

Supporting Information

Table S1. Detailed results for CO₂ (1) + [C₂mim][Tf₂N] (2) at 293.15 K.

A_p	A_ϕ	$\% \Delta A_i$	P^{exp}	P^{cal}	$\% \Delta P$	y_1^{cal}	y_2^{cal}	x_1
(4 data points) $k_{12} = 0.2223$, $A_{12} = 49988.291$, $A_{21} = -1791.751$, $ \Delta P (\%) = 0.5$								
2.04E+09	2.02E+09	-0.8	2.9348	2.9282	-0.2	1.0000	0.0000	0.560
1.88E+09	2.07E+09	10.2	3.4366	3.4249	-0.3	1.0000	0.0000	0.606
3.75E+09	3.44E+09	-8.2	3.9416	3.9839	1.1	1.0000	0.0000	0.650
-	-	-	4.7826	4.7583	-0.5	1.0000	0.0000	0.700

Table S2. Detailed results for CO₂ (1) + [C₂mim][Tf₂N] (2) at 303.15 K.

A_p	A_ϕ	$\% \Delta A_i$	P^{exp}	P^{cal}	$\% \Delta P$	y_1^{cal}	y_2^{cal}	x_1
(9 data points) $k_{12} = -0.0090$, $A_{12} = 8795.384$, $A_{21} = -1923.852$, $ \Delta P (\%) = 2.0$								
3.01E+09	2.82E+09	-6.4	0.830	0.864	4.1	1.0000	0.0000	0.221
2.14E+09	1.98E+09	-7.3	1.453	1.464	0.8	1.0000	0.0000	0.327
1.42E+09	1.37E+09	-3.4	2.178	2.136	-1.9	1.0000	0.0000	0.418
6.13E+08	6.11E+08	-0.3	3.049	2.962	-2.9	1.0000	0.0000	0.503
2.92E+08	3.16E+08	8.3	3.784	3.675	-2.9	1.0000	0.0000	0.560
1.45E+08	1.74E+08	20.2	4.459	4.389	-1.6	1.0000	0.0000	0.606
84369683	88171977	4.5	5.178	5.248	1.4	1.0000	0.0000	0.650
8.03E+08	2.29E+09	184.7	6.497	6.634	2.1	1.0000	0.0000	0.700
-	-	-	22.207	22.194	-0.1	1.0000	0.0000	0.750
(8 data points) $k_{12} = 0.2490$, $A_{12} = 1937.676$, $A_{21} = -917.474$, $ \Delta P (\%) = 1.9$								
4.02E+09	3.79E+09	-5.7	0.830	0.860	3.6	1.0000	0.0000	0.221
3.35E+09	3.14E+09	-6.5	1.453	1.461	0.6	1.0000	0.0000	0.327
2.65E+09	2.58E+09	-2.6	2.178	2.137	-1.9	1.0000	0.0000	0.418
1.37E+09	1.37E+09	0.2	3.049	2.970	-2.6	1.0000	0.0000	0.503
7.56E+08	8.18E+08	8.3	3.784	3.689	-2.5	1.0000	0.0000	0.560
4.28E+08	5.09E+08	19.0	4.459	4.406	-1.2	1.0000	0.0000	0.606
2.79E+08	2.79E+08	0.3	5.178	5.259	1.6	1.0000	0.0000	0.650
-	-	-	6.497	6.592	1.5	1.0000	0.0000	0.700

Table S3. Detailed results for CO₂ (1) + [C₂mim][Tf₂N] (2) at 313.15 K.

