

Electronic Supplementary Information

Active chemisorption sites in functionalized ionic liquids for carbon capture

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Abbreviations and full names of ionic liquids and ionic salts listed in the main text

Abbreviation	Full name
[Bmim][PF ₆]	1-butyl-3-methylimidazolium hexafluorophosphate
[apbm][BF ₄]	1-(3-aminopropyl)-3-butylimidazolium tetrafluoroborate
[apmim][BF ₄]	1-(3-aminopropyl)-3-methylimidazolium tetrafluoroborate
[Bmim][BF ₄]	1-butyl-3-methylimidazolium tetrafluoroborate
[Li(EA)][Tf ₂ N]	ethanolamine lithium bis(trifluoromethylsulfonyl)imide
[Li(DEA)][Tf ₂ N]	diethanolamine lithium bis(trifluoromethylsulfonyl)imide
[Li(AEE)][Tf ₂ N]	2-(2-aminoethoxy)ethanol lithium bis(trifluoromethylsulfonyl)imide
[PEG ₁₅₀ MeBu ₂ NLi][Tf ₂ N]	2-(2-(2-methoxyethoxy)ethoxy)-ethyl-dibutylamine lithium bis(trifluoromethylsulfonyl)imide
[PEG ₁₅₀ MeTMGLi][Tf ₂ N]	2-[2-(2-(2-methoxyethoxy)ethoxy)-ethyl]-1,1,3,3-tetramethyl guanidine lithium bis(trifluoromethylsulfonyl)imide
[PEG ₁₅₀ MeNH ₂ Li][Tf ₂ N]	2-(2-(2-methoxyethoxy)ethoxy)-ethyl-amine lithium bis(trifluoromethylsulfonyl)imide
[P ₄₄₄₄][OH]	Tetrabutylphosphonium hydroxide
[P ₄₄₄₄][Gly]	Tetrabutylphosphonium glycinate
[P ₄₄₄₄][Ala]	Tetrabutylphosphonium L-alaninate
[P ₄₄₄₄][β-Ala]	Tetrabutylphosphonium β-alaninate
[P ₄₄₄₄][Ser]	Tetrabutylphosphonium l-serinate
[P ₄₄₄₄][Lys]	Tetrabutylphosphonium l-lysinate
[N ₂₂₂₂][L-Ala]	Tetraethylammonium L-alaninate
[N ₂₂₂₂][β-Ala]	Tetraethylammonium β-alaninate
[N ₂₂₂₄][L-Ala]	Triethylbutylammonium L-alaninate
[Emim][Gly]	1-ethyl-3-methylimidazolium glycinate
[Emim][Ala]	1-ethyl-3-methylimidazolium L-alaninate
[Emim][Arg]	1-ethyl-3-methylimidazolium L-argininate
[Cho][Pro]	cholinium proline
[P ₆₆₆₁₄][Met]	trihexy(tetradecyl)phosphonium methioninate
[P ₆₆₆₁₄][Pro]	trihexy(tetradecyl)phosphonium proline
[P ₆₆₆₁₄][Gly]	trihexy(tetradecyl)phosphonium glycinate
[P ₆₆₆₁₄][Sar]	trihexy(tetradecyl)phosphonium sarcosinate

