## SUPPORTING INFORMATION

# Density and Speed of Sound of Binary Mixtures of Ionic Liquid 1-Ethyl-3-Methylimidazolium Tetrafluoroborate, *N,N*-Dimethylformamide, and *N,N*-Dimethylacetamide at Temperature Range of (293.15 to 343.15) K: Measurement and PC-SAFT Modeling

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**TABLE S1.** Densities $(\rho)$, Excess Molar Volumes($V_m^E$), Speeds of Sound $(u)$, Isentropic Compressibility $(k_s)$ and Isentropic Compressibility Deviation $(\Delta k_s)$ for Binary Mixtures [Emim][BF4] (1) + DMF (2) at $T$ = (293.15 to 343.15) K and ambient pressure (81.5 kPa).[a]

| | $\rho \cdot 10^{-3}$ | $V_m^E \cdot 10^6$ | $T$ | $u$ | $k_s$ | $\Delta k_s$ |
|---|---|---|---|---|---|---|
| $x_1$ | $kg \cdot m^{-3}$ | $m^3 \cdot mol^{-1}$ | K | $m \cdot s^{-1}$ | $TPa^{-1}$ | $TPa^{-1}$ |
| | | | 293.15 | | | |
| 0.0997 | 1.019179 | -0.767 | | 1524.5 | 422 | -41.6 |
| 0.2042 | 1.075445 | -1.059 | | 1552.3 | 386 | -57.6 |
| 0.2983 | 1.116819 | -1.163 | | 1571.7 | 362 | -62.7 |
| 0.4111 | 1.157474 | -1.157 | | 1589.3 | 342 | -61.3 |
| 0.5003 | 1.184763 | -1.066 | | 1600.9 | 329 | -56.7 |
| 0.585 | 1.206748 | -0.919 | | 1609.6 | 320 | -49.7 |
| 0.6965 | 1.231364 | -0.609 | | 1618.8 | 310 | -38.0 |
| 0.7833 | 1.247192 | -0.236 | | 1625.5 | 303 | -27.6 |
| 0.9134 | 1.267671 | 0.351 | | 1633.1 | 296 | -10.0 |
| | | | 298.15 | | | |
| 0.0997 | 1.014686 | -0.797 | | 1506.5 | 434 | -44.0 |
| 0.2042 | 1.071123 | -1.099 | | 1535.6 | 396 | -60.9 |
| 0.2983 | 1.112615 | -1.207 | | 1555.9 | 371 | -66.4 |
| 0.4111 | 1.153376 | -1.200 | | 1574.6 | 350 | -64.9 |
| 0.5003 | 1.180738 | -1.106 | | 1586.9 | 336 | -60.0 |
| 0.585 | 1.202773 | -0.954 | | 1596.1 | 326 | -52.6 |
| 0.6965 | 1.227438 | -0.636 | | 1605.9 | 316 | -40.3 |
| 0.7833 | 1.243296 | -0.254 | | 1612.9 | 309 | -29.2 |
| 0.9134 | 1.263822 | 0.347 | | 1620.9 | 301 | -10.7 |
| | | | 303.15 | | | |
| 0.0997 | 1.010193 | -0.826 | | 1488.6 | 447 | -46.6 |
| 0.2042 | 1.066805 | -1.139 | | 1519.0 | 406 | -64.6 |
| 0.2983 | 1.10842 | -1.251 | | 1540.4 | 380 | -70.3 |
| 0.4111 | 1.149294 | -1.243 | | 1560.1 | 358 | -68.7 |
| 0.5003 | 1.176724 | -1.146 | | 1573.0 | 343 | -63.5 |
| 0.585 | 1.198806 | -0.989 | | 1582.7 | 333 | -55.7 |
