

## ***Antimicrobial and cytotoxic activity of novel imidazolium-based ionic liquids***

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### **Supplementary material**

#### **Section S1.1. FTIR ATR spectra**

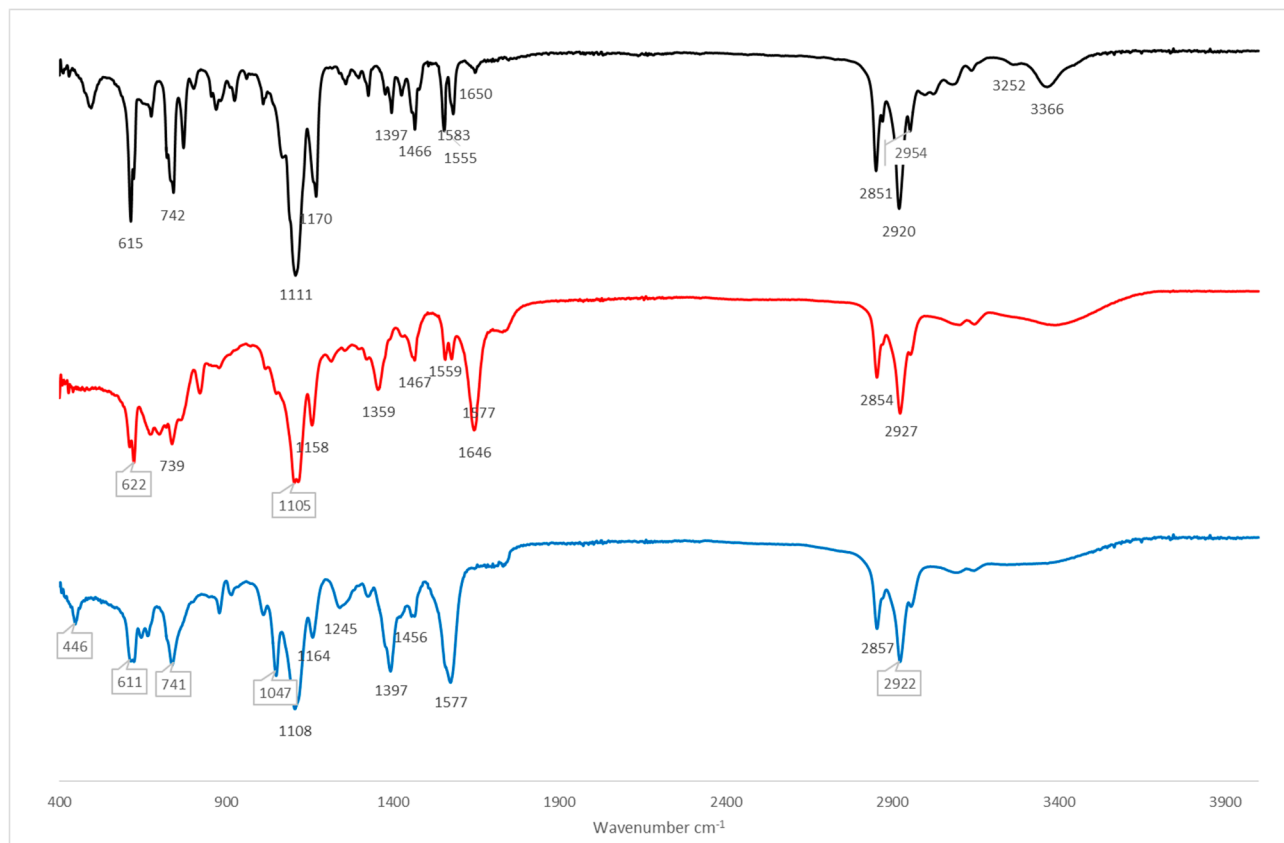


Figure S1. FTIR ATR spectra for CL-4 (black) MR-5 (red) and PR-6 (blue),

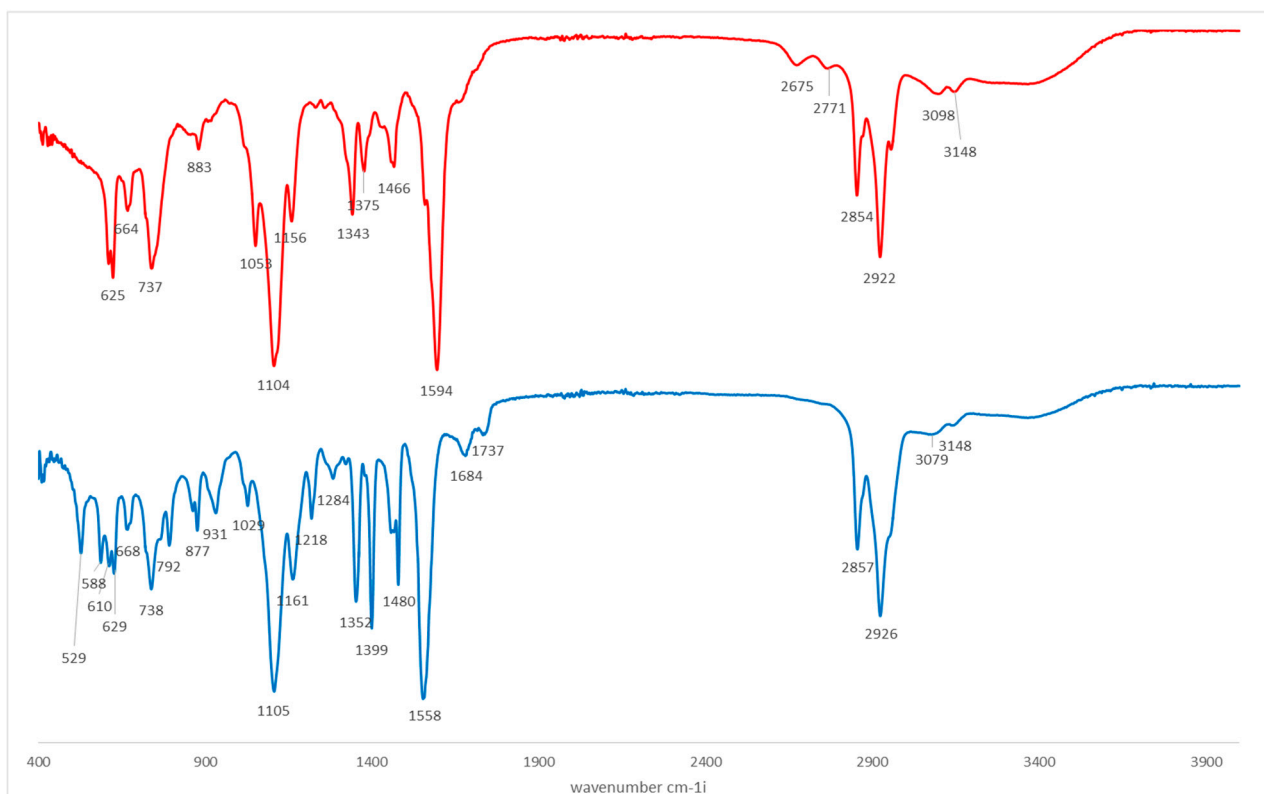


Figure S2. FTIR ATR spectra for TR-10 (red) compared with dichloroacetate (blue),

