

Supplementary materials

CO₂ Absorption by Solvents Consisting of TMG Protic Ionic Liquids and Ethylene Glycol: The Influence of Hydrogen Bonds

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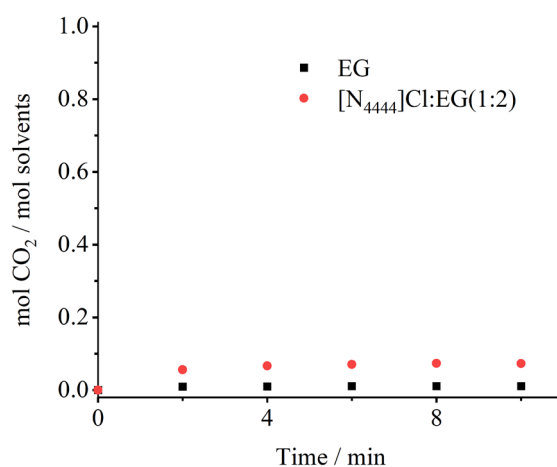


Figure S1. CO₂ absorption by EG and [N₄₄₄₄]Cl:EG (1:2) at 25 °C and 1.0 atm.

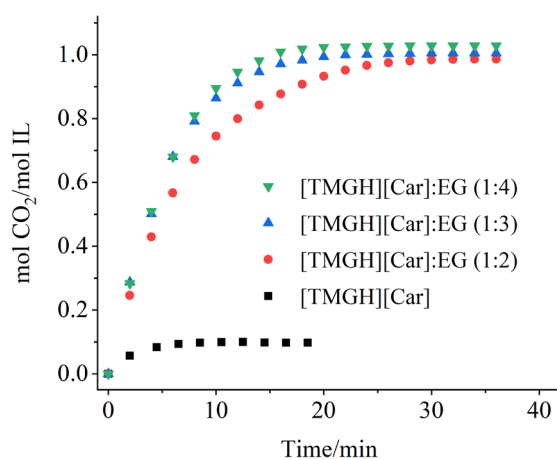


Figure S2. CO₂ absorption by [TMGH][Car] and [TMGH][Car]-EG at 25 °C and 1.0 atm.

Table S1. Comparison of CO₂ capacities in this work with other IL-based solvents.

Absorbents	T/ °C	P/bar	Capacity (mol/mol)	References
[TMGH][4-F-PhO]:EG (1:2)	25	1.0	0.97	This work
[TMGH][4-F-PhO]:EG (1:3)	25	1.0	0.98	This work
[TMGH][4-F-PhO]:EG (1:4)	25	1.0	0.98	This work
[TMGH][Car]:EG (1:2)	25	1.0	0.99	This work
[TMGH][Car]:EG (1:3)	25	1.0	1.01	This work
[TMGH][Car]:EG (1:4)	25	1.0	1.03	This work
DBN:BmimCl:Im (1:1:2)	25	1.0	0.97	[49]
[N ₂₂₂₂][Im]:EG (1:2)	25	1.0	0.94	[50]
[N ₂₂₂₂][1,2,4-Triz]:EG (1:2)	25	1.0	0.92	[50]
[DBUH][Thy]:EG (1:2)	25	1.0	0.91	[51]
[N ₂₂₂₂][Car]:EG (1:2)	25	1.0	0.87	[52]
[N ₂₂₂₂][Car]:4-CH ₃ Im (1:2)	25	1.0	0.88	[52]
[DBUH][MLU]:EG (1:1)	40	1.0	0.90	[53]
[EMIM][2-Npyr]:EG (1:2)	25	1.0	0.85	[39]
[MEA][Im]:EG (1:1)	25	1.0	0.62	[28]
[Ch][PhO]: EG (1:2)	25	1.0	1.00	[54]
[Ch][BP]: EG (1:2)	25	1.0	0.89	[54]
[Ch][1,2,4-Triz]: EG (1:2)	25	1.0	0.75	[54]
[Ch][Pro]: EG (1:2)	25	1.0	0.72	[55]
[Ch][Gly]: EG (1:2)	25	1.0	0.51	[55]
[Ch][OAc]: EG (1:2)	25	1.0	0.20	[54]
DBN-DMLU (2:1)	45	1.0	0.36	[56]
[P ₆₆₆₁₄][4-Me-PhO]	30	1.0	0.91	[17]
[P ₆₆₆₁₄][PhO]	30	1.0	0.85	[17]
[P ₆₆₆₁₄][1,2,4-Triz]	23	1.0	0.95	[14]
[P ₆₆₆₁₄][MN]	25	1.0	0.84	[10]
[P ₄₄₄₂][MN]	25	1.0	0.86	[10]
[P ₆₆₆₁₄][MMN]	25	1.0	0.35	[10]
[DMAPAH][Im]	22	1.0	0.81	[25]
[DMEDAH][Im]	22	1.0	0.77	[25]
[Emim][1,2,4-Triz]	30	1.0	0.65	[57]
[N ₄₄₄₂][2-Op]	30	1.0	1.24	[58]
[Bmim][2-Op]	30	1.0	1.02	[58]

