**Supplementary Table 2.** Name and Structure of Ionic Liquids Considered

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| No | Name | Formula | Structure | No | Name | Formula | Structure |
| 1 | 1-Butyl-3-methylimidazolium hexafluorophosphate | C8H15F6N2P | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABChHZ&full=1 | 72 | N-ethyl-2-hydroxy-N,N-dimethylethanaminium methanesulfonate | C7H19NO4S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AApAfO&full=1 |
| 2 | 1-Ethyl-3-methylimidazolium ethyl sulfate | C8H16N2O4S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAtWKK&full=1 | 73 | 2-Hydroxy-N,N,N-trimethyl-ethanaminium 1-butanesulfonate | C9H23NO4S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAuVHn&full=1 |
| 3 | 1-Hexyl-3-methylimidazolium bis[(trifluoromethyl)  sulfonyl]imide | C12H19F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABiCxP&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABiCxP&full=1 | 74 | N,N,N-trimethyl-1-butanaminium 1-butanesulfonate | C11H27NO3S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAwmwM&full=1 |
| 4 | Trihexyl(tetradecyl)phosphonium tris(pentafluoroethyl) trifluorophosphate | C38H68F18P2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ADWgMY&full=1 | 75 | 1-Ethyl-3-methylimidazolium tetracyanoborate | C10H11BN6 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AArYif&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AArYif&full=1 |

**Supplementary Table 2.** Continued

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 5 | 1-Butyl-3-methylimidazolium tetrafluoroborate | C8H15BF4N2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AArYqx&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AArYqx&full=1 | 76 | 1H-imidazolium, 1-ethyl-3-methyl-, salt with trifluoroacetic acid (1:1) | C8H11F3N2O2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AArFFz&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AArFFz&full=1 |
| 6 | 1-Hexyl-3-methylimidazolium tetrafluoroborate | C10H19BF4N2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAwsOa&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAwsOa&full=1 | 77 | 1-(2-Hydroxyethyl)-3-methyl-1H-imidazolium 2,2,2-trifluoroacetate | C8H11F3N2O3 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAuJbB&full=1 |
| 7 | 1-Methyl-3-octylimidazolium tetrafluoroborate | C12H23BF4N2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABCNMJ&full=1 | 78 | 1-Ethyl-3-methylimidazolium hydrogen sulfate | C6H12N2O4S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAoCuc&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAoCuc&full=1 |
| 8 | 1-Ethyl-3-methylimidazolium tetrafluoroborate | C6H11BF4N2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAmDHa&full=1 | 79 | 1-Ethyl-3-methylimidazolium methylsulfate | C7H14N2O4S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAqmIf&full=1 |
| 9 | 1-Butyl-3-methylimidazolium iodide | C8H15IN2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAzJIS&full=1http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAzJIS&full=1 | 80 | 1-Ethyl-3-methylimidazolium methanesulfonate | C7H14N2O3S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAniyX&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAniyX&full=1 |

**Supplementary Table 2.** Continued

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 10 | 2-Hydroxy-N-methylethanaminium propionate | C6H15NO3 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAcjwx&full=1 | 81 | Tributylethylphosphonium diethylphosphate | C18H42O4P2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABVwfE&full=1 |
| 11 | Trihexyl(tetradecyl)phosphonium bis[(trifluoromethyl)sulfonyl]imide | C34H68F6NO4PS2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACqwev&full=1 | 82 | 1-Methyl-3-octylimidazolium L-asparaginate | C16H30N4O3 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABKoeG&full=1 |
| 12 | 2-Hydroxy-N-methylethanaminium pentanoate | C8H19NO3 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAiErr&full=1 | 83 | 1-Methyl-3-octylimidazolium L-alaninate | C15H29N3O2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABCaXt&full=1 |
| 13 | N-methyl-2-hydroxyethylammonium butanoate | C7H17NO3 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAfUmv&full=1 | 84 | 1-Methyl-3-octyl-1H-imidazol-3-ium L-prolinate | C17H31N3O2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABHatB&full=1 |
| 14 | 1-Methyl-3-propylimidazolium bromide | C7H13BrN2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAnWLz&full=1 | 85 | N-Ethyl-N,N-dimethyl-N-butylammonium ethyl sulfate | C10H25NO4S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAxFKI&full=1 |
| 15 | 1-Butyl-3-methylimidazolium dicyanamide | C10H15N5 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAnYiE&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAnYiE&full=1 | 86 | 1-Ethyl-3-methylimidazolium tosylate | C13H18N2O3S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABCPgg&full=1 |