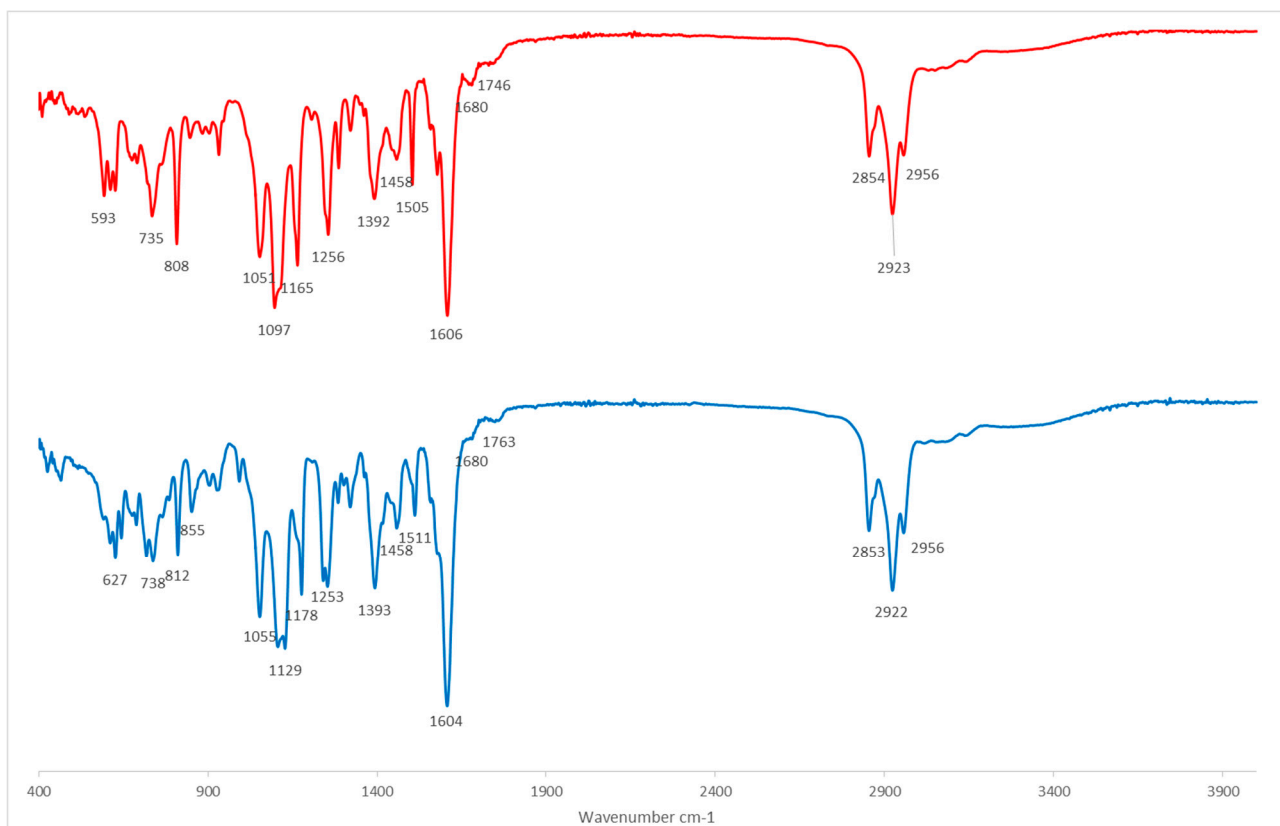


Figure S3. FTIR ATR spectra for TY-7 (red) and OR-3 (blue),

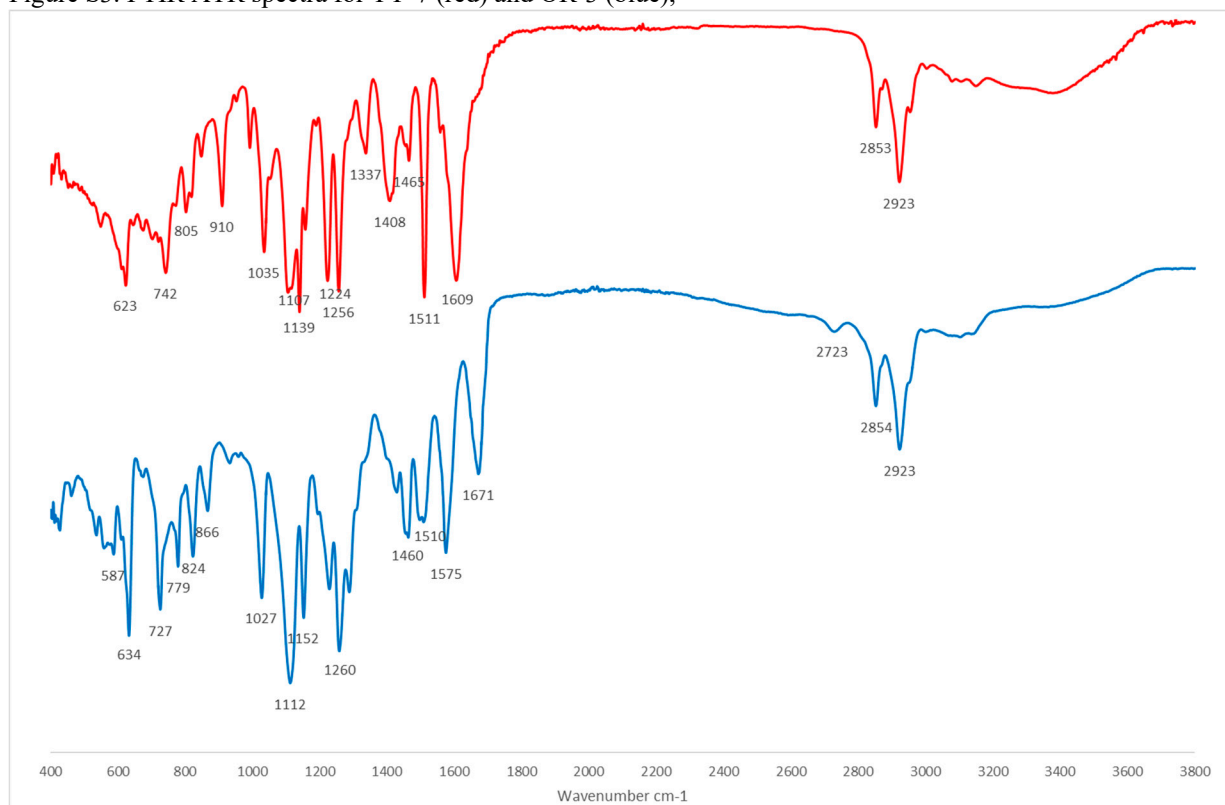


Figure S4. FTIR ATR spectra for EV-9 (red) and VA-8 (blue),

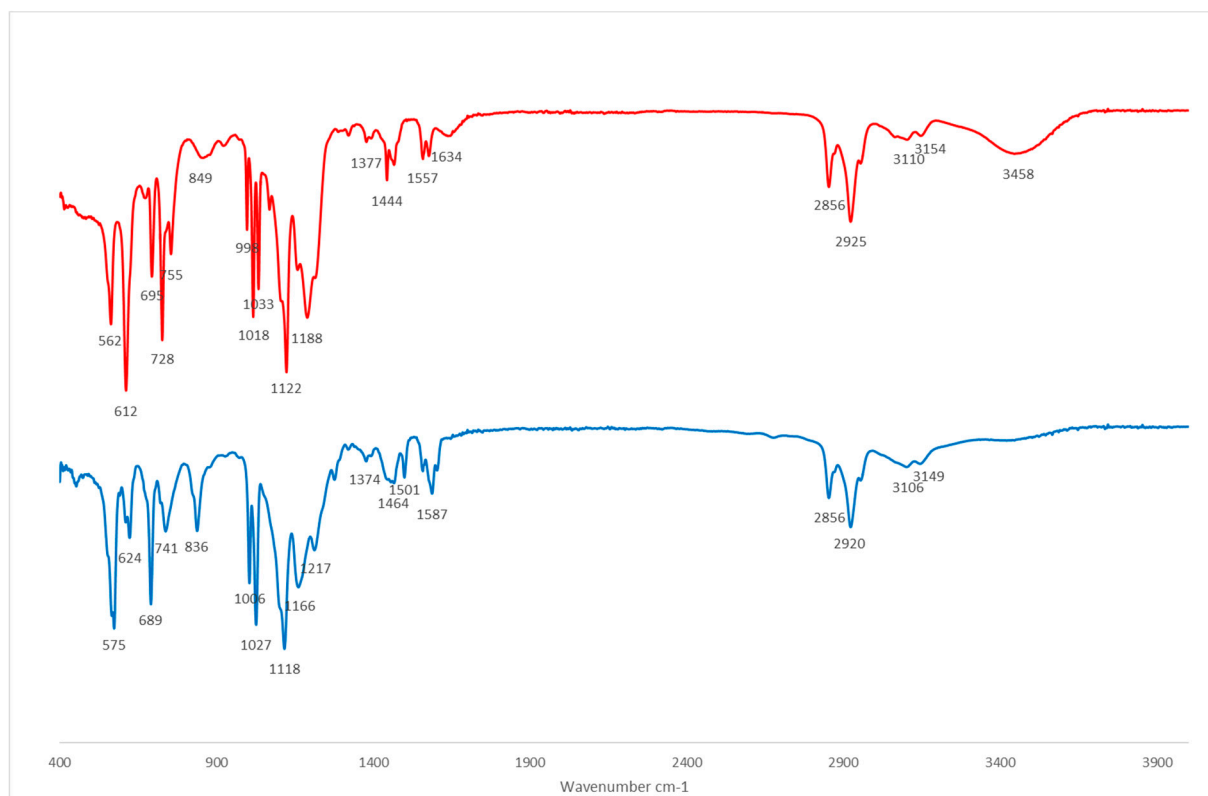


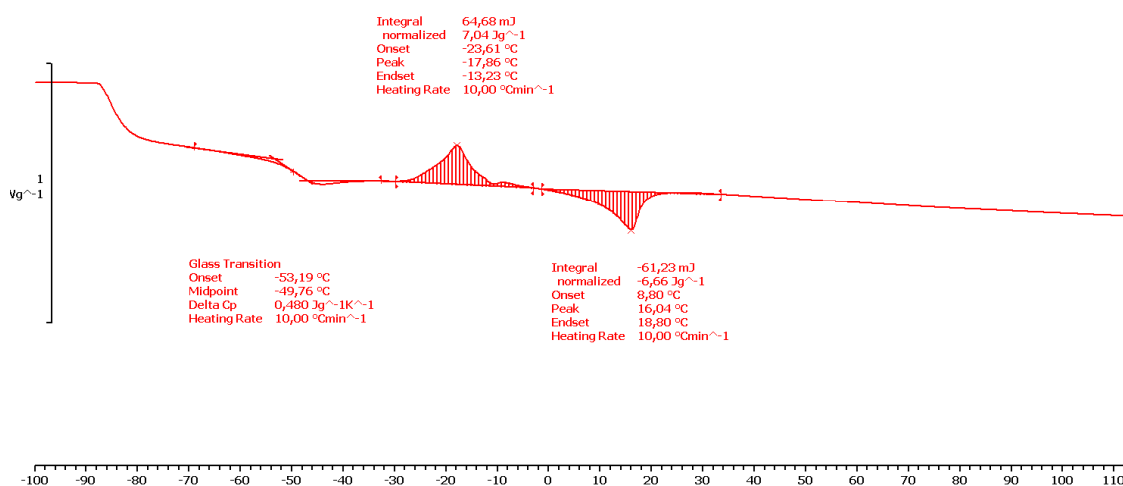
Figure S5. FTIR ATR spectra for FE-1 (red) and BE-2 (blue),

## Section S1.2. DSC data

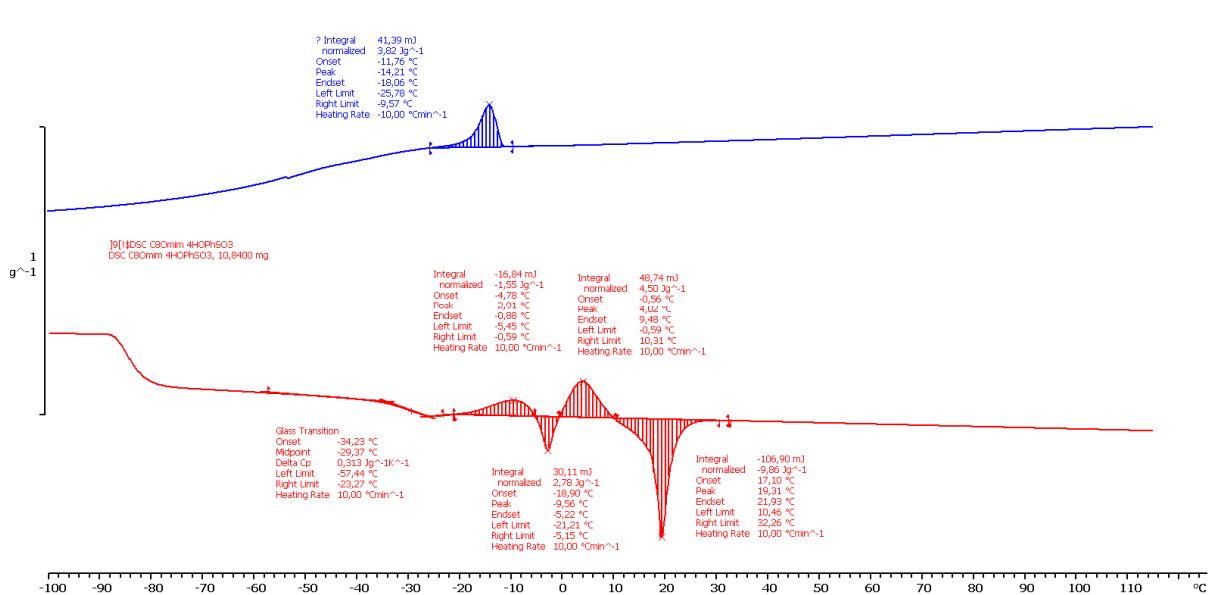
**Table S1.** DSC data for obtained ionic liquids

compound	T <sub>g</sub> [°C] <sup>a</sup>	T <sub>c</sub> [°C] <sup>b</sup>	T <sub>m</sub> [°C] <sup>c</sup>
FE-1	-49.76	-23.61	8.8
BE-2	-29.37	-4.78	-18.90
OR-3	-69.24	-50.39	-43.05
CL-4	-	-2.02	16.62
MR-5	-54.54	-18.75	-24.98
PR-6	-	-52.23	-37.01
TY-7	-68.73	-	-
VA-8	-36.92	-	-
EV-9	-59.45	-49.36	-37.26
TR-10	-	-68.65	-61.58

T<sub>m</sub> – melting point; T<sub>c</sub> – temperature of crystallization; T<sub>g</sub> – glass transition temperature