| 0.6965 | 1.223526 | -0.662 | | 1593.0 | 322 | -42.7 |
| 0.7833 | 1.239427 | -0.273 | | 1600.5 | 315 | -31.0 |
| 0.9134 | 1.259988 | 0.342 | | 1608.8 | 307 | -11.3 |
| | | | 308.15 | | | |
| 0.0997 | 1.0057 | -0.856 | | 1470.8 | 299 | -49.4 |
| 0.2042 | 1.062494 | -1.179 | | 1502.6 | 417 | -68.5 |
| 0.2983 | 1.104233 | -1.295 | | 1524.9 | 389 | -74.5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 0.4111 | 1.145227 | -1.287 | | 1545.6 | 366 | -72.8 |
| 0.5003 | 1.172722 | -1.185 | | 1559.2 | 351 | -67.3 |
| 0.585 | 1.194857 | -1.024 | | 1569.4 | 340 | -59.1 |
| 0.6965 | 1.219632 | -0.689 | | 1580.3 | 328 | -45.2 |
| 0.7833 | 1.235572 | -0.291 | | 1588.2 | 321 | -32.9 |
| 0.9134 | 1.25617 | 0.338 | | 1596.9 | 312 | -12.1 |
| | | | 313.15 | | | |
| 0.0997 | 1.001204 | -0.885 | | 1453.1 | 305 | -52.5 |
| 0.2042 | 1.058188 | -1.220 | | 1486.2 | 428 | -72.6 |
| 0.2983 | 1.100053 | -1.338 | | 1509.6 | 399 | -79.0 |
| 0.4111 | 1.141169 | -1.330 | | 1531.3 | 374 | -77.2 |
| 0.5003 | 1.168733 | -1.225 | | 1545.6 | 358 | -71.4 |
| 0.585 | 1.190922 | -1.059 | | 1556.3 | 347 | -62.6 |
| 0.6965 | 1.215752 | -0.716 | | 1567.7 | 335 | -47.9 |
| 0.7833 | 1.23173 | -0.310 | | 1576.0 | 327 | -34.9 |
| 0.9134 | 1.252368 | 0.334 | | 1585.0 | 318 | -12.8 |
| | | | 318.15 | | | |
| 0.0997 | 0.996709 | -0.914 | | 1435.6 | 310 | -55.7 |
| 0.2042 | 1.053889 | -1.260 | | 1470.0 | 439 | -77.1 |
| 0.2983 | 1.095882 | -1.382 | | 1494.4 | 409 | -83.8 |
| 0.4111 | 1.13712 | -1.373 | | 1517.1 | 382 | -81.9 |
| 0.5003 | 1.164758 | -1.265 | | 1532.0 | 366 | -75.7 |
| 0.585 | 1.187001 | -1.094 | | 1543.3 | 354 | -66.4 |
| 0.6965 | 1.211892 | -0.742 | | 1555.3 | 341 | -50.8 |
| 0.7833 | 1.22791 | -0.328 | | 1563.9 | 333 | -37.1 |
| 0.9134 | 1.248583 | 0.330 | | 1573.3 | 324 | -13.6 |
| | | | 323.15 | | | |
| 0.0997 | 0.992209 | -0.944 | | 1418.1 | 315 | -59.2 |
| 0.2042 | 1.049593 | -1.300 | | 1453.8 | 451 | -81.8 |
| 0.2983 | 1.091719 | -1.426 | | 1479.3 | 419 | -88.9 |
| 0.4111 | 1.133079 | -1.416 | | 1503.0 | 391 | -86.8 |
| 0.5003 | 1.160794 | -1.305 | | 1518.6 | 374 | -80.2 |
| 0.585 | 1.183096 | -1.129 | | 1530.4 | 361 | -70.4 |
| 0.6965 | 1.208049 | -0.769 | | 1542.9 | 348 | -53.9 |
| 0.7833 | 1.224107 | -0.347 | | 1551.9 | 339 | -39.3 |
