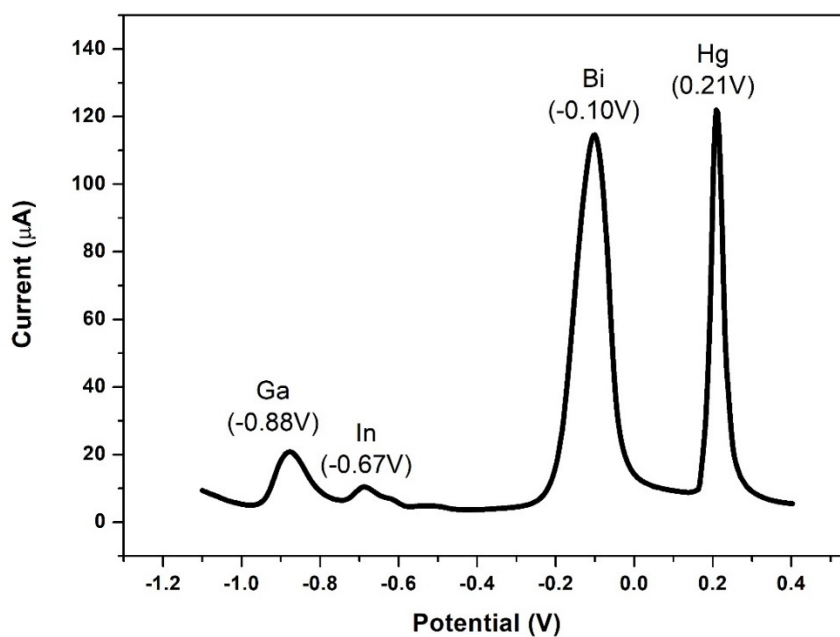
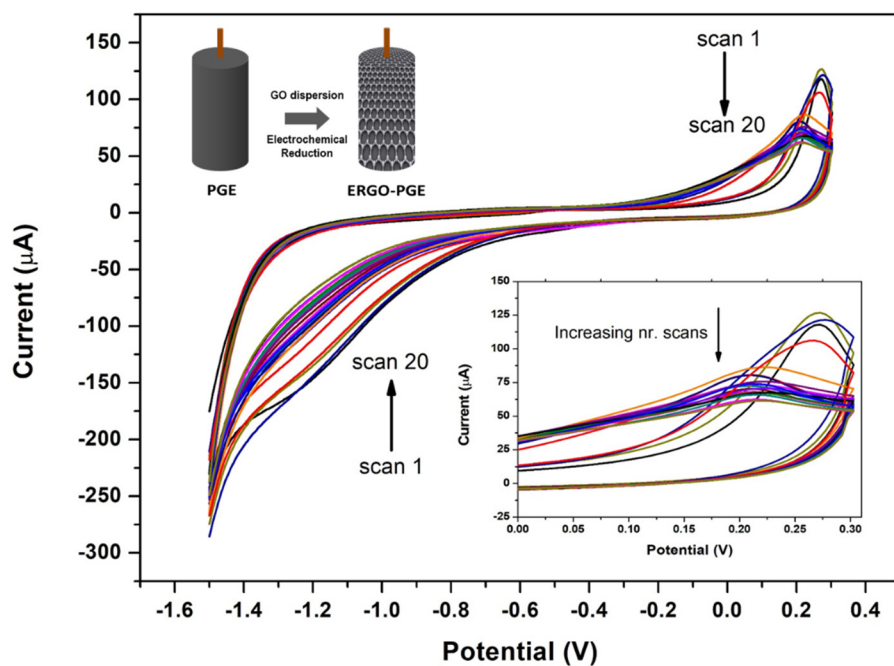


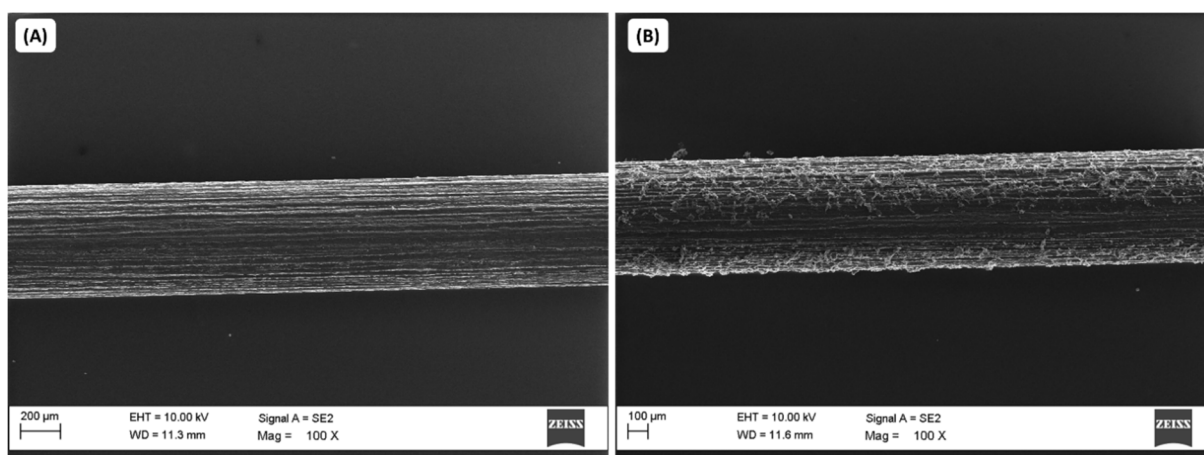
## Supporting Information:



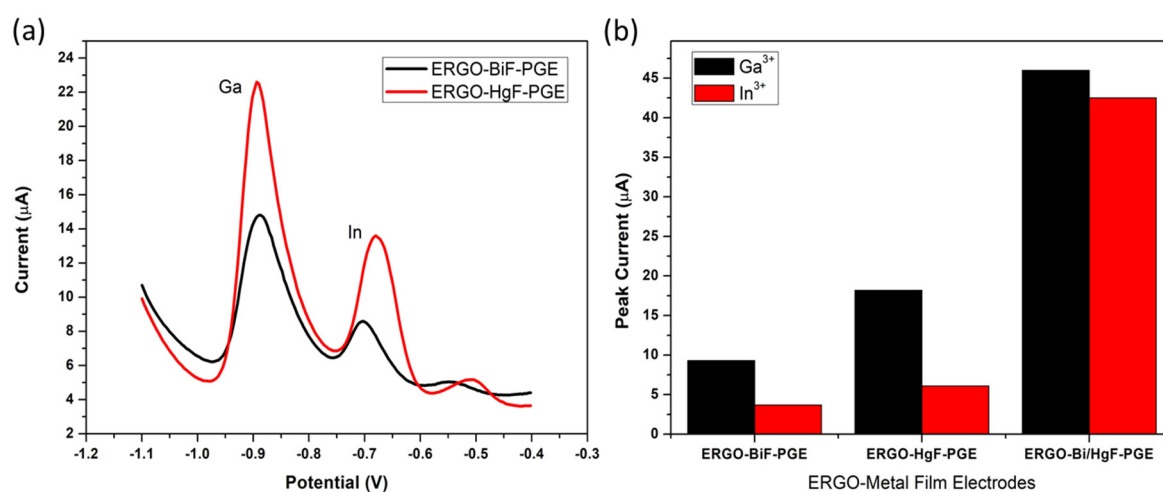
**Figure S1:** Stripping peaks of Ga (-0.88 V), In (-0.67 V), Bi (-0.10 V), and Hg (0.21 V) recorded at the ERGO-PGE in 0.1 M Acetate Buffer Solution (pH 4.7) vs Ag/AgCl saturated reference electrode.



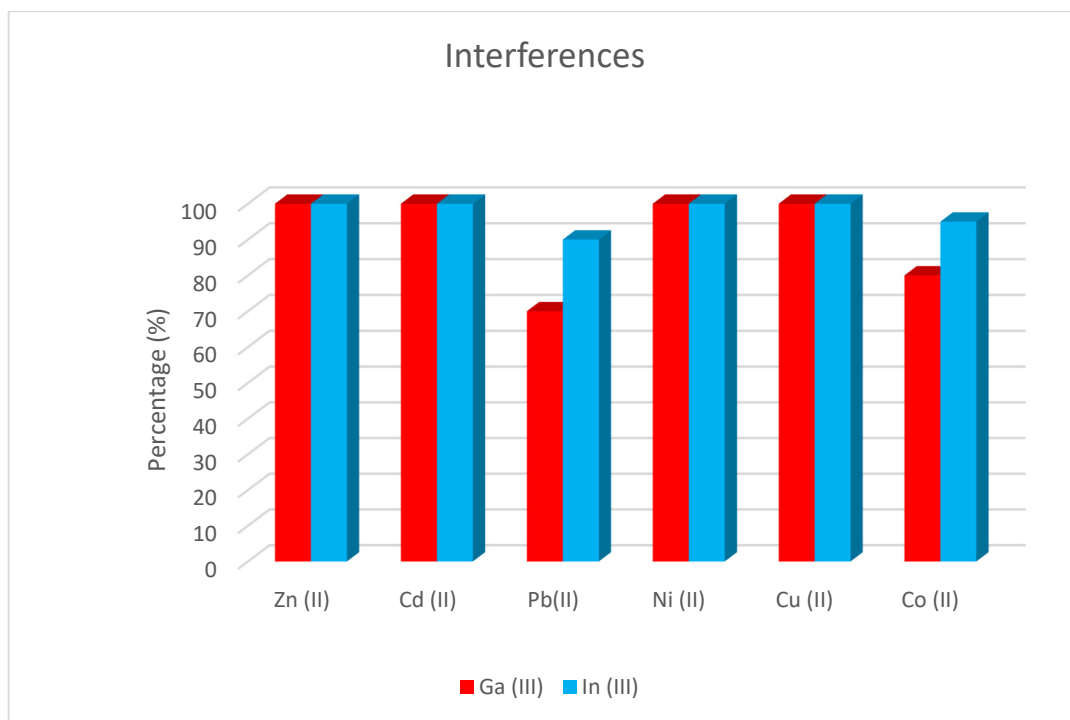
**Figure S2:** Cyclic electrochemical reduction and deposition of Electrochemically Reduced Graphene Oxide (ERGO) onto pencil graphite electrodes (PGE) recorded between -1.5 and 0.3 V (vs Ag/AgCl sat).