[P ₆₆₆₁₄][Ile]	trihexy(tetradecyl)phosphonium isoleucinate
[N ₆₆₆₁₄][Met]	trihexy(tetradecyl)ammonium methioninate
[P ₆₆₆₁₄][Ala]	trihexy(tetradecyl)phosphonium L-alaninate
[P ₆₆₆₁₄][Tau]	trihexy(tetradecyl)phosphonium taurinate
[Me ₂ N(CH ₂ CH ₂ OH) ₂][Tau]	dihydroxyethyl dimethylammonium taurinate
[P ₆₆₆₁₄][<i>p</i> -AA]	trihexy(tetradecyl)phosphonium 4-amino-3-methylbenzoate
[P ₆₆₆₁₄][<i>p</i> -ANA]	trihexy(tetradecyl) phosphonium 6-aminonicotinate
[P ₆₆₆₁₄][<i>o</i> -AA]	trihexy(tetradecyl)phosphonium 2-amino-3-methylbenzoate
[P ₆₆₆₁₄][<i>o</i> -ANA]	trihexy(tetradecyl)phosphonium 2-aminonicotinate
<i>i</i> PrNH-GlyNa	sodium N-isopropylglycinate
<i>n</i> Pr ₂ N-GlyNa	sodium N-n-propylglycinate
[P ₆₆₆₁₄][Pyrz]	trihexy(tetradecyl)phosphonium pyrazolate
[P ₆₆₆₁₄][Im]	trihexy(tetradecyl)phosphonium imidazolate
[P ₆₆₆₁₄][Ind]	trihexy(tetradecyl)phosphonium indolate
[P ₆₆₆₁₄][Triz]	trihexy(tetradecyl)phosphonium 1,3,4-trizolate
[P ₆₆₆₁₄][BenTriz]	trihexy(tetradecyl)phosphonium bentrizolate
[P ₆₆₆₁₄][Tetz]	trihexy(tetradecyl)phosphonium tetrazolate
[P ₆₆₆₁₄][2-CN-Pyr]	trihexyl(tetradecyl)phosphonium 2-cyanopyrrolide
[P ₆₆₆₁₄][2-CF ₃ -Pyr]	trihexyl(tetradecyl)phosphonium 3-(trifluoromethyl)pyrazolide
[P ₂₂₂₈][2-CN-Pyr]	triethyloctylphosphonium 2-cyanopyrrolide
K[Phth]	potassium phthalimide
[Im ₂₁ OH][Tf ₂ N]	1-(2-hydroxyethyl)-3-methylimidazolium bis(trifluoromethyl-sulfonyl)imide
[N _{ip,211} OH][Tf ₂ N]	2-hydroxyethyl(dimethyl)-isopropylammonium bis(trifluoromethyl-sulfonyl)imide
[MTBDH][TFE]	1,3,4,6,7,8-hexahydro-1-methyl-2 <i>H</i> -pyrimido[1,2- <i>a</i>]pyrimidinium trifluoroethanolate
[(P ₂ -Et)H][TFE]	1-ethyl-2,2,4,4,4-pentakis(dimethylamino)-2λ ⁵ ,4λ ⁵ -catenadi(phosphazene)-3-ium trifluoroethanolate
[MTBDH][TFPA]	1,3,4,6,7,8-hexahydro-1-methyl-2 <i>H</i> -pyrimido[1,2- <i>a</i>]pyrimidinium 1-phenyl-2,2,2-trifluoroethanolate
[MTBDH][PhO]	1,3,4,6,7,8-hexahydro-1-methyl-2 <i>H</i> -pyrimido[1,2- <i>a</i>]pyrimidinium phenolate
[(P ₂ -Et)H][PhO]	1-ethyl-2,2,4,4,4-pentakis(dimethylamino)-2λ ⁵ ,4λ ⁵ -catenadi(phosphazene)-3-ium phenolate
[DBUH][TFE]	1,8-diazabicyclo[5.4.0]undec-7-en-8-ium trifluoroacetate

[P ₆₆₆₁₄][4-Me-PhO]	trihexy(tetradecyl)phosphonium 4-methyl-phenolate
[P ₆₆₆₁₄][4-H-PhO]	trihexy(tetradecyl)phosphonium phenolate
[P ₆₆₆₁₄][4-Cl-PhO]	trihexy(tetradecyl)phosphonium 4-chlorophenolate
[P ₆₆₆₁₄][4-CF ₃ -PhO]	trihexy(tetradecyl)phosphonium 4-trifluoromethylphenol
[P ₆₆₆₁₄][4-NO ₂ -PhO]	trihexy(tetradecyl)phosphonium 4-nitrophenolate
[P ₆₆₆₁₄][2,4,6-Cl-PhO]	trihexy(tetradecyl)phosphonium 2,4,6-trichlorophenolate
PhOLi	lithium phenolate
PhONa	sodium phenolate
PhOK	potassium phenolate
[Bmim][Tf ₂ N]	1-butyl-3-methylimidazolium bis(trifluoromethyl-sulfonyl)imide
[Emim][OAc]	1-ethyl-3-methylimidazolium acetate
[Bmim][OAc]	1-butyl-3-methylimidazolium acetate
[Bmim][Im]	1-butyl-3-methylimidazolium imidazolate
[Emim][Im]	1-ethyl-3-methylimidazolium imidazolate
[HO-emim][Im]	1-hydroxyethyl-3-methylimidazolium imidazolate
[aP ₄₄₄₃][Gly]	(3-aminopropyl) tributylphosphonium glycinate
[aP ₄₄₄₃][Ala]	(3-aminopropyl) tributylphosphonium L-alaninate
[aemmim][Tau]	1-aminoethyl-2,3-dimethylimidazolium taurinate
[Li(HDA)][Tf ₂ N]	2-hydroxyethylenediamine lithium bis(trifluoromethylsulfonyl)imide
[Li(DOBA)][Tf ₂ N]	2,2'-(ethylenedioxy)bis(ethylamine) lithium bis(trifluoromethylsulfonyl)imide
[P ₆₆₆₁₄][Lys]	trihexy(tetradecyl)phosphonium lysinate
[N ₆₆₆₁₄][Lys]	trihexy(tetradecyl)ammonium lysinate
[N ₆₆₆₁₄][His]	trihexy(tetradecyl)ammonium histidinate
[N ₆₆₆₁₄][Asn]	trihexy(tetradecyl)ammonium asparaginate
[N ₆₆₆₁₄][Gln]	trihexy(tetradecyl)ammonium glutaminate
[C ₂ (N ₁₁₂) ₂][Gly] ₂	N,N,N',N'-tetramethyl-N,N'-diethyl-ethylenediammonium diglycinate
[C ₂ (N ₁₁₄) ₂][Gly] ₂	N,N,N',N'-tetramethyl-N,N'-dibutyl-ethylenediammonium diglycinate
[Bis(mim)C ₄][Pro] ₂	1,4-bis(3-methylimidazolium-1-yl)butane diproline
[Bis(mim)C ₄][Gly] ₂	1,4-Bis(3-methylimidazolium-1-yl)butane diproline
[MTBDH ⁺] ₂ [HFPD] ²⁻	di-1,3,4,6,7,8-hexahydro-1-methyl-2H-pyrimido[1,2-a]pyrimidinium 2,2,3,3,4,4-hexafluoro-1,5-pentanediolate
[Bis(mim)C ₂][Im] ₂	1,2-bis(3-methylimidazolium-1-yl)ethane diimidazolate

