

Fig. 5.4.1. Plots of ultrasonic velocities (u) vs mole fraction of Butyl carbitol (X_{BC}) at 308.15 K for the binary mixtures of BC with various amines.

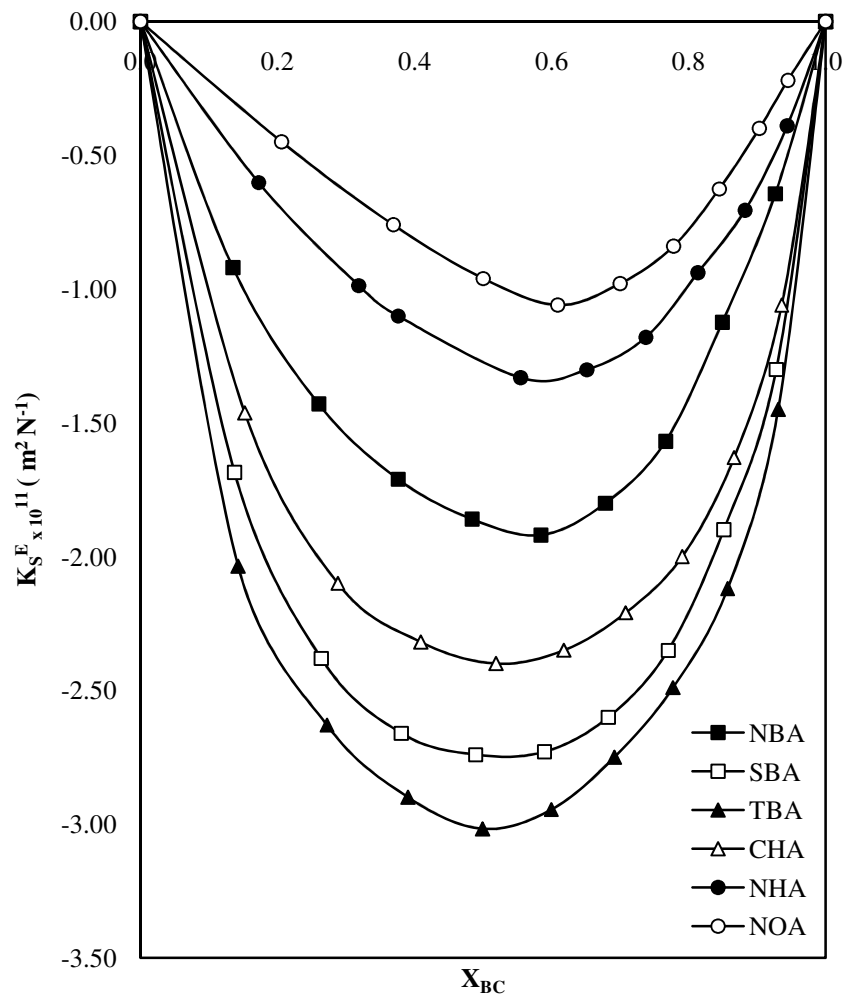


Fig.5.4.2. Plots of excess isentropic compressibility

(K_S^E)

vs mole fraction of Butylcarbitol (X_{BC}) at 308.15 K for the
binary mixtures of BC with
amines.

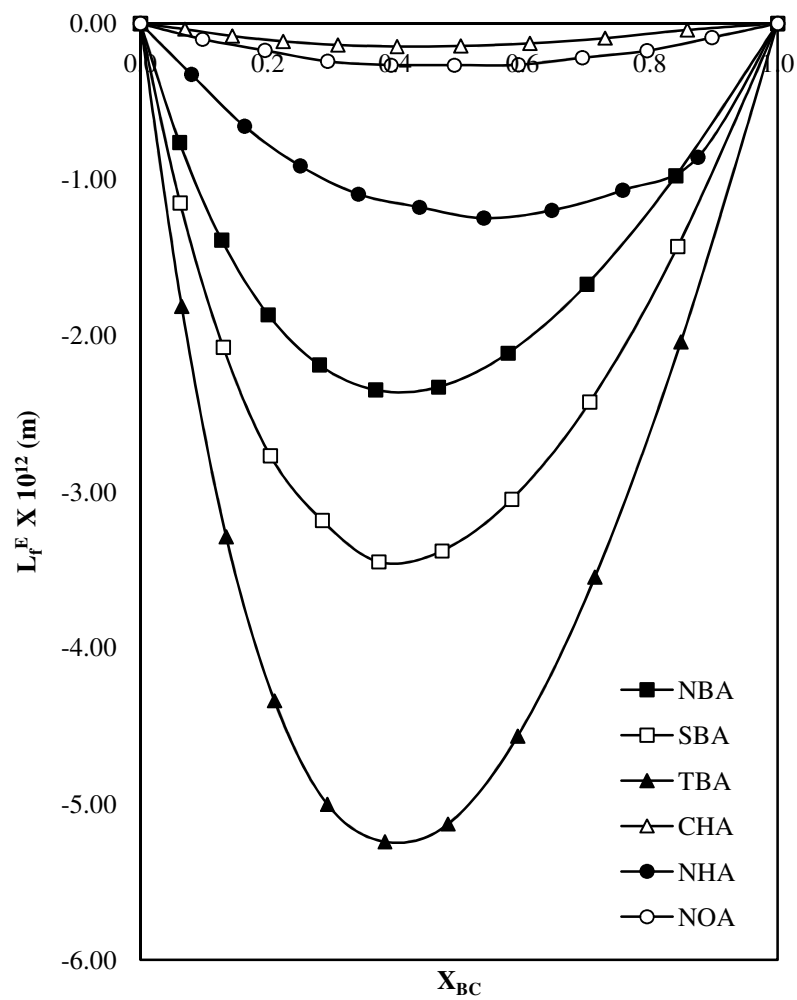


Fig. 5.4.3. Plots of excess isentropic compressibility (L_f^E) vs

mole fraction of Butylcarbitol (X_{BC}) at 308.15 K for the binary mixtures of BC with amines.

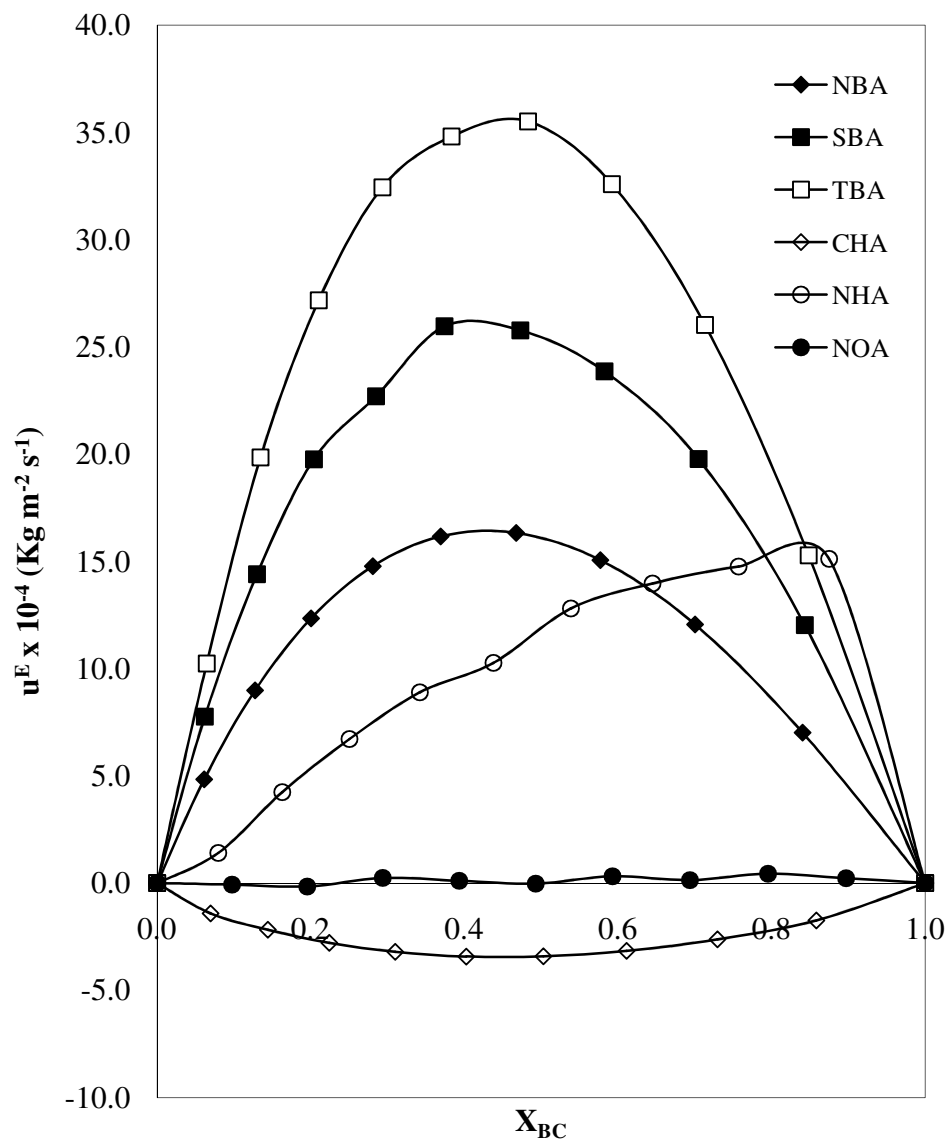


Fig.5.4.4. Plots of excess ultrasonic velocities (u^E) vs mole fraction of Butylcarbitol (X_{BC}) at 308.15 K for the binary mixtures of BC with amines.

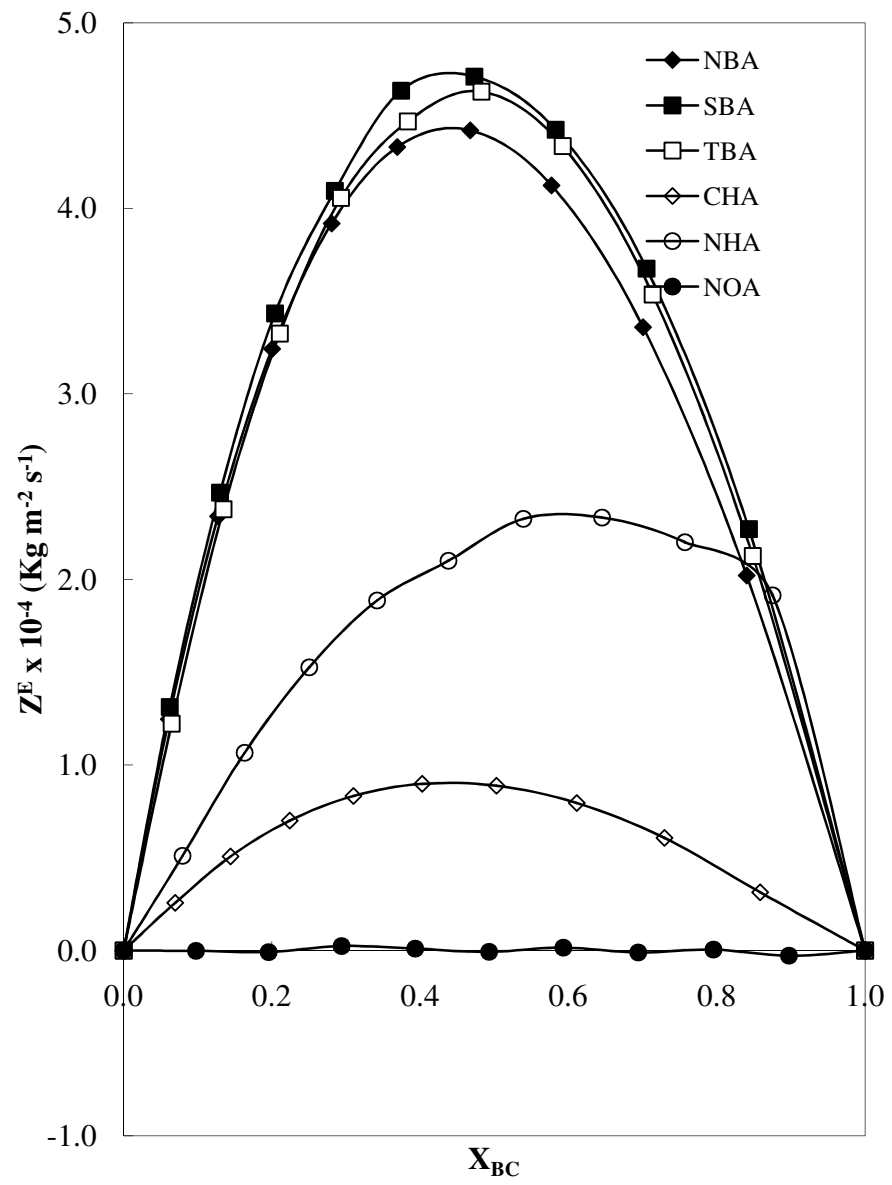
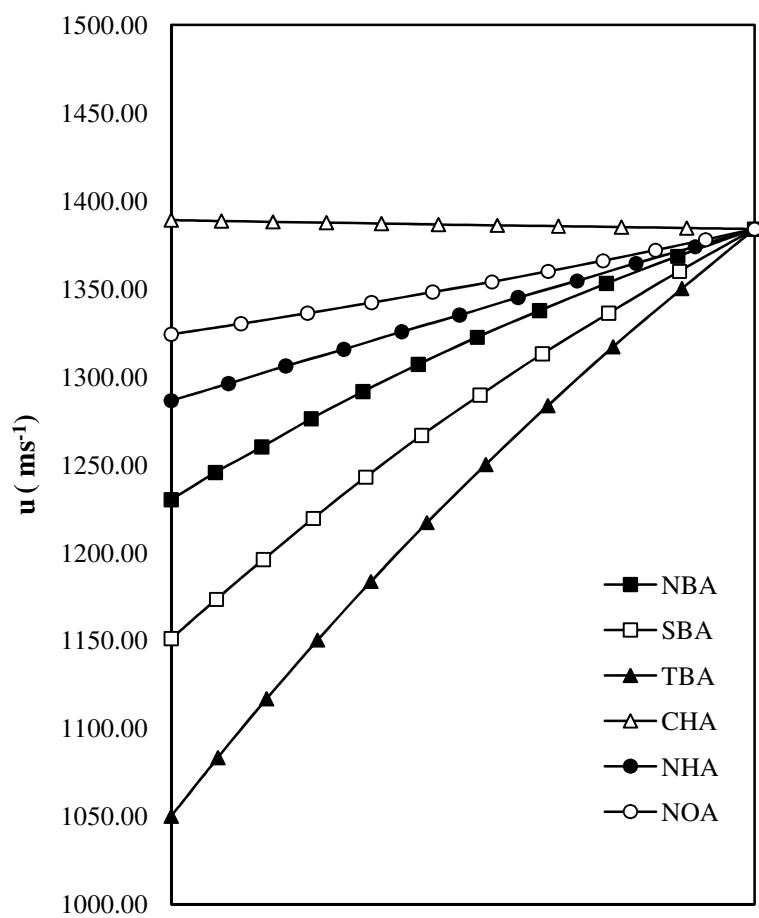


Fig.5.4.5. Plots of excess acoustic impedance (Z^E) vs mole fraction of Butylcarbitol (X_{BC}) at 308.15 K for the binary mixtures of BC with amines.



of **Fig. 5.3.1.** Plots of ultrasonic velocities (u) vs mole fraction of Ethyl carbitol (X_{EC}) at 308.15 K for the binary mixtures of EC with amines.

