

Supporting Information

Volumetric Properties of Binary Mixtures of 1-Butyl-3-Methylimidazolium Tris(pentafluoroethyl)trifluorophosphate with *N*-Methylformamide, *N*-Ethylformamide, *N,N*-Dimethylformamide, *N,N*-Dibutylformamide, and *N,N*-Dimethylacetamide from (293.15 to 323.15) K

Milan Vraneš, Aleksandar Tot, Snežana Papović, Nebojša Zec, and Slobodan Gadžurić*

Faculty of Science, Department of Chemistry, Biochemistry and Environmental Protection,
University of Novi Sad, Trg Dositeja Obradovića 3, 21000 Novi Sad, Serbia

* Corresponding author: Tel: +381 21 485 2744; Fax: +381 21 454 065;
E-mail: slobodan.gadzuric@dh.uns.ac.rs

Table S1. Density (d), Excess Molar Volume (V^E), Apparent Molar Volume ($V_{\phi i}$) and Partial Molar Volume (V_i) at Different Temperatures and Compositions of the Studied Mixtures at Atmospheric Pressure (0.1 MPa)

x_1	$10^{-3} \cdot d/$ ($\text{kg} \cdot \text{m}^{-3}$)	$10^6 \cdot V^E/$ ($\text{m}^3 \cdot \text{mol}^{-1}$)	$10^6 \cdot V_i/$ ($\text{m}^3 \cdot \text{mol}^{-1}$)	$10^6 \cdot V_1^E/$ ($\text{m}^3 \cdot \text{mol}^{-1}$)	$10^6 \cdot V_2/$ ($\text{m}^3 \cdot \text{mol}^{-1}$)	$10^6 \cdot V_2^E/$ ($\text{m}^3 \cdot \text{mol}^{-1}$)	$10^6 \cdot V_{\phi 1}/$ ($\text{m}^3 \cdot \text{mol}^{-1}$)	$10^6 \cdot V_{\phi 2}/$ ($\text{m}^3 \cdot \text{mol}^{-1}$)
[BMIM][FAP] (1) + NMF (2)								
$T = 293.15 \text{ K}$								
0.0177	1.06368	0.099	363.42	5.251	58.874	0.004	363.70	58.970
0.0496	1.15062	0.251	362.73	4.566	58.898	0.027	363.36	59.142
0.0664	1.18802	0.342	362.41	4.242	58.918	0.047	363.09	59.221
0.1003	1.25067	0.456	361.82	3.651	58.972	0.101	362.70	59.376
0.1495	1.32015	0.612	361.10	2.933	59.074	0.203	362.17	59.575
0.2000	1.37381	0.723	360.51	2.345	59.197	0.327	361.76	59.769
0.2968	1.44668	0.868	359.72	1.550	59.456	0.586	361.10	60.107
0.4150	1.50535	0.935	359.15	0.984	59.764	0.893	360.43	60.473
0.4958	1.53452	0.930	358.91	0.747	59.961	1.090	360.00	60.673
0.5497	1.55047	0.898	358.80	0.628	60.090	1.220	359.79	60.851
0.6043	1.56453	0.862	358.69	0.524	60.232	1.362	359.59	61.049
0.6816	1.58175	0.773	358.56	0.391	60.474	1.603	359.30	61.294
0.8148	1.60562	0.551	358.34	0.177	61.126	2.255	358.85	61.853
0.9028	1.61856	0.353	358.23	0.060	61.854	2.983	358.55	62.391
$T = 298.15 \text{ K}$								
0.0177	1.05908	0.099	364.79	5.332	59.135	0.004	365.01	59.231
0.0496	1.14591	0.248	364.11	4.655	59.158	0.027	364.50	59.395
0.0664	1.18315	0.346	363.79	4.334	59.178	0.047	364.33	59.478
0.1003	1.24548	0.465	363.20	3.745	59.231	0.100	364.08	59.646
0.1495	1.31468	0.624	362.48	3.025	59.334	0.202	363.59	59.859
0.2000	1.36820	0.748	361.88	2.430	59.459	0.328	363.17	60.059
0.2968	1.44098	0.890	361.07	1.613	59.725	0.594	362.46	60.399
0.4150	1.49953	0.966	360.47	1.014	60.051	0.920	361.78	60.781
0.4958	1.52869	0.959	360.21	0.757	60.264	1.133	361.34	60.982
0.5497	1.54463	0.914	360.08	0.629	60.405	1.274	361.12	61.163
0.6043	1.55868	0.884	359.97	0.517	60.557	1.426	360.92	61.365
0.6816	1.57593	0.786	359.83	0.378	60.808	1.677	360.61	61.597
0.8148	1.59977	0.563	359.62	0.167	61.451	2.319	360.15	62.180
0.9028	1.61273	0.347	359.51	0.056	62.140	3.009	359.84	62.689
$T = 303.15 \text{ K}$								
0.0177	1.05445	0.101	366.23	5.486	59.398	0.004	366.41	59.497
0.0496	1.14096	0.255	365.53	4.796	59.422	0.028	365.95	59.667
0.0664	1.17805	0.356	365.21	4.468	59.442	0.048	365.80	59.755
0.1003	1.24025	0.477	364.61	3.867	59.497	0.102	365.49	59.924
0.1495	1.30920	0.646	363.87	3.129	59.602	0.207	365.02	60.148
0.2000	1.36264	0.769	363.26	2.518	59.731	0.336	364.56	60.350
0.2968	1.43524	0.920	362.41	1.673	60.006	0.611	363.84	60.705
0.4150	1.49367	1.003	361.79	1.049	60.345	0.951	363.16	61.109
0.4958	1.52288	0.986	361.52	0.779	60.570	1.175	362.68	61.300
0.5497	1.53876	0.947	361.38	0.644	60.718	1.323	362.47	61.501
0.6043	1.55285	0.910	361.27	0.527	60.877	1.482	362.25	61.694
0.6816	1.57009	0.811	361.12	0.383	61.137	1.743	361.93	61.937
0.8148	1.59395	0.579	360.91	0.167	61.792	2.397	361.45	62.527
0.9028	1.60693	0.354	360.79	0.056	62.484	3.090	361.13	63.030
$T = 308.15 \text{ K}$								
0.0177	1.04977	0.103	367.69	5.646	59.667	0.004	367.82	59.767
0.0496	1.13595	0.263	366.99	4.943	59.692	0.028	367.43	59.944
0.0664	1.17290	0.367	366.65	4.607	59.712	0.049	367.30	60.037
0.1003	1.23494	0.492	366.04	3.992	59.768	0.104	366.94	60.208
0.1495	1.30367	0.667	365.28	3.235	59.876	0.212	366.48	60.442
0.2000	1.35698	0.795	364.65	2.604	60.008	0.345	366.00	60.651

0.2968	1.42945	0.950	363.77	1.726	60.295	0.632	365.25	61.016
0.4150	1.48783	1.031	363.12	1.069	60.652	0.989	364.53	61.425
0.4958	1.51702	1.013	362.83	0.785	60.889	1.225	364.04	61.621
0.5497	1.53285	0.979	362.69	0.643	61.044	1.381	363.83	61.840
0.6043	1.54699	0.932	362.57	0.521	61.210	1.547	363.59	62.018
0.6816	1.56423	0.829	362.42	0.374	61.475	1.812	363.26	62.262
0.8148	1.58814	0.581	362.21	0.161	62.120	2.457	362.76	62.808
0.9028	1.60110	0.356	362.10	0.053	62.788	3.125	362.44	63.313

T = 313.15 K

0.0177	1.04505	0.104	369.18	5.826	59.942	0.004	369.18	60.043
0.0496	1.13098	0.272	368.46	5.100	59.967	0.029	368.80	60.222
0.0664	1.16779	0.376	368.11	4.754	59.989	0.050	368.71	60.319
0.1003	1.22960	0.506	367.48	4.119	60.046	0.108	368.39	60.499
0.1495	1.29811	0.689	366.70	3.338	60.157	0.219	367.94	60.743
0.2000	1.35130	0.821	366.04	2.687	60.294	0.356	367.44	60.958
0.2968	1.42365	0.980	365.14	1.782	60.589	0.651	366.66	61.334
0.4150	1.48195	1.065	364.46	1.106	60.957	1.019	365.92	61.758
0.4958	1.51112	1.047	364.17	0.813	61.201	1.263	365.42	61.963
0.5497	1.52694	1.013	364.02	0.667	61.361	1.423	365.20	62.190
0.6043	1.54111	0.959	363.90	0.541	61.533	1.594	364.94	62.362
0.6816	1.55834	0.856	363.75	0.389	61.807	1.869	364.61	62.622
0.8148	1.58226	0.602	363.52	0.168	62.477	2.539	364.10	63.196
0.9028	1.59523	0.371	363.41	0.055	63.173	3.234	363.77	63.748

T = 318.15 K

0.0177	1.04026	0.106	370.65	5.957	60.223	0.004	370.63	60.325
0.0496	1.12588	0.279	369.93	5.228	60.248	0.029	370.30	60.511
0.0664	1.16265	0.379	369.58	4.880	60.269	0.051	370.12	60.605
0.1003	1.22421	0.520	368.94	4.239	60.327	0.109	369.86	60.794
0.1495	1.29253	0.708	368.14	3.445	60.440	0.221	369.40	61.045
0.2000	1.34556	0.847	367.48	2.779	60.581	0.362	368.91	61.271
0.2968	1.41778	1.010	366.54	1.842	60.887	0.668	368.11	61.657
0.4150	1.47601	1.097	365.83	1.129	61.275	1.056	367.34	62.093
0.4958	1.50515	1.079	365.51	0.817	61.535	1.316	366.82	62.307
0.5497	1.52106	1.030	365.36	0.661	61.705	1.486	366.57	62.509
0.6043	1.53517	0.983	365.23	0.529	61.885	1.666	366.33	62.704
0.6816	1.55244	0.870	365.07	0.373	62.166	1.948	365.97	62.946
0.8148	1.57638	0.606	364.85	0.156	62.820	2.601	365.44	63.497
0.9028	1.58936	0.368	364.75	0.051	63.471	3.253	365.10	63.997

