

Molecular interactions between ammonium-based ionic liquids and molecular solvents: current progress and challenges

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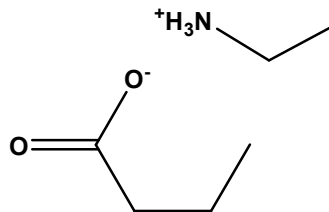
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Table 1S. Name, abbreviation and chemical structure of ammonium-based ionic liquids:

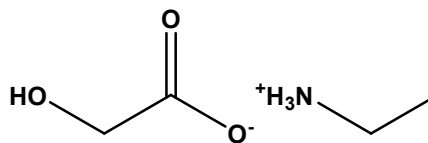
Table 1S. Name, abbreviation and chemical structure of ammonium-based ionic liquids:

Name of the ionic liquid	Abbreviation	Structure
Ethylammonium nitrate	[EAN]	
N-propylammonium nitrate	[PAN]	
N-butylammonium nitrate	[BAN]	
Methylammonium formate	[MAF]	
Ethylammonium formate	[EAF]	
Propylammonium formate	[PAF]	
Butylammonium formate	[BAF]	
Pentylammonium formate	[PeAF]	
Ethylammonium propionate	[EAP]	

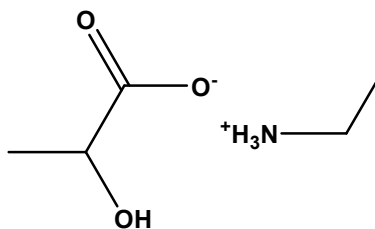
Ethylammonium butyrate [EAB]



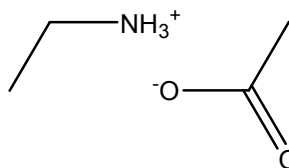
Ethylammonium glycolate [EAG]



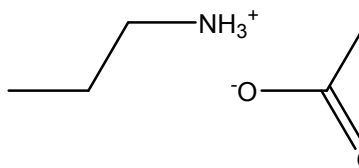
Ethylammonium lactate [EAL]



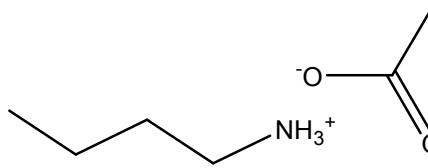
n-ethylammonium acetate [N2A]



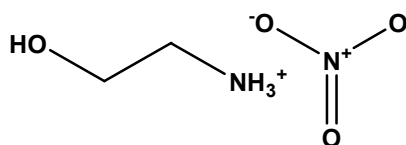
n-propylammonium acetate [N3A]



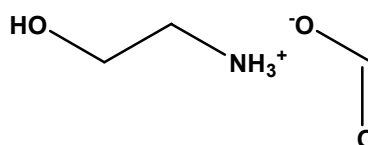
n-butylammonium acetate [N4A]



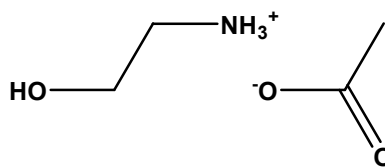
Ethanolammonium nitrate [EOAN]



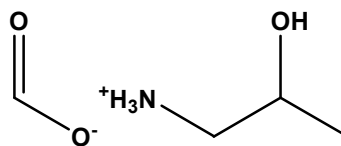
Ethanolammonium formate [EOAF]



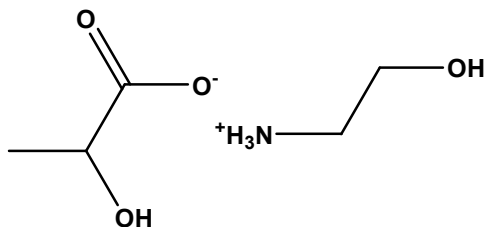
Ethanolammonium acetate [EOAA]



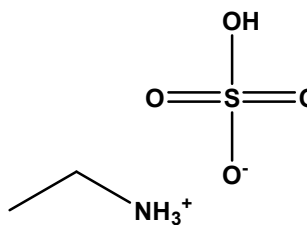
2-propanolammonium formate [2-POAF]



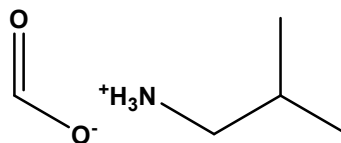
Ethanolammonium lactate [EOAL]



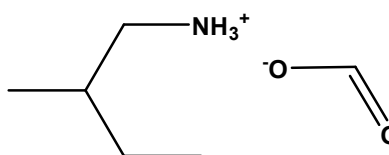
Ethylammonium hydrogen sulfate [EAHS]



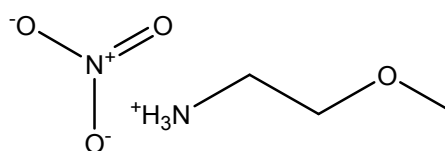
2-methylpropylammonium formate [2-MPAF]



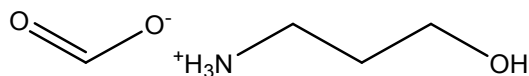
2-methylbutylammonium formate [2-MBAF]



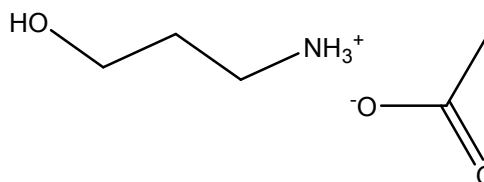
2-methoxyethylammonium nitrate [MEOEAN]



3-hydroxypropylammonium formate [3-HPAF]

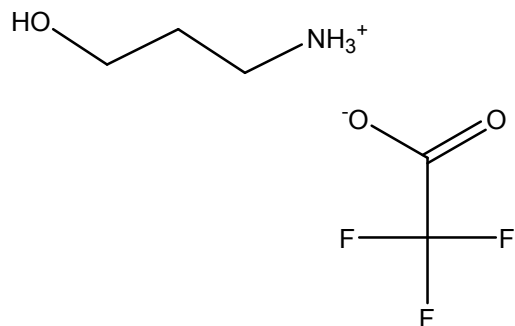


3-hydroxypropylammonium acetate [3-HPAA]



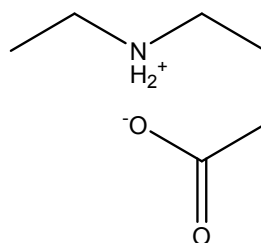
3-hydroxypropylammonium
trifluoroacetate

[3-HPATFA]



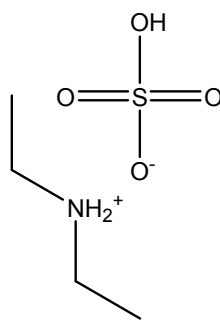
Diethylammonium acetate

[DEAA]



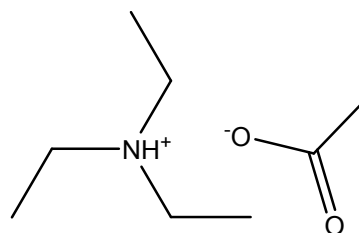
Diethyl ammonium hydrogen
sulfate

[DEAS]



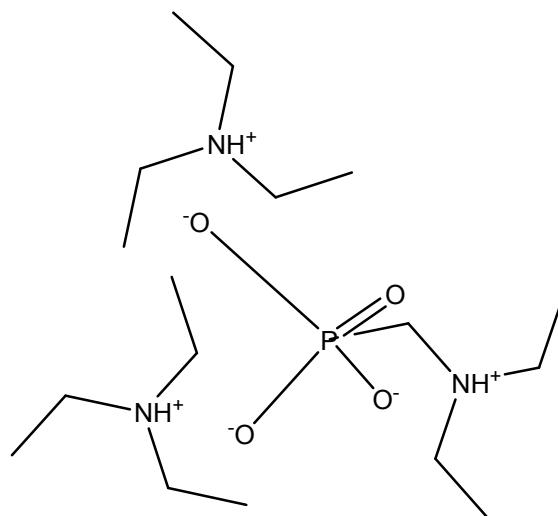
Triethylammonium acetate

[TEAA]

