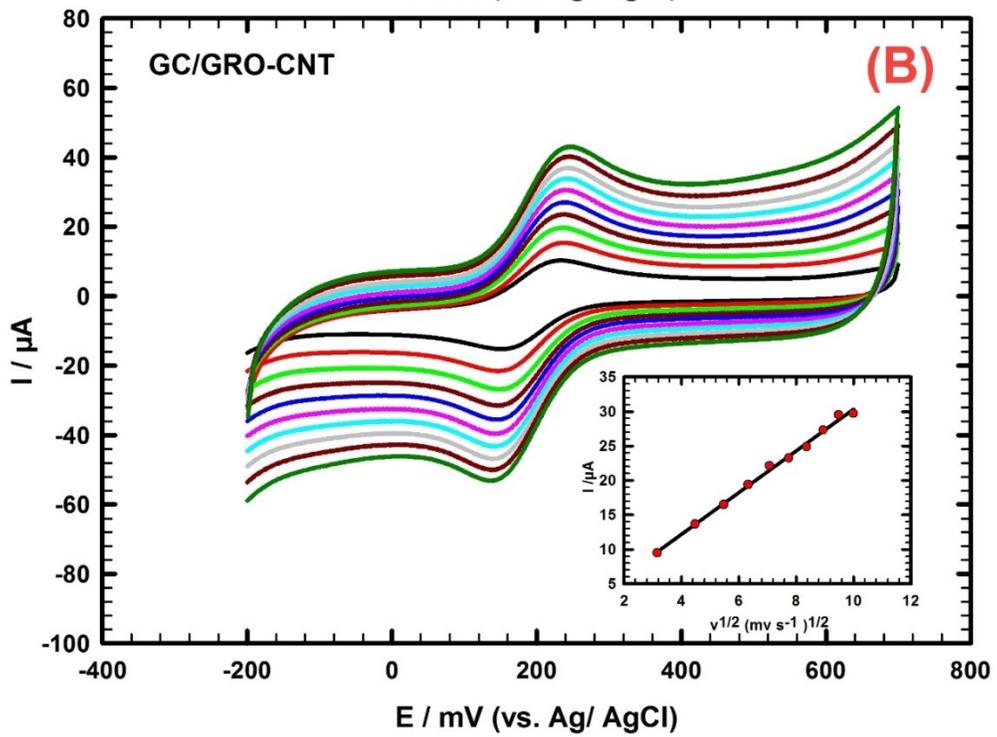
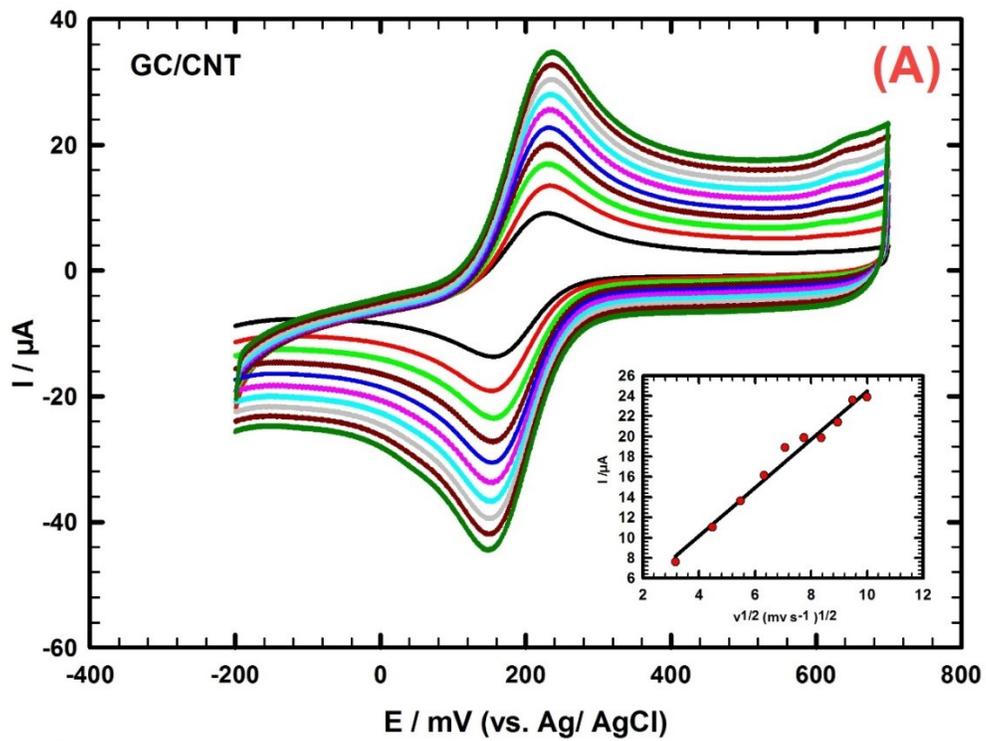