T = 323.15 K

0.0177	1.03540	0.110	372.16	6.115	60.508	0.004	372.21	60.615
0.0496	1.12076	0.286	371.42	5.373	60.534	0.030	371.79	60.804
0.0664	1.15738	0.380	371.07	5.018	60.556	0.051	371.65	60.902
0.1003	1.21875	0.536	370.41	4.364	60.615	0.111	371.38	61.098
0.1495	1.28699	0.721	369.60	3.551	60.730	0.226	370.84	61.346
0.2000	1.33977	0.875	368.92	2.867	60.875	0.371	370.40	61.591
0.2968	1.41184	1.045	367.95	1.899	61.191	0.687	369.58	61.993
0.4150	1.47004	1.130	367.21	1.157	61.595	1.091	368.77	62.436
0.4958	1.49920	1.107	366.88	0.830	61.867	1.363	368.23	62.648
0.5497	1.51513	1.053	366.72	0.668	62.045	1.541	367.97	62.845
0.6043	1.52919	1.012	366.58	0.531	62.232	1.728	367.72	63.061
0.6816	1.54655	0.880	366.42	0.370	62.521	2.016	367.34	63.263
0.8148	1.57042	0.623	366.20	0.153	63.175	2.670	366.82	63.875
0.9028	1.58343	0.375	366.10	0.050	63.815	3.310	366.47	64.358

[BMIM][FAP] (1) + DMF (2)

T = 293.15 K

0.0182	1.00050	0.185	368.17	10.008	77.055	0.010	368.36	77.233
0.0664	1.11133	0.613	365.65	7.485	77.164	0.119	367.15	77.683
0.0998	1.17162	0.821	364.24	6.072	77.291	0.247	366.40	77.957
0.2010	1.30475	1.229	361.31	3.143	77.793	0.748	364.21	78.564
0.3017	1.39257	1.368	359.86	1.698	78.264	1.219	362.69	79.001

0.4016	1.45503	1.364	359.29	1.127	78.563	1.518	361.57	79.326
0.5024	1.50236	1.303	359.14	0.970	78.687	1.642	360.76	79.660
0.5970	1.53691	1.230	359.09	0.918	78.751	1.706	360.23	80.098
0.6927	1.56542	1.149	358.96	0.794	78.986	1.942	359.74	80.597
0.7560	1.58139	1.053	358.81	0.642	79.393	2.348	359.49	81.151
0.7924	1.58958	0.995	358.70	0.532	79.771	2.726	359.40	81.748
0.8499	1.60204	0.825	358.51	0.340	80.661	3.617	359.13	82.488
0.8946	1.61097	0.667	358.36	0.194	81.667	4.622	358.93	83.492
$T = 298.15 \text{ K}$								
0.0182	0.99554	0.181	369.40	9.941	77.451	0.010	369.50	77.627
0.0664	1.10611	0.612	366.92	7.462	77.559	0.117	368.41	78.078
0.0998	1.16627	0.817	365.52	6.070	77.684	0.243	367.69	78.354
0.2010	1.29919	1.230	362.62	3.171	78.181	0.739	365.50	78.962
0.3017	1.38688	1.369	361.17	1.721	78.654	1.212	364.00	79.404
0.4016	1.44928	1.369	360.59	1.132	78.963	1.521	362.87	79.731
0.5024	1.49665	1.296	360.41	0.955	79.103	1.662	362.03	80.044
0.5970	1.53106	1.231	360.34	0.891	79.182	1.741	361.54	80.525
0.6927	1.55958	1.145	360.22	0.764	79.421	1.979	361.04	81.021
0.7560	1.57558	1.055	360.07	0.616	79.816	2.375	360.78	81.555
0.7924	1.58378	0.962	359.96	0.510	80.181	2.740	360.69	82.141
0.8499	1.59625	0.815	359.78	0.326	81.036	3.595	360.41	82.857
0.8946	1.60515	0.647	359.64	0.186	82.000	4.559	360.21	83.895
$T = 303.15 \text{ K}$								
0.0182	0.99059	0.179	370.71	9.972	77.852	0.010	370.60	78.024
0.0664	1.10090	0.611	368.22	7.478	77.960	0.118	369.67	78.477
0.0998	1.16094	0.818	366.82	6.082	78.086	0.244	368.97	78.755
0.2010	1.29361	1.235	363.92	3.181	78.583	0.740	366.81	79.370
0.3017	1.38121	1.375	362.48	1.738	79.053	1.211	365.30	79.812
0.4016	1.44355	1.378	361.89	1.155	79.360	1.517	364.17	80.143
0.5024	1.49089	1.301	361.72	0.978	79.500	1.657	363.33	80.458
0.5970	1.52527	1.239	361.65	0.910	79.584	1.742	362.84	80.948
0.6927	1.55377	1.156	361.52	0.776	79.836	1.993	362.34	81.457
0.7560	1.56977	1.070	361.36	0.623	80.243	2.401	362.08	81.997
0.7924	1.57798	0.989	361.25	0.515	80.616	2.774	361.98	82.581
0.8499	1.59047	0.818	361.07	0.328	81.484	3.642	361.70	83.278
0.8946	1.59934	0.645	360.93	0.187	82.458	4.616	361.51	84.375
$T = 308.15 \text{ K}$								
0.0182	0.98556	0.177	372.02	9.974	78.262	0.010	371.80	78.433
0.0664	1.09562	0.610	369.55	7.505	78.369	0.117	370.96	78.886
0.0998	1.15553	0.818	368.16	6.117	78.494	0.242	370.29	79.166
0.2010	1.28797	1.240	365.26	3.215	78.991	0.739	368.14	79.786
0.3017	1.37546	1.383	363.80	1.751	79.469	1.217	366.63	80.232
0.4016	1.43774	1.384	363.19	1.145	79.788	1.536	365.50	80.567
0.5024	1.48503	1.314	363.00	0.952	79.941	1.689	364.66	80.892
0.5970	1.51949	1.236	362.93	0.879	80.031	1.778	364.14	81.351
0.6927	1.54798	1.153	362.80	0.750	80.274	2.022	363.65	81.855
0.7560	1.56395	1.033	362.65	0.603	80.665	2.412	363.39	82.410
0.7924	1.57218	0.965	362.55	0.499	81.023	2.771	363.28	82.974
0.8499	1.58467	0.815	362.37	0.319	81.861	3.609	363.00	83.654
0.8946	1.59356	0.655	362.23	0.182	82.805	4.553	362.80	84.687
$T = 313.15 \text{ K}$								
0.0182	0.98046	0.178	373.350	9.993	78.679	0.010	373.20	78.851
0.0664	1.09029	0.611	370.880	7.523	78.786	0.117	372.29	79.304
0.0998	1.15008	0.821	369.493	6.136	78.911	0.242	371.63	79.586
0.2010	1.28233	1.244	366.595	3.238	79.407	0.738	369.47	80.208
0.3017	1.36970	1.391	365.137	1.780	79.883	1.214	367.97	80.661
0.4016	1.43191	1.396	364.535	1.177	80.200	1.531	366.84	81.005
0.5024	1.47922	1.320	364.342	0.985	80.353	1.684	365.99	81.322
0.5970	1.51369	1.251	364.266	0.909	80.447	1.778	365.46	81.777
0.6927	1.54216	1.163	364.130	0.773	80.703	2.034	364.96	82.290
0.7560	1.55813	1.076	363.977	0.620	81.110	2.440	364.71	82.847

0.7924	1.56637	0.997	363.870	0.513	81.480	2.811	364.60	83.405
0.8499	1.57884	0.823	363.684	0.327	82.343	3.674	364.32	84.112
0.8946	1.58774	0.648	363.543	0.186	83.312	4.643	364.12	85.138
$T = 318.15 \text{ K}$								
0.0182	0.97529	0.178	374.721	10.024	79.111	0.010	374.39	79.280
0.0664	1.08487	0.610	372.243	7.545	79.218	0.117	373.61	79.734
0.0998	1.14455	0.822	370.851	6.153	79.343	0.243	372.96	80.016
0.2010	1.27660	1.245	367.941	3.243	79.842	0.741	370.82	80.641
0.3017	1.36386	1.397	366.475	1.777	80.320	1.220	369.32	81.099
0.4016	1.42604	1.400	365.868	1.170	80.640	1.539	368.19	81.443
0.5024	1.47331	1.325	365.674	0.976	80.793	1.693	367.34	81.767
0.5970	1.50783	1.246	365.598	0.901	80.887	1.786	366.79	82.201
0.6927	1.53632	1.159	365.464	0.767	81.139	2.038	366.29	82.695
0.7560	1.55234	1.062	365.313	0.616	81.541	2.440	366.02	83.202
0.7924	1.56048	0.995	365.207	0.509	81.908	2.808	365.94	83.838
0.8499	1.57297	0.819	365.022	0.325	82.765	3.664	365.65	84.514
0.8946	1.58185	0.659	364.883	0.185	83.727	4.626	365.46	85.561
$T = 323.15 \text{ K}$								
0.0182	0.97002	0.178	376.117	10.067	79.550	0.010	375.92	79.722
0.0664	1.07938	0.612	373.627	7.576	79.658	0.118	375.00	80.176
0.0998	1.13897	0.821	372.228	6.177	79.784	0.244	374.32	80.456
0.2010	1.27082	1.249	369.303	3.253	80.285	0.745	372.19	81.084
0.3017	1.35798	1.405	367.830	1.780	80.765	1.226	370.70	81.548
0.4016	1.42014	1.405	367.220	1.170	81.086	1.546	369.55	81.890
0.5024	1.46738	1.332	367.026	0.976	81.240	1.700	368.70	82.220
0.5970	1.50192	1.248	366.951	0.900	81.333	1.793	368.15	82.646
0.6927	1.53050	1.159	366.817	0.767	81.584	2.044	367.62	83.086
0.7560	1.54643	1.062	366.667	0.616	81.986	2.446	367.38	83.647
0.7924	1.55462	0.981	366.560	0.510	82.353	2.813	367.28	84.238
0.8499	1.56702	0.832	366.376	0.325	83.210	3.670	367.02	85.016
0.8946	1.57591	0.669	366.236	0.186	84.173	4.634	366.82	86.070

[BMIM][FAP] (1) + NEF (2)

