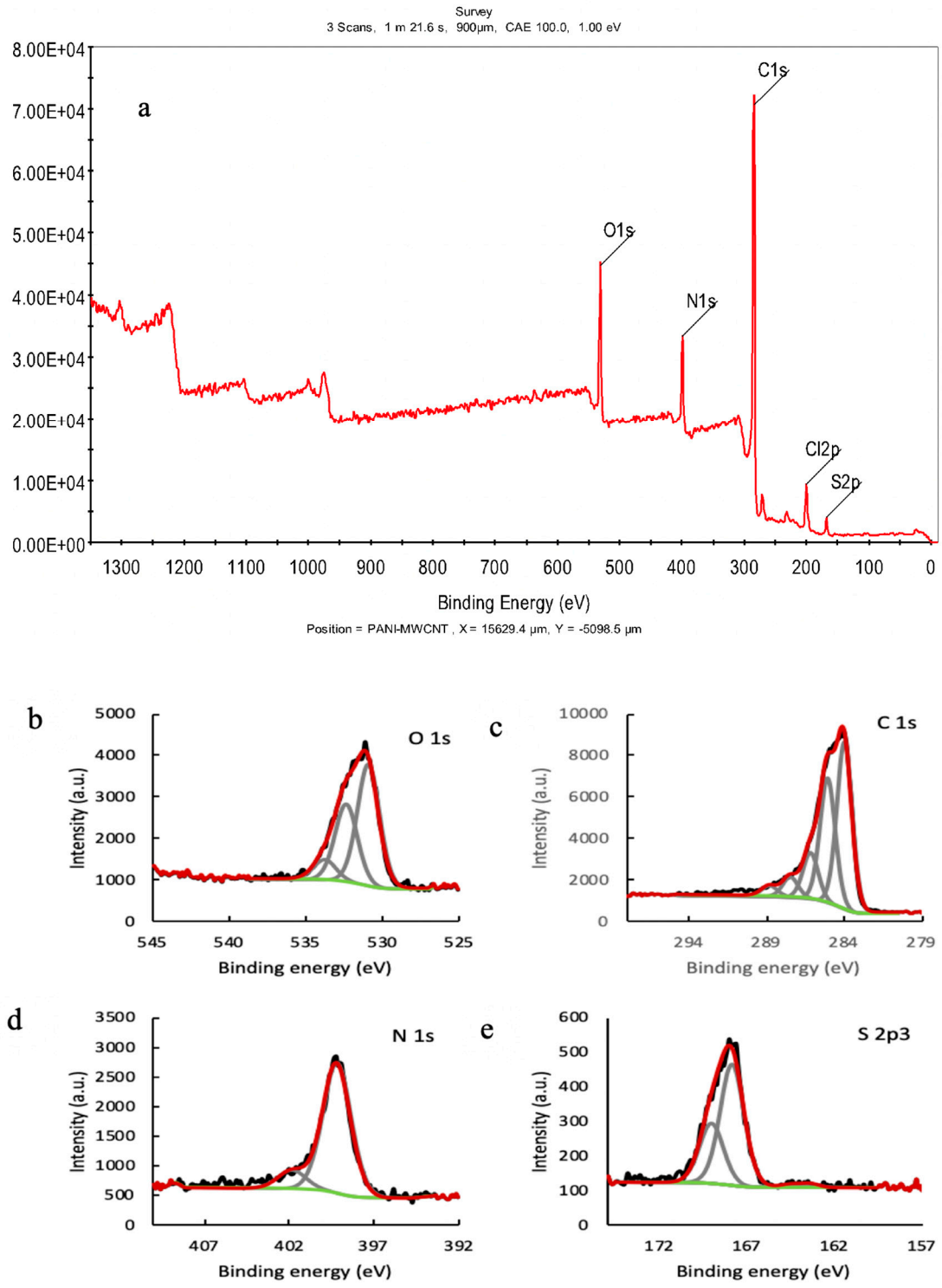

Figure S2. X-ray photoelectric spectroscopy survey spectra of (**a**) tPANI-MWCNT, (**b**) O 1s, (**c**) C1s, (**d**) N 1s, and (**e**) S 2p3.

