Electronic Supplementary Material (ESI) for RSC Advances

Highly efficient and reversible CO_2 capture through 1,1,3,3-tetramethylguanidinium imdizazole ionic liquid

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Supplementary information

^{1}H NMR and ^{13}C NMR data of [P_{66614}][IM]

CO_2-free [P_{66614}][IM]: ^{1}H NMR (400 MHz; $CDCl_3$; TMS): 0.89 (m, 12H, CH3), 1.31-1.48 (m, 48H, CH2), 2.37 (m, 8H, PCH2), 7.03 (s, 2H, C4H and C5H of imidazole anion), 7.64 ppm (s, 1H, C2H of imidazole anion); ^{13}C NMR (400 MHz; $CDCl_3$; TMS): 13.9, 14.1, 21.7, 22.3, 22.7, 29.0, 29.3, 29.4, 29.6, 30.4, 30.5, 30.7, 30.8, 31.1, 31.9, 121.7, 135.3 ppm.

CO_2-absorbed [P_{66614}][IM]: ^{13}C NMR (400 MHz; $CDCl_3$; TMS): 14.1, 15.6, 18.5, 19.0, 21.7, 22.3, 29.3, 29.4, 30.4, 30.5, 31.0, 31.9, 122.0, 135.7, 160.3 ppm.

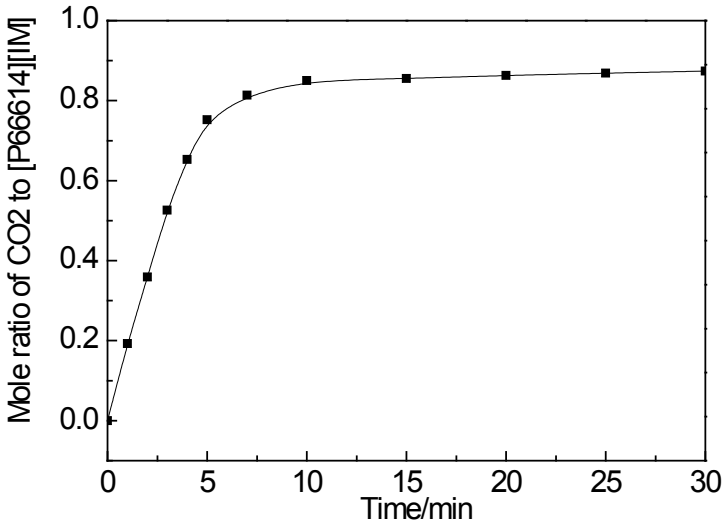

Fig. S1. CO_2 absorption of $[P_{66614}][IM]$ at 30°C under atmospheric pressure

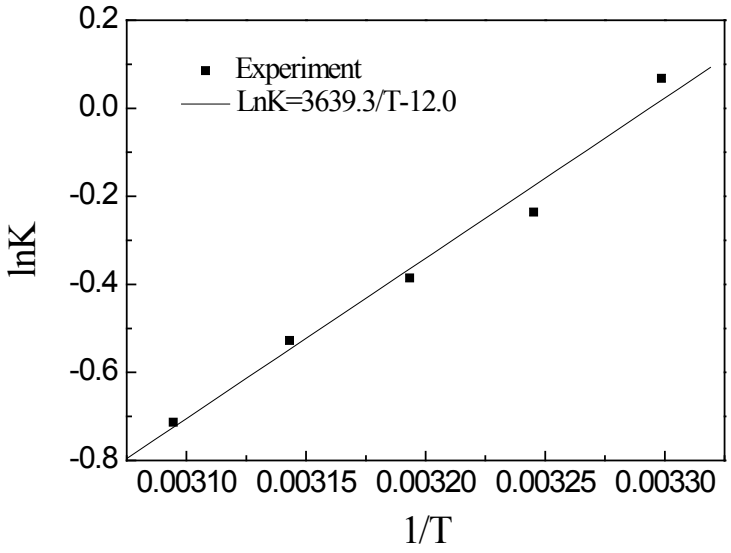

Fig. S2. Variation in the natural logarithm equilibrium comstant of [TMG][IM] with temperature.

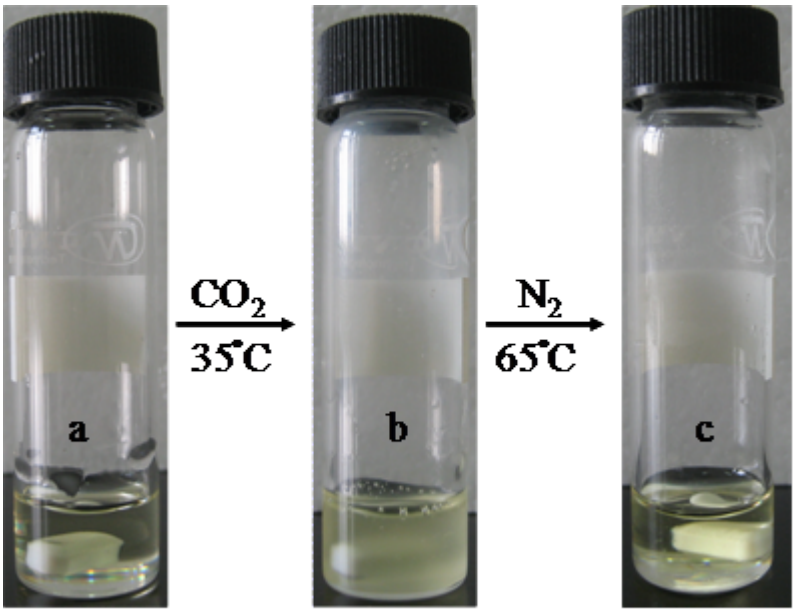

Fig. S3. Appearance of [TMG][IM] before and after CO_2 absorption at 35°C, and stripped at 65°C under N_2.