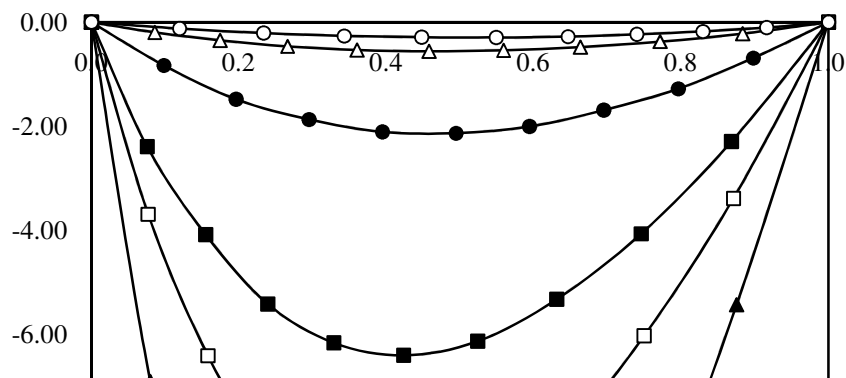


Fig.5.3.2. Plots of excess isentropic compressibility (K_S^E) vs mole fraction of Ethylcarbitol (X_{EC}) at 308.15 K for the binary mixtures of EC with amines.

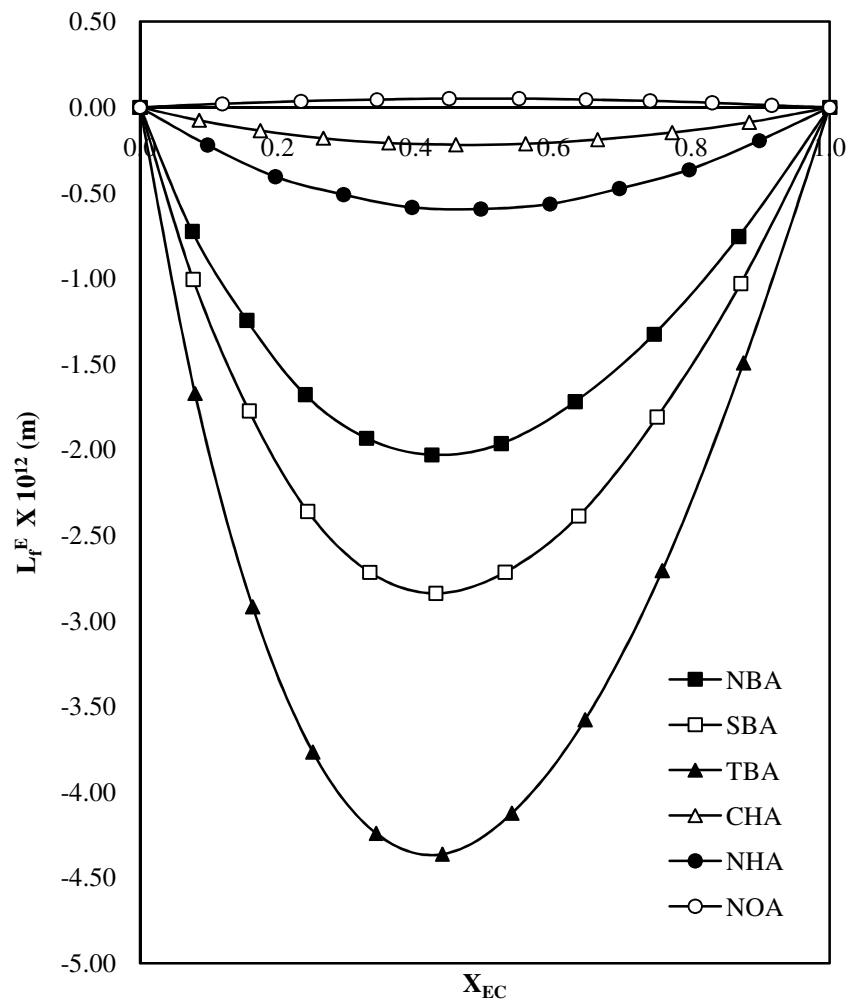


Fig.5.3.3. Plots of excess isentropic compressibility (L_f^E) vs

mole fraction of Ethylcarbitol (X_{EC}) at 308.15 K for the binary mixtures of EC with amines.

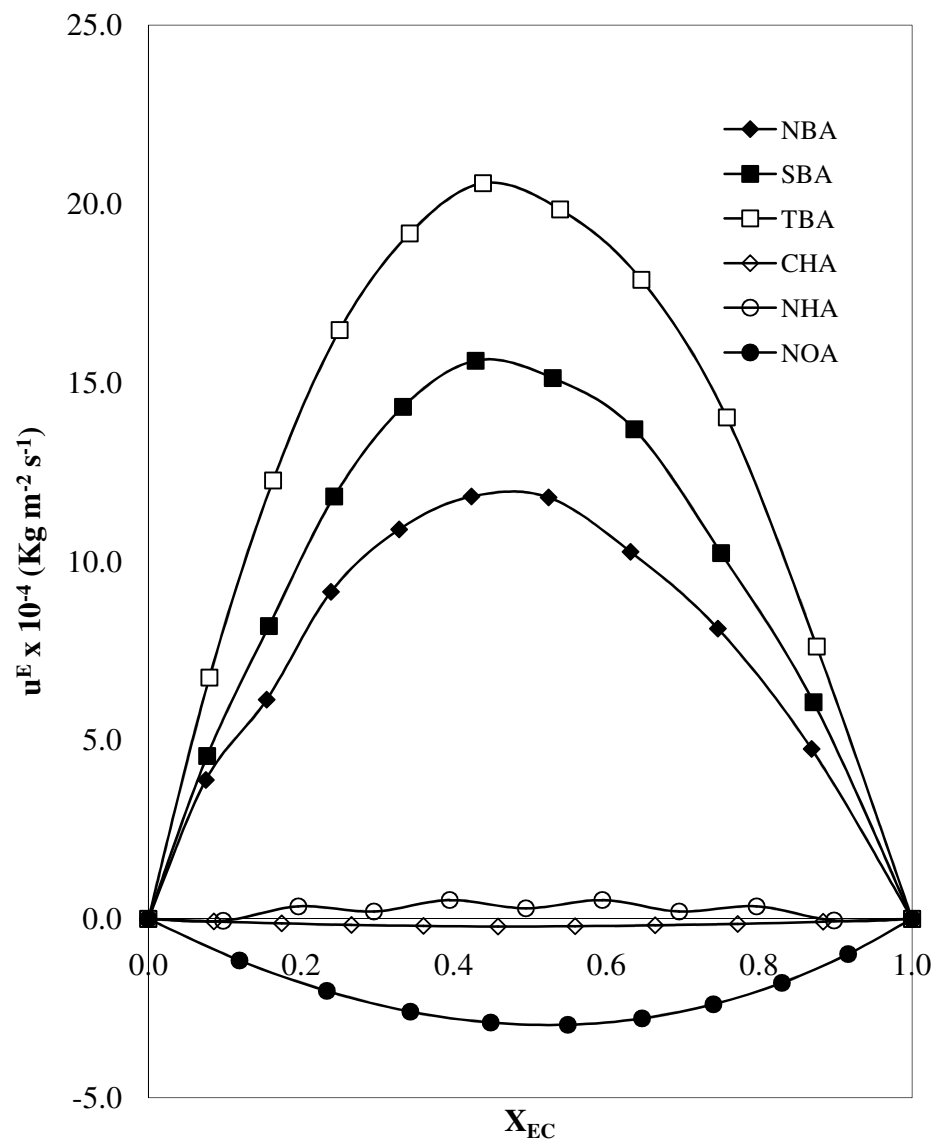


Fig.5.3.4. Plots of excess ultrasonic velocities (u^E) vs mole fraction of Ethylcarbitol (X_{EC}) at 308.15 K for the binary mixtures of EC with amines.

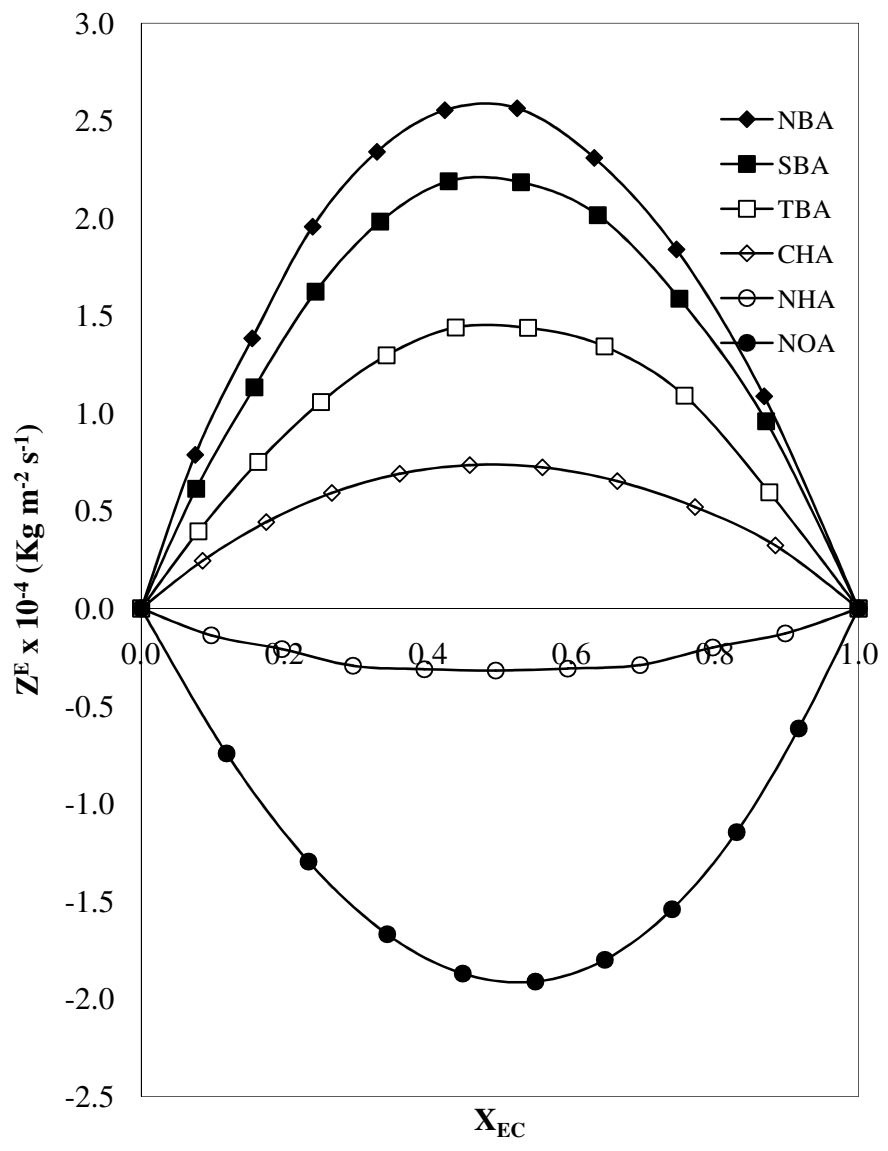


Fig.5.3.5. Plots of excess acoustic impedance (Z^E) vs mole fraction of Ethylcarbitol (X_{EC}) at 308.15 K for the binary mixtures of EC with amines.