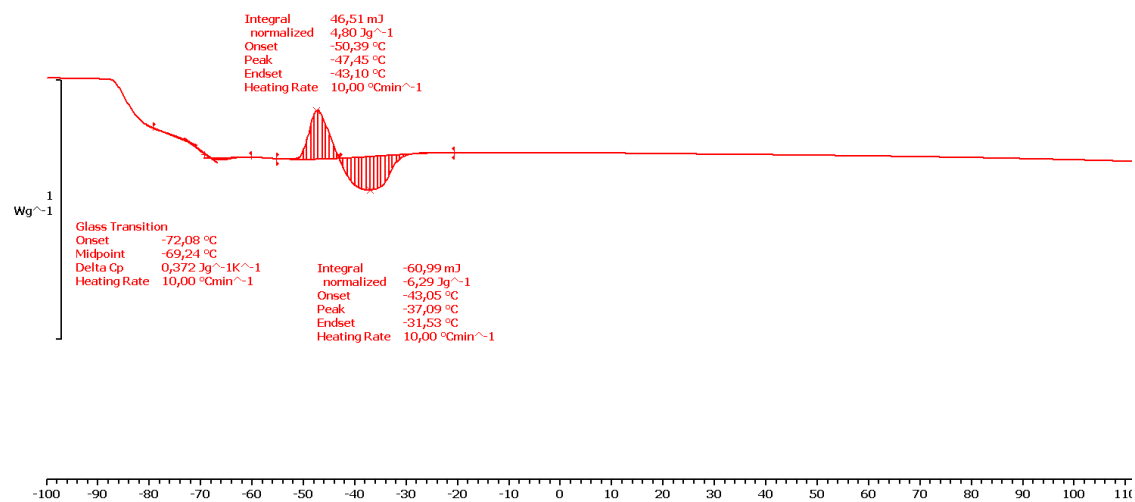


DSC curve for FE-1

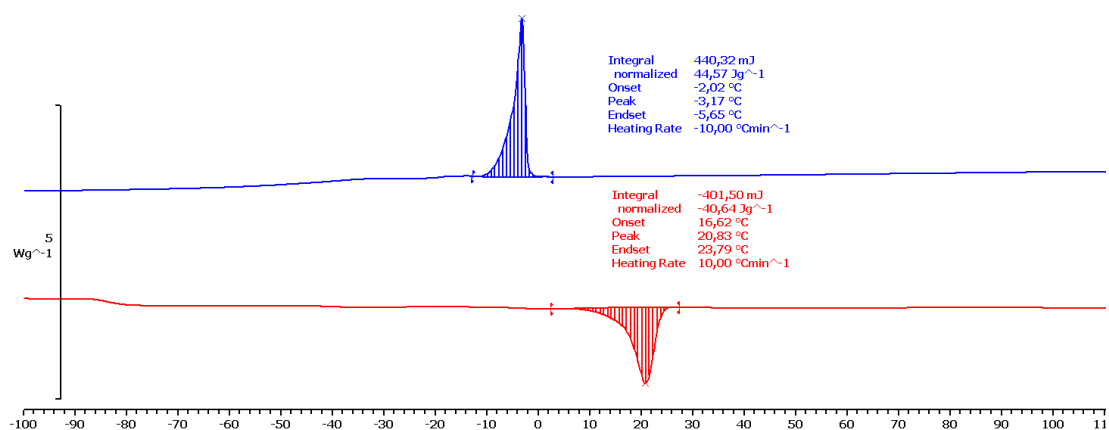




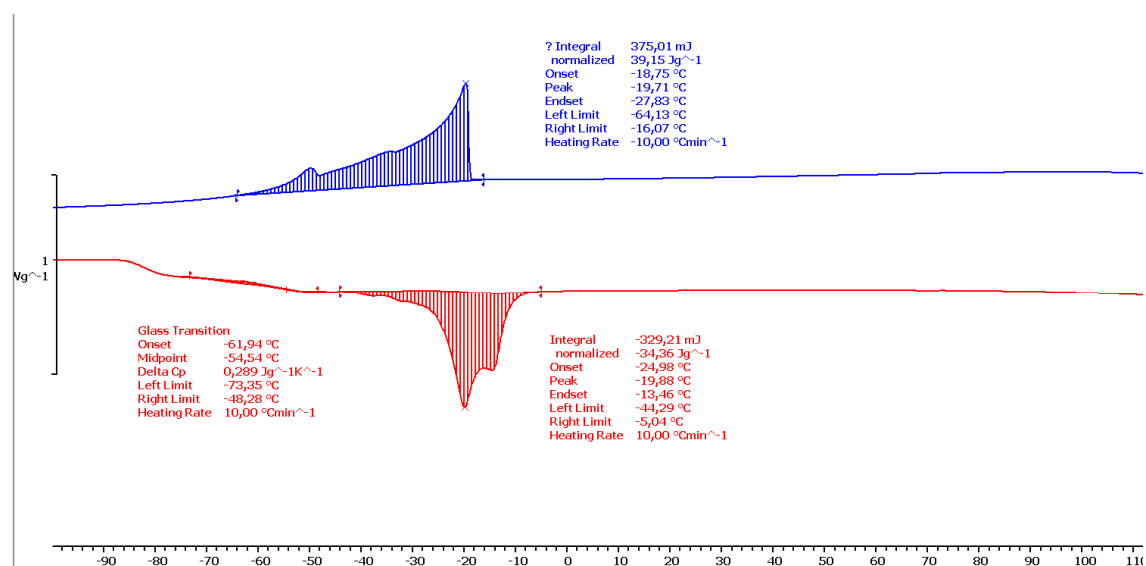
DSC curve for BE-2



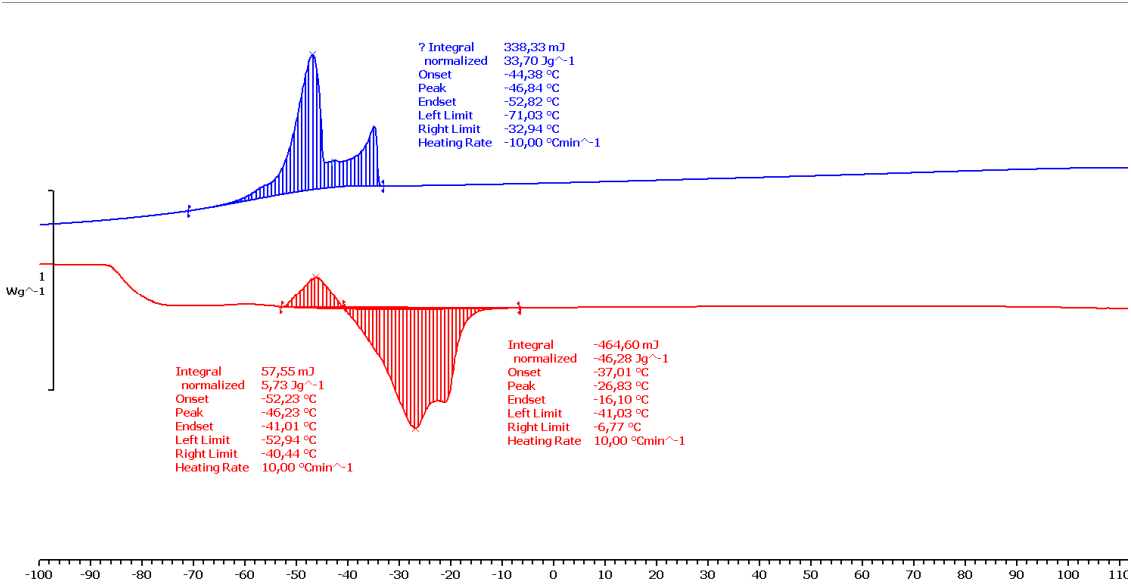
DSC curve for OR-3



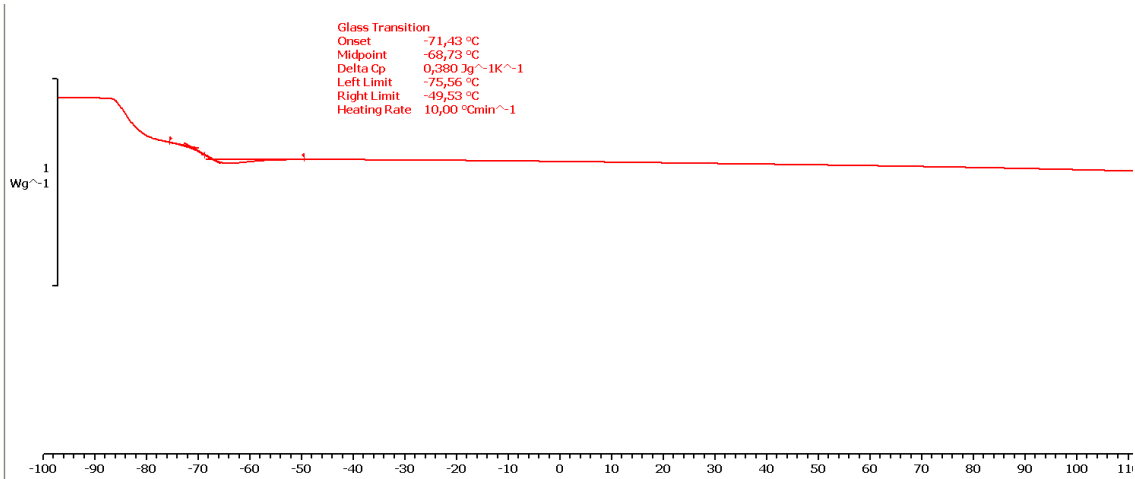
DSC curve for CL-4



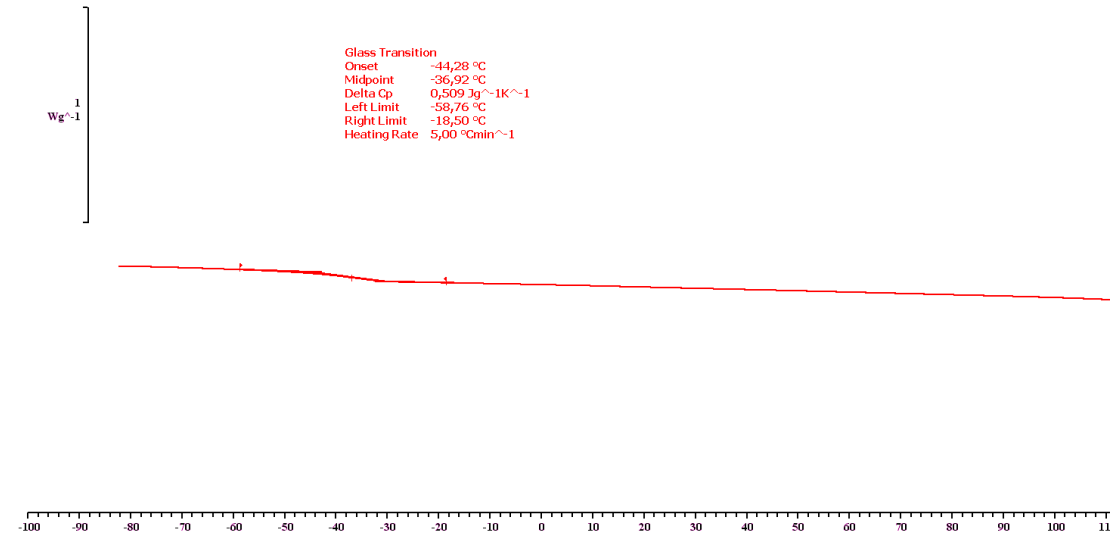
DSC curve for MR-5



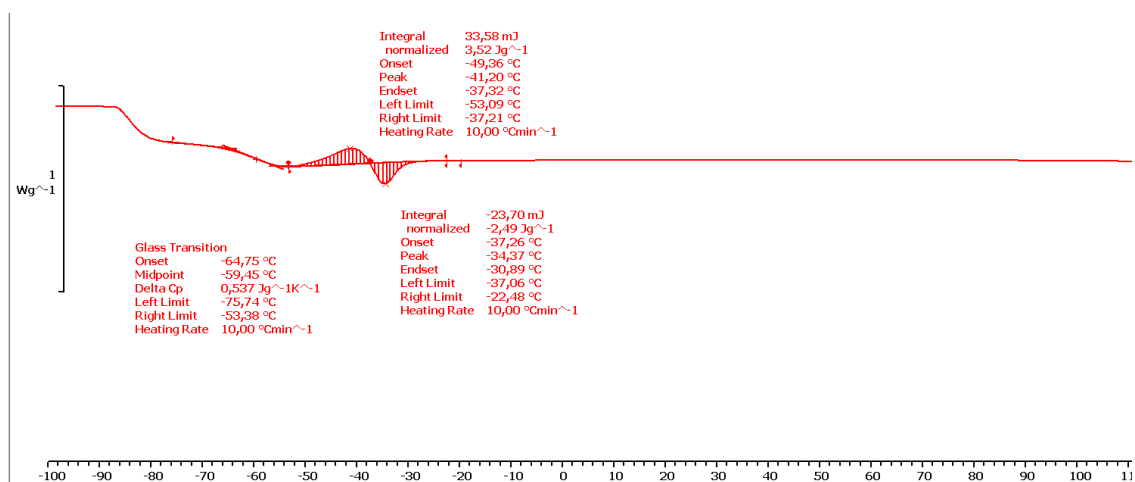
DSC curve for PR-6



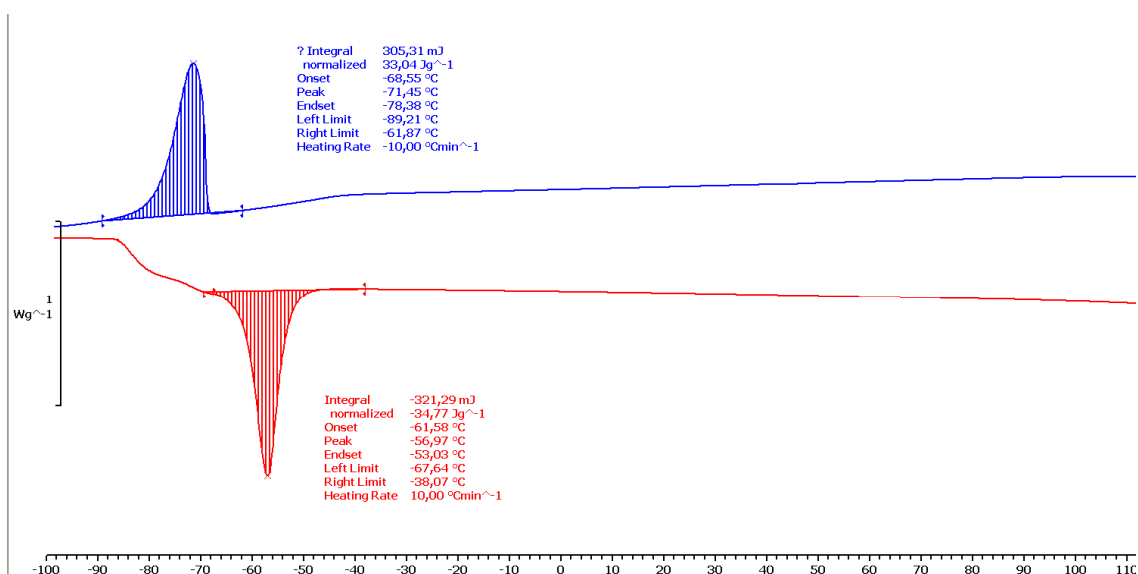
DSC curve for TY-7



DSC curve for VA-8



DSC curve for EV-9



DSC curve for TR-10

### Section S1.3. Thermal stability and TGA curves

Table S2. Thermal stability for obtained ionic liquids

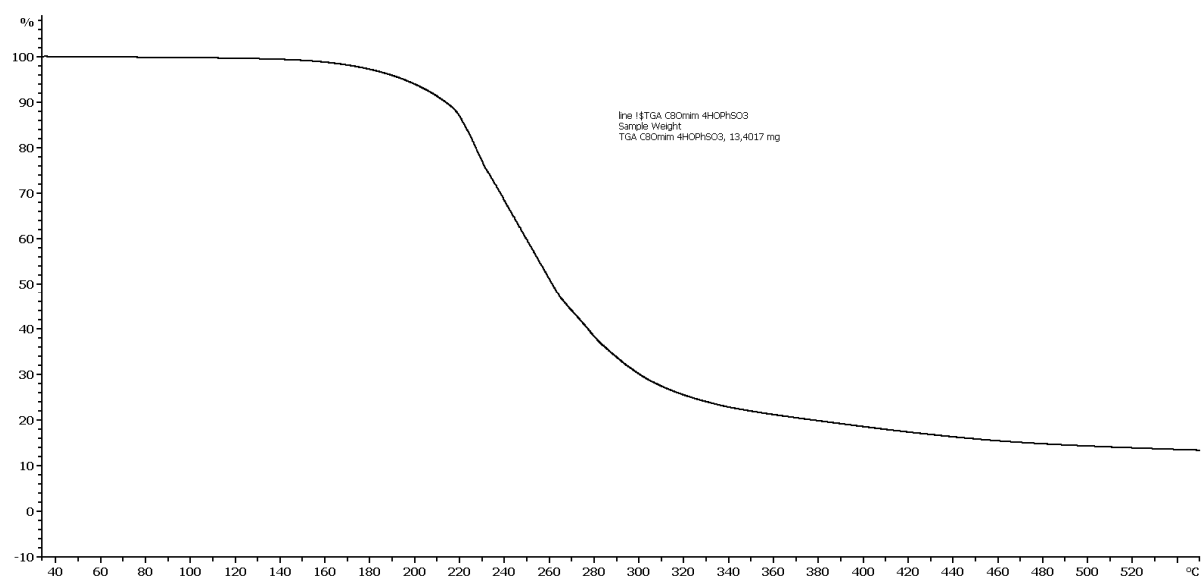
compound	T <sub>i</sub> [°C]	T <sub>0.01</sub> [°C]	T <sub>0.02</sub> [°C]	T <sub>0.05</sub> [°C]
FE-1	138.65	159.92	170.90	192.18
BE-2	135.62	163.71	176.93	196.93
OR-3	115.98	130.23	139.40	156.37
CL-4	117.60	147.81	159.69	177.68
MR-5	97.48	107.77	116.00	129.73
PR-6	85.81	97.92	106.05	120.46
TY-7	114.24	133.92	144.79	162.77
VA-8	112.85	135.25	144.08	157.66
EV-9	118.62	135.59	145.78	163.09
TR-10	102.67	114.21	122.36	134.91

T<sub>i</sub> initial decomposition -temperature at which dm/dt obtained value 10<sup>-4</sup> mg/s

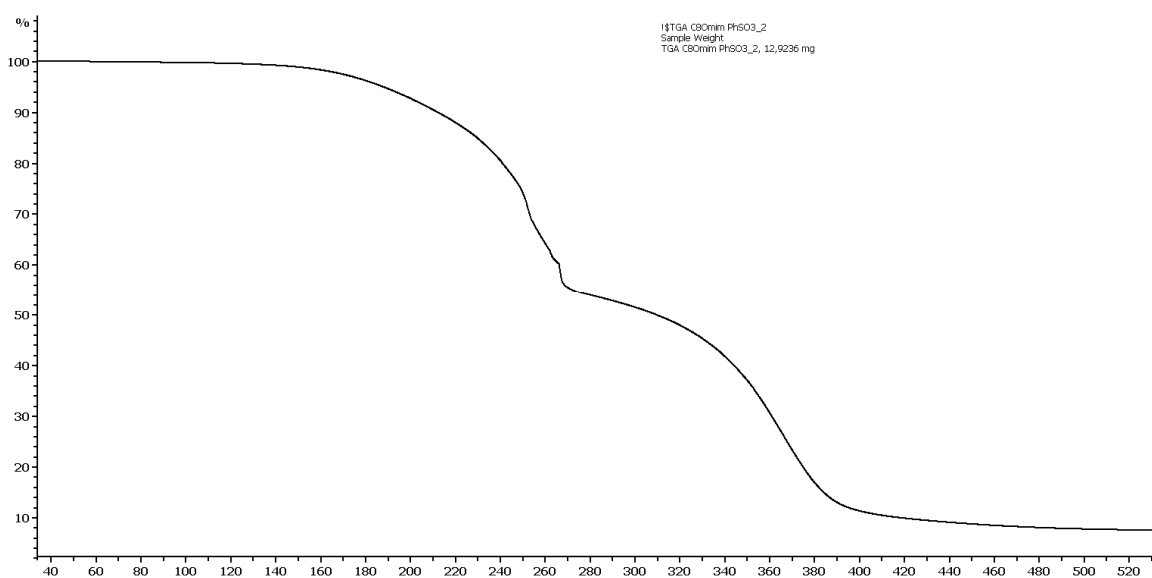
T<sub>0.01</sub> – decomposition temperature of 1% sample;

T<sub>0.02</sub> – decomposition temperature of 50% sample

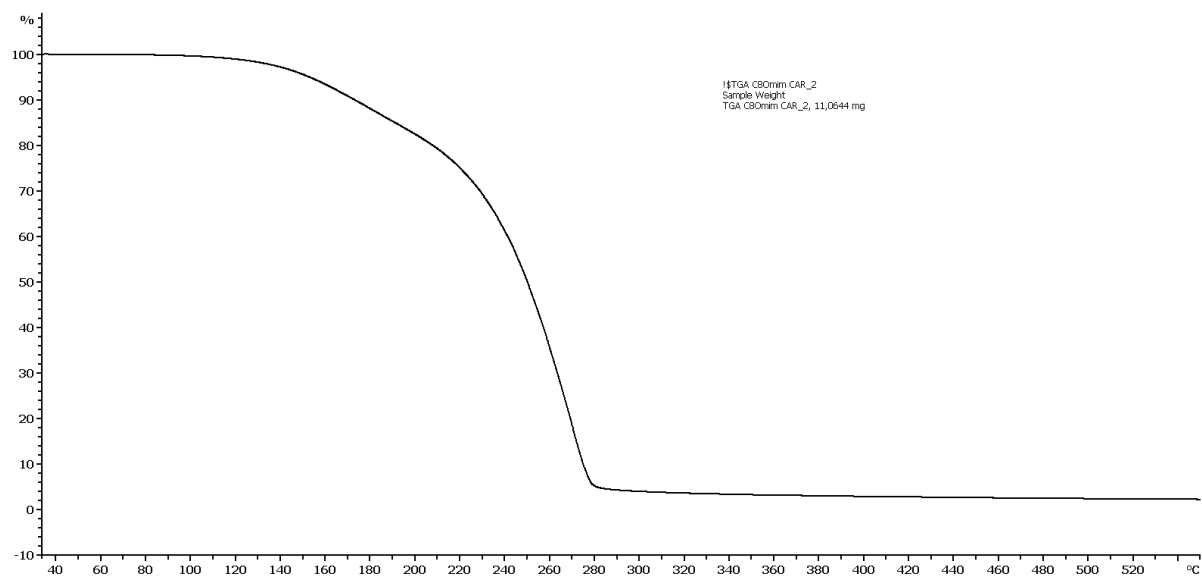
T<sub>0.05</sub> – decomposition temperature of 50% sample