[Bis(mim)C ₄][Im] ₂	1,4-bis(3-methylimidazolium-1-yl)butane diimidazolate
[NH ₂ -pmim][Im]	1-aminopropyl-3-methylimidazolium imidazolate
[P ₆₆₆₁₄][2-Op]	trihexy(tetradecyl)phosphonium 2-hydroxypyridinate
[P ₆₆₆₁₄][4-Op]	trihexy(tetradecyl)phosphonium 4-hydroxypyridinate
[P ₆₆₆₁₄][3-Op]	trihexy(tetradecyl)phosphonium 3-hydroxypyridinate
[P ₆₆₆₁₄][3-OCH ₃ -2-Op]	trihexy(tetradecyl)phosphonium 3-methoxyl-2-hydroxypyridinate
[P ₆₆₆₁₄][4-ABI]	trihexy(tetradecyl)phosphonium 4-azabenzimidazolate
[P ₆₆₆₁₄][4-CHO-PhO]	trihexy(tetradecyl)phosphonium 4-formylimidazolate
[P ₆₆₆₁₄][4-CHO-Im]	trihexy(tetradecyl)phosphonium p-formylphenolate
[P ₆₆₆₁₄][4-Kt-PhO]	trihexy(tetradecyl)phosphonium 4-carbethoxyphenolate
[P ₆₆₆₁₄][4-EF-PhO]	trihexy(tetradecyl)phosphonium p-acetylphenolate
[Emim][TFA]	1-ethyl-3-methylimidazolium trifluoroacetate
[Emim][EtSO ₄]	1-ethyl-3-methylimidazolium ethylsulfate
[aemim][BF ₄]	1-(2-aminoethyl)-3-methylimidazolium tetrafluoroborate
[Emim][BF ₄]	1-Ethyl-3-methylimidazolium tetrafluoroborate

Table S1. The full names of ILs and ionic salts mentioned in Table 1 in the main text

Abbreviation	Full name
MEA	monoethanolamine
MEA-H ₂ O (30 w _{MEA} %)	monoethanolamine
[apbim][BF ₄]	1-propylamide-3-butyl imidazolium tetrafluoroborate
[aemim][BF ₄]	1-(2-aminoethyl)-3-methylimidazolium tetrafluoroborate
[aemim][PF ₆]	1-(2-aminoethyl)-3-methylimidazolium hexafluorophosphate
[aemim][Tf ₂ N]	1-(2-aminoethyl)-3-methylimidazolium bis(trifluoromethyl-sulfonyl)imide
[aemim][TfO]	1-(2-aminoethyl)-3-methylimidazolium trifluoromethanesulfonate
[aemim][DCA]	1-(2-aminoethyl)-3-methylimidazolium dicyanamide
[Li(EA)][Tf ₂ N]	ethanolamine lithium bis(trifluoromethylsulfonyl)imide
[Li(DEA)][Tf ₂ N]	diethanolamine lithium bis(trifluoromethylsulfonyl)imide
[Li(AEE)][Tf ₂ N]	2-(2-aminoethoxy)ethanol lithium bis(trifluoromethylsulfonyl)imide