A_P	A_ϕ	$\% \Delta A_i$	P^{exp}	P^{cal}	$\% \Delta P$	y_1^{cal}	y_2^{cal}	x_1
(9 data points) $k_{12} = 0.0204$, $A_{12} = 5854.406$, $A_{21} = -1747.716$, $ \Delta P (\%) = 1.1$								
1.01E+09	9.65E+08	-4.5	1.073	1.092	1.74	1.0000	0.0000	0.221
6.32E+08	6.16E+08	-2.6	1.861	1.853	-0.39	1.0000	0.0000	0.327
3.77E+08	3.73E+08	-1.1	2.747	2.713	-1.23	1.0000	0.0000	0.418
1.36E+08	1.38E+08	1.2	3.835	3.781	-1.41	1.0000	0.0000	0.503
5.39E+07	5.73E+07	6.3	4.772	4.720	-1.10	1.0000	0.0000	0.560
1.91E+07	2.35E+07	23.1	5.687	5.687	0.01	1.0000	0.0000	0.606
1.17E+07	1.06E+07	-9.6	6.682	6.922	3.59	1.0000	0.0000	0.650
4.73E+05	8.20E+05	73.2	10.142	10.076	-0.65	1.0000	0.0000	0.700
-	-	-	28.178	28.186	0.03	1.0000	0.0000	0.750
(8 data points) $k_{12} = -0.0515$, $A_{12} = 7768.754$, $A_{21} = -1861.272$, $ \Delta P (\%) = 1.3$								
9.22E+08	8.77E+08	-4.9	1.073	1.096	2.2	1.0000	0.0000	0.221
5.50E+08	5.33E+08	-3.2	1.861	1.857	-0.2	1.0000	0.0000	0.327
3.13E+08	3.08E+08	-1.7	2.747	2.713	-1.2	1.0000	0.0000	0.418
1.08E+08	1.09E+08	0.5	3.835	3.774	-1.6	1.0000	0.0000	0.503
4.20E+07	4.43E+07	5.6	4.772	4.705	-1.4	1.0000	0.0000	0.560
1.49E+07	1.82E+07	22.5	5.687	5.663	-0.4	1.0000	0.0000	0.606
9.56E+06	8.88E+06	-7.1	6.682	6.886	3.1	1.0000	0.0000	0.650
-	-	-	10.142	10.111	-0.3	1.0000	0.0000	0.700

Table S4. Detailed results for CO₂ (1) + [C₂mim][Tf₂N] (2) at 323.15 K.

A_p	A_ϕ	$\% \Delta A_i$	P^{exp}	P^{cal}	$\% \Delta P$	y_1^{cal}	y_2^{cal}	x_1
(9 data points) $k_{12} = 0.0108$, $A_{12} = 4879.271$, $A_{21} = -1604.227$, $ \Delta P (\%) = 1.0$								
3.40E+08	3.34E+08	-1.6	1.341	1.343	0.1	1.0000	0.0000	0.221
1.92E+08	1.90E+08	-1.2	2.293	2.282	-0.5	1.0000	0.0000	0.327
1.00E+08	9.91E+07	-1.1	3.372	3.347	-0.7	1.0000	0.0000	0.418
2.92E+07	2.98E+07	2.1	4.724	4.684	-0.8	1.0000	0.0000	0.503
9.52E+06	9.89E+06	3.8	5.899	5.882	-0.3	1.0000	0.0000	0.560
2.53E+06	3.05E+06	20.7	7.121	7.158	0.5	1.0000	0.0000	0.606
9.38E+05	6.84E+05	-27.1	8.561	8.925	4.3	1.0000	0.0000	0.650
5.11E+04	6.81E+04	33.4	14.477	14.217	-1.8	1.0000	0.0000	0.700
-	-	-	33.729	33.794	0.2	1.0000	0.0000	0.750
(8 data points) $k_{12} = -0.1361$, $A_{12} = 6595.4793$, $A_{21} = -1740.993$, $ \Delta P (\%) = 1.0$								
2.73E+08	2.65E+08	-2.8	1.341	1.360	1.4	1.0000	0.0000	0.221
1.36E+08	1.32E+08	-2.8	2.293	2.299	0.3	1.0000	0.0000	0.327
6.26E+07	6.06E+07	-3.2	3.372	3.354	-0.5	1.0000	0.0000	0.418
1.60E+07	1.59E+07	-0.4	4.724	4.664	-1.3	1.0000	0.0000	0.503
4.77E+06	4.82E+06	1.0	5.899	5.827	-1.2	1.0000	0.0000	0.560
1.21E+06	1.42E+06	16.7	7.121	7.056	-0.9	1.0000	0.0000	0.606
4.88E+05	3.95E+05	-19.2	8.561	8.739	2.1	1.0000	0.0000	0.650
-	-	-	14.477	14.455	-0.1	1.0000	0.0000	0.700

Table S5. Detailed results for CO₂ (1) + [C₂mim][Tf₂N] (2) at 333.15 K.