**Supplementary Table 2.** Continued

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 16 | 1-Ethyl-3-methylimidazolium bis[(trifluoromethyl)sulfonyl]imide | C8H11F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABXNBv&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABXNBv&full=1 | 87 | 1,3-Dimethylimidazolium methylsulfate | C6H12N2O4S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAoCik&full=1 |
| 17 | 1-Butyl-1-methylpyrrolidinium bis[(trifluoromethyl)sulfonyl]imide | C11H20F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABdMdV&full=1 | 88 | Tetrapropylammonium bromide | C12H28BrN | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAzKFM&full=1 |
| 18 | Tetradecyl(trihexyl)phosphonium dicyanamide | C34H68N3P | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACBmLn&full=1 | 89 | 1-Ethylpyridinium hexafluorophosphate | C7H10F6NP | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAwjJD&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAwjJD&full=1 |
| 19 | 3-Methyl-1-propyl-1H-imidazolium (S)-2-amino-4-carboxybutanoate | C12H21N3O4 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABAJBs&full=1 | 90 | 1-Butyl-3-methylimidazolium tosylate | C15H22N2O3S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABHkic&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABHkic&full=1 |
| 20 | 1-Hexyl-3-methylimidazolium hexafluorophosphate | C10H19F6N2P | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABICDn&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABICDn&full=1 | 91 | 3-Cyano-1-octylpyridinium 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide | C16H21F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABriKE&full=1 |

**Supplementary Table 2.** Continued

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 21 | Tributylmethylphosphonium methylsulphate | C14H33O4PS | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABLIPK&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABLIPK&full=1 | 92 | 1-Hexyl-4-cyanopyridinium bis(trifluoromethylsulfonyl)imide | C14H17F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABmOyo&full=1 |
| 22 | 1-Tetradecyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide | C20H35F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACDgGO&full=1 | 93 | 1-Butyl-3-cyanopyridinium bis(trifluoromethylsulfonyl)imide | C12H13F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABgtFr&full=1 |
| 23 | N-(2-hydroxyethyl)-N,N-dimethylpropanaminium bromide | C7H18BrNO | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAopyu&full=1 | 94 | 3-Cyano-1-hexylpyridinium 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide | C14H17F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABmOhR&full=1 |
| 24 | Butyltrimethylammonium bis(trifluoromethylsulfonyl)imide | C9H18F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABYLKg&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABYLKg&full=1 | 95 | 1-Methylpyridinium methylsulfate | C7H11NO4S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAnYdG&full=1 |
| 25 | 1-Butyl-3-methylimidazolium octyl sulfate | C16H32N2O4S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABPBfp&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABPBfp&full=1 | 96 | 1,2-Diethylpyridinium ethylsulfate | C11H19NO4S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAyNcU&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAyNcU&full=1 |

**Supplementary Table 2.** Continued

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 26 | 1-Butylpyridinium tetrafluoroborate | C9H14BF4N | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAqunO&full=1 | 97 | 1-Butyl-1-methylpyrrolidinium trifluoromethanesulfonate | C10H20F3NO3S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABEBcN&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABEBcN&full=1 |
| 27 | 1-Butyl-3-methylpyridinium 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide | C12H16F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABenYW&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABenYW&full=1 | 98 | 3-(Ethoxycarbonyl)-1-ethylpyridinium ethylsulfate | C12H19NO6S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABGluo&full=1 |
| 28 | 1-Methyl-3-propylimidazolium bis[(trifluoromethyl)sulfonyl]imide | C9H13F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABZxrC&full=1 | 99 | 1-Ethyl-3-methylpyridinium ethylsulfate | C10H17NO4S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAvdxy&full=1 |
| 29 | 1-Butyl-3-methylimidazolium bis[(trifluoromethyl)sulfonyl]imide | C10H15F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABchye&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABchye&full=1 | 100 | 1-Methyl-3-octylimidazolium bromide | C12H23BrN2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABAwBN&full=1http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABAwBN&full=1 |