$T = 293.15 \text{ K}$								
0.0346	1.04796	0.0785	360.57	2.402	76.801	-0.011	360.44	76.894
0.0702	1.12660	0.1667	360.99	2.820	76.779	-0.034	360.54	76.992
0.1019	1.18375	0.2585	361.16	2.989	76.763	-0.049	360.71	77.100
0.2005	1.31244	0.5535	360.92	2.753	76.815	0.003	360.93	77.505
0.3013	1.39864	0.7866	360.21	2.043	77.056	0.244	360.78	77.938
0.4019	1.45970	0.9150	359.58	1.413	77.396	0.583	360.44	78.342
0.4936	1.50192	0.9604	359.24	1.069	77.670	0.858	360.11	78.709
0.6054	1.54177	0.9692	359.06	0.889	77.884	1.071	359.77	79.268
0.7017	1.56908	0.9266	358.95	0.781	78.092	1.279	359.49	79.919
0.7892	1.58979	0.8552	358.76	0.598	78.648	1.836	359.25	80.869
0.8837	1.60926	0.6562	358.45	0.285	80.333	3.521	358.91	82.454
0.9417	1.62024	0.4244	358.26	0.092	82.394	5.582	358.62	84.090
$T = 298.15 \text{ K}$								
0.0346	1.04351	0.0817	362.15	2.696	77.138	-0.008	361.82	77.230
0.0702	1.12175	0.1848	362.41	2.954	77.124	-0.021	362.09	77.344
0.1019	1.17870	0.2811	362.49	3.032	77.117	-0.028	362.21	77.459
0.2005	1.30703	0.5828	362.16	2.710	77.182	0.037	362.36	77.875
0.3013	1.39322	0.7977	361.50	2.051	77.405	0.260	362.10	78.287
0.4019	1.45414	0.9280	360.93	1.475	77.715	0.570	361.76	78.697
0.4936	1.49621	0.9832	360.59	1.139	77.985	0.839	361.45	79.087
0.6054	1.53592	1.0036	360.37	0.917	78.251	1.106	361.11	79.689
0.7017	1.56325	0.9504	360.22	0.762	78.549	1.403	360.81	80.332
0.7892	1.58401	0.8629	360.01	0.557	79.168	2.023	360.55	81.239
0.8837	1.60353	0.6454	359.71	0.255	80.781	3.636	360.18	82.695
0.9417	1.61453	0.4032	359.54	0.081	82.640	5.494	359.88	84.060

$T = 303.15 \text{ K}$								
0.0346	1.03906	0.0790	363.44	2.704	77.478	-0.010	363.02	77.570
0.0702	1.11703	0.1865	363.78	3.043	77.460	-0.028	363.40	77.689
0.1019	1.17382	0.2839	363.90	3.162	77.450	-0.038	363.53	77.804
0.2005	1.30167	0.6044	363.59	2.851	77.514	0.026	363.75	78.244
0.3013	1.38764	0.8266	362.86	2.120	77.762	0.274	363.48	78.671
0.4019	1.44847	0.9564	362.21	1.474	78.110	0.622	363.12	79.087
0.4936	1.49049	1.0100	361.84	1.105	78.405	0.917	362.78	79.483
0.6054	1.53027	1.0100	361.62	0.886	78.666	1.178	362.41	80.048
0.7017	1.55756	0.9554	361.49	0.753	78.922	1.434	362.10	80.691
0.7892	1.57831	0.8628	361.30	0.564	79.494	2.006	361.83	81.581
0.8837	1.59777	0.6498	361.00	0.264	81.099	3.611	361.47	83.075
0.9417	1.60873	0.4112	360.82	0.085	83.017	5.529	361.18	84.539
$T = 308.15 \text{ K}$								
0.0346	1.03461	0.0710	364.73	2.683	77.827	-0.012	364.10	77.912
0.0702	1.11231	0.1826	365.15	3.101	77.805	-0.034	364.65	78.035
0.1019	1.16888	0.2863	365.31	3.262	77.790	-0.048	364.86	78.158
0.2005	1.29629	0.6216	365.02	2.976	77.852	0.013	365.15	78.616
0.3013	1.38200	0.8554	364.24	2.194	78.117	0.278	364.89	79.063
0.4019	1.44276	0.9820	363.54	1.494	78.494	0.655	364.49	79.481
0.4936	1.48476	1.0293	363.15	1.101	78.809	0.970	364.13	79.872
0.6054	1.52446	1.0326	362.93	0.884	79.066	1.228	363.75	80.456
0.7017	1.55174	0.9728	362.81	0.764	79.296	1.457	363.43	81.100
0.7892	1.57248	0.8761	362.63	0.583	79.846	2.007	363.16	81.995
0.8837	1.59190	0.6652	362.32	0.278	81.487	3.648	362.80	83.559
0.9417	1.60285	0.4235	362.14	0.090	83.496	5.657	362.50	85.101
$T = 313.15 \text{ K}$								
0.0346	1.03007	0.0699	366.05	2.695	78.180	-0.013	365.38	78.266
0.0702	1.10755	0.1818	366.53	3.176	78.155	-0.039	365.95	78.389
0.1019	1.16392	0.2905	366.73	3.371	78.137	-0.057	366.21	78.517
0.2005	1.29093	0.6376	366.45	3.097	78.198	0.004	366.54	78.991
0.3013	1.37636	0.8861	365.62	2.266	78.480	0.286	366.30	79.462
0.4019	1.43705	1.0102	364.88	1.520	78.881	0.687	365.87	79.883
0.4936	1.47901	1.0549	364.47	1.109	79.209	1.015	365.49	80.277
0.6054	1.51866	1.0575	364.26	0.899	79.458	1.264	365.10	80.874
0.7017	1.54592	0.9949	364.15	0.793	79.662	1.469	364.78	81.529
0.7892	1.56659	0.9063	363.97	0.614	80.206	2.013	364.51	82.493
0.8837	1.58602	0.6870	363.65	0.296	81.920	3.726	364.13	84.101
0.9417	1.59697	0.4423	363.45	0.097	84.059	5.865	363.83	85.778
$T = 318.15 \text{ K}$								
0.0346	1.02551	0.0641	367.31	2.608	78.543	-0.014	366.55	78.624
0.0702	1.10279	0.1741	367.84	3.143	78.515	-0.043	367.18	78.745
0.1019	1.15898	0.2855	368.07	3.373	78.494	-0.064	367.50	78.875
0.2005	1.28566	0.6354	367.85	3.156	78.544	-0.013	367.87	79.352
0.3013	1.37082	0.8947	367.03	2.333	78.825	0.267	367.67	79.838
0.4019	1.43135	1.0256	366.27	1.572	79.235	0.677	367.25	80.272
0.4936	1.47323	1.0721	365.84	1.141	79.579	1.022	366.87	80.675
0.6054	1.51283	1.0731	365.61	0.912	79.850	1.293	366.47	81.277
0.7017	1.54003	1.0139	365.49	0.796	80.072	1.515	366.14	81.957
0.7892	1.56070	0.9195	365.31	0.615	80.625	2.067	365.86	82.920
0.8837	1.58013	0.6937	364.99	0.296	82.340	3.782	365.48	84.522
0.9417	1.59109	0.4417	364.79	0.097	84.477	5.920	365.17	86.132
$T = 323.15 \text{ K}$								
0.0346	1.02095	0.0532	368.48	2.430	78.914	-0.016	367.59	78.985
0.0702	1.09801	0.1630	369.08	3.029	78.882	-0.048	368.37	79.105
0.1019	1.15406	0.2736	369.36	3.307	78.857	-0.073	368.74	79.235
0.2005	1.28050	0.6167	369.24	3.186	78.891	-0.039	369.13	79.701
0.3013	1.36536	0.8895	368.45	2.398	79.160	0.230	369.00	80.203
0.4019	1.42568	1.0331	367.68	1.634	79.572	0.642	368.62	80.657
0.4936	1.46747	1.0827	367.24	1.185	79.931	1.001	368.24	81.068
0.6054	1.50700	1.0854	366.98	0.930	80.235	1.305	367.84	81.681

0.7017	1.53414	1.0299	366.85	0.798	80.487	1.557	367.52	82.383
0.7892	1.55481	0.9300	366.66	0.610	81.059	2.129	367.23	83.342
0.8837	1.57424	0.6977	366.34	0.292	82.767	3.838	366.84	84.929
0.9417	1.58521	0.4387	366.15	0.095	84.878	5.948	366.52	86.452

[BMIM][FAP] (1) + DBF (2)

T = 293.15 K

0.0344	0.92873	0.0718	361.32	3.156	178.86	-0.031	360.26	178.96
0.0694	0.97575	0.2069	362.50	4.330	178.80	-0.093	361.15	179.11
0.0908	1.00284	0.3058	362.92	4.758	178.76	-0.130	361.54	179.23
0.1509	1.07317	0.6339	363.26	5.097	178.72	-0.169	362.37	179.64
0.1983	1.12357	0.8813	362.94	4.768	178.79	-0.098	362.61	179.99
0.3053	1.22438	1.2859	361.44	3.278	179.30	0.414	362.38	180.74
0.4013	1.30246	1.4603	360.20	2.038	179.98	1.087	361.81	181.33
0.5001	1.37310	1.4874	359.50	1.336	180.54	1.649	361.14	181.87
0.5949	1.43303	1.4453	359.32	1.150	180.75	1.863	360.60	182.46
0.7025	1.49316	1.3700	359.30	1.129	180.79	1.904	360.12	183.50
0.8049	1.54402	1.2369	359.06	0.897	181.57	2.680	359.70	185.23
0.9051	1.58961	0.8864	358.53	0.366	184.94	6.048	359.15	188.23
0.9470	1.60782	0.6298	358.31	0.140	187.81	8.923	358.83	190.78