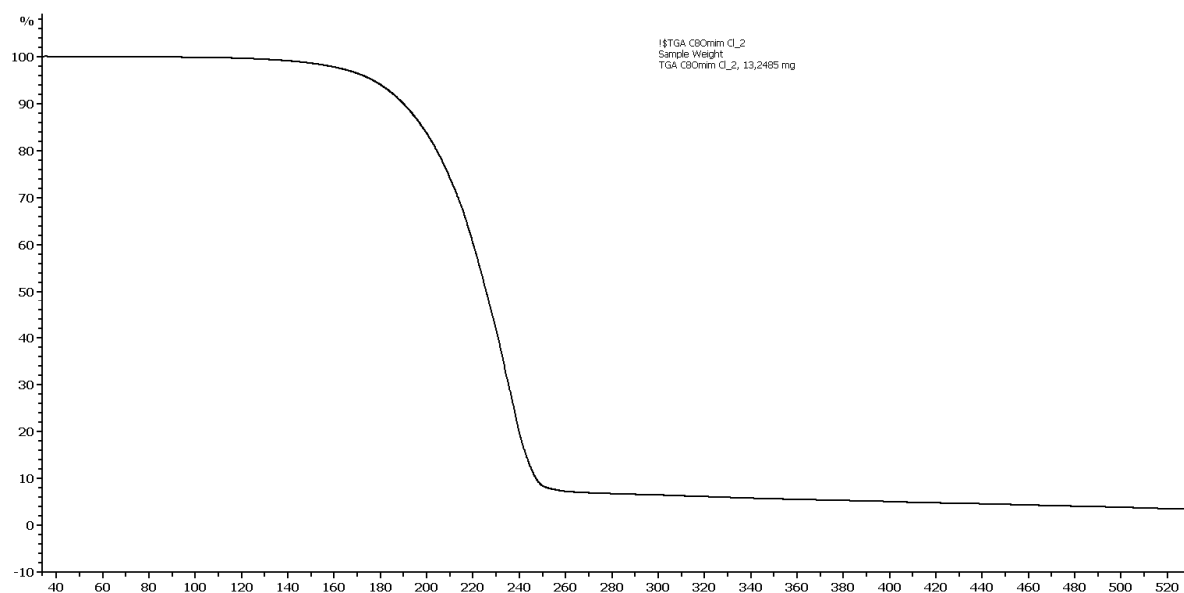
TGA curve for compound FE-1



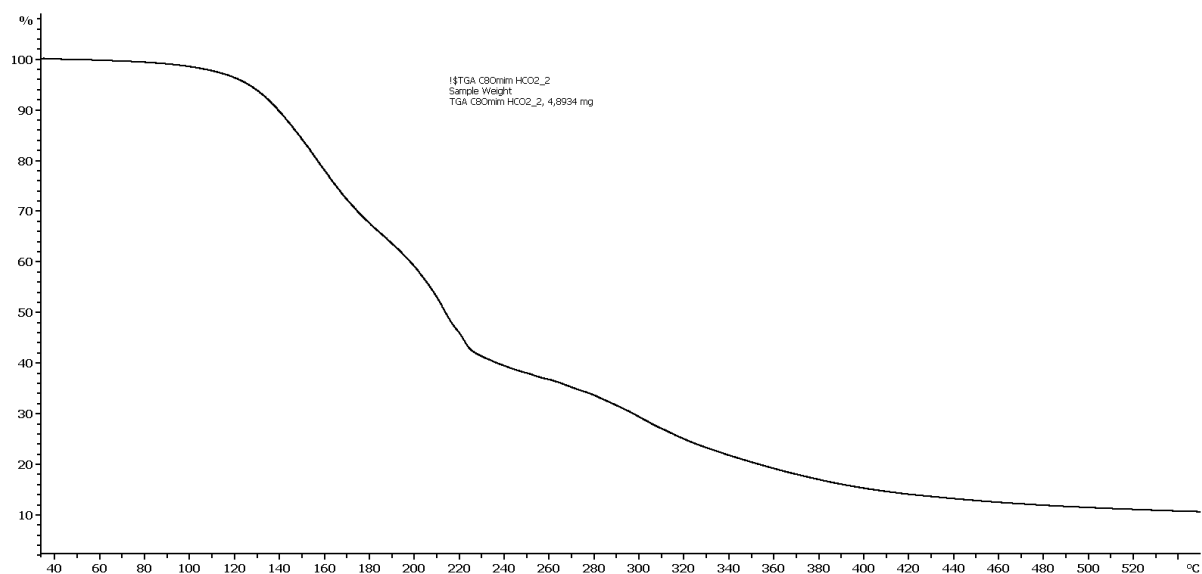
TGA curve for compound BE-2



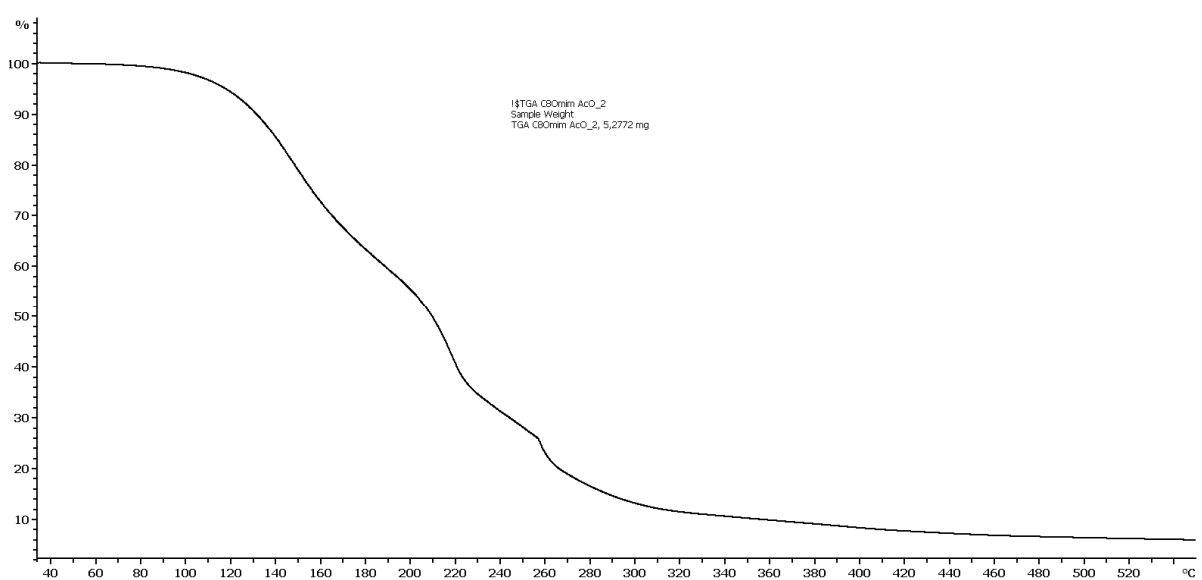
TGA curve for compound OR-3



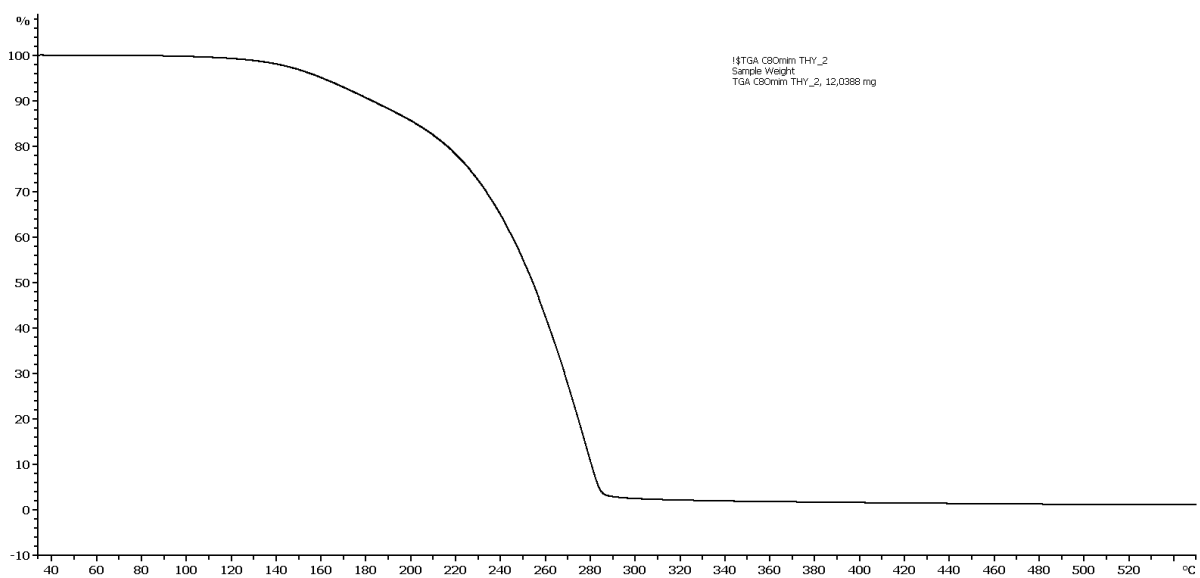
TGA curve for compound CL-4



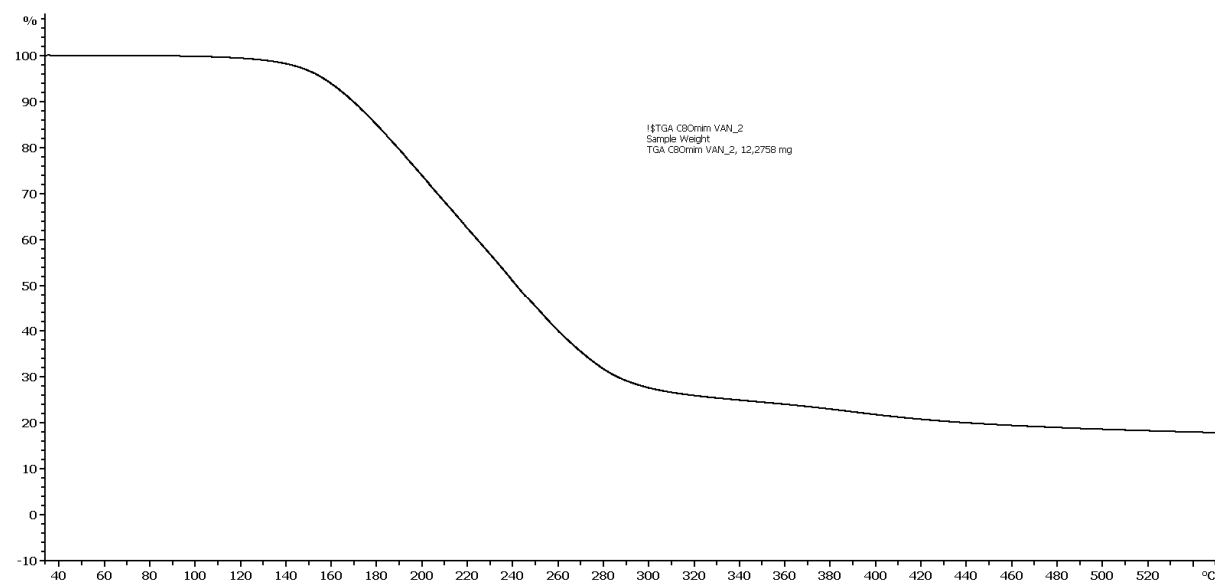
TGA curve for compound MR-5



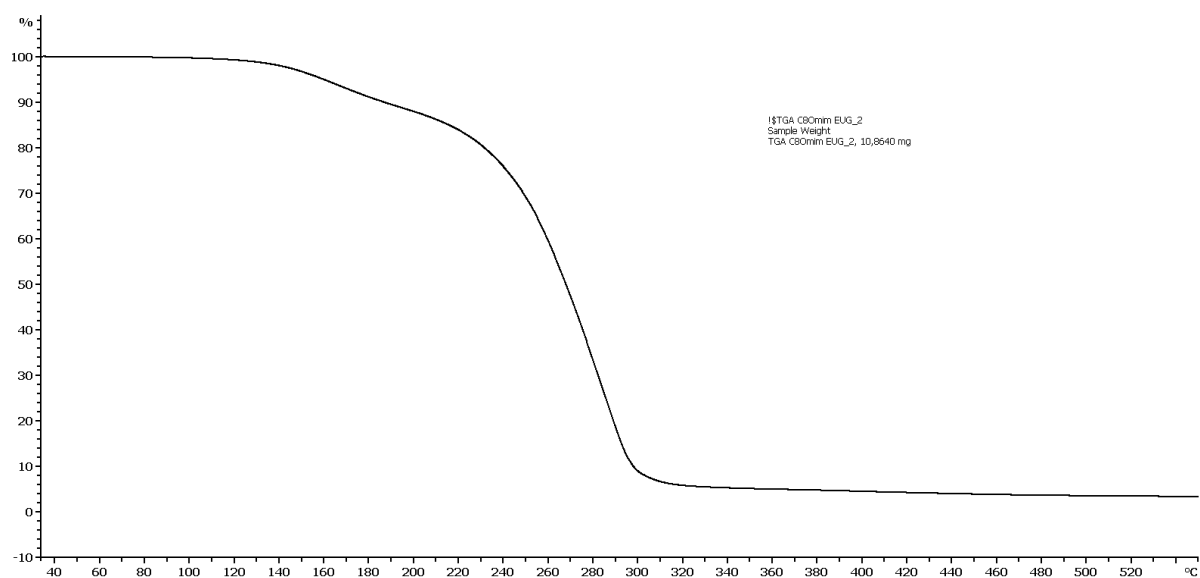
TGA curve for compound PR-6



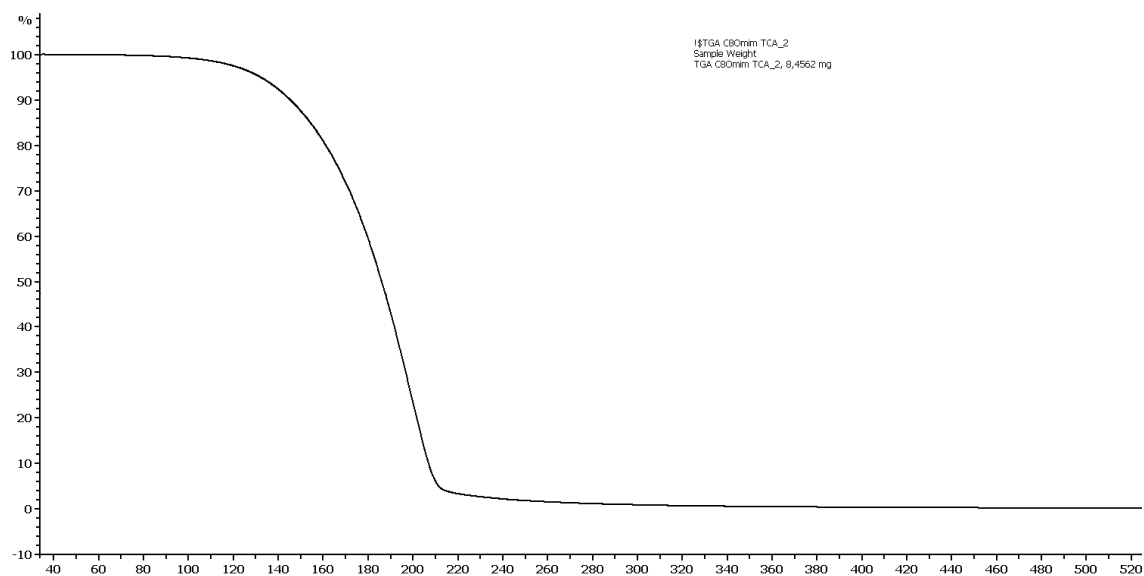
TGA curve for compound TY-7



TGA curve for compound VA-8



TGA curve for compound EV-9



TGA curve for compound TR-10

## Section S1.4. Elementary analysis

**Table S3.** Elementary analysis for obtained ionic liquids

Compound	Formula	calculated	obtained
FE-1	$C_{19}H_{30}N_2O_4S$	C(59.66%) H(7.91%) N(7.32%) O(16.73%) S(8.38%)	C(59.18%) H(7.42%) N(6.85%) O(16.21%) S(7.91%)
BE-2	$C_{19}H_{30}N_2O_5S$	C(57.26%) H(7.59%) N(7.03%) O(20.07%)	C(57.69%) H(7.96%) N(7.44%) O(20.45%)



		S(8.05%)	S(8.52%)
OR-3	$C_{25}H_{40}N_2O_4$	C(69.41%) H(9.32%) N(6.48%) O(14.79%)	C(69.01%) H(8.92%) N(6.09%) O(14.38%)
CL-4	$C_{13}H_{25}ClN_2O$	C(59.87%) H(9.66%) Cl(13.59%) N(10.74%) O(6.13%)	C(59.25%) H(9.13%) Cl(13.02%) N(10.20%) O(5.73%)
MR-5	$C_{14}H_{26}N_2O_3$	C(62.19%) H(9.69%) N(10.36%) O(17.75%)	C(62.49%) H(9.98%) N(10.66%) O(18.09%)
PR-6	$C_{15}H_{28}N_2O_3$	C(63.35%) H(9.92%) N(9.85%) O(16.88%)	C(63.02%) H(9.66%) N(9.23%) O(16.26%)
TY-7	$C_{25}H_{40}N_2O_4$	C(69.41%) H(9.32%) N(6.48%) O(14.79%)	C(69.90%) H(9.78%) N(6.96%) O(15.26%)
VA-8	$C_{23}H_{34}N_2O_6$	C(63.57%) H(7.89%) N(6.45%) O(22.09%)	C(63.05%) H(7.36%) N(5.99%) O(21.66%)
EV-9	$C_{25}H_{38}N_2O_5$	C(67.24%) H(8.58%) N(6.27%) O(17.91%)	C(67.81%) H(8.93%) N(6.81%) O(18.42%)
TR-10	$C_{18}H_{34}N_2O_3$	C(66.22%) H(10.50%) N(8.58%) O(14.70%)	C(66.44%) H(10.93%) N(8.99%) O(15.07%)

## Section S1.5. <sup>1</sup>H and <sup>13</sup>C-NMR spectroscopy

The novel group of imidazolium based ionic liquids was characterized by <sup>1</sup>H and <sup>13</sup>C-NMR spectroscopy. <sup>1</sup>H and <sup>13</sup>C NMR spectra were recorded at 25 °C using a 400 MHz (for <sup>1</sup>H) and 100 MHz (for <sup>13</sup>C) Bruker NMR spectrometer.