A _p	A _φ	%ΔA _i	P ^{exp}	P ^{cal}	%ΔP	y ₁ ^{cal}	y ₂ ^{cal}	x ₁
(9 data points) k ₁₂ = 0.0038, A ₁₂ = 4323.089, A ₂₁ = -1491.756, ΔP (%) = 1.4								
1.22E+08	1.24E+08	1.5	1.634	1.613	-1.3	1.0000	0.0000	0.221
6.33E+07	6.30E+07	-0.6	2.757	2.746	-0.4	1.0000	0.0000	0.327
2.92E+07	2.88E+07	-1.2	4.054	4.039	-0.4	1.0000	0.0000	0.418
6.98E+06	7.16E+06	2.7	5.706	5.683	-0.4	1.0000	0.0000	0.503
1.89E+06	1.94E+06	2.7	7.164	7.192	0.4	1.0000	0.0000	0.560
4.19E+05	4.70E+05	12.2	8.762	8.863	1.2	1.0000	0.0000	0.606
9.51E+04	6.07E+04	-36.1	10.903	11.386	4.4	1.0000	0.0000	0.650
1.44E+04	1.82E+04	26.8	18.933	18.308	-3.3	1.0000	0.0000	0.700
-	-	-	38.862	39.028	0.4	1.0000	0.0000	0.750
(8 data points) k ₁₂ = -0.1516, A ₁₂ = 5124.061, A ₂₁ = -1555.429, ΔP (%) = 0.6								
93611788.0	93594300.5	0.0	1.634	1.641	0.4	1.0000	0.0000	0.221
41725084.9	40614214.9	-2.7	2.757	2.775	0.7	1.0000	0.0000	0.327
16418362.7	15758402.8	-4.0	4.054	4.054	0.0	1.0000	0.0000	0.418
3296210.7	3269578.3	-0.8	5.706	5.656	-0.9	1.0000	0.0000	0.503
789583.5	778145.6	-1.4	7.164	7.105	-0.8	1.0000	0.0000	0.560
162342.8	174188.7	7.3	8.762	8.687	-0.9	1.0000	0.0000	0.606
36951.9	27210.0	-26.4	10.903	11.039	1.2	1.0000	0.0000	0.650
-	-	-	18.933	18.916	-0.1	1.0000	0.0000	0.700

Table S6. Detailed results for CO₂ (1) + [C₂mim][Tf₂N] (2) at 343.15 K.

A _p	A _φ	%ΔA _i	P ^{exp}	P ^{cal}	%ΔP	y ₁ ^{cal}	y ₂ ^{cal}	x ₁
(9 data points) k ₁₂ = -0.0077, A ₁₂ = 3830.967, A ₂₁ = -1359.963, ΔP (%) = 1.6								
46618692.1	47820300.6	2.6	1.953	1.909	-2.3	1.0000	0.0000	0.221
21500259.3	21880241.9	1.8	3.280	3.254	-0.8	1.0000	0.0000	0.327
8911655.6	8798557.4	-1.3	4.792	4.799	0.1	1.0000	0.0000	0.418
1795168.5	1824418.9	1.6	6.770	6.787	0.3	1.0000	0.0000	0.503
410188.9	413798.5	0.9	8.568	8.651	1.0	1.0000	0.0000	0.560
82565.2	84098.7	1.9	10.608	10.785	1.7	1.0000	0.0000	0.606
19471.3	12434.9	-36.1	13.585	14.108	3.9	1.0000	0.0000	0.650
5127.4	6446.8	25.7	23.085	22.119	-4.2	1.0000	0.0000	0.700
-	-	-	43.575	43.825	0.6	1.0000	0.0000	0.750
(8 data points) k ₁₂ = -0.1535, A ₁₂ = 4128.880, A ₂₁ = -1350.552, ΔP (%) = 0.4								
35492832.5	35856283.6	1.0	1.953	1.944	-0.5	1.0000	0.0000	0.221
13939618.3	13871428.6	-0.5	3.280	3.292	0.3	1.0000	0.0000	0.327
4902994.2	4692463.2	-4.3	4.792	4.818	0.5	1.0000	0.0000	0.418
822351.8	804842.8	-2.1	6.770	6.752	-0.3	1.0000	0.0000	0.503
165382.0	159705.5	-3.4	8.568	8.536	-0.4	1.0000	0.0000	0.560
30320.8	29956.0	-1.2	10.608	10.546	-0.6	1.0000	0.0000	0.606
6383.0	4735.3	-25.8	13.585	13.673	0.6	1.0000	0.0000	0.650
-	-	-	23.085	23.074	-0.1	1.0000	0.0000	0.700

Table S7. Detailed results for CO₂ (1) + [C₂mim][Tf₂N] (2) at 353.15 K.

