

Fig. 5.2.1. Plots of ultrasonic velocities (u) vs mole fraction of Methyl carbitol

(X_{MC}) at 308.15 K for the binary mixtures of MC with Amines.

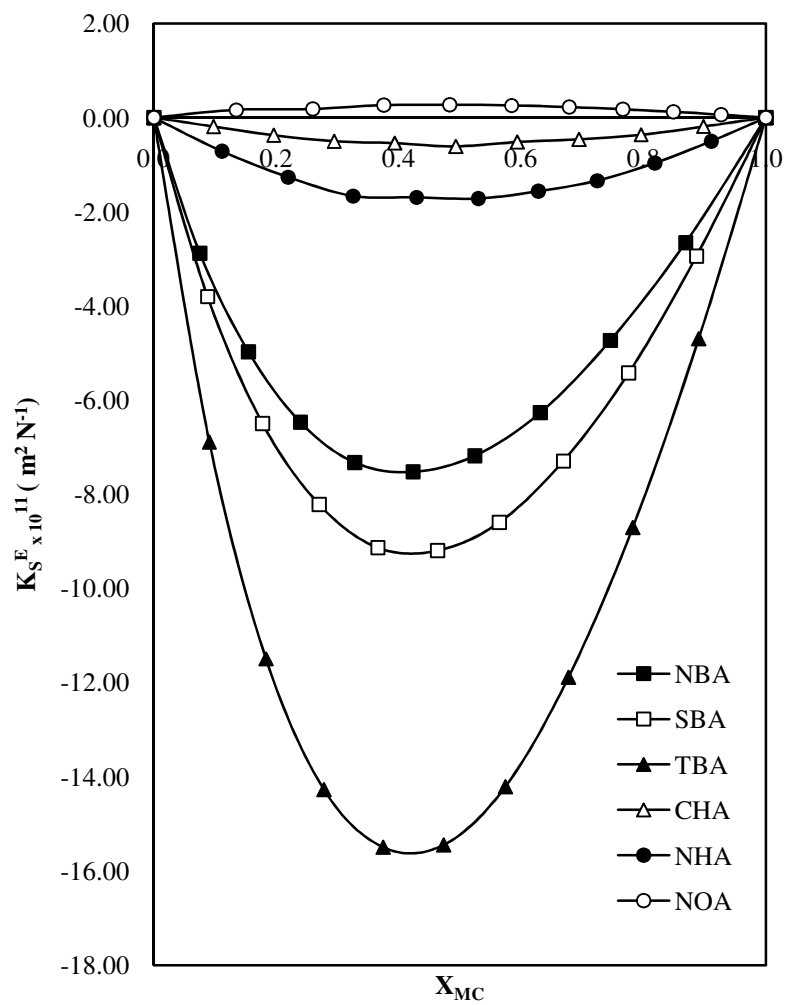


Fig: 5.2.2. Plots of excess isentropic compressibility (K_S^E) vs mole fraction of Methylcarbitol (X_{MC}) at 308.15 K for the

binary mixtures of MC with various amines.

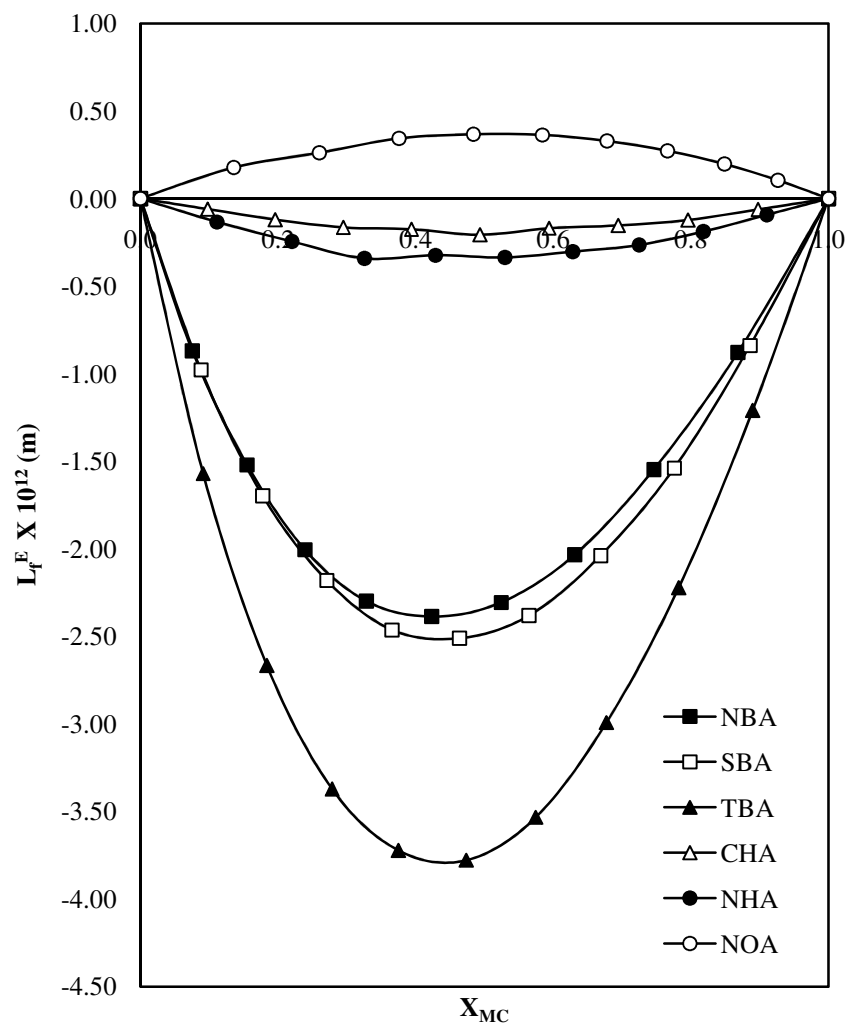


Fig.5.2.3. Plots of excess isentropic compressibility (L_f^E) vs mole fraction of Methylcarbitol (X_{MC}) at 308.15 K for the

binary mixtures of MC with amines.

