

Supplementary Information

Viscometric and refractive index study of intermolecular interaction between binary mixtures of terpinolene with *o*-, *m*- and *p*-cresol at 303.15, 308.15 and 313.15 K

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Table S1. Fitting Coefficients (A_0, A_1, A_2, A_3, A_4) with Standard error of coefficients, Standard error of estimation, Mean absolute error and Standard Deviation (σ) at 95.0% confidence intervals for Least Square Representation of $\Delta\eta$ for Terpinolene + *o*-, *m*- and *p*-Cresol Mixtures at 303.15, 308.15 and 313.15K.

T (K)	A_0	Standard error of A_0	A_1	Standard error of A_1	A_2	Standard error of A_2	A_3	Standard error of A_3	Standard error of estimation	Mean absolute error	σ (mPa·s)
Coefficients values of 3rd order Redlich-Kister Equation											
Terpinolene (1) + <i>o</i>-Cresol (2)											
303.15	-1.241	0.061	2.662	0.194	1.909	0.194	-1.594	0.399	0.114	0.074	0.020
308.15	-3.189	0.027	1.982	0.087	-0.173	0.087	0.013	0.179	0.051	0.033	0.008
313.15	-3.949	0.021	-1.949	0.066	-0.094	0.066	-0.432	0.136	0.039	0.025	0.006
Terpinolene (1) + <i>m</i>-Cresol (2)											
303.15	-5.758	0.041	4.135	0.131	0.854	0.130	-1.297	0.268	0.077	0.046	0.016
308.15	-6.884	0.031	3.736	0.100	-1.121	0.099	0.508	0.205	0.059	0.038	0.011
313.15	-7.506	0.036	3.655	0.113	-1.302	0.113	0.770	0.233	0.067	0.044	0.011
Terpinolene (1) + <i>p</i>-Cresol (2)											
303.15	-7.221	0.027	4.709	0.085	-0.315	0.084	-0.478	0.174	0.050	0.030	0.009
308.15	-7.995	0.036	4.210	0.115	-1.611	0.115	1.113	0.237	0.068	0.042	0.013
313.15	-8.575	0.033	4.390	0.105	-2.416	0.104	1.448	0.215	0.062	0.038	0.011

Table S2. Fitting Coefficients (A_0, A_1, A_2, A_3, A_4) with Standard error of coefficients, Standard error of estimation, Mean absolute error and Standard Deviation (σ) at 95.0% confidence intervals for Least Square Representation of (ΔG^{*E}) for Terpinolene + *o*-, *m*- and *p*-Cresol Mixtures at 303.15, 308.15 and 313.15K.

T (K)	A_0	Standard error of A_0	A_1	Standard error of A_1	A_2	Standard error of A_2	A_3	Standard error of A_3	Standard error of estimation	Mean absolute error	σ (mPa·s)
Coefficients values of 3rd order Redlich-Kister Equation											
Terpinolene (1) + <i>o</i>-Cresol (2)											
303.15	2761.67	64.46	3083.03	204.64	3866.46	204.81	1232.00	421.06	120.58	74.25	21.75
308.15	11.93	26.54	1248.37	84.24	1089.79	84.31	315.37	173.33	49.64	33.06	8.89
313.15	-2353.80	39.86	119.92	126.54	948.32	126.65	-225.97	260.38	74.56	45.94	14.10
Terpinolene (1) + <i>m</i>-Cresol (2)											
303.15	2603.49	42.95	2899.34	136.70	3312.48	135.72	1365.19	280.58	80.55	46.72	15.60
308.15	-18.43	25.30	1210.58	80.53	1025.38	79.95	443.26	165.29	47.45	30.88	8.90
313.15	-3015.77	37.22	-482.50	118.46	698.17	117.61	461.99	243.14	69.81	42.95	13.02
Terpinolene (1) + <i>p</i>-Cresol (2)											
303.15	2458.61	21.28	2853.40	67.73	2740.25	67.25	1199.42	139.03	39.91	23.36	7.82
308.15	-37.11	27.00	1176.61	85.93	948.59	85.31	594.89	176.37	50.63	30.98	9.73
313.15	-3314.45	24.54	-496.08	78.10	51.02	77.55	280.53	160.32	46.02	27.64	8.45

Table S3. Fitting Coefficients (A_0, A_1, A_2, A_3, A_4) with Standard error of coefficients, Standard error of estimation, Mean absolute error and Standard Deviation (σ) at 95.0% confidence intervals for Least Square Representation of Δn_D for Terpinolene + *o*-, *m*- and *p*-Cresol Mixtures at 303.15, 308.15 and 313.15K.