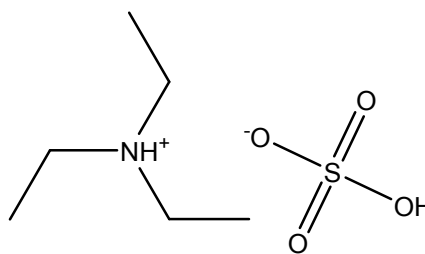


Triethylammonium phosphate

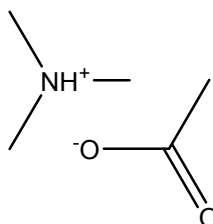
[TEAP]



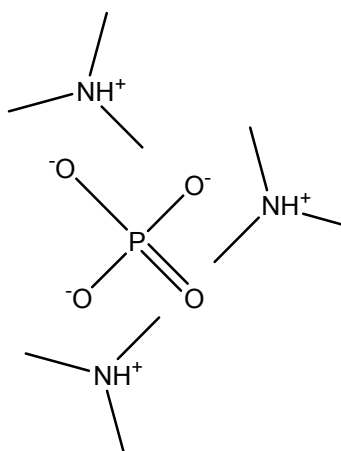
Triethylammonium hydrogen sulfate [TEAS]
sulfate



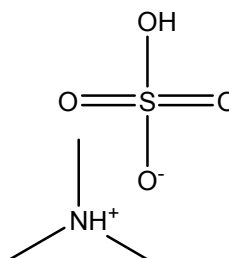
Trimethylammonium acetate [TMAA]



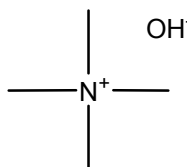
Trimethylammonium phosphate [TMAP]



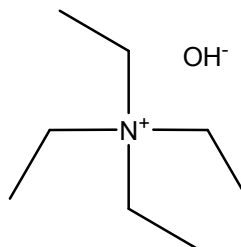
Trimethylammonium hydrogen sulfate [TMAS]
sulfate



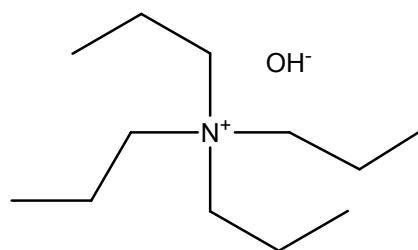
Tetramethylammonium hydroxide [TMAH]



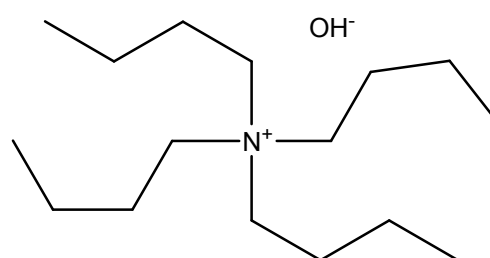
Tetraethylammonium hydroxide [TEAH]



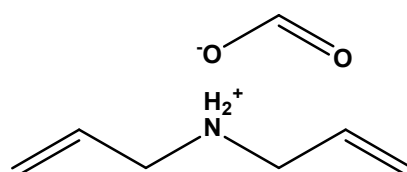
Tetrapropylammonium hydroxide [TPAH]



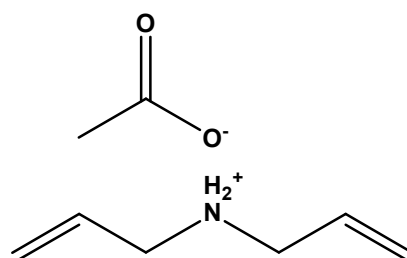
Tetrabutylammonium hydroxide [TBAH]



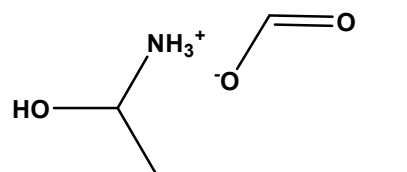
Diallylammonium formate [DAAF]



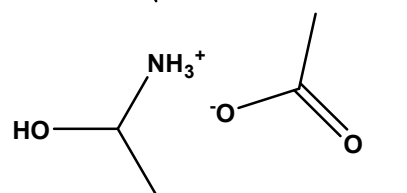
Diallylammonium acetate [DAAA]



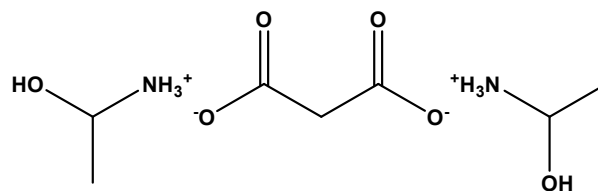
1-hydroxyethylammonium formate [HEAF]



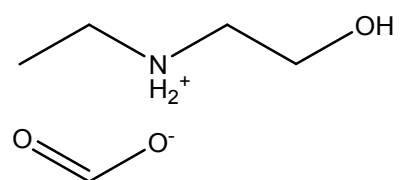
1-hydroxyethylammonium acetate [HEAA]



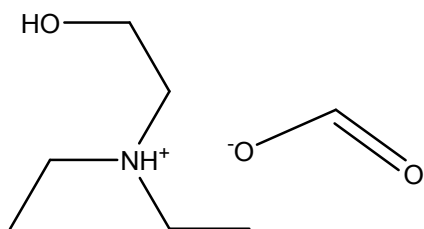
1-hydroxyethylammonium malonate [HEAMal]



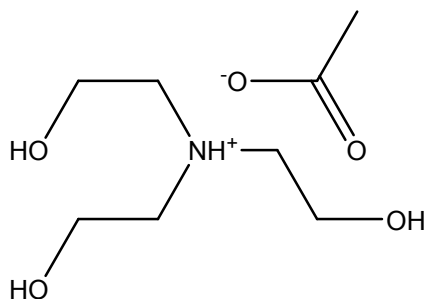
2-hydroxydiethylammonium formate [2-HDEAF]



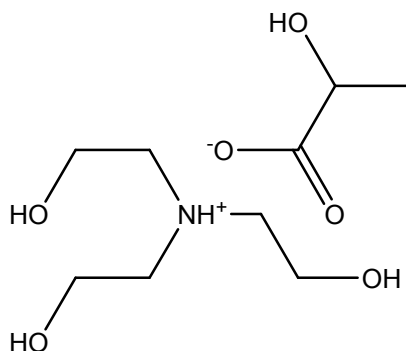
2-hydroxytriethylammonium
formate [2-HTEAF]



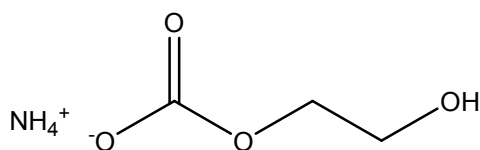
tri-(2-hydroxyethyl) ammonium [THEAA]
acetate



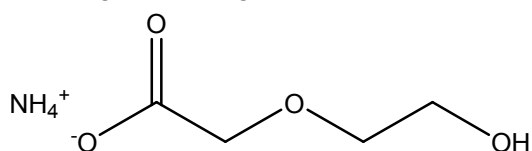
tri-(2-hydroxyethyl) ammonium [THEAL]
lactate