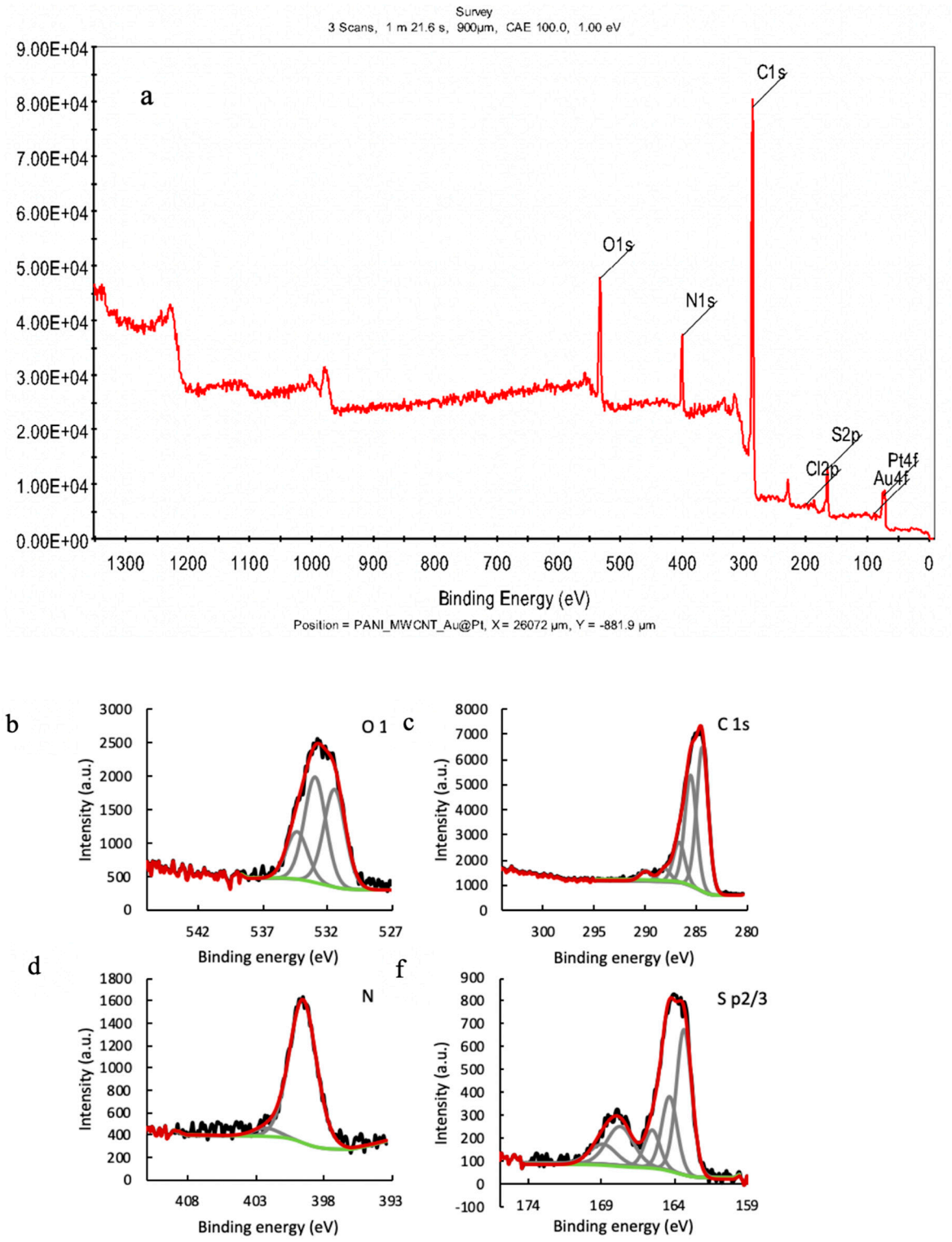

Figure S3. X-ray photoelectric spectroscopy survey spectra of (**a**) tPANI-Au@Pt-MWCNT, (**b**) O 1s, (**c**) C1s, (**d**) N 1s, and (**e**) S 2p3.