T = 298.15 K

0.0344	0.92465	0.0687	362.45	2.993	179.66	-0.032	361.45	179.76
0.0694	0.97159	0.1901	363.67	4.216	179.60	-0.097	362.19	179.90
0.0908	0.99856	0.2964	364.12	4.666	179.56	-0.135	362.72	180.02
0.1509	1.06874	0.6139	364.50	5.048	179.51	-0.181	363.52	180.42
0.1983	1.11898	0.8649	364.19	4.737	179.58	-0.113	363.81	180.77
0.3053	1.21955	1.2653	362.71	3.259	180.09	0.395	363.60	181.51
0.4013	1.29741	1.4449	361.48	2.021	180.76	1.067	363.05	182.11
0.5001	1.36789	1.4707	360.78	1.324	181.32	1.625	362.39	182.64
0.5949	1.42771	1.4236	360.60	1.146	181.52	1.828	361.85	183.21
0.7025	1.48766	1.3590	360.59	1.135	181.55	1.852	361.39	184.26
0.8049	1.53837	1.2358	360.36	0.906	182.31	2.619	360.99	186.03
0.9051	1.58383	0.8936	359.82	0.370	185.71	6.017	360.44	189.11
0.9470	1.60208	0.6200	359.60	0.142	188.62	8.928	360.11	191.40

T = 303.15 K

0.0344	0.92052	0.0720	363.49	2.755	180.47	-0.034	362.84	180.58
0.0694	0.96739	0.1779	364.81	4.075	180.40	-0.104	363.30	180.70
0.0908	0.99435	0.2701	365.31	4.569	180.36	-0.146	363.72	180.81
0.1509	1.06432	0.5896	365.77	5.028	180.31	-0.202	364.65	181.20
0.1983	1.11441	0.8435	365.48	4.741	180.37	-0.139	364.99	181.56
0.3053	1.21470	1.2486	363.99	3.254	180.88	0.373	364.83	182.31
0.4013	1.29236	1.4311	362.72	1.985	181.57	1.062	364.30	182.90
0.5001	1.36275	1.4431	362.00	1.266	182.15	1.637	363.62	183.40
0.5949	1.42243	1.3983	361.83	1.088	182.35	1.840	363.09	183.96
0.7025	1.48231	1.3231	361.84	1.096	182.33	1.827	362.62	184.96
0.8049	1.53292	1.2002	361.63	0.889	183.03	2.523	362.23	186.66
0.9051	1.57821	0.8756	361.11	0.368	186.35	5.842	361.71	189.74
0.9470	1.59637	0.6137	360.88	0.142	189.24	8.728	361.39	192.10

T = 308.15 K

0.0344	0.91647	0.0444	364.46	2.411	181.31	-0.036	363.34	181.39
0.0694	0.96319	0.1508	365.89	3.846	181.23	-0.113	364.22	181.51
0.0908	0.99005	0.2468	366.44	4.395	181.18	-0.160	364.77	181.62
0.1509	1.05986	0.5583	367.01	4.960	181.11	-0.230	365.75	182.00
0.1983	1.10982	0.8111	366.77	4.721	181.17	-0.177	366.14	182.36
0.3053	1.20982	1.2231	365.32	3.277	181.67	0.322	366.05	183.11
0.4013	1.28730	1.4047	364.06	2.014	182.35	1.007	365.55	183.69
0.5001	1.35746	1.4303	363.35	1.300	182.92	1.579	364.91	184.21
0.5949	1.41697	1.3954	363.18	1.129	183.12	1.772	364.39	184.79
0.7025	1.47666	1.3356	363.19	1.141	183.10	1.753	363.95	185.84
0.8049	1.52713	1.2233	362.97	0.926	183.83	2.480	363.57	187.61
0.9051	1.57238	0.8899	362.43	0.382	187.28	5.936	363.03	190.72

0.9470	1.59048	0.6337	362.19	0.147	190.28	8.935	362.72	193.31
$T = 313.15 \text{ K}$								
0.0344	0.91226	0.0455	365.63	2.269	182.16	-0.036	364.68	182.24
0.0694	0.95886	0.1462	367.05	3.697	182.08	-0.112	365.46	182.35
0.0908	0.98569	0.2319	367.61	4.249	182.03	-0.160	365.91	182.45
0.1509	1.05532	0.5396	368.20	4.846	181.96	-0.234	366.93	182.83
0.1983	1.10523	0.7761	368.00	4.643	182.01	-0.188	367.27	183.16
0.3053	1.20492	1.2001	366.64	3.279	182.48	0.283	367.29	183.92
0.4013	1.28219	1.3879	365.42	2.062	183.14	0.944	366.82	184.51
0.5001	1.35213	1.4281	364.71	1.356	183.70	1.510	366.21	185.05
0.5949	1.41151	1.3946	364.52	1.166	183.92	1.727	365.70	185.64
0.7025	1.47106	1.3411	364.50	1.148	183.96	1.765	365.27	186.70
0.8049	1.52144	1.2295	364.27	0.915	184.74	2.543	364.88	188.50
0.9051	1.56664	0.8901	363.73	0.374	188.17	5.973	364.34	191.58
0.9470	1.58475	0.6244	363.50	0.143	191.11	8.914	364.02	193.98
$T = 318.15 \text{ K}$								
0.0344	0.90802	0.0397	366.68	1.984	183.03	-0.037	365.85	183.10
0.0694	0.95453	0.1281	368.17	3.472	182.95	-0.116	366.54	183.20
0.0908	0.98131	0.2072	368.76	4.058	182.90	-0.167	366.98	183.29
0.1509	1.05077	0.5086	369.43	4.734	182.81	-0.252	368.07	183.66
0.1983	1.10059	0.7359	369.28	4.579	182.85	-0.217	368.41	183.98
0.3053	1.20001	1.1634	367.98	3.278	183.30	0.235	368.51	184.74
0.4013	1.27702	1.3669	366.77	2.074	183.95	0.889	368.10	185.35
0.5001	1.34682	1.4041	366.05	1.357	184.53	1.464	367.51	185.87
0.5949	1.40607	1.3722	365.85	1.149	184.77	1.704	367.00	186.45
0.7025	1.46549	1.3220	365.81	1.117	184.83	1.766	366.58	187.51
0.8049	1.51581	1.2038	365.59	0.887	185.59	2.531	366.19	189.23
0.9051	1.56092	0.8661	365.06	0.363	188.92	5.858	365.65	192.19
0.9470	1.57893	0.6151	364.84	0.139	191.77	8.710	365.35	194.68
$T = 323.15 \text{ K}$								
0.0344	0.90369	0.0340	367.77	1.718	183.92	-0.040	367.04	184.00
0.0694	0.95013	0.1059	369.38	3.332	183.83	-0.126	367.58	184.07
0.0908	0.97684	0.1826	370.02	3.974	183.78	-0.181	368.06	184.16
0.1509	1.04613	0.4784	370.80	4.746	183.68	-0.279	369.22	184.52
0.1983	1.09568	0.7334	370.67	4.618	183.71	-0.249	369.75	184.88
0.3053	1.19490	1.1521	369.36	3.307	184.17	0.206	369.82	185.62
0.4013	1.27177	1.3491	368.12	2.075	184.84	0.876	369.41	186.21
0.5001	1.34137	1.3976	367.40	1.347	185.42	1.459	368.85	186.76
0.5949	1.40046	1.3756	367.20	1.151	185.64	1.684	368.36	187.36
0.7025	1.45982	1.3165	367.19	1.140	185.67	1.706	367.92	188.39
0.8049	1.51002	1.2070	366.97	0.917	186.42	2.455	367.55	190.15
0.9051	1.55497	0.8894	366.43	0.378	189.84	5.882	367.03	193.33
0.9470	1.57301	0.6251	366.20	0.145	192.81	8.847	366.71	195.77
[BMIM][FAP] (1) + DMA (2)								
$T = 293.15 \text{ K}$								
0.0178	0.98458	0.1564	367.88	9.715	92.598	0.007	366.95	92.750
0.0671	1.08539	0.5911	365.86	7.694	92.686	0.096	366.97	93.224
0.1007	1.14143	0.8475	364.69	6.524	92.793	0.203	366.58	93.533
0.1937	1.26204	1.2954	362.19	4.025	93.216	0.626	364.85	94.197
0.3006	1.35987	1.5128	360.39	2.221	93.798	1.207	363.25	94.776
0.3995	1.42694	1.5321	359.43	1.264	94.305	1.715	362.02	95.156
0.5041	1.48189	1.4205	358.89	0.724	94.743	2.152	360.99	95.465
0.5544	1.50395	1.3546	358.74	0.570	94.915	2.324	360.60	95.620
0.6039	1.52358	1.2571	358.63	0.460	95.066	2.479	360.23	95.739
0.6990	1.55620	1.0584	358.48	0.309	95.347	2.757	359.66	96.047
0.8104	1.58798	0.7393	358.33	0.165	95.798	3.207	359.08	96.490
0.8588	1.60009	0.5868	358.27	0.106	96.098	3.507	358.85	96.747
0.9093	1.61190	0.3956	358.22	0.051	96.521	3.931	358.60	96.953
0.9408	1.61879	0.2774	358.19	0.024	96.859	4.268	358.46	97.313