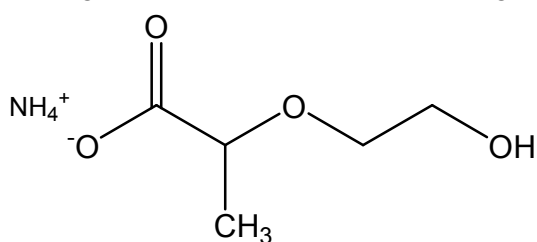
2-(2-hydroxyethoxy) ammonium [2,2-HEOAF]
formate



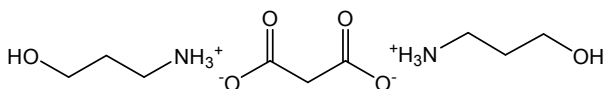
2-(2-hydroxyethoxy) ammonium [2,2-HEOAA]
acetate



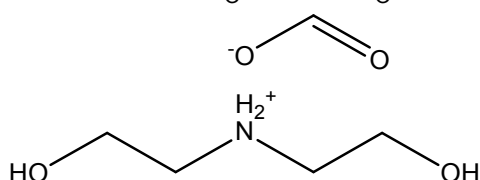
2-(2-hydroxyethoxy)ammonium [2,2-HEOAL]
lactate



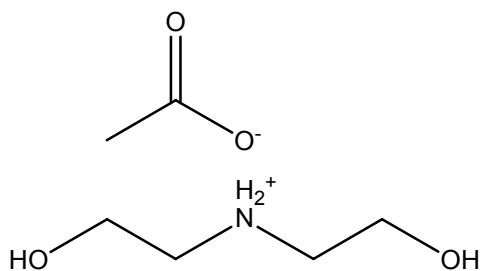
3-hydroxypropylammonium [3-HPAMal]
malonate



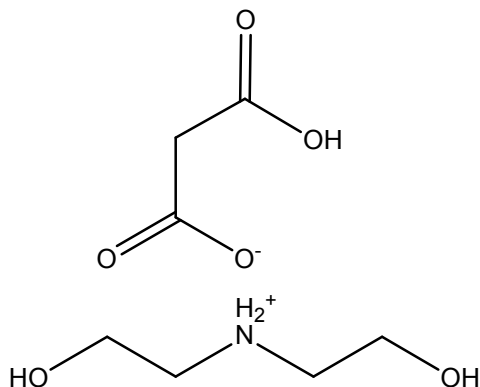
Bis(2-hydroxyethyl)ammonium [BHEAF]
formate



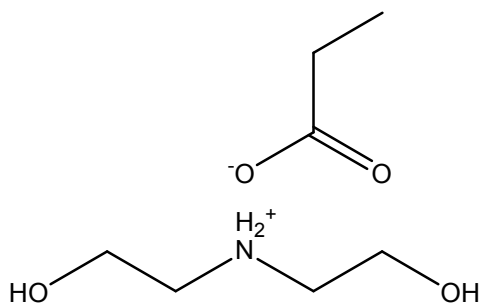
Bis(2-hydroxyethyl)ammonium acetate [2-BHEAA]



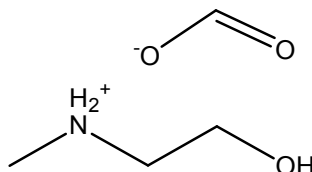
Bis(2-hydroxyethyl) ammonium malonate [DEAMal]



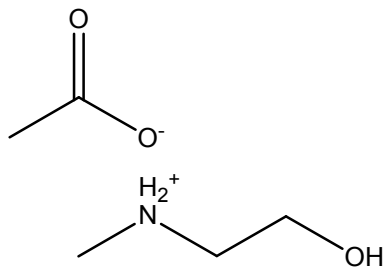
Bis(2-hydroxyethyl)ammonium propionate [2-BHEAP]



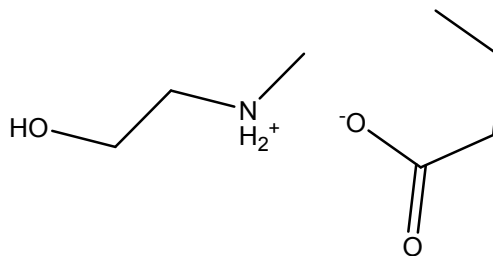
N-Methyl-2-hydroxyethyl ammonium formate [m-2-HEAF]



N-Methyl-2-hydroxyethylammonium acetate [m-2-HEAA]

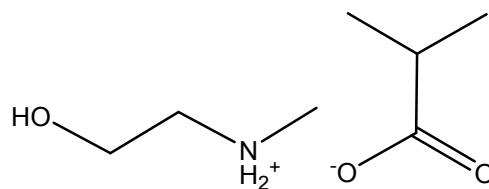


N-methyl-2-hydroxyethylammonium butyrate [m-2-HEAB]



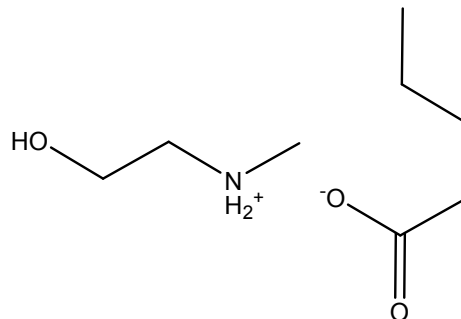
N-Methyl-2-hydroxyethylammonium isobutyrate

[m-2-HEAiB]



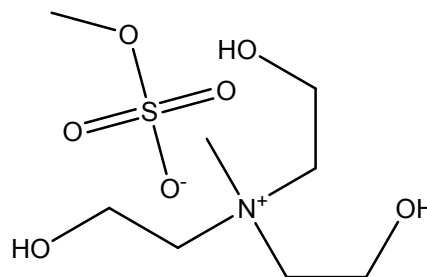
N-Methyl-2-hydroxyethylammonium pentanoate

[m-2-HEAP]



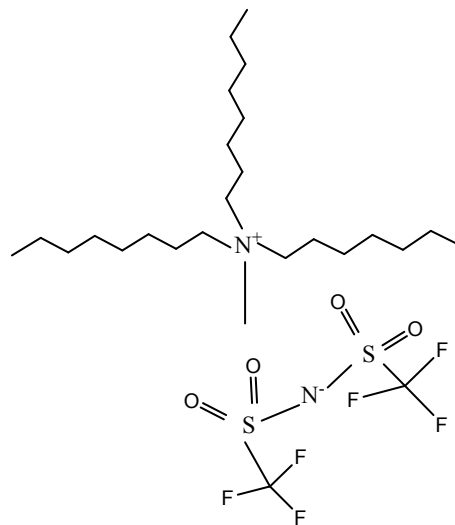
Tris(2-hydroxyethyl)methyl ammonium methylsulfate

[MTEOA][MeOSO₃]



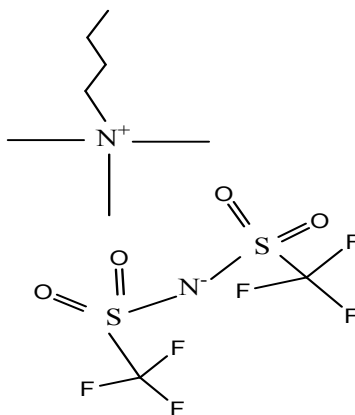
Methyltrioctylammonium bis(trifluoromethylsulfonyl) imide

[MOA]⁺[Tf₂N]⁻



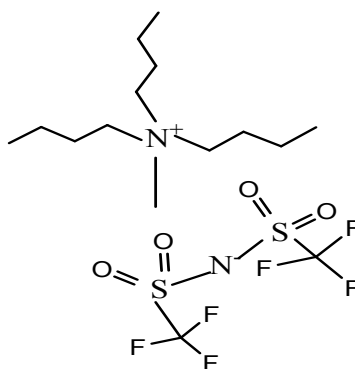
Trimethylbutylammonium
bis(trifluoromethylsulfonyl) imide

