Supporting Information

Journal: Journal of Materials Chemistry A

Title: "An electrochemical sensing platform based on reduced graphene oxide-cobalt oxide nanocubes@platinum nanocomposite for nitric oxide detection"

Authors: Muhammad Mehmood Shahid[1], Perumal Rameshkumar[1], Alagarsamy Pandikumar[1], Hong Ngee Lim[2,3], Yun Hau Ng[4], Nay Ming Huang[1]*

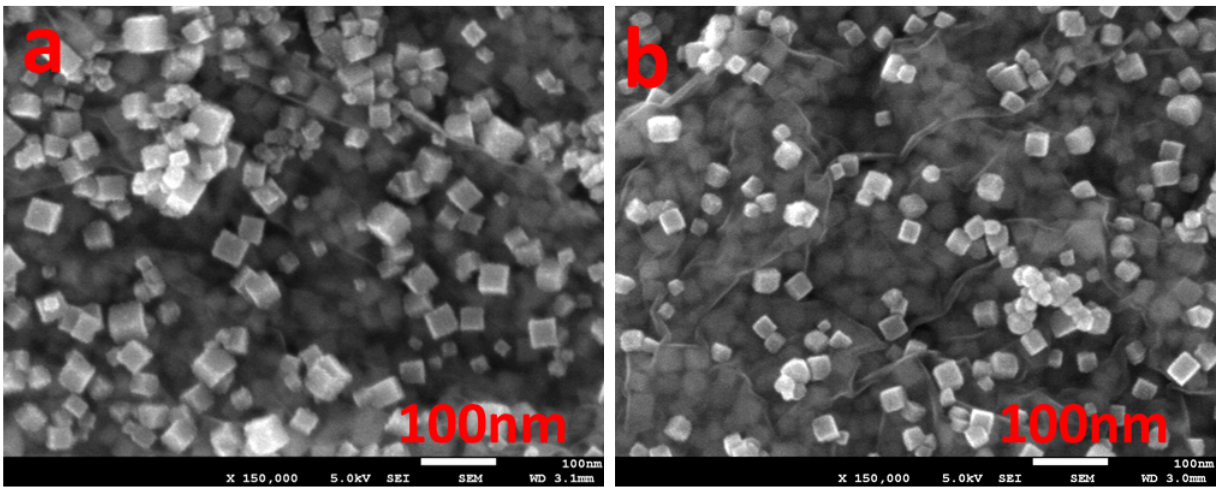

Figure S1 FESEM images of rGO-Co_3O_4 nanocomposite (a: 4 wt% GO and b: 12 wt% GO).

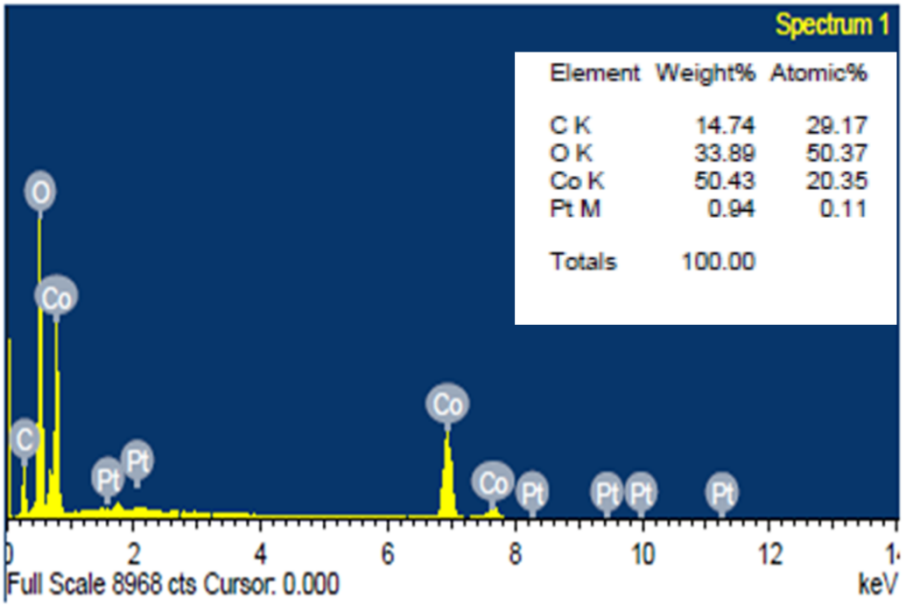

Figure S2 EDX spectrum of rGO-Co_3O_4@Pt nanocomposite.

