Supporting Information

Specific Heat Capacities of Two Functional Ionic Liquids and Two Functional Deep Eutectic Solvents for the Absorption of SO_2

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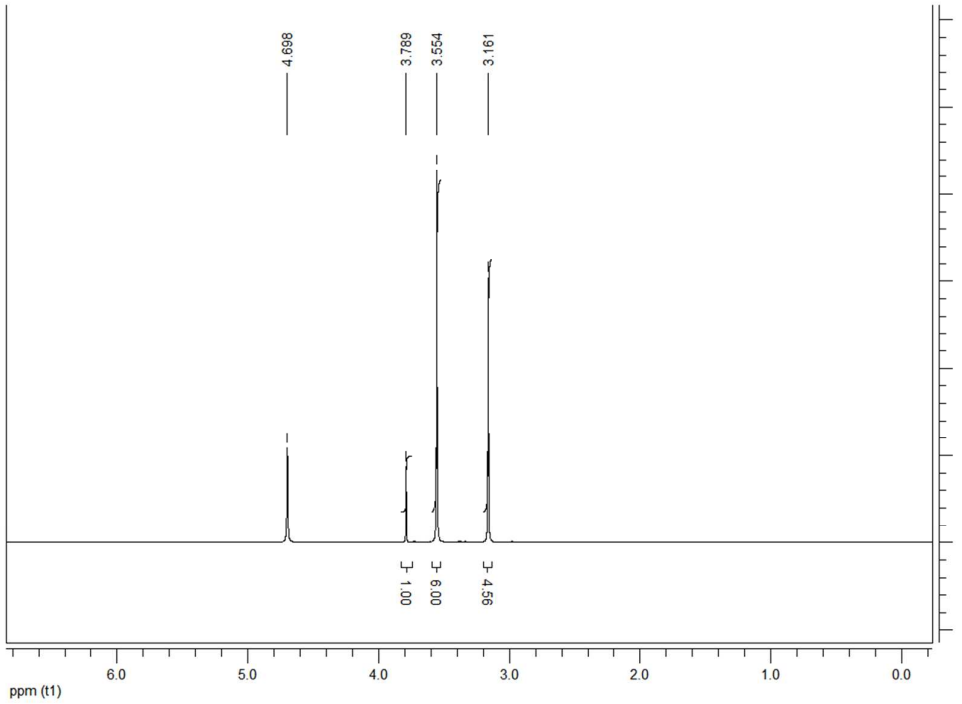
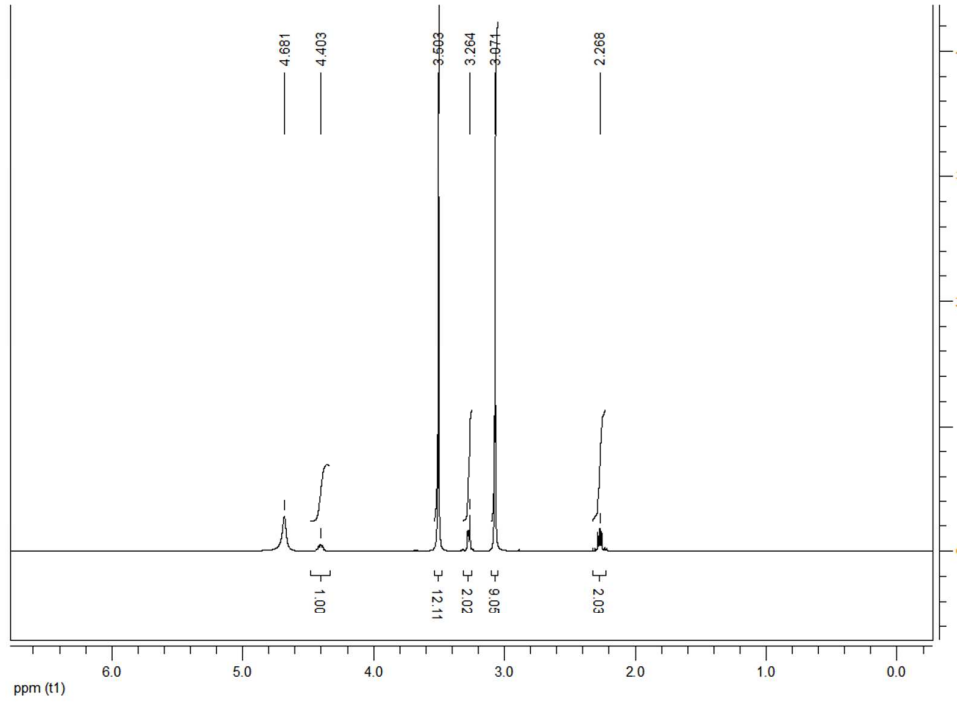
Table S1. The Chemicals Used in the Present Study