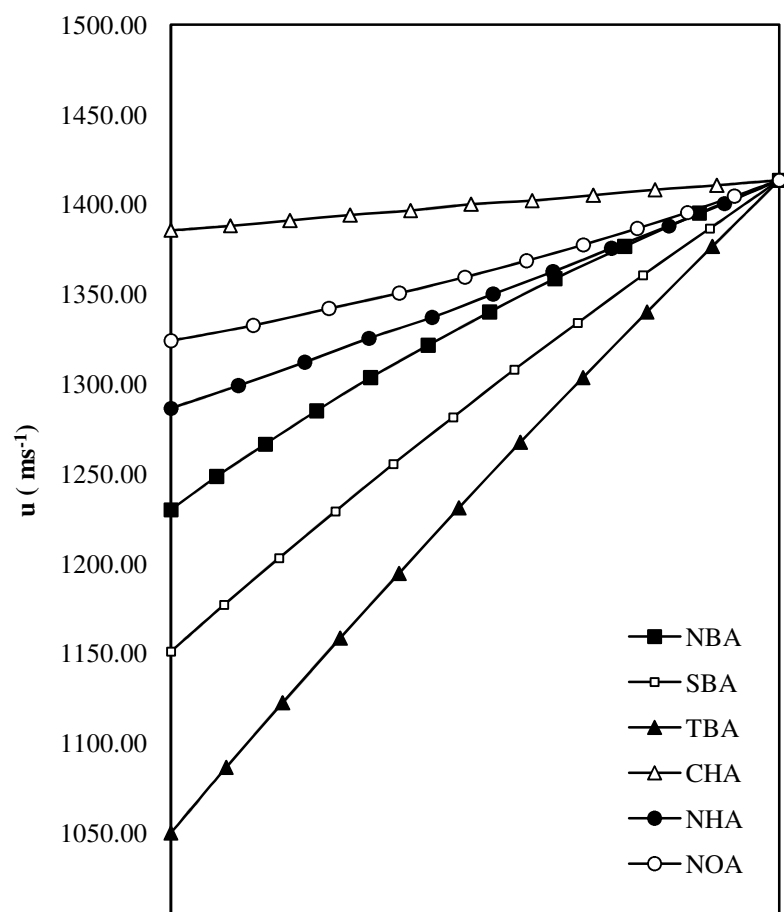


Fig. 5.2.1. Plots of ultrasonic velocities (u) vs mole fraction of Methyl carbitol (X_{MC}) at 308.15 K for the binary mixtures of MC with Amines.

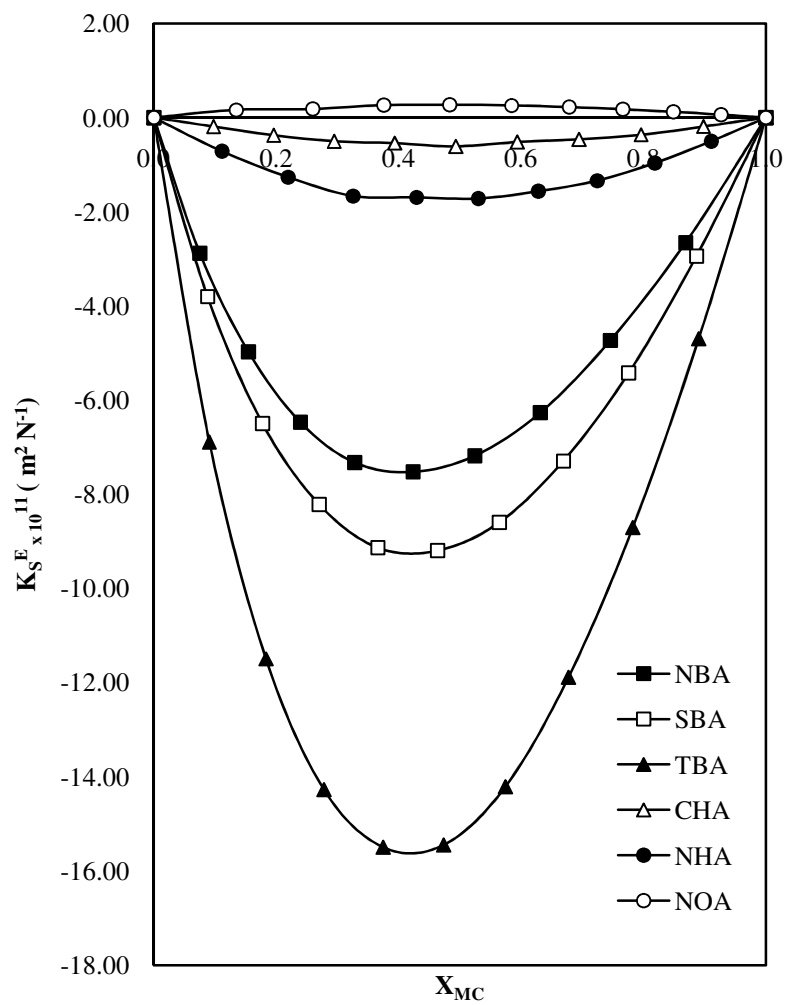


Fig: 5.2.2. Plots of excess isentropic compressibility (K_S^E) vs mole fraction of Methylcarbitol (X_{MC}) at 308.15 K for the

binary mixtures of MC with various amines.

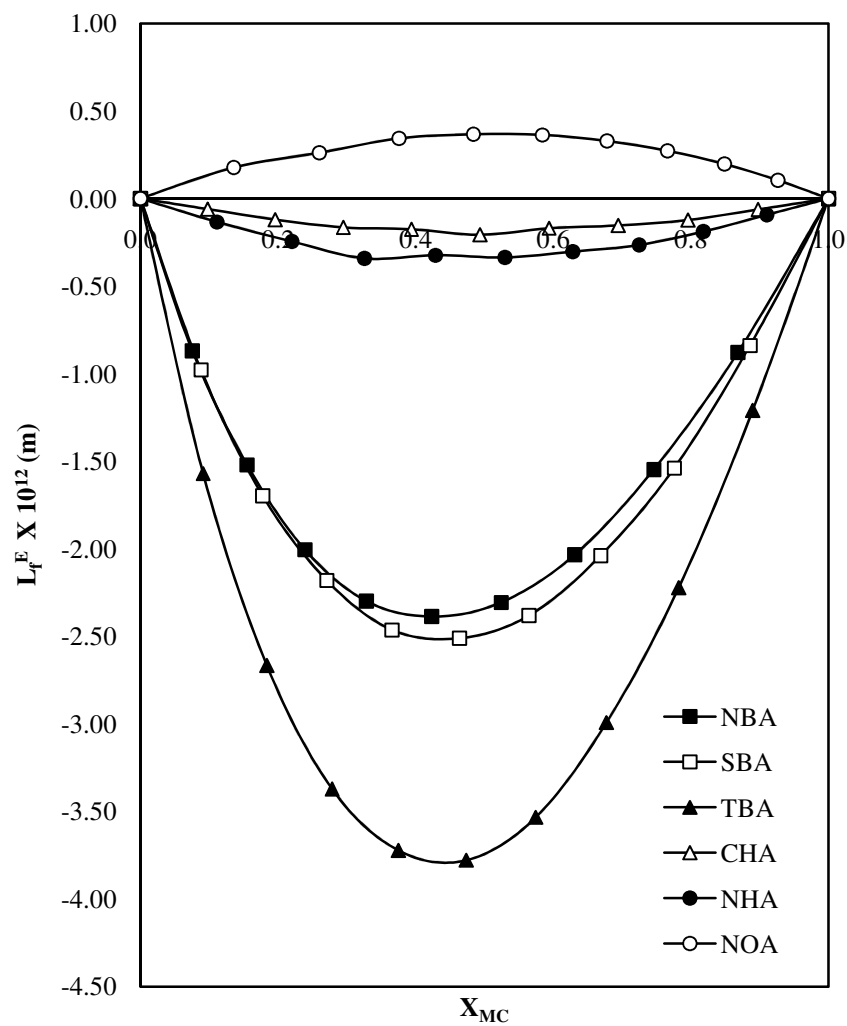


Fig.5.2.3. Plots of excess isentropic compressibility (L_f^E) vs mole fraction of Methylcarbitol (X_{MC}) at 308.15 K for the

binary mixtures of MC with amines.

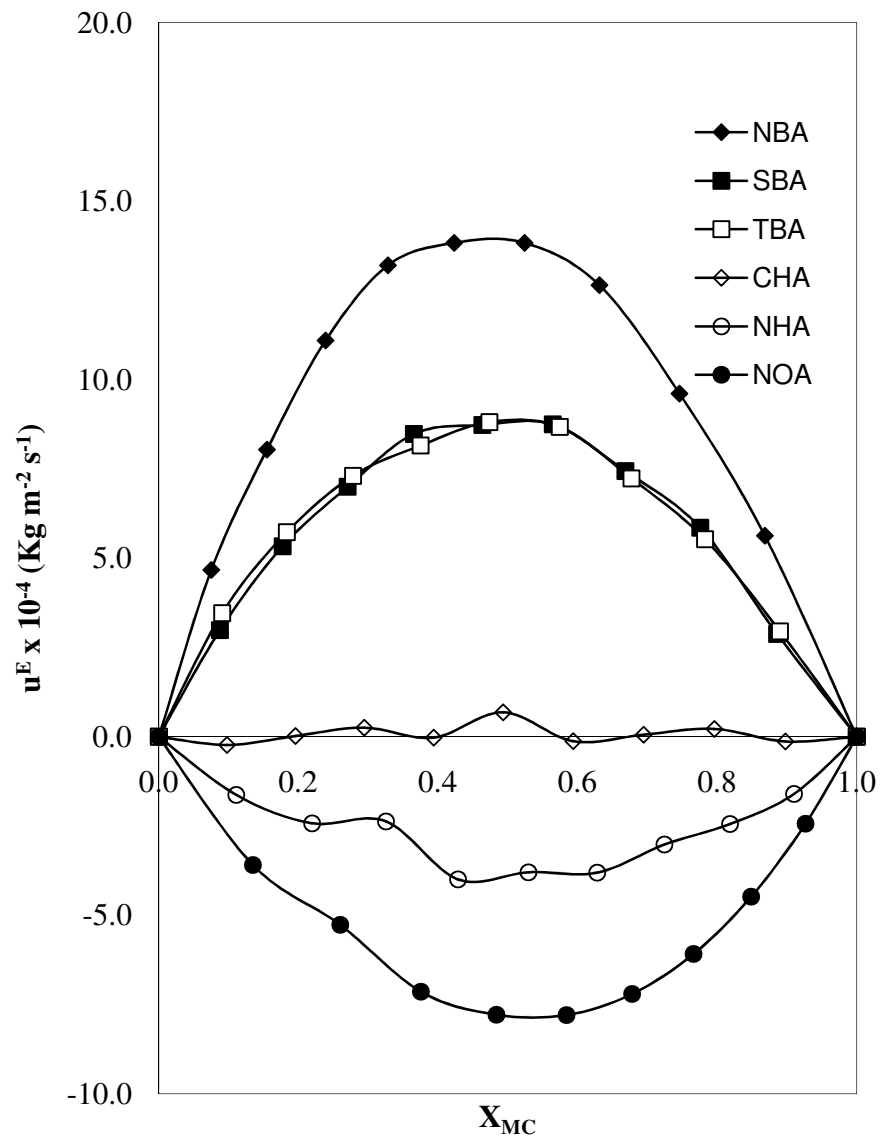


Fig. 5.2.4. Plots of excess ultrasonic velocities (u^E) vs mole fraction of Methylcarbitol (X_{MC}) at 308.15 K for the binary mixtures of MC with amines.

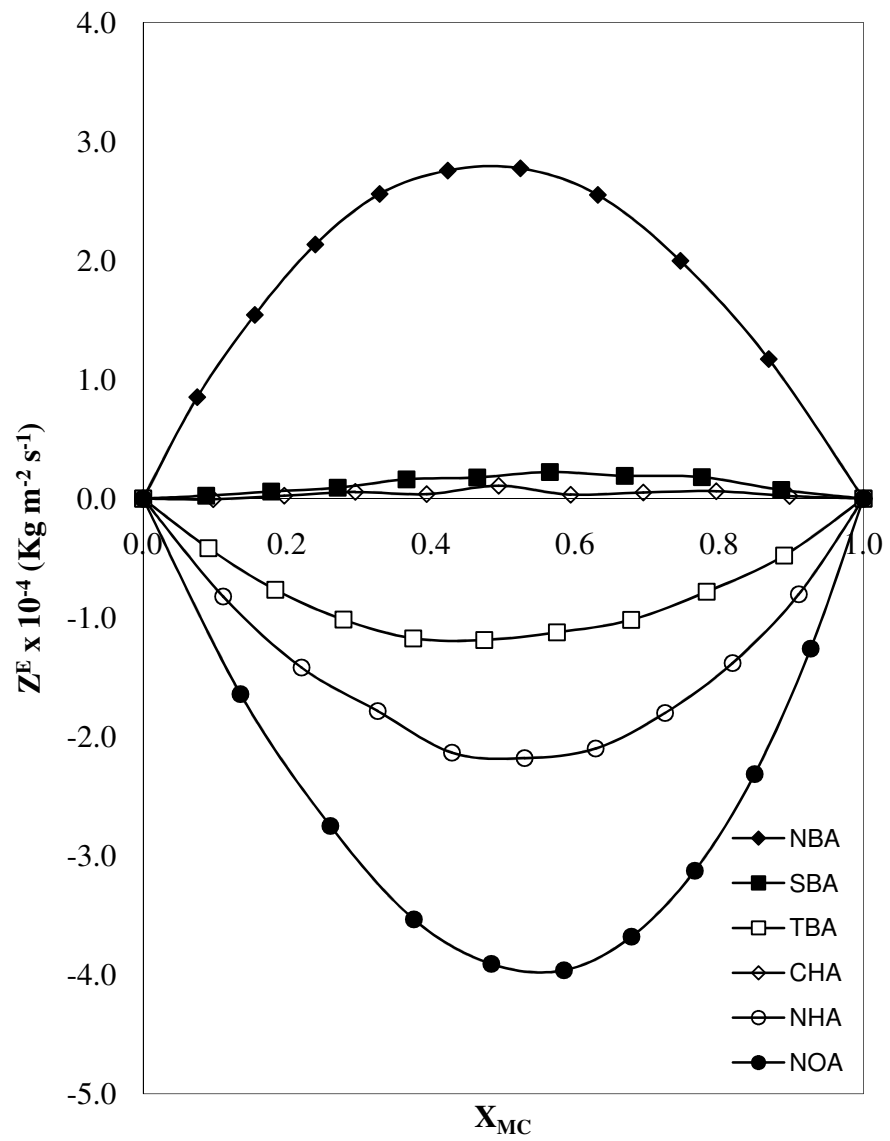


Fig. 5.2.5. Plots of excess acoustic impedance (Z^E) vs mole fraction of Methylcarbitol (X_{MC}) at 308.15 K for the binary mixtures of MC with amines.

