## SUPPLEMENTARY MATERIAL

**Table S1: Experimental Refractive Indices, $n_D$, and Refractive Index Deviation, $\Delta n_D$, of the Binary Mixtures Isomeric Chlorobutane (1) + Butyl Ethyl Ether (2) at Several Temperatures**

| $\phi_1$ | $n_D$ | $\Delta n_D$ | $\phi_1$ | $n_D$ | $\Delta n_D$ |
|---|---|---|---|---|---|
| $T$ = 283.15 K | | | | | |
| 1-Chlorobutane (1) + butyl ethyl ether (2) | | | 2-Chlorobutane (1) + butyl ethyl ether (2) | | |
| 0.0400 | 1.388076 | 0.000042 | 0.0413 | 1.387878 | 0.000034 |
| 0.0798 | 1.388927 | 0.000086 | 0.0775 | 1.388451 | 0.000063 |
| 0.1616 | 1.390669 | 0.000169 | 0.1629 | 1.389796 | 0.000124 |
| 0.2476 | 1.392475 | 0.000230 | 0.2525 | 1.391181 | 0.000165 |
| 0.3385 | 1.394356 | 0.000268 | 0.3416 | 1.392558 | 0.000199 |
| 0.4354 | 1.396341 | 0.000288 | 0.4622 | 1.394388 | 0.000216 |
| 0.5373 | 1.398416 | 0.000296 | 0.5402 | 1.395567 | 0.000218 |
| 0.6418 | 1.400527 | 0.000288 | 0.6455 | 1.397140 | 0.000213 |
| 0.7546 | 1.402789 | 0.000262 | 0.7560 | 1.398785 | 0.000197 |
| 0.8742 | 1.405134 | 0.000181 | 0.8747 | 1.400518 | 0.000145 |
| 0.9360 | 1.406328 | 0.000122 | 0.9369 | 1.401405 | 0.000091 |
| 1-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | | 2-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | |
| 0.0386 | 1.387881 | 0.000028 | 0.0417 | 1.387415 | 0.000028 |
| 0.0795 | 1.388582 | 0.000062 | 0.0851 | 1.387640 | 0.000083 |
| 0.1623 | 1.390000 | 0.000128 | 0.1687 | 1.388016 | 0.000130 |
| 0.2502 | 1.391481 | 0.000175 | 0.2563 | 1.388380 | 0.000150 |
| 0.3424 | 1.393016 | 0.000205 | 0.3505 | 1.388738 | 0.000138 |
| 0.4388 | 1.394608 | 0.000224 | 0.4440 | 1.389077 | 0.000109 |
| 0.5381 | 1.396231 | 0.000227 | 0.5466 | 1.389445 | 0.000074 |
| 0.6429 | 1.397927 | 0.000213 | 0.6517 | 1.389826 | 0.000042 |
| 0.7552 | 1.399725 | 0.000178 | 0.7628 | 1.390239 | 0.000018 |
| 0.8736 | 1.401584 | 0.000105 | 0.8783 | 1.390684 | 0.000009 |
| 0.9352 | 1.402544 | 0.000059 | 0.9376 | 1.390914 | 0.000006 |
| $T$ = 288.15 K | | | | | |
| 1-Chlorobutane (1) + butyl ethyl ether (2) | | | 2-Chlorobutane (1) + butyl ethyl ether (2) | | |
| 0.0400 | 1.385478 | 0.000033 | 0.0413 | 1.385286 | 0.000033 |
| 0.0798 | 1.386328 | 0.000080 | 0.0775 | 1.385848 | 0.000056 |
| 0.1616 | 1.388055 | 0.000159 | 0.1629 | 1.387182 | 0.000116 |
| 0.2476 | 1.389855 | 0.000222 | 0.2525 | 1.388556 | 0.000157 |
| 0.3385 | 1.391725 | 0.000260 | 0.3416 | 1.389918 | 0.000192 |
| 0.4354 | 1.393699 | 0.000277 | 0.4622 | 1.391730 | 0.000208 |
| 0.5373 | 1.395764 | 0.000286 | 0.5402 | 1.392899 | 0.000213 |
| 0.6418 | 1.397864 | 0.000278 | 0.6455 | 1.394460 | 0.000207 |
| 0.7546 | 1.400113 | 0.000251 | 0.7560 | 1.396087 | 0.000187 |
| 0.8742 | 1.402451 | 0.000176 | 0.8747 | 1.397807 | 0.000140 |
| 0.9360 | 1.403634 | 0.000112 | 0.9369 | 1.398683 | 0.000090 |