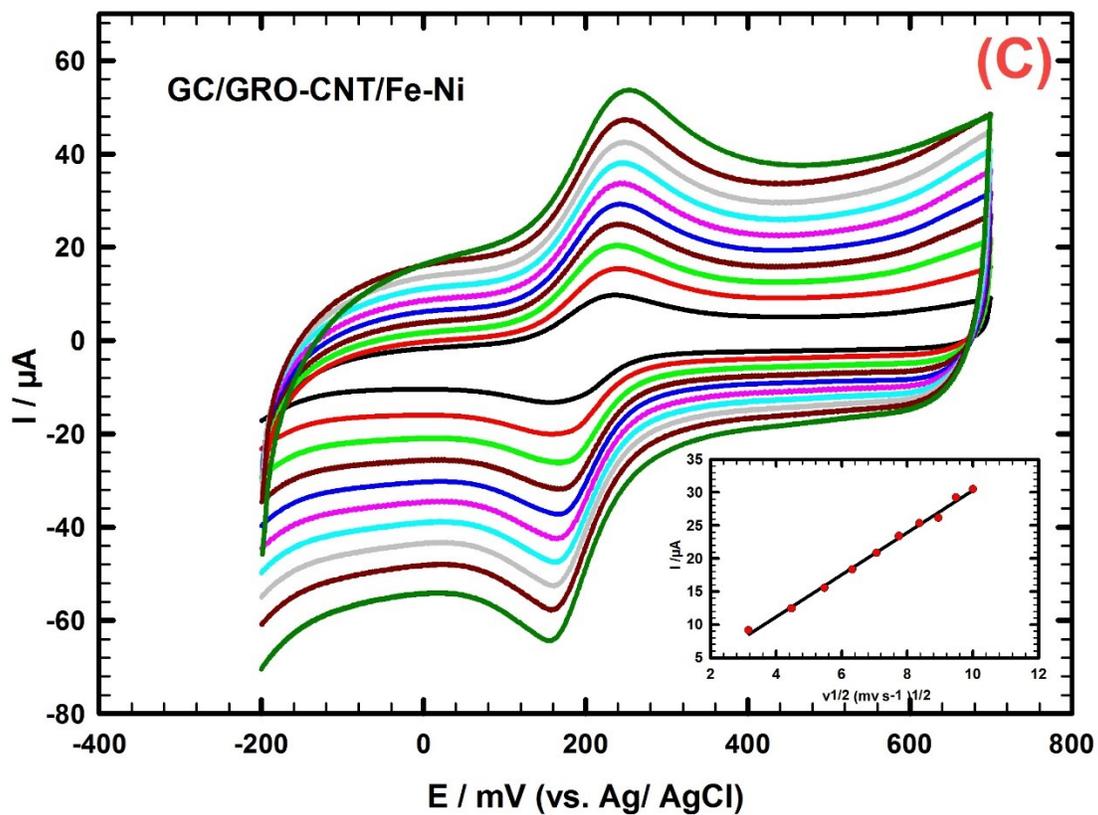
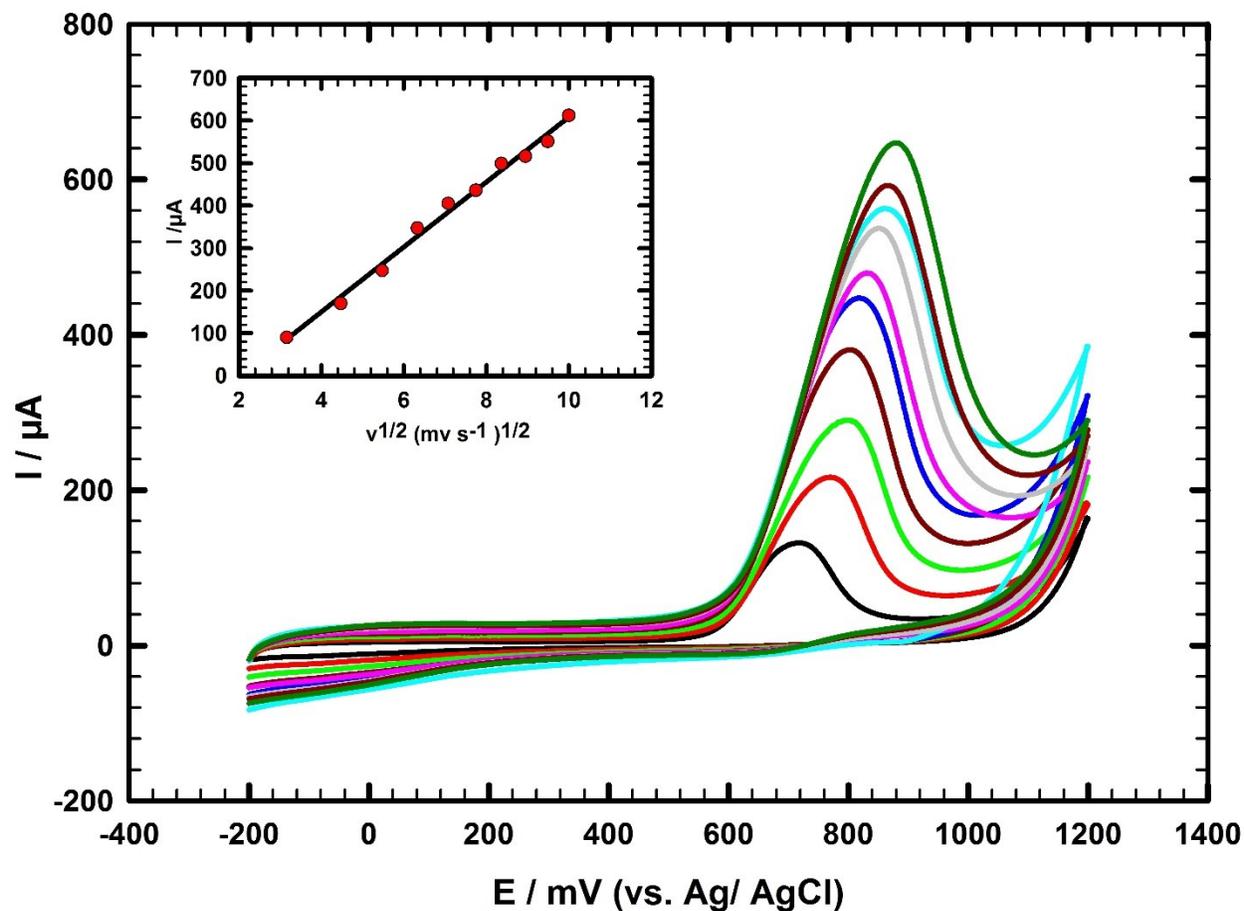