| 0.9134 | 1.244815 | 0.326 | | 1561.7 | 329 | -14.5 |
| | | | 328.15 | | | |
| 0.0997 | 0.987708 | -0.973 | | 1400.7 | 321 | -62.9 |
| 0.2042 | 1.045306 | -1.340 | | 1437.8 | 463 | -86.9 |
| 0.2983 | 1.087565 | -1.470 | | 1464.2 | 429 | -94.4 |
| 0.4111 | 1.129051 | -1.460 | | 1489.0 | 400 | -92.1 |
| 0.5003 | 1.156845 | -1.345 | | 1505.2 | 382 | -85.1 |
| 0.585 | 1.179206 | -1.163 | | 1517.6 | 368 | -74.6 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 0.6965 | 1.20422 | -0.795 | | 1530.6 | 354 | -57.1 |
| 0.7833 | 1.220322 | -0.365 | | 1540.0 | 346 | -41.7 |
| 0.9134 | 1.24107 | 0.322 | | 1550.1 | 335 | -15.4 |
| | | | 333.15 | | | |
| 0.0997 | 0.983204 | -1.002 | | 1383.3 | 326 | -66.9 |
| 0.2042 | 1.041011 | -1.381 | | 1421.8 | 475 | -92.3 |
| 0.2983 | 1.083419 | -1.513 | | 1449.3 | 439 | -100.2 |
| 0.4111 | 1.125033 | -1.503 | | 1475.0 | 409 | -97.8 |
| 0.5003 | 1.152909 | -1.385 | | 1492.0 | 390 | -90.3 |
| 0.585 | 1.17533 | -1.198 | | 1504.8 | 376 | -79.2 |
| 0.6965 | 1.200408 | -0.822 | | 1518.4 | 361 | -60.6 |
| 0.7833 | 1.216551 | -0.383 | | 1528.2 | 352 | -44.3 |
| 0.9134 | 1.237341 | 0.318 | | 1538.7 | 341 | -16.4 |
| | | | 338.15 | | | |
| 0.0997 | 0.978699 | -1.032 | | 1366.1 | 332 | -71.2 |
| 0.2042 | 1.036728 | -1.421 | | 1405.9 | 488 | -98.1 |
| 0.2983 | 1.07928 | -1.557 | | 1434.5 | 450 | -106.5 |
| 0.4111 | 1.121029 | -1.546 | | 1461.2 | 418 | -103.8 |
| 0.5003 | 1.148986 | -1.425 | | 1478.9 | 398 | -95.8 |
| 0.585 | 1.171467 | -1.233 | | 1492.2 | 383 | -84.0 |
| 0.6965 | 1.196609 | -0.848 | | 1506.4 | 368 | -64.3 |
| 0.7833 | 1.2128 | -0.402 | | 1516.5 | 359 | -47.0 |
| 0.9134 | 1.233627 | 0.314 | | 1527.4 | 347 | -17.5 |
| | | | 343.15 | | | |
| 0.0997 | 0.974184 | -1.061 | | 1348.9 | 338 | -75.8 |
| 0.2042 | 1.032446 | -1.461 | | 1390.2 | 501 | -104.3 |
| 0.2983 | 1.075149 | -1.601 | | 1419.8 | 461 | -113.2 |
| 0.4111 | 1.117033 | -1.590 | | 1447.5 | 427 | -110.3 |
| 0.5003 | 1.145073 | -1.465 | | 1465.8 | 406 | -101.7 |
| 0.585 | 1.167616 | -1.268 | | 1479.7 | 391 | -89.1 |
| 0.6965 | 1.192823 | -0.875 | | 1494.4 | 375 | -68.2 |
| 0.7833 | 1.209064 | -0.420 | | 1504.9 | 365 | -49.9 |
| 0.9134 | 1.229929 | 0.310 | | 1516.1 | 354 | -18.6 |