[PEG ₁₅₀ MeNH ₂ Li][Tf ₂ N]	2-(2-(2-methoxyethoxy)ethoxy)-ethyl-dibutylamine lithium bis(trifluoromethylsulfonyl)imide
[PEG ₁₅₀ MeBu ₂ NLi][Tf ₂ N]	2-[2-(2-(2-methoxyethoxy)ethoxy)-ethyl]-1,1,3,3-tetramethyl guanidine lithium bis(trifluoromethylsulfonyl)imide
[PEG ₁₅₀ MeTMGLi][NTf ₂]	2-(2-(2-methoxyethoxy)ethoxy)-ethyl-amine lithium bis(trifluoromethylsulfonyl)imide
[DEEDAH][HCOO]	diethylethylenediamine formate
[DMEDAH][HCOO]	dimethylethylenediamine formate
[DEEDAH][Ac]	diethylethylenediamine acetate
[DMAPAH][Ac]	3-(dimethylamino)-1-propylamine acetate
[DMAPAH][HCOO]	3-(dimethylamino)-1-propylamine formate
[P ₄₄₄₄][Gly]	tetrabutylphosphonium glycinate
[P ₄₄₄₄][Ala]	tetrabutylphosphonium L-alaninate
[P ₄₄₄₄][β-Ala]	tetrabutylphosphonium β-alaninate
[N ₂₂₂₂][Ala]	tetraethylammonium L-alaninate
[N ₂₂₂₂][β-Ala]	tetraethylammonium β-alaninate
[N ₂₂₂₄][Ala]	triethylbutylammonium L-alaninate
[Emim][Gly]	1-ethyl-3-methylimidazolium glycinate
[Emim][Ala]	1-ethyl-3-methylimidazolium L-alaninate
[Bmim][Met]	1-butyl-3-methylimidazolium methioninate
[Bmim][Leu]	1-butyl-3-methylimidazolium methioninate
[Bmim][Gly]	1-butyl-3-methylimidazolium glycinate
[Bmim][Val]	1-butyl-3-methylimidazolium valinate
[Bmim][Ala]	1-butyl-3-methylimidazolium L-alaninate
[Bmim][Pro]	1-butyl-3-methylimidazolium proline
[Cho][Pro]	cholinium proline
[P ₆₆₆₁₄][Met]	trihexy(tetradecyl)phosphonium methioninate
[P ₆₆₆₁₄][Pro]	trihexy(tetradecyl)phosphonium proline
[P ₆₆₆₁₄][Gly]	trihexy(tetradecyl)phosphonium glycinate
[P ₆₆₆₁₄][Sar]	trihexy(tetradecyl)phosphonium sarcosinate
[P ₆₆₆₁₄][Ile]	trihexy(tetradecyl)phosphonium isoleucinate
[N ₆₆₆₁₄][Met]	trihexy(tetradecyl)ammonium methioninate

[P ₆₆₆₁₄][Ala]	trihexy(tetradecyl)phosphonium L-alaninate
[P ₆₆₆₁₄][Tau]	trihexy(tetradecyl)phosphonium taurinate
[P ₄₄₄₄][Val]	tetrabutylphosphonium valinate
[P ₄₄₄₄][Ile]	tetrabutylphosphonium isoleucinate
[P ₄₄₄₄][Pro]	Tetrabutylphosphonium proline
[P ₄₄₄₄][Bic]	tetrabutylphosphonium bicinate
[P ₄₄₄₄][dmGly]	tetrabutylphosphonium sarcosinate
[N ₁₁₁₂][Pro]	ethyltrimethylammonium proline
[N ₁₁₁₃][Pro]	ethyltrimethylammonium proline
[Me ₂ N(CH ₂ CH ₂ OH) ₂][Pro]	dihydroxyethyl dimethylammonium proline
[Me ₂ N(CH ₂ CH ₂ OH) ₂][Tau]	dihydroxyethyl dimethylammonium taurinate
[P ₆₆₆₁₄][<i>p</i> -AA]	trihexy(tetradecyl)phosphonium 4-amino-3-methylbenzoate
[P ₆₆₆₁₄][<i>o</i> -AA]	trihexy(tetradecyl) phosphonium 6-aminonicotinate
[P ₆₆₆₁₄][<i>p</i> -ANA]	trihexy(tetradecyl)phosphonium 2-amino-3-methylbenzoate
[P ₆₆₆₁₄][<i>o</i> -ANA]	trihexy(tetradecyl)phosphonium 2-aminonicotinate
NH ₂ -GlyNa	sodium glycinate
<i>i</i> PrNH-GlyNa	sodium N-isopropylglycinate
<i>n</i> PrNH-GlyNa	sodium N-n-propylglycinate
<i>t</i> BuNH-GlyNa	sodium N-tertbutylglycinate
CyNH-GlyNa	sodium N-cyclohexyl glycinate
<i>i</i> PrNH-AlaNa	sodium N-isopropyl-L-alaninate
<i>n</i> Pr ₂ N-GlyNa	sodium N,N-di-n-propylglycinate
β - <i>i</i> PrNH-AlaNa	sodium N-isopropyl- β -alaninate
ProNa/15-crown-5	sodium proline/15-crown-5
ProK/18-crown-6	potassium proline/18-crown-6
ValK/18-crown-6	potassium valinate/18-crown-6
MetK/18-crown-6	potassium methioninate/18-crown-6
GlyK/18-crown-6	potassium glycinate/18-crown-6
ThrK/18-crown-6	potassium threoninate/18-crown-6
AlaK/18-crown-6	potassium L-alaninate/18-crown-6
LeuK/18-crown-6	potassium leucinate/18-crown-6