**(Table S1). Continued.**

| $\phi_1$ | $n_D$ | $\Delta n_D$ | $\phi_1$ | $n_D$ | $\Delta n_D$ |
|---|---|---|---|---|---|
| 1-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | | 2-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | |
| 0.0386 | 1.385346 | 0.000084 | 0.0417 | 1.384831 | 0.000044 |
| 0.0795 | 1.386103 | 0.000180 | 0.0851 | 1.385038 | 0.000096 |
| 0.1623 | 1.387649 | 0.000388 | 0.1687 | 1.385391 | 0.000150 |
| 0.2502 | 1.389206 | 0.000525 | 0.2563 | 1.385723 | 0.000169 |
| 0.3424 | 1.390821 | 0.000650 | 0.3505 | 1.386042 | 0.000152 |
| 0.4388 | 1.392410 | 0.000681 | 0.4440 | 1.386343 | 0.000119 |
| 0.5380 | 1.393975 | 0.000642 | 0.5466 | 1.386670 | 0.000079 |
| 0.6429 | 1.395550 | 0.000523 | 0.6517 | 1.387011 | 0.000045 |
| 0.7552 | 1.397195 | 0.000354 | 0.7628 | 1.387384 | 0.000021 |
| 0.8736 | 1.398918 | 0.000163 | 0.8783 | 1.387786 | 0.000011 |
| 0.9352 | 1.399814 | 0.000064 | 0.9376 | 1.387995 | 0.000008 |
| $T$ = 293.15 K | | | | | |
| 1-Chlorobutane (1) + butyl ethyl ether (2) | | | 2-Chlorobutane (1) + butyl ethyl ether (2) | | |
| 0.0400 | 1.382871 | 0.000031 | 0.0413 | 1.382676 | 0.000029 |
| 0.0798 | 1.383711 | 0.000071 | 0.0775 | 1.383232 | 0.000051 |
| 0.1616 | 1.385431 | 0.000150 | 0.1629 | 1.384552 | 0.000109 |
| 0.2476 | 1.387221 | 0.000211 | 0.2525 | 1.385915 | 0.000150 |
| 0.3385 | 1.389084 | 0.000250 | 0.3416 | 1.387266 | 0.000186 |
| 0.4354 | 1.391051 | 0.000271 | 0.4622 | 1.389062 | 0.000202 |
| 0.5373 | 1.393106 | 0.000279 | 0.5402 | 1.390221 | 0.000208 |
| 0.6418 | 1.395197 | 0.000271 | 0.6455 | 1.391767 | 0.000200 |
| 0.7546 | 1.397436 | 0.000244 | 0.7560 | 1.393380 | 0.000181 |
| 0.8742 | 1.399758 | 0.000164 | 0.8747 | 1.395083 | 0.000133 |
| 0.9360 | 1.400937 | 0.000100 | 0.9369 | 1.395953 | 0.000085 |
| 1-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | | 2-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | |
| 0.0386 | 1.382680 | 0.000026 | 0.0417 | 1.382218 | 0.000048 |
| 0.0795 | 1.383367 | 0.000060 | 0.0851 | 1.382415 | 0.000107 |
| 0.1623 | 1.384755 | 0.000124 | 0.1687 | 1.382737 | 0.000163 |
| 0.2502 | 1.386205 | 0.000170 | 0.2563 | 1.383036 | 0.000183 |
| 0.3424 | 1.387708 | 0.000199 | 0.3505 | 1.383318 | 0.000165 |
| 0.4389 | 1.389269 | 0.000218 | 0.4440 | 1.383579 | 0.000129 |
| 0.5381 | 1.390857 | 0.000221 | 0.5466 | 1.383862 | 0.000086 |
| 0.6429 | 1.392517 | 0.000206 | 0.6517 | 1.384160 | 0.000049 |
| 0.7552 | 1.394276 | 0.000171 | 0.7628 | 1.384488 | 0.000024 |
| 0.8737 | 1.396100 | 0.000101 | 0.8783 | 1.384843 | 0.000012 |
| 0.9352 | 1.397035 | 0.000054 | 0.9376 | 1.385027 | 0.000008 |
| $T$ = 298.15 K | | | | | |
| 1-Chlorobutane (1) + butyl ethyl ether (2) | | | 2-Chlorobutane (1) + butyl ethyl ether (2) | | |
| 0.0400 | 1.380265 | 0.000031 | 0.0413 | 1.380058 | 0.000024 |
| 0.0798 | 1.381099 | 0.000066 | 0.0775 | 1.380610 | 0.000047 |