1-methyl-3-octyloxymetyloimidazolium 4-hydroxybenzenesulfonate (FE-1):

<sup>1</sup>H NMR (DMSO-d<sub>6</sub>) δ ppm = 0.84-0.87 (t, J=6.85 Hz, 3H); 1.23-1.27 (m, 12H); 1.47 (m, 2H); 3.45-3.48 (m, 3H); 6.8-6.70 (d, 2H); 7.42-7.44 (d, 2H); 7.79 (s, 1H); 7.86 (s, 1H); 9.38 (s, 1H).

<sup>13</sup>C NMR (DMSO-d<sub>6</sub>) δ ppm = 13.97; 22.16; 25.37; 28.77; 28.79; 29.03; 31.36; 35.91; 69.18; 78.09; 114.06; 121.87; 124.01; 127.02; 137.26; 139.04; 157.72.

1-methyl-3-octyloxymethylimidazolium benzenesulfonate (BE-2):

<sup>1</sup>H NMR (DMSO-d<sub>6</sub>) δ ppm = 0.84-0.87 (t, J=6.8 Hz, 3H); 1.23-1.27 (m, 12H); 1.47 (m, 2H); 3.89 (s, 3H); 5.56 (s, 2H); 7.31-7.64 (m, 5H); 7.78 (s, 1H); 7.86 (s, 1H); 9.34 (s, 1H).

<sup>13</sup>C NMR (DMSO-d<sub>6</sub>) δ ppm = 13.99; 22.17; 25.38; 28.71; 28.77; 29.05; 31.36; 35.95; 69.19; 78.12; 121.90; 124.03; 125.46; 127.70; 128.53; 137.20; 148.13.

1-methyl-3-octyloxymethylimidazolium carvacroloxyacetate (OR-3):

<sup>1</sup>H NMR (DMSO-d<sub>6</sub>) δ ppm = 0.84-0.87 (t, J=6.85 Hz, 3H); 1.12-1.14 (d, 6H); 1.22-1.27 (m, 12H); 1.46 (m, 2H); 2.74 (m, 1H); 3.87 (s, 3H); 5.57 (d, 2H); 6.59-6.61 (m, 2H); 6.94-6.96 (m, 1H); 7.83 (s, 1H); 7.91 (s, 1H); 9.90 (s, 1H).

<sup>13</sup>C NMR (DMSO-d<sub>6</sub>) δ ppm = 13.95; 1.92; 22.16; 23.96; 25.40; 28.74; 28.77; 29.03; 31.36; 35.91; 68.08; 6.08; 77.93; 109.72; 116.52; 121.87; 122.61; 123.99; 127.02; 137.99; 146.76; 157.18; 170.61.

1-methyl-3-octyloxymethylimidazolium chloride (CL-4):

<sup>1</sup>H NMR (DMSO-d<sub>6</sub>) δ ppm = 0.84-0.87 (t, J=6.85 Hz, 3H); 1.23-1.28 (m, 12H); 1.49 (m, 2H); 3.50-3.53 (t, J=6.5 Hz, 3H); 5.69 (s, 2H); 7.85-7.86 (t, J=1.75 Hz, 1H); 8.01-8.02 (t, J=1.8Hz,1H); 9.82 (s, 1H).

<sup>13</sup>C NMR (DMSO-d<sub>6</sub>) δ ppm = 13.89; 22.09; 25.34; 28.70; 28.74; 28.96; 31.29; 35.87; 69.11; 77.90; 121.85; 123.93; 137.39.

1-methyl-3-octyloxymethylimidazolium formate (MR-5):

<sup>1</sup>H NMR (DMSO-d<sub>6</sub>) δ ppm = 0.84-0.87 (t, J=6.85 Hz, 3H); 1.23-1.28 (m, 12H); 1.49 (m, 2H); 3.42-3.49 (m, 3H); 5.52 (s, 2H); 7.84-7.85 (t, J=1.7 Hz, 1H); 7.91-7.92 (t, J=1.7Hz, 1H); 9.53 (s, 1H); 9.72 (s, 1H).

<sup>13</sup>C NMR (DMSO-d<sub>6</sub>) δ ppm = 13.92; 22.13; 25.37; 28.71; 28.74; 29.00; 31.33; 35.87; 69.14; 78.02; 121.87; 124.02; 137.64; 165.65.

1-methyl-3-octyloxymethylimidazolium propionate (PR-6):

<sup>1</sup>H NMR (DMSO-d<sub>6</sub>) δ ppm = 0.84-0.87 (t, J=6.85 Hz, 3H); 1.23-1.27 (m, 12H); 1.49 (m, 2H); 1.67 (s, 3H); 3.93 (m, 3H); 4.86 (s, 2H); 5.62 (s, 2H); 7.84 (s, 1H); 7.91(s, 1H); 9.87 (s, 1H).

<sup>13</sup>C NMR (DMSO-d<sub>6</sub>) δ ppm = 13.90; 18.54, 22.12; 25.36; 28.70; 28.73; 28.75; 28.99; 31.32; 35.81; 55.90; 69.09; 77.98; 121.83; 123.98; 137.92; 173.64.

1-methyl-3-octyloxymethylimidazolium thymoloxylacetate (TY-7):

<sup>1</sup>H NMR (DMSO-d<sub>6</sub>) δ ppm = 0.84-0.87 (t, J=6.85 Hz, 3H); 1.12-1.14 (d, 6H); 1.22-1.27 (m, 12H); 1.46 (m, 2H); 2.74 (m, 1H); 3.87 (s, 3H); 5.57 (d, 2H); 6.59-6.61 (m, 2H); 6.94-6.96 (m, 1H); 7.83 (s, 1H); 7.91 (s, 1H); 9.90 (s, 1H).

<sup>13</sup>C NMR (DMSO-d<sub>6</sub>) δ ppm = 13.95; 15.92; 22.16; 23.96; 25.40; 28.74; 28.77; 29.03; 31.36; 35.91; 68.08; 69.08; 77.93; 109.72; 116.52; 121.87; 122.61; 123.99; 12.,02; 137.99; 146.76; 157.18; 170.61.

1-methyl-3-octyloxymethylimidazolium vanillinoloxylacetate (VA-8):

<sup>1</sup>H NMR (DMSO-d<sub>6</sub>) δ ppm = 0.84-0.87 (t, J=6.7 Hz, 3H); 1.21 (m, 12H); 1.47 (m, 2H); 3.50-3.53 (m, 3H); 3.82-3.93 (m, 3H); 4.36 (s, 2H); 5.59 (s, 2H); 6.74-6.76 (m, 1H); 7.36-7.89 (m, 2H); 9.57 (s, 1H); 9.81 (s, 1H).

<sup>13</sup>C NMR (DMSO-d<sub>6</sub>) δ ppm = 13.98; 22.16; 25.37; 28.76; 29.01 29.04; 31.35; 35.95; 55.11; 69.20; 77.16; 109.62; 116.04; 121.91; 124.05; 124.18; 127.98; 147.95; 149.76; 160.86; 189.19.

1-methyl-3-octyloxymethylimidazolium eugenoloxylacetate (EV-9):

<sup>1</sup>H NMR (DMSO-d<sub>6</sub>) δ ppm = 0.83-0.87 (t, J=6.9 Hz, 3H), 1.21-1.27 (m, 12H), 1.45 (s, 2H), 3.25-3.27 (d, 2H), 3.69 (s, 3H), 3.86 (s, 3H), 4.15 (s, 2H), 4.99-5.08 (m, 2H), 5.57 (s, 2H); 5.89-5.95 (m, 1H); 6.57-6.59 (m, 1H) 6.65-6.70 (m, 2H); 7.81 (s, 1H); 7.88 (s, 1H); 9.90 (s, 1H).

<sup>13</sup>C NMR (DMSO-d<sub>6</sub>) δ ppm = 13.95; 22.15; 25.40; 28.76; 28.80; 29.02; 29.05; 31.35; 35.71; 35.72; 55.29; 55.21; 68.07; 69.08; 77.95; 112.09; 112.50; 115.24; 119.93; 121.78; 123.95; 131.01; 138.10; 146.90; 148.39; 170.53.

1-methyl-3-octyloxymethylimidazolium trimethylacetate (TR-10):

<sup>1</sup>H NMR (DMSO-d<sub>6</sub>) δ ppm = 0.84-0.87 (t, J=6.9 Hz, 3H); 1.00 (s, 9H), 1.23-1.27 (m, 12H); 1.48 (m, 2H); 3.94 (m, 3H); 5.65 (s, 2H); 7.86-7.87 (t, J=1.7 Hz, 1H); 7.93-7.94 (t, J=1.7 Hz, 1H); 10.29 (s, 1H).

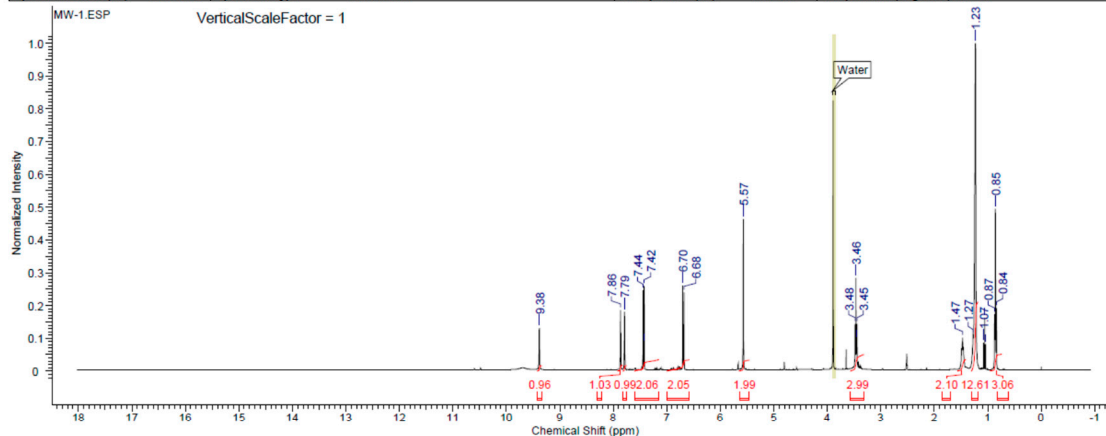
<sup>13</sup>C NMR (DMSO-d<sub>6</sub>) δ ppm = 13.92; 22.16; 25.37; 28.68; 28.73; 28.77; 28.80; 29.02; 29.06; 31.32; 35.74; 69.01; 77.89; 121.84; 123.99; 138.62; 180.84.

# 1-methyl-3-octyloxymetyloimidazolium 4-hydroxybenzenesulfonate (FE-1):

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2021-11-16 19:55:24

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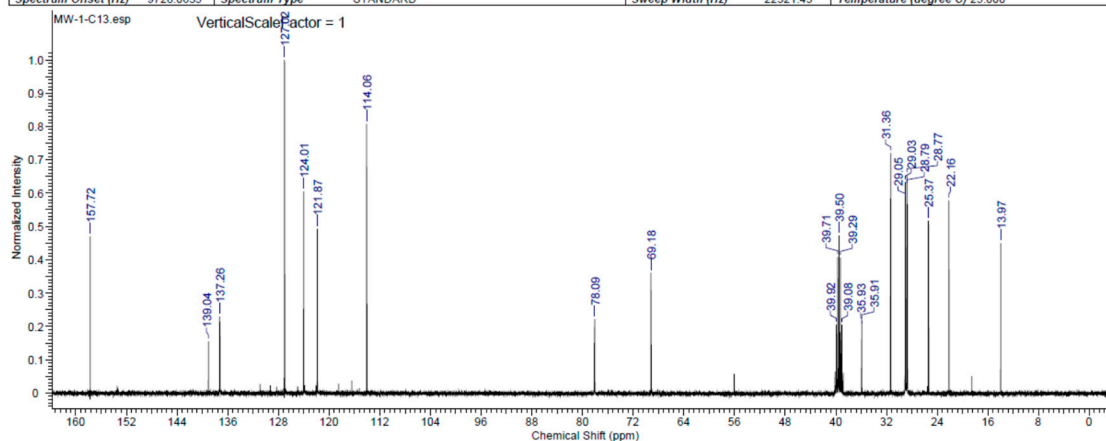
  

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2	0.85	341.8	0.4948	7	1.23	491.4	1.0000	12	3.46	1384.8	0.2833	17	6.70	2679.2	0.2604	22	7.86	3144.9	0.1855
3	0.87	348.4	0.1735	8	1.27	509.0	0.1079	13	3.48	1391.3	0.1439	18	7.42	2967.8	0.2593	23	9.38	3752.0	0.1310
4	1.04	415.9	0.0812	9	1.47	587.8	0.1013	14	5.57	2226.8	0.4637	19	7.43	2969.8	0.0847				
5	1.06	422.9	0.1626	10	3.45	1378.2	0.1443	15	6.68	2670.5	0.2397	20	7.44	2976.5	0.2455				

This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlabs.com/nmrproc/](http://www.acdlabs.com/nmrproc/)

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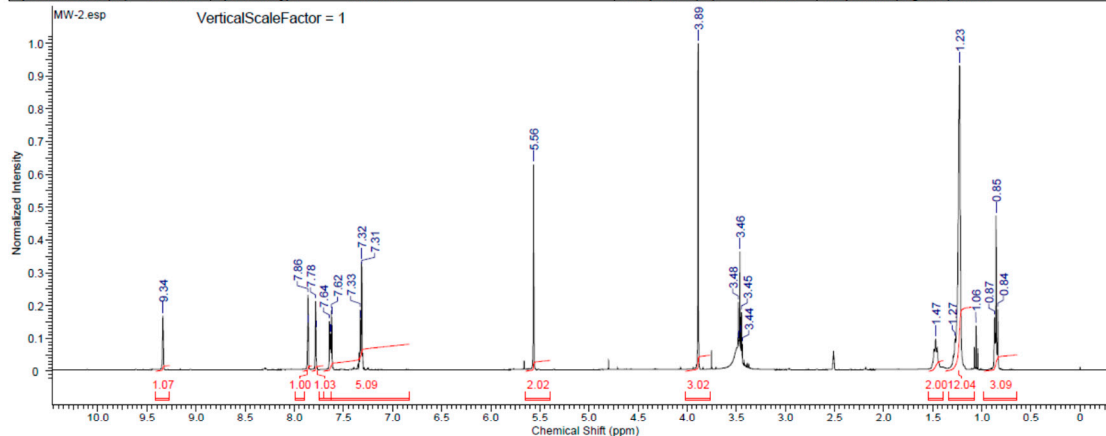
No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height
1	13.97	1404.6	0.4503	6	28.79	2895.1	0.6221	11	35.93	3613.1	0.2008	16	39.92	4014.4	0.2054	21	124.01	12471.0	0.6050
2	22.16	2228.9	0.5779	7	29.03	2919.0	0.6330	12	39.08	3930.6	0.2047	17	69.18	6957.2	0.3611	22	127.02	12773.4	1.0000
3	25.37	2551.8	0.5169	8	29.05	2921.7	0.5809	13	39.29	3951.7	0.4061	18	78.09	7853.0	0.2210	23	137.26	13804.1	0.2291
4	28.71	2887.6	0.5666	9	31.36	3153.3	0.7199	14	39.50	3972.1	0.4727	19	114.06	11471.0	0.8079	24	139.04	13982.6	0.1554
5	28.77	2893.1	0.6547	10	35.91	3611.8	0.2156	15	39.71	3993.2	0.4084	20	121.87	12255.7	0.4934	25	157.72	15860.7	0.4706