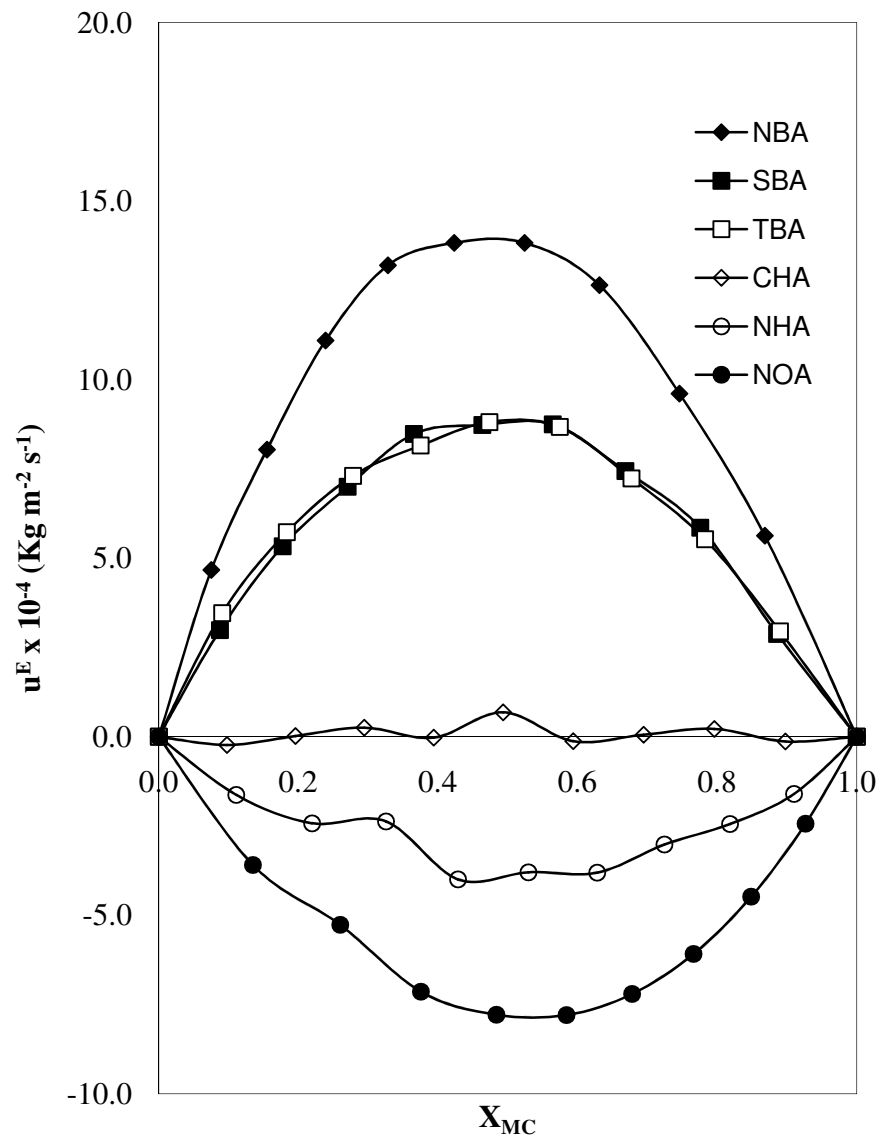


Fig. 5.2.4. Plots of excess ultrasonic velocities (u^E) vs mole fraction of Methylcarbitol (X_{MC}) at 308.15 K for the binary mixtures of MC with amines.