[a]The standard uncertainties $(u)$ are $u(T)=1\times10^{-2}K$ and $u(p)=0.5kPa$ and the relative uncertainties $(u_r)$ is $u_r(\rho)=0.002$ and the combined expanded uncertainties $(U_c)$ are $U_c(x)=1\times10^{-4}, U_c(u)=3\,m\cdot s^{-1}, U_c(k_s)=4TPa^{-1}, U_c(\Delta k_s)=0.1TPa^{-1}$, $U_c(V_m^E)=3\times10^{-6}m^3\cdot mol^{-1}$ and $U_c(\alpha)=1\times10^{-7}K^{-1}$ (0.95 level of confidence).

**TABLE S2.** Densities $(\rho)$, Excess Molar Volumes($V_m^E$), Speeds of Sound$(u)$, Isentropic Compressibility$(k_s)$ and Isentropic Compressibility Deviation $(\Delta k_s)$ for Binary Mixtures [Emim][BF4] (1) + DMA (2) at $T$ = (293.15 to 343.15) K and ambient pressure (81.5 kPa).[a]

| | $\rho \cdot 10^{-3}$ | $V_m^E \cdot 10^6$ | $T$ | $u$ | $k_s$ | $\Delta k_s$ |
|---|---|---|---|---|---|---|
| $x_1$ | $kg \cdot m^{-3}$ | $m^3 \cdot mol^{-1}$ | K | $m \cdot s^{-1}$ | $TPa^{-1}$ | $TPa^{-1}$ |
| 0.1310 | 1.020021 | -0.914 | | 1520.9 | 424 | -36.8 |
| 0.1980 | 1.054855 | -1.261 | | 1544.9 | 397 | -50.2 |
| 0.2976 | 1.098689 | -1.548 | | 1566.5 | 371 | -56.8 |
| 0.3868 | 1.134168 | -1.633 | | 1581.8 | 352 | -57.7 |
| 0.4734 | 1.164328 | -1.655 | | 1594.3 | 338 | -55.1 |
| 0.5630 | 1.190972 | -1.651 | | 1606.8 | 325 | -50.1 |
| 0.7089 | 1.230236 | -1.283 | | 1620.0 | 310 | -36.8 |
| 0.7973 | 1.244593 | -0.554 | | 1625.7 | 304 | -25.0 |
| 0.8821 | 1.257248 | 0.385 | | 1629.9 | 299 | -12.9 |
| | | | 298.15 | | | |
| 0.1310 | 1.015666 | -0.963 | | 1502.5 | 436 | -39.2 |
| 0.1980 | 1.050627 | -1.307 | | 1527.6 | 408 | -53.4 |
| 0.2976 | 1.094554 | -1.598 | | 1550.4 | 380 | -60.4 |
| 0.3868 | 1.13011 | -1.686 | | 1566.4 | 361 | -61.3 |
| 0.4734 | 1.160324 | -1.707 | | 1579.8 | 345 | -58.6 |
| 0.5630 | 1.187074 | -1.697 | | 1592.9 | 332 | -53.2 |
| 0.7089 | 1.226338 | -1.318 | | 1606.9 | 316 | -39.0 |
| 0.7973 | 1.240731 | -0.579 | | 1613.0 | 310 | -26.6 |
| 0.8821 | 1.2534 | 0.379 | | 1617.4 | 305 | -13.7 |
| | | | 303.15 | | | |
| 0.1310 | 1.01132 | -1.011 | | 1484.4 | 449 | -41.6 |
| 0.1980 | 1.046395 | -1.354 | | 1510.4 | 419 | -56.8 |
| 0.2976 | 1.090428 | -1.648 | | 1534.3 | 390 | -64.2 |
| 0.3868 | 1.126062 | -1.739 | | 1551.3 | 369 | -65.1 |
| 0.4734 | 1.156334 | -1.758 | | 1565.3 | 353 | -62.2 |