A_p	A_ϕ	$\% \Delta A_i$	P^{exp}	P^{cal}	$\% \Delta P$	y_1^{cal}	y_2^{cal}	x_1
(8 data points) $k_{12} = -0.1468$, $A_{12} = 3458.742$, $A_{21} = -1158.891$, $ \Delta P (\%) = 0.5$								
14608776.8	14862062.3	1.7	2.297	2.264	-1.4	1.0000	0.0000	0.221
5148412.6	5251796.6	2.0	3.849	3.841	-0.2	1.0000	0.0000	0.327
1660958.3	1598816.6	-3.7	5.587	5.639	0.9	1.0000	0.0000	0.418
249939.2	238876.9	-4.4	7.907	7.945	0.5	1.0000	0.0000	0.503
45266.3	42720.8	-5.6	10.110	10.113	0.0	1.0000	0.0000	0.560
8330.4	7809.6	-6.3	12.661	12.614	-0.4	1.0000	0.0000	0.606
2191.0	1694.1	-22.7	16.464	16.516	0.3	1.0000	0.0000	0.650
-	-	-	27.039	27.029	0.0	1.0000	0.0000	0.700

Table S8. Detailed results for CO₂ (1) + [C₂mim][Tf₂N] (2) at 363.15 K.

A _p	A ₀	%ΔA _i	P ^{exp}	P ^{cal}	%ΔP	y ₁ ^{cal}	y ₂ ^{cal}	x ₁
(8 data points) k ₁₂ = -0.1317, A ₁₂ = 3048.107, A ₂₁ = -1016.976, ΔP (%) = 0.8								
6343241.6	6688429.5	5.4	2.666	2.593	-2.7	1.0000	0.0000	0.221
2208040.2	2223482.8	0.7	4.406	4.413	0.2	1.0000	0.0000	0.327
646739.4	632411.6	-2.2	6.439	6.503	1.0	1.0000	0.0000	0.418
94964.5	87720.3	-7.6	9.105	9.218	1.2	1.0000	0.0000	0.503
16828.3	15461.0	-8.1	11.791	11.813	0.2	1.0000	0.0000	0.560
3404.9	3170.8	-6.9	14.919	14.843	-0.5	1.0000	0.0000	0.606
1198.9	968.5	-19.2	19.429	19.483	0.3	1.0000	0.0000	0.650
-	-	-	30.832	30.813	-0.1	1.0000	0.0000	0.700

Table S9. Detailed results for CO₂ (1) + [C₅mim][Tf₂N] (2) at 303.15 K.

A _P	A _φ	%ΔA _i	P ^{exp}	P ^{cal}	%ΔP	y ₁ ^{cal}	y ₂ ^{cal}	x ₁
(9 data points) k ₁₂ = 0.0606, A ₁₂ = 2477.849, A ₂₁ = -773.810, ΔP (%) = 1.5								
5.22E+11	4.80E+11	-8.0	0.807	0.818	1.4	1.0000	0.0000	0.212
8.23E+10	9.69E+10	17.8	1.664	1.608	-3.4	1.0000	0.0000	0.351
1.17E+11	1.24E+11	6.7	1.905	1.885	-1.1	1.0000	0.0000	0.390
1.90E+11	1.92E+11	1.1	2.393	2.404	0.4	1.0000	0.0000	0.453
6.77E+09	6.44E+09	-5.0	4.352	4.426	1.7	1.0000	0.0000	0.619
2.94E+09	3.35E+09	14.0	5.005	5.056	1.0	1.0000	0.0000	0.654
1.57E+09	1.48E+09	-6.0	5.937	6.129	3.2	1.0000	0.0000	0.701
2.59E+04	1.47E+04	-43.2	10.577	10.489	-0.8	1.0000	0.0000	0.751
-	-	-	32.753	32.788	0.1	0.9998	0.0002	0.802
(8 data points) k ₁₂ = -0.1425, A ₁₂ = 4260.927, A ₂₁ = -1186.995, ΔP (%) = 1.0								
3.93E+11	3.57E+11	-9.2	0.807	0.827	2.5	1.0000	0.0000	0.212
5.12E+10	5.96E+10	16.4	1.664	1.617	-2.8	1.0000	0.0000	0.351
6.60E+10	6.93E+10	5.1	1.905	1.892	-0.7	1.0000	0.0000	0.390
9.49E+10	9.32E+10	-1.8	2.393	2.405	0.5	1.0000	0.0000	0.453
2.00E+09	1.84E+09	-8.1	4.352	4.370	0.4	1.0000	0.0000	0.619
7.70E+08	8.38E+08	9.0	5.005	4.972	-0.7	1.0000	0.0000	0.654
3.57E+08	3.62E+08	1.4	5.937	5.979	0.7	1.0000	0.0000	0.701
-	-	-	10.577	10.576	0.0	0.9999	0.0001	0.751