[N₁₁₁₄][Tf₂N]



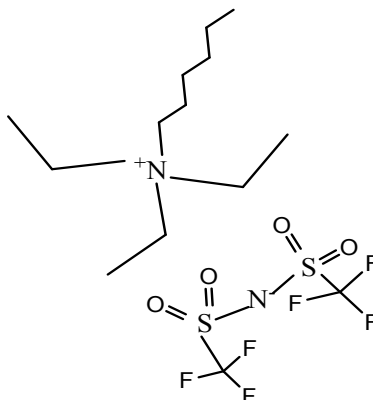
Tributylmethylammonium
bis(trifluoromethylsulfonyl) imide

[N₄₄₄₁][Tf₂N]



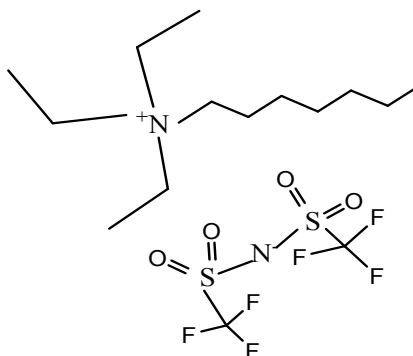
N-hexyl-triethylammonium
bis(trifluoromethylsulfonyl)imide

[N_{6,222}][Tf₂N]



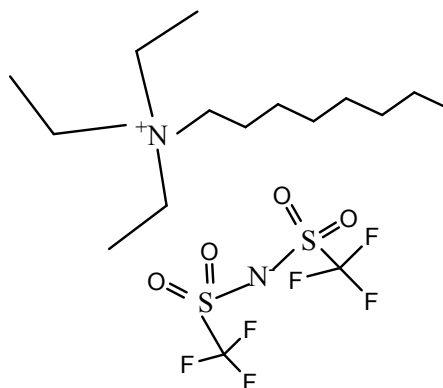
N-heptyl-triethylammonium
bis(trifluoromethylsulfonyl)imide

[N_{7,222}][Tf₂N]



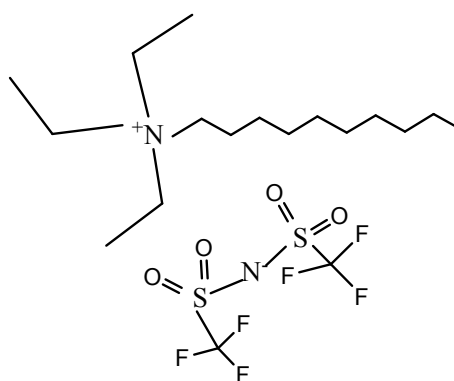
N-octyl-triethylammonium
bis(trifluoromethylsulfonyl)imide

[N_{8,222}][Tf₂N]



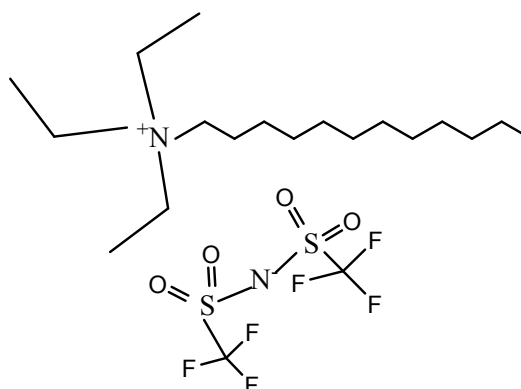
N-docyl-triethylammonium
bis(trifluoromethylsulfonyl)imide

[N_{10,222}][Tf₂N]



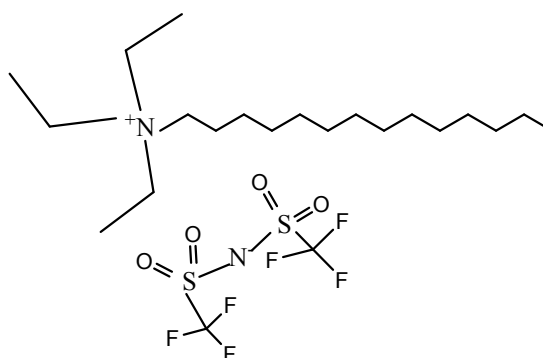
N-dodecyl-triethylammonium
bis(trifluoromethylsulfonyl)imide

[N_{12,222}][Tf₂N]

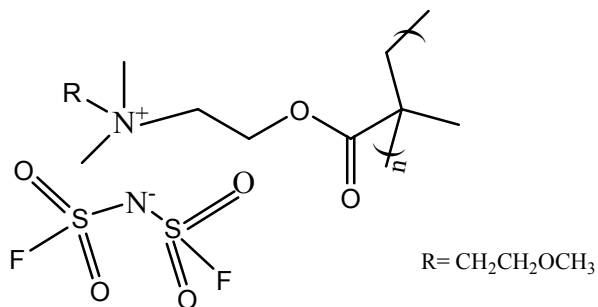


N-tetradecyl-triethylammonium
bis(trifluoromethylsulfonyl)imide

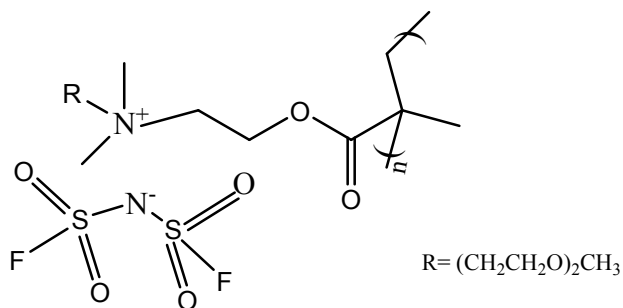
[N_{14,222}][Tf₂N]



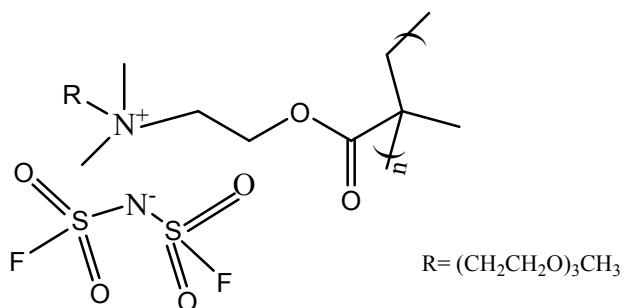
Poly(N,N-dimethyl-N-[2-(methacryloyloxy)ethyl]-N-(2-methoxyethyl)ammonium) bis(fluorosulfonyl)imide



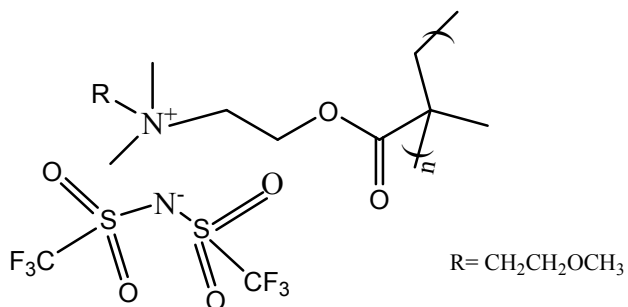
Poly(N,N-dimethyl-N-[2-(methacryloyloxy)ethyl]-N-(2-methoxy)ethylammonium) bis(fluorosulfonyl)imide



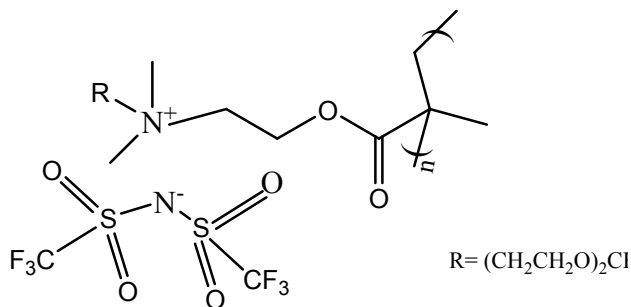
Poly(N,N-dimethyl-N-[2-(methacryloyloxy)ethyl]-N-[2-(2-methoxy)ethoxy]ethyl]ammonium) bis(fluorosulfonyl)imide