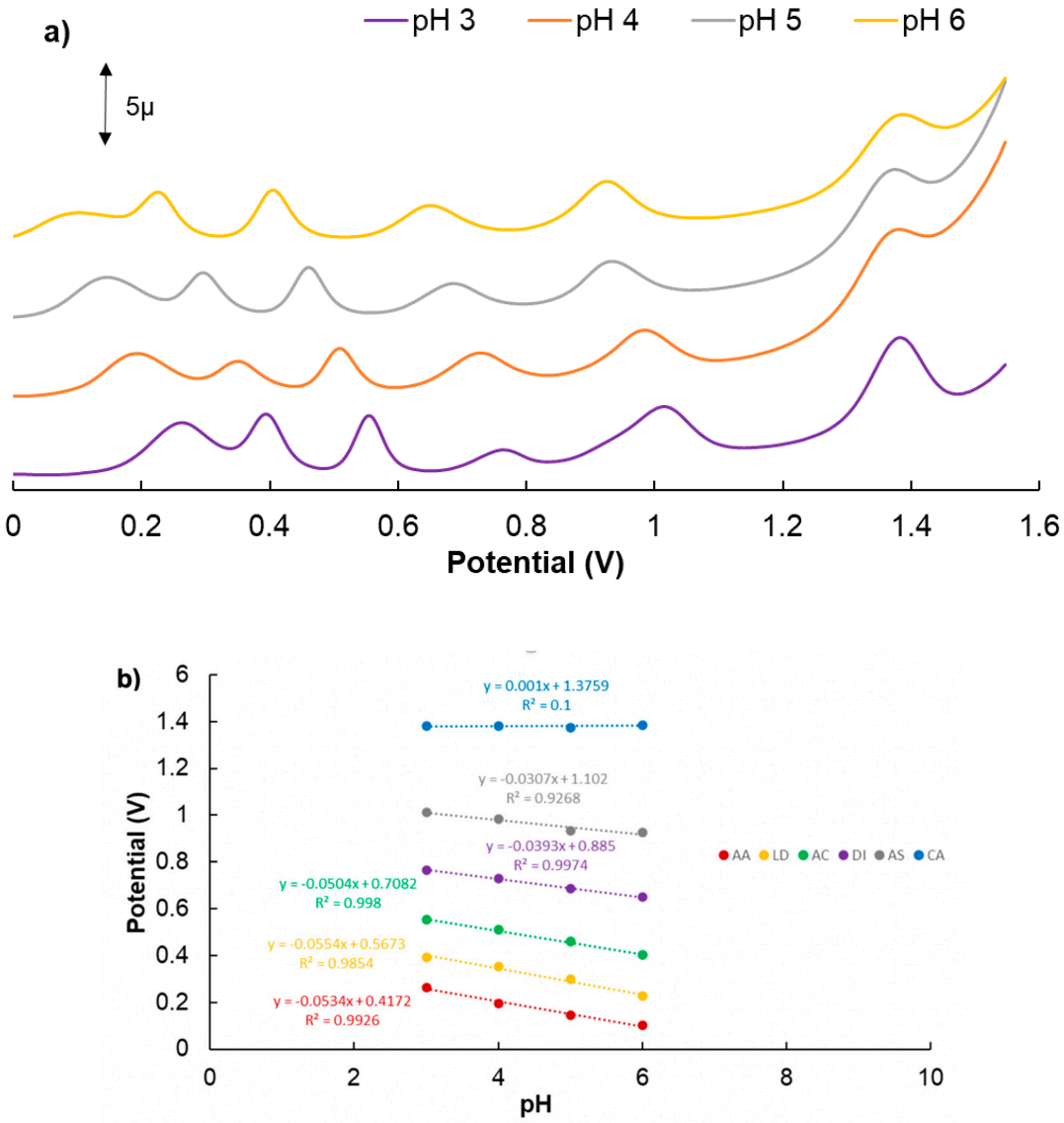

Figure S4. (**a**) Differential pulse voltammogram of GCE-0tPANI-Au@Pt-MWCNTs in 0.5 M PBS at pH 3.0 (purple line), 4.0 (orange line), 5.0 (grey line), and 6.0 (yellow line) in the presence of ascorbic acid (AA, 250 μM), levodopa (LD, 25 μM), acetaminophen (AC, 25 μM), diclofenac (DI, 25 μM,), aspirin (AS, 250 μM) and caffeine (CA, 245 μM) and (**b**) The dependence of anodic peak potentials of six analytes vs. pH.