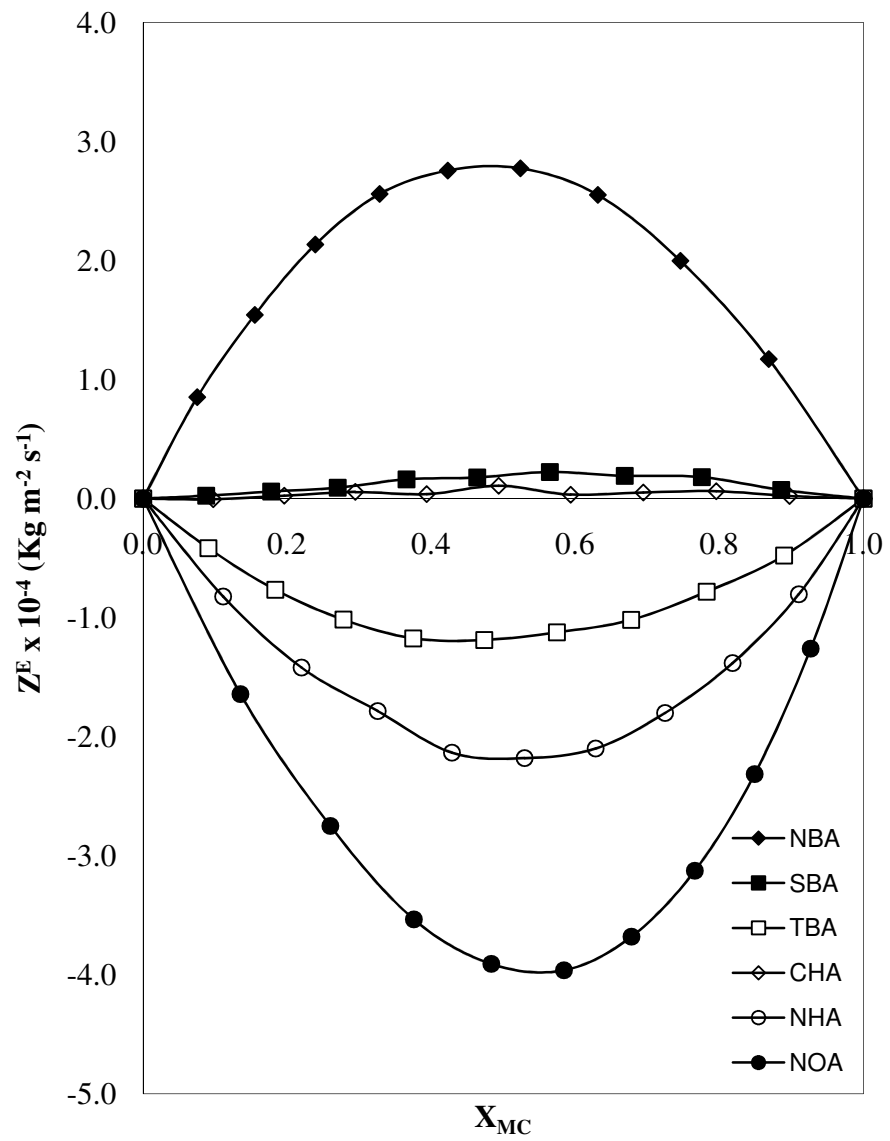


Fig. 5.2.5. Plots of excess acoustic impedance (Z^E) vs mole fraction of Methylcarbitol (X_{MC}) at 308.15 K for the binary mixtures of MC with amines.

<p>Table: 5.4.1: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Butyl Carbitol (BC) + N Butylamine (NBA) at 308.15 K.</p>										
Mole fraction of BC X_{BC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.7241	1230.0	0.0000	0.8906	0.0000	91.28	0.0000	6.3276	0.0000	1.0000
0.0611	0.7457	1242.5	4.8320	0.9265	1.2464	86.86	-2.3792	6.1725	-0.7635	1.0264
0.1276	0.7673	1255.0	8.9862	0.9630	2.3398	82.75	-4.2782	6.0244	-1.3882	1.0526
0.2005	0.7889	1267.5	12.3373	0.9999	3.2418	78.90	-5.6901	5.8828	-1.8657	1.0786

0.2807	0.8105	1280.0	14.7722	1.0374	3.9179	75.31	-6.6086	5.7472	-2.1887	1.1046
0.3692	0.8321	1292.5	16.1654	1.0755	4.3298	71.94	-7.0213	5.6172	-2.3483	1.1303
0.4675	0.8537	1305.0	16.3287	1.1141	4.4200	68.78	-6.8973	5.4926	-2.3287	1.1559
0.5773	0.8753	1317.5	15.0489	1.1532	4.1233	65.82	-6.1967	5.3729	-2.1111	1.1814
0.7007	0.8969	1330.0	12.0622	1.1929	3.3592	63.03	-4.8646	5.2580	-1.6716	1.2068
0.8405	0.9185	1342.5	7.0173	1.2331	2.0203	60.41	-2.8215	5.1474	-0.9768	1.2320
1.0000	0.9399	1355.5	0.0000	1.2740	0.0000	57.91	0.0000	5.0397	0.0000	1.2567

<p>Table: 5.4.2: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Butyl Carbitol (BC) + Secondary butylamine (SBA) at 308.15 K.</p>										
Mole fraction of BC X_{BC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.7084	1151.0	0.0000	0.8154	0.0000	106.55	0.0000	6.8364	0.0000	1.0000
0.0623	0.7316	1171.5	7.7596	0.8571	1.3126	99.60	-3.9275	6.6094	-1.1505	1.0267
0.1301	0.7548	1192.0	14.3946	0.8997	2.4681	93.24	-6.9822	6.3951	-2.0751	1.0531
0.2041	0.7780	1212.5	19.7615	0.9433	3.4343	87.43	-9.1957	6.1926	-2.7712	1.0794
0.2851	0.8012	1232.0	22.6971	0.9871	4.0944	82.23	-10.4531	6.0057	-3.1849	1.1056
0.3743	0.8244	1253.5	25.9557	1.0334	4.6338	77.20	-11.1457	5.8190	-3.4488	1.1311
0.4730	0.8476	1273.5	25.7715	1.0794	4.7101	72.75	-10.7970	5.6487	-3.3786	1.1568
0.5826	0.8708	1294.0	23.8583	1.1268	4.4228	68.58	-9.6290	5.4846	-3.0498	1.1822
0.7053	0.8940	1315.0	19.7661	1.1756	3.6744	64.69	-7.5561	5.3266	-2.4259	1.2072
0.8434	0.9172	1335.5	12.0247	1.2249	2.2713	61.13	-4.3947	5.1780	-1.4299	1.2321
1.0000	0.9399	1355.5	0.0000	1.2740	0.0000	57.91	0.0000	5.0397	0.0000	1.2564

Table: 5.4.3: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Butyl

Carbitol

(EC) + Tertiary butyl amine (TBA) at 308.15 K.