**Supplementary Table 2.** Continued

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 30 | 1-Hexyl-3-methylimidazolium trifluoromethanesulfonate | C11H19F3N2O3S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABIrZt&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABIrZt&full=1 | 101 | 17-Hydroxy-N-(17-hydroxy-3,6,9,12,15-pentaoxaheptadec-1-yl)-N-methyl-N-tetradecyl-3,6,9,12,15-pentaoxaheptadecan-1-aminium methyl sulfate | C40H85NO16S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ADKxVv&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ADKxVv&full=1 |
| 31 | 1-Methyl-1-propylpyrrolidinium bis[(trifluoromethyl)sulfonyl]imide | C10H18F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABabTM&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABabTM&full=1 | 102 | Tetrabutylammonium docusate | C36H73NO7S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACXkLK&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACXkLK&full=1 |
| 32 | 1-Butyl-3-methylimidazolium trifluoromethanesulfonate | C9H15F3N2O3S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABDWqB&full=1 | 103 | 1-Methyl-3-(3,3,4,4,5,5,6,6,6-nonafluorohexyl)-1H-imidazolium 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide | C12H12F15N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACNdpC&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACNdpC&full=1 |

**Supplementary Table 2.** Continued

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 33 | 1-Pentylpyridinium hexafluorophosphate | C10H16F6NP | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABEoOZ&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABEoOZ&full=1 | 104 | 1-Hexyl-2,3-dimethylimidazolium bis[(trifluoromethyl)sulfonyl]imide | C13H21F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABkmMl&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABkmMl&full=1 |
| 34 | 1-Propylpyridinium tetrafluoroborate | C8H12BF4N | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAoJEg&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAoJEg&full=1 | 105 | 3-Hexyl-1-methyl-1H-imidazolium bromide | C10H19BrN2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAvbTu&full=1 |
| 35 | 1-Ethyl-2-methylpyridinium bis((trifluoromethyl)sulfonyl)amide | C10H12F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABZTkd&full=1 | 106 | 1-Butyl-3-methylimidazolium 2-(2-methoxyethoxy)ethyl sulfate | C13H26N2O6S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABNEmG&full=1 |
| 36 | 2-Methyl-1-propylpyridinium bis((trifluoromethyl)sulfonyl)imide | C11H14F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABcDaE&full=1 | 107 | 1-Octyl-3-methylpydridinium bis(trifluoromethylsulfonyl)imide | C16H24F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABpcdc&full=1 |
| 37 | 1-Butyl-3-methyl-1H-imidazolium tetrachloroferrate(III) | C8H15Cl4FeN2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABMovL&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABMovL&full=1 | 108 | 1-Hexyl-3-methyl-4-(dimethylamino)pyridinium 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide | C16H25F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABsXQM&full=1 |

**Supplementary Table 2.** Continued

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 38 | 1-Methyl-1-propylpiperidinium bis(trifluoromethylsulfonyl)imide | C11H20F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABdMnp&full=1 | 109 | 1-Hexyl-4-(4-methyl-1-piperidinyl)pyridinium 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide | C19H29F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACAHrr&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACAHrr&full=1 |
| 39 | 1-Octyl-3-methylimidazolium trifluoromethanesulfonate | C13H23F3N2O3S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABOLjQ&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABOLjQ&full=1 | 110 | 1-Butyl-3-methylpyridinium tetrafluoroborate | C10H16BF4N | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAteYD&full=1 |
| 40 | 1-Ethyl-3-methylimidazolium trifluoromethanesulfonate | C7H11F3N2O3S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAyCXJ&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAyCXJ&full=1 | 111 | 1-Butyl-nicotinic acid butyl ester bis[(trifluoromethyl)sulfonyl]imide | C16H22F6N2O6S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABvQdL&full=1 |
| 41 | 4-(Dimethylamino)-1-hexyl-pyridinium 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide | C15H23F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABpmFB&full=1 | 112 | 1-Hexylpyridinium bis(trifluromethylsulfonyl)imide | C13H18F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABhYRm&full=1 |