<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	$Z \times 10^{-6}$ 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	0.7492	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

<p>Table: 5.3.2: 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 Ethyl Carbitol (EC) + Secondary Butylamine (SBA) 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	0.7084	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

Table:4.4.1: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of Butyl carbitol (BC) + N-Butyl amine (NBA) at 308.15 K.

Mole fraction of Butyl carbitol X_{BC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.7241	0.4248	0.0000	101.0081	0.0000	0.0000	---
0.0611	0.7457	0.7304	0.1189	105.3796	-0.1189	259.1301	7.2084
0.1276	0.7673	1.0360	0.2212	110.1317	-0.2212	392.7322	5.5985
0.2005	0.7889	1.3416	0.3040	115.3461	-0.3040	461.5525	4.5439
0.2807	0.8105	1.6472	0.3645	121.0847	-0.3645	487.3444	3.7884
0.3692	0.8321	1.9528	0.3996	127.4137	-0.3999	479.7355	3.2158
0.4675	0.8537	2.2584	0.4048	134.4448	-0.4048	442.7938	2.7618
0.5773	0.8753	2.5640	0.3748	142.2990	-0.3748	377.8210	2.3910
0.7007	0.8969	2.8696	0.3033	151.1254	-0.3033	284.1864	2.0812
0.8405	0.9185	3.1752	0.1816	161.1268	-0.1816	159.4479	1.8169
1.0000	0.9399	3.4811	0.0000	172.5716	0.0000	0.0000	---

Table:4.4.2: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of Butyl carbitol (BC) + Sec-Butyl amine (SBA) at 308.15 K.

Mole fraction of Butyl carbitol X_{BC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.7084	0.3994	0.0000	103.2468	0.0000	0.0000	---
0.0623	0.7316	0.7076	0.1162	107.5566	-0.1162	273.1110	7.4823
0.1301	0.7548	1.0156	0.2153	112.2505	-0.2153	409.3522	5.7584
0.2041	0.7780	1.3240	0.2956	117.3742	-0.2956	477.6902	4.6581
0.2851	0.8012	1.6322	0.3542	122.9793	-0.3542	501.5363	3.8789
0.3743	0.8244	1.9404	0.3875	129.1547	-0.3875	491.1298	3.2896
0.4730	0.8476	2.2486	0.3916	135.9903	-0.3916	451.0657	2.8247
0.5826	0.8708	2.5572	0.3624	143.5764	-0.3624	383.2591	2.4484
0.7053	0.8940	2.8654	0.2925	152.0738	-0.2925	286.8578	2.1338
0.8434	0.9172	3.1736	0.1751	161.6367	-0.1751	160.1982	1.8673
1.0000	0.9399	3.4811	0.0000	172.5716	0.0000	0.0000	---

Table:4.4.3: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of Butyl carbitol (BC) + Tert-Butyl amine (TBA) at 308.15 K.

Mole fraction of Butyl carbitol X_{BC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.6809	0.4122	0.0000	107.4167	0	0.0000	---
0.0647	0.7068	0.7191	0.1083	111.6330	-0.1083	261.0791	6.9162
0.1347	0.7327	1.0260	0.2004	116.1954	-0.2004	391.4984	5.3591
0.2106	0.7586	1.3329	0.2744	121.1390	-0.2743	456.0710	4.3573
0.2932	0.7845	1.6398	0.3278	126.5168	-0.3278	477.6654	3.6451
0.3836	0.8104	1.9467	0.3573	132.4080	-0.3572	466.2363	3.1045
0.4828	0.8363	2.2536	0.3597	138.8714	-0.3597	426.6532	2.6784
0.5922	0.8622	2.5605	0.3309	146.0002	-0.3308	360.7833	2.3314
0.7135	0.8881	2.8674	0.2655	153.9064	-0.2655	268.6851	2.0419
0.8485	0.9140	3.1743	0.1581	162.6996	-0.1581	149.3790	1.7972
1.0000	0.9399	3.4811	0.0000	172.5716	0.0000	0.0000	---

Table:4.4.4: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of Butyl carbitol (BC) + N-Hexyl amine (NHA) at 308.15 K.

Mole fraction of Butyl carbitol X_{BC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.7522	0.6001	0.0000	134.5254	0.0000	0.0000	---
0.0797	0.7710	0.8881	0.0584	137.5519	-0.0583	155.7336	3.4346
0.1631	0.7898	1.1761	0.1061	140.7201	-0.1061	239.1864	2.8293
0.2504	0.8086	1.4642	0.1427	144.0353	-0.1426	280.3280	2.4073
0.3420	0.8274	1.7523	0.1669	147.5168	-0.1668	292.3672	2.0905
0.4381	0.8462	2.0404	0.1781	151.1681	-0.1781	282.4380	1.8431
0.5390	0.8650	2.3285	0.1755	154.9993	-0.1755	254.6279	1.6436
0.6453	0.8838	2.6166	0.1574	159.0402	-0.1574	211.1655	1.4774
0.7572	0.9026	2.9047	0.1231	163.2913	-0.1230	153.7422	1.3374
0.8752	0.9214	3.1928	0.0712	167.7729	-0.0712	83.1920	1.2174
1.0000	0.9399	3.4811	0.0000	172.5716	0.0000	0.0000	---

Table:4.4.5: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of butyl carbitol (BC) + N-Octyl amine (NOA) at 308.15

K.

Mole fraction of Butyl carbitol X_{BC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.7704	0.9263	0.0000	167.7181	0.0000	0.0000	---
0.0975	0.7873	1.1818	0.0064	168.2034	-0.0064	70.2027	1.3016
0.1955	0.8042	1.4373	0.0115	168.6888	-0.0115	110.6690	1.1478
0.2940	0.8211	1.6928	0.0154	169.1744	-0.0153	131.0501	1.0298
0.3932	0.8380	1.9483	0.0175	169.6679	-0.0175	136.7612	0.9346
0.4929	0.8549	2.2038	0.0182	170.1612	-0.0182	131.4276	0.8571
0.5931	0.8718	2.4593	0.0177	170.6542	-0.0178	117.3859	0.7925
0.6940	0.8887	2.7148	0.0155	171.1546	-0.0155	96.1385	0.7370
0.7954	0.9056	2.9703	0.0119	171.6544	-0.0119	69.0211	0.6895
0.8974	0.9225	3.2258	0.0068	172.1574	-0.0068	36.8641	0.6481
1.0000	0.9399	3.4811	0.0000	172.5716	0.0000	0.0000	---

Table:4.4.6: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of Butyl carbitol (BC) + Cyclo hexylamine (CHA) at 308.15 K.

Mole fraction of Butyl carbitol X_{BC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.8525	1.3245	0.0000	116.3284	0.0000	0.0000	---
0.0697	0.8612	1.5402	0.0654	120.2545	-0.0653	54.6496	1.2884
0.1442	0.8699	1.7559	0.1204	124.4499	-0.1204	93.8406	1.1558
0.2241	0.8786	1.9716	0.1638	128.9495	-0.1638	119.9692	1.0426
0.3101	0.8873	2.1873	0.1940	133.7942	-0.1940	134.4747	0.9443
0.4027	0.8960	2.4030	0.2100	139.0091	-0.2100	138.3242	0.8589
0.5028	0.9047	2.6187	0.2099	144.6463	-0.2098	131.8963	0.7833
0.6113	0.9134	2.8344	0.1916	150.7557	-0.1915	115.2891	0.7160
0.7295	0.9221	3.0501	0.1524	157.4128	-0.1523	88.1691	0.6549
0.8585	0.9308	3.2658	0.0899	164.6769	-0.0899	50.1426	0.6001
1.0000	0.9399	3.4811	0.0000	172.5716	0.0000	0.0000	---

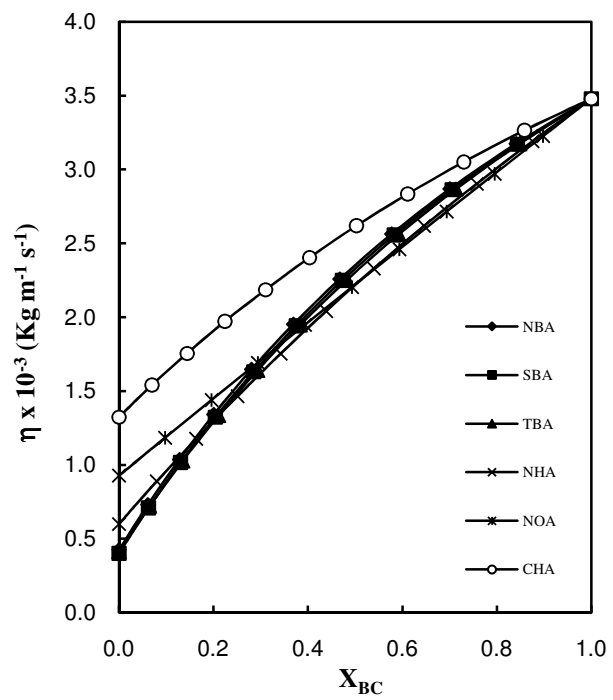


Fig:4.4.1: Plots of viscosities (η) for various amines vs mole fractions of Butyl carbitol (X_{BC}) at 308.15 K.

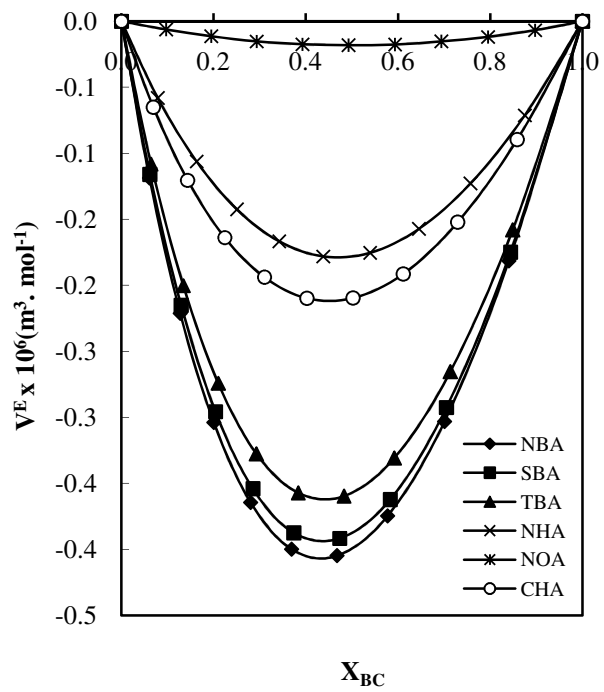


Fig: 4.4.2: Plots of excess volumes (V^E) for various amines vs mole fractions of Butyl carbitol (X_{BC}) at 308.15 K.

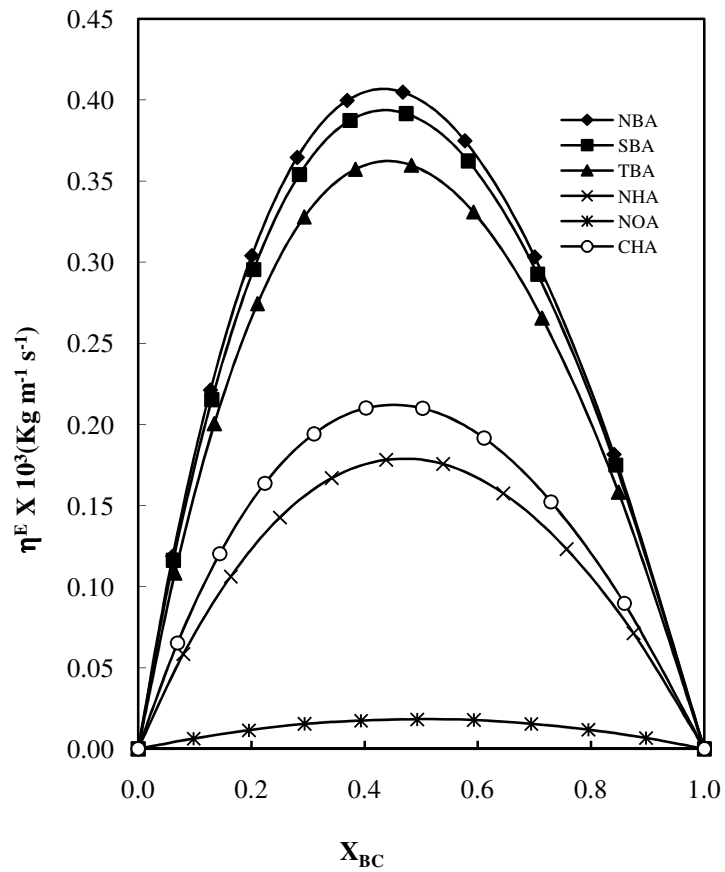


Fig:4.4.3: Plots of excess viscosities (η^E) for various amines vs mole fraction of Butyl Carbitol (X_{BC}) at 308.15 K.