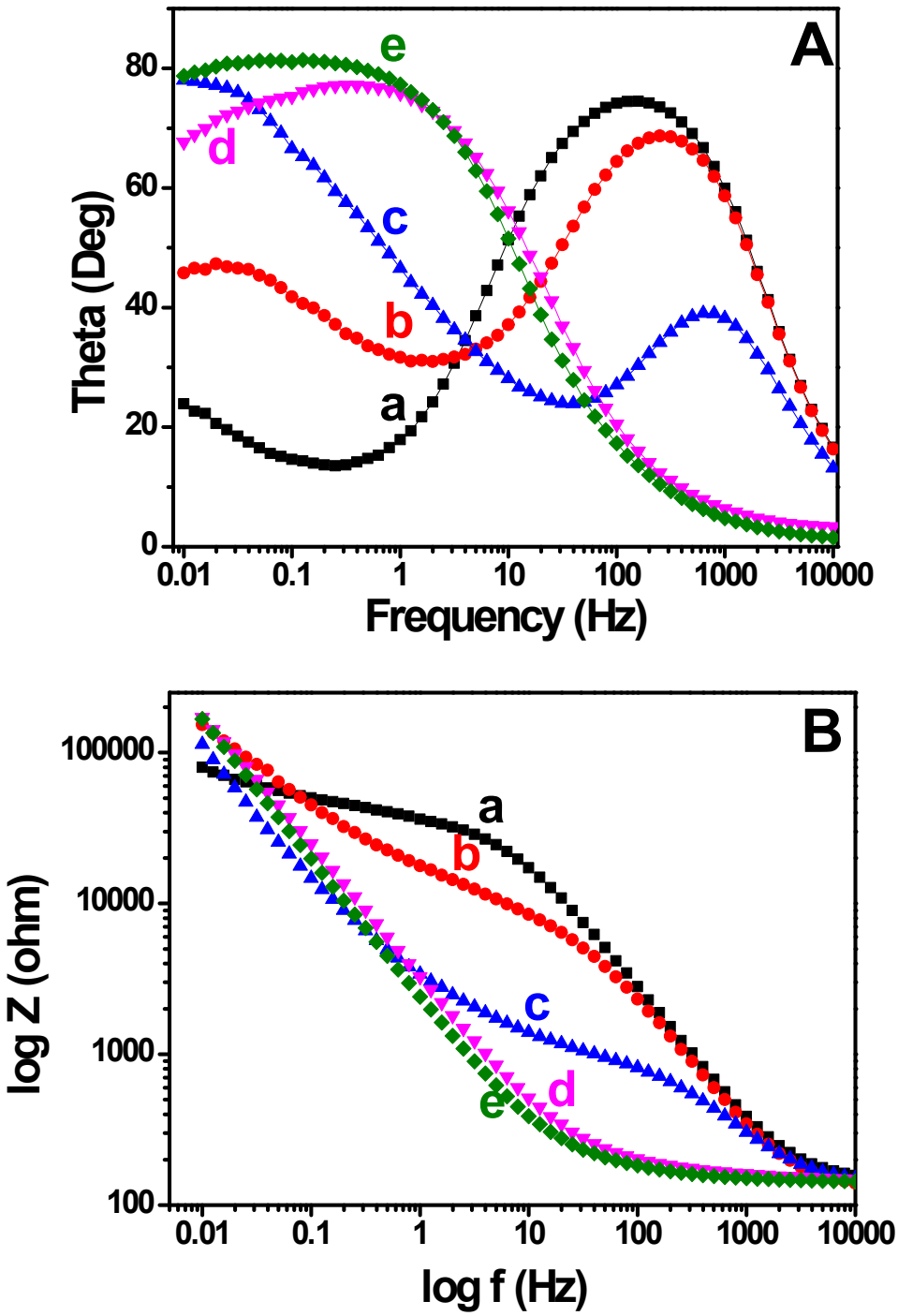

Figure S3 Bode phase plots (A) and Bode impedance plots (log Z *vs.* log f) (B) obtained for bare GC (a) Co_3O_4 nanocubes (b), rGO (c), rGO-Co_3O_4 nanocomposite (d) and rGO-Co_3O_4@Pt nanocomposite (e) modified GC electrodes for 1 mM $K_3[Fe(CN)_6]$ in 0.1 M KCl.

