

## Supplementary Information

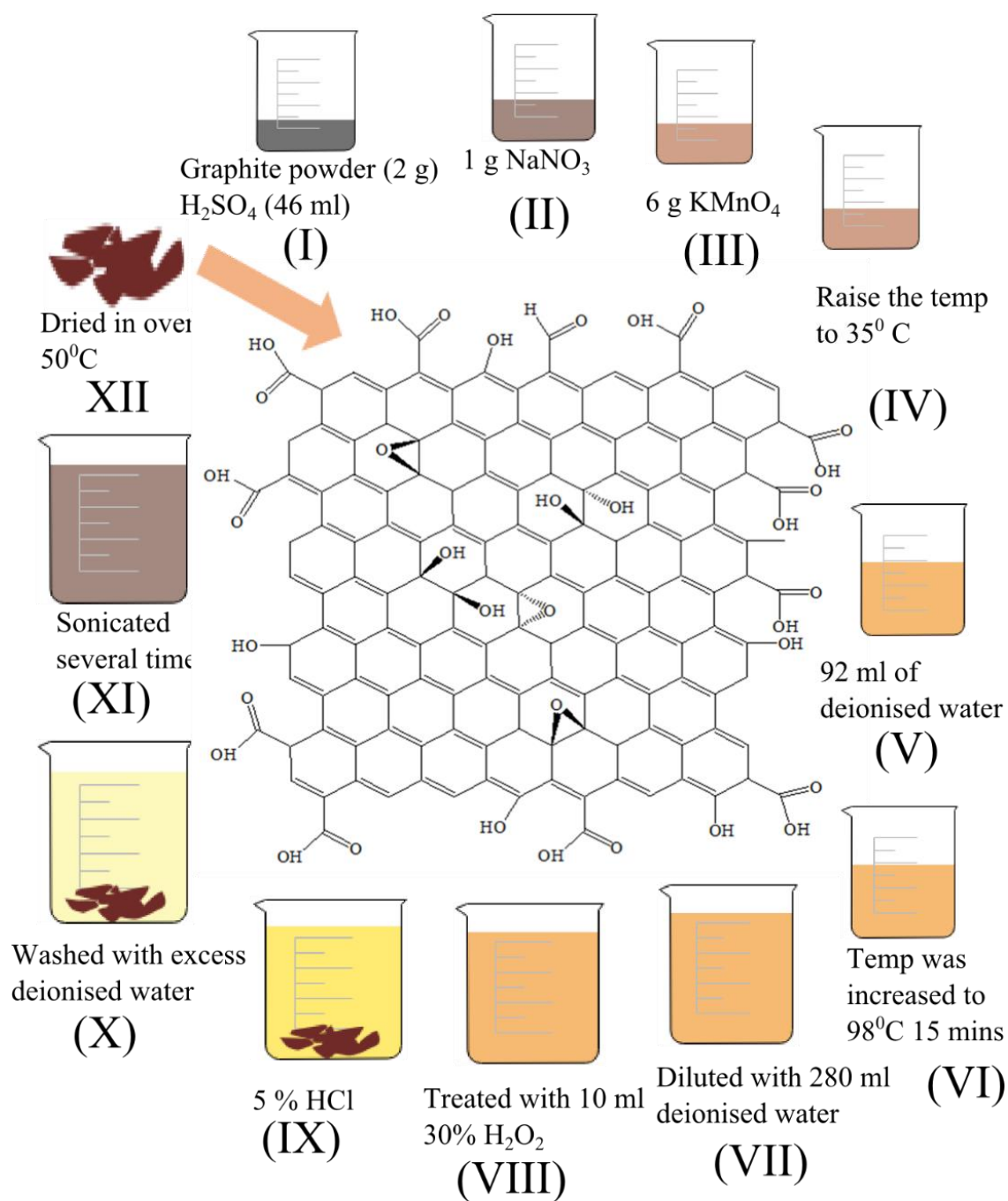


Fig. S1: Schematic representation of the synthesis of GO through modified Hummers method.