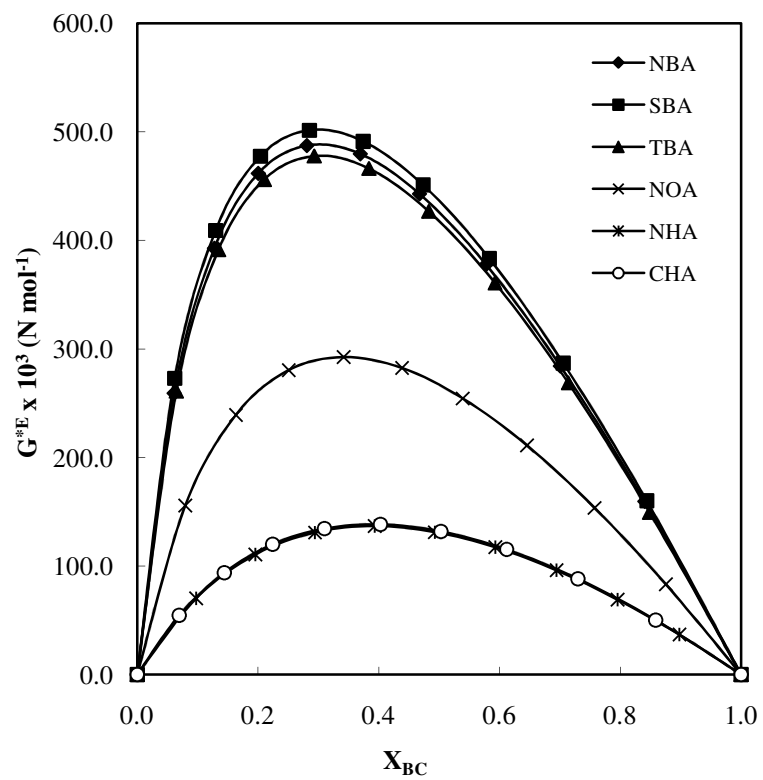


Fig: 4.4.4: Plots of excess Gibbs free energy of activation of viscous flow (G^{*E}) for various amines vs mole fraction of Butyl carbitol X_{BC} at 308.15 K.

Table:4.2.1: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of methyl carbitol + N-Butyl amine at 308.15

K.

Mole fraction of Methyl carbitol X_{MC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.7241	0.4248	0.0000	101.0081	0.0000	0.0000	---
0.0754	0.7524	0.6270	0.0280	101.9249	-0.0276	153.5778	3.6482
0.1551	0.7807	0.8392	0.0480	103.0345	-0.0426	243.1822	3.0762
0.2393	0.8090	1.0514	0.0650	104.3281	-0.0625	287.9341	2.6245
0.3286	0.8373	1.2636	0.0750	105.8210	-0.0742	302.1603	2.2739
0.4233	0.8656	1.4758	0.0800	107.5098	-0.0846	293.3867	1.9961
0.5241	0.8939	1.6881	0.0823	109.4128	-0.0816	265.5892	1.7687
0.6314	0.9222	1.9002	0.0740	111.5308	-0.0739	221.1652	1.5783
0.7460	0.9505	2.1124	0.0600	113.8840	-0.0601	161.3846	1.4139
0.8685	0.9788	2.3246	0.0390	116.4810	-0.0382	86.9413	1.2627
1.0000	1.0073	2.5469	0.0000	119.3289	0.0000	0.0000	---

Table:4.2.2: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of methyl carbitol (MC) + Sec-Butyl amine (SBA) at 308.15 K.

Mole fraction of Methyl carbitol X_{MC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.7084	0.3994	0.0000	103.2468	0.0000	0.0000	---
0.0877	0.7383	0.6142	0.0265	104.6555	-0.0246	164.5909	3.3487
0.1778	0.7682	0.8290	0.0478	106.1016	-0.0436	246.4497	2.7425
0.2705	0.7981	1.0438	0.0635	107.5927	-0.0625	282.7056	2.3291
0.3658	0.8280	1.2586	0.0736	109.1239	-0.0746	289.3862	2.0267
0.4639	0.8579	1.4734	0.0778	110.7019	-0.0765	274.6760	1.7933
0.5648	0.8878	1.6882	0.0759	112.3220	-0.0736	243.4884	1.6076
0.6688	0.9177	1.9030	0.0674	113.9956	-0.0635	198.6715	1.4547
0.7758	0.9476	2.1178	0.0524	115.7125	-0.0546	142.4288	1.3276
0.8862	0.9775	2.3326	0.0301	117.4881	-0.0312	75.8645	1.2193
1.0000	1.0073	2.5469	0.0000	119.3289	0.0000	0.0000	---

Table:4.2.3: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of methyl carbitol (MC) + Tert-Butyl amine (TBA) at 308.15 K.

Mole fraction of Methyl carbitol X_{MC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.6809	0.4122	0.0000	107.4167	0.0000	0.0000	---
0.0909	0.7135	0.6257	0.0195	108.5042	-0.0185	154.5473	3.0479
0.1837	0.7461	0.8392	0.0349	109.6166	-0.0336	231.1164	2.5106
0.2784	0.7787	1.0527	0.0462	110.7506	-0.0456	264.5185	2.1438
0.3751	0.8113	1.2662	0.0533	111.9095	-0.0547	269.9079	1.8739
0.4737	0.8439	1.4797	0.0563	113.0849	-0.0554	255.4136	1.6666
0.5745	0.8765	1.6932	0.0546	114.2909	-0.0532	225.5368	1.5001
0.6775	0.9091	1.9067	0.0482	115.5243	-0.0477	183.3255	1.3633
0.7826	0.9417	2.1202	0.0374	116.7773	-0.0376	130.9417	1.2495
0.8901	0.9743	2.3337	0.0214	118.0623	-0.0224	69.5801	1.1525
1.0000	1.0073	2.5469	0.0000	119.3289	0.0000	0.0000	---

Table:4.2.4: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of methyl carbitol (MC) + N-Hexyl amine (NHA) at 308.15 K.

Mole fraction of Methyl carbitol X_{MC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.7522	0.6001	0.0000	134.5254	0.0000	0.0000	---
0.1113	0.7777	0.7948	-0.0220	132.8350	0.0215	73.9875	1.2145
0.2199	0.8032	0.9895	-0.0387	131.1881	0.0365	112.3684	1.0625
0.3258	0.8287	1.1842	-0.0502	129.5806	0.0514	128.8472	0.9506
0.4291	0.8542	1.3789	-0.0566	128.0112	0.0542	130.7410	0.8642
0.5299	0.8797	1.5736	-0.0581	126.4788	0.0595	122.4173	0.7951
0.6284	0.9052	1.7683	-0.0552	124.9844	0.0543	106.6088	0.7380
0.7246	0.9307	1.9630	-0.0478	123.5249	0.0468	85.2828	0.6901
0.8185	0.9562	2.1577	-0.0359	122.0976	0.0347	59.8448	0.6499
0.9103	0.9817	2.3524	-0.0199	120.7037	0.0196	31.1908	0.6152
1.0000	1.0073	2.5469	0.0000	119.3289	0.0000	0.0000	---

Table:4.2.5: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of methyl carbitol (MC) + N-Octyl amine (NOA) at 308.15 K.

Mole fraction of Methyl carbitol X_{MC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.7704	0.9263	0.0000	167.7181	0.0000	0.0000	---
0.1351	0.7941	1.0884	-0.0568	161.1796	0.0599	18.8911	0.2107
0.2600	0.8178	1.2505	-0.0972	155.1326	0.0965	29.1702	0.1930
0.3759	0.8415	1.4126	-0.1229	149.5224	0.1276	33.6304	0.1782
0.4837	0.8652	1.5747	-0.1355	144.3040	0.1364	34.1029	0.1658
0.5843	0.8888	1.7368	-0.1364	139.4526	0.1354	31.8219	0.1549
0.6783	0.9126	1.8989	-0.1267	134.8877	0.1312	27.4558	0.1456
0.7663	0.9363	2.0610	-0.1072	130.6265	0.1063	21.8000	0.1379
0.8490	0.9600	2.2231	-0.0791	126.6255	0.0786	15.1293	0.1307
0.9267	0.9837	2.3852	-0.0429	122.8631	0.0414	7.8273	0.1258
1.0000	1.0073	2.5469	0.0000	119.3289	0.0000	0.0000	---

Table:4.2.6: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of methyl carbitol (MC) + Cyclo Hexyl amine (CHA) at 308.15 K.

Mole fraction of Methyl carbitol X_{MC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.8525	1.3245	0.0000	116.3284	0.0000	0.0000	---
0.0977	0.8680	1.4467	0.0028	116.6182	-0.0026	14.9256	0.2765
0.1960	0.8835	1.5689	0.0048	116.9121	-0.0042	25.2339	0.2614
0.2947	0.8990	1.6911	0.0064	117.2053	-0.0064	31.6409	0.2486
0.3939	0.9145	1.8133	0.0073	117.5000	-0.0073	34.6377	0.2370
0.4936	0.9300	1.9355	0.0076	117.7961	-0.0075	34.6424	0.2265
0.5939	0.9455	2.0577	0.0072	118.0959	-0.0069	31.9662	0.2166
0.6946	0.9610	2.1799	0.0063	118.3948	-0.0064	26.9511	0.2079
0.7959	0.9765	2.3021	0.0047	118.6972	-0.0045	19.7725	0.1995
0.8977	0.9920	2.4243	0.0025	119.0006	-0.0024	10.6596	0.1912
1.0000	1.0073	2.5469	0.0000	119.3289	0.0000	0.0000	---

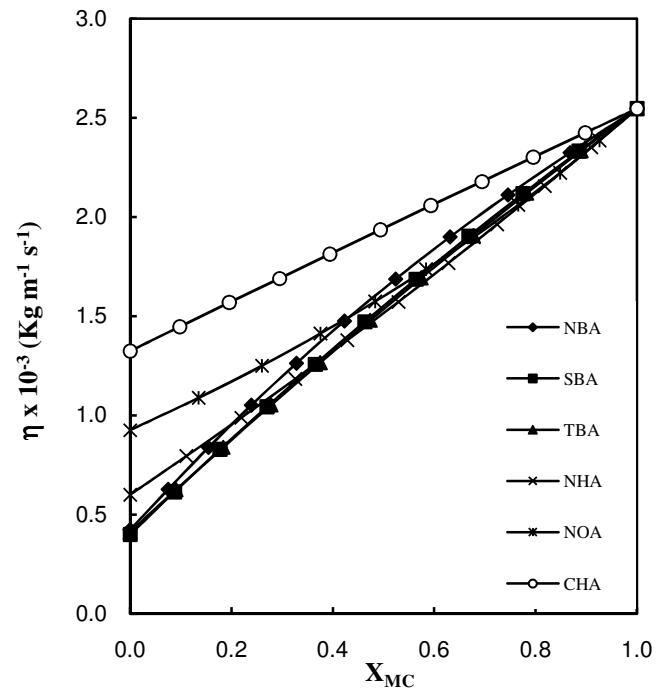


Fig:4.2.1: Plots of viscosities (η) for various amines vs mole fraction of methyl carbitol (X_{MC}) at 308.15 K.

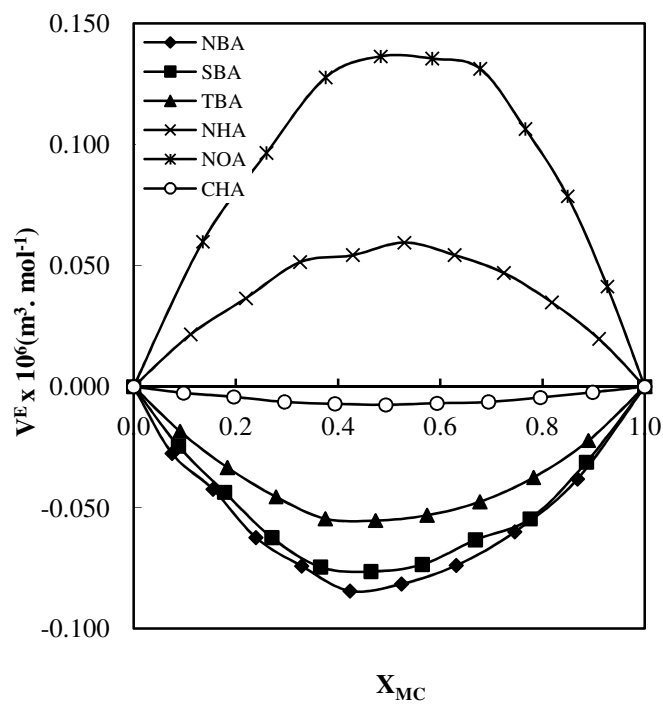


Fig:4.2.2: Plots of excess volumes (V^E) for various amines vs mole fraction of Methyl carbitol at 308.15 K

amines

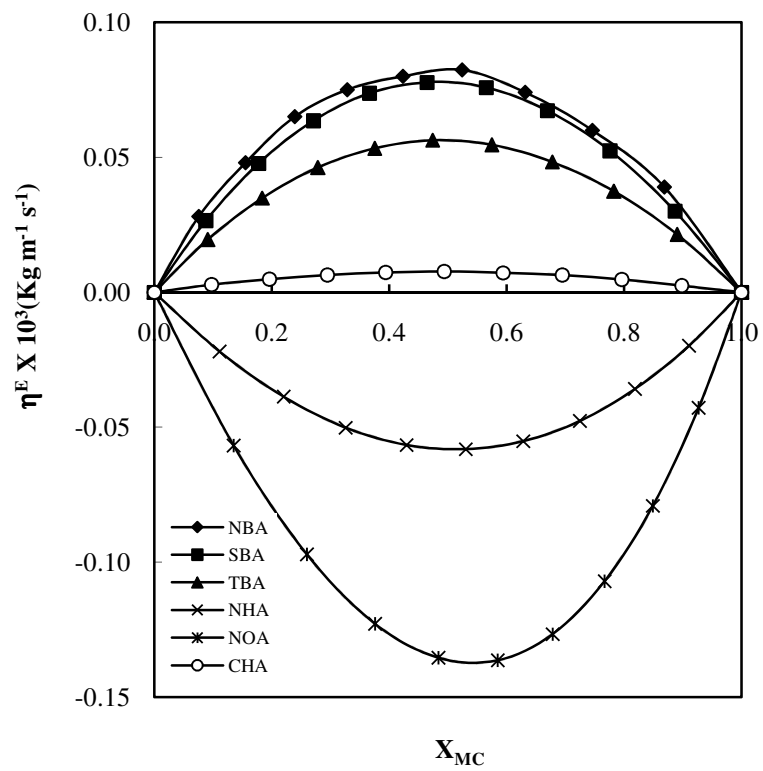


Fig:4.2.3: Plots of excess viscosities(η^E) for various glycols vs mole fraction of Methyl carbitol (X_{MC}) at 308.15 K.

amines

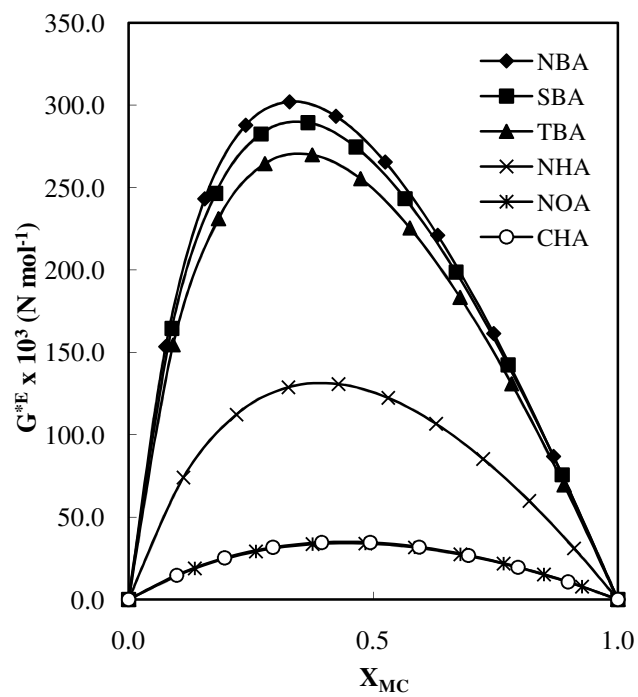


Fig:4.2.4: Plots of excess Gibbs free energy of activation (G^{*E}) of viscous flow for various amines Vs mole fractions of Methyl carbitol (X_{MC}) at 308.15 K.

