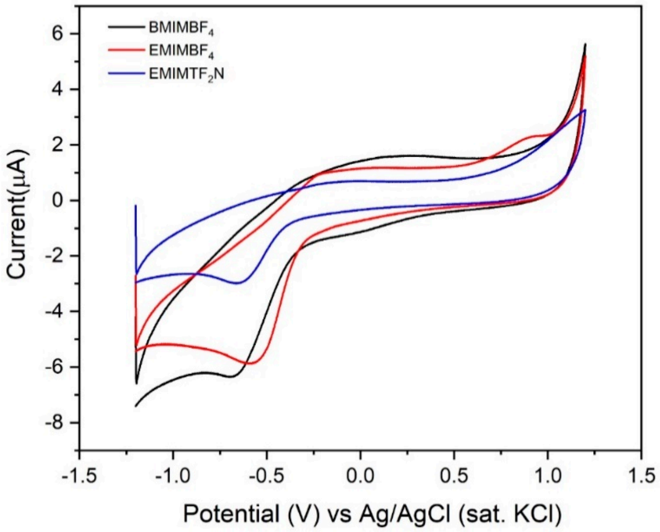
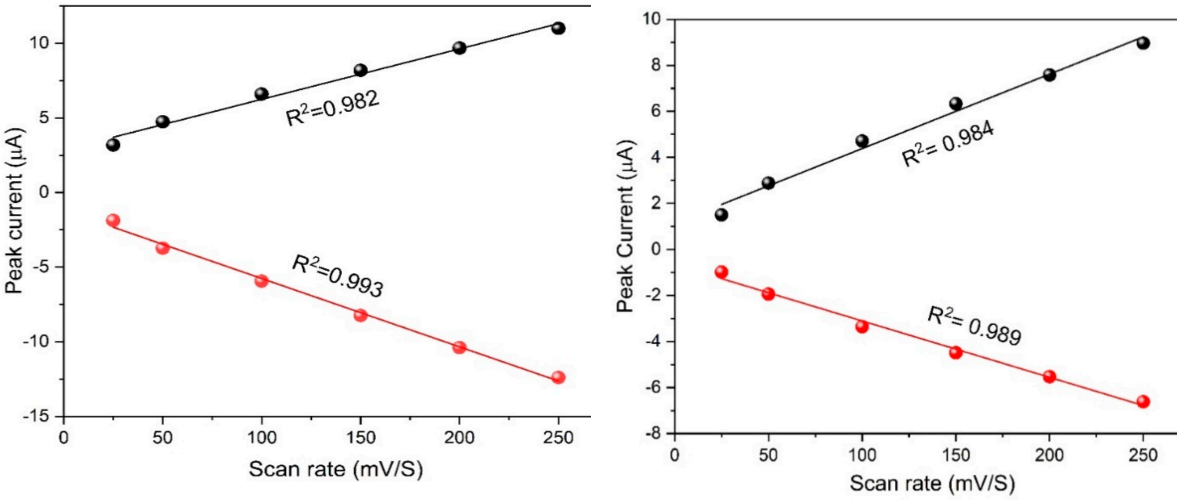


Figure S1. Cyclic voltammetry (CV) output of room-temperature ionic liquid (RTIL)-modified glassy carbon electrode (GCE) without analyte.



(**a**) (**b**)

Figure S2. (**a**) The peak current vs. scan rate with R^2 for 2,6-dinitrotoluene (2,6 DNT); (**b**) The peak current vs. scan rate with R^2 for ethylnitrobenzene (ENB).