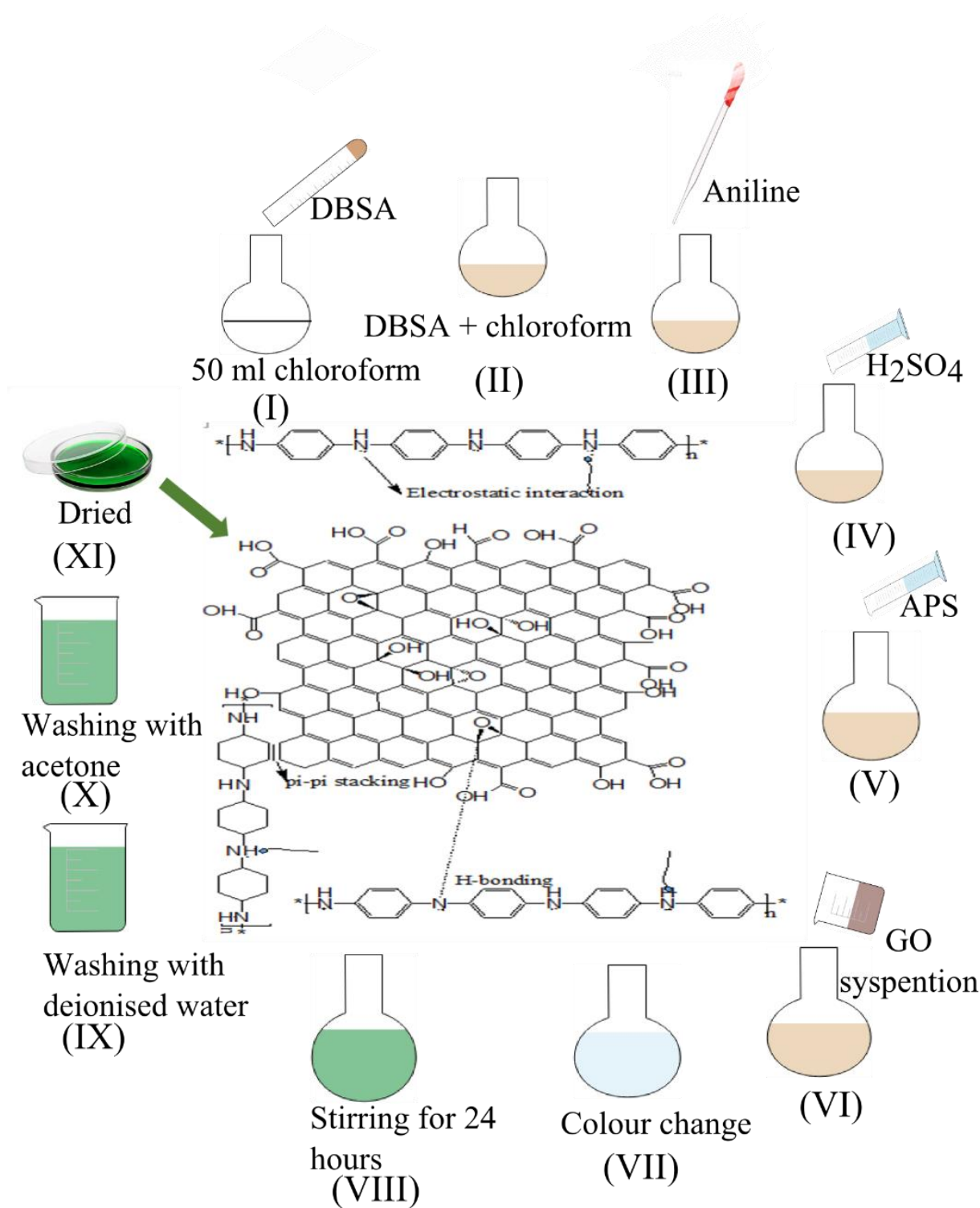
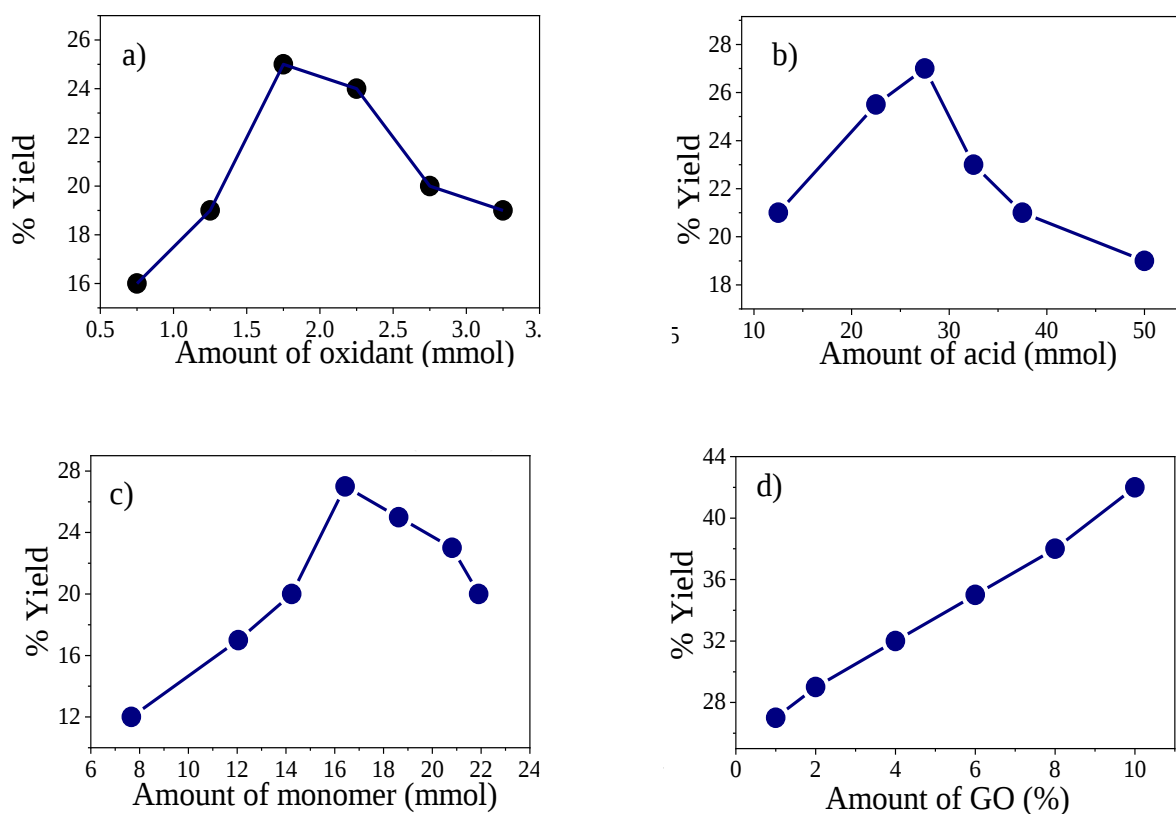