Table:4.3.1: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of Ethyl carbitol (EC) + N-Butyl amine (NBA) at 308.15

K.

Mole fraction of Ethyl carbitol X_{EC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.7241	0.4248	0.0000	101.0081	0.0000	0.0000	---
0.0754	0.7492	0.6590	0.0576	103.7662	-0.0576	184.6346	4.2729
0.1550	0.7743	0.8932	0.1055	106.6765	-0.1055	281.4020	3.4576
0.2393	0.7994	1.1274	0.1423	109.7629	-0.1423	328.7884	2.8993
0.3286	0.8245	1.3616	0.1674	113.0315	-0.1674	342.9765	2.4893
0.4233	0.8496	1.5958	0.1798	116.4948	-0.1798	332.0644	2.1730
0.5241	0.8747	1.8301	0.1781	120.1850	-0.1756	300.3106	1.9188
0.6314	0.8998	2.0642	0.1609	124.1102	-0.1596	250.2688	1.7097
0.7460	0.9249	2.2984	0.1268	128.3040	-0.1245	183.2367	1.5338
0.8685	0.9500	2.5326	0.0741	132.7837	-0.0721	99.9161	1.3845
1.0000	0.9751	2.7664	0.0000	137.5961	0.0000	0.0000	---

Table:4.3.2: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of Ethyl carbitol (EC) + Sec-Butyl amine (SBA) at 308.15 K.

Mole fraction of Ethyl carbitol X_{EC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.7084	0.3994	0.0000	103.2468	0.0000	0.0000	---
0.0770	0.7351	0.6361	0.0544	105.8894	-0.0521	195.7015	4.4523
0.1580	0.7618	0.8728	0.0994	108.6673	-0.0892	295.0560	3.5783
0.2433	0.7885	1.1095	0.1342	111.5899	-0.1309	342.1638	2.9925
0.3334	0.8152	1.3462	0.1576	114.6803	-0.1522	354.6849	2.5645
0.4287	0.8419	1.5829	0.1688	117.9517	-0.1682	341.3894	2.2353
0.5295	0.8686	1.8196	0.1669	121.4085	-0.1621	307.2206	1.9738
0.6365	0.8953	2.0563	0.1503	125.0816	-0.1493	254.7236	1.7588
0.7501	0.9221	2.2931	0.1182	128.9650	-0.1153	185.5701	1.5794
0.8710	0.9487	2.5297	0.0686	133.1265	-0.0593	100.5905	1.4262
1.0000	0.9751	2.7664	0.0000	137.5961	0.0000	0.0000	---

Table:4.3.3: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of Ethyl carbitol (EC)+ Tert-Butyl amine (TBA) at 308.15 K.

Mole fraction of Methyl carbitol X_{MC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.6809	0.4122	0.0000	107.4167	0.0000	0.0000	---
0.0798	0.7103	0.6476	0.0475	109.8271	-0.0448	185.1331	4.0840
0.1633	0.7397	0.8830	0.0864	112.3512	-0.0891	278.9215	3.3009
0.2507	0.7691	1.1184	0.1160	114.9918	-0.1158	322.7300	2.7733
0.3423	0.7986	1.3538	0.1358	117.7443	-0.1364	333.5106	2.3879
0.4384	0.8279	1.5892	0.1449	120.6614	-0.1429	320.0600	2.0915
0.5394	0.8573	1.8246	0.1425	123.7135	-0.1363	286.8759	1.8547
0.6456	0.8867	2.0600	0.1279	126.9211	-0.1265	236.9378	1.6605
0.7574	0.9161	2.2954	0.1001	130.2960	-0.1025	171.9656	1.4981
0.8754	0.9455	2.5308	0.0577	133.8611	-0.0542	92.8088	1.3590
1.0000	0.9751	2.7664	0.0000	137.5961	0.0000	0.0000	---

Table:4.3.4: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of Ethyl carbitol (EC) + N-Hexyl amine (NHA) at 308.15 K.

Mole fraction of Ethyl carbitol X_{EC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.7522	0.6001	0.0000	134.5254	0.0000	0.0000	---
0.0980	0.7745	0.8167	0.0043	134.8251	-0.0039	97.0299	1.7924
0.1964	0.7968	1.0330	0.0074	135.1246	-0.0073	148.8281	1.5399
0.2953	0.8191	1.2493	0.0095	135.4279	-0.0095	172.7061	1.3552
0.3946	0.8414	1.4656	0.0107	135.7308	-0.0107	177.5589	1.2137
0.4944	0.8639	1.6819	0.0108	136.0057	-0.0107	168.3199	1.1005
0.5946	0.8860	1.8982	0.0100	136.3430	-0.0102	148.7647	1.0078
0.6953	0.9083	2.1145	0.0082	136.6520	-0.0080	120.5991	0.9296
0.7964	0.9306	2.3308	0.0055	136.9603	-0.0052	85.6050	0.8624
0.8979	0.9529	2.5471	0.0019	137.2681	-0.0018	44.9278	0.8012
1.0000	0.9751	2.7664	0.0000	137.5961	0.0000	0.0000	---

Table:4.3.5: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of Ethyl carbitol (EC) + N-Octyl amine (NOA) at 308.15

K.

Mole fraction of Ethyl carbitol X_{EC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.7704	0.9263	0.0000	167.7181	0.0000	0.0000	---
0.1193	0.7909	1.1103	-0.0355	164.1190	0.0354	112.1496	1.7248
0.2336	0.8114	1.2943	-0.0618	160.6713	0.0624	206.9198	1.8689
0.3432	0.8319	1.4783	-0.0795	157.3654	0.0727	288.8857	2.0741
0.4483	0.8524	1.6623	-0.0889	154.1924	0.0884	361.0009	2.3647
0.5493	0.8729	1.8463	-0.0908	151.1451	0.0901	425.3189	2.7866
0.6464	0.8934	2.0303	-0.0854	148.2160	0.0854	483.2902	3.4339
0.7398	0.9139	2.2143	-0.0733	145.3982	0.0765	535.9917	4.5281
0.8298	0.9344	2.3983	-0.0549	142.6860	0.0515	584.2606	6.7371
0.9164	0.9549	2.5823	-0.0303	140.0726	0.0313	628.7123	13.3848
1.0000	0.9751	2.7664	0.0000	137.5961	0.0000	0.0000	---

Table:4.3.6: Values of Density (ρ), Viscosity (η), Excess viscosity (η^E), Molar volume (V), Excess molar volume (V^E), Excess Gibbs free energy of activation of viscous flow (G^{*E}) and Grunberg-Nissan interaction parameter (d^1) for the binary liquid mixtures of Ethyl carbitol (EC) + Cyclo Hexyl amine (CHA) at 308.15 K.

Mole fraction of Ethyl carbitol X_{EC}	$\rho \times 10^{-3}$ Kg m ⁻³	$\eta \times 10^3$ Kg m ⁻¹ s ⁻¹	$\eta^E \times 10^3$ Kg m ⁻¹ s ⁻¹	$V \times 10^5$ m ³ mol ⁻¹	$V^E \times 10^6$ m ³ mol ⁻¹	$G^{*E} \times 10^3$ N mol ⁻¹	d^1
0.0000	0.8525	1.3245	0.0000	116.3284	0.0000	0.0000	---
0.0859	0.8648	1.4687	0.0203	118.1504	-0.0214	25.2301	0.5105
0.1745	0.8771	1.6129	0.0368	120.0291	-0.0354	43.1754	0.4755
0.2660	0.8894	1.7571	0.0491	121.9699	-0.0461	54.7613	0.4442
0.3605	0.9017	1.9013	0.0570	123.9742	-0.0590	60.7052	0.4164
0.4581	0.9140	2.0455	0.0605	126.0432	-0.0612	61.5534	0.3917
0.5591	0.9263	2.1897	0.0590	128.1858	-0.0586	57.6533	0.3690
0.6636	0.9386	2.3339	0.0526	130.4027	-0.0515	49.3307	0.3484
0.7718	0.9509	2.4781	0.0407	132.6985	-0.0412	36.8031	0.3295
0.8838	0.9632	2.6223	0.0234	135.0737	-0.0216	20.2702	0.3125
1.0000	0.9751	2.7664	0.0000	137.5961	0.0000	0.0000	---

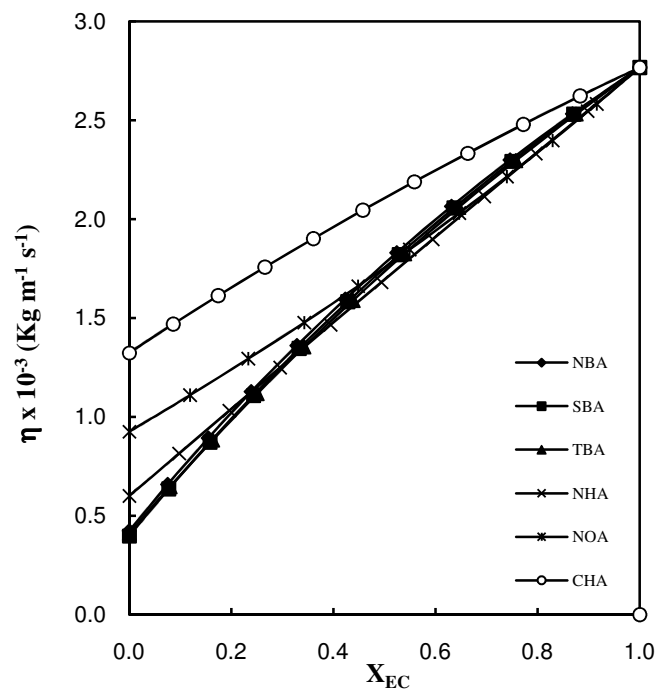


Fig:4.3.1: Plots of viscosities (η) for various amines vs mole fractions of Ethyl carbitol (X_{EC}) at 308.15 K.

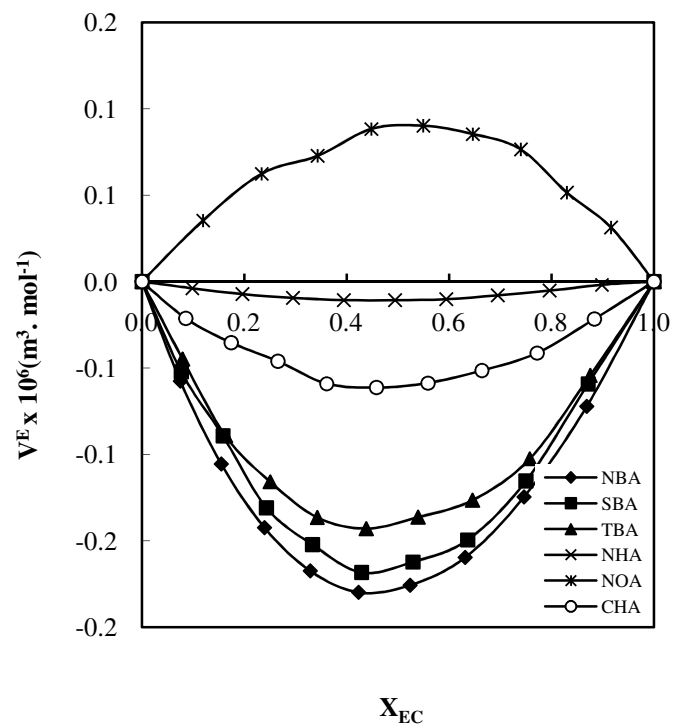


Fig:4.3.2: Plots of excess volumes (V^E) for various amines vs mole fraction of Ethyl carbitol (X_{EC}) at 308.15 K.