Supplement Figure 1. A) Effect of varying the percentage of GRO mixed with CNT on the CVs of 1.0 mM TFLP in 0.1 M PBS (pH 7.0); scan rate is $50 \text{ mV}\cdot\text{s}^{-1}$; inset: relation between oxidation peak current of TFLP and percentage of GRO. B) Effect of varying the amount of Fe-Ni on the CVs of 1.0 mM TFLP in 0.1 M PBS (pH 7.0); scan rate is 50 mV/s ; inset: relation between oxidation peak current of TFLP and amount of Fe-Ni.

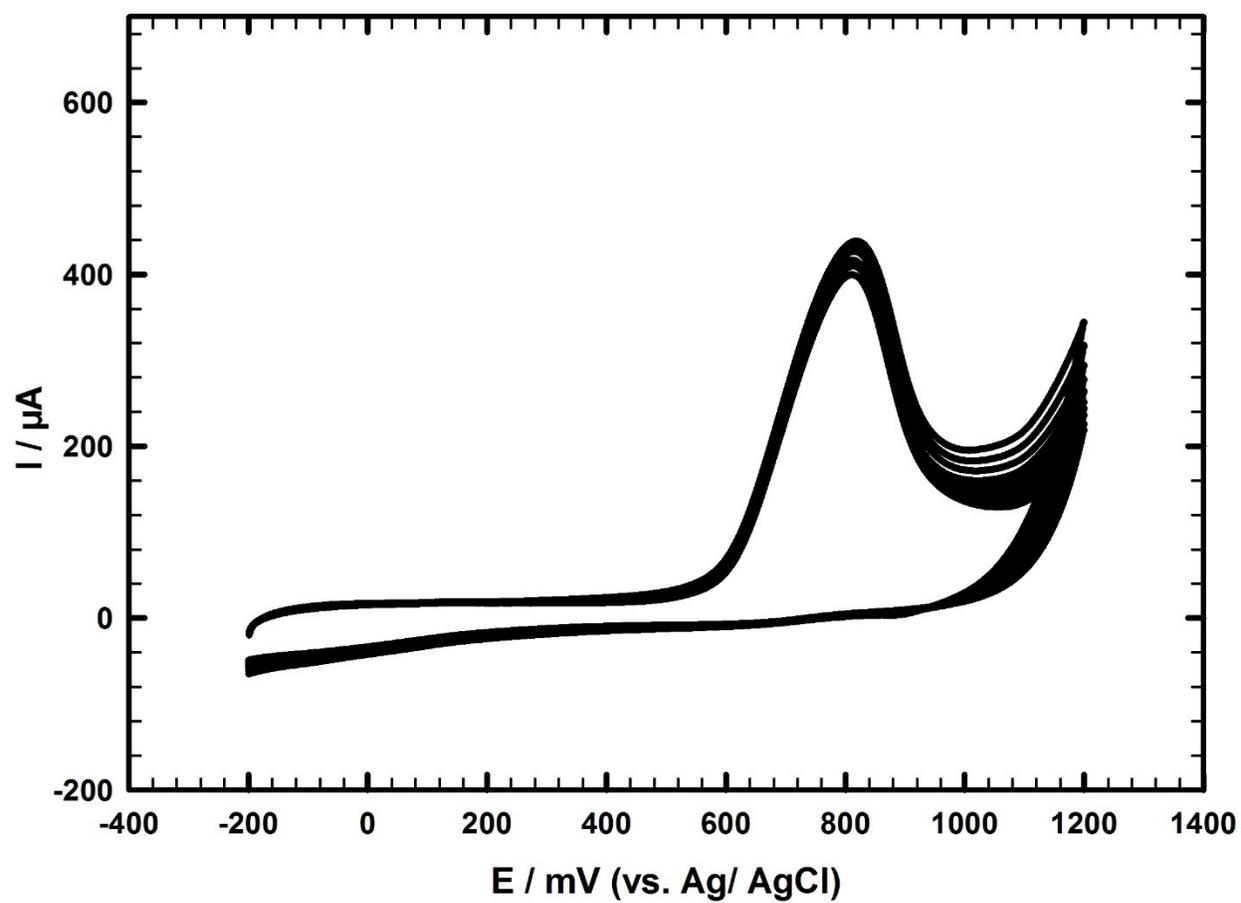




Supplement Figure 2 (A-C): CV experiments in 1.0 mM $K_3[Fe(CN)_6]$ system using different electrodes GC/CNT, GC/GRO-CNT, GC/GRO-CNT/Fe-Ni, respectively. Insets: Corresponding relations between oxidation peak current and square root of scan rate.



Supplement Figure 3: Effect of varying the scan rates on the CVs of 1.0 mM TFLP in 0.1 M PBS (pH 7.0); inset: relation between oxidation peak current and square root of scan rate.



Supplement Figure 4: Repeated CVs (25 cycles) for examining the current response stability of GC/GRO-CNT/Fe-Ni electrode in 1.0 mM TFLP/0.1 M PBS (pH 7.0); scan rate is $50 \text{ mV}\cdot\text{s}^{-1}$

Supplement Table 1: The devices used in this work.

Instrument	Uses