T (K)	A_0	Standard error of A_0	A_1	Standard error of A_1	A_2	Standard error of A_2	A_3	Standard error of A_3	Standard error of estimation	Mean absolute error	σ (mPa·s)
Coefficients values of 3rd order Redlich-Kister Equation											
Terpinolene (1) + <i>o</i>-Cresol (2)											
303.15	0.0058	0.0001	-0.0007	0.0002	-0.0013	0.0002	-0.0004	0.0005	0.000144	0.000087	0.000030
308.15	0.0053	0.0001	-0.0007	0.0002	-0.0014	0.0001	-0.0004	0.0003	0.000099	0.000060	0.000018
313.15	0.0047	0.0001	-0.0006	0.0004	-0.0014	0.0003	-0.0009	0.0007	0.000207	0.000124	0.000038
Terpinolene (1) + <i>m</i>-Cresol (2)											
303.15	0.0049	0.0001	-0.0011	0.0002	-0.0007	0.0002	0.0002	0.0004	0.000117	0.000069	0.000024
308.15	0.0041	0.0001	-0.0005	0.0002	-0.0011	0.0002	-0.0012	0.0004	0.000121	0.000070	0.000024
313.15	0.0035	0.0001	-0.0010	0.0002	-0.0019	0.0002	-0.0003	0.0004	0.000116	0.000069	0.000024
Terpinolene (1) + <i>p</i>-Cresol (2)											
303.15	0.0042	0.0001	-0.0006	0.0002	-0.0004	0.0002	-0.0009	0.0004	0.000125	0.000076	0.000021
308.15	0.0036	0.0001	-0.0006	0.0002	-0.0014	0.0002	-0.0013	0.0004	-0.000117	0.000064	0.000025
313.15	0.0030	0.0001	-0.0011	0.0002	-0.0022	0.0002	-0.0004	0.0005	0.000139	0.000084	0.000026

Table S4. Fitting Coefficients (A_0, A_1, A_2, A_3, A_4) with Standard error of coefficients, Standard error of estimation, Mean absolute error and Standard Deviation (σ) at 95.0% confidence intervals for Least Square Representation of ΔR_m for Terpinolene + *o*-, *m*- and *p*-Cresol Mixtures at 303.15, 308.15 and 313.15K.

T (K)	A_0	Standard error of A_0	A_1	Standard error of A_1	A_2	Standard error of A_2	A_3	Standard error of A_3	Standard error of estimation	Mean absolute error	σ (mPa·s)
Coefficients values of 3rd order Redlich-Kister Equation											
Terpinolene (1) + <i>o</i>-Cresol (2)											
303.15	-5.3077	0.0048	-1.1906	0.0160	-0.3655	0.0135	-0.1033	0.0313	0.009459	0.005855	0.002000
308.15	-5.3374	0.0029	-1.2106	0.0096	-0.3291	0.0081	-0.0728	0.0188	0.005667	0.003423	0.001000
313.15	-5.3596	0.0062	-1.2207	0.0209	-0.3087	0.0176	-0.0847	0.0408	0.012336	0.007497	0.002300
Terpinolene (1) + <i>m</i>-Cresol (2)											
303.15	-5.1699	0.0037	-1.1518	0.0125	-0.2895	0.0105	-0.0387	0.0244	0.007367	0.004564	0.001500
308.15	-5.2161	0.0036	-1.1277	0.0121	-0.2961	0.0102	-0.1338	0.0236	0.007128	0.004450	0.001400
313.15	-5.2493	0.0032	-1.1766	0.0107	-0.3324	0.0090	-0.0748	0.0210	0.006342	0.003892	0.001400
Terpinolene (1) + <i>p</i>-Cresol (2)											
303.15	-5.1721	0.0037	-1.1074	0.0125	-0.2224	0.0105	-0.0809	0.0245	0.0073905	0.0046213	0.0012000
308.15	-5.2076	0.0038	-1.1156	0.0128	-0.2706	0.0108	-0.1130	0.0251	0.0075946	0.0039218	0.0016000
313.15	-5.2659	0.0045	-1.1650	0.0152	-0.3202	0.0128	-0.0606	0.0298	0.0089916	0.0054633	0.0017000