SerK/18-crown-6	potassium serinate/18-crown-6
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Table S2. The full names of ILs and ionic salts mentioned in Table 2 in the main text

Abbreviation	Full name
[MTBDH][Im]	1,3,4,6,7,8-hexahydro-1-methyl-2 <i>H</i> -pyrimido[1,2- <i>a</i>]pyrimidinium imidazolate
[(P ₂ -Et)H][Im]	1-ethyl-2,2,4,4,4-pentakis(dimethylamino)-2λ ⁵ ,4λ ⁵ -catenadi(phosphazene)-3-ium imidazolate
[MTBDH][Pyr]	1,3,4,6,7,8-hexahydro-1-methyl-2 <i>H</i> -pyrimido[1,2- <i>a</i>]pyrimidinium pyrrolidonate
[(P ₂ -Et)H][Pyr]	1-ethyl-2,2,4,4,4-pentakis(dimethylamino)-2λ ⁵ ,4λ ⁵ -catenadi(phosphazene)-3-ium pyrrolidonate
[P ₆₆₆₁₄][Pyrz]	trihexy(tetradecyl)phosphonium pyrazolate
[P ₆₆₆₁₄][Im]	trihexy(tetradecyl)phosphonium imidazolate
[P ₆₆₆₁₄][Ind]	trihexy(tetradecyl)phosphonium indolate
[P ₆₆₆₁₄][Triz]	trihexy(tetradecyl)phosphonium 1,3,4-trizolate
[P ₆₆₆₁₄][Bentriz]	trihexy(tetradecyl)phosphonium bentrizolate
[P ₆₆₆₁₄][Tetz]	trihexy(tetradecyl)phosphonium tetrazolate
[P ₆₆₆₁₄][Oxa]	trihexy(tetradecyl)phosphonium 2-oxazolidonate
[TMGH][Im]	1,1,3,3-tetramethylguanidinium imidazolate
[P ₆₆₆₁₄][2-CN-Pyr]	trihexyl(tetradecyl)phosphonium 2-cyanopyrrolide
[P ₆₆₆₁₄][3-CF ₃ -Pyr]	trihexyl(tetradecyl)phosphonium 3-(trifluoromethyl)pyrazolide
[P ₆₆₆₁₄][BnIm]	trihexy(tetradecyl)phosphonium benzimidazolate
[P ₆₆₆₁₄][6-BrBnIm]	trihexy(tetradecyl)phosphonium 6-bromobenzimidazolate
[P ₆₆₆₁₄][2-SCH ₃ BnIm]	trihexy(tetradecyl)phosphonium 2-(methylthio)-1- <i>H</i> -benzimidazolate
[P ₂₂₂₄][2-CN-Pyr]	triethyl(butyl)phosphonium 2-cyanopyrrolide
[P ₂₂₂₈][2-CN-Pyr]	triethyl(octyl)phosphonium 2-cyanopyrrolide
[P ₂₂₂₁₂][2-CN-Pyr]	triethyl(dodecyl)phosphonium 2-cyanopyrrolide