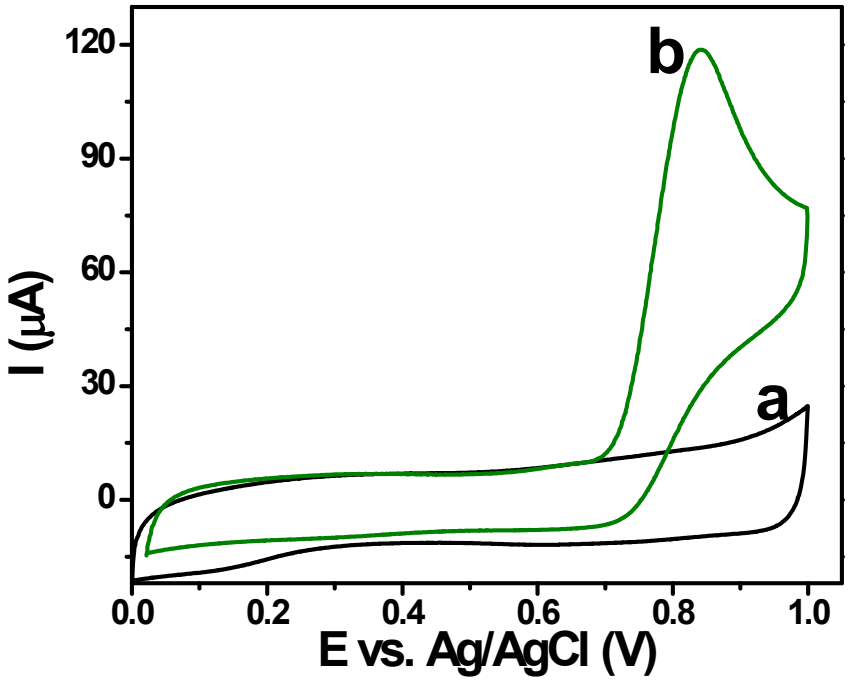

Figure S4 Cyclic voltammograms recorded at rGO-Co_3O_4@Pt nanocomposite modified electrode in the absence (a) and presence (b) of 5 mM NO_2^- in 0.1 M PBS (pH 2.5) at a scan rate of 50 mV s^{-1}.

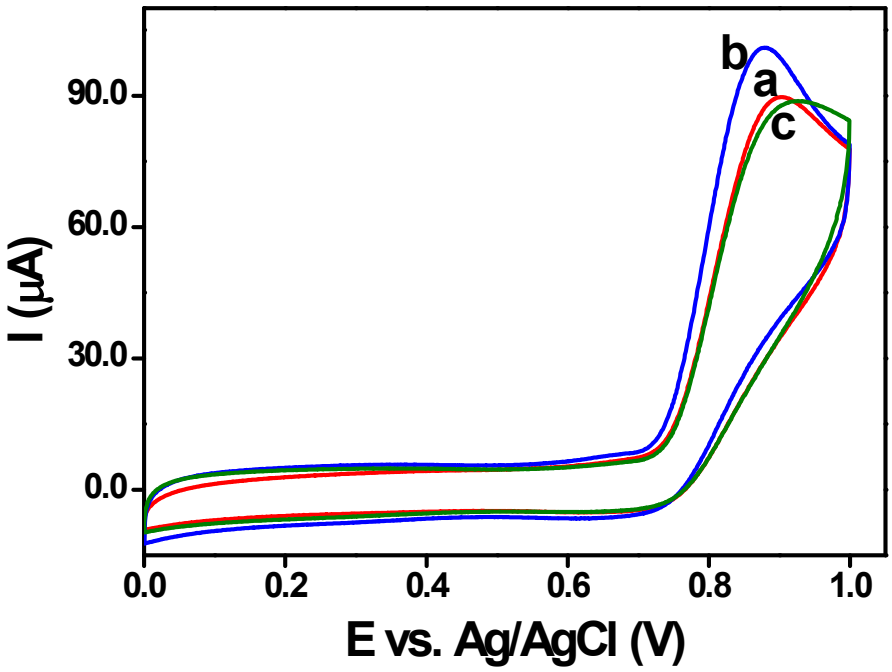

Figure S5 Cyclic voltammograms recorded at rGO-Co_3O_4 nanocomposite modified electrode with different amounts of GO (a: 4, b: 8 and c: 12 wt%) for 5 mM of NO_2^- in 0.1 M PBS (pH 2.5) at a scan rate of 50 mV s^{-1}.