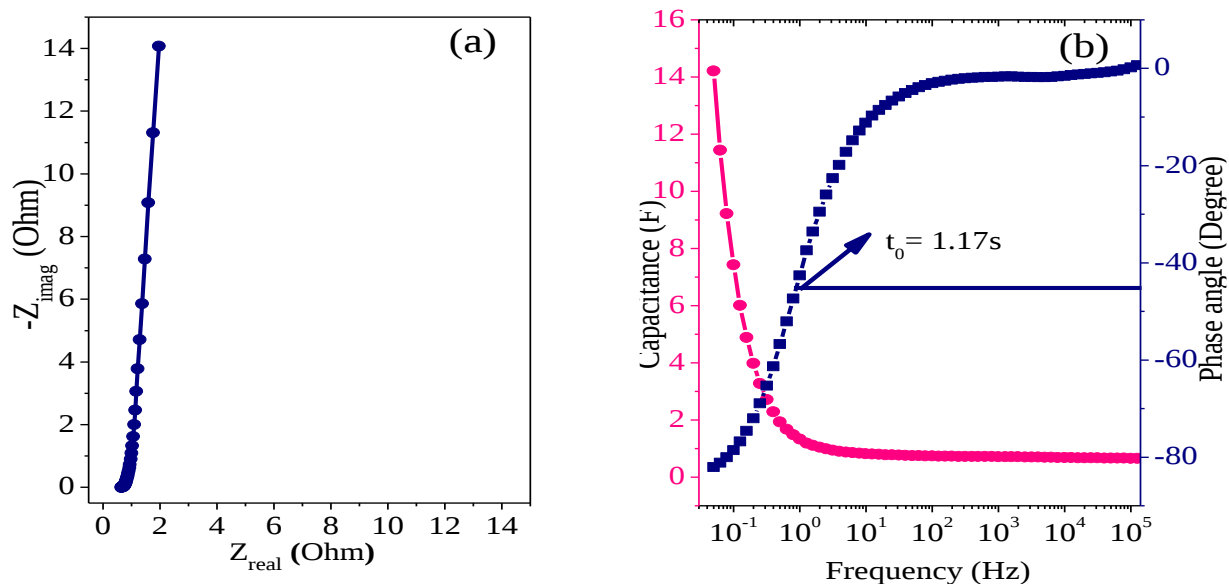