| 0.5630 | 1.183165 | -1.743 | | 1579.1 | 339 | -56.5 |
| 0.7089 | 1.222464 | -1.354 | | 1594.1 | 322 | -41.4 |
| 0.7973 | 1.236885 | -0.604 | | 1600.4 | 316 | -28.2 |
| 0.8821 | 1.249547 | 0.372 | | 1605.1 | 311 | -14.6 |
| | | | 308.15 | | | |
| 0.1310 | 1.006922 | -1.059 | | 1466.5 | 462 | -44.3 |
| 0.1980 | 1.042175 | -1.401 | | 1493.4 | 430 | -60.4 |
| 0.2976 | 1.086313 | -1.697 | | 1518.5 | 399 | -68.3 |
| 0.3868 | 1.122026 | -1.792 | | 1536.2 | 378 | -69.2 |
| 0.4734 | 1.152366 | -1.810 | | 1551.1 | 361 | -66.0 |
| 0.5630 | 1.179248 | -1.789 | | 1565.5 | 346 | -59.9 |
| 0.7089 | 1.218612 | -1.389 | | 1581.4 | 328 | -43.9 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 0.7973 | 1.233059 | -0.630 | | 1588.0 | 322 | -30.0 |
| 0.8821 | 1.245727 | 0.365 | | 1592.9 | 316 | -15.6 |
| | | | 313.15 | | | |
| 0.1310 | 1.00263 | -1.107 | | 1448.8 | 475 | -47.3 |
| 0.1980 | 1.037957 | -1.448 | | 1476.5 | 442 | -64.2 |
| 0.2976 | 1.082207 | -1.747 | | 1502.7 | 409 | -72.6 |
| 0.3868 | 1.117998 | -1.845 | | 1521.4 | 386 | -73.5 |
| 0.4734 | 1.148414 | -1.862 | | 1536.9 | 369 | -70.1 |
| 0.5630 | 1.175337 | -1.835 | | 1552.1 | 353 | -63.6 |
| 0.7089 | 1.214782 | -1.424 | | 1568.8 | 334 | -46.6 |
| 0.7973 | 1.229252 | -0.655 | | 1575.7 | 328 | -31.8 |
| 0.8821 | 1.24192 | 0.358 | | 1580.8 | 322 | -16.6 |
| | | | 318.15 | | | |
| 0.1310 | 0.998322 | -1.155 | | 1431.2 | 489 | -50.5 |
| 0.1980 | 1.033747 | -1.495 | | 1459.8 | 454 | -68.3 |
| 0.2976 | 1.078112 | -1.796 | | 1487.1 | 419 | -77.1 |
| 0.3868 | 1.113982 | -1.898 | | 1506.6 | 395 | -78.1 |
| 0.4734 | 1.144475 | -1.913 | | 1522.9 | 377 | -74.5 |
| 0.5630 | 1.171436 | -1.881 | | 1538.7 | 361 | -67.5 |
| 0.7089 | 1.210931 | -1.460 | | 1556.3 | 341 | -49.5 |
| 0.7973 | 1.225464 | -0.680 | | 1563.5 | 334 | -33.8 |
| 0.8821 | 1.23813 | 0.351 | | 1568.9 | 328 | -17.6 |
| | | | 323.15 | | | |
| 0.1310 | 0.994081 | -1.203 | | 1413.7 | 503 | -54.0 |
| 0.1980 | 1.02941 | -1.542 | | 1443.1 | 466 | -72.6 |
| 0.2976 | 1.074025 | -1.846 | | 1471.6 | 430 | -82.0 |
| 0.3868 | 1.109977 | -1.951 | | 1491.9 | 405 | -82.9 |
| 0.4734 | 1.140545 | -1.965 | | 1509.0 | 385 | -79.1 |
| 0.5630 | 1.16754 | -1.927 | | 1525.4 | 368 | -71.7 |
| 0.7089 | 1.207136 | -1.495 | | 1543.9 | 348 | -52.5 |