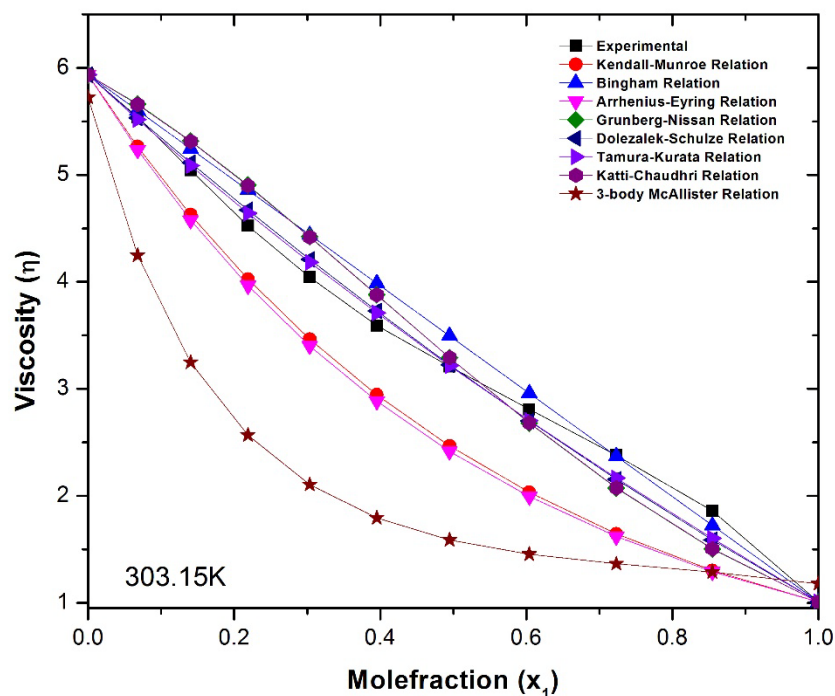


Figure S1. Experimental and theoretical calculated viscosity, η /(mPa·s) of Terpinolene (1) + o-cresol (2) as a function of mole fraction at $T = 303.15\text{K}$

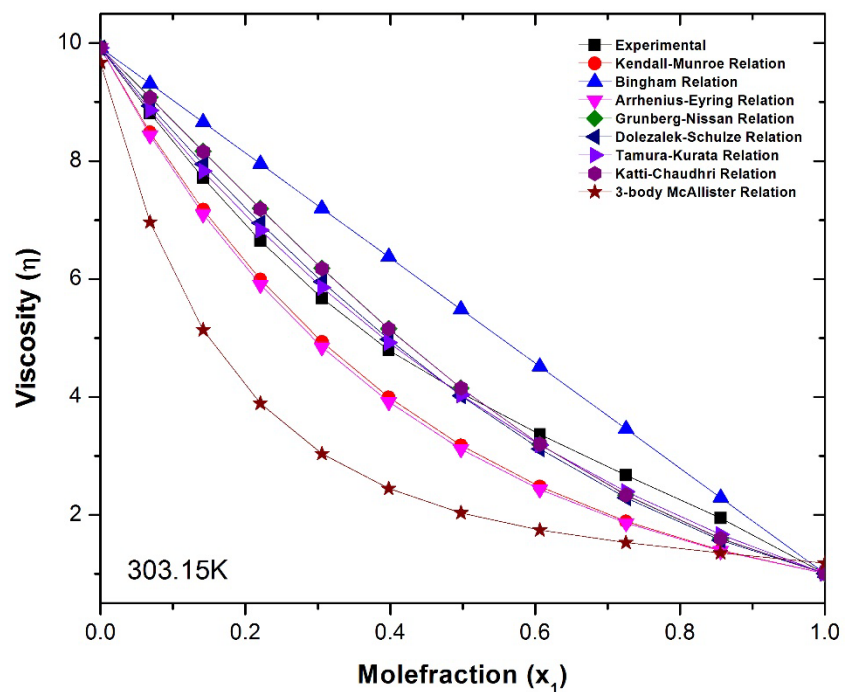


Figure S2. Experimental and theoretical calculated viscosity, η /(mPa·s) of Terpinolene (1) + m-cresol (2) as a function of mole fraction at $T = 303.15\text{K}$

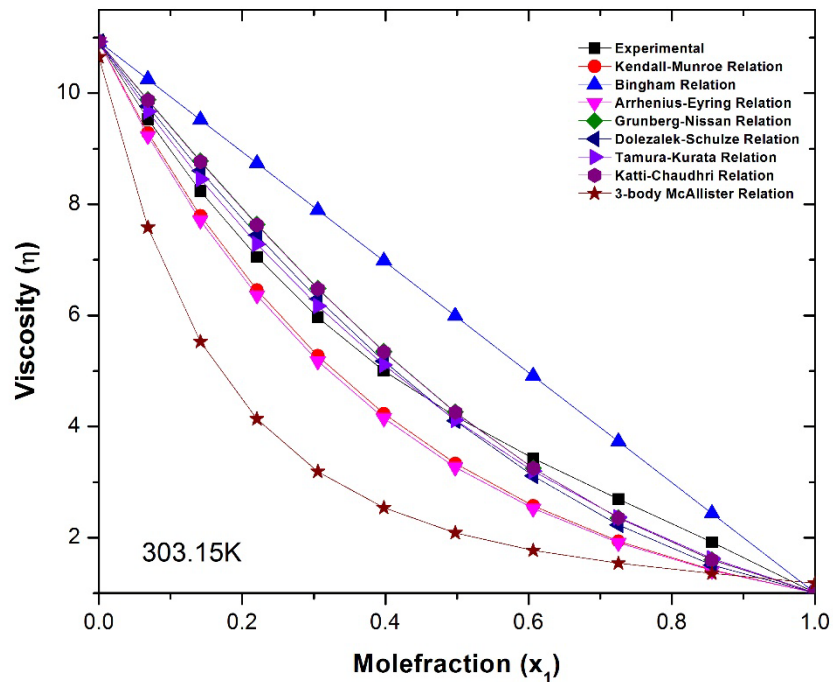


Figure S3. Experimental and theoretical calculated viscosity, η /(mPa·s) of Terpinolene (1) + p-cresol (2) as a function of mole fraction at $T = 303.15\text{K}$