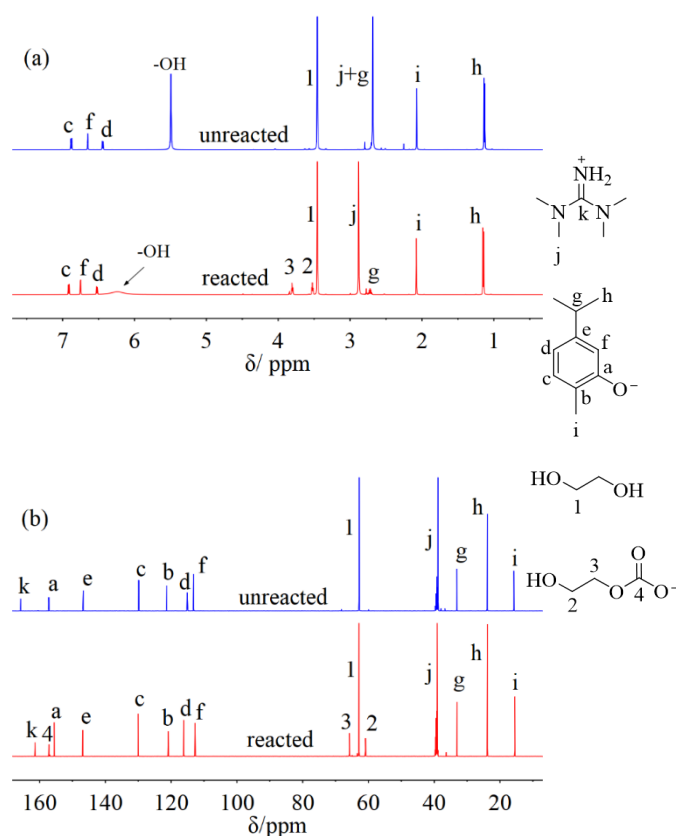


Figure S3. The ^1H (a) and ^{13}C (b) NMR spectra of [TMGH][Car]:EG (1:3) before and after absorption.