**(Table S1). Continued.**

| $\phi_1$ | $n_D$ | $\Delta n_D$ | $\phi_1$ | $n_D$ | $\Delta n_D$ |
|---|---|---|---|---|---|
| 0.1616 | 1.382817 | 0.000145 | 0.1629 | 1.381912 | 0.000100 |
| 0.2476 | 1.384607 | 0.000209 | 0.2525 | 1.383261 | 0.000142 |
| 0.3385 | 1.386467 | 0.000245 | 0.3416 | 1.384600 | 0.000180 |
| 0.4354 | 1.388433 | 0.000266 | 0.4622 | 1.386376 | 0.000195 |
| 0.5373 | 1.390484 | 0.000272 | 0.5402 | 1.387522 | 0.000200 |
| 0.6418 | 1.392576 | 0.000267 | 0.6455 | 1.389053 | 0.000194 |
| 0.7546 | 1.394821 | 0.000248 | 0.7560 | 1.390649 | 0.000175 |
| 0.8742 | 1.397151 | 0.000178 | 0.8747 | 1.392329 | 0.000123 |
| 0.9360 | 1.398327 | 0.000111 | 0.9369 | 1.393191 | 0.000077 |
| 1-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | | 2-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | |
| 0.0386 | 1.380068 | 0.000025 | 0.0417 | 1.379601 | 0.000052 |
| 0.0796 | 1.380752 | 0.000059 | 0.0851 | 1.379783 | 0.000111 |
| 0.1623 | 1.382126 | 0.000122 | 0.1687 | 1.380081 | 0.000173 |
| 0.2503 | 1.383565 | 0.000166 | 0.2563 | 1.380350 | 0.000194 |
| 0.3425 | 1.385058 | 0.000197 | 0.3505 | 1.380598 | 0.000176 |
| 0.4390 | 1.386607 | 0.000216 | 0.4440 | 1.380827 | 0.000141 |
| 0.5382 | 1.388181 | 0.000217 | 0.5466 | 1.381069 | 0.000094 |
| 0.6430 | 1.389828 | 0.000203 | 0.6517 | 1.381332 | 0.000060 |
| 0.7553 | 1.391573 | 0.000167 | 0.7628 | 1.381618 | 0.000032 |
| 0.8737 | 1.393383 | 0.000100 | 0.8783 | 1.381926 | 0.000015 |
| 0.9352 | 1.394312 | 0.000054 | 0.9376 | 1.382087 | 0.000009 |
| $T$ = 303.15 K | | | | | |
| 1-Chlorobutane (1) + butyl ethyl ether (2) | | | 2-Chlorobutane (1) + butyl ethyl ether (2) | | |
| 0.0400 | 1.377587 | 0.000030 | 0.0413 | 1.377379 | 0.000020 |
| 0.0798 | 1.378411 | 0.000060 | 0.0775 | 1.377924 | 0.000040 |
| 0.1616 | 1.380119 | 0.000137 | 0.1629 | 1.379216 | 0.000093 |
| 0.2476 | 1.381897 | 0.000197 | 0.2525 | 1.380552 | 0.000133 |
| 0.3385 | 1.383748 | 0.000236 | 0.3416 | 1.381883 | 0.000173 |
| 0.4354 | 1.385704 | 0.000259 | 0.4622 | 1.383648 | 0.000191 |
| 0.5373 | 1.387746 | 0.000267 | 0.5402 | 1.384783 | 0.000194 |
| 0.6418 | 1.389826 | 0.000262 | 0.6455 | 1.386300 | 0.000187 |
| 0.7546 | 1.392053 | 0.000236 | 0.7560 | 1.387883 | 0.000168 |
| 0.8742 | 1.394364 | 0.000160 | 0.8747 | 1.389550 | 0.000116 |
| 0.9360 | 1.395549 | 0.000110 | 0.9369 | 1.390407 | 0.000072 |
| 1-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | | 2-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | |
| 0.0386 | 1.377391 | 0.000024 | 0.0417 | 1.376921 | 0.000058 |
| 0.0795 | 1.378066 | 0.000058 | 0.0851 | 1.377094 | 0.000124 |
| 0.1623 | 1.379428 | 0.000121 | 0.1687 | 1.377363 | 0.000188 |
| 0.2502 | 1.380852 | 0.000165 | 0.2563 | 1.377600 | 0.000210 |
| 0.3424 | 1.382327 | 0.000194 | 0.3505 | 1.377812 | 0.000191 |
| 0.4389 | 1.383860 | 0.000213 | 0.4440 | 1.378009 | 0.000158 |