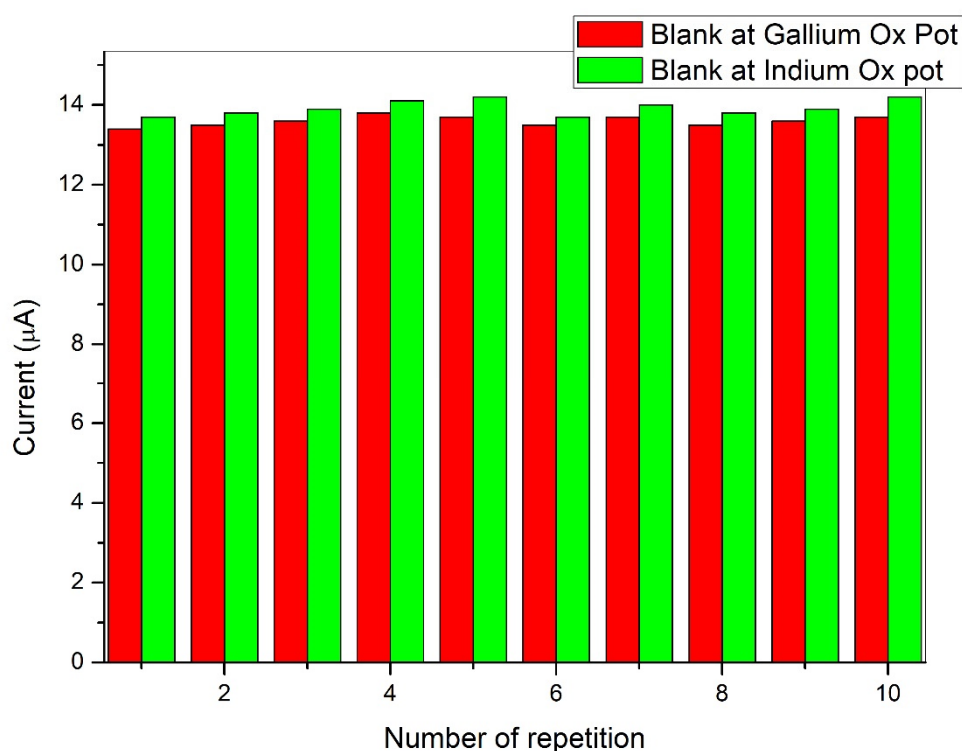
**Figure S3:** HRSEM images of bare PGE (a), and Electrochemically Reduced Graphene Oxide PGE (b) at 100.00 times magnification.



**Figure S4:** (a) SW voltammograms of 0.1 mol. L<sup>-1</sup> ABS at pH 4.38 containing 30 ppb Ga<sup>3+</sup> and 20 ppb In<sup>3+</sup> at ERGO-BiF-PGE and ERGO-HgF-PGE. (b) Comparative bar graphs of the ERGO-BiF-PGE, ERGO-HgF-PGE and ERGO-Bi/HgF-PGE.



**Figure S5:** The change of percentages of the oxidation peak current of 20 ppb of Ga and 5 ppb of In in presence of  $\text{Zn}^{2+}$ ,  $\text{Cd}^{2+}$ ,  $\text{Pb}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Co}^{2+}$ , and  $\text{Cu}^{2+}$ .



**Figure S6:** Ten replications of the response of the ERGO-PGE in the blank solution at gallium and indium oxidation potentials.

**Table S1:** Analytical data for detection limit calculations.

Individual analyses	Standard deviation ( $\sigma$ ) of 10 replications in blank (A)	$3\sigma$ (A)	Sensitivity (A/ppb)	Detection limit (mol.L <sup>-1</sup> )
Gallium	$1.2 \times 10^{-7}$	$3.7 \times 10^{-7}$	$3.67 \times 10^{-7}$	$1.02 \times 10^{-6}$
Indium	$1.8 \times 10^{-7}$	$1.8 \times 10^{-7}$	$2.05 \times 10^{-7}$	$2.7 \times 10^{-7}$
simultaneous analyses	Standard deviation ( $\sigma$ ) of 10 replications in blank (A)	$3\sigma$ (A)	Sensitivity (A/ppb)	Detection limit (mol.L <sup>-1</sup> )
Gallium	$1.2 \times 10^{-7}$	$3.7 \times 10^{-7}$	$1.48 \times 10^{-5}$	$2.53 \times 10^{-9}$
Indium	$1.8 \times 10^{-7}$	$1.8 \times 10^{-7}$	$7.79 \times 10^{-6}$	$7.27 \times 10^{-9}$