# 1-methyl-3-octyloxymethylimidazolium benzenesulfonate (BE-2):

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2021-11-17 18:44:00

Acquisition Time (sec)	5.0001	Date	Nov 17 2021	Date Stamp	Nov 17 2021				
File Name	d:\Users\Michal\Desktop\MW-2.fidfid	Frequency (MHz)	399.91	Nucleus	<sup>1</sup> H	Number of Transients	40		
Original Points Count	30941	Points Count	32768	Pulse Sequence	s2pul	Receiver Gain	18.00	Solvent	DMSO-d6
Spectrum Offset (Hz)	2743.7021	Spectrum Type	STANDARD	Sweep Width (Hz)	6188.12	Temperature (degree C)	25.000		

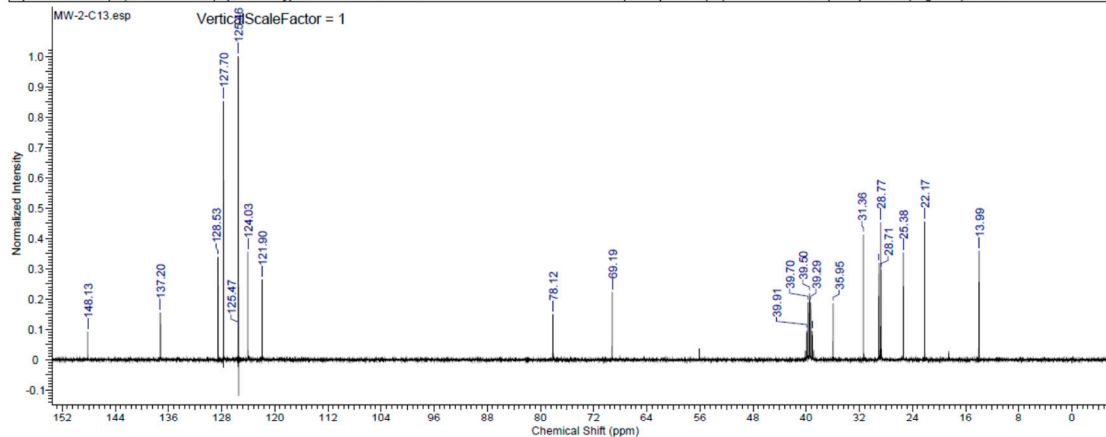


No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height
1	0.84	334.8	0.1880	8	3.44	1375.0	0.0828	15	5.56	2225.0	0.6307	22	7.63	3051.2	0.1141	29	7.79	3113.9	0.1391
2	0.85	341.8	0.4741	9	3.45	1378.4	0.1804	16	7.31	2924.0	0.3188	23	7.63	3052.9	0.1126	30	7.66	3141.7	0.1401
3	0.87	348.4	0.1645	10	3.46	1382.0	0.1108	17	7.32	2925.9	0.3341	24	7.64	3053.7	0.0978	31	7.66	3143.6	0.2323
4	1.06	423.2	0.1385	11	3.46	1384.8	0.3646	18	7.32	2928.9	0.1558	25	7.64	3055.0	0.0899	32	7.67	3145.3	0.1375
5	1.23	490.4	0.9323	12	3.47	1389.0	0.0935	19	7.33	2931.1	0.1876	26	7.64	3056.0	0.1524	33	9.34	3734.3	0.1693
6	1.27	508.9	0.0985	13	3.48	1391.4	0.2109	20	7.62	3046.1	0.1652	27	7.78	3110.5	0.1256				
7	1.47	588.0	0.0990	14	3.89	1555.4	1.0000	21	7.62	3048.0	0.1853	28	7.78	3112.2	0.2137				

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2021-11-16 19:57:00

Acquisition Time (sec)	1.0000	Date	Nov 15 2021	Date Stamp	Nov 15 2021				
File Name	d:\Users\Michal\Desktop\MW-2-C13.fidfid	Frequency (MHz)	100.57	Nucleus	<sup>13</sup> C	Number of Transients	944		
Original Points Count	22322	Points Count	32768	Pulse Sequence	s2pul	Receiver Gain	58.00	Solvent	DMSO-d6
Spectrum Offset (Hz)	9729.0850	Spectrum Type	STANDARD	Sweep Width (Hz)	22321.43	Temperature (degree C)	25.000		



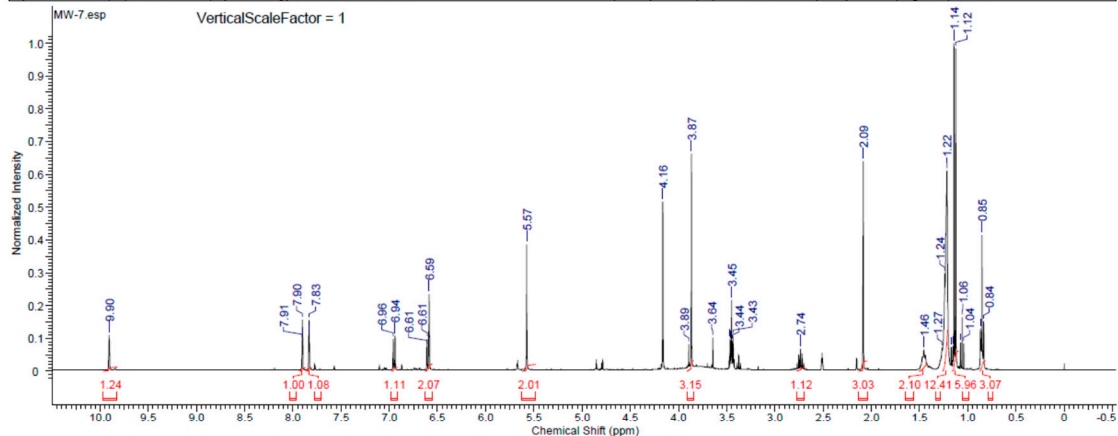
No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height
1	13.99	1407.0	0.3592	6	29.02	2918.6	0.2881	11	39.29	3951.3	0.1888	16	78.12	7856.1	0.1499	21	127.70	12841.9	0.8514
2	22.17	2229.2	0.4548	7	29.05	2921.3	0.3183	12	39.50	3972.5	0.2185	17	121.90	12258.8	0.2633	22	128.53	12925.7	0.3379
3	25.38	2552.1	0.3531	8	31.36	3153.6	0.4119	13	39.70	3992.9	0.1879	18	124.03	12472.7	0.3550	23	137.20	13797.7	0.1555
4	28.71	2887.3	0.2964	9	35.95	3615.5	0.1851	14	39.91	4014.0	0.0946	19	125.46	12617.1	1.0000	24	148.13	14896.5	0.0917
5	28.77	2893.4	0.4529	10	39.08	3930.2	0.0940	15	69.19	6958.2	0.2227	20	125.47	12618.5	0.1032				

# 1-methyl-3-octyloxymethylimidazolium carvacroloxyacetate (OR-3):

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2021-11-17 18:45:07

Acquisition Time (sec)	4.9999	Date	Nov 16 2021	Date Stamp	Nov 16 2021				
File Name	d:\Users\Michal\Desktop\MW-7.fid	Frequency (MHz)	399.91	Nucleus	<sup>1</sup> H	Number of Transients	64		
Original Points Count	32216	Points Count	32768	Pulse Sequence	s2pul	Receiver Gain	18.00	Solvent	DMSO-d6
Spectrum Offset (Hz)	2851.3411	Spectrum Type	STANDARD	Sweep Width (Hz)	6443.30	Temperature (degree C)	25.000		

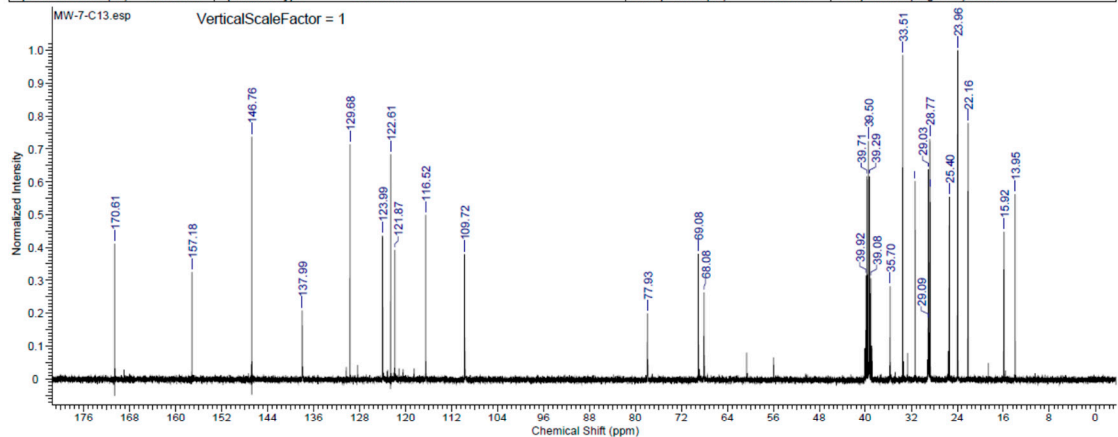


No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height
1	0.84	334.1	0.1511	9	1.15	461.3	0.0754	17	3.43	1373.1	0.1064	25	4.16	1664.7	0.5165	33	7.83	3131.8	0.1557
2	0.85	341.1	0.4144	10	1.17	468.2	0.0741	18	3.44	1376.8	0.0919	26	5.57	2229.5	0.3860	34	7.84	3133.6	0.1084
3	0.87	347.8	0.1293	11	1.22	486.6	0.6108	19	3.45	1379.6	0.2166	27	6.59	2634.2	0.2342	35	7.90	3157.8	0.1039
4	1.04	416.6	0.0844	12	1.24	495.9	0.2981	20	3.46	1383.7	0.0936	28	6.61	2642.0	0.0979	36	7.90	3159.6	0.1564
5	1.06	423.7	0.1646	13	1.27	506.9	0.0706	21	3.47	1386.3	0.0990	29	6.61	2643.6	0.0744	37	7.91	3161.3	0.0939
6	1.08	430.6	0.0864	14	1.46	582.4	0.0638	22	3.64	1457.7	0.1018	30	6.94	2775.5	0.1077	38	9.90	3960.9	0.1108
7	1.12	449.9	0.9842	15	2.09	833.9	0.6394	23	3.87	1546.3	0.6631	31	6.96	2783.0	0.0961				
8	1.14	456.8	1.0000	16	2.74	1094.1	0.0688	24	3.89	1556.8	0.0823	32	7.83	3130.3	0.0850				

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2021-11-17 18:46:37

Acquisition Time (sec)	1.0000	Date	Nov 16 2021	Date Stamp	Nov 16 2021				
File Name	d:\Users\Michal\Desktop\MW-7-C13.fid	Frequency (MHz)	100.57	Nucleus	<sup>13</sup> C	Number of Transients	1008		
Original Points Count	22322	Points Count	32768	Pulse Sequence	s2pul	Receiver Gain	56.00	Solvent	DMSO-d6
Spectrum Offset (Hz)	9724.6572	Spectrum Type	STANDARD	Sweep Width (Hz)	22321.43	Temperature (degree C)	25.000		



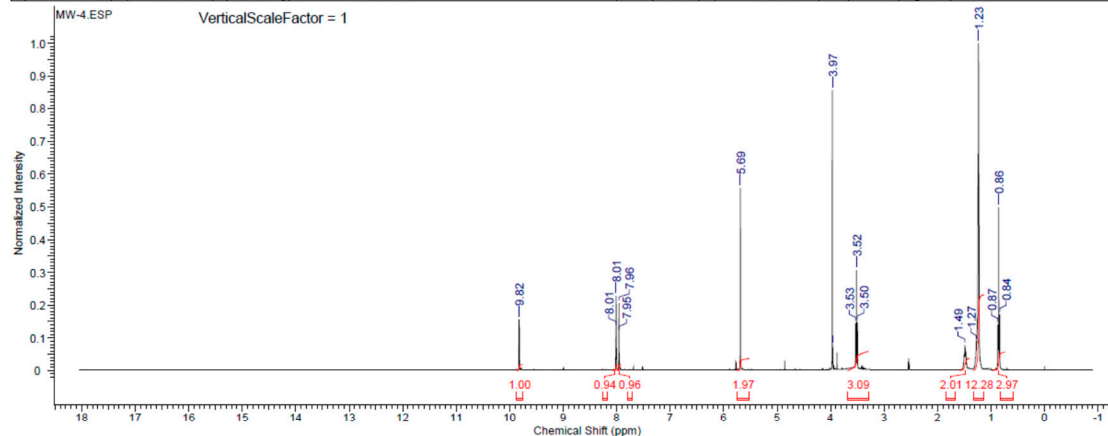
No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height
1	13.95	1403.3	0.5618	8	28.80	2896.5	0.5766	15	35.72	3592.7	0.2018	22	69.08	6947.0	0.3803	29	129.68	13041.8	0.7141
2	15.92	1600.8	0.4479	9	29.03	2919.0	0.6370	16	39.08	3930.6	0.3067	23	77.93	7836.7	0.1992	30	137.99	13877.0	0.2086
3	22.16	2228.9	0.7792	10	29.05	2921.7	0.5702	17	39.29	3951.0	0.6166	24	109.72	11033.6	0.3799	31	138.01	13879.1	0.1905
4	23.96	2409.4	1.0000	11	29.09	2925.1	0.1791	18	39.50	3972.1	0.7230	25	116.52	11717.6	0.4993	32	146.76	14759.2	0.7368
5	25.40	2554.5	0.5543	12	31.36	3153.3	0.6020	19	39.71	3993.2	0.6162	26	121.87	12256.4	0.3920	33	157.18	15806.9	0.3249
6	28.74	2890.4	0.5044	13	33.51	3369.9	0.9856	20	39.92	4014.4	0.3142	27	122.61	12330.0	0.6841	34	170.61	17157.8	0.4107
7	28.77	2893.8	0.7299	14	35.70	3590.6	0.2819	21	68.08	6846.2	0.2637	28	123.99	12469.6	0.4364				

# 1-methyl-3-octyloxymethylimidazolium chloride (CL-4):

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2021-11-16 19:55:54

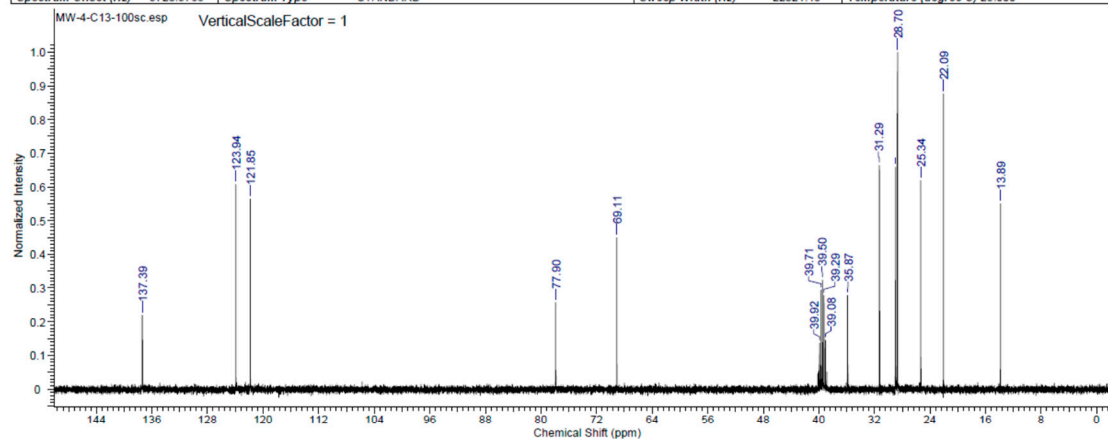
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File Name	d:\Users\Michal\Desktop\MW-4.fid	Frequency (MHz)	399.91	Nucleus	<sup>1</sup> H
Original Points Count	37879	Points Count	65536	Pulse Sequence	s2pul
Spectrum Offset (Hz)	3429.7598	Spectrum Type	STANDARD	Receiver Gain	20.00
				Sweep Width (Hz)	7575.76
				Temperature (degree C)	25.000