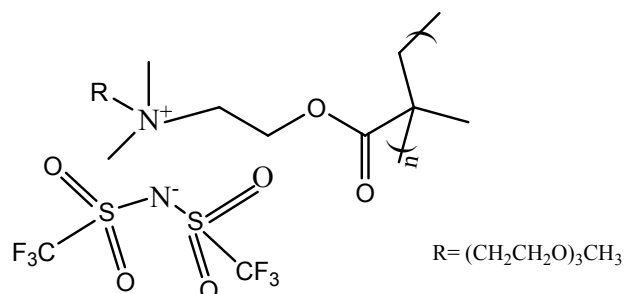
Poly(N,N-dimethyl-N-[2-(methacryloyloxy)ethyl]-N-(2-methoxyethyl)ammonium) bis(trifluorosulfonyl)imide



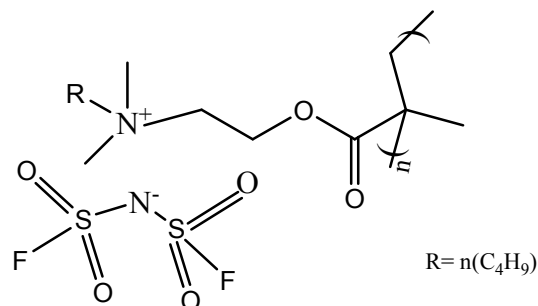
Poly(N,N-dimethyl-N-[2-(methacryloyloxy)ethyl]-N-[2-(2-methoxy)ethyl]ammonium) bis(trifluorosulfonyl)imide



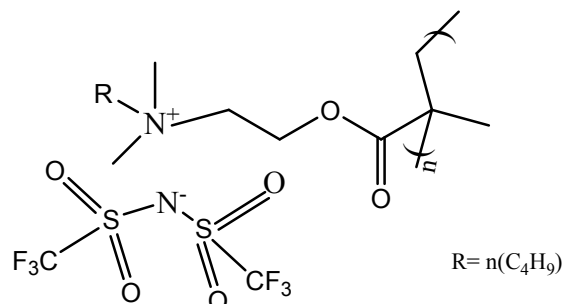
Poly(N,N-dimethyl-N-[2-(methacryloyloxy)ethyl]-N-[2-(2-methoxyethoxy)ethyl]ammonium) bis(trifluorosulfonyl)imide



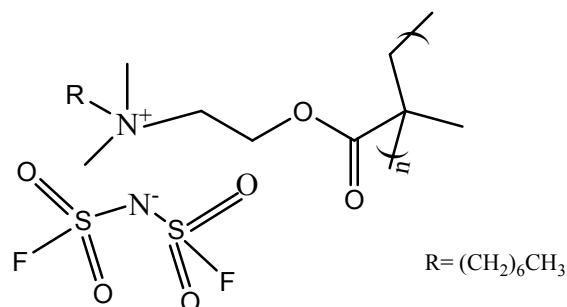
Poly(N-(n-butyl)-N,N-dimethyl-N-[2-(methacryloyloxy)ethyl]ammonium) bis(fluorosulfonyl)imide



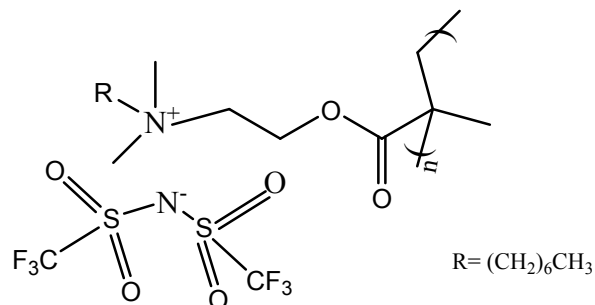
Poly(N-(n-butyl)-N,N-dimethyl-N-[2-(methacryloyloxy)ethyl]ammonium) bis(trifluoromethanesulfonyl)imide

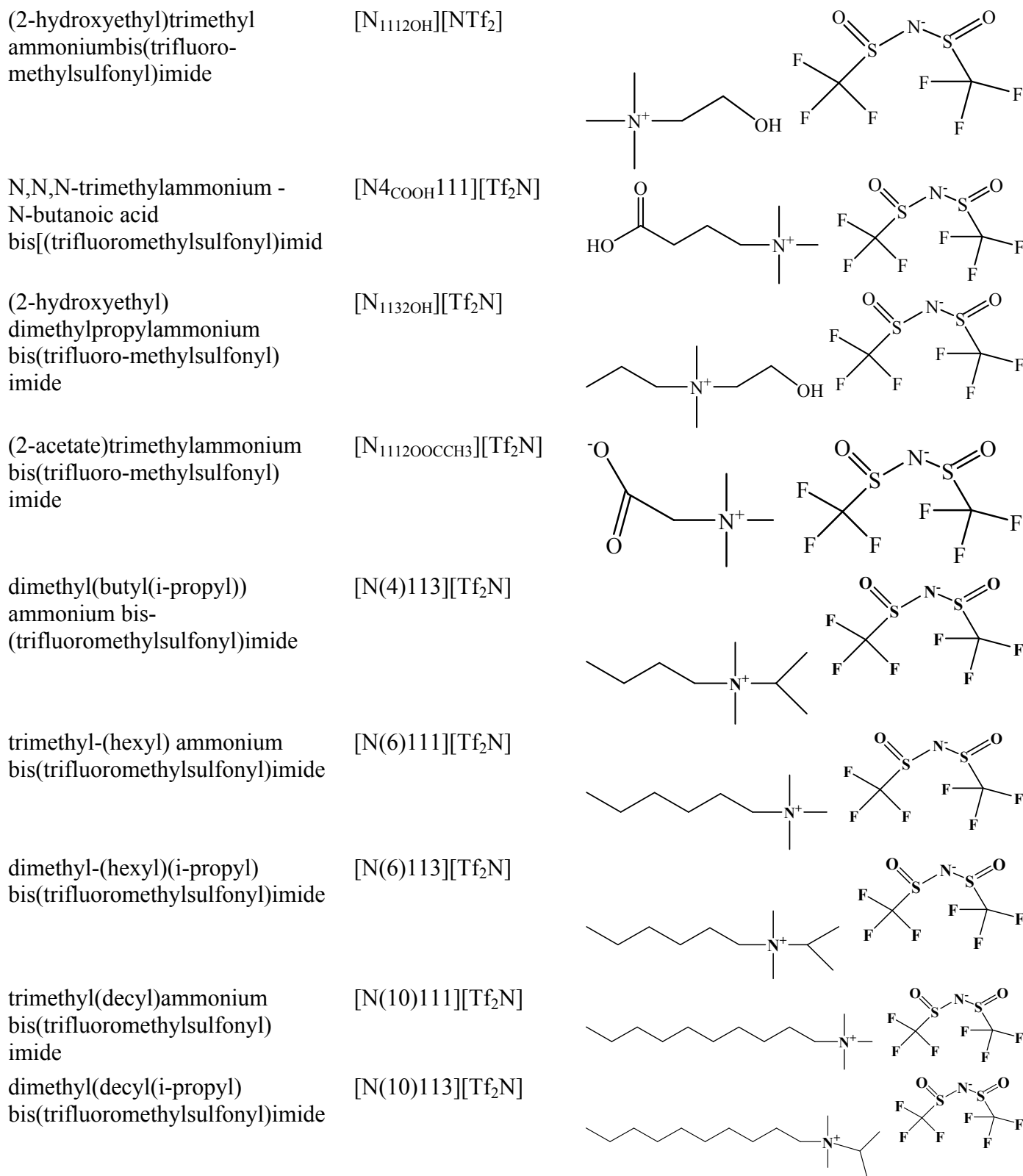


Poly(N,N-dimethyl-N-(n-butyl)-N-[2-(methacryloyloxy)ethyl]-N-(2-methoxyethyl)ammonium) bis(fluorosulfonyl)imide