[P ₄₄₄₁₂][2-CN-Pyr]	tributyl(dodecyl)phosphonium 2-cyanopyrrolide
[P ₄₄₄₁₈][2-CN-Pyr]	tributyl(octadecyl)phosphonium 2-cyanopyrrolide
TrizLi	lithium 1,3,4-trizolate
TrizNa	sodium 1,3,4-trizolate
TrizK	potassium 1,3,4-trizolate
[DBUH][Phth]	1,8-diazabicyclo[5.4.0]undec-7-en-8-ium phthalimide
[TMGH][Phth]	1,1,3,3-tetramethylguanidinium phthalimide
Na[Phth]	sodium phthalimide
K[Phth]	potassium phthalimide
K[Sacc]	potassium saccharinate
[MTBDH][TFE]	1,3,4,6,7,8-hexahydro-1-methyl-2 <i>H</i> -pyrimido[1,2- <i>a</i>]pyrimidinium trifluoroethanolate
[(P ₂ -Et)H][TFE]	1-ethyl-2,2,4,4,4-pentakis(dimethylamino)-2λ ⁵ ,4λ ⁵ -catenadi(phosphazene)-3-ium trifluoroethanolate
[MTBDH][TFPA]	1,3,4,6,7,8-hexahydro-1-methyl-2 <i>H</i> -pyrimido[1,2- <i>a</i>]pyrimidinium 1-phenyl-2,2,2-trifluoroethanolate
[DBUH][TFE]	1,8-diazabicyclo[5.4.0]undec-7-en-8-ium trifluoroethanolate
[P ₆₆₆₁₄][4-Me-PhO]	trihexy(tetradecyl)phosphonium 4-methyl-phenolate
[P ₆₆₆₁₄][4-MeO-PhO]	trihexy(tetradecyl)phosphonium 4-methoxyl-phenolate
[P ₆₆₆₁₄][4-H-PhO]	trihexy(tetradecyl)phosphonium phenolate
[P ₆₆₆₁₄][4-Cl-PhO]	trihexy(tetradecyl)phosphonium 4-chlorophenolate
[P ₆₆₆₁₄][4-CF ₃ -PhO]	trihexy(tetradecyl)phosphonium 4-trifluoromethylphenol
[P ₆₆₆₁₄][4-NO ₂ -PhO]	trihexy(tetradecyl)phosphonium 4-nitrophenolate
[P ₆₆₆₁₄][3-Cl-PhO]	trihexy(tetradecyl)phosphonium 3-chlorophenolate
[P ₆₆₆₁₄][2-Cl-PhO]	trihexy(tetradecyl)phosphonium 2-chlorophenolate
[P ₆₆₆₁₄][2,4-Cl-PhO]	trihexy(tetradecyl)phosphonium 2,4-dichlorophenolate
[P ₆₆₆₁₄][2,4,6-Cl-PhO]	trihexy(tetradecyl)phosphonium 2,4,6-trichlorophenolate
[P ₆₆₆₁₄][3-NMe ₂ -PhO]	trihexy(tetradecyl)phosphonium 3-dimethylaminophenolate
[P ₆₆₆₁₄][1-Naph]	trihexy(tetradecyl)phosphonium 1-naphtholate

[P ₆₆₆₁₄][2-Naph]	trihexy(tetradecyl)phosphonium 2-naphtholate
PhOLi/12-crown-4	lithium phenolate/12-crown-4
PhONa/15-crown-5	sodium phenolate/15-crown-5
PhOK/18-crown-6	potassium phenolate/18-crown-6
[P ₄₄₄₄][PhO]	tetrabutylphosphonium phenolate
[P ₄₄₄₄][2-F-PhO]	tetrabutylphosphonium 2-fluorophenolate
[P ₄₄₄₄][3-F-PhO]	tetrabutylphosphonium 3-fluorophenolate
[P ₄₄₄₄][4-F-PhO]	tetrabutylphosphonium 4-fluorophenolate
[MTBDH][PhO]	1,3,4,6,7,8-hexahydro-1-methyl-2 <i>H</i> -pyrimido[1,2- <i>a</i>]pyrimidinium phenolate
[(P ₂ -Et)H][PhO]	1-ethyl-2,2,4,4,4-pentakis(dimethylamino)-2λ ⁵ ,4λ ⁵ -catenadi(phosphazene)-3-ium phenolate
[N ₂₂₂₂][PhO]	Tetraethylammonium phenolate
[P ₆₆₆₁₄][PhO]	trihexy(tetradecyl)phosphonium phenolate
[Im ₂₁ OH][Tf ₂ N]-DBU	1-(2-hydroxyethyl)-3-methylimidazolium bis(trifluoromethyl-sulfonyl)imide/ 1,8-diazabicyclo[5.4.0]undec-7-ene
[Im ₂₁ OH][Tf ₂ N]-MTBD	1-(2-hydroxyethyl)-3-methylimidazolium bis(trifluoromethyl-sulfonyl)imide/ 1,3,4,6,7,8-hexahydro-1-methyl-2 <i>H</i> -pyrimido[1,2- <i>a</i>]pyrimidine
[Im ₂₁ OH][Tf ₂ N]-BEMP	1-(2-hydroxyethyl)-3-methylimidazolium bis(trifluoromethyl-sulfonyl)imide/ 2- <i>tert</i> -butylamino-2-diethylamino-1,3-dimethylperhydro-1,3,2-diaza-phosphorine
[N _{ip,211} OH][Tf ₂ N]-DBU	2-hydroxyethyl(dimethyl)-isopropylammonium bis(trifluoromethyl-sulfonyl)imide/1,8-diazabicyclo[5.4.0]undec-7-ene
[N ₁₁₁₁][<i>n</i> -BuNH ₂ COO]	tetramethylammonium N-butyl-β-alaninate
[N ₁₁₁₁][<i>n</i> -Bu ₂ NEtCOO]	tetramethylammonium N,N-dibutyl-β-alaninate
[N ₁₁₁₁][<i>n</i> -Bu ₂ NEtNH ₂ COO]	tetramethylammonium N-(N',N'-dibutyl)aminoethyl-β-alaninate
[Bmim][Tf ₂ N]-DBU	1-butyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide/ 1,8-diazabicyclo[5.4.0]undec-7-ene
[Bmim][BF ₄]-DBU	1-butyl-3-methylimidazolium tetrafluoroborate/ 1,8-diazabicyclo[5.4.0]undec-7-ene