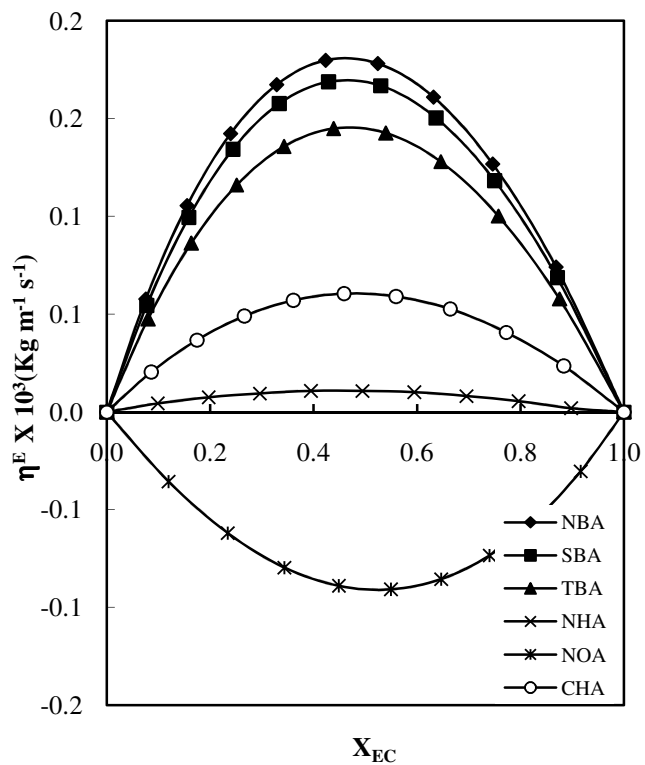


Fig:4.3.3: Plots of excess viscosities(η^E) for various glycols vs mole fractions of Ethyl carbitol (X_{EC}) at 308.15 K.

amines

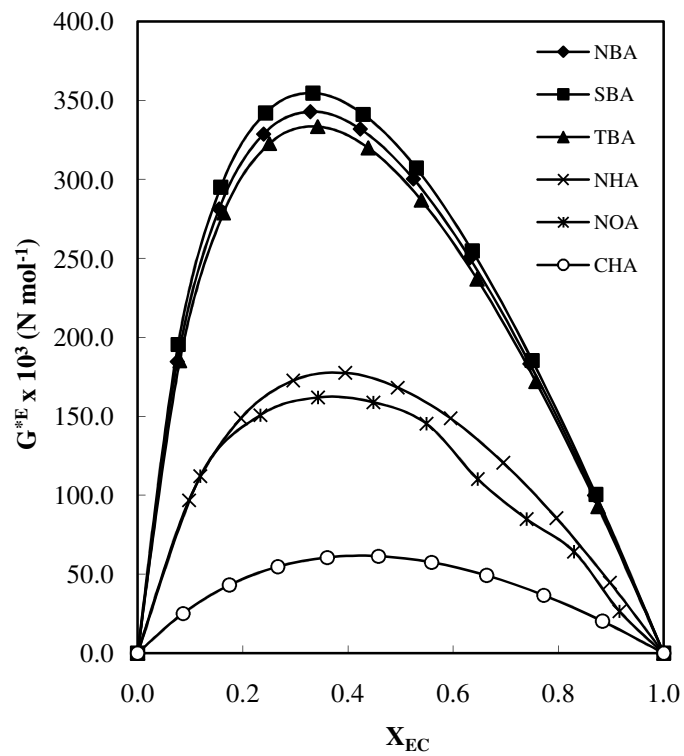


Fig:4.3.4: Plots of excess Gibbs free energy of activation of viscous flow (G^{*E}) for various amines vs mole fraction of ethyl carbitol (X_{EC}) at 308.15 K.

Table 5.4.7: The Co-efficient of a_i of the Redlich-Kister type polynomial equation (5.7) and the corresponding standard deviations $\sigma(Y^E)$ for the binary liquid mixtures of BC+Amines at 308.15 K.						
Excess Property	A₀	A₁	A₂	A₃	A₄	σ
Butyl carbitol (BC) + N- Butyl amine (NBA)						
$K_S^E \times 10^{11} \text{ (m}^2 \text{ N}^{-1}\text{)}$	-0.0279	-42.9320	84.5371	-60.4061	18.8392	0.02947
$L_f^E \times 10^{12} \text{ (m)}$	-0.0068	-13.7730	25.6101	-16.8147	4.9870	0.0075
$Z^E \times 10^{-4} \text{ (Kg m}^{-2} \text{ s}^{-1}\text{)}$	0.0024	22.3528	-33.7492	14.7012	-3.3087	0.00413
$U^E \text{ (m s}^{-1}\text{)}$	0.03097	86.2830	-136.4081	62.3510	-12.2743	0.0445
Butyl carbitol (BC) + Sec-Butyl amine (SBA)						
$K_S^E \times 10^{11} \text{ (m}^2 \text{ N}^{-1}\text{)}$	-0.0571	-69.5970	142.8109	-109.4504	36.3128	0.0704
$L_f^E \times 10^{12} \text{ (m)}$	-0.0122	-20.4082	39.2437	-27.8041	8.9849	0.0193
$Z^E \times 10^{-4} \text{ (Kg m}^{-2} \text{ s}^{-1}\text{)}$	0.0005	23.1769	-34.6742	16.6983	-5.2008	0.0248
$U^E \text{ (m s}^{-1}\text{)}$	0.04918	137.3790	-231.8604	141.9557	-47.5401	0.3120
Butyl carbitol (BC) + Tert-Butyl amine (TBA)						
$K_S^E \times 10^{11} \text{ (m}^2 \text{ N}^{-1}\text{)}$	-0.07542	-122.6108	258.3238	-201.6577	66.0599	0.1073
$L_f^E \times 10^{12} \text{ (m)}$	-0.0087	-31.6691	61.1457	-42.5269	13.0664	0.0209
$Z^E \times 10^{-4} \text{ (Kg m}^{-2} \text{ s}^{-1}\text{)}$	-0.0100	21.1289	-26.5184	5.4635	-0.0652	0.0173
$U^E \text{ (m s}^{-1}\text{)}$	0.0106	182.0642	-277.2899	121.4711	-26.1673	0.2263
Butyl carbitol (BC) + N-Hexyl amine (NHA)						
$K_S^E \times 10^{11} \text{ (m}^2 \text{ N}^{-1}\text{)}$	0.0732	-17.5122	34.3989	-37.2248	20.2024	0.1146
$L_f^E \times 10^{12} \text{ (m)}$	0.0307	-5.9709	12.2515	-14.8753	8.5367	0.0495

$Z^E \times 10^{-4} (\text{Kg m}^{-2} \text{s}^{-1})$	-0.0717	10.2644	-23.4410	35.0115	-21.6932	0.1244
$U^E (\text{m s}^{-1})$	-0.7852	54.1629	-173.8472	338.4840	-217.2851	1.3070
Butyl carbitol (BC) + N-Octyl amine (NOA)						
$K_S^E \times 10^{11} (\text{m}^2 \text{N}^{-1})$	0.0027	-4.0243	4.7007	-0.6188	-0.0595	0.0153
$L_f^E \times 10^{12} (\text{m})$	0.0001	-1.1681	1.2841	-0.0656	-0.0511	0.0062
$Z^E \times 10^{-4} (\text{Kg m}^{-2} \text{s}^{-1})$	-0.007	-0.0775	0.6847	-1.3452	0.7349	0.0145
$U^E (\text{m s}^{-1})$	-0.03974	0.2488	-1.4763	5.5953	-4.3127	0.1533
Butyl carbitol (BC) + Cyclohexyl amine (CHA)						
$K_S^E \times 10^{11} (\text{m}^2 \text{N}^{-1})$	0.0044	-1.5520	1.0986	1.8767	-1.4269	0.0059
$L_f^E \times 10^{12} (\text{m})$	0.0019	-0.6379	0.4152	0.8481	-0.6268	0.0025
$Z^E \times 10^{-4} (\text{Kg m}^{-2} \text{s}^{-1})$	-0.0029	4.1679	-4.5203	-1.2711	1.6243	0.0069
$U^E (\text{m s}^{-1})$	-0.0639	-20.2399	43.6159	-42.2443	18.9349	0.0656

Table 5.3.7: The Co-efficient of a_i of the Redlich-Kister type polynomial equation (5.7) and the corresponding standard deviations $\sigma(Y^E)$ for the binary liquid mixtures of EC+Amines at 308.15 K.						
Excess Property	A₀	A₁	A₂	A₃	A₄	σ
Ethyl carbitol (EC) + N- Butyl amine (NBA)						
$K_S^E \times 10^{11} \text{ (m}^2 \text{ N}^{-1}\text{)}$	-0.0200	-35.0128	59.4828	-32.7713	8.3213	0.0313
$L_f^E \times 10^{12} \text{ (m)}$	-0.0056	-10.4969	16.3913	-7.4699	1.5800	0.0113
$Z^E \times 10^{-4} \text{ (Kg m}^{-2} \text{ s}^{-1}\text{)}$	0.0054	10.9243	-11.6015	-0.6028	1.2788	0.0195
$U^E \text{ (m s}^{-1}\text{)}$	0.0747	49.7653	-47.9539	-17.0857	15.2477	0.2499
Ethyl carbitol (EC) + Sec-Butyl amine (SBA)						
$K_S^E \times 10^{11} \text{ (m}^2 \text{ N}^{-1}\text{)}$	-0.0101	-54.2140	93.4227	-52.3536	13.1528	0.0215
$L_f^E \times 10^{12} \text{ (m)}$	-0.0006	-14.6635	22.6929	-9.8925	1.8611	0.0086
$Z^E \times 10^{-4} \text{ (Kg m}^{-2} \text{ s}^{-1}\text{)}$	-0.0037	8.4742	-6.3897	-4.7103	2.6373	0.0183
$U^E \text{ (m s}^{-1}\text{)}$	-0.0206	61.9162	-44.6980	-51.2556	34.1209	0.2116
Ethyl carbitol (EC) + Tert-Butyl amine (TBA)						
$K_S^E \times 10^{11} \text{ (m}^2 \text{ N}^{-1}\text{)}$	-0.0425	-99.3634	187.6197	-125.3552	37.1696	0.0552
$L_f^E \times 10^{12} \text{ (m)}$	-0.0062	-23.8611	40.5849	-22.7746	6.0624	0.0104
$Z^E \times 10^{-4} \text{ (Kg m}^{-2} \text{ s}^{-1}\text{)}$	0.0014	5.1543	-2.7212	-4.5062	2.0659	0.0154
$U^E \text{ (m s}^{-1}\text{)}$	0.0168	93.1672	-115.2062	19.6545	2.3111	0.1522
Ethyl carbitol (EC) + N-Hexyl amine (NHA)						
$K_S^E \times 10^{11} \text{ (m}^2 \text{ N}^{-1}\text{)}$	0.0035	-9.7904	12.2736	-2.4886	0.0025	0.0136
$L_f^E \times 10^{12} \text{ (m)}$	0.0013	-2.6171	2.9943	-0.2223	-0.1559	0.0055

$Z^E \times 10^{-4} (\text{Kg m}^{-2} \text{s}^{-1})$	-0.0019	-1.5197	2.3315	-1.4953	0.6855	0.0117
$U^E (\text{m s}^{-1})$	-0.0296	0.5216	5.0859	-11.311	5.7076	0.1510
Ethyl carbitol (EC) + N-Octyl amine (NOA)						
$K_S^E \times 10^{11} (\text{m}^2 \text{N}^{-1})$	0.0005	-1.1942	1.3739	-0.4860	0.3037	0.0024
$L_f^E \times 10^{12} (\text{m})$	0.0002	0.1760	-0.0636	-0.2467	0.1330	0.0011
$Z^E \times 10^{-4} (\text{Kg m}^{-2} \text{s}^{-1})$	-0.0014	-6.8094	4.9409	2.2465	-0.3715	0.0059
$U^E (\text{m s}^{-1})$	0.0004	-10.8131	8.9945	1.3532	0.4651	0.0017
Ethyl carbitol (EC) + Cyclohexyl amine (CHA)						
$K_S^E \times 10^{11} (\text{m}^2 \text{N}^{-1})$	-0.0008	-2.6348	3.7155	-1.6359	0.5532	0.0020
$L_f^E \times 10^{12} (\text{m})$	0.0003	-1.0230	1.4233	-0.6266	0.2254	0.0009
$Z^E \times 10^{-4} (\text{Kg m}^{-2} \text{s}^{-1})$	-0.0023	3.2695	-4.3945	2.1073	-0.9766	0.0053
$U^E (\text{m s}^{-1})$	0.0008	-0.9115	1.0688	-0.1763	0.0188	0.0001

Table 5.2.7: The Co-efficient of a_i of the Redlich-Kister type polynomial equation (5.7) and the corresponding standard deviations $\sigma(Y^E)$ for the binary liquid mixtures of MC+Amines at 308.15 K.						
Excess Property	A₀	A₁	A₂	A₃	A₄	σ
Methyl carbitol (MC) + N- Butyl amine (NBA)						
$K_S^E \times 10^{11} \text{ (m}^2 \text{ N}^{-1}\text{)}$	-0.0224	-42.8585	76.9814	-47.6183	13.5260	0.0268
$L_f^E \times 10^{12} \text{ (m)}$	-0.0057	-12.8386	21.2897	-11.3919	2.9483	0.0081
$Z^E \times 10^{-4} \text{ (Kg m}^{-2} \text{ s}^{-1}\text{)}$	0.0053	12.0546	-13.4148	0.5319	0.8221	0.0134
$U^E \text{ (m s}^{-1}\text{)}$	0.0580	65.0406	-83.8419	19.1073	-0.3686	0.1536
Methyl carbitol (MC) + Sec-Butyl amine (SBA)						
$K_S^E \times 10^{11} \text{ (m}^2 \text{ N}^{-1}\text{)}$	-0.0142	-49.6861	82.0598	-43.1675	10.8185	0.0236
$L_f^E \times 10^{12} \text{ (m)}$	-0.0033	-12.6112	18.7168	-7.6332	1.5339	0.0074
$Z^E \times 10^{-4} \text{ (Kg m}^{-2} \text{ s}^{-1}\text{)}$	0.0042	-0.0239	2.3629	-3.7779	1.4292	0.0149
$U^E \text{ (m s}^{-1}\text{)}$	0.0551	34.6735	-25.9919	-23.5631	14.7629	0.1639
Methyl carbitol (MC) + Tert-Butyl amine (TBA)						
$K_S^E \times 10^{11} \text{ (m}^2 \text{ N}^{-1}\text{)}$	-0.0435	-87.7523	154.9606	-93.2516	26.1127	0.0591
$L_f^E \times 10^{12} \text{ (m)}$	-0.0098	-19.6640	31.0627	-15.1451	3.7619	0.0141
$Z^E \times 10^{-4} \text{ (Kg m}^{-2} \text{ s}^{-1}\text{)}$	0.0118	-5.6378	8.0662	-3.9390	1.4899	0.0202
$U^E \text{ (m s}^{-1}\text{)}$	0.1187	38.4937	-46.5648	8.08678	-0.1966	0.1987
Methyl carbitol (MC) + N-Hexyl amine (NHA)						
$K_S^E \times 10^{11} \text{ (m}^2 \text{ N}^{-1}\text{)}$	0.0118	-7.7885	9.2943	-1.3955	-0.1207	0.0377
$L_f^E \times 10^{12} \text{ (m)}$	0.0045	-1.5294	1.7564	-0.1101	-0.1204	0.0152