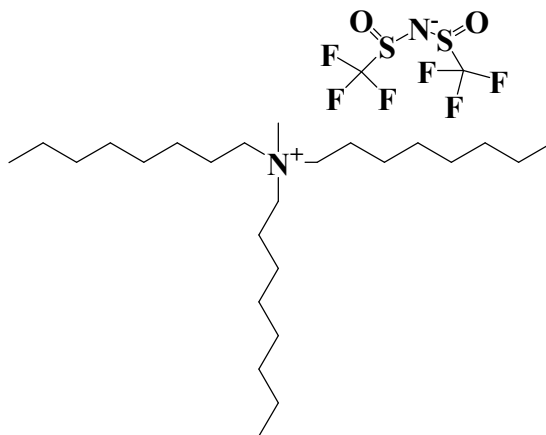
Poly(N,N-dimethyl-N-(n-heptyl)-N-[2-(methacryloyloxy)ethyl]-N-(2-methoxyethyl)ammonium) bis(trifluorosulfonyl)imide





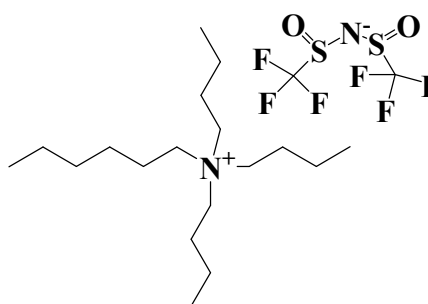
trioctyl(methyl)ammonium
bis(trifluoromethylsulfonyl) imide

[N(1)888][Tf₂N]



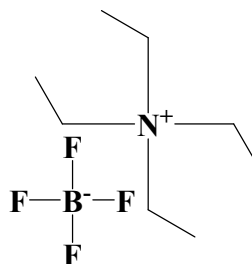
tributylhexylammonium
bis(trifluoromethylsulfonyl)imide

[N_{4,4,4,6}][NTf₂]



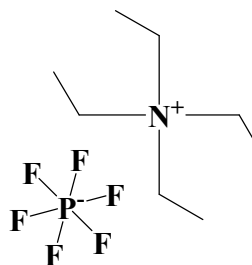
N,N,N,N-tetraethyl
ammoniumtetrafluoroborate

[N₂₂₂₂]BF₄



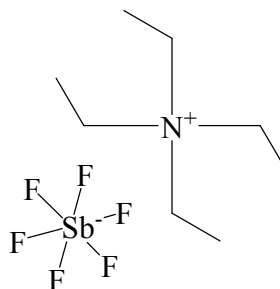
N,N,N,N-tetraethyl
ammoniumhexafluorophosphate

[N₂₂₂₂]PF₆

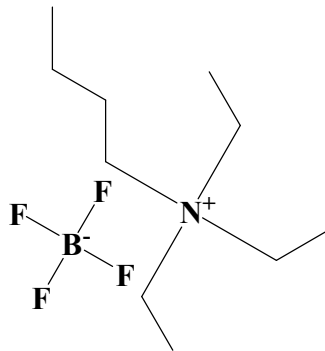
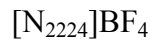


N,N,N,N-tetraethyl
ammoniumhexafluoroantimonate

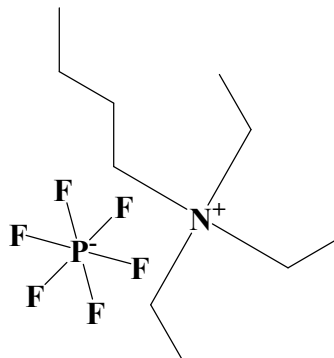
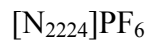
[N₂₂₂₂]SbF₆



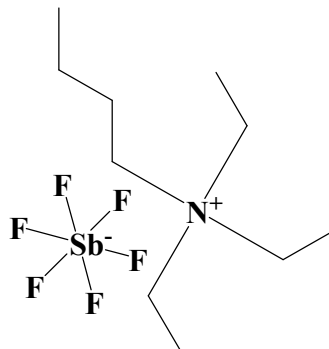
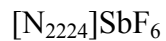
N,N,N-triethylbutyl
ammoniumtetrafluoroborate



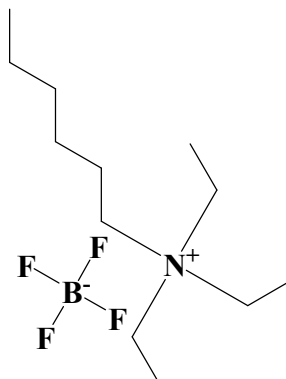
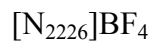
N,N,N-triethylbutyl
ammoniumhexafluorophosphate



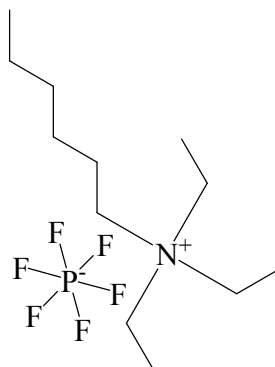
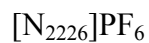
N,N,N-triethylbutyl
ammoniumhexafluoroantimonate



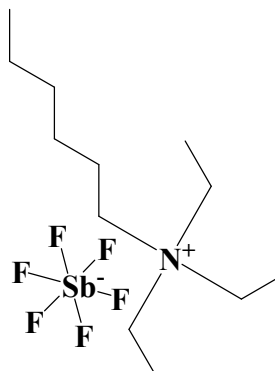
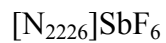
N,N,N-triethylhexyl
ammoniumtetrafluoroborate



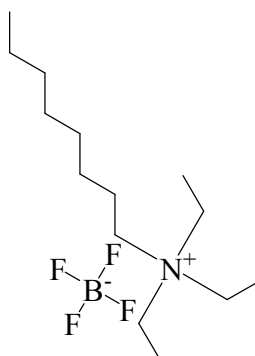
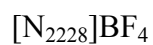
N,N,N-triethylhexyl
ammoniumhexafluorophosphate



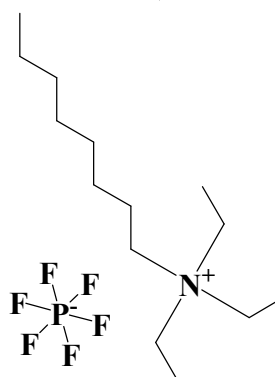
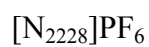
N,N,N-triethylhexyl
ammoniumhexafluoroantimonate



N,N,N-triethyloctyl
ammoniumtetrafluoroborate

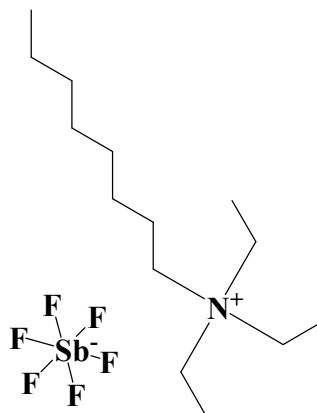


N,N,N-triethyloctyl
ammoniumhexafluorophosphate



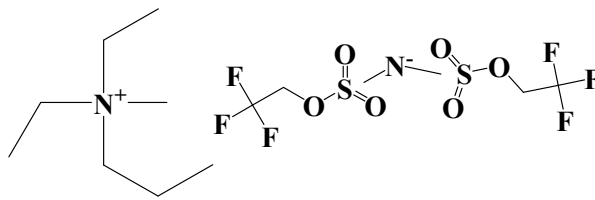
N,N,N-triethyloctyl ammoniumhexafluoroantimonate