$T = 298.15 \text{ K}$								
0.0178	0.97997	0.143	368.78	9.328	93.053	0.005	367.50	93.193
0.0671	1.08045	0.586	367.18	7.725	93.124	0.076	368.19	93.676
0.1007	1.13639	0.840	366.14	6.687	93.219	0.171	367.80	93.982
0.1937	1.25672	1.293	363.63	4.176	93.649	0.601	366.13	94.651
0.3006	1.35442	1.522	361.56	2.111	94.317	1.269	364.52	95.223
0.3995	1.42153	1.514	360.45	0.992	94.909	1.861	363.24	95.569
0.5041	1.47658	1.369	359.92	0.469	95.327	2.280	362.17	95.809
0.5544	1.49881	1.260	359.83	0.381	95.425	2.377	361.73	95.875
0.6039	1.51830	1.173	359.81	0.354	95.461	2.413	361.40	96.009
0.6990	1.55076	0.983	359.81	0.360	95.448	2.401	360.86	96.313
0.8104	1.58220	0.737	359.75	0.293	95.684	2.636	360.36	96.935
0.8588	1.59419	0.606	359.67	0.215	96.082	3.034	360.16	97.340
0.9093	1.60585	0.444	359.57	0.117	96.851	3.803	359.94	97.944
0.9408	1.61270	0.336	359.51	0.058	97.579	4.532	359.81	98.723
$T = 303.15 \text{ K}$								
0.0178	0.97521	0.139	369.95	9.212	93.520	0.005	368.56	93.657
0.0671	1.07546	0.581	368.40	7.663	93.589	0.074	369.40	94.138
0.1007	1.13127	0.837	367.40	6.657	93.681	0.166	369.05	94.445
0.1937	1.25139	1.289	364.95	4.207	94.101	0.586	367.39	95.113
0.3006	1.34896	1.515	362.90	2.161	94.763	1.248	365.78	95.682
0.3995	1.41597	1.509	361.76	1.020	95.368	1.853	364.52	96.028
0.5041	1.47087	1.378	361.19	0.453	95.822	2.307	363.47	96.293
0.5544	1.49301	1.279	361.08	0.344	95.943	2.428	363.05	96.386
0.6039	1.51255	1.182	361.04	0.301	96.002	2.487	362.70	96.498
0.6990	1.54523	0.947	361.03	0.291	96.017	2.502	362.09	96.661
0.8104	1.57669	0.689	360.98	0.239	96.199	2.685	361.59	97.150
0.8588	1.58860	0.571	360.92	0.178	96.517	3.002	361.40	97.559
0.9093	1.60018	0.423	360.84	0.097	97.145	3.630	361.20	98.177
0.9408	1.60701	0.317	360.79	0.049	97.748	4.233	361.08	98.876
$T = 308.15 \text{ K}$								
0.0178	0.97038	0.137	371.32	9.271	93.998	0.006	369.75	94.132
0.0671	1.07043	0.575	369.65	7.603	94.071	0.079	370.61	94.608
0.1007	1.12610	0.833	368.60	6.558	94.167	0.175	370.31	94.918
0.1937	1.24603	1.281	366.16	4.110	94.585	0.593	368.66	95.581
0.3006	1.34348	1.504	364.20	2.152	95.218	1.226	367.05	96.142
0.3995	1.41040	1.497	363.13	1.086	95.783	1.791	365.79	96.485
0.5041	1.46514	1.380	362.60	0.552	96.212	2.220	364.78	96.774
0.5544	1.48720	1.291	362.49	0.440	96.336	2.344	364.37	96.889
0.6039	1.50669	1.199	362.43	0.385	96.412	2.420	364.03	97.019
0.6990	1.53919	0.993	362.39	0.339	96.495	2.503	363.47	97.291
0.8104	1.57070	0.724	362.30	0.249	96.795	2.803	362.94	97.811
0.8588	1.58265	0.597	362.23	0.179	97.156	3.164	362.74	98.221
0.9093	1.59429	0.435	362.14	0.095	97.807	3.815	362.53	98.790
0.9408	1.60119	0.314	362.09	0.047	98.405	4.413	362.38	99.291
$T = 313.15 \text{ K}$								
0.0178	0.96549	0.134	372.50	9.143	94.487	0.005	370.89	94.618
0.0671	1.06532	0.570	370.90	7.547	94.557	0.076	371.85	95.093
0.1007	1.12090	0.826	369.90	6.540	94.649	0.168	371.56	95.400
0.1937	1.24061	1.276	367.51	4.156	95.057	0.575	369.94	96.064
0.3006	1.33793	1.498	365.58	2.223	95.682	1.201	368.34	96.623
0.3995	1.40455	1.523	364.51	1.153	96.249	1.768	367.17	97.018
0.5041	1.45933	1.394	363.96	0.603	96.692	2.211	366.12	97.293
0.5544	1.48129	1.319	363.84	0.482	96.826	2.345	365.74	97.442
0.6039	1.50082	1.219	363.78	0.418	96.914	2.433	365.38	97.559
0.6990	1.53327	1.020	363.72	0.359	97.024	2.543	364.82	97.869
0.8104	1.56479	0.747	363.61	0.257	97.360	2.878	364.28	98.423
0.8588	1.57679	0.610	363.54	0.183	97.738	3.256	364.07	98.799
0.9093	1.58845	0.442	363.45	0.097	98.407	3.925	363.84	99.359
0.9408	1.59531	0.329	363.40	0.048	99.017	4.535	363.71	100.037

$T = 318.15 \text{ K}$								
0.0178	0.96049	0.136	373.72	9.025	94.987	0.005	372.34	95.121
0.0671	1.06015	0.565	372.24	7.547	95.052	0.070	373.11	95.587
0.1007	1.11562	0.820	371.28	6.581	95.141	0.159	372.84	95.894
0.1937	1.23512	1.270	368.91	4.212	95.547	0.565	371.25	96.557
0.3006	1.33208	1.521	366.92	2.223	96.191	1.209	369.76	97.157
0.3995	1.39883	1.519	365.81	1.110	96.781	1.799	368.50	97.512
0.5041	1.45359	1.384	365.25	0.554	97.227	2.245	367.44	97.773
0.5544	1.47558	1.300	365.14	0.444	97.349	2.367	367.04	97.900
0.6039	1.49506	1.205	365.09	0.395	97.416	2.434	366.69	98.025
0.6990	1.52742	1.018	365.07	0.367	97.467	2.485	366.15	98.363
0.8104	1.55889	0.751	364.98	0.282	97.754	2.772	365.62	98.944
0.8588	1.57089	0.612	364.90	0.205	98.150	3.168	365.41	99.317
0.9093	1.58250	0.454	364.81	0.110	98.889	3.907	365.20	99.990
0.9408	1.58939	0.333	364.75	0.055	99.579	4.597	365.05	100.614
$T = 323.15 \text{ K}$								
0.0178	0.95545	0.128	374.92	8.865	95.507	0.005	373.22	95.633
0.0671	1.05492	0.552	373.47	7.419	95.572	0.069	374.27	96.094
0.1007	1.11029	0.806	372.52	6.472	95.658	0.156	374.05	96.398
0.1937	1.22957	1.258	370.20	4.151	96.056	0.554	372.55	97.063
0.3006	1.32656	1.490	368.26	2.208	96.685	1.183	371.01	97.632
0.3995	1.39316	1.497	367.18	1.131	97.256	1.753	369.80	97.996
0.5041	1.44773	1.384	366.65	0.602	97.679	2.177	368.80	98.294
0.5544	1.46976	1.292	366.55	0.500	97.793	2.290	368.38	98.402
0.6039	1.48913	1.214	366.51	0.455	97.854	2.351	368.06	98.567
0.6990	1.52148	1.026	366.47	0.424	97.913	2.410	367.52	98.912
0.8104	1.55285	0.779	366.37	0.318	98.268	2.766	367.01	99.610
0.8588	1.56480	0.650	366.28	0.229	98.725	3.223	366.81	100.109
0.9093	1.57650	0.474	366.17	0.122	99.556	4.053	366.57	100.724
0.9408	1.58341	0.348	366.11	0.060	100.32	4.820	366.42	101.385

The combined experimental uncertainties ($k = 2$) are: $u(d) = 2 \cdot 10^{-2} \text{ kg} \cdot \text{m}^{-3}$; $u(x) = 5 \cdot 10^{-5}$; $u(V^E) = 9 \cdot 10^{-9} \text{ m}^3 \cdot \text{mol}^{-1}$; $u(V_\phi) = 6 \cdot 10^{-9} \text{ m}^3 \cdot \text{mol}^{-1}$; $u(T) = 0.01 \text{ K}$

Table S2. Redlich–Kister Fitting Coefficients (eq. 2), A_i , of the V^E of the ([BMIM][FAP] + Amide) Binary Mixtures as a Function of Temperature from (293.15 to 323.15) K along with their Fitting Deviations, σ_V^E (eq. S1).

$T /$ (K)	$10^{-6} \cdot A_0 /$ ($\text{m}^3 \cdot \text{mol}^{-1}$)	$10^{-6} \cdot A_1 /$ ($\text{m}^3 \cdot \text{mol}^{-1}$)	$10^{-6} \cdot A_2 /$ ($\text{m}^3 \cdot \text{mol}^{-1}$)	$10^{-6} \cdot A_3 /$ ($\text{m}^3 \cdot \text{mol}^{-1}$)	$10^{-6} \cdot \sigma /$ ($\text{m}^3 \cdot \text{mol}^{-1}$)
[BMIM][FAP] (1) + NMF (2)					
293.15	3.6859	0.7026	1.2334	0.0739	0.0075
298.15	3.7912	0.7946	1.1452	-0.0016	0.0072
303.15	3.9195	0.8457	1.1368	-0.0235	0.0071
308.15	4.0340	0.9195	1.0865	-0.0329	0.0067
313.15	4.1658	0.9678	1.1373	-0.0456	0.0068
318.15	4.2801	1.0900	1.0552	-0.0937	0.0062
323.15	4.3963	1.2369	1.0643	-0.3153	0.0063
[BMIM][FAP] (1) + DMF (2)					
293.15	5.2235	1.3847	4.5688	-0.1315	0.0054
298.15	5.2329	1.4091	4.3971	-0.0076	0.0075
303.15	5.2709	1.3504	4.4124	0.0403	0.0092
308.15	5.2808	1.5682	4.3299	-0.2772	0.0079
313.15	5.3378	1.4145	4.3608	-0.0750	0.0089
318.15	5.3374	1.5392	4.3704	-0.3199	0.0073
323.15	5.3513	1.6323	4.3974	-0.5303	0.0059
[BMIM][FAP] (1) + NEF (2)					
293.15	3.8529	0.3580	1.4332	3.2299	0.0055
298.15	3.9559	0.5304	1.3446	2.5498	0.0063
303.15	4.0429	0.3036	1.2913	2.9254	0.0067
308.15	4.1406	0.1867	1.2826	3.2664	0.0089
313.15	4.2496	0.1123	1.3539	3.6066	0.0094
318.15	4.3244	0.1578	1.2282	3.6643	0.0089
323.15	4.3732	0.2807	1.0396	3.6564	0.0082
[BMIM][FAP] (1) + DBF (2)					
293.15	5.9709	-0.6239	1.8934	7.1957	0.0124
298.15	5.8988	-0.6009	1.8918	7.3250	0.0095
303.15	5.8069	-0.7410	1.6934	7.5439	0.0106
308.15	5.7581	-0.5554	1.7076	7.8140	0.0122
313.15	5.7324	-0.3074	1.5952	7.5440	0.0089
318.15	5.6432	-0.2129	1.3248	7.4412	0.0107
323.15	5.6135	-0.2218	1.3212	7.8559	0.0118
[BMIM][FAP] (1) + DMA (2)					
293.15	5.7516	2.7978	2.0674	-0.0754	0.0106
298.15	5.4965	3.5778	2.2615	-1.4167	0.0109
303.15	5.5205	3.6567	2.3535	-1.7486	0.0142
308.15	5.5426	3.2859	2.4464	-1.3690	0.0091

313.15	5.6265	3.1629	2.3543	-1.3995	0.0081
318.15	5.5979	3.3313	2.4532	-1.8176	0.0119
323.15	5.5580	3.1011	2.6128	-1.8795	0.0123

The standard deviation of the fit is given as:

$$\sigma V^E = \left[\sum_1^m (V_{\text{exp}}^E - V_{\text{calc}}^E)^2 / (m - n) \right]^{\frac{1}{2}} \quad (\text{S1})$$

where m denotes the number of experimental points.

