Electronic Supplementary Information

Comparative Evaluation of Enzyme-Free Nanoclay-Ionic liquid based Electrodes for detection of bioanalytes

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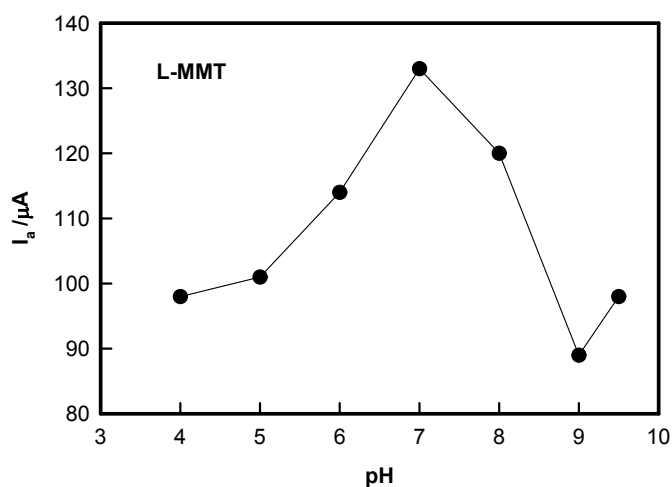Tel: +91 11 2670 4699, Fax: +91 11 2674 1837

Fig. S1 Cathodic current as a function of pH where we get the maximum current for pH = 7 thus fixed the pH.
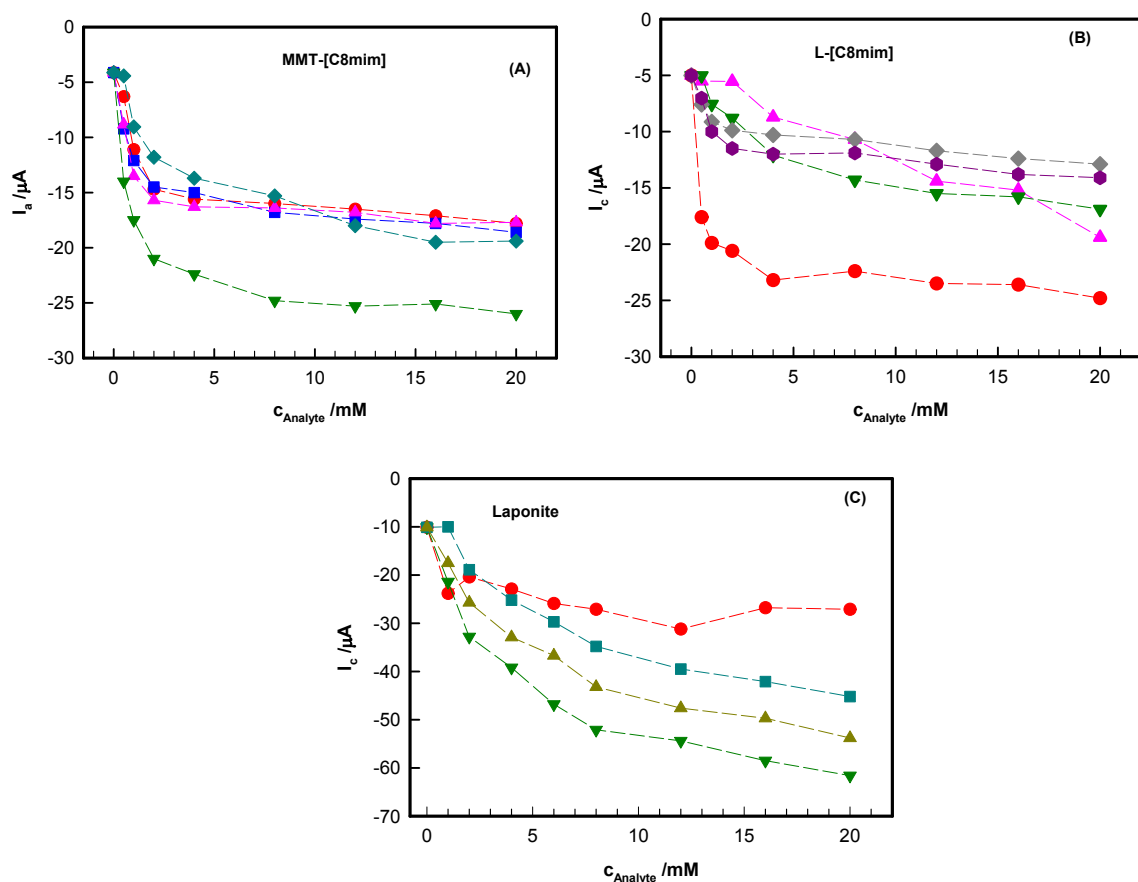
Fig. S2 Calibration plot for Cathodic current versus analyte concentration for (A) MMT-[C8mim], (B) L-[C8mim] and (C) Laponite.

Table ST1: Comparative response of Laponite based matrices. Maximum error in the reported values does not exceed ±10%.