**(Table S1). Continued.**

| $\phi_1$ | $n_D$ | $\Delta n_D$ | $\phi_1$ | $n_D$ | $\Delta n_D$ |
|---|---|---|---|---|---|
| 0.5381 | 1.385418 | 0.000214 | 0.5466 | 1.378219 | 0.000117 |
| 0.6430 | 1.387048 | 0.000198 | 0.6517 | 1.378435 | 0.000076 |
| 0.7553 | 1.388775 | 0.000163 | 0.7628 | 1.378674 | 0.000043 |
| 0.8737 | 1.390568 | 0.000099 | 0.8783 | 1.378934 | 0.000020 |
| 0.9352 | 1.391488 | 0.000054 | 0.9376 | 1.379070 | 0.000011 |
| $T$ = 308.15 K | | | | | |
| 1-Chlorobutane (1) + butyl ethyl ether (2) | | | 2-Chlorobutane (1) + butyl ethyl ether (2) | | |
| 0.0400 | 1.374883 | 0.000027 | 0.0413 | 1.374674 | 0.000017 |
| 0.0798 | 1.375708 | 0.000060 | 0.0775 | 1.375213 | 0.000035 |
| 0.1616 | 1.377407 | 0.000134 | 0.1629 | 1.376494 | 0.000087 |
| 0.2476 | 1.379175 | 0.000192 | 0.2525 | 1.377820 | 0.000126 |
| 0.3385 | 1.381020 | 0.000230 | 0.3416 | 1.379142 | 0.000166 |
| 0.4354 | 1.382970 | 0.000253 | 0.4622 | 1.380895 | 0.000185 |
| 0.5373 | 1.385004 | 0.000260 | 0.5402 | 1.382021 | 0.000188 |
| 0.6418 | 1.387073 | 0.000251 | 0.6455 | 1.383527 | 0.000181 |
| 0.7546 | 1.389284 | 0.000219 | 0.7560 | 1.385096 | 0.000160 |
| 0.8742 | 1.391590 | 0.000145 | 0.8747 | 1.386752 | 0.000110 |
| 0.9360 | 1.392770 | 0.000094 | 0.9369 | 1.387603 | 0.000066 |
| 1-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | | 2-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | |
| 0.0386 | 1.374688 | 0.000024 | 0.0417 | 1.374222 | 0.000070 |
| 0.0796 | 1.375359 | 0.000057 | 0.0851 | 1.374393 | 0.000148 |
| 0.1623 | 1.376708 | 0.000119 | 0.1687 | 1.374637 | 0.000214 |
| 0.2503 | 1.378121 | 0.000163 | 0.2563 | 1.374838 | 0.000228 |
| 0.3425 | 1.379584 | 0.000191 | 0.3505 | 1.375020 | 0.000210 |
| 0.4389 | 1.381104 | 0.000210 | 0.4440 | 1.375187 | 0.000178 |
| 0.5381 | 1.382648 | 0.000211 | 0.5466 | 1.375370 | 0.000143 |
| 0.6430 | 1.384268 | 0.000198 | 0.6517 | 1.375550 | 0.000100 |
| 0.7553 | 1.385980 | 0.000162 | 0.7628 | 1.375749 | 0.000063 |
| 0.8737 | 1.387758 | 0.000098 | 0.8783 | 1.375960 | 0.000029 |
| 0.9352 | 1.388672 | 0.000054 | 0.9376 | 1.376071 | 0.000014 |
| $T$ = 313.15 K | | | | | |
| 1-Chlorobutane (1) + butyl ethyl ether (2) | | | 2-Chlorobutane (1) + butyl ethyl ether (2) | | |
| 0.0400 | 1.372226 | 0.000023 | 0.0413 | 1.372008 | 0.000012 |
| 0.0798 | 1.373046 | 0.000051 | 0.0775 | 1.372540 | 0.000030 |
| 0.1616 | 1.374743 | 0.000122 | 0.1629 | 1.373804 | 0.000079 |
| 0.2476 | 1.376509 | 0.000177 | 0.2525 | 1.375116 | 0.000119 |
| 0.3385 | 1.378361 | 0.000222 | 0.3416 | 1.376423 | 0.000160 |
| 0.4354 | 1.380314 | 0.000247 | 0.4622 | 1.378154 | 0.000178 |
| 0.5373 | 1.382352 | 0.000255 | 0.5402 | 1.379270 | 0.000184 |
| 0.6418 | 1.384421 | 0.000244 | 0.6455 | 1.380756 | 0.000175 |
| 0.7546 | 1.386632 | 0.000210 | 0.7560 | 1.382306 | 0.000154 |