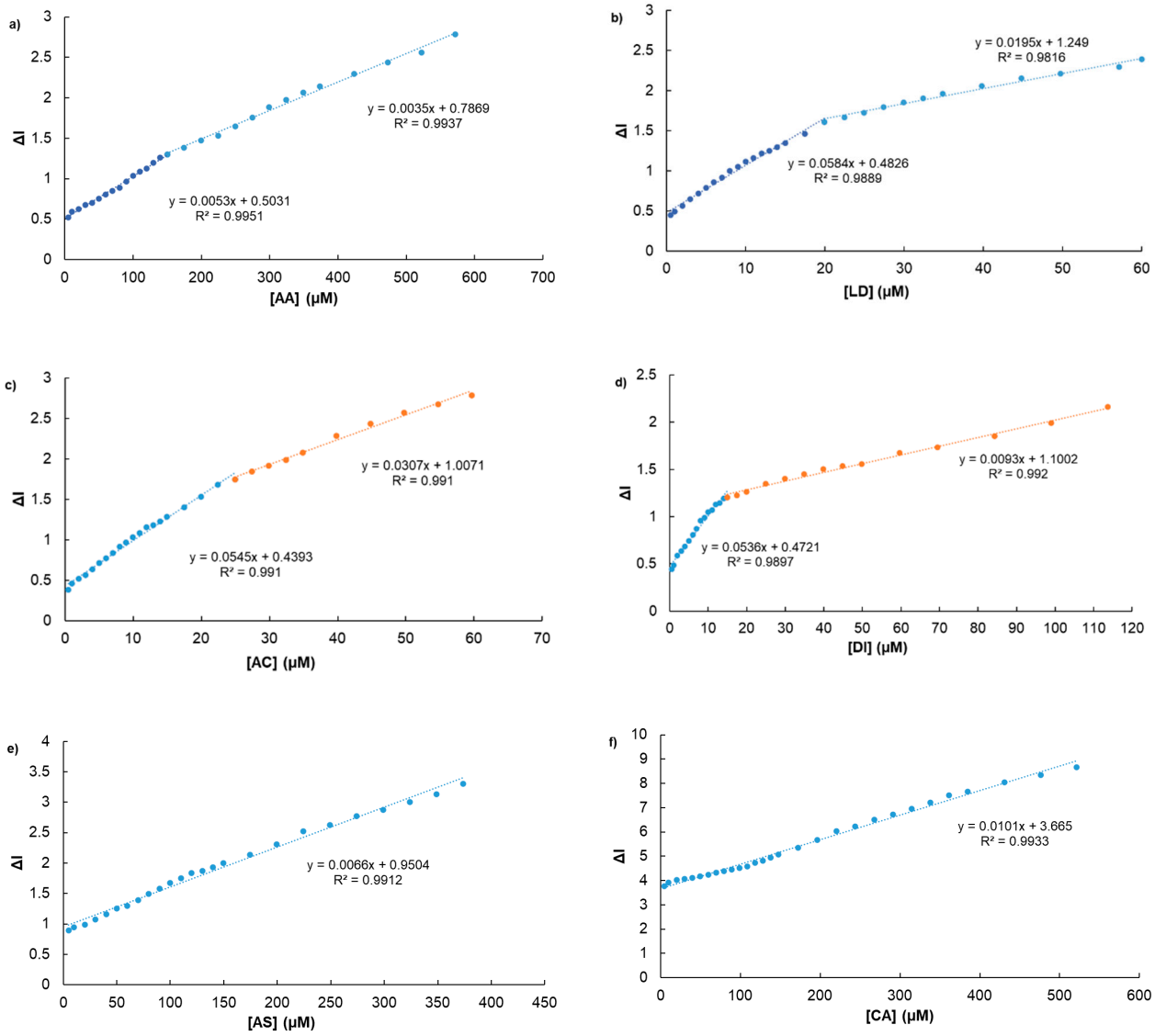

Figure S5. The calibration plots of (**a**) AA (5.0 – 570.0 μM), (**b**) LD (0.5 – 60.0 μM), (**c**) AC (0.5 – 60.0 μM), (**d**) DI (0.5 – 115.0 μM), (**e**) AS (5.0 – 375.0 μM) and (**f**) CA (5.0 – 520.0 μM) with the concentrations plotted against the anodic peak current in μA.