**Supplementary Table 2.** Continued

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 42 | n-butyl-4-(n',n'-dimethylammonium)pyridinium bis(trifluoromethylsulfonyl)imid | C13H19F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABkSMu&full=1 | 113 | 1-Hexyl-3-methylpyridinium bromide | C12H20BrN | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAxhYN&full=1 |
| 43 | n-ethyl-4-(n',n'-dimethylammonium)pyridinium bis(trifluoromethylsulfonyl)imide | C11H15F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABexXo&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABexXo&full=1 | 114 | 1-Hexyl-3-methylpyridinium 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide | C14H20F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABkIPt&full=1 |
| 44 | 1-Ethylpyridinium bis[(trifluoromethyl)sulfonyl]imide | C9H10F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABWjNu&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABWjNu&full=1 | 115 | 1-Hexyl-3,5-dimethylpyridinium bis(trifluoromethylsulfonyl)imide | C15H22F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABmsuB&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABmsuB&full=1 |
| 45 | 1-Butylpyridinium bis[(trifluoromethyl)sulfonyl]imide | C11H14F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABcDRa&full=1 | 116 | 3,5-Diethyl-1-hexyl-2-propylpyridinium 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide | C20H32F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACARFQ&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACARFQ&full=1 |

**Supplementary Table 2.** Continued

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 46 | 1-butyl-3-methylimidazolium acetate | C10H18N2O2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAmGTe&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAmGTe&full=1 | 117 | 1-butyl-2,3-dimethylimidazolium tetrafluoroborate | C9H17BF4N2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAuIfS&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAuIfS&full=1 |
| 47 | 1-Butyl-4-methylpyridinium bis((trifluoromethyl)sulfonyl)amide | C12H16F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABenLU&full=1 | 118 | 1-Ethyl-2,3-dimethylimidazolium bis[(trifluoromethyl)sulfonyl]imide | C9H13F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABZxPs&full=1 |
| 48 | 1-Ethyl-3-methyl-1H-imidazolium 1,1,2,2-tetrafluoroethane-1-sulfonate | C8H12F4N2O3S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABEKjM&full=1 | 119 | 1-Butyl-2,3-dimethylimidazolium hexafluorophosphate | C9H17F6N2P | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABFSXc&full=1 |
| 49 | 1-Ethyl-3-methylimidazolium dicyanamide | C8H11N5 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAiEKW&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAiEKW&full=1 | 120 | 1-Butyl-3-methylpyridinium tetracyanoborate | C14H16BN5 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAyzej&full=1 |
| 50 | 1-Ethyl-3-methylimidazolium thiocyanate | C7H11N3S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAgczr&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAgczr&full=1 | 121 | 1-Butyl-1-methylpyrrolidinium tetracyanoborate | C13H20BN5 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAxXZq&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAxXZq&full=1 |

**Supplementary Table 2.** Continued

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| 51 | 1-Butyl-3-methylimidazolium thiocyanate | C9H15N3S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAlxAe&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAlxAe&full=1 | 122 | 1-Butyl-3-methylpyridinium tricyanomethanide | C14H16N4 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAuLhT&full=1 |
| 52 | 1-Ethyl-3-methyl-1H-imidazolium tricyanomethanide | C10H11N5 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAmkuv&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAmkuv&full=1 | 123 | N-butyl-3-methylpyridinium dicyanamide | C12H16N4 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AApeZY&full=1 |
| 53 | 1-Ethyl-4-methylpyridinium bis((trifluoromethyl)sulfonyl)amide | C10H12F6N2O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABZTMe&full=1 | 124 | 3-(2-Hydroxyethyl)-1-methyl-1H-imidazol-3-ium dicyanoazanide | C8H11N5O | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAlIWQ&full=1 |
| 54 | N-(2-hydroxyethyl)-N,N-dimethylbutanaminium bromide | C8H20BrNO | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AArZiD&full=1 | 125 | 1-Butyl-3-methylimidazolium tricyanomethane | C12H15N5 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAsEjC&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAsEjC&full=1 |
| 55 | 1-n-butyl-3-methylimidazolium bromide | C8H15BrN2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAqHPn&full=1 | 126 | 1-Ethyl-3-methylimidazolium acetate | C8H14N2O2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAgmAE&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAgmAE&full=1 |