**(Table S1). Continued.**

| $\phi_1$ | $n_D$ | $\Delta n_D$ | $\phi_1$ | $n_D$ | $\Delta n_D$ |
|---|---|---|---|---|---|
| 0.8742 | 1.388934 | 0.000130 | 0.8747 | 1.383940 | 0.000102 |
| 0.9360 | 1.390112 | 0.000077 | 0.9369 | 1.384780 | 0.000059 |
| 1-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | | 2-Chloro-2-methylpropane(1) + butyl ethyl ether (2) | | |
| 0.0386 | 1.372027 | 0.000023 | 0.0417 | 1.371559 | 0.000079 |
| 0.0796 | 1.372692 | 0.000056 | 0.0851 | 1.371720 | 0.000165 |
| 0.1624 | 1.374029 | 0.000116 | 0.1687 | 1.371928 | 0.000230 |
| 0.2504 | 1.375430 | 0.000160 | 0.2563 | 1.372088 | 0.000240 |
| 0.3426 | 1.376878 | 0.000187 | 0.3505 | 1.372236 | 0.000227 |
| 0.4391 | 1.378385 | 0.000206 | 0.4440 | 1.372368 | 0.000199 |
| 0.5383 | 1.379916 | 0.000207 | 0.5466 | 1.372511 | 0.000168 |
| 0.6431 | 1.381518 | 0.000194 | 0.6517 | 1.372651 | 0.000128 |
| 0.7554 | 1.383213 | 0.000157 | 0.7628 | 1.372786 | 0.000074 |
| 0.8738 | 1.384976 | 0.000095 | 0.8783 | 1.372947 | 0.000039 |
| 0.9353 | 1.385880 | 0.000051 | 0.9376 | 1.373027 | 0.000018 |