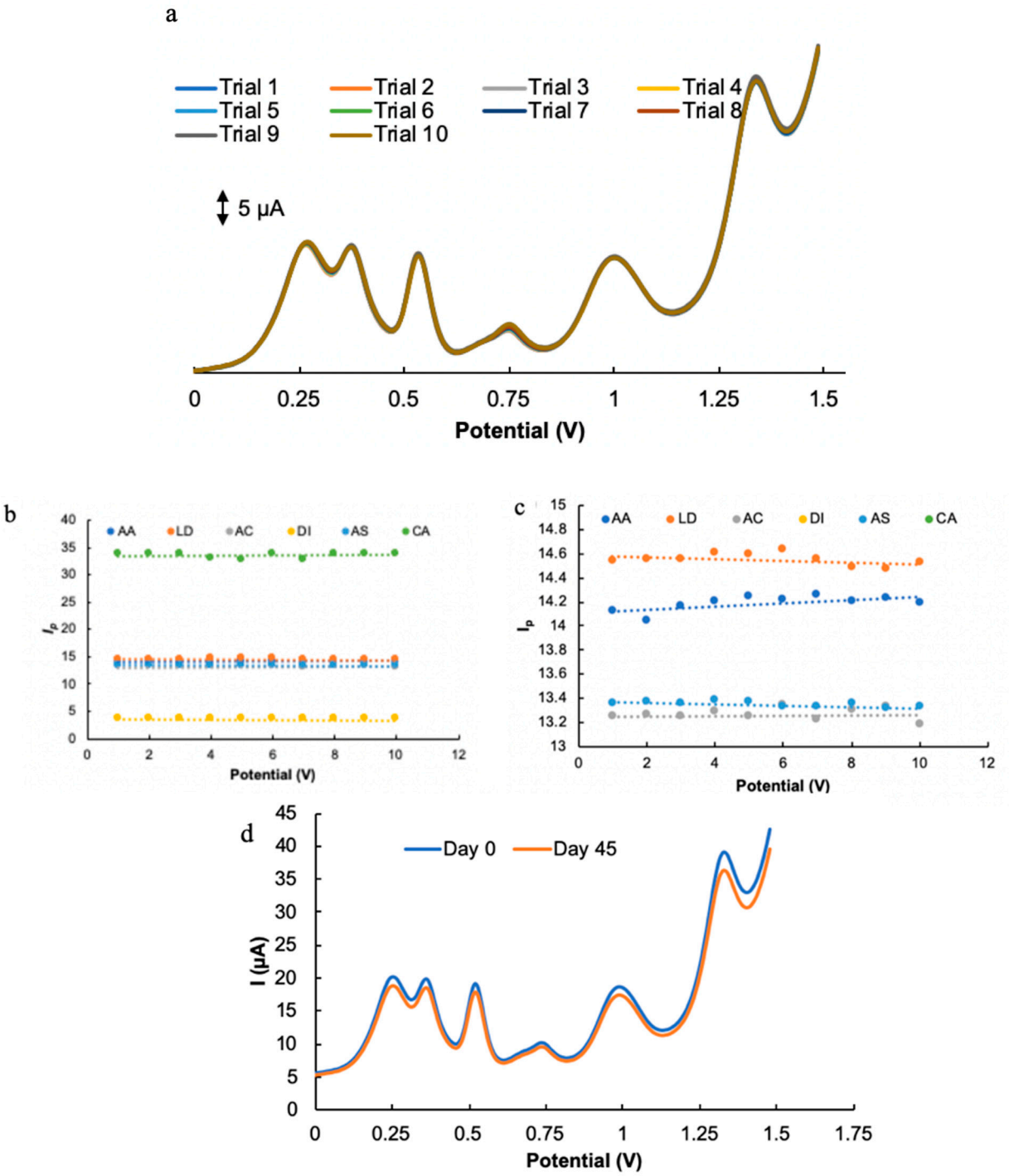

Figure S6. The overlay of differential pulse voltammograms (**a**) of tPANI-Au@Pt-MWCNT in 0.5 M PBS (pH 3.0) of ten consecutive measurements (n = 10) in a solution containing AA (100 µM) LD (25 µM), AC (25µM), DI (50 µM), AS (150 µM) and CA (150 µM), (**b**) The changes in the current peaks of six analytes are plotted across 10 consecutive measurements, (**c**) the magnified region of (**b**), and (**d**) stability study of tPANI-Au@Pt-MWCNT-GCE in a solution containing AA (100 µM) LD (25 µM), AC (25 µM), DI (50 µM), AS (150 µM) and CA (150 µM) on day 0 (blue) and day 45 (orange).