Table S10. Detailed results for CO₂ (1) + [C₅mim][Tf₂N] (2) at 313.15 K.

A_P	A_ϕ	$\% \Delta A_i$	P^{exp}	P^{cal}	$\% \Delta P$	y_1^{cal}	y_2^{cal}	x_1
(9 data points) $k_{12} = 0.0489$, $A_{12} = 2232.933$, $A_{21} = -637.261$, $ \Delta P (\%) = 1.9$								
1.24E+11	1.21E+11	-2.6	1.028	1.010	-1.7	1.0000	0.0000	0.212
1.77E+10	2.13E+10	20.5	2.050	1.990	-2.9	1.0000	0.0000	0.351
2.34E+10	2.53E+10	8.0	2.341	2.336	-0.2	1.0000	0.0000	0.390
3.54E+10	3.52E+10	-0.4	2.938	2.984	1.6	1.0000	0.0000	0.453
6.15E+08	5.71E+08	-7.0	5.445	5.579	2.5	1.0000	0.0000	0.619
1.89E+08	2.22E+08	17.4	6.343	6.434	1.4	1.0000	0.0000	0.654
2.09E+07	1.35E+07	-35.3	7.723	8.064	4.4	1.0000	0.0000	0.701
8.66E+03	6.01E+03	-30.6	15.399	15.030	-2.4	0.9999	0.0001	0.751
-	-	-	38.148	38.298	0.4	0.9997	0.0003	0.802
(8 data points) $k_{12} = -0.1209$, $A_{12} = 3122.348$, $A_{21} = -892.071$, $ \Delta P (\%) = 0.8$								
9.45E+10	9.08E+10	-3.8	1.028	1.026	-0.2	1.0000	0.0000	0.212
1.11E+10	1.32E+10	18.8	2.050	2.007	-2.1	1.0000	0.0000	0.351
1.35E+10	1.43E+10	6.0	2.341	2.351	0.4	1.0000	0.0000	0.390
1.83E+10	1.75E+10	-4.3	2.938	2.990	1.8	1.0000	0.0000	0.453
1.95E+08	1.72E+08	-11.9	5.445	5.488	0.8	1.0000	0.0000	0.619
5.61E+07	5.96E+07	6.3	6.343	6.285	-0.9	1.0000	0.0000	0.654
8.33E+06	6.24E+06	-25.1	7.723	7.733	0.1	1.0000	0.0000	0.701
-	-	-	15.399	15.398	0.0	0.9995	0.0005	0.751

Table S11. Detailed results for CO₂ (1) + [C₅mim][Tf₂N] (2) at 323.15 K.

