Studies on the affect of bio-ionic liquid structures on the spontaneous reduction and dispersion stability of graphene oxide in aqueous media

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Fig. S1: SEM images of (a) pristine HGO and GO modified with (b) choline bicarbonate, (c) choline hydroxide, (d) choline formate and (e) choline caproate.
**Fig. S2**: FT-IR of pristine graphene oxide prepared by Hummers method (HGO)

**Fig. S3**: FT-IR of pristine graphene oxide modified by Chol-HCO$_3^-$
**Electronic supporting information**

**Fig. S4**: FT-IR of pristine graphene oxide modified by Chol-C₆H₁₁COO

**Fig. S5**: SSNMR of (a) pristine HGO and GO modified by (b) Chol-OH (c) Chol-HCO₃ (d) chol-HCOO and (e) chol-C₆H₁₁COO
**Fig. S6**: GO functionalized by chol-OH (black) and GO functionalized by chol-HCO$_3$ (Red).
Fig. S7: TGA of HGO and IL functionalized GO
Fig. S8: Powder x-ray diffraction pattern of (a) pristine HGO, modified GO with (b) choline bicarbonate (c) choline hydroxide (d) choline caproate and (e) choline formate.
**Fig. S9**: Tyndall effect shown in GO functionalized with (a) choline formate and (b) choline caproate at 0 days. Tyndall effect shown in GO functionalized with (c) choline formate and (d) choline caproate after 365 days.
Fig. S10: Long term dispersion stability of GO modified by ILs.

Fig. S11: AFM images of GO functionalized with (a) choline hydroxide (b) choline caproate
Fig. S12: AFM images of dispered GO functionalized with choline bicarbonate.