Fig. S2: Schematic representation of synthesis of PANI-GO composites



**Fig. S3: a) Impact of oxidant amount on percent yield of PANI-GO composites, b) Impact of amount of acid on percent yield of PANI-GO composites, c) Impact of monomer amount on percent yield of PANI-GO composites, d) Impact of GO amount on percent yield of PANI-GO composites.**



**Fig. S4: (a) Nyquist plot and (b) Bode plot of PANI-GO composite.**

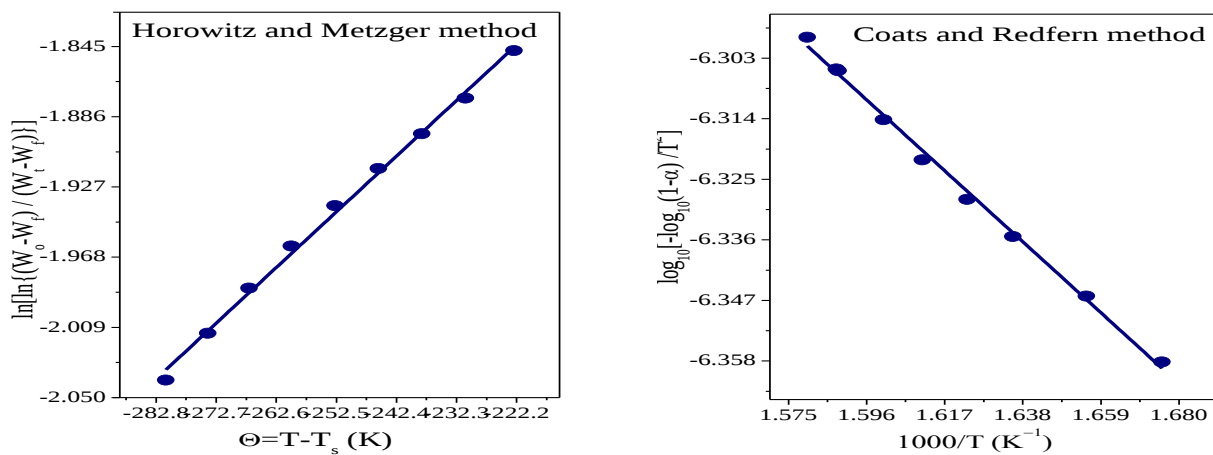


Fig. S5: Plots for calculating activation energy of PANI.