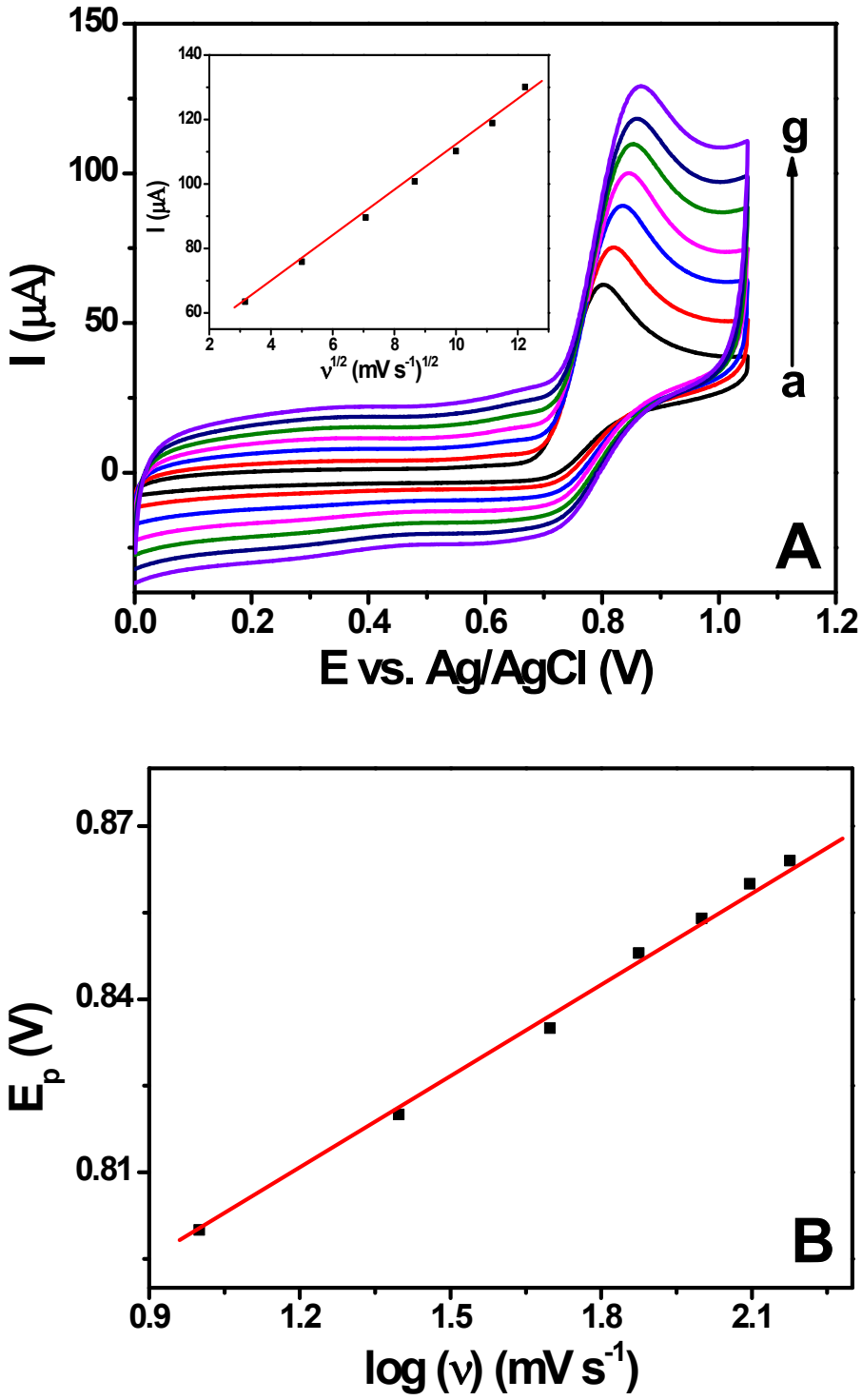

Figure S6 A) Cyclic voltammograms recorded at rGO-Co_3O_4@Pt nanocomposite modified electrode for 5 mM of NO_2^- in 0.1 M PBS (pH 2.5) with various scan rates (a: 10, b: 25, c: 50, d:

75, e: 100, f: 125 and g: 150 mV s^{-1}). Inset: Plot of peak current versus square root of scan rate. B) Plot of peak potential from (A) versus log (scan rate).