Table S3. Partial Molar Volume at Infinite Dilution (V_i^∞) and Partial Molar Excess Volume at Infinite Dilution ($(V_i^E)^\infty$) for the Components of the Mixtures Studied at Different Temperatures, Calculated from eqs. (10) and (11).

$T/$ (K)	$10^6 \cdot V_1^\infty /$ ($\text{m}^3 \cdot \text{mol}^{-1}$)	$10^6 \cdot (V_1^E)^\infty /$ ($\text{m}^3 \cdot \text{mol}^{-1}$)	$10^6 \cdot V_2^\infty /$ ($\text{m}^3 \cdot \text{mol}^{-1}$)	$10^6 \cdot (V_2^E)^\infty /$ ($\text{m}^3 \cdot \text{mol}^{-1}$)
[BMIM][FAP] (1) + NMF (2)				
293.15	363.84	5.696	63.096	4.143
298.15	365.20	5.729	63.294	4.143
303.15	366.64	5.878	63.635	4.234
308.15	368.12	6.073	63.886	4.168
313.15	369.62	6.225	64.317	4.381
318.15	371.09	6.332	64.524	4.339
323.15	372.61	6.382	64.837	4.539
[BMIM][FAP] (1) + DMF (2)				
293.15	369.29	11.045	85.494	8.539
298.15	370.49	11.032	85.665	8.228
303.15	371.81	11.074	86.135	8.293
308.15	373.11	10.901	86.387	8.320
313.15	374.44	11.038	86.977	8.359
318.15	375.81	10.927	87.371	8.489
323.15	377.22	10.851	87.825	8.647
[BMIM][FAP] (1) + NEF (2)				
293.15	359.86	8.874	85.686	1.698
298.15	361.67	8.381	85.526	2.220
303.15	362.84	8.563	86.051	2.105
308.15	364.02	8.876	86.715	1.970
313.15	365.24	9.322	87.516	1.885
318.15	366.43	9.375	87.932	1.731
323.15	367.53	9.350	88.279	1.476
[BMIM][FAP] (1) + DBF (2)				
293.15	359.46	14.436	193.326	1.293
298.15	360.52	14.515	194.208	1.067
303.15	361.44	14.303	194.811	0.697
308.15	362.25	14.724	196.069	0.207
313.15	363.45	14.564	196.758	0.091
318.15	364.44	14.196	197.259	-0.260
323.15	365.35	14.569	198.529	-0.699
[BMIM][FAP] (1) + DMA (2)				
293.15	368.71	10.541	97.69	5.097
298.15	369.37	9.919	98.64	5.597
303.15	370.52	9.782	99.48	5.966
308.15	371.95	9.906	100.06	6.072

313.15	373.10	9.744	100.70	6.217
318.15	374.26	9.565	101.52	6.537
323.15	375.44	9.392	102.45	6.949

Table S4. Excess Apparent Molar Volume, $V_{\phi 1}^E$, of [BMIM][FAP] and [BMPYRR][FAP] with Amides at Different Temperatures and Compositions of the Studied Mixtures at Atmospheric Pressure (0.1 MPa), Calculated from eq. (14).

$T / (\text{K})$	293.15	298.15	303.15	308.15	313.15	318.15	323.15
x_1	$10^6 \cdot V_{\phi 1}^E / (\text{m}^3 \cdot \text{mol}^{-1})$						
[BMIM][FAP] (1) + NMF (2)							
0.0177	5.533	5.556	5.671	5.773	5.823	5.932	6.160
0.0497	5.193	5.046	5.211	5.383	5.443	5.602	5.740
0.0664	4.923	4.876	5.061	5.253	5.353	5.422	5.600
0.1003	4.533	4.626	4.751	4.893	5.033	5.162	5.330
0.1495	4.003	4.136	4.281	4.433	4.583	4.702	4.790
0.2001	3.593	3.716	3.821	3.953	4.083	4.212	4.350
0.2968	2.933	3.006	3.101	3.203	3.303	3.412	3.530
0.4150	2.263	2.326	2.421	2.483	2.563	2.642	2.720
0.4963	1.833	1.886	1.941	1.993	2.063	2.122	2.180
0.5497	1.623	1.666	1.731	1.783	1.843	1.872	1.920
0.6043	1.423	1.466	1.511	1.543	1.583	1.632	1.670
0.6816	1.133	1.156	1.191	1.213	1.253	1.272	1.290
0.8148	0.683	0.696	0.711	0.713	0.743	0.742	0.770
0.9028	0.383	0.386	0.391	0.393	0.413	0.402	0.420
[BMIM][FAP] (1) + DMF (2)							
0.0182	10.19	10.046	9.861	9.753	9.843	9.692	9.870
0.0664	8.983	8.956	8.931	8.913	8.933	8.912	8.950
0.0998	8.233	8.236	8.231	8.243	8.273	8.262	8.270
0.2010	6.043	6.046	6.071	6.093	6.113	6.122	6.140
0.3017	4.523	4.546	4.561	4.583	4.613	4.622	4.650
0.4016	3.403	3.416	3.431	3.453	3.483	3.492	3.500
0.5024	2.593	2.576	2.591	2.613	2.633	2.642	2.650
0.5970	2.063	2.086	2.101	2.093	2.103	2.092	2.100
0.6927	1.573	1.586	1.601	1.603	1.603	1.592	1.570
0.7560	1.323	1.326	1.341	1.343	1.353	1.322	1.330
0.7924	1.233	1.236	1.241	1.233	1.243	1.242	1.230
0.8499	0.963	0.956	0.961	0.953	0.963	0.952	0.970
0.8946	0.763	0.756	0.771	0.753	0.763	0.762	0.770
[BMIM][FAP] (1) + NEF (2)							
0.0346	2.273	2.366	2.281	2.053	2.023	1.852	1.540
0.0702	2.373	2.636	2.661	2.603	2.593	2.482	2.320
0.1019	2.543	2.756	2.791	2.813	2.853	2.802	2.690
0.2005	2.763	2.906	3.011	3.103	3.183	3.172	3.080
0.3013	2.613	2.646	2.741	2.843	2.943	2.972	2.950
0.4019	2.273	2.306	2.381	2.443	2.513	2.552	2.570

0.4936	1.943	1.996	2.041	2.083	2.133	2.172	2.190
0.6054	1.603	1.656	1.671	1.703	1.743	1.772	1.790
0.7017	1.323	1.356	1.361	1.383	1.423	1.442	1.470
0.7892	1.083	1.096	1.091	1.113	1.153	1.162	1.180
0.8837	0.743	0.726	0.731	0.753	0.773	0.782	0.790
0.9417	0.453	0.426	0.441	0.453	0.473	0.472	0.470
[BMIM][FAP] (1) + DBF (2)							
0.0344	2.093	1.996	2.101	1.293	1.323	1.152	0.990
0.0694	2.983	2.736	2.561	2.173	2.103	1.842	1.530
0.0908	3.373	3.266	2.981	2.723	2.553	2.282	2.010
0.1509	4.203	4.066	3.911	3.703	3.573	3.372	3.170
0.1983	4.443	4.356	4.251	4.093	3.913	3.712	3.700
0.3053	4.213	4.146	4.091	4.003	3.933	3.812	3.770
0.4013	3.643	3.596	3.561	3.503	3.463	3.402	3.360
0.5001	2.973	2.936	2.881	2.863	2.853	2.812	2.800
0.5949	2.433	2.396	2.351	2.343	2.343	2.302	2.310
0.7025	1.953	1.936	1.881	1.903	1.913	1.882	1.870
0.8049	1.533	1.536	1.491	1.523	1.523	1.492	1.500
0.9051	0.983	0.986	0.971	0.983	0.983	0.952	0.980
0.9470	0.663	0.656	0.651	0.673	0.663	0.652	0.660
[BMIM][FAP] (1) + DMA (2)							
0.0178	8.783	8.046	7.821	7.703	7.533	7.642	7.170
0.0671	8.803	8.736	8.661	8.563	8.493	8.412	8.220
0.1007	8.413	8.346	8.311	8.263	8.203	8.142	8.000
0.1937	6.683	6.676	6.651	6.613	6.583	6.552	6.500
0.3006	5.083	5.066	5.041	5.003	4.983	5.062	4.960
0.3995	3.853	3.786	3.781	3.743	3.813	3.802	3.750
0.5041	2.823	2.716	2.731	2.733	2.763	2.742	2.750
0.5544	2.433	2.276	2.311	2.323	2.383	2.342	2.330
0.6039	2.063	1.946	1.961	1.983	2.023	1.992	2.010
0.6990	1.493	1.406	1.351	1.423	1.463	1.452	1.470
0.8104	0.913	0.906	0.851	0.893	0.923	0.922	0.960
0.8588	0.683	0.706	0.661	0.693	0.713	0.712	0.760
0.9093	0.433	0.486	0.461	0.483	0.483	0.502	0.520
0.9408	0.293	0.356	0.341	0.333	0.353	0.352	0.370
x_1	$*10^{-6} \cdot V_{\phi 1}^E / (\text{m}^3 \cdot \text{mol}^{-1})$						
[BMPYRR][FAP] (1) + NMF (2)							
0.0170	8.342	8.459	8.730	8.726	8.985	8.829	8.990
0.0380	7.772	7.909	8.170	8.196	8.425	8.339	8.570
0.0640	7.242	7.389	7.560	7.646	7.795	7.759	8.040
0.1395	5.682	5.849	5.980	6.086	6.165	6.209	6.450
0.1994	4.742	4.859	4.990	5.116	5.255	5.379	5.470
0.2991	3.642	3.719	3.830	3.936	4.055	4.179	4.290