Chemical Name	Source	CAS Registry number	Mass Fraction Purity/%	Purification Method
Aluminium oxide	Aladdin Chemical Co., Ltd., Shanghai, China	1344-28-1	99.99	none
1,1,3,3-tetramethylguanidine	Aladdin Chemical Co., Ltd., Shanghai, China	80-70-6	99	none
Monoethanolamine	Aladdin Chemical Co., Ltd., Shanghai, China	141-43-5	99	none
Lactic acid	Aladdin Chemical Co., Ltd., Shanghai, China	50-21-5	80-85 [a]	none
Betaine	Yuanye Bio-Technology Co., Ltd., Shanghai, China	107-43-7	99	none
L-carnitine	Yuanye Bio-Technology Co., Ltd., Shanghai, China	541-15-1	99	none
Ethylene glycol	Sinopharm Chemical Reagent Co., Ltd., Beijing, China	107-21-1	99	none
Bet-EG DES	Prepared in the present work	–	98.8	N_2 sweeping [b]
L-car-EG DES	Prepared in the present work	–	98.5	N_2 sweeping [c]
TMGL	Prepared in the present work	–	98.3	N_2 sweeping [d]
MEAL	Prepared in the present work	–	98.0	N_2 sweeping [e]

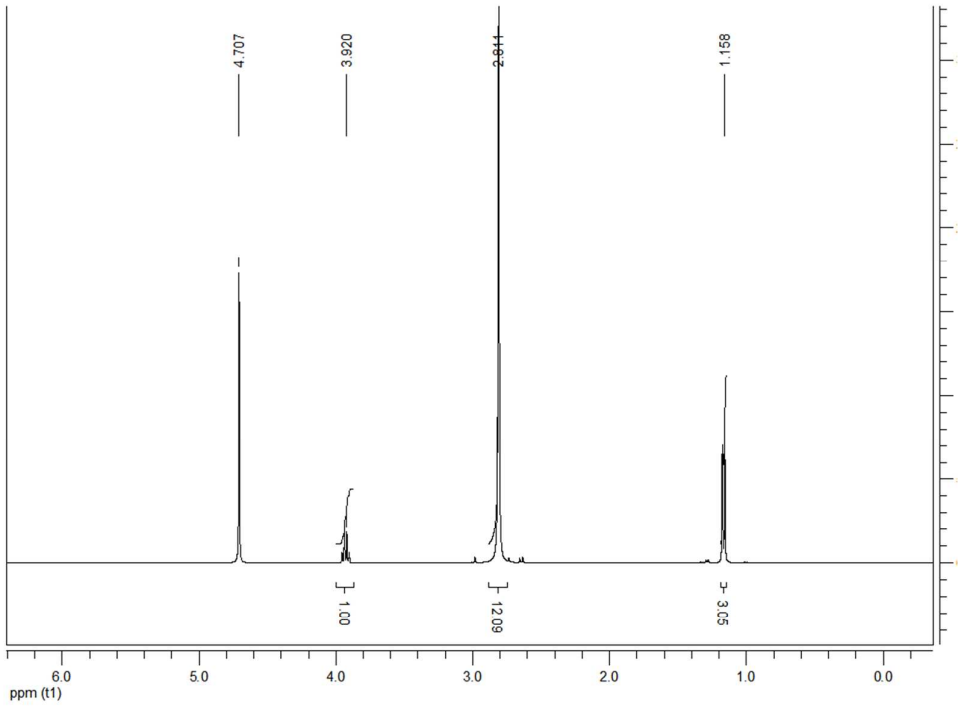
[a], The other fraction is water. [b], water content in mass fraction is 0.11 %. [c], water content in mass fraction is 0.15 %. [d], water content in mass fraction is 0.29 %. [e], water content in mass fraction is 0.25 %, and the prepared MEAL contains 20.6 % of lactic acid monoethanolamide in mole fraction.


4.698
3.789
3.554
3.161
1.00
6.00
4.56
6.0
5.0
4.0
3.0
2.0
1.0
0.0
ppm (t1)