A _P	A _φ	%ΔA _i	P ^{exp}	P ^{cal}	%ΔP	y ₁ ^{cal}	y ₂ ^{cal}	x ₁
(9 data points) k ₁₂ = 0.0364, A ₁₂ = 2057.406, A ₂₁ = -528.352, ΔP (%) = 2.4								
3.23E+10	3.29E+10	1.8	1.266	1.217	-3.8	1.0000	0.0000	0.212
4.20E+09	5.10E+09	21.3	2.465	2.404	-2.5	1.0000	0.0000	0.351
5.19E+09	5.63E+09	8.4	2.817	2.825	0.3	1.0000	0.0000	0.390
7.35E+09	7.22E+09	-1.9	3.540	3.618	2.2	1.0000	0.0000	0.453
5.95E+07	5.49E+07	-7.8	6.701	6.895	2.9	1.0000	0.0000	0.619
1.49E+07	1.59E+07	6.3	7.919	8.055	1.7	1.0000	0.0000	0.654
2.41E+05	1.31E+05	-45.4	10.281	10.662	3.7	1.0000	0.0000	0.701
4.02E+03	3.24E+03	-19.3	19.950	19.181	-3.9	0.9998	0.0002	0.751
-	-	-	43.205	43.480	0.6	0.9995	0.0005	0.802
(7 data points) k ₁₂ = -0.4015, A ₁₂ = 4810.994, A ₂₁ = -1180.327, ΔP (%) = 1.2								
1.55E+10	1.54E+10	-0.6	1.266	1.247	-1.5	1.0000	0.0000	0.212
1.15E+09	1.36E+09	18.4	2.465	2.435	-1.3	1.0000	0.0000	0.351
1.12E+09	1.18E+09	5.0	2.817	2.849	1.2	1.0000	0.0000	0.390
1.18E+09	1.10E+09	-7.2	3.540	3.623	2.4	1.0000	0.0000	0.453
2.22E+06	1.94E+06	-12.8	6.701	6.724	0.3	1.0000	0.0000	0.619
3.93E+05	4.18E+05	6.3	7.919	7.794	-1.6	1.0000	0.0000	0.654
-	-	-	10.281	10.304	0.2	0.9998	0.0002	0.701

Table S12. Detailed results for CO₂ (1) + [C₅mim][Tf₂N] (2) at 333.15 K.

A_P	A_ϕ	$\% \Delta A_i$	P^{exp}	P^{cal}	$\% \Delta P$	y_1^{cal}	y_2^{cal}	x_1
(9 data points) $k_{12} = 0.0247$, $A_{12} = 1907.507$, $A_{21} = -429.010$, $ \Delta P (\%) = 2.8$								
9.24E+09	9.74E+09	5.3	1.521	1.439	-5.3	1.0000	0.0000	0.212
1.13E+09	1.33E+09	17.2	2.912	2.851	-2.1	1.0000	0.0000	0.351
1.24E+09	1.37E+09	10.7	3.345	3.353	0.2	1.0000	0.0000	0.390
1.69E+09	1.63E+09	-3.1	4.195	4.307	2.7	1.0000	0.0000	0.453
6.80E+06	6.22E+06	-8.5	8.103	8.382	3.4	1.0000	0.0000	0.619
1.33E+06	1.25E+06	-6.0	9.717	9.933	2.2	1.0000	0.0000	0.654
3.34E+04	1.86E+04	-44.3	13.185	13.608	3.2	1.0000	0.0000	0.701
2.23E+03	2.06E+03	-7.7	24.231	23.064	-4.8	0.9997	0.0003	0.751
-	-	-	47.993	48.365	0.8	0.9993	0.0007	0.802
(7 data points) $k_{12} = 0.6652$, $A_{12} = -1895.929$, $A_{21} = 3685.079$, $ \Delta P (\%) = 0.4$								
3.27E+10	3.18E+10	-2.7	1.521	1.527	0.4	1.0000	0.0000	0.212
8.51E+09	9.20E+09	8.1	2.912	2.879	-1.1	1.0000	0.0000	0.351
1.45E+10	1.49E+10	3.0	3.345	3.346	0.0	1.0000	0.0000	0.390
3.64E+10	3.51E+10	-3.7	4.195	4.224	0.7	1.0000	0.0000	0.453
3.52E+09	3.38E+09	-4.1	8.103	8.122	0.2	1.0000	0.0000	0.619
1.91E+09	1.79E+09	-6.5	9.717	9.687	-0.3	1.0000	0.0000	0.654
-	-	-	13.185	13.191	0.0	1.0000	0.0000	0.701

Table S13. Detailed results for CO₂ (1) + [C₅mim][Tf₂N] (2) at 343.15 K.