[Emim][Tf ₂ N]-DBU	1-ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide/ 1,8-diazabicyclo[5.4.0]undec-7-ene
[Bmim][PF ₆]-DBU	1-butyl-3-methylimidazolium hexafluorophosphate/ 1,8-diazabicyclo[5.4.0]undec-7-ene
[Bmim][Tf ₂ N]-MTBD	1-butyl-3-methylimidazolium tetrafluoroborate/ 1,3,4,6,7,8-hexahydro-1-methyl-2 <i>H</i> -pyrimido[1,2- <i>a</i>]pyrimidine
[Bmim][Tf ₂ N]-EtP ₂	1-butyl-3-methylimidazolium tetrafluoroborate 1-ethyl-2,2,4,4,4-pentakis(dimethylamino)-2λ ⁵ ,4λ ⁵ -catenadi(phosphazene)
[Emim][Ac]	1-ethyl-3-methylimidazolium acetate
[Bmim][Ac]	1-butyl-3-methylimidazolium acetate
[Bmim][CH ₃ CH ₂ COO]	1-butyl-3-methylimidazolium propionate
[Bmim][(CH ₃) ₂ CHCOO]	1-butyl-3-methylimidazolium isobutyrate
[Bmim][(CH ₃) ₃ CCOO]	1-butyl-3-methylimidazolium trimethylacetate
[Eeim][Ac]	1,3-diethylimidazolium acetate
[Bmim][Im]	1-butyl-3-methylimidazolium imidazolate
[Emim][Im]	1-ethyl-3-methylimidazolium imidazolate
[HO-emim][Im]	1-hydroxyethyl-3-methylimidazolium imidazolate
[P ₄₄₄₄][Gly]	tetrabutylphosphonium glycinate
[N ₁₁₁₁][Gly]	tetramethylammonium glycinate
[C ₁ C ₄ Pyrro][Ac]	1-butyl-1-methylpyrrolidinium acetate

Table S3. The full names of ILs and ionic salts mentioned in Table 3 in the main text

Abbreviation	Full name
[Li(HDA)][Tf ₂ N]	2-hydroxyethylenediamine lithium bis(trifluoromethylsulfonyl)imide
[Li(DOBA)][Tf ₂ N]	2,2'-(ethylenedioxy)bis(ethylamine) lithium bis(trifluoromethylsulfonyl)imide
DAIL	1,3-di(3-aminopropyl)-2-methylimidazolium bromide
[TETA][NO ₃]	triethylenetetramine-1-ium nitrate
[P ₆₆₆₁₄][Lys]	trihexy(tetradecyl)phosphonium lysinate
[N ₆₆₆₁₄][Lys]	trihexy(tetradecyl)ammonium lysinate
[N ₆₆₆₁₄][Asn]	trihexy(tetradecyl)ammonium asparaginate
[N ₆₆₆₁₄][Gln]	trihexy(tetradecyl)ammonium glutaminate
[N ₆₆₆₁₄][His]	trihexy(tetradecyl)ammonium histidinate
[P ₆₆₆₁₄][Lys]	trihexy(tetradecyl)phosphonium l-lysinate
[Emim][Arg]	1-ethyl-3-methylimidazolium L-argininate
[Bmim][Arg]	1-butyl-3-methylimidazolium L-argininate
[Bmim][Lys]	1-butyl-3-methylimidazolium lysinate
[Bmim][His]	1-butyl-3-methylimidazolium histidinate
[C ₂ (N ₁₁₂) ₂][Gly] ₂	N,N,N',N'-tetramethyl-N,N'-diethyl-ethylenediammonium diglycinate
[C ₂ (N ₁₁₄) ₂][Gly] ₂	N,N,N',N'-tetramethyl-N,N'-dibutyl-ethylenediammonium diglycinate
[Bis(mim)C ₂][Pro] ₂	1,4-bis(3-methylimidazolium-1-yl)ethane diproline
[Bis(mim)C ₄][Pro] ₂	1,4-bis(3-methylimidazolium-1-yl) butane diproline
[Bis(mim)C ₂][Gly] ₂	1,4-Bis(3-methylimidazolium-1-yl)ethane diglycinate
[Bis(mim)C ₄][Gly] ₂	1,4-Bis(3-methylimidazolium-1-yl)butane diglycinate
[Bis(mim)C ₂][Im] ₂	1,2-bis(3-methylimidazolium-1-yl)ethane diimidazolate
[Bis(mim)C ₄][Im] ₂	1,4-bis(3-methylimidazolium-1-yl)butane diimidazolate
[MTBDH ⁺] ₂ [HFPD ²⁻]	di-1,3,4,6,7,8-hexahydro-1-methyl-2 <i>H</i> -pyrimido[1,2- <i>a</i>]pyrimidinium 2,2,3,3,4,4-hexafluoro-1,5-pentanediolate
[aP ₄₄₄₃][Gly]	(3-aminopropyl) tributylphosphonium glycinate