Mole fraction of BC X_{BC}	$\rho \times 10^{-3}$ Kg m^{-3}	u m s^{-1}	u^E m s^{-1}	$Z \times 10^{-6}$ $\text{Kg m}^{-2} \text{s}^{-1}$	$Z^E \times 10^{-4}$ $\text{Kg m}^{-2} \text{s}^{-1}$	$K_S \times 10^{11}$ $\text{m}^2 \text{N}^{-1}$	$K_S^E \times 10^{11}$ $\text{m}^2 \text{N}^{-1}$	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.6809	1050.0	0.0000	0.7149	0.0000	133.21	0.0000	7.6438	0.0000	1.0000
0.0647	0.7068	1080.0	10.2342	0.7633	1.2226	121.30	-7.0395	7.2941	-1.8127	1.0283
0.1347	0.7327	1111.0	19.8492	0.8140	2.3775	110.57	-12.4947	6.9641	-3.2895	1.0560
0.2106	0.7586	1141.5	27.1617	0.8659	3.3253	101.17	-16.1850	6.6613	-4.3408	1.0835
0.2932	0.7845	1172.0	32.4274	0.9194	4.0564	92.80	-18.3301	6.3800	-5.0033	1.1107
0.3836	0.8104	1202.0	34.8102	0.9741	4.4689	85.41	-18.9168	6.1205	-5.2436	1.1377
0.4828	0.8363	1233.0	35.5046	1.0312	4.6285	78.65	-18.2008	5.8735	-5.1303	1.1642
0.5922	0.8622	1263.5	32.5829	1.0894	4.3352	72.65	-15.9638	5.6450	-4.5666	1.1905
0.7135	0.8881	1294.0	26.0258	1.1492	3.5346	67.25	-12.2338	5.4310	-3.5480	1.2166
0.8485	0.9140	1324.5	15.2833	1.2106	2.1261	62.37	-6.9478	5.2302	-2.0401	1.2423
1.0000	0.9399	1355.5	0.0000	1.2740	0.0000	57.91	0.0000	5.0397	0.0000	1.2677

Table: 5.4.4: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Butyl

Carbitol

(BC) + N Hexylamine (NHA) at 308.15 K.

Mole fraction of BC X_{BC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.7522	1286.5	0.0000	0.9677	0.0000	80.32	0.0000	5.9356	0.0000	1.0000
0.0797	0.7710	1293.4	1.4007	0.9972	0.5092	77.53	-1.0057	5.8315	-0.3268	1.0232
0.1631	0.7898	1302.0	4.2461	1.0283	1.0652	74.69	-1.9781	5.7236	-0.6584	1.0458
0.2504	0.8086	1310.5	6.7224	1.0597	1.5260	72.01	-2.7007	5.6200	-0.9124	1.0684
0.3420	0.8274	1319.0	8.9020	1.0913	1.8871	69.47	-3.1874	5.5200	-1.0919	1.0909
0.4381	0.8462	1327.0	10.2711	1.1229	2.0999	67.11	-3.3929	5.4254	-1.1766	1.1134
0.5390	0.8650	1336.5	12.8090	1.1561	2.3256	64.72	-3.5194	5.3280	-1.2469	1.1354
0.6453	0.8838	1345.0	13.9743	1.1887	2.3331	62.55	-3.3111	5.2377	-1.1973	1.1577
0.7572	0.9026	1353.5	14.7532	1.2217	2.2011	60.48	-2.8720	5.1503	-1.0686	1.1798
0.8752	0.9214	1362.0	15.1112	1.2549	1.9142	58.51	-2.1977	5.0657	-0.8576	1.2019
1.0000	0.9399	1355.5	0.0000	1.2740	0.0000	57.91	0.0000	5.0397	0.0000	1.2280

<p>Table: 5.4.5: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Butyl Carbitol (BC) + N Octylamine (NOA) at 308.15 K.</p>										
Mole fraction of BC X_{BC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.7704	1324.0	0.0000	1.0200	0.0000	74.05	0.0000	5.6990	0.0000	1.0000
0.0975	0.7873	1327.0	-0.0712	1.0447	-0.0030	72.13	-0.3429	5.6247	-0.0996	1.0212
0.1955	0.8042	1330.0	-0.1582	1.0696	-0.0085	70.30	-0.5950	5.5527	-0.1732	1.0423
0.2940	0.8211	1333.5	0.2390	1.0949	0.0244	68.49	-0.8129	5.4809	-0.2424	1.0633
0.3932	0.8380	1336.5	0.1142	1.1200	0.0095	66.81	-0.8938	5.4132	-0.2657	1.0843
0.4929	0.8549	1339.5	-0.0264	1.1451	-0.0080	65.19	-0.8981	5.3474	-0.2661	1.1054
0.5931	0.8718	1343.0	0.3173	1.1708	0.0156	63.60	-0.8773	5.2815	-0.2643	1.1263
0.6940	0.8887	1346.0	0.1390	1.1962	-0.0113	62.11	-0.7357	5.2194	-0.2202	1.1472
0.7954	0.9056	1349.5	0.4449	1.2221	0.0046	60.63	-0.5738	5.1570	-0.1751	1.1680
0.8974	0.9225	1352.5	0.2319	1.2477	-0.0290	59.26	-0.3019	5.0982	-0.0905	1.1890
1.0000	0.9399	1355.5	0.0000	1.2740	0.0000	57.91	0.0000	5.0397	0.0000	1.2105