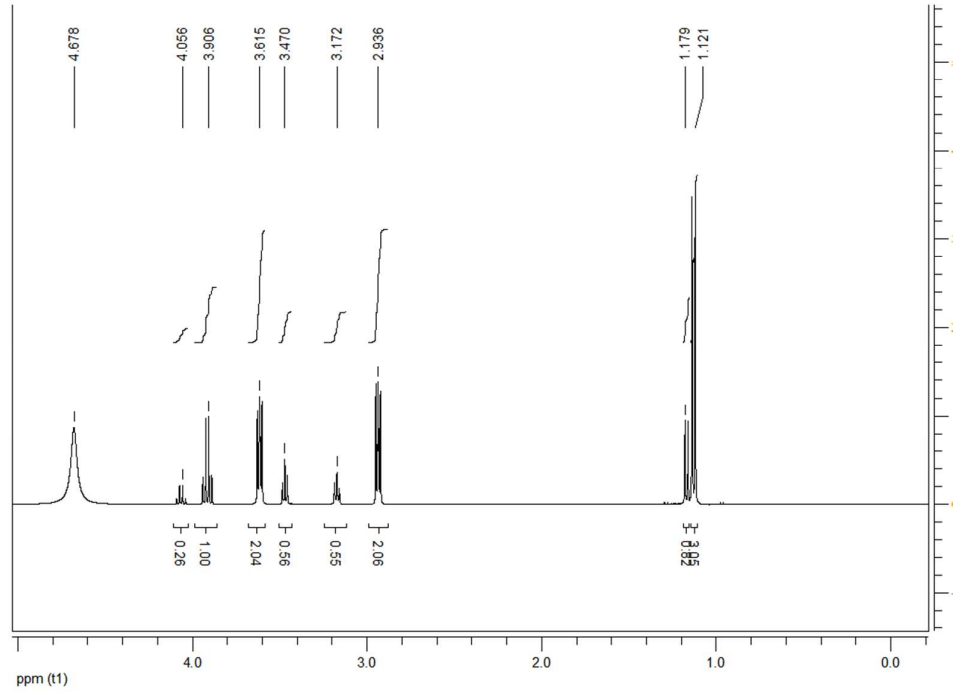
(a)


4.681
4.403
3.503
3.264
3.071
2.268
1.00
12.11
2.02
9.05
2.03
6.0
5.0
4.0
3.0
2.0
1.0
0.0
ppm (t1)

(b)



(c)



(d)

Figure S1. ^{1}H NMR spectra of DESs and ILs. (a), Bet-EG; (b), L-car-EG; (c), TMGL; (d), MEAL.

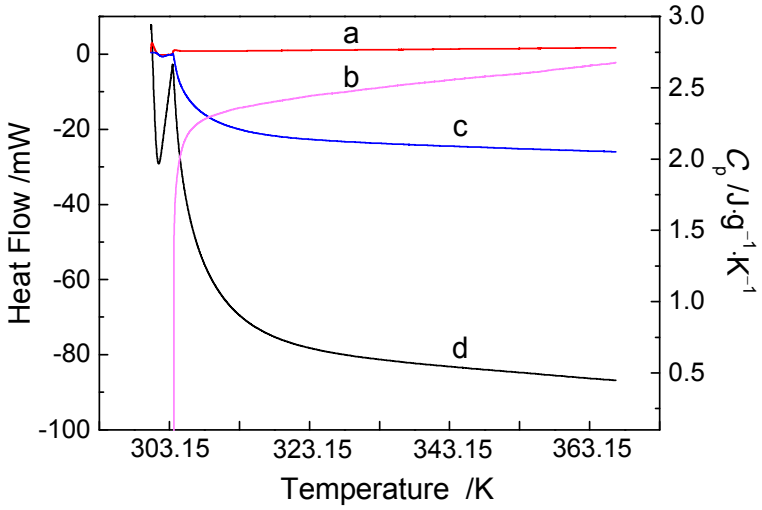


Figure S2. Curves of heat flow and measured C_p for EG. a, heat flow of equilibrium cell; b, measured C_p; c, heat flow of equilibrium cell + aluminium oxide; d, heat flow of equilibrium cell + EG.

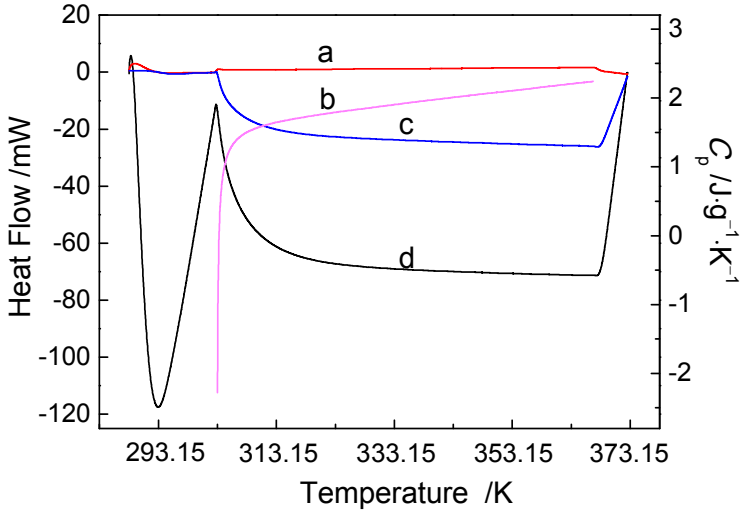


Figure S3. Curves of heat flow and measured C_p for TMGL. a, heat flow of equilibrium cell; b, measured C_p; c, heat flow of equilibrium cell + aluminium oxide; d, heat flow of equilibrium cell + TMGL.