[N₂₂₂₈][SbF₆]



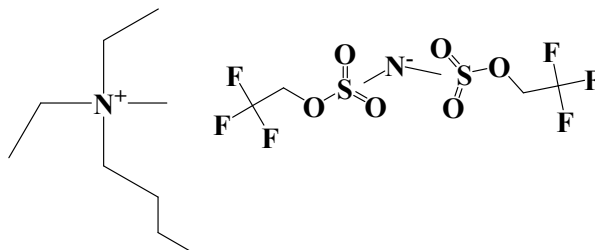
N,N-Diethyl-N-methyl-N-(n-propyl)ammonium bis(2,2,2-trifluoroethoxy sulfonyl)imide

(N₁₂₂₃[TFESI])



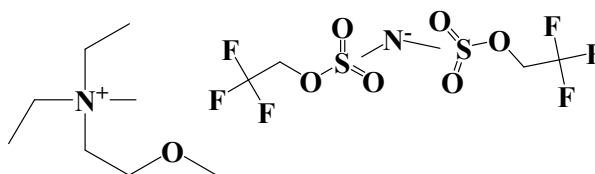
N-(n-Butyl)-N,N-diethyl-N-methylammonium bis(2,2,2-trifluoroethoxy sulfonyl)imide

(N₁₂₂₄[TFESI])

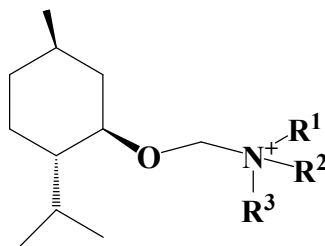


N,N-Diethyl-N-methyl-N-(2-methoxyethyl) ammonium bis(2,2,2-trifluoroethoxysulfonyl)imide

(N_{122.102}[TFESI])

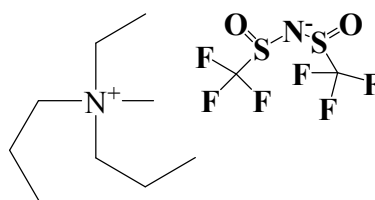


Trialkyl[(1R,2S,5R)-(-)-menthoxymethyl] ammonium bis(trifluoromethanesulfonyl)imides



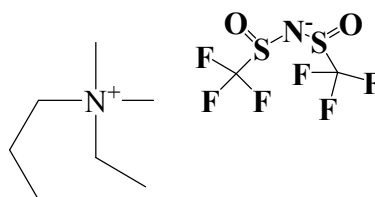
methylethyldipropyl ammonium bis(trifluorosulfonyl)imide

[N₁₂₃₃][TFESI]



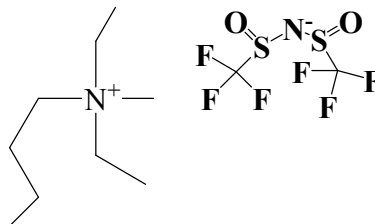
dimethylethylpropyl ammonium bis(trifluorosulfonyl)imide

[N₁₁₂₃][TFESI]



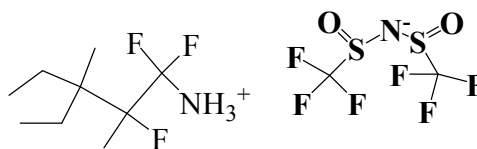
diethylmethylbutyl ammonium
bis(trifluorosulfonyl)imide

[N₁₂₂₄][TFSI]



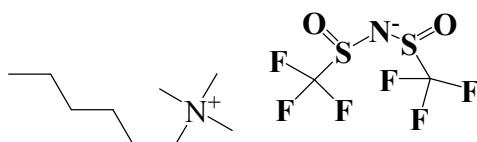
diethylmethyltrifluorobutyl
ammonium bis(trifluorosulfonyl)
imide

[N_{1224f}][TFSI]



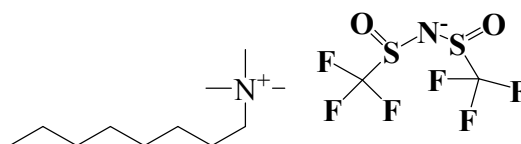
trimethylhexylammonium
bis(trifluorosulfonyl)imide

[N₁₁₁₆][TFSI]



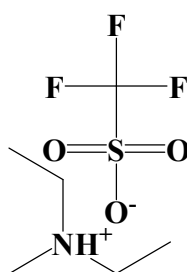
trimethyloctylammonium
bis(trifluorosulfonyl)imide

[N₁₁₁₈][TFSI]



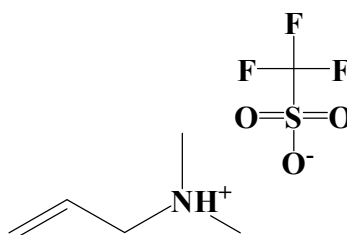
diethylmethyllummonium
trifluoromethanesulfonate

([N₁₂₂][TfO])



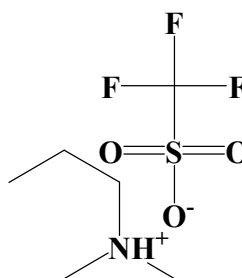
allyldimethylammonium
trifluoromethanesulfonate

([N_{11a}][TfO])



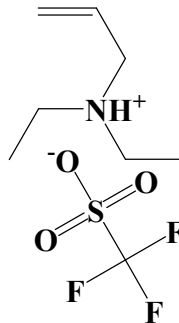
dimethylpropylammonium
trifluoromethanesulfonate

[N₁₁₃][TfO]



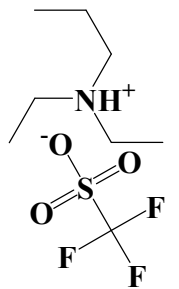
allyldiethylammonium
trifluoromethanesulfonate

[N22a][TfO]



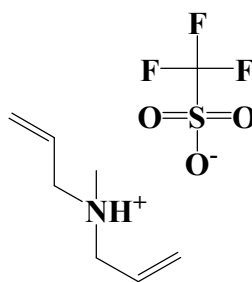
diethylpropylammonium
trifluoromethanesulfonate

[N223][TfO]



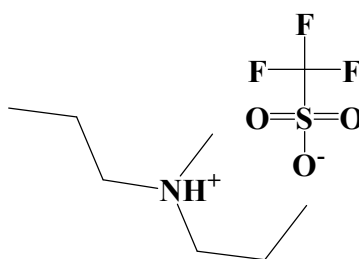
diallylmethylammonium
trifluoromethanesulfonate

[N1aa][TfO]



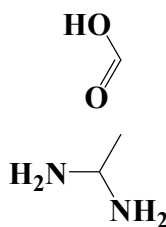
dipropylmethylammonium
trifluoromethanesulfonate

[N133][TfO]



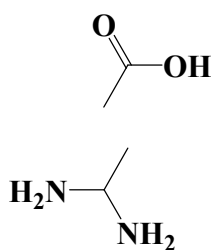
Ethanediamine formic acid

[EDA.HO₂CH]

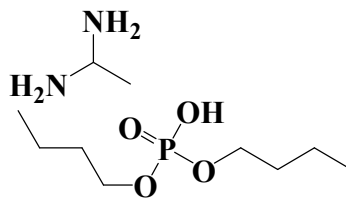


Ethanediamine acetic acid

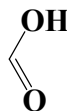
[EDA.AcOH]