<p>Table: 5.4.6: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Butyl Carbitol (BC) + Cyclohexylamine (CHA) at 308.15 K.</p>										
Mole fraction of BC X_{BC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.8525	1385.5	0.0000	1.1811	0.0000	61.11	0.0000	5.1771	0.0000	1.0000
0.0697	0.8612	1382.0	-1.4090	1.1902	0.2565	60.80	-0.0874	5.1639	-0.0359	1.0111
0.1442	0.8699	1379.0	-2.1740	1.1996	0.5058	60.45	-0.1947	5.1492	-0.0806	1.0220
0.2241	0.8786	1376.0	-2.7770	1.2090	0.6997	60.11	-0.2762	5.1348	-0.1146	1.0330
0.3101	0.8873	1373.0	-3.1970	1.2183	0.8317	59.78	-0.3299	5.1208	-0.1371	1.0440
0.4027	0.8960	1370.0	-3.4190	1.2275	0.8972	59.46	-0.3543	5.1070	-0.1475	1.0550
0.5028	0.9047	1367.0	-3.4160	1.2367	0.8878	59.15	-0.3469	5.0936	-0.1445	1.0660
0.6113	0.9134	1364.0	-3.1610	1.2459	0.7952	58.85	-0.3049	5.0804	-0.1270	1.0770
0.7295	0.9221	1361.0	-2.6150	1.2550	0.6072	58.55	-0.2244	5.0675	-0.0933	1.0881
0.8585	0.9308	1358.0	-1.7450	1.2640	0.3137	58.26	-0.1020	5.0549	-0.0420	1.0992
1.0000	0.9399	1355.5	0.0000	1.2740	0.0000	57.91	0.0000	5.0397	0.0000	1.1106

Table: 5.3.1: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Ethyl

Carbitol

(EC) + N Butylamine (NBA) at 308.15 K.

Mole fraction of EC X_{EC}	$\rho \times 10^{-3}$ Kg m^{-3}	u m s^{-1}	u^E m s^{-1}	$Z \times 10^{-6}$ $\text{Kg m}^{-2} \text{s}^{-1}$	$Z^E \times 10^{-4}$ $\text{Kg m}^{-2} \text{s}^{-1}$	$K_S \times 10^{11}$ $\text{m}^2 \text{N}^{-1}$	$K_S^E \times 10^{11}$ $\text{m}^2 \text{N}^{-1}$	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.7241	1230.0	0.0000	0.8906	0.0000	91.28	0.0000	6.3276	0.0000	1.0000
0.0754	0.7492	1245.5	3.8884	0.9331	0.7885	86.04	-2.3946	6.1433	-0.7260	1.0304
0.1550	0.7743	1260.0	6.1300	0.9756	1.3846	81.35	-4.0846	5.9733	-1.2460	1.0608
0.2393	0.7994	1276.0	9.1478	1.0200	1.9578	76.83	-5.4207	5.8051	-1.6794	1.0906
0.3286	0.8245	1291.5	10.8956	1.0648	2.3406	72.71	-6.1664	5.6474	-1.9328	1.1203
0.4233	0.8496	1307.0	11.8118	1.1104	2.5534	68.90	-6.4042	5.4974	-2.0299	1.1498
0.5241	0.8747	1322.5	11.7886	1.1568	2.5641	65.37	-6.1364	5.3545	-1.9660	1.1791
0.6314	0.8998	1337.5	10.2644	1.2035	2.3093	62.13	-5.3272	5.2201	-1.7204	1.2084
0.7460	0.9249	1353.0	8.1160	1.2514	1.8411	59.06	-4.0646	5.0897	-1.3255	1.2374
0.8685	0.9500	1368.5	4.7510	1.3001	1.0881	56.21	-2.2967	4.9652	-0.7562	1.2661
1.0000	0.9751	1384.0	0.0000	1.3495	0.0000	53.54	0.0000	4.8460	0.0000	1.2947

Excess length K.	Table: 5.3.2: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Ethyl Carbitol (EC) + Secondary Butylamine (SBA) at 308.15									
	Mole fraction of EC X_{EC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m
0.0000	0.7084	1151.0	0.0000	0.8154	0.0000	106.55	0.0000	6.8364	0.0000	1.0000
0.0770	0.7351	1173.5	4.5590	0.8626	0.6140	98.78	-3.6880	6.5824	-1.0071	1.0310
0.1580	0.7618	1196.0	8.1860	0.9111	1.1346	91.77	-6.4089	6.3444	-1.7752	1.0617
0.2433	0.7885	1219.5	11.8111	0.9616	1.6244	85.28	-8.3784	6.1159	-2.3624	1.0918
0.3334	0.8152	1243.0	14.3178	1.0133	1.9833	79.40	-9.4842	5.9012	-2.7161	1.1216
0.4287	0.8419	1266.5	15.6129	1.0663	2.1899	74.05	-9.7764	5.6991	-2.8400	1.1512
0.5295	0.8686	1289.5	15.1265	1.1201	2.1848	69.24	-9.2463	5.5107	-2.7172	1.1806
0.6365	0.8953	1313.0	13.6955	1.1755	2.0161	64.79	-8.0216	5.3308	-2.3869	1.2096
0.7501	0.9221	1336.0	10.2267	1.2319	1.5876	60.76	-6.0295	5.1623	-1.8104	1.2386
0.8710	0.9487	1360.0	6.0570	1.2902	0.9602	56.99	-3.3896	4.9996	-1.0310	1.2668
1.0000	0.9751	1384.0	0.0000	1.3495	0.0000	53.54	0.0000	4.8460	0.0000	1.2944

<p>Table: 5.3.3: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Ethyl Carbitol (EC) + Teriary butylamine (TBA) at 308.15 K.</p>										
Mole fraction of EC X_{EC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.6809	1050.0	0.0000	0.7149	0.0000	133.21	0.0000	7.6438	0.0000	1.0000
0.0798	0.7103	1083.4	6.7468	0.7695	0.3953	119.94	-6.9081	7.2532	-1.6732	1.0323
0.1633	0.7397	1116.8	12.2578	0.8261	0.7523	108.39	-11.8091	6.8951	-2.9187	1.0642
0.2507	0.7691	1150.2	16.4662	0.8846	1.0581	98.28	-14.9558	6.5656	-3.7677	1.0957
0.3423	0.7986	1183.5	19.1718	0.9451	1.2977	89.40	-16.5399	6.2619	-4.2418	1.1270
0.4384	0.8279	1217.0	20.5744	1.0076	1.4404	81.55	-16.7297	5.9808	-4.3641	1.1575
0.5394	0.8573	1250.0	19.8404	1.0716	1.4380	74.65	-15.5832	5.7222	-4.1243	1.1880
0.6456	0.8867	1283.5	17.8696	1.1381	1.3441	68.46	-13.3160	5.4797	-3.5782	1.2179
0.7574	0.9161	1317.0	14.0284	1.2065	1.0918	62.93	-9.9340	5.2539	-2.7080	1.2476
0.8754	0.9455	1350.0	7.6164	1.2764	0.5957	58.03	-5.4345	5.0452	-1.4940	1.2770
1.0000	0.9751	1384.0	0.0000	1.3495	0.0000	53.54	0.0000	4.8460	0.0000	1.3061