$Z^E \times 10^{-4} (\text{Kg m}^{-2} \text{s}^{-1})$	-0.0075	-7.9271	6.8699	0.2649	0.7945	0.0314
$U^E (\text{m s}^{-1})$	-0.1086	-12.2989	9.5110	-0.1784	3.0439	0.3739
Methyl carbitol (MC) + N-Octyl amine (NOA)						
$K_S^E \times 10^{11} (\text{m}^2 \text{N}^{-1})$	0.0073	1.1504	-1.3569	0.1918	0.0041	0.0191
$L_f^E \times 10^{12} (\text{m})$	0.0029	1.3715	-1.2081	-0.1281	-0.0395	0.0076
$Z^E \times 10^{-4} (\text{Kg m}^{-2} \text{s}^{-1})$	-0.0058	-13.2292	9.1889	2.1044	1.9447	0.0155
$U^E (\text{m s}^{-1})$	-0.622	-27.2410	22.3957	-0.1552	5.0804	0.1795
Methyl carbitol (MC) + Cyclohexyl amine (CHA)						
$K_S^E \times 10^{11} (\text{m}^2 \text{N}^{-1})$	0.0051	-2.3420	2.0425	0.9791	-0.6863	0.0208
$L_f^E \times 10^{12} (\text{m})$	0.0022	-0.7412	0.5232	0.5286	-0.3136	0.0093
$Z^E \times 10^{-4} (\text{Kg m}^{-2} \text{s}^{-1})$	-0.0056	0.0644	0.6595	-1.2869	0.5710	0.0249
$U^E (\text{m s}^{-1})$	-0.0549	-1.5353	12.7664	-22.6346	11.4654	0.2635

Table: 4.4.7: The Co efficient of a_i of the Redlich-Kister type polynomial equation (4.7) and the corresponding standard deviations σ (Y^E) for the binary mixtures of Butyl carbitol (BC) + various amines at 308.15 K.

Excess Property	A₀	A₁	A₂	A₃	A₄	σ
Butyl carbitol (BC) + N- Butyl amine (NBA)						
$\eta^E \times 10^3$ (Kg m ⁻¹ s ⁻¹)	0.00038	2.13936	-3.45663	1.77913	-0.4621	0.00054
$V^E \times 10^6$ (m ³ mol ⁻¹)	0.00168	-0.11544	0.43405	-0.83539	0.51449	0.00211
$G^{*E} \times 10^3$ (N mol ⁻¹)	0.00368	6082.45	-39420.93	185595.34	-634873.79	0.27222
Butyl carbitol (BC) + Sec-Butyl amine (SBA)						
$\eta^E \times 10^3$ (Kg m ⁻¹ s ⁻¹)	0.00039	2.0467	-3.25294	1.62655	-0.42085	0.00046
$V^E \times 10^6$ (m ³ mol ⁻¹)	0.00246	-0.26125	0.99776	-1.99642	1.25542	0.00558
$G^{*E} \times 10^3$ (N mol ⁻¹)	0.00414	6395.48	-42763.92	206780.59	-717715.08	0.30901
Butyl carbitol (BC) + Tert-Butyl amine (TBA)						
$\eta^E \times 10^3$ (Kg m ⁻¹ s ⁻¹)	0.00019	1.84459	-2.8349	1.30484	-0.31478	0.00021
$V^E \times 10^6$ (m ³ mol ⁻¹)	0.00053	-0.01388	0.12164	-0.22765	0.12096	0.00172
$G^{*E} \times 10^3$ (N mol ⁻¹)	0.0025	5866.37	-37410.27	173438.22	-584378.18	0.22165
Butyl carbitol (BC) + N-Hexyl amine (NHA)						

$\eta^E \times 10^3 \text{ (Kg m}^{-1} \text{ s}^{-1} \text{)}$	-0.000025	0.81246	-1.0339	0.26479	-0.04338	0.000082
$V^E \times 10^6 \text{ (m}^3 \text{ mol}^{-1} \text{)}$	0.00225	-0.18836	0.79397	-1.53883	0.92809	0.00544
$G^{*E} \times 10^3 \text{ (N mol}^{-1} \text{)}$	0.00017	2694.098	-11858.09	39812.63	-110679.94	0.08982
Butyl carbitol (BC) + N-Octyl amine (NOA)						
$\eta^E \times 10^3 \text{ (Kg m}^{-1} \text{ s}^{-1} \text{)}$	0.000038	0.07419	-0.07662	0.00399	-0.0015	0.000094
$V^E \times 10^6 \text{ (m}^3 \text{ mol}^{-1} \text{)}$	-0.00348	0.32717	-1.39639	2.69207	-1.61225	0.01039
$G^{*E} \times 10^3 \text{ (N mol}^{-1} \text{)}$	0.0000009	935.1578	-2709.08	6598.76	-18191.67	0.01579
Butyl carbitol (BC) + Cyclohexyl amine (CHA)						
$\eta^E \times 10^3 \text{ (Kg m}^{-1} \text{ s}^{-1} \text{)}$	0.000059	1.03905	-1.50728	0.60891	-0.14078	0.00013
$V^E \times 10^6 \text{ (m}^3 \text{ mol}^{-1} \text{)}$	-0.0026	0.20608	-0.83939	1.70709	-1.06873	0.00555
$G^{*E} \times 10^3 \text{ (N mol}^{-1} \text{)}$	0.00021	940.313	-2519.27	4477.44	-7976.19	0.02398

Table:4.3.7: The Co-efficients of a_i of the Redlich-Kister type polynomial equation (4.7) and the corresponding standard deviations σ (Y^E) for the binary mixtures of EC+ Amines at 308.15 K.

Excess Property	A_0	A_1	A_2	A_3	A_4	σ
Ethyl carbitol (EC) + N-Butyl amine (NBA)						
$\eta^E \times 10^3$ (Kg m ⁻¹ s ⁻¹)	-0.000003	0.84919	-1.14906	0.396	-0.07912	0.000081
$V^E \times 10^6$ (m ³ mol ⁻¹)	0.000128	-0.02629	0.12509	-0.18198	0.08289	0.00102
$G^{*E} \times 10^3$ (N mol ⁻¹)	0.000396	3420.15	-16501.05	58603.96	-163056.24	0.06221
Ethyl carbitol (EC) + Sec-Butyl amine (SBA)						
$\eta^E \times 10^3$ (Kg m ⁻¹ s ⁻¹)	-0.000031	0.78516	-1.03012	0.29636	-0.05137	0.000072
$V^E \times 10^6$ (m ³ mol ⁻¹)	0.00265	-0.15088	0.64015	-1.29377	0.8008	0.00473
$G^{*E} \times 10^3$ (N mol ⁻¹)	0.000325	3610.21	-18079.16	67568.11	-197217.59	0.04933
Ethyl carbitol (EC) + Tert-Butyl amine (TBA)						
$\eta^E \times 10^3$ (Kg m ⁻¹ s ⁻¹)	0.000013	0.66051	-0.84009	0.21411	-0.03457	0.000055
$V^E \times 10^6$ (m ³ mol ⁻¹)	-0.00018	0.06861	-0.3495	0.77352	-0.49177	0.00523
$G^{*E} \times 10^3$ (N mol ⁻¹)	0.000575	3282.46	-15628.15	55245.95	-154416.48	0.09331
Ethyl carbitol (EC) + N-Hexyl amine (NHA)						

$\eta^E \times 10^3 \text{ (Kg m}^{-1} \text{ s}^{-1}\text{)}$	0.000128	0.04281	-0.01999	-0.06714	0.04398	0.0003
$V^E \times 10^6 \text{ (m}^3 \text{ mol}^{-1}\text{)}$	-0.0003	0.03571	-0.36598	0.59081	-0.26332	0.01102
$G^{*E} \times 10^3 \text{ (N mol}^{-1}\text{)}$	-0.00026	1327.03	-4228.616	9850.385	-21283.48	0.10573
Ethyl carbitol (EC) + N-Octyl amine (NOA)						
$\eta^E \times 10^3 \text{ (Kg m}^{-1} \text{ s}^{-1}\text{)}$	0.000017	-0.33152	0.27572	0.0407	0.01502	0.00005
$V^E \times 10^6 \text{ (m}^3 \text{ mol}^{-1}\text{)}$	0.00148	-0.1421	0.63246	-1.26974	0.77264	0.00625
$G^{*E} \times 10^3 \text{ (N mol}^{-1}\text{)}$	0.00313	-2020.23	68586.61	-627269.89	3.00862	3.49043
Ethyl carbitol (EC) + Cyclohexyl amine (CHA)						
$\eta^E \times 10^3 \text{ (Kg m}^{-1} \text{ s}^{-1}\text{)}$	-0.000015	0.26306	-0.30807	0.05024	-0.00521	0.000053
$V^E \times 10^6 \text{ (m}^3 \text{ mol}^{-1}\text{)}$	0.00233	-0.17521	0.74304	-1.48465	0.91107	0.00579
$G^{*E} \times 10^3 \text{ (N mol}^{-1}\text{)}$	0.0000319	344.7376	-627.5836	358.15361	555.1295	0.00897

Table 4.2.7: The Co-efficients of a_i of the Redlich-Kister type polynomial equation (4.7) and the corresponding standard deviations σ (Y^E) for the binary mixtures of MC+ Amines at 308.15 K.						
Excess Property	A₀	A₁	A₂	A₃	A₄	σ
Methyl carbitol (MC) + N- Butyl amine (NBA)						
$\eta^E \times 10^3$ (Kg m ⁻¹ s ⁻¹)	-0.00102	0.64896	-0.57047	-0.36031	0.28281	0.0013
$V^E \times 10^6$ (m ³ mol ⁻¹)	-0.00294	-6.91548	11.83324	-6.55798	1.64487	0.00392
$G^{*E} \times 10^3$ (N mol ⁻¹)	-0.000301	2618.1684	-8634.34	11927.24621	9798.74683	0.04256
Methyl carbitol (MC) + Sec-Butyl amine (SBA)						
$\eta^E \times 10^3$ (Kg m ⁻¹ s ⁻¹)	-0.000018	0.33725	-0.39904	0.08154	-0.01971	0.000054
$V^E \times 10^6$ (m ³ mol ⁻¹)	0.000707	-0.06148	0.26214	-0.4612	0.25915	0.00149
$G^{*E} \times 10^3$ (N mol ⁻¹)	-0.000047	2643.17802	-11215.3680	34833.76	-87963.08	0.01211
Methyl carbitol (MC) + Tert-Butyl amine (TBA)						
$\eta^E \times 10^3$ (Kg m ⁻¹ s ⁻¹)	0.000007	0.2349	-0.27198	0.04537	-0.01186	0.00009
$V^E \times 10^6$ (m ³ mol ⁻¹)	-0.00237	0.16859	-0.64978	1.23175	-0.74501	0.00524
$G^{*E} \times 10^3$ (N mol ⁻¹)	0.0001374	2392.2543	-9786.2227	29700.09452	-75174.1899	0.03817
Methyl carbitol (MC) + N-Hexyl amine (NHA)						
$\eta^E \times 10^3$ (Kg m ⁻¹ s ⁻¹)	0.000013	-0.22028	0.19661	0.02041	0.00327	0.00007
$V^E \times 10^6$ (m ³ mol ⁻¹)	-0.00092	0.05871	-0.24412	0.43913	-0.25149	0.00194

$G^{*E} \times 10^3 \text{ (N mol}^{-1}\text{)}$	0.0000084	883.7606	-2372.5638	4449.2148	-8737.6206	0.01945
Methyl carbitol (MC) + N-Octyl amine (NOA)						
$\eta^E \times 10^3 \text{ (Kg m}^{-1}\text{ s}^{-1}\text{)}$	-0.0000006	-0.46795	0.34018	0.07184	0.056	0.00008
$V^E \times 10^6 \text{ (m}^3\text{ mol}^{-1}\text{)}$	0.00155	-0.10482	0.5089	-0.84415	0.43604	0.00637
$G^{*E} \times 10^3 \text{ (N mol}^{-1}\text{)}$	0.000016	173.0691	-259.4579	121.2605	-317.9294	0.04846
Methyl carbitol (MC)+ Cyclohexyl amine (CHA)						
$\eta^E \times 10^3 \text{ (Kg m}^{-1}\text{ s}^{-1}\text{)}$	0.000028	0.0303	-0.02738	-0.00902	0.00605	0.000057
$V^E \times 10^6 \text{ (m}^3\text{ mol}^{-1}\text{)}$	0.0007048	-0.07531	0.32318	-0.64254	0.39215	0.00269
$G^{*E} \times 10^3 \text{ (N mol}^{-1}\text{)}$	0.0000254	179.99809	-296.72935	176.42425	179.6763	0.01094