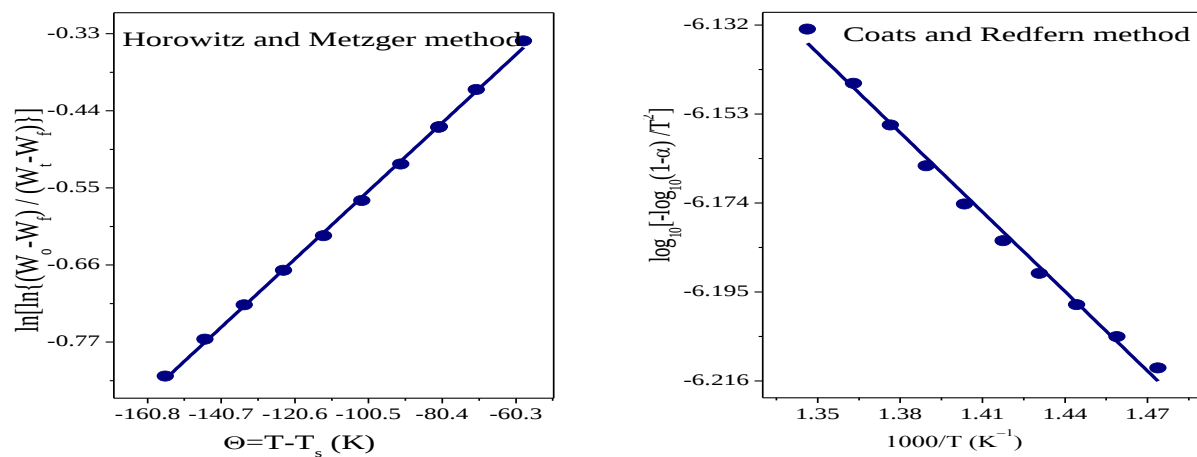


Fig. S6: Plots for calculating activation energy of PANI-GO-1.

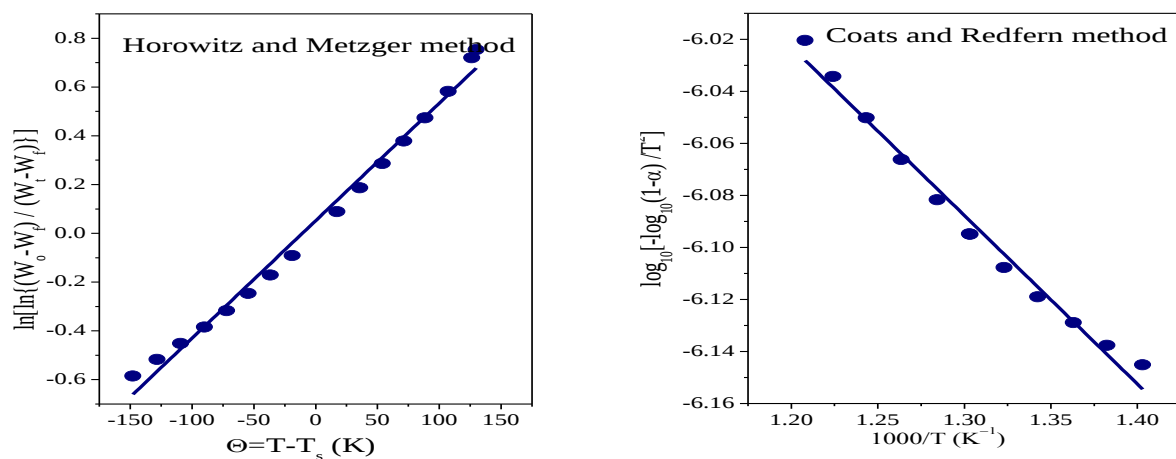


Fig. S7: Plots for calculating activation energy of PANI-GO-2.

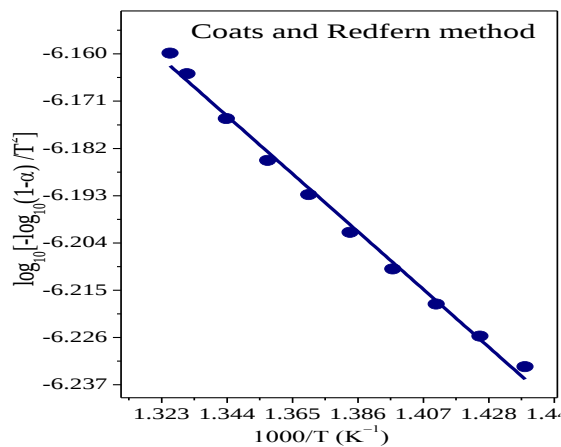
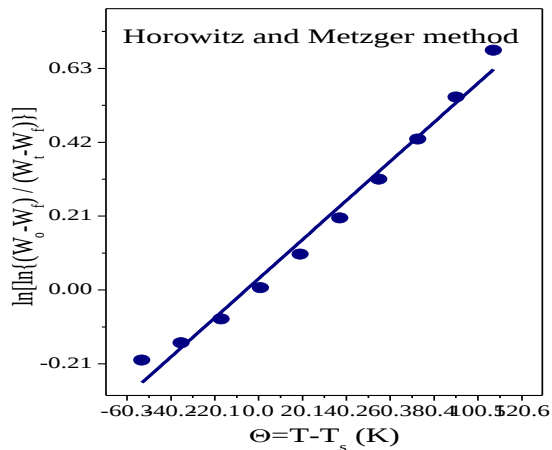


Fig. S8: Plots for calculating activation energy of PANI-GO-4.