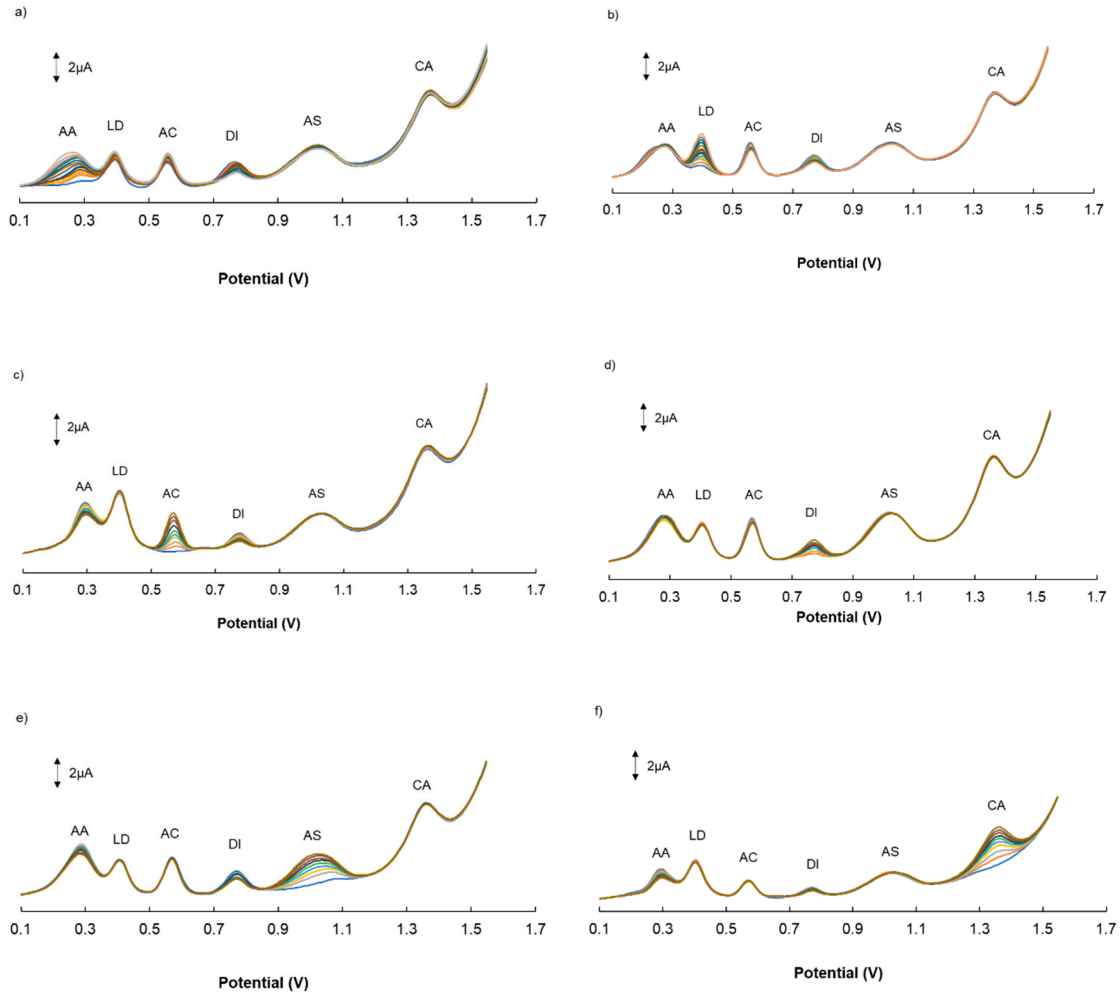

Figure S7. Interference study of six analytes by increasing the concentration of only (**a**) AA, (**b**) LD, (**c**) AC, (**d**) DI, (**e**) AS, and (**f**) CA, while keeping the concentrations of other five analytes constant using tPANI-Au@Pt-MWCNT-GCEs in 0.5 M PBS (pH 3.0).