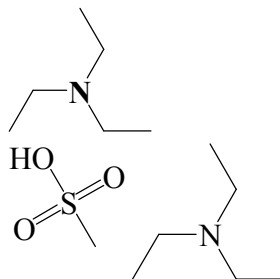
Ethanediamine di-n-butyl phosphate



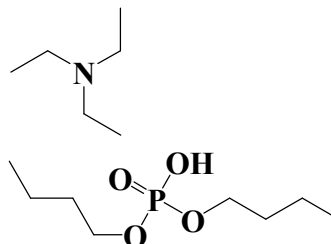
Triethylamine formic acid



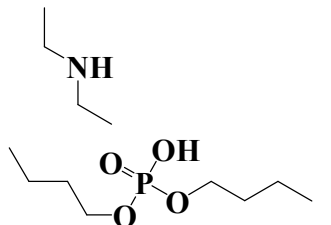
Triethylamine methylsulfonic acid



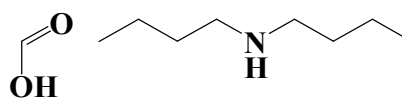
Triethylamine di-n-butyl phosphate



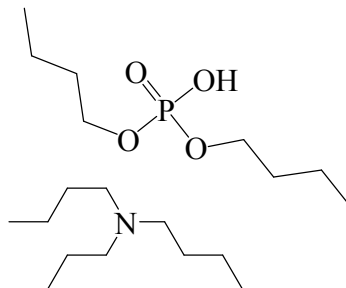
Diethylamine di-n-butyl phosphate



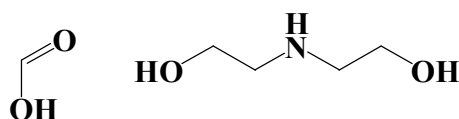
Di-n-Butylamine formic acid



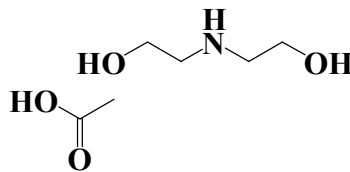
Tri-n-Butylamine di-n-butyl phosphate



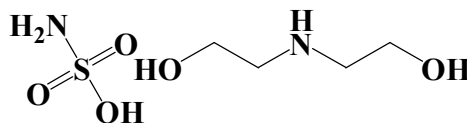
diethanolamine formic acid



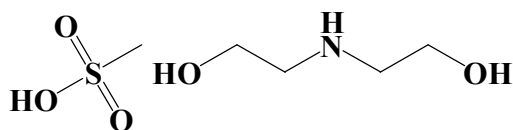
diethanolamine acetic acid $(\text{HOEt})_2\text{NH}\cdot\text{AcOH}$



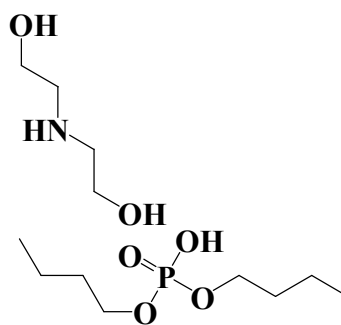
diethanolamine sulfamic acid $(\text{HOEt})_2\text{NH}\cdot\text{OSA}$



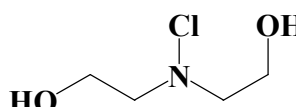
diethanolamine methylsulfonic acid $(\text{HOEt})_2\text{NH}\cdot\text{MsOH}$



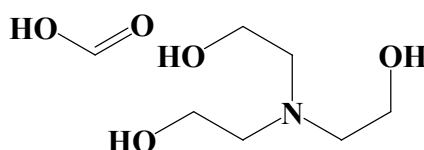
diethanolamine di-n-butyl phosphate $(\text{HOEt})_2\text{NH}\cdot(\text{BuO})_2\text{P O}_2\text{H}$



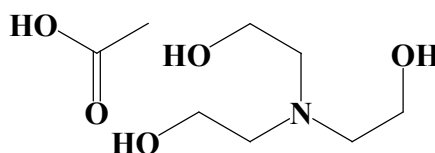
diethanolamine Chlorid $[\text{DEA}][\text{Cl}]$



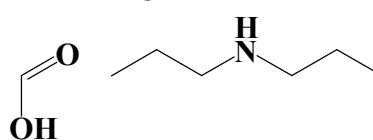
triethanolamine formate $[\text{TEtA}][\text{Of}]$



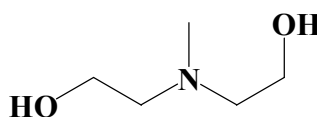
triethanolamine acetate $[\text{TEtA}][\text{A}]$



di-n-propylamine formate $[\text{DPA}][\text{Of}]$

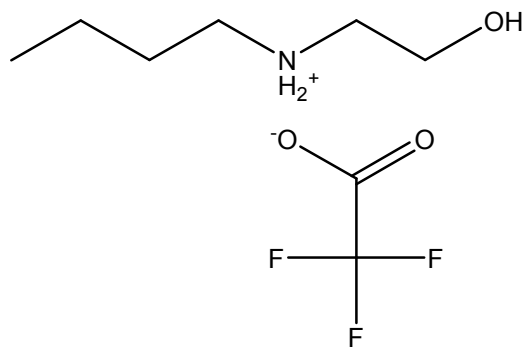


Methyldiethanolamine $[\text{MDEA}]$



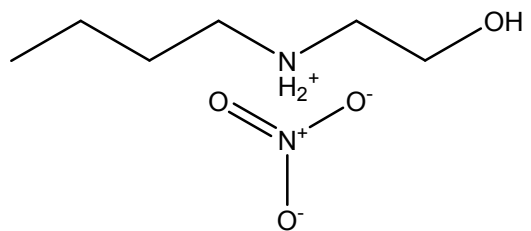
N-butyl-(N-hydroxyethyl) ammonium trifluoroacetate

[BHEA] [TFA]



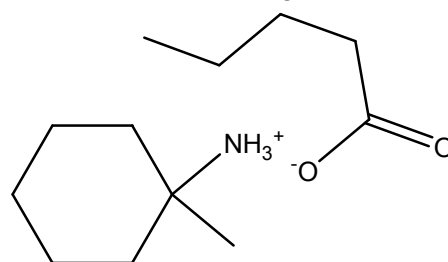
N-butyl-(N-hydroxyethyl) ammonium nitrate

[BHEA] [NO₃]



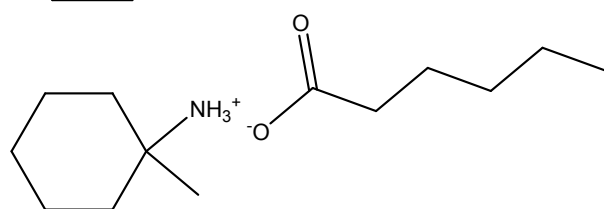
N-methylcyclohexyl ammonium pentanoate

[NMC][Pen]



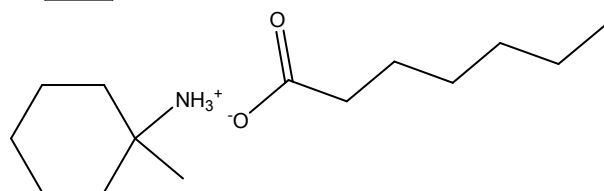
N-methylcyclohexyl ammonium hexanoate

[NMC][Hex]



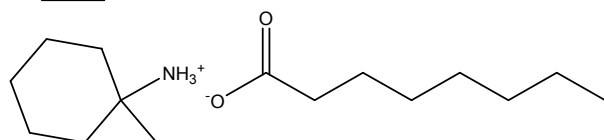
N-methylcyclohexyl ammonium heptanoate

[NMC][Hep]



N-methylcyclohexyl ammonium octanoate

[NMC][Oct]



N-ethyl-N,N-dimethyl ammoniumphenylacetate

[N_{112H}][C₇H₇CO₂]