A_P	A_ϕ	$\% \Delta A_i$	P^{exp}	P^{cal}	$\% \Delta P$	y_1^{cal}	y_2^{cal}	x_1
(9 data points) $k_{12} = 0.0195$, $A_{12} = 1805.985$, $A_{21} = -356.494$, $ \Delta P (\%) = 2.9$								
2.91E+09	3.15E+09	8.3	1.792	1.673	-6.6	1.0000	0.0000	0.212
3.26E+08	3.84E+08	17.8	3.388	3.325	-1.9	1.0000	0.0000	0.351
3.40E+08	3.76E+08	10.5	3.895	3.917	0.6	1.0000	0.0000	0.390
4.40E+08	4.21E+08	-4.2	4.899	5.048	3.0	1.0000	0.0000	0.453
1.07E+06	9.58E+05	-10.7	9.635	10.047	4.3	1.0000	0.0000	0.619
2.06E+05	1.68E+05	-18.6	11.724	12.059	2.9	1.0000	0.0000	0.654
1.10E+04	6.77E+03	-38.7	16.461	16.678	1.3	1.0000	0.0000	0.701
1.50E+03	1.58E+03	5.4	28.241	26.946	-4.6	0.9997	0.0003	0.751
-	-	-	52.435	52.861	0.8	0.9991	0.0009	0.802
(7 data points) $k_{12} = 0.8063$, $A_{12} = -2217.487$, $A_{21} = 4383.6044$, $ \Delta P (\%) = 0.6$								
1.57E+10	1.52E+10	-3.1	1.792	1.805	0.8	1.0000	0.0000	0.212
4.66E+09	4.94E+09	5.9	3.388	3.351	-1.1	1.0000	0.0000	0.351
8.66E+09	8.77E+09	1.2	3.895	3.884	-0.3	1.0000	0.0000	0.390
2.50E+10	2.46E+10	-1.8	4.899	4.899	0.0	1.0000	0.0000	0.453
3.20E+09	3.10E+09	-3.0	9.635	9.713	0.8	1.0000	0.0000	0.619
1.73E+09	1.43E+09	-17.3	11.724	11.797	0.6	1.0000	0.0000	0.654
-	-	-	16.461	16.329	-0.8	1.0000	0.0000	0.701

Table S14. Detailed results for CO₂ (1) + [C₅mim][Tf₂N] (2) at 353.15 K.

A_p	A_ϕ	$\% \Delta A_i$	P^{exp}	P^{cal}	$\% \Delta P$	y_1^{cal}	y_2^{cal}	x_1
(9 data points) $k_{12} = 0.0172$, $A_{12} = 1728.749$, $A_{21} = -298.579$, $ \Delta P (\%) = 3.0$								
9.95E+08	1.10E+09	10.9	2.080	1.917	-7.8	1.0000	0.0000	0.212
9.79E+07	1.22E+08	25.1	3.895	3.823	-1.8	1.0000	0.0000	0.351
1.07E+08	1.15E+08	7.1	4.447	4.511	1.4	1.0000	0.0000	0.390
1.29E+08	1.21E+08	-5.8	5.647	5.831	3.3	1.0000	0.0000	0.453
2.50E+05	2.12E+05	-15.1	11.280	11.838	4.9	1.0000	0.0000	0.619
5.52E+04	4.22E+04	-23.5	13.926	14.311	2.8	1.0000	0.0000	0.654
5.41E+03	3.62E+03	-33.1	19.720	19.697	-0.1	0.9999	0.0001	0.701
1.11E+03	1.39E+03	24.5	31.981	30.610	-4.3	0.9996	0.0004	0.751
-	-	-	56.153	56.637	0.9	0.9990	0.0010	0.802
(7 data points) $k_{12} = -0.2206$, $A_{12} = 2025.132$, $A_{21} = -348.4867$, $ \Delta P (\%) = 2.2$								
6.05E+08	6.58E+08	8.7	2.080	1.961	-5.7	1.0000	0.0000	0.212
3.97E+07	4.84E+07	22.2	3.895	3.871	-0.6	1.0000	0.0000	0.351
3.72E+07	3.86E+07	3.8	4.447	4.549	2.3	1.0000	0.0000	0.390
3.65E+07	3.25E+07	-10.9	5.647	5.838	3.4	1.0000	0.0000	0.453
3.01E+04	2.45E+04	-18.4	11.280	11.500	1.9	1.0000	0.0000	0.619
5.35E+03	4.49E+03	-16.0	13.926	13.799	-0.9	1.0000	0.0000	0.654
-	-	-	19.720	19.583	-0.7	0.9989	0.0011	0.701