BAS-Epsilon electrochemical equipment with a cell contained three electrodes (GCE (Φ : 3 mm), platinum wire and Ag/AgCl (3 M KCl)).	Voltammetry measurements
Quanta 250 FEG instrument	Scanning electron microscopy FE-SEM measurement
Quanta 250 FEG instrument	Energy dispersive X-ray spectroscopy (EDAX) measurement
JEM-2100 (JEOL Ltd., Japan)	High resolution transmission electron microscope (HRTEM).

Supplement Table 2: Comparison of figures of merit for GC/GRO-CNT/Ni-Fe with different modified electrodes mentioned in literature for TFLP determination.

Modified electrodes	Linearity range (μM)	Detection limit (M)	Sensitivity ($\mu\text{A}/\mu\text{M}$)	Stability (% RSD)	Accuracy (% RSD)	Ref
MWCNT/GCE	0.021–1.7	0.7×10^{-9}	1.20	1.98	2.87	2
DMSA/Fe ₃ O ₄ /RGO/CPE	1–50	54×10^{-8}	0.0337	2.4	2.4	3
ABSA/SWCNT/GCE	0.1–10	1×10^{-9}	0.314	3.1	3.2	37
NCO-500/SPCE	0.025–100.9	7×10^{-9}	1.704	1.76	1.38	44
MCP-MWCNT/CPE	0.5–167	1.1×10^{-7}	1.294	2.0	1.80	46
BDDE	1–37	7×10^{-7}	0.0193	3.8	-	47
Decanethiol SAM/AuE	0.5–30	3×10^{-8}	0.245	1.5	-	48
GC/ CNT-GRO/Fe-Ni	0.008 -24	1.057×10^{-9}	3.602	1.62	2.32	This work

DMSA: Dimercaptosuccinic acid; ABSA: Aminobenzene sulfonic acid; NCO: Ni@CeO₂ nanoparticles; MCP: m-cresol purple; BDDE: Boron-doped diamond electrode; Decanethiol SAM/AuE: Decanethiol Self-assembled monolayer/gold electrode.