<p>Table: 5.3.4: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Ethyl Carbitol (EC) + N hexylamine (NHA) at 308.15 K.</p>										
Mole fraction of EC X_{EC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.7522	1286.5	0.0000	0.9677	0.0000	80.32	0.0000	5.9356	0.0000	1.0000
0.0980	0.7745	1296.0	-0.0550	1.0038	-0.1373	76.87	-0.8274	5.8067	-0.2217	1.0271
0.1964	0.7968	1306.0	0.3510	1.0406	-0.2077	73.58	-1.4831	5.6810	-0.4062	1.0540
0.2953	0.8191	1315.5	0.2083	1.0775	-0.2935	70.55	-1.8675	5.5627	-0.5118	1.0809
0.3946	0.8414	1325.5	0.5265	1.1153	-0.3101	67.65	-2.1099	5.4470	-0.5860	1.1075
0.4944	0.8639	1335.0	0.2960	1.1533	-0.3177	64.95	-2.1329	5.3374	-0.5951	1.1344
0.5946	0.8860	1345.0	0.5265	1.1917	-0.3073	62.39	-2.0074	5.2312	-0.5650	1.1605
0.6953	0.9083	1354.5	0.2083	1.2303	-0.2902	60.01	-1.6927	5.1304	-0.4762	1.1870
0.7964	0.9306	1364.5	0.3510	1.2698	-0.1993	57.72	-1.2782	5.0314	-0.3645	1.2131
0.8979	0.9529	1374.0	-0.0453	1.3093	-0.1269	55.59	-0.6869	4.9378	-0.1945	1.2393
1.0000	0.9751	1384.0	0.0000	1.3495	0.0000	53.54	0.0000	4.8460	0.0000	1.2651

<p>Table: 5.3.5: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Ethyl Carbitol (EC) + N Octylamine (NOA) at 308.15 K.</p>										
Mole fraction of EC X_{EC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.7704	1324.0	0.0000	1.0200	0.0000	74.05	0.0000	5.6990	0.0000	1.0000
0.1193	0.7909	1330.0	-1.1580	1.0519	-0.7425	71.48	-0.1221	5.5992	0.0204	1.0251
0.2336	0.8114	1336.0	-2.0160	1.0840	-1.2957	69.05	-0.2085	5.5032	0.0353	1.0501
0.3432	0.8319	1342.0	-2.5920	1.1164	-1.6694	66.75	-0.2633	5.4107	0.0449	1.0750
0.4483	0.8524	1348.0	-2.8980	1.1490	-1.8702	64.56	-0.2918	5.3214	0.0489	1.0998
0.5493	0.8729	1354.0	-2.9580	1.1819	-1.9113	62.49	-0.2943	5.2353	0.0488	1.1246
0.6464	0.8934	1360.0	-2.7840	1.2150	-1.7993	60.52	-0.2745	5.1520	0.0446	1.1493
0.7398	0.9139	1366.0	-2.3880	1.2484	-1.5408	58.64	-0.2352	5.0716	0.0364	1.1740
0.8298	0.9344	1372.0	-1.7880	1.2820	-1.1456	56.85	-0.1766	4.9937	0.0253	1.1986
0.9164	0.9549	1378.0	-0.9840	1.3159	-0.6138	55.15	-0.1047	4.9183	0.0100	1.2231
1.0000	0.9751	1384.0	0.0000	1.3495	0.0000	53.54	0.0000	4.8460	0.0000	1.2471

<p>Table: 5.3.6: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Ethyl Carbitol (EC) + Cyclohexylamine (CHA) at 308.15 K.</p>										
Mole fraction of EC X_{EC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.8525	1389.0	0.0000	1.1841	0.0000	60.80	0.0000	5.1641	0.0000	1.0000
0.0859	0.8648	1388.5	-0.0705	1.2008	0.2443	59.98	-0.1980	5.1291	-0.0768	1.0145
0.1745	0.8771	1388.0	-0.1275	1.2174	0.4427	59.18	-0.3533	5.0948	-0.1376	1.0291
0.2660	0.8894	1387.5	-0.1700	1.2340	0.5919	58.40	-0.4654	5.0613	-0.1818	1.0437
0.3605	0.9017	1387.0	-0.1975	1.2507	0.6903	57.65	-0.5345	5.0284	-0.2095	1.0582
0.4581	0.9140	1386.5	-0.2095	1.2673	0.7361	56.91	-0.5607	4.9963	-0.2205	1.0728
0.5591	0.9263	1386.0	-0.2045	1.2839	0.7245	56.20	-0.5427	4.9648	-0.2141	1.0874
0.6636	0.9386	1385.5	-0.1820	1.3004	0.6538	55.50	-0.4805	4.9339	-0.1903	1.1019
0.7718	0.9509	1385.0	-0.1410	1.3170	0.5206	54.82	-0.3733	4.9037	-0.1486	1.1165
0.8838	0.9632	1384.5	-0.0810	1.3336	0.3233	54.16	-0.2212	4.8741	-0.0888	1.1311
1.0000	0.9751	1384.0	0.0000	1.3495	0.0000	53.54	0.0000	4.8460	0.0000	1.1452