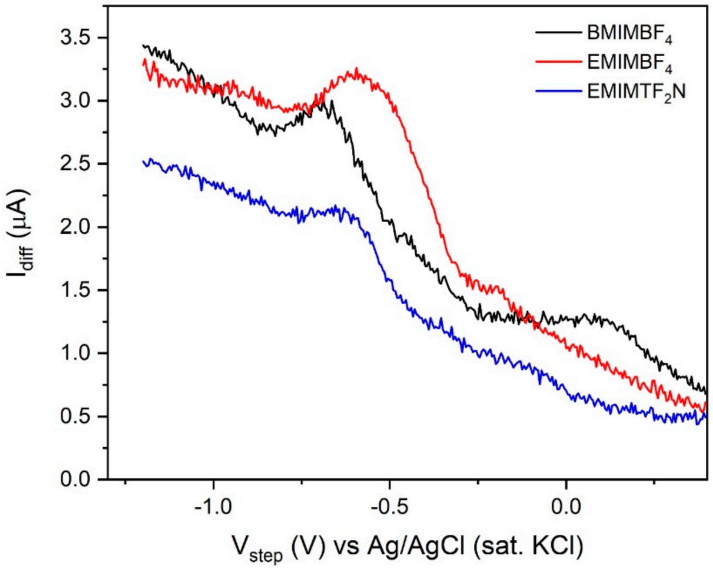
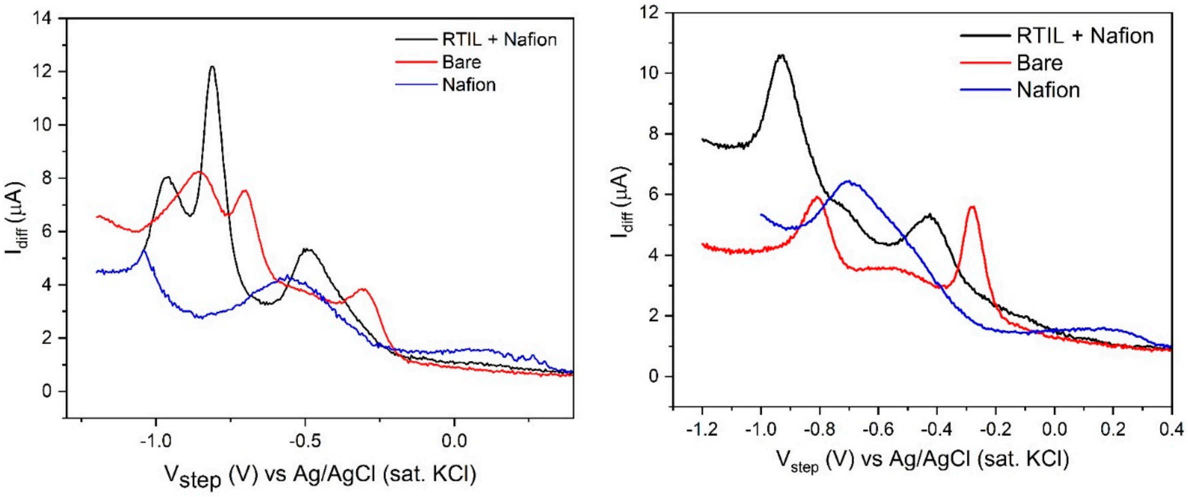


Figure S3. Square wave voltammetry (SQWV) was performed using different RTILs in the absence of the target analyte to obtain the baseline peak current. SQWV parameter: frequency 25 Hz, amplitude of 25 mV and step size of 5 mV.



(**a**) (**b**)

Figure S4. (**a**) SQWV output of RTIL ([EMIM][BF$_4$])-nafion modified GCE, bare electrode and nafion-GCE for detection of 100 ppm 2,6 DNT; (**b**) SQWV output of RTIL ([EMIM][BF$_4$])-nafion modified GCE, bare electrode and nafion-GCE for detection of 100 ppm ENB.