| 0.7973 | 1.221694 | -0.705 | | 1551.4 | 340 | -35.9 |
| 0.8821 | 1.234361 | 0.344 | | 1557.0 | 334 | -18.8 |
| | | | 328.15 | | | |
| 0.1310 | 0.990013 | -1.251 | | 1396.4 | 518 | -57.7 |
| 0.1980 | 1.0252 | -1.589 | | 1426.6 | 479 | -77.3 |
| 0.2976 | 1.069951 | -1.896 | | 1456.1 | 441 | -87.2 |
| 0.3868 | 1.105977 | -2.004 | | 1477.4 | 414 | -88.1 |
| 0.4734 | 1.136625 | -2.017 | | 1495.2 | 394 | -84.0 |
| 0.5630 | 1.163659 | -1.973 | | 1512.2 | 376 | -76.0 |
| 0.7089 | 1.203377 | -1.530 | | 1531.6 | 354 | -55.7 |
| 0.7973 | 1.217938 | -0.730 | | 1539.4 | 346 | -38.1 |
| 0.8821 | 1.230609 | 0.337 | | 1545.3 | 340 | -20.0 |
| | | | 333.15 | | | |
| 0.1310 | 0.986018 | -1.299 | | 1379.0 | 533 | -61.8 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 0.1980 | 1.021012 | -1.635 | | 1410.2 | 493 | -82.3 |
| 0.2976 | 1.065884 | -1.945 | | 1440.9 | 452 | -92.8 |
| 0.3868 | 1.101986 | -2.057 | | 1462.9 | 424 | -93.7 |
| 0.4734 | 1.132718 | -2.068 | | 1481.5 | 402 | -89.2 |
| 0.5630 | 1.159798 | -2.019 | | 1499.1 | 384 | -80.7 |
| 0.7089 | 1.199692 | -1.566 | | 1519.4 | 361 | -59.2 |
| 0.7973 | 1.214193 | -0.755 | | 1527.4 | 353 | -40.5 |
| 0.8821 | 1.226873 | 0.330 | | 1533.6 | 347 | -21.3 |
| | | | 338.15 | | | |
| 0.1310 | 0.982059 | -1.347 | | 1361.9 | 549 | -66.1 |
| 0.1980 | 1.01681 | -1.682 | | 1393.9 | 506 | -87.6 |
| 0.2976 | 1.061828 | -1.995 | | 1425.7 | 463 | -98.7 |
| 0.3868 | 1.098011 | -2.110 | | 1448.6 | 434 | -99.6 |
| 0.4734 | 1.128825 | -2.120 | | 1467.9 | 411 | -94.8 |
| 0.5630 | 1.155955 | -2.065 | | 1486.1 | 392 | -85.6 |
| 0.7089 | 1.19592 | -1.601 | | 1507.3 | 368 | -62.8 |
| 0.7973 | 1.210464 | -0.780 | | 1515.6 | 360 | -43.0 |
| 0.8821 | 1.223162 | 0.323 | | 1528.1 | 350 | -25.4 |
| | | | 343.15 | | | |
| 0.1310 | 0.978076 | -1.395 | | 1344.8 | 565 | -70.8 |
| 0.1980 | 1.01261 | -1.729 | | 1377.7 | 520 | -93.3 |
| 0.2976 | 1.05778 | -2.044 | | 1410.6 | 475 | -105.0 |
| 0.3868 | 1.09404 | -2.163 | | 1434.4 | 444 | -105.8 |
| 0.4734 | 1.124943 | -2.172 | | 1454.4 | 420 | -100.7 |
| 0.5630 | 1.15206 | -2.111 | | 1473.0 | 400 | -90.8 |
| 0.7089 | 1.192221 | -1.637 | | 1495.4 | 375 | -66.7 |
| 0.7973 | 1.206749 | -0.805 | | 1503.8 | 366 | -45.6 |
| 0.8821 | 1.219464 | 0.316 | | 1510.6 | 359 | -24.2 |