[aP ₄₄₄₃][Ala]	(3-aminopropyl) tributylphosphonium L-alaninate
[aemmim][Tau]	1-aminoethyl-2,3-dimethylimidazolium taurinate
[apaeP ₄₄₄][Lys]	N-(3-aminopropyl)aminoethyl tributylphosphonium lysinate
[apaeP ₄₄₄][Gly]	N-(3-aminopropyl)aminoethyl tributylphosphonium glycinate
[apaeP ₄₄₄][Ser]	N-(3-aminopropyl)aminoethyl tributylphosphonium serinate
[apaeP ₄₄₄][Ala]	N-(3-aminopropyl)aminoethyl tributylphosphonium L-alaninate
[apaeP ₄₄₄][Asp]	N-(3-aminopropyl)aminoethyl tributylphosphonium aspartate
[apaeP ₄₄₄][His]	N-(3-aminopropyl)aminoethyl tributylphosphonium histidinate
[AEMP][Gly]	1-(2-aminoethyl)-1-methylpiperazin-1-ium glycinate
[AEMP][Ala]	1-(2-aminoethyl)-1-methylpiperazin-1-ium L-alaninate
[AEMP][Pro]	1-(2-aminoethyl)-1-methylpiperazin-1-ium proline
[AEMP][Leu]	1-(2-aminoethyl)-1-methylpiperazin-1-ium leucinate
[apmim][Im]	1-(3-aminopropyl)-3-methylimidazolium imidazolate
[OH-emmim][PhO]	1-(2-hydroxyethyl)-2,3-dimethylimidazolium phenolate
[P ₆₆₆₁₄][2-Op]	trihexy(tetradecyl)phosphonium 2-hydroxypyridinate
[P ₆₆₆₁₄][4-Op]	trihexy(tetradecyl)phosphonium 4-hydroxypyridinate
[P ₆₆₆₁₄][3-Op]	trihexy(tetradecyl)phosphonium 3-hydroxypyridinate
[P ₆₆₆₁₄][3-OCH ₃ -2-Op]	trihexy(tetradecyl)phosphonium 3-methoxyl-2-hydroxypyridinate
[P ₆₆₆₁₄][4-ABI]	trihexy(tetradecyl)phosphonium 4-azabenzimidazolate
[P ₆₆₆₁₄][4-Kt-PhO]	trihexy(tetradecyl)phosphonium 4-carbethoxyphenolate
[P ₆₆₆₁₄][4-EF-PhO]	trihexy(tetradecyl)phosphonium p-acetylphenolate
[P ₆₆₆₁₄][4-CHO-PhO]	trihexy(tetradecyl)phosphonium p-formylphenolate
[P ₆₆₆₁₄][4-CHO-Im]	rihexy(tetradecyl)phosphonium 4-formylimidazolate
[N ₁₁₁₁][Gly]-MDEA	tetramethylammonium glycinate / N-methyldiethanolamine
[N ₂₂₂₂][Gly]-MDEA	tetraethylammonium glycinate / N-methyldiethanolamine
[N ₁₁₁₁][Lys]-MDEA	tetramethylammonium lysinate / N-methyldiethanolamine
[N ₂₂₂₂][Lys]-MDEA	tetraethylammonium lysinate / N-methyldiethanolamine
[Bmim][Gly]-MDEA	1-butyl-3-methylimidazolium glycinate / N-methyldiethanolamine