<p>Table: 5.2.1: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Methyl Carbitol (MC) + N Butylamine (NBA) at 308.15 K.</p>										
Mole fraction of MC X_{MC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.7241	1230.0	0.0000	0.8906	0.0000	91.28	0.0000	6.3276	0.0000	1.0000
0.0754	0.7524	1248.5	4.6641	0.9394	0.8527	85.27	-2.8813	6.1155	-0.8702	1.0339
0.1551	0.7807	1266.5	8.0391	0.9888	1.5418	79.86	-4.9762	5.9183	-1.5197	1.0677
0.2393	0.8090	1285.0	11.0885	1.0396	2.1333	74.86	-6.4703	5.7301	-2.0040	1.1011
0.3286	0.8373	1303.5	13.2019	1.0914	2.5576	70.29	-7.3245	5.5525	-2.2984	1.1342
0.4233	0.8656	1321.5	13.8245	1.1439	2.7554	66.15	-7.5231	5.3866	-2.3862	1.1672
0.5241	0.8939	1340.0	13.8277	1.1978	2.7746	62.30	-7.1811	5.2275	-2.3051	1.1997
0.6314	0.9222	1358.5	12.6381	1.2528	2.5519	58.76	-6.2634	5.0766	-2.0340	1.2321
0.7460	0.9505	1376.5	9.6090	1.3084	1.9971	55.53	-4.7272	4.9350	-1.5479	1.2643
0.8685	0.9788	1395.0	5.6302	1.3654	1.1720	52.50	-2.6578	4.7987	-0.8790	1.2962
1.0000	1.0073	1413.5	0.0000	1.4238	0.0000	49.69	0.0000	4.6684	0.0000	1.3281

<p>Table: 5.2.2: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Methyl Carbitol (MC) + Secondary Butylamine (SBA) at 308.15 K.</p>										
Mole fraction of MC X_{MC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.7084	1151.0	0.0000	0.8154	0.0000	106.55	0.0000	6.8364	0.0000	1.0000
0.0877	0.7383	1177.0	2.9787	0.8690	0.0250	97.77	-3.7951	6.5486	-0.9765	1.0345
0.1778	0.7682	1203.0	5.3275	0.9241	0.0594	89.95	-6.4948	6.2811	-1.6978	1.0686
0.2705	0.7981	1229.0	6.9937	0.9809	0.0911	82.95	-8.2176	6.0320	-2.1795	1.1023
0.3658	0.8280	1255.5	8.4775	1.0396	0.1615	76.62	-9.1335	5.7971	-2.4625	1.1355
0.4639	0.8579	1281.5	8.7263	1.0994	0.1770	70.98	-9.1955	5.5796	-2.5103	1.1685
0.5648	0.8878	1308.0	8.7400	1.1612	0.2221	65.84	-8.5992	5.3737	-2.3816	1.2010
0.6688	0.9177	1334.0	7.4400	1.2242	0.1912	61.23	-7.2887	5.1825	-2.0397	1.2333
0.7758	0.9476	1360.5	5.8525	1.2892	0.1806	57.01	-5.4237	5.0007	-1.5375	1.2651
0.8862	0.9775	1386.5	2.8725	1.3553	0.0727	53.22	-2.9430	4.8313	-0.8381	1.2969
1.0000	1.0073	1413.5	0.0000	1.4238	0.0000	49.69	0.0000	4.6684	0.0000	1.3278

<p>Table: 5.2.3: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Methyl Carbitol (MC) + Tertiary butylamine (TBA) at 308.15 K.</p>										
Mole fraction of MC X_{MC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.6809	1050.0	0.0000	0.7149	0.0000	133.21	0.0000	7.6438	0.0000	1.0000
0.0909	0.7135	1086.5	3.4579	0.7752	-0.4164	118.73	-6.8920	7.2163	-1.5705	1.0360
0.1837	0.7461	1122.5	5.7251	0.8375	-0.7668	106.37	-11.4946	6.8306	-2.6667	1.0716
0.2784	0.7787	1158.5	7.3016	0.9021	-1.0171	95.68	-14.2740	6.4783	-3.3717	1.1068
0.3751	0.8113	1194.5	8.1512	0.9691	-1.1746	86.39	-15.4945	6.1555	-3.7222	1.1414
0.4737	0.8439	1231.0	8.8101	1.0388	-1.1898	78.20	-15.4482	5.8565	-3.7786	1.1754
0.5745	0.8765	1267.5	8.6692	1.1110	-1.1229	71.02	-14.2113	5.5811	-3.5336	1.2090
0.6775	0.9091	1303.5	7.2287	1.1850	-1.0195	64.74	-11.8848	5.3287	-2.9922	1.2423
0.7826	0.9417	1340.0	5.5249	1.2619	-0.7831	59.14	-8.7061	5.0931	-2.2216	1.2750
0.8901	0.9743	1376.5	2.9487	1.3411	-0.4789	54.17	-4.6974	4.8744	-1.2101	1.3074
1.0000	1.0073	1413.5	0.0000	1.4238	0.0000	49.69	0.0000	4.6684	0.0000	1.3398