0.4005	2.942	3.039	3.120	3.206	3.275	3.389	3.490
0.5044	2.352	2.429	2.470	2.536	2.595	2.649	2.740
0.5964	1.872	1.929	2.000	2.046	2.095	2.109	2.150
0.6471	1.642	1.679	1.750	1.786	1.845	1.839	1.890
0.7548	1.112	1.159	1.220	1.246	1.285	1.279	1.310
0.8413	0.692	0.739	0.780	0.806	0.835	0.829	0.850
0.9029	0.402	0.439	0.470	0.486	0.505	0.509	0.520

[BMPYRR][FAP] (1) + DMF (2)

0.0165	12.19	12.13	12.05	12.02	12.13	11.89	12.13
0.0379	11.42	11.35	11.34	11.29	11.38	11.29	11.31
0.0636	10.63	10.64	10.65	10.63	10.66	10.64	10.65
0.0999	9.542	9.549	9.550	9.576	9.605	9.609	9.630
0.1381	8.612	8.639	8.660	8.676	8.695	8.729	8.770
0.2002	7.242	7.269	7.300	7.316	7.365	7.379	7.410
0.3038	5.542	5.579	5.590	5.616	5.615	5.729	5.710
0.3944	4.322	4.359	4.390	4.396	4.425	4.439	4.470
0.4946	3.232	3.249	3.270	3.276	3.285	3.289	3.320
0.5997	2.292	2.309	2.320	2.326	2.325	2.329	2.340
0.6972	1.622	1.639	1.630	1.636	1.635	1.639	1.640
0.7887	1.042	1.069	1.080	1.066	1.065	1.059	1.060
0.8853	0.512	0.529	0.530	0.526	0.525	0.519	0.520

[BMPYRR][FAP] (1) + NEF (2)

0.0355	2.362	2.359	2.230	2.346	2.215	2.099	2.170
0.0753	2.592	2.619	2.550	2.706	2.655	2.599	2.690
0.0995	2.892	2.849	2.890	2.996	3.055	2.979	3.020
0.1508	3.062	3.099	3.160	3.186	3.285	3.259	3.340
0.2001	3.112	3.169	3.230	3.286	3.335	3.389	3.390
0.3045	3.022	3.079	3.100	3.146	3.185	3.219	3.240
0.3996	2.622	2.649	2.700	2.716	2.755	2.779	2.770
0.5028	2.202	2.229	2.260	2.276	2.295	2.309	2.330
0.5527	2.012	2.059	2.080	2.086	2.105	2.119	2.130
0.5989	1.852	1.879	1.890	1.906	1.925	1.929	1.940
0.7015	1.502	1.549	1.560	1.576	1.585	1.579	1.580
0.7983	1.192	1.199	1.210	1.216	1.225	1.229	1.240
0.8866	0.802	0.819	0.830	0.836	0.835	0.829	0.840
0.9510	0.402	0.419	0.420	0.416	0.415	0.419	0.420

[BMPYRR][FAP] (1) + DBF (2)

0.0351	3.932	3.719	3.720	3.086	2.775	2.699	2.270
0.0697	4.372	4.279	4.280	3.766	3.525	3.489	3.010
0.0998	5.002	4.849	4.670	4.416	4.215	4.109	3.720
0.1498	5.492	5.389	5.320	5.086	4.985	4.749	4.430
0.1994	5.722	5.569	5.460	5.316	5.135	5.049	4.950
0.2999	5.252	5.159	5.090	4.996	4.895	4.829	4.780

0.4003	4.522	4.449	4.410	4.346	4.265	4.229	4.240
0.4990	3.722	3.659	3.640	3.606	3.525	3.509	3.530
0.5993	2.962	2.929	2.930	2.906	2.845	2.819	2.840
0.6799	2.452	2.459	2.430	2.416	2.375	2.369	2.370
0.7754	1.922	1.899	1.910	1.906	1.855	1.869	1.880
0.8021	1.752	1.759	1.750	1.756	1.725	1.729	1.730
0.9011	1.072	1.049	1.060	1.076	1.055	1.059	1.050
0.9490	0.602	0.589	0.590	0.606	0.595	0.599	0.600
[BMPYRR][FAP] (1) + DMA (2)							
0.0182	10.85	10.81	10.64	10.59	10.30	9.959	9.680
0.0658	10.76	10.75	10.71	10.68	10.59	10.48	10.34
0.0990	10.28	10.29	10.27	10.23	10.17	10.12	10.00
0.1925	8.152	8.179	8.160	8.126	8.095	8.069	8.030
0.2995	6.362	6.369	6.360	6.346	6.325	6.299	6.270
0.4032	4.952	4.979	4.960	4.946	4.925	4.909	4.900
0.5012	3.942	3.909	3.840	3.886	3.935	3.829	3.860
0.6048	2.992	2.929	2.850	2.976	2.975	2.899	2.900
0.7078	2.102	2.039	1.930	2.026	2.035	2.109	1.980
0.8060	1.282	1.189	1.180	1.346	1.265	1.319	1.250
0.8469	0.972	0.909	0.900	1.036	0.995	1.019	0.960
0.9176	0.492	0.459	0.460	0.496	0.525	0.499	0.490

*Calculated from reference ²⁶

Table S5. Thermal Expansion Coefficients (α_p) as a Function of Temperature for the ([BMIM][FAP] + Amide) Investigated Mixtures.

x_1	$T / (\text{K})$						
	293.15	298.15	303.15	308.15	313.15	318.15	323.15
$\alpha_p \cdot 10^4 / \text{K}^{-1}$							
[BMIM][FAP] (1) + NMF (2)							
0.0000	8.996	9.036	9.076	9.118	9.160	9.202	9.246
0.0177	8.856	8.895	8.934	8.973	9.014	9.055	9.098
0.0496	8.667	8.703	8.741	8.779	8.818	8.858	8.898
0.0664	8.609	8.644	8.681	8.720	8.758	8.796	8.836
0.1003	8.507	8.542	8.578	8.615	8.653	8.691	8.730
0.1495	8.379	8.414	8.450	8.485	8.522	8.559	8.595
0.2000	8.253	8.287	8.321	8.356	8.391	8.427	8.463
0.2968	8.024	8.056	8.088	8.121	8.154	8.187	8.222
0.4150	7.815	7.845	7.876	7.907	7.938	7.970	8.002
0.4958	7.671	7.700	7.730	7.760	7.790	7.821	7.852
0.5497	7.600	7.629	7.658	7.688	7.718	7.747	7.778
0.6043	7.523	7.551	7.580	7.608	7.637	7.667	7.697
0.6816	7.421	7.448	7.476	7.504	7.532	7.561	7.590
0.8148	7.299	7.326	7.352	7.379	7.407	7.434	7.463
0.9028	7.230	7.256	7.282	7.309	7.336	7.363	7.390
1.0000	7.173	7.199	7.224	7.251	7.277	7.304	7.331
[BMIM][FAP] (1) + DMF (2)							
0.0182	10.446	10.500	10.555	10.610	10.667	10.725	10.785
0.0664	10.143	10.193	10.244	10.297	10.350	10.405	10.461
0.0998	9.573	9.618	9.664	9.710	9.758	9.806	9.856
0.2010	9.282	9.325	9.367	9.411	9.456	9.502	9.548
0.3017	8.663	8.700	8.738	8.776	8.815	8.854	8.895
0.4016	8.275	8.308	8.343	8.377	8.413	8.449	8.485
0.5024	7.991	8.023	8.055	8.088	8.121	8.154	8.188
0.5970	7.763	7.793	7.823	7.854	7.885	7.917	7.949
0.6927	7.576	7.605	7.634	7.663	7.692	7.722	7.752
0.7560	7.433	7.460	7.488	7.516	7.545	7.573	7.602
0.7924	7.362	7.390	7.417	7.445	7.472	7.500	7.529
0.8499	7.329	7.355	7.382	7.410	7.437	7.465	7.493
0.8946	7.279	7.305	7.332	7.358	7.386	7.413	7.441
[BMIM][FAP] (1) + NEF (2)							
0.0000	8.944	8.983	9.023	9.064	9.105	9.148	9.191
0.0346	8.589	8.626	8.663	8.700	8.739	8.778	8.817
0.0702	8.443	8.480	8.516	8.552	8.588	8.626	8.663
0.1019	8.352	8.388	8.422	8.458	8.494	8.530	8.567
0.2005	8.126	8.159	8.193	8.227	8.261	8.295	8.328

0.3013	7.963	7.994	8.026	8.059	8.092	8.124	8.157
0.4019	7.783	7.813	7.844	7.875	7.906	7.938	7.969
0.4936	7.647	7.676	7.706	7.735	7.765	7.796	7.826
0.6054	7.510	7.539	7.566	7.595	7.624	7.654	7.683
0.7017	7.416	7.443	7.470	7.498	7.527	7.556	7.585
0.7892	7.336	7.363	7.389	7.417	7.445	7.473	7.501
0.8837	7.262	7.288	7.314	7.341	7.368	7.396	7.424
0.9417	7.218	7.244	7.270	7.296	7.323	7.350	7.378
1.0000	7.173	7.199	7.224	7.251	7.277	7.304	7.331

[BMIM][FAP] (1) + DBF (2)

0.0000	9.180	9.221	9.263	9.306	9.349	9.394	9.440
0.0344	8.971	9.010	9.051	9.091	9.133	9.175	9.219
0.0694	8.749	8.786	8.824	8.863	8.903	8.943	8.984
0.0908	8.630	8.667	8.703	8.741	8.780	8.819	8.859
0.1509	8.390	8.425	8.460	8.496	8.532	8.569	8.607
0.1983	8.241	8.274	8.308	8.343	8.377	8.413	8.450
0.3053	8.010	8.042	8.074	8.106	8.139	8.173	8.208
0.4013	7.843	7.874	7.905	7.936	7.967	8.000	8.033
0.5001	7.696	7.726	7.755	7.785	7.816	7.847	7.878
0.5949	7.572	7.600	7.628	7.658	7.687	7.717	7.748
0.7025	7.444	7.471	7.498	7.527	7.556	7.584	7.614
0.8049	7.337	7.364	7.390	7.418	7.446	7.474	7.502
0.9051	7.248	7.275	7.301	7.328	7.355	7.382	7.410
0.9470	7.213	7.238	7.264	7.291	7.318	7.344	7.372
1.0000	7.173	7.199	7.224	7.251	7.277	7.304	7.331