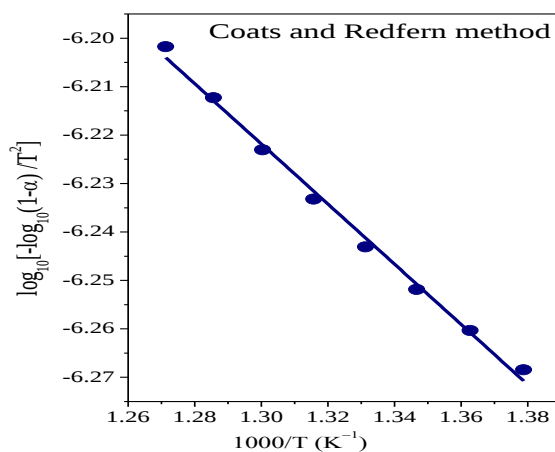
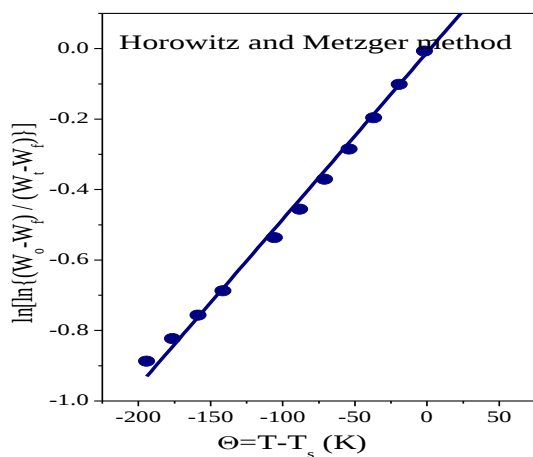


Fig. S9: Plots for calculating activation energy of PANI-GO-8.

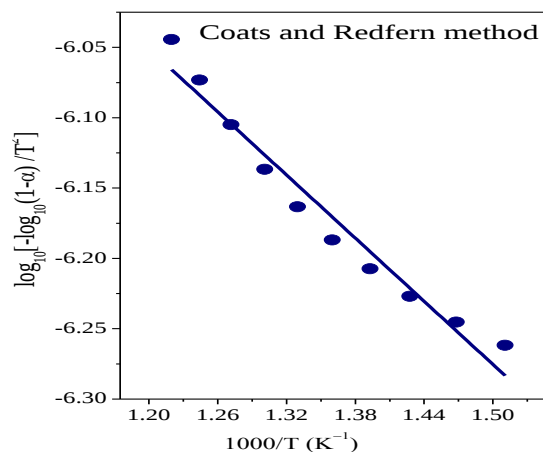
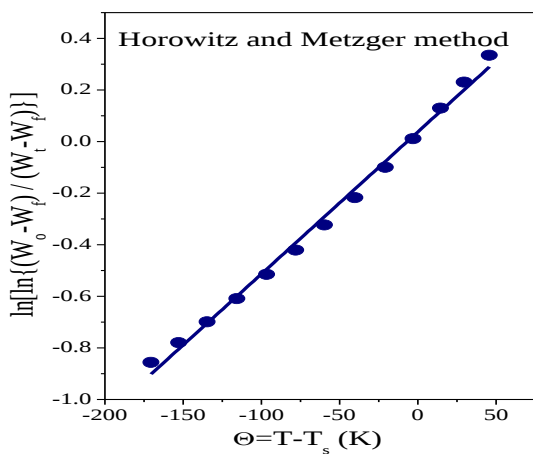


Fig. S 10: Plots for calculating activation energy of PANI-GO-10.