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2021-11-16 19:57:40

Acquisition Time (sec)	1.0000	Date	Nov 15 2021	Date Stamp	Nov 15 2021
File Name	d:\Users\Michal\Desktop\MW-4-C13-100sc.fid	Frequency (MHz)	100.57	Nucleus	<sup>13</sup> C
Original Points Count	22322	Points Count	32768	Pulse Sequence	s2pul
Spectrum Offset (Hz)	9723.9766	Spectrum Type	STANDARD	Receiver Gain	58.00
				Sweep Width (Hz)	22321.43
				Temperature (degree C)	25.000



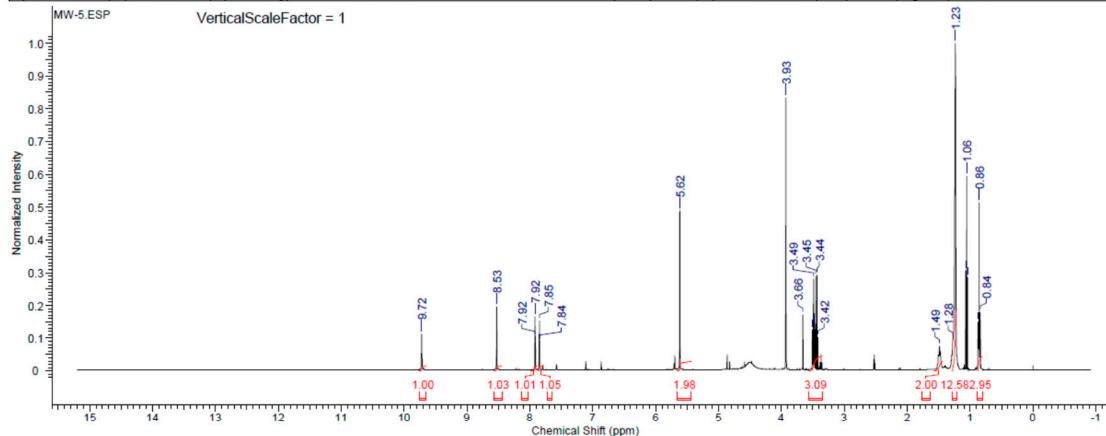


# 1-methyl-3-octyloxymethylimidazolium formate (MR-5):

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2021-11-16 19:56:21

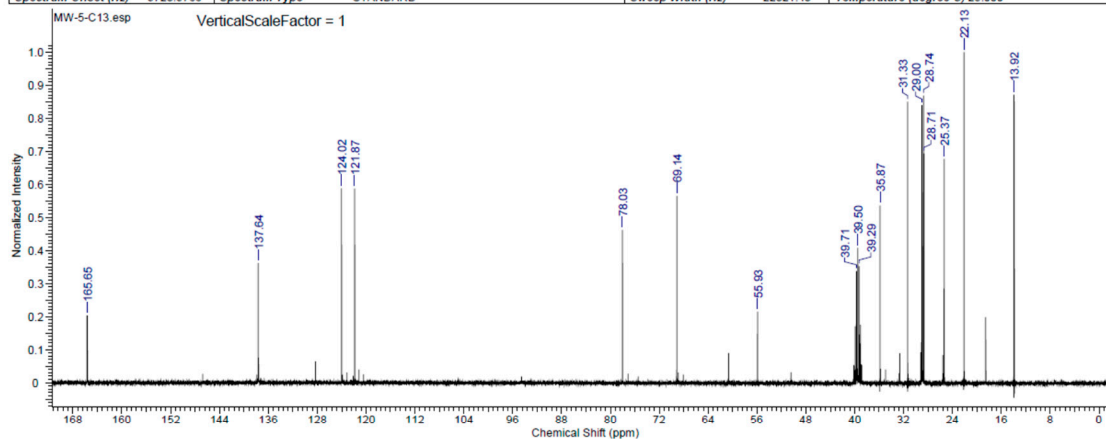
Acquisition Time (sec)	7.0000	Date	Nov 15 2021	Date Stamp	Nov 15 2021		
File Name	d:\Users\Michal\Desktop\MW-5.fid	Frequency (MHz)	399.91	Nucleus	<sup>1</sup> H	Number of Transients	64
Original Points Count	45103	Points Count	65536	Pulse Sequence	s2pul	Solvent	DMSO-d6
Spectrum Offset (Hz)	2856.2053	Spectrum Type	STANDARD	Sweep Width (Hz)	6443.30	Temperature (degree C)	25.000



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2021-11-16 19:58:11

Acquisition Time (sec)	1.0000	Date	Nov 15 2021	Date Stamp	Nov 15 2021		
File Name	d:\Users\Michal\Desktop\MW-5-C13.fid	Frequency (MHz)	100.57	Nucleus	<sup>13</sup> C	Number of Transients	800
Original Points Count	22322	Points Count	32768	Pulse Sequence	s2pul	Solvent	DMSO-d6
Spectrum Offset (Hz)	9723.9766	Spectrum Type	STANDARD	Sweep Width (Hz)	22321.43	Temperature (degree C)	25.000



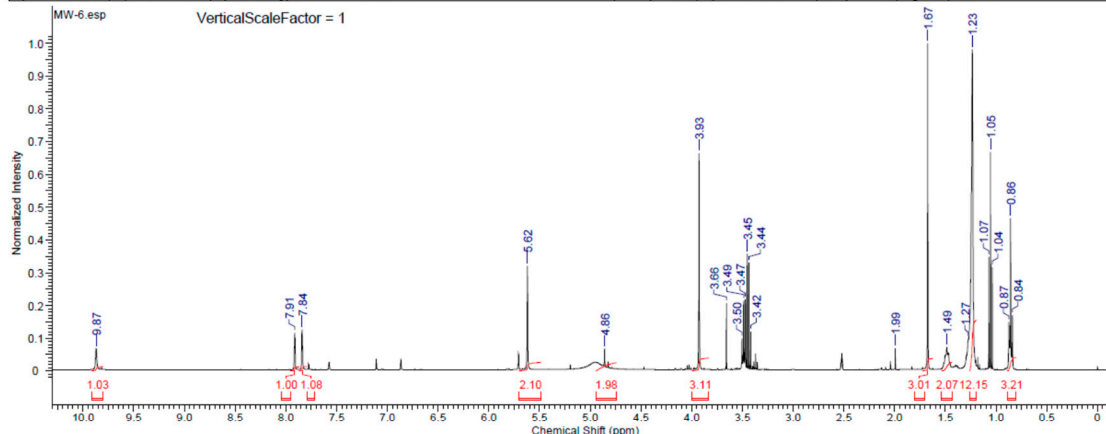


# 1-methyl-3-octyloxymethylimidazolium propionate (PR-6):

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2021-11-17 18:44:34

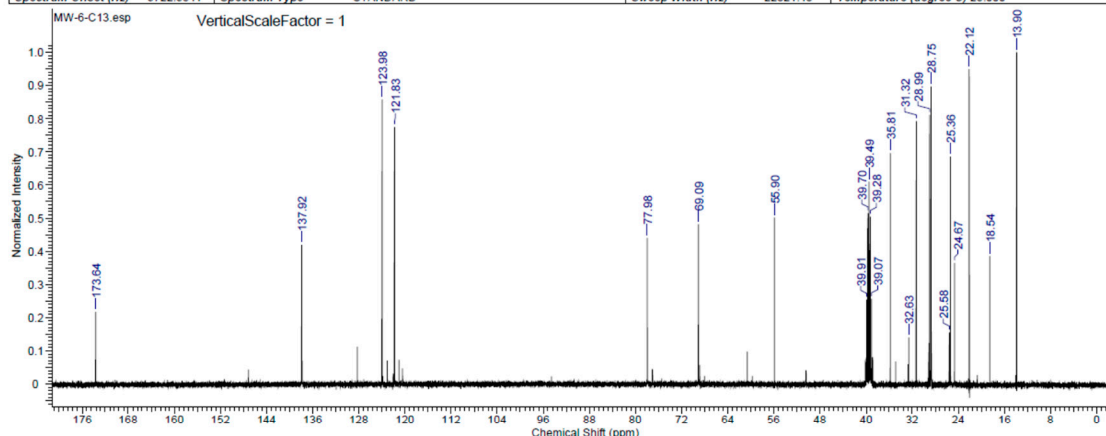
Acquisition Time (sec)	4.9999	Date	Nov 16 2021	Date Stamp	Nov 16 2021
File Name	d:\Users\Michal\Desktop\MW-6.fid	Frequency (MHz)	399.91	Nucleus	1H
Original Points Count	32216	Points Count	32768	Pulse Sequence	s2pul
Spectrum Offset (Hz)	2855.0256	Spectrum Type	STANDARD	Receiver Gain	56.00
				Sweep Width (Hz)	6443.30
				Temperature (degree C)	25.000



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2021-11-17 18:45:55

Acquisition Time (sec)	1.0000	Date	Nov 16 2021	Date Stamp	Nov 16 2021
File Name	d:\Users\Michal\Desktop\MW-6-C13.fid	Frequency (MHz)	100.57	Nucleus	13C
Original Points Count	22322	Points Count	32768	Pulse Sequence	s2pul
Spectrum Offset (Hz)	9722.9541	Spectrum Type	STANDARD	Receiver Gain	56.00
				Sweep Width (Hz)	22321.43
				Temperature (degree C)	25.000

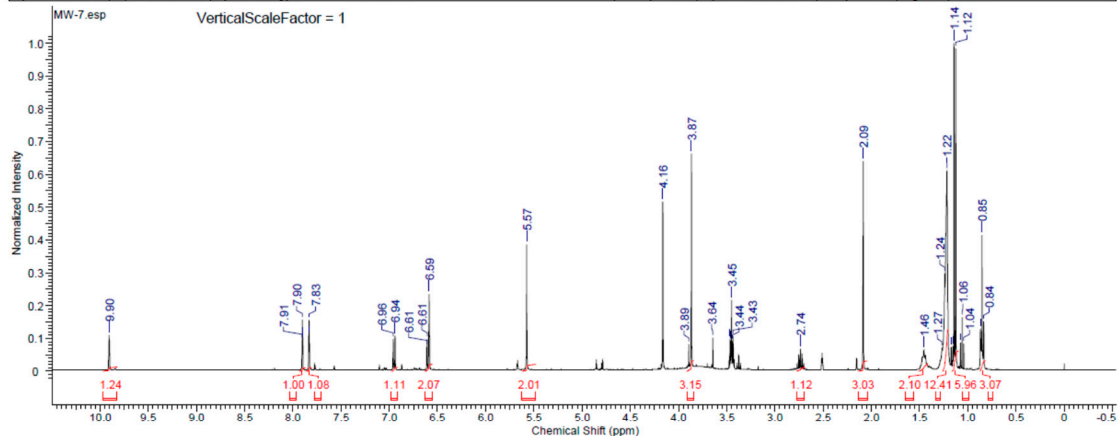


# 1-methyl-3-octyloxymethylimidazolium thymoloxycetate (TY-7):

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2021-11-17 18:45:07

Acquisition Time (sec)	4.9999	Date	Nov 16 2021	Date Stamp	Nov 16 2021				
File Name	d:\Users\Michal\Desktop\MW-7.fid	Frequency (MHz)	399.91	Nucleus	<sup>1</sup> H	Number of Transients	64		
Original Points Count	32216	Points Count	32768	Pulse Sequence	s2pul	Receiver Gain	18.00	Solvent	DMSO-d <sub>6</sub>
Spectrum Offset (Hz)	2851.3411	Spectrum Type	STANDARD	Sweep Width (Hz)	6443.30	Temperature (degree C)	25.000		

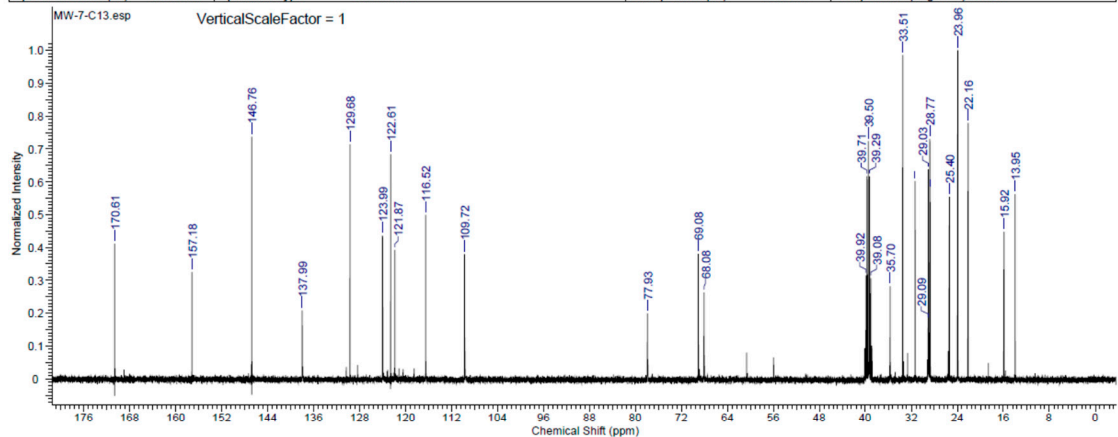


No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height
1	0.84	334.1	0.1511	9	1.15	461.3	0.0754	17	3.43	1373.1	0.1064	25	4.16	1664.7	0.5165	33	7.83	3131.8	0.1557
2	0.85	341.1	0.4144	10	1.17	468.2	0.0741	18	3.44	1376.8	0.0919	26	5.57	2229.5	0.3860	34	7.84	3133.6	0.1084
3	0.87	347.8	0.1293	11	1.22	486.6	0.6108	19	3.45	1379.6	0.2166	27	6.59	2634.2	0.2342	35	7.90	3157.8	0.1039
4	1.04	416.6	0.0844	12	1.24	495.9	0.2981	20	3.46	1383.7	0.0936	28	6.61	2642.0	0.0979	36	7.90	3159.6	0.1564
5	1.06	423.7	0.1646	13	1.27	506.9	0.0706	21	3.47	1386.3	0.0990	29	6.61	2643.6	0.0744	37	7.91	3161.3	0.0939
6	1.08	430.6	0.0864	14	1.46	582.4	0.0638	22	3.64	1457.7	0.1018	30	6.94	2775.5	0.1077	38	9.90	3960.9	0.1108
7	1.12	449.9	0.9842	15	2.09	833.9	0.6394	23	3.87	1546.3	0.6631	31	6.96	2783.0	0.0981				
8	1.14	456.8	1.0000	16	2.74	1094.1	0.0688	24	3.89	1556.8	0.0823	32	7.83	3130.3	0.0850				

This report was created by ACD/NMR Processor Academic Edition. For more information go to [www.acdlabs.com/nmrproc/](http://www.acdlabs.com/nmrproc/)

2021-11-17 18:46:37

Acquisition Time (sec)	1.0000	Date	Nov 16 2021	Date Stamp	Nov 16 2021				
File Name	d:\Users\Michal\Desktop\MW-7-C13.fid	Frequency (MHz)	100.57	Nucleus	<sup>13</sup> C	Number of Transients	1008		
Original Points Count	22322	Points Count	32768	Pulse Sequence	s2pul	Receiver Gain	56.00	Solvent	DMSO-d <sub>6</sub>
Spectrum Offset (Hz)	9724.6572	Spectrum Type	STANDARD	Sweep Width (Hz)	22321.43	Temperature (degree C)	25.000		