[a]The standard uncertainties $(u)$ are $u(T)=1\times10^{-2}K$ and $u(p)=0.5kPa$ and the relative uncertainties $(u_r)$ is $u_r(\rho)=0.002$ and the combined expanded uncertainties $(U_c)$ are $U_c(x)=1\times10^{-4}, U_c(u)=3\,m\cdot s^{-1}, U_c(k_s)=4TPa^{-1}, U_c(\Delta k_s)=0.1TPa^{-1}$, $U_c(V_m^E)=3\times10^{-6}m^3\cdot mol^{-1}$ and $U_c(\alpha)=1\times10^{-7}K^{-1}$ (0.95 level of confidence).

**TABLE S3**. Prediction the Speed of Sound with Interaction Parameters, $k_{ij}$ , ; without Interaction Parameters, $k_{ij} = 0$ , and %*AAD* at Different Temperatures for Binary Mixtures of [Emim][BF4] + DMF and [Emim][BF4] + DMA.

| | | Curras et al. [a] | |
|---|---|---|---|
| System | $T$ /K | $k_{ij}$ | %*AAD* |
| [Emim][$BF_4$]+DMF | 293.15 | -0.055 | 2.112 |
| | 298.15 | -0.061 | 2.319 |
| | 303.15 | -0.069 | 2.474 |
| | 308.15 | -0.076 | 2.614 |
| [Emim][$BF_4$]+DMF | 293.15 | 0 | 2.408 |
| | 298.15 | 0 | 2.649 |
| | 303.15 | 0 | 2.849 |
| | 308.15 | 0 | 3.031 |
| [Emim][$BF_4$]+DMA | 293.15 | -0.080 | 1.802 |
| | 298.15 | -0.083 | 1.907 |
| | 303.15 | -0.090 | 2.000 |
| | 308.15 | -0.095 | 2.126 |
| [Emim][$BF_4$]+DMA | 293.15 | 0 | 1.900 |
| | 298.15 | 0 | 2.072 |
| | 303.15 | 0 | 2.237 |
| | 308.15 | 0 | 2.392 |

[a] Curras et al.[1] parameters was used.

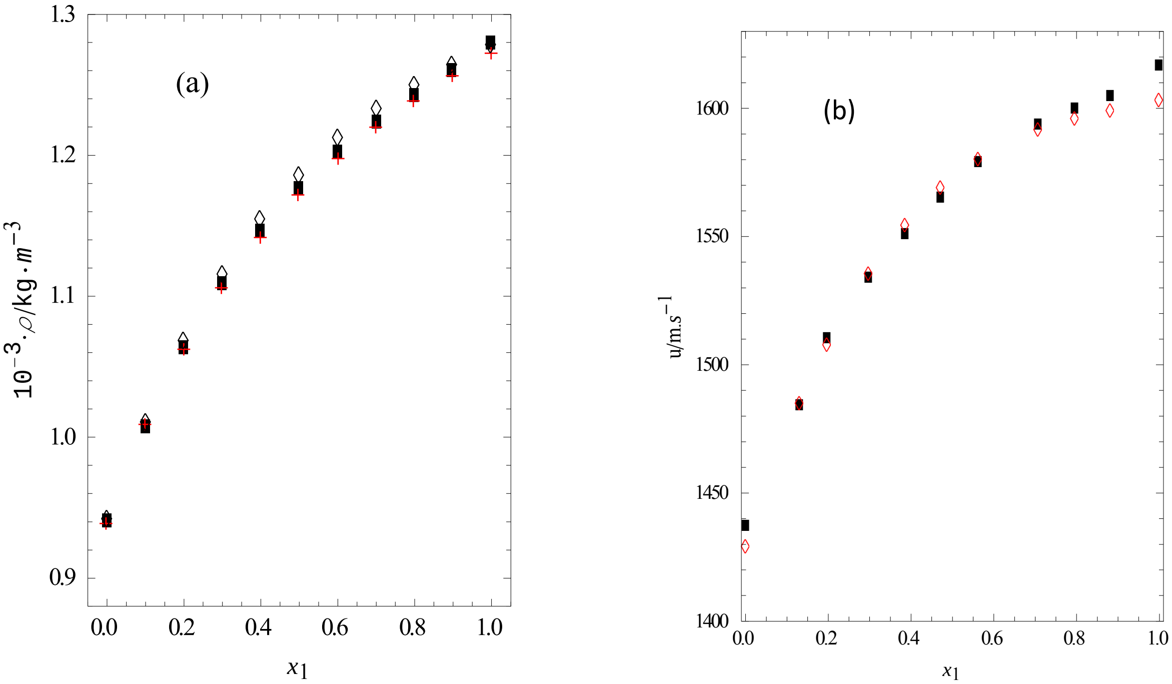


**Figure S1.** Plot of (a) experimental density data (b) experimental speed of sound data of binary mixtures [Emim][BF4] (1) + DMF (2) against mole fraction at temperatures 303.15 K(■) Compared with Sharma et al.[2] (◊); Fan et al.[3] (+).