S. No	Fluence ions/cm^2	Charge transfer constant $(K_s)s^{-1}$	Average surface concentration (I*) $x10^{-8}$mol/cm^2	Diffusion coefficient (D) $x10^{-12}$ cm^2/s	Sensitivity (μA/mMcm^2)
1	10^{13}	0.016	0.022	0.0021	3.7960
2	$5x10^{13}$	0.014	0.022	0.0020	3.6572
3	10^{14}	0.013	0.020	0.0014	2.8636
4	$5x10^{14}$	0.01	0.019	0.0012	2.7400
5	10^{15}	0.0081	0.016	0.0010	2.2136
6	$5x10^{15}$	0.0080	0.008	0.0009	1.2700

Table ST2: Comparative response of MMT based matrices. Maximum error in the reported values does not exceed ±10%.

S. No	Fluence ions/cm^2	Charge transfer constant (K$_s$)s^{-1}	Average surface concentration (I*) x10^{-8}mol/cm^2	Diffusion coefficient (D) x10^{-12} cm^2/s	Sensitivity (μA/mMcm^2)
1	10^{13}	0.0049	0.0097	0.0005	0.8224
2	10^{14}	0.0033	0.0091	0.0005	0.8036
3	5x10^{14}	0.0001	0.0006	0.00003	0.0779
4	10^{15}	0.0038	0.0098	0.0006	0.9724
5	5x10^{15}	0.0021	0.0040	0.0002	0.3138

Table ST3: Comparative response of L-[C2mim] based matrices. Maximum error in the reported values does not exceed ±10%.

S. No	Fluence ions/cm^2	Charge transfer constant (K$_s$)s^{-1}	Average surface concentration (I*) x10^{-8}mol/cm^2	Diffusion coefficient (D) x10^{-12} cm^2/s	Sensitivity (μA/mMcm^2)
1	10^{13}	0.030	0.0073	0.0003	2.5020
2	5x10^{13}	0.027	0.0068	0.0001	1.0572
3	10^{14}	0.027	0.0066	0.0001	1.0100
4	5x10^{14}	0.011	0.0009	0.00008	0.8024
5	10^{15}	0.020	0.0009	0.00008	0.8268
6	5x10^{15}	0.008	0.0001	0.00002	0.0304

Table ST4: Comparative response of L-[C8mim] based matrices. Maximum error in the reported values does not exceed ±10%.

S. No	Fluence ions/cm^2	Charge transfer constant (K$_s$)s^{-1}	Average surface concentration (I*) x10^{-8}mol/cm^2	Diffusion coefficient (D) x10^{-12} cm^2/s	Sensitivity (μA/mMcm^2)
1	10^{13}	0.040	0.0101	0.0015	2.3740
2	5x10^{13}	0.038	0.0100	0.0012	2.1404
3	10^{14}	0.041	0.0101	0.0015	2.3216
4	5x10^{14}	0.047	0.0120	0.0017	2.5556
5	10^{15}	0.004	0.0074	0.0002	0.8244
6	5x10^{15}	0.033	0.0118	0.0015	2.4152

Table ST5: Comparative response of MMT-[C2mim] based matrices. Maximum error in the reported values does not exceed ±10%.

S. No	Fluence ions/cm²	Charge transfer constant $(K_s)s^{-1}$	Average surface concentration (I*) $x10^{-8}mol/cm^2$	Diffusion coefficient (D) $x10^{-12}$ cm²/s	Sensitivity (µA/mMcm²)
1	10^{13}	0.005	0.013	0.001	1.1540
2	$5x10^{13}$	0.001	0.010	0.0007	0.9040
3	10^{14}	0.003	0.008	0.0006	0.6876
4	$5x10^{14}$	0.003	0.009	0.0007	0.7480
5	10^{15}	0.0024	0.008	0.0007	0.8772

Table ST6: Comparative response of MMT-[C8mim] based matrices. Maximum error in the reported values does not exceed ±10%.

S. No	Fluence ions/cm²	Charge transfer constant $(K_s)s^{-1}$	Average surface concentration (I*) $x10^{-8}mol/cm^2$	Diffusion coefficient (D) $x10^{-12}$ cm²/s	Sensitivity (µA/mMcm²)
1	10^{13}	0.0015	0.0036	0.00007	1.7124
2	$5x10^{13}$	0.007	0.0041	0.0001	2.0320
3	10^{14}	0.0011	0.0007	0.00002	0.5288
4	10^{15}	0.0014	0.0003	0.00003	0.4404
5	$5x10^{15}$	0.0014	0.0003	0.00002	0.4472

Table ST7: Comparative response of L-MMT based matrices. Maximum error in the reported values does not exceed ±10%.

S. No	Fluence ions/cm²	Charge transfer constant $(K_s)s^{-1}$	Average surface concentration (I*) $x10^{-8}mol/cm^2$	Diffusion coefficient (D) $x10^{-12}$ cm²/s	Sensitivity (µA/mMcm²)
1	10^{13}	0.0018	0.0056	0.00018	2.5280
2	$5x10^{13}$	0.0015	0.0048	0.00015	1.7076
3	10^{14}	0.0017	0.0052	0.00018	2.0528
4	$5x10^{14}$	0.0009	0.0008	0.00002	0.6788
5	10^{15}	0.0011	0.0010	0.00005	0.9056
6	$5x10^{15}$	0.0010	0.0010	0.00005	0.8440