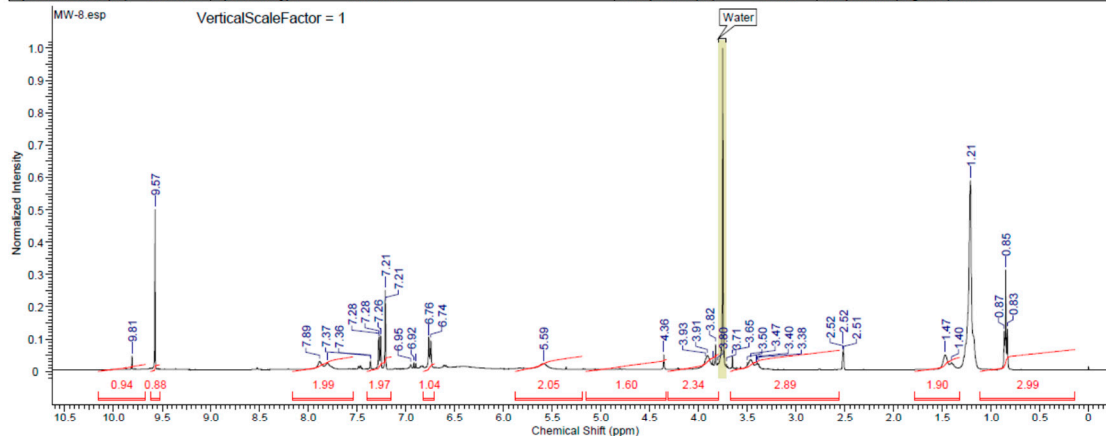
No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height
1	13.95	1403.3	0.5618	8	28.80	2896.5	0.5766	15	35.72	3592.7	0.2018	22	69.08	6947.0	0.3803	29	129.68	13041.8	0.7141
2	15.92	1600.8	0.4479	9	29.03	2919.0	0.6370	16	39.08	3930.6	0.3067	23	77.93	7836.7	0.1992	30	137.99	13877.0	0.2086
3	22.16	2228.9	0.7792	10	29.05	2921.7	0.5702	17	39.29	3951.0	0.6166	24	109.72	11033.6	0.3799	31	138.01	13879.1	0.1905
4	23.96	2409.4	1.0000	11	29.09	2925.1	0.1791	18	39.50	3972.1	0.7230	25	116.52	11717.6	0.4993	32	146.76	14759.2	0.7368
5	25.40	2554.5	0.5543	12	31.36	3153.3	0.6020	19	39.71	3993.2	0.6162	26	121.87	12256.4	0.3920	33	157.18	15806.9	0.3249
6	28.74	2890.4	0.5044	13	33.51	3369.9	0.9856	20	39.92	4014.4	0.3142	27	122.61	12330.0	0.6841	34	170.61	17157.8	0.4107
7	28.77	2893.8	0.7299	14	35.70	3590.6	0.2819	21	68.08	6846.2	0.2637	28	123.99	12469.6	0.4364				

# 1-methyl-3-octyloxymethylimidazolium vanillin oxyacetate (VA-8):

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2021-11-19 17:11:30

Acquisition Time (sec)	3.9999	Date	Nov 17 2021	Date Stamp	Nov 17 2021
File Name	d:\Users\Michal\Desktop\MW-8.fid	Frequency (MHz)	399.91	Nucleus	1H
Original Points Count	24752	Points Count	32768	Pulse Sequence	s2pul
Spectrum Offset (Hz)	2746.2166	Spectrum Type	STANDARD	Sweep Width (Hz)	6188.12
				Receiver Gain	20.00
				Solvent	DMSO-d6
				Temperature (degree C)	25.000



No.	(ppm)	Annotation	Layer No.	Created By	Created At	Modified By	Modified At
1	[3.72 .. 3.80]	Water	1	Michal	Pt 2021-11-19 15:40:36		

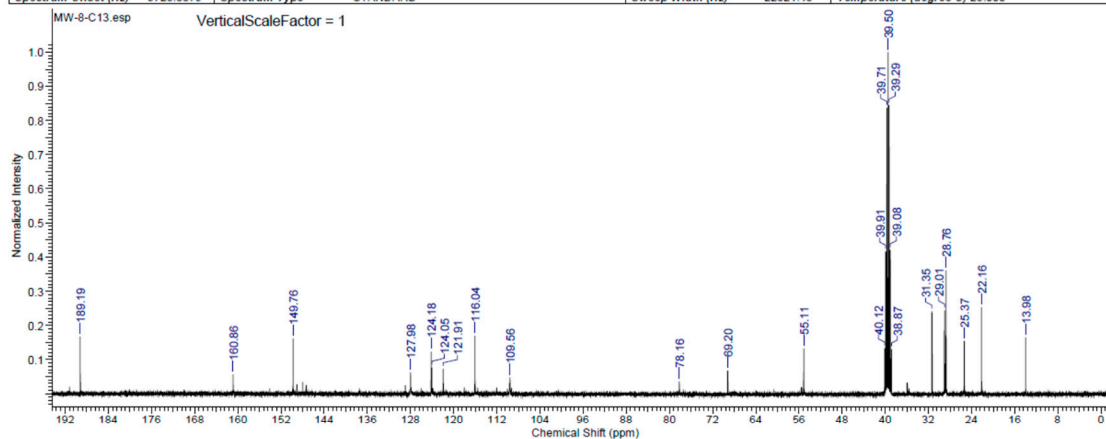
  

No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height
1	0.83	333.0	0.1307	9	2.52	1008.1	0.0609	17	3.80	1520.1	0.0258	25	6.76	2705.3	0.1028	33	7.28	2909.9	0.1065
2	0.85	340.0	0.3145	10	3.38	1353.0	0.0255	18	3.82	1529.5	0.0845	26	6.90	2759.0	0.0239	34	7.28	2911.7	0.0990
3	0.87	346.4	0.1240	11	3.40	1359.4	0.0271	19	3.86	1541.8	0.0339	27	6.92	2767.3	0.0254	35	7.36	2944.0	0.0301
4	1.21	484.4	0.5908	12	3.41	1364.9	0.0211	20	3.91	1563.5	0.0491	28	6.95	2780.1	0.0209	36	7.37	2945.7	0.0316
5	1.40	561.7	0.0259	13	3.47	1385.8	0.0362	21	3.93	1570.9	0.0387	29	7.21	2882.9	0.2103	37	7.80	3121.2	0.0259
6	1.47	587.9	0.0511	14	3.50	1399.4	0.0267	22	4.36	1741.6	0.0510	30	7.21	2884.7	0.2519	38	7.89	3153.3	0.0312
7	2.51	1004.5	0.0583	15	3.65	1460.2	0.0471	23	5.59	2236.4	0.0246	31	7.26	2901.7	0.1101	39	9.57	3828.4	0.5014
8	2.52	1006.2	0.0783	16	3.71	1485.2	0.0230	24	6.74	2697.2	0.0956	32	7.26	2903.6	0.1058	40	9.81	3922.7	0.0479

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2021-11-19 17:11:05

Acquisition Time (sec)	1.1000	Date	Nov 17 2021	Date Stamp	Nov 17 2021
File Name	d:\Users\Michal\Desktop\MW-8-C13.fid	Frequency (MHz)	100.57	Nucleus	13C
Original Points Count	24554	Points Count	32768	Pulse Sequence	s2pul
Spectrum Offset (Hz)	9725.3379	Spectrum Type	STANDARD	Sweep Width (Hz)	22321.43
				Receiver Gain	60.00
				Solvent	DMSO-d6
				Temperature (degree C)	25.000



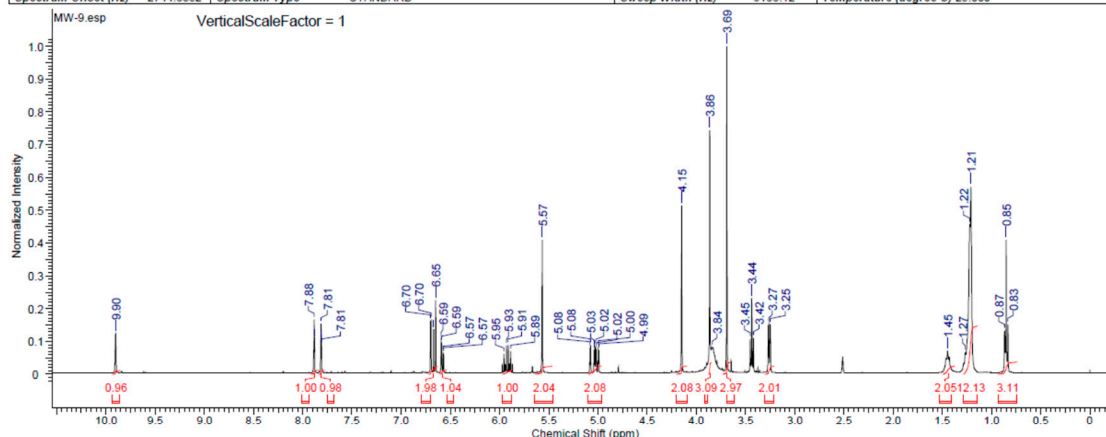
No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height
1	13.98	1406.0	0.1644	7	29.04	2920.3	0.1842	13	39.71	3993.2	0.8377	19	109.56	11017.9	0.0471	25	149.76	15060.3	0.1617
2	22.16	2228.2	0.2535	8	31.35	3152.6	0.2411	14	39.91	4013.7	0.4165	20	116.04	11669.9	0.1695	26	160.86	16177.5	0.0561
3	25.37	2551.8	0.1544	9	38.87	3908.8	0.1305	15	40.12	4034.8	0.1333	21	121.91	12259.8	0.0725	27	189.19	19026.3	0.1671
4	28.70	2886.3	0.1617	10	39.08	3929.9	0.4208	16	55.11	5542.3	0.1317	22	124.05	12475.1	0.0762				
5	28.76	2892.4	0.3615	11	39.29	3951.0	0.8443	17	69.20	6959.3	0.0672	23	124.18	12488.0	0.1228				
6	29.01	2917.6	0.2439	12	39.50	3972.1	1.0000	18	78.16	7860.5	0.0366	24	127.98	12870.9	0.0628				

# 1-methyl-3-octyloxymethylimidazolium eugenoloxycetate (EV-9):

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2021-11-19 17:09:52

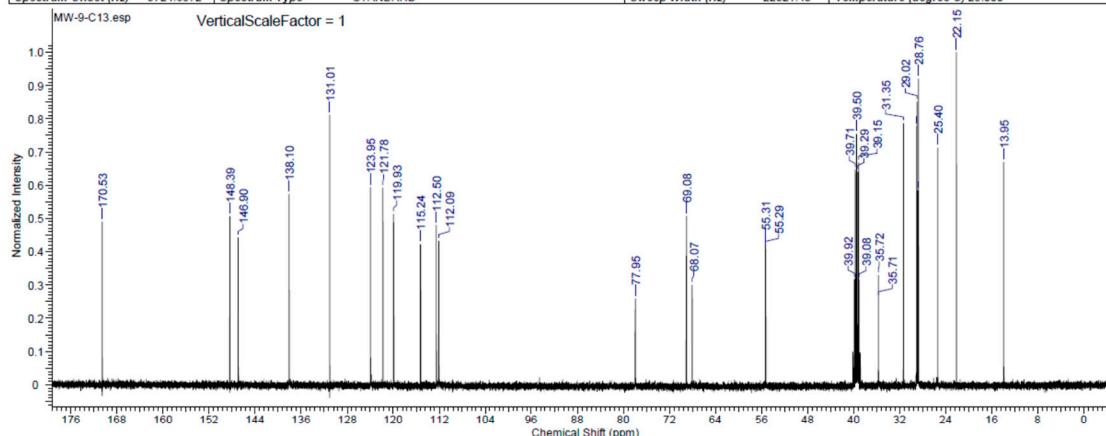
Acquisition Time (sec)	5.0001	Date	Nov 17 2021	Date Stamp	Nov 17 2021
File Name	d:\Users\Michal\Desktop\MW-9.fidfid	Frequency (MHz)	399.91	Nucleus	<sup>1</sup> H
Original Points Count	30941	Points Count	32768	Pulse Sequence	s2pul
Spectrum Offset (Hz)	2744.8352	Spectrum Type	STANDARD	Receiver Gain	18.00
				Sweep Width (Hz)	6188.12
				Temperature (degree C)	25.000



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2021-11-19 17:10:29

Acquisition Time (sec)	1.1000	Date	Nov 17 2021	Date Stamp	Nov 17 2021
File Name	d:\Users\Michal\Desktop\MW-9-C13.fidfid	Frequency (MHz)	100.57	Nucleus	<sup>13</sup> C
Original Points Count	24554	Points Count	32768	Pulse Sequence	s2pul
Spectrum Offset (Hz)	9724.6572	Spectrum Type	STANDARD	Receiver Gain	56.00
				Sweep Width (Hz)	22321.43
				Temperature (degree C)	25.000



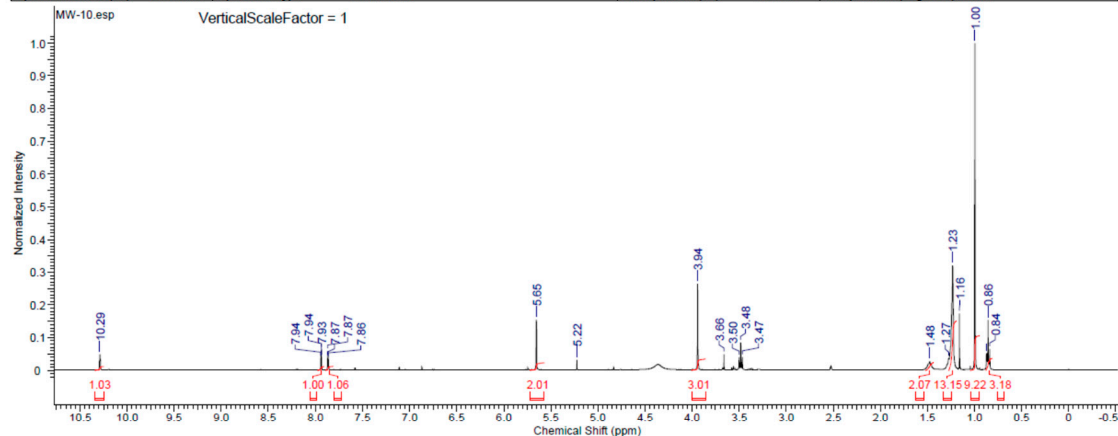


# 1-methyl-3-octyloxymethylimidazolium trimethylacetate (TR-10):

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2021-11-17 18:45:29

Acquisition Time (sec)	4.9999	Date	Nov 17 2021	Date Stamp	Nov 17 2021				
File Name	d:\Users\Michal\Desktop\MW-10.fid	Frequency (MHz)	399.91	Nucleus	1H	Number of Transients	64		
Original Points Count	32216	Points Count	32768	Pulse Sequence	s2pul	Receiver Gain	16.00	Solvent	DMSO-d6
Spectrum Offset (Hz)	2856.6477	Spectrum Type	STANDARD	Sweep Width (Hz)	6443.30	Temperature (degree C)	25.000		



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2021-11-17 18:47:04

Acquisition Time (sec)	1.1000	Date	Nov 17 2021	Date Stamp	Nov 17 2021				
File Name	d:\Users\Michal\Desktop\MW-10-C13.fid	Frequency (MHz)	100.57	Nucleus	13C	Number of Transients	784		
Original Points Count	24554	Points Count	32768	Pulse Sequence	s2pul	Receiver Gain	56.00	Solvent	DMSO-d6
Spectrum Offset (Hz)	9726.3604	Spectrum Type	STANDARD	Sweep Width (Hz)	22321.43	Temperature (degree C)	25.000		