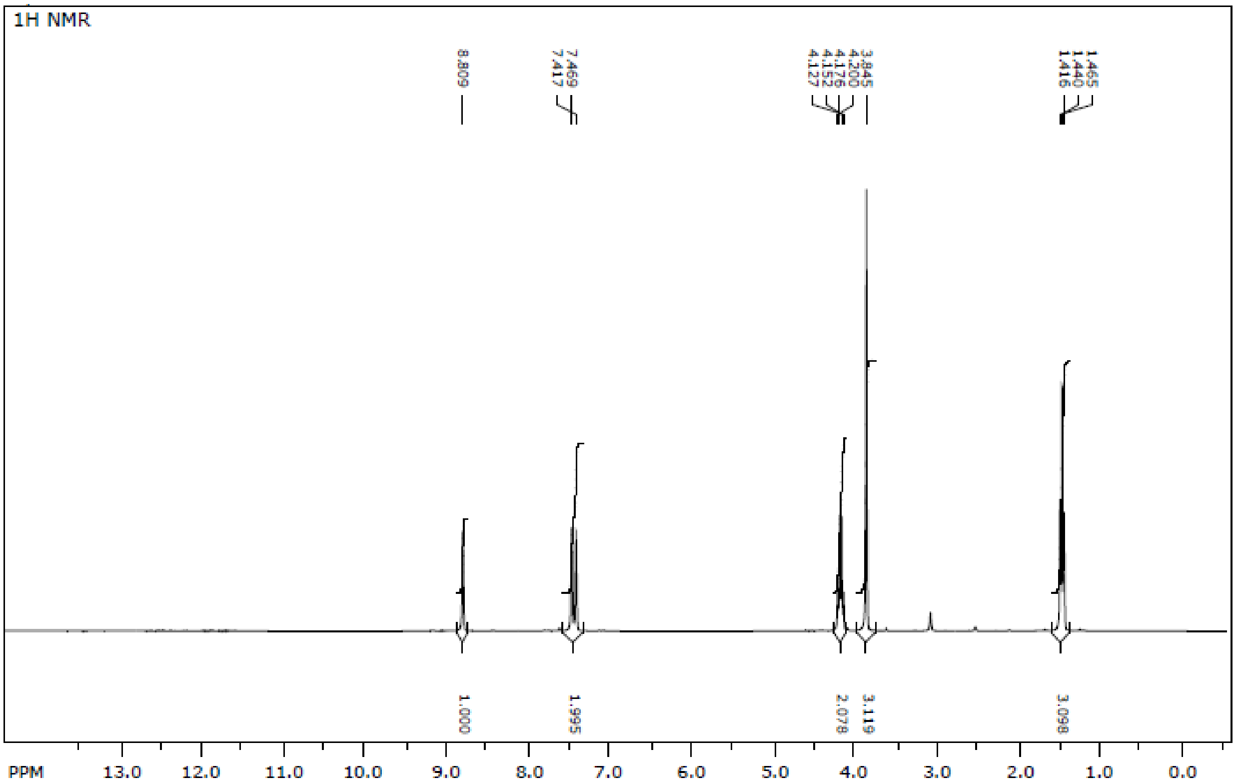


**Figure S2**. H-NMR spectrum (300MHz, DMSO-d6) of 1-Ethyl-3-Methylimidazolium Tetrafluoroborate.


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3. Fan, X.-H.; Chen, Y.-P.; Su, C.-S., Density and Viscosity Measurements for Binary Mixtures of 1-Ethyl-3-methylimidazolium Tetrafluoroborate ([Emim][BF4]) with Dimethylacetamide, Dimethylformamide, and Dimethyl Sulfoxide. *J. Chem. Eng. Data* **2016,** 61, 920–927.