**Supplementary Table 2.** Continued

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| 56 | 1-Octyl-3-methylimidazolium bis[(trifluoromethyl)sulfonyl]imide | C14H23F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABnWeX&full=1 | 127 | 1-Ethyl-3-methylimidazolium dimethylphosphate | C8H17N2O4P | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAtWWe&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAtWWe&full=1 |
| 57 | Pyrrolidinium nitrate | C4H10N2O3 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAZpdP&full=1 | 128 | 1-Ethyl-3-methylimidazolium methyl phosphonate | C7H15N2O3P | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAnhJF&full=1 |
| 58 | N-ethyl-N-(2-hydroxyethyl)-N,N-dimethylammonium ethyl sulfate | C8H21NO5S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAupgS&full=1 | 129 | 1-Pentyl-3-methylimidazolium bis(trifluoromethylsulfonyl)amide | C11H17F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABfROm&full=1 |
| 59 | Trihexyltetradecylphosphonium bis(2,4,4-trimethylpentyl)phosphinate | C48H102O2P2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACsktY&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACsktY&full=1 | 130 | 1-Heptyl-3-methylimidazolium bis(trifluoromethylsulfonyl)amide | C13H21F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABkmHV&full=1 |
| 60 | 1-Butyl-1-methylpyrrolidinium tris(pentafluoroethyl)trifluorophosphate | C15H20F18NP | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACIwxD&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ACIwxD&full=1 | 131 | 1-Dodecyl-3-methyl-1H-imidazolium bis(trifluoromethylsulfonyl)amide | C18H31F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AByLWb&full=1 |

**Supplementary Table 2.** Continued

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| 61 | 1,2-Dimethyl-3-propylimidazolium bis[(trifluoromethyl)sulfonyl]imide | C10H15F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABchmk&full=1 | 132 | 1-Decyl-3-methylimidazolium bis(trifluoromethylsulfonyl)amide | C16H27F6N3O4S2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABsrnp&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABsrnp&full=1 |
| 62 | N-(2-hydroxyethyl)-N,N-dimethylhexan-1-aminium bromide | C10H24BrNO | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAwuAG&full=1 | 133 | 1-Hexyl-3-methylimidazolium chloride | C10H19ClN2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAmzru&full=1 |
| 63 | 1-Butyl-3-methylimidazolium chloride | C8H15ClN2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAhewM&full=1 | 134 | 1-Methyl-3-octylimidazolium chloride | C12H23ClN2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAsTgE&full=1 |
| 64 | 1-Ethyl-3-methylimidazolium bromide | C6H11BrN2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAkmSF&full=1 | 135 | 1,3-Dimethylimidazolium bromide | C5H9BrN2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAiCGe&full=1 |
| 65 | 1-Ethyl-3-methylimidazolium 2-(2-methoxyethoxy) ethylsulfate | C11H22N2O6S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABHjbe&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABHjbe&full=1 | 136 | 4,6-Dimethyl-N-phenylpyrimidin-2-amine dodecanoate | C24H37N3O2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABYrKI&full=1 |

**Supplementary Table 2.** Continued

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| 66 | 1-Butyl-3-methylimidazolium methylsulfate | C9H18N2O4S | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAwHMa&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAwHMa&full=1 | 137 | 1-Ethyl-3-methylimidazolium diethylphosphate | C10H21N2O4P | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=AAyqCh&full=1 |
| 67 | Tetrabutylphosphonium L-lysinate | C22H49N2O2P | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABZqNF&full=1 | 138 | N,N-dibutyl-N-methylbutanaminium L-serinate | C16H36N2O3 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABGczY&full=1 |
| 68 | Tetrabutylphosphonium L-threoninate | C20H44NO3P | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABUfhr&full=1 | 139 | N,N-dibutyl-N-methyl-1-butanaminium L-lysinate | C19H43N3O2 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABOXXw&full=1 |
| 69 | Tetrabutylphosphonium L-prolinate | C21H44NO2P | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABTrcK&full=1  http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABTrcK&full=1 | 140 | N,N-dibutyl-N-methyl-1-butanaminium L-threoninate | C17H38N2O3 | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABJMAZ&full=1 |

**Supplementary Table 2.** Continued

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| 70 | N,N-dibutyl-N-methyl-1-butanaminium 2-aminoethanesulfonate | C15H36N2O3S | C:\Users\Ehsan\Desktop\ilimage.png | 141 | tetrabutylphosphonium L-serinate | C19H42NO3P | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABRvqF&full=1 |
| 71 | Tetrabutylphosphonium L-cysteinate | C19H42NO2PS | http://ilthermo.boulder.nist.gov/ILT2/ilimage?key=ABUzfd&full=1 |  |  |  |  |