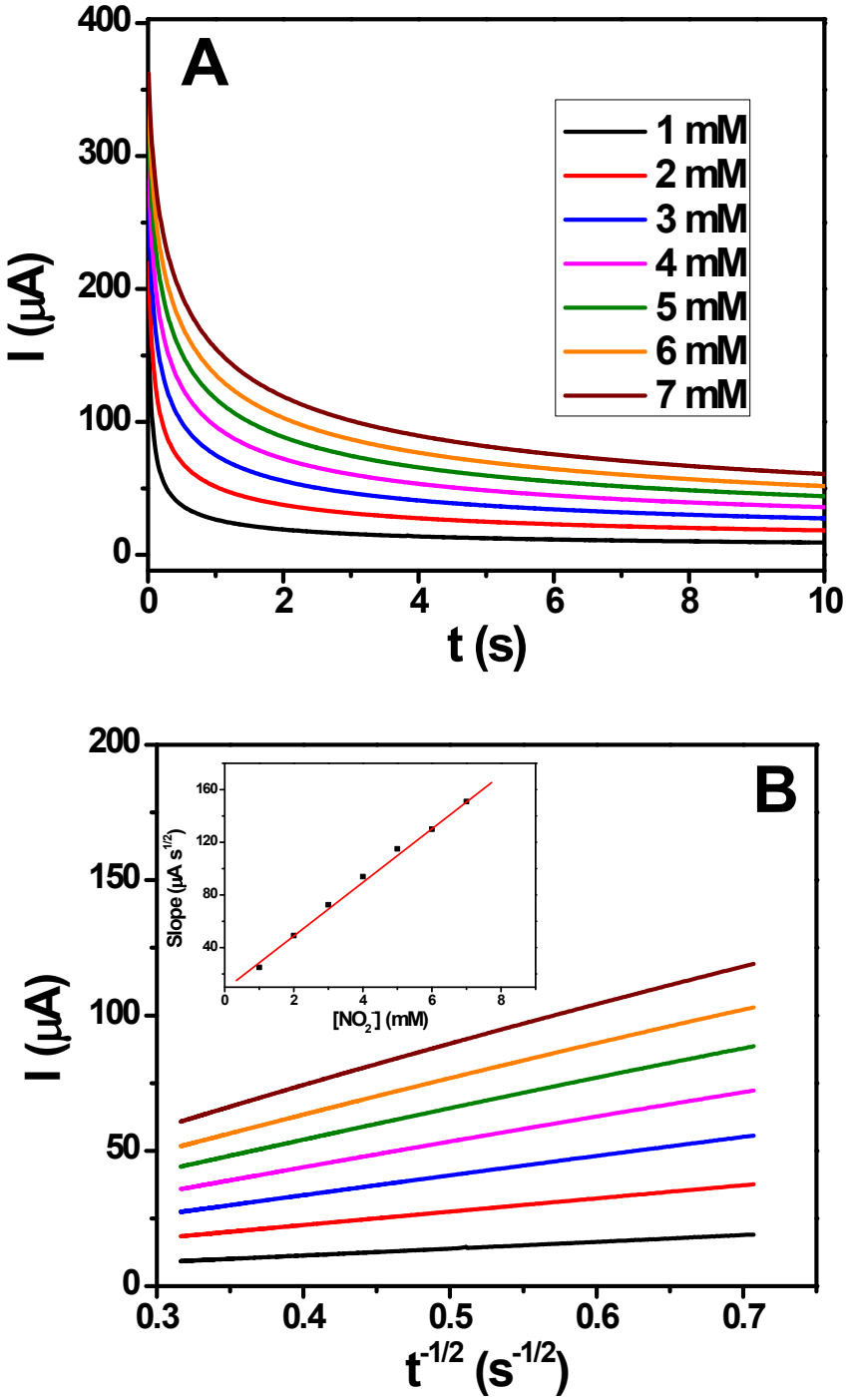

Figure S7 A) Chronoamperograms obtained at rGO-Co_3O_4@Pt nanocomposite modified electrode with different concentrations of NO_2^- in 0.1 M PBS (pH 2.5). Applied potential was +0.84 V. B) Plot of current versus $t^{-1/2}$. Inset: Plot of slopes obtained from straight lines of 'B' versus concentration of NO_2^-.