<p>Table: 5.2.4: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Methyl Carbitol (MC) + N hexylamine (NHA) at 308.15 K.</p>										
Mole fraction of MC X_{MC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.7522	1286.5	0.0000	0.9677	0.0000	80.32	0.0000	5.9356	0.0000	1.0000
0.1113	0.7777	1299.0	-1.6351	1.0102	-0.8238	76.20	-0.7119	5.7813	-0.1325	1.0306
0.2199	0.8032	1312.0	-2.4273	1.0538	-1.4206	72.33	-1.2590	5.6324	-0.2451	1.0608
0.3258	0.8287	1325.5	-2.3766	1.0984	-1.7865	68.68	-1.6609	5.4886	-0.3412	1.0908
0.4291	0.8542	1337.0	-3.9957	1.1421	-2.1358	65.49	-1.6878	5.3596	-0.3227	1.1211
0.5299	0.8797	1350.0	-3.7973	1.1876	-2.1805	62.37	-1.7168	5.2305	-0.3364	1.1509
0.6284	0.9052	1362.5	-3.8068	1.2333	-2.0992	59.51	-1.5633	5.1090	-0.3032	1.1806
0.7246	0.9307	1375.5	-3.0242	1.2802	-1.8027	56.79	-1.3354	4.9909	-0.2651	1.2100
0.8185	0.9562	1388.0	-2.4495	1.3272	-1.3828	54.28	-0.9642	4.8795	-0.1886	1.2394
0.9103	0.9817	1400.5	-1.6081	1.3749	-0.8034	51.93	-0.5015	4.7728	-0.0930	1.2687
1.0000	1.0073	1413.5	0.0000	1.4238	0.0000	49.69	0.0000	4.6684	0.0000	1.2978

<p>Table: 5.2.5: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Methyl Carbitol (MC) + N Octylamine (NOA) at 308.15 K.</p>										
Mole fraction of MC X_{MC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.7704	1324.0	0.0000	1.0200	0.0000	74.05	0.0000	5.6990	0.0000	1.0000
0.1351	0.7941	1332.5	-3.5915	1.0581	-1.6426	70.92	0.1674	5.5775	0.1774	1.0286
0.2600	0.8178	1342.0	-5.2700	1.0975	-2.7512	67.90	0.1829	5.4571	0.2614	1.0568
0.3759	0.8415	1350.5	-7.1431	1.1364	-3.5356	65.16	0.2659	5.3459	0.3432	1.0851
0.4837	0.8652	1359.5	-7.7912	1.1762	-3.9093	62.54	0.2708	5.2373	0.3679	1.1132
0.5843	0.8888	1368.5	-7.7949	1.2163	-3.9632	60.08	0.2628	5.1333	0.3649	1.1410
0.6783	0.9126	1377.5	-7.2079	1.2571	-3.6807	57.75	0.2238	5.0328	0.3288	1.1690
0.7663	0.9363	1386.5	-6.0838	1.2982	-3.1268	55.56	0.1773	4.9364	0.2722	1.1968
0.8490	0.9600	1395.5	-4.4855	1.3397	-2.3163	53.49	0.1235	4.8437	0.1969	1.2244
0.9267	0.9837	1404.5	-2.4396	1.3816	-1.2613	51.53	0.0607	4.7543	0.1040	1.2520
1.0000	1.0073	1413.5	0.0000	1.4238	0.0000	49.69	0.0000	4.6684	0.0000	1.2793

Table: 5.2.6: Values of Density (ρ), Ultrasonic velocity (u), Excess ultrasonic velocity (u^E), Acoustic impedance (Z), Excess acoustic impedance (Z^E), Isentropic compressibility (K_S), Excess isentropic compressibility (K_S^E), Intermolecular free-length (L_f), Excess intermolecular free-length (L_f^E) and Relative association (R_A) for the binary liquid mixture of Methyl Carbitol (MC) + Cyclohexylamine (CHA) at 308.15 K.

Mole fraction of MC X_{MC}	$\rho \times 10^{-3}$ Kg m ⁻³	u m s ⁻¹	u^E m s ⁻¹	$Z \times 10^{-6}$ Kg m ⁻² s ⁻¹	$Z^E \times 10^{-4}$ Kg m ⁻² s ⁻¹	$K_S \times 10^{11}$ m ² N ⁻¹	$K_S^E \times 10^{11}$ m ² N ⁻¹	$L_f \times 10^{11}$ m	$L_f^E \times 10^{12}$ m	R_A
0.0000	0.8525	1385.5	0.0000	1.1811	0.0000	61.11	0.0000	5.1771	0.0000	1.0000
0.0977	0.8680	1388.0	-0.2356	1.2048	-0.0065	59.80	-0.1915	5.1214	-0.0597	1.0176
0.1960	0.8835	1391.0	0.0120	1.2289	0.0245	58.50	-0.3713	5.0654	-0.1203	1.0350
0.2947	0.8990	1394.0	0.2484	1.2532	0.0550	57.24	-0.4999	5.0107	-0.1649	1.0524
0.3939	0.9145	1396.5	-0.0292	1.2771	0.0369	56.07	-0.5386	4.9592	-0.1756	1.0699
0.4936	0.9300	1400.0	0.6792	1.3020	0.1075	54.86	-0.6099	4.9054	-0.2063	1.0871
0.5939	0.9455	1402.0	-0.1292	1.3256	0.0325	53.81	-0.5178	4.8581	-0.1692	1.1047
0.6946	0.9610	1405.0	0.0512	1.3502	0.0501	52.71	-0.4615	4.8084	-0.1532	1.1220
0.7959	0.9765	1408.0	0.2148	1.3749	0.0624	51.66	-0.3623	4.7600	-0.1226	1.1393
0.8977	0.9920	1410.5	-0.1356	1.3992	0.0224	50.67	-0.1870	4.7142	-0.0617	1.1567
1.0000	1.0073	1413.5	0.0000	1.4238	0.0000	49.69	0.0000	4.6684	0.0000	1.1737