[BMIM][FAP] (1) + DMA (2)

0.0000	10.153	10.203	10.254	10.306	10.360	10.415	10.472
0.0178	9.872	9.918	9.966	10.016	10.067	10.119	10.172
0.0671	9.355	9.398	9.441	9.486	9.531	9.577	9.625
0.1007	9.094	9.135	9.176	9.218	9.261	9.305	9.350
0.1937	8.568	8.605	8.641	8.678	8.716	8.755	8.795
0.3006	8.175	8.208	8.241	8.275	8.309	8.346	8.380
0.3995	7.917	7.947	7.978	8.010	8.043	8.076	8.109
0.5041	7.712	7.740	7.770	7.800	7.831	7.862	7.894
0.5544	7.635	7.661	7.691	7.721	7.751	7.781	7.812
0.6039	7.574	7.601	7.629	7.659	7.689	7.719	7.749
0.6990	7.472	7.499	7.525	7.555	7.584	7.613	7.643
0.8104	7.373	7.400	7.426	7.454	7.482	7.510	7.540
0.8588	7.334	7.361	7.387	7.414	7.442	7.470	7.499
0.9093	7.295	7.323	7.349	7.376	7.403	7.431	7.459
0.9408	7.257	7.284	7.310	7.337	7.364	7.391	7.419
1.0000	7.173	7.199	7.224	7.251	7.277	7.304	7.331

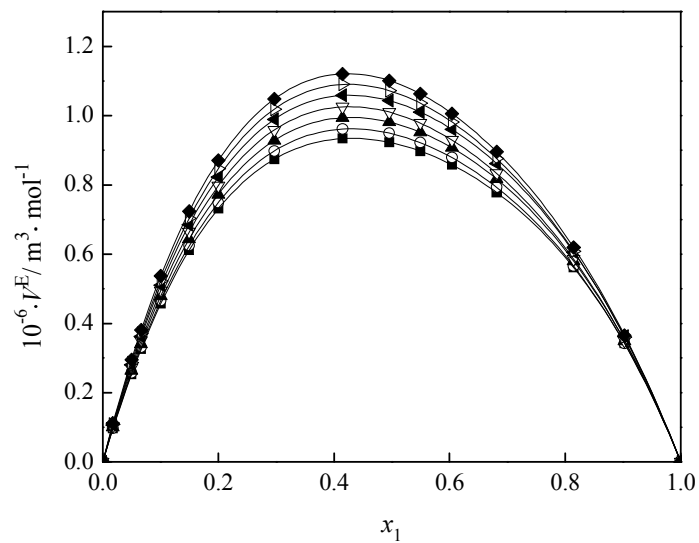


Figure S1. Excess molar volumes of the ([bmim][FAP] + NMF) binary mixtures as a function of [bmim][NTf₂] mole fraction at different temperatures $T =$: ■, 293.15 K; ○, 298.15; ▲, 303.15; ▽, 308.15; ◀, 313.15; ▶, 318.15; ◆, 323.15 K. The lines represent the Redlich–Kister-type fittings with the parameters indicated in the table S2.

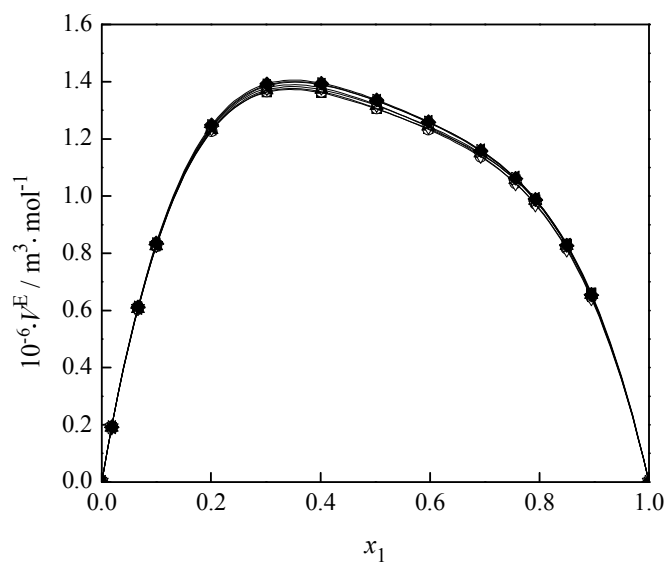


Figure S2. Excess molar volumes of the ([bmim][FAP] + DMF) binary mixtures as a function of [bmim][NTf₂] mole fraction at different temperatures $T =$: ■, 293.15 K; ○, 298.15; ▲, 303.15; ▽, 308.15; ◀, 313.15; ▶, 318.15; ◆, 323.15 K. The lines represent the Redlich–Kister-type fittings with the parameters indicated in the table S2.

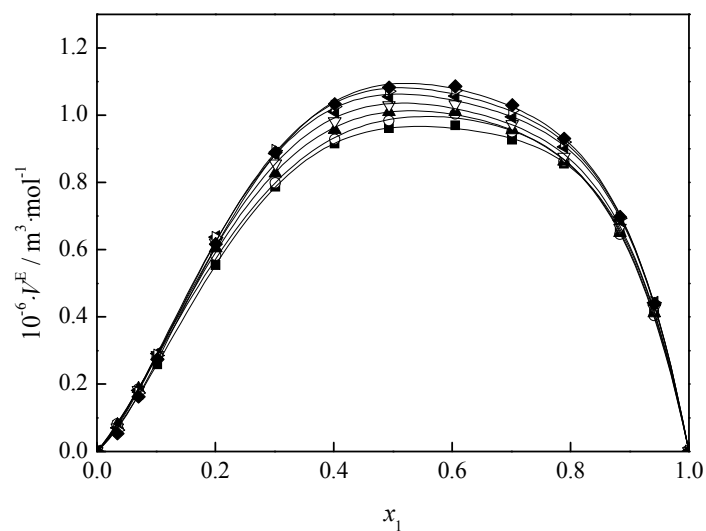


Figure S3. Excess molar volumes of the ([bmim][FAP] + NEF) binary mixtures as a function of [bmim][NTf₂] mole fraction at different temperatures $T =$: ■, 293.15 K; ○, 298.15; ▲, 303.15; ▽, 308.15; ◀, 313.15; ▶, 318.15; ◆, 323.15 K. The lines represent the Redlich–Kister-type fittings with the parameters indicated in the table S2.

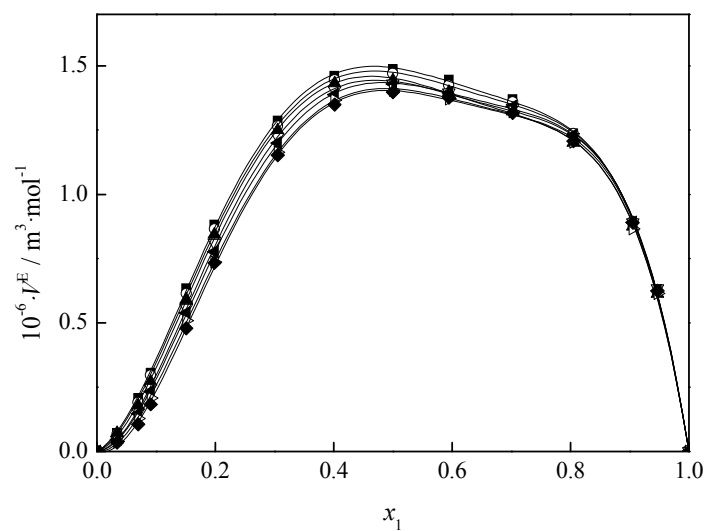


Figure S4. Excess molar volumes of the ([bmim][FAP] + DBF) binary mixtures as a function of [bmim][NTf₂] mole fraction at different temperatures $T =$: ■, 293.15 K; ○, 298.15; ▲, 303.15; ▽, 308.15; ◀, 313.15; ▶, 318.15; ◆, 323.15 K. The lines represent the Redlich–Kister-type fittings with the parameters indicated in the table S2.

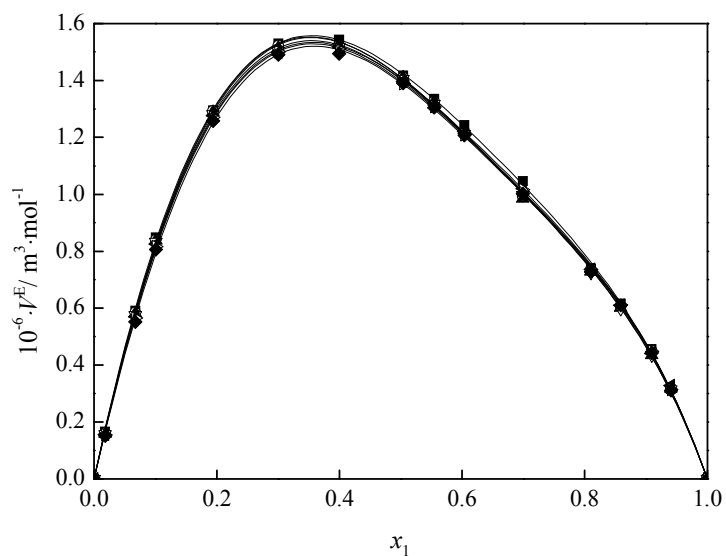


Figure S5. Excess molar volumes of the ([bmim][FAP] + DMA) binary mixtures as a function of [bmim][NTf₂] mole fraction at different temperatures $T =$: ■, 293.15 K; ○, 298.15; ▲, 303.15; ▽, 308.15; ◀, 313.15; ▶, 318.15; ◆, 323.15 K. The lines represent the Redlich–Kister-type fittings with the parameters indicated in the table S2.