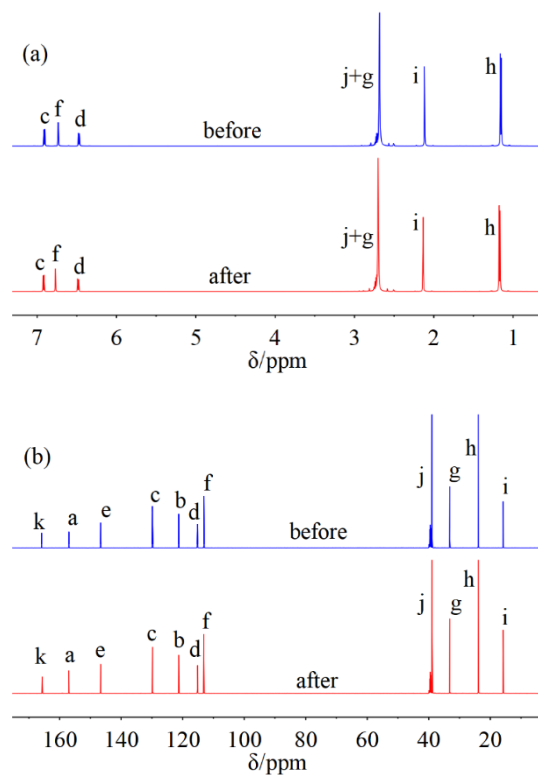


Figure S4. The ^1H (a) and ^{13}C (b) NMR spectra of [TMGH][Car] before and after absorption.

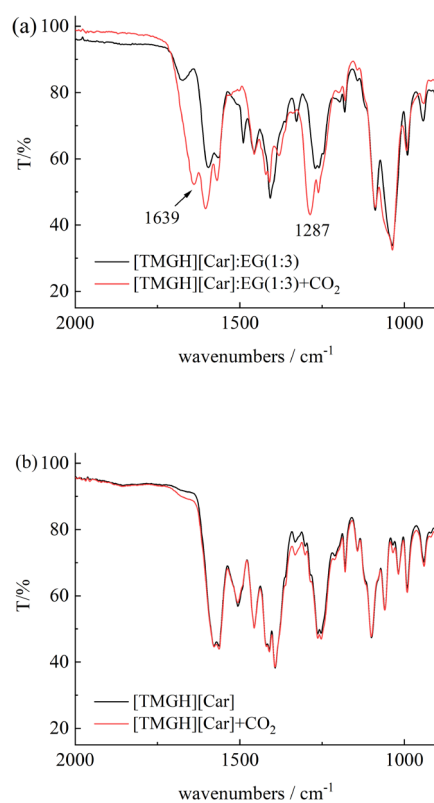


Figure S5. The FTIR spectra of [TMGH][Car]:EG (1:3) (a) and [TMGH][Car] (b) before and after absorption.

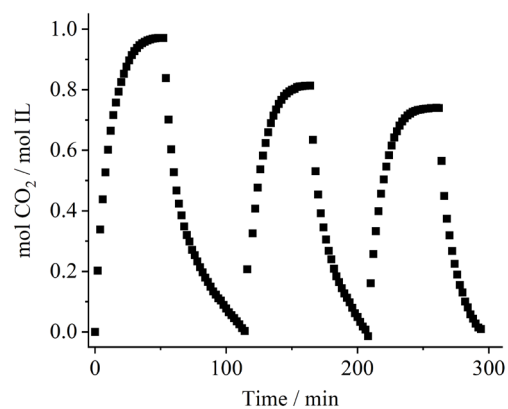


Figure S6. The absorption-desorption cycles of [TMGH][4-F-PhO]:EG (1:2): Absorption, 20 °C; Desorption, 70°C.

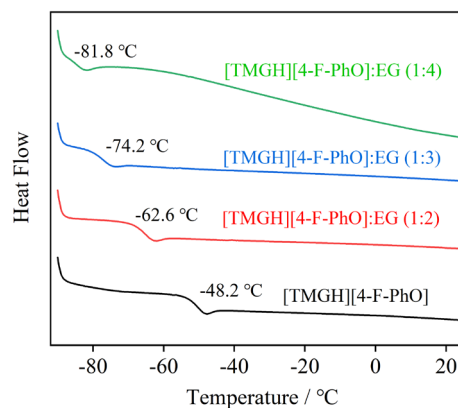


Figure S7. The DSC curves of [TMGH][4-F-PhO] -EG and [TMGH][4-F-PhO].

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