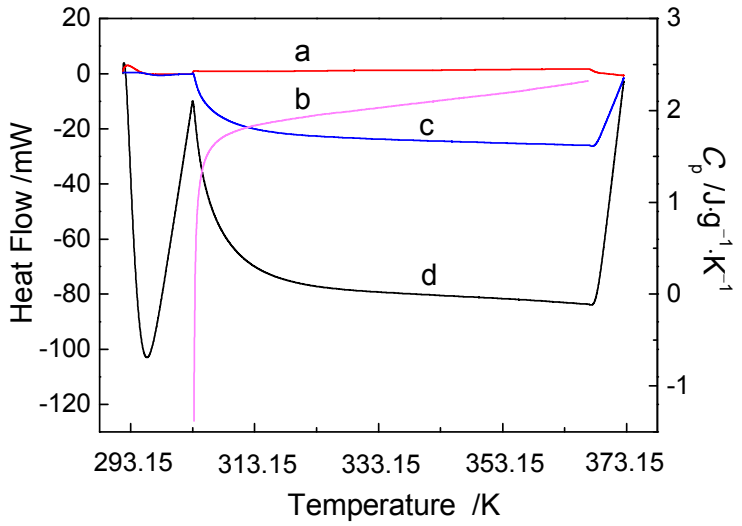


Figure S4. Curves of heat flow and measured C_p for MEAL. a, heat flow of equilibrium cell; b, measured C_p; c, heat flow of equilibrium cell + aluminium oxide; d, heat flow of equilibrium cell + MEAL.

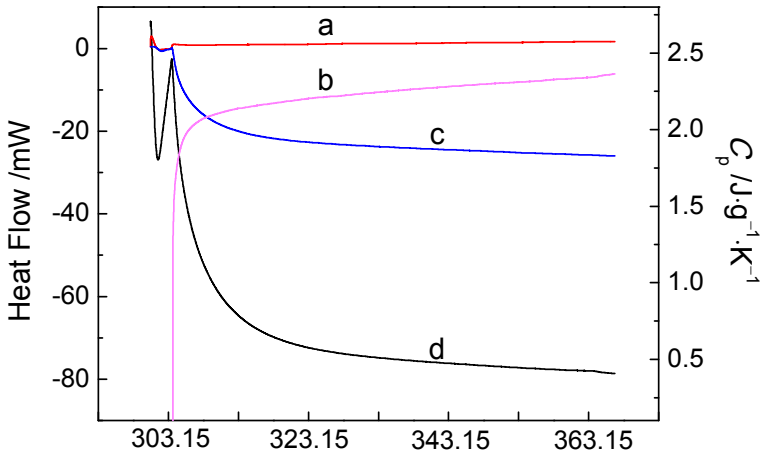


Figure S5. Curves of heat flow and measured C_p for Bet-EG. a, heat flow of equilibrium cell; b, measured C_p; c, heat flow of equilibrium cell + aluminium oxide; d, heat flow of equilibrium cell + Bet-EG.

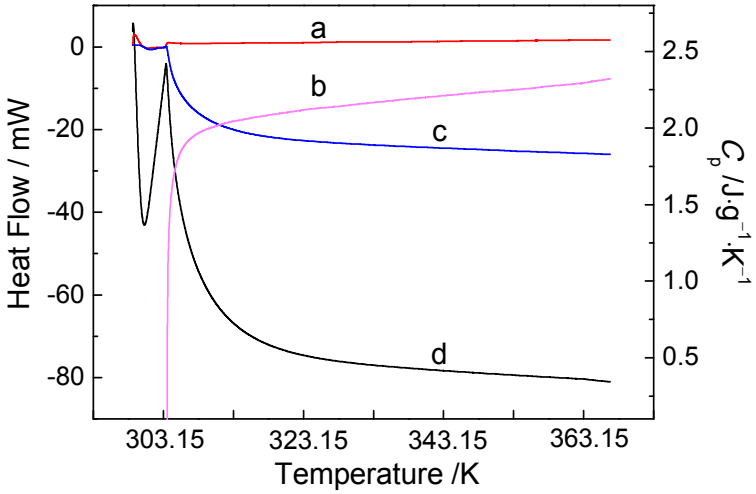


Figure S6. Curves of heat flow and measured C_p for L-car-EG. a, heat flow of equilibrium cell; b, measured C_p; c, heat flow of equilibrium cell + aluminium oxide; d, heat flow of equilibrium cell + L-car-EG.