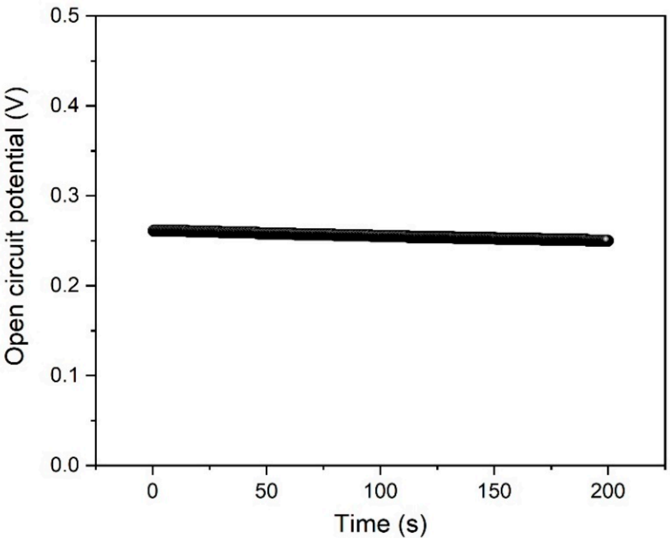
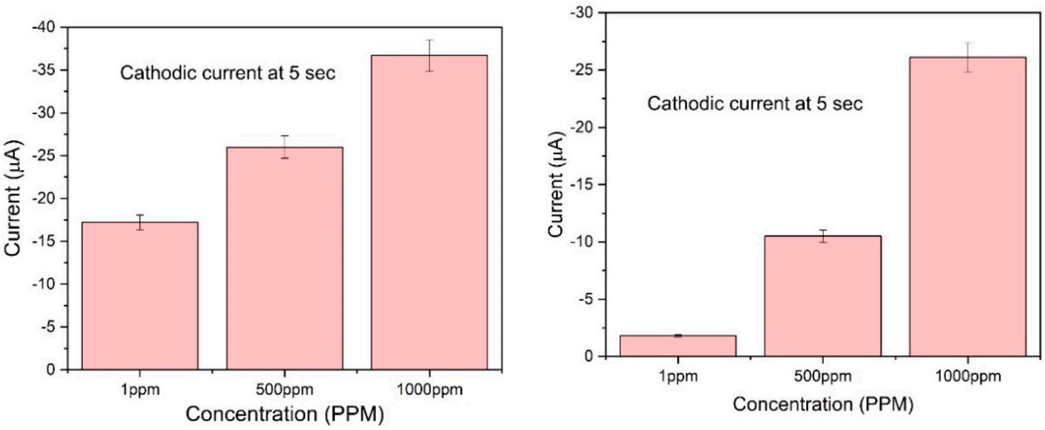


Figure S5. Open circuit potential measurement to show the stability of the fabricated sensor. The sensor is stable for over 200 s with the OCP in the lower millivolt regime.



(**a**) (**b**)

Figure S6. (**a**) Calibration dose response plotted for 2,6 DNT concentrations of 1, 500 and 1000 ppm in terms of steady state current at 5 sec; (**b**) Calibration dose response plotted for ENB concentrations of 1, 500 and 1000 ppm in terms of steady state current at 5 sec.

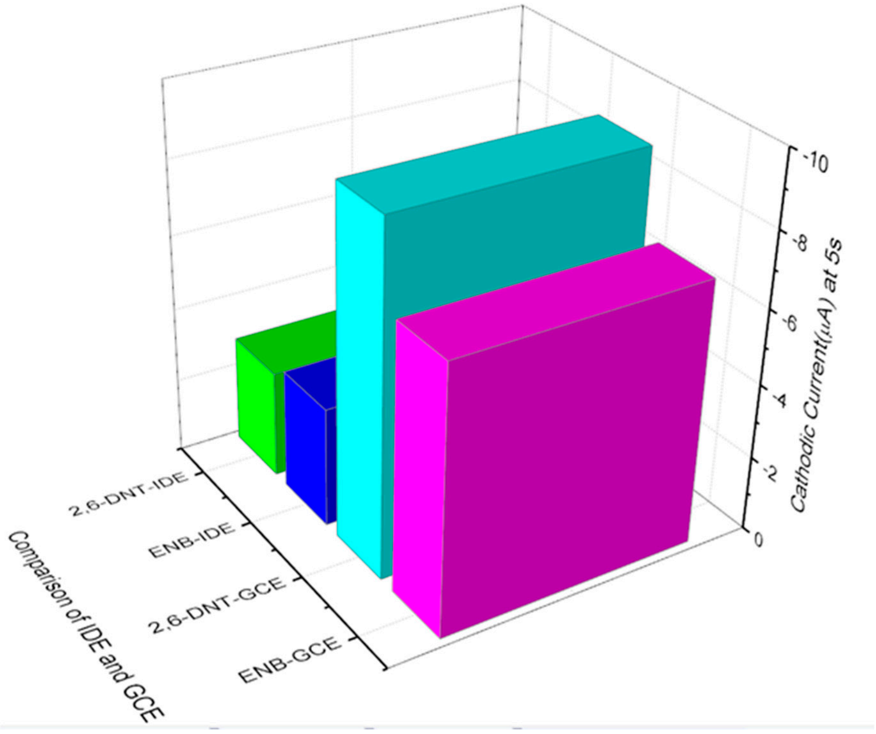


Figure S7. Comparison of the current obtained at 5 s for interdigitated electrode (IDE) vs. GCE for both the target analytes.