Supplementary Information

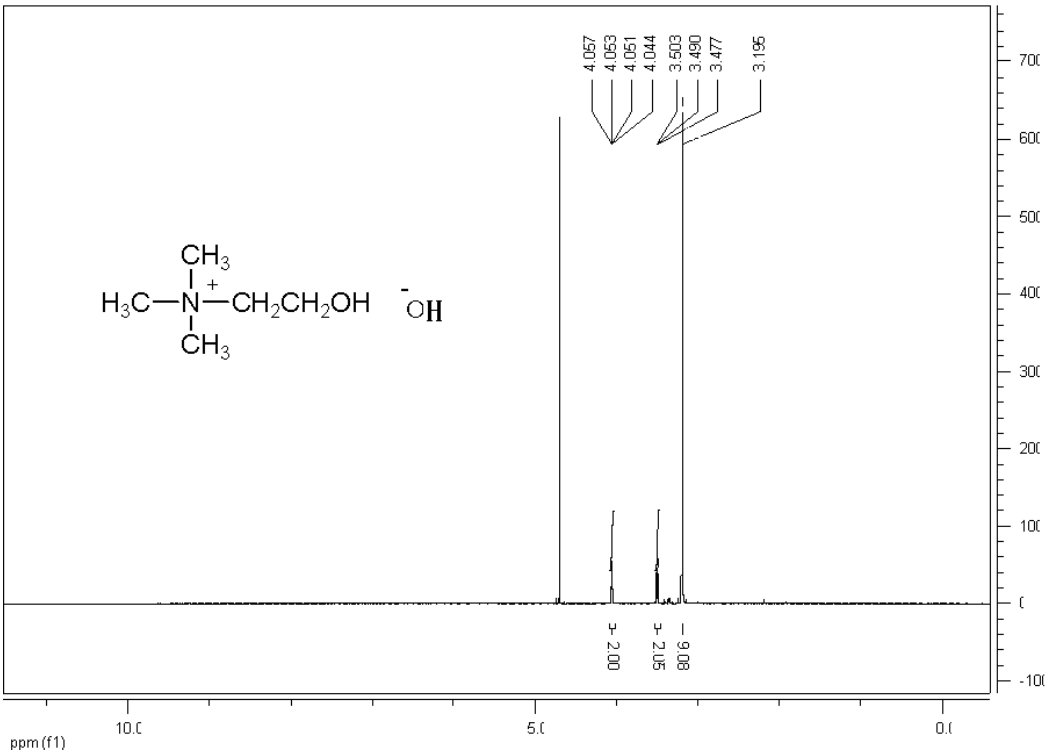
1. The pH Values of the Ionic Liquids

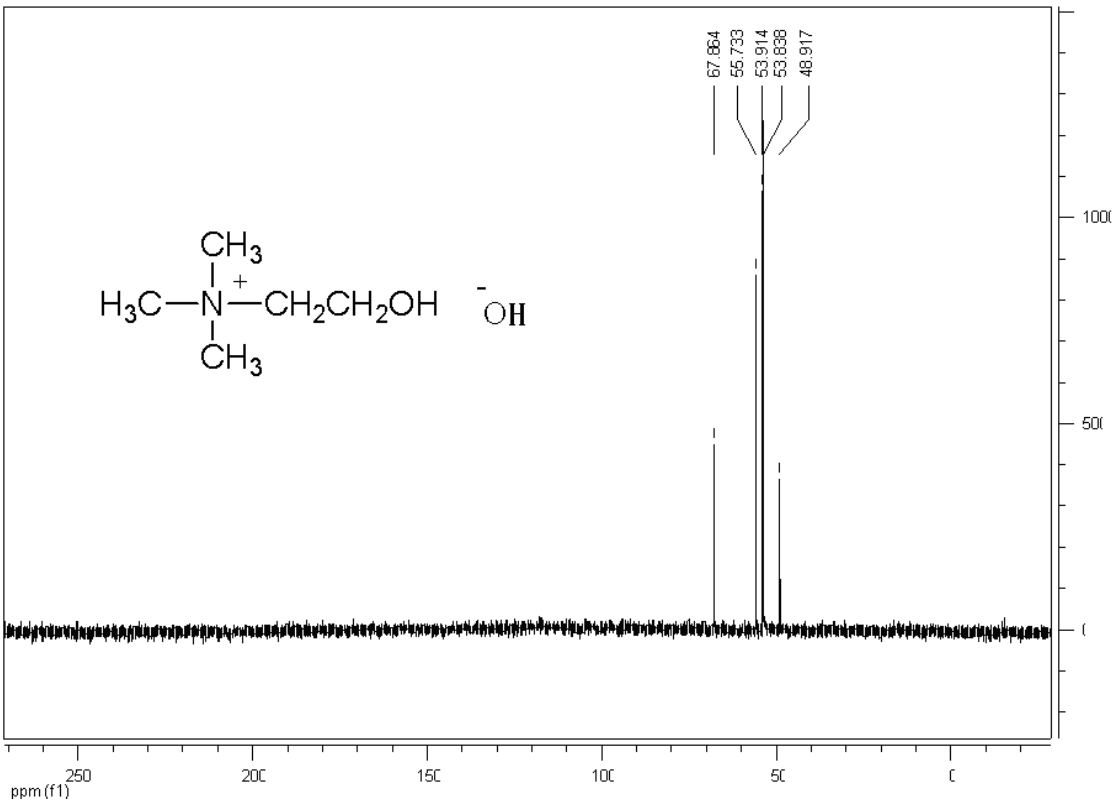
The aqueous solution of ChCl based ionic liquids (0.5 mmol/mL) were conducted at the Mettler Toledo pH meter (FE20) at 25 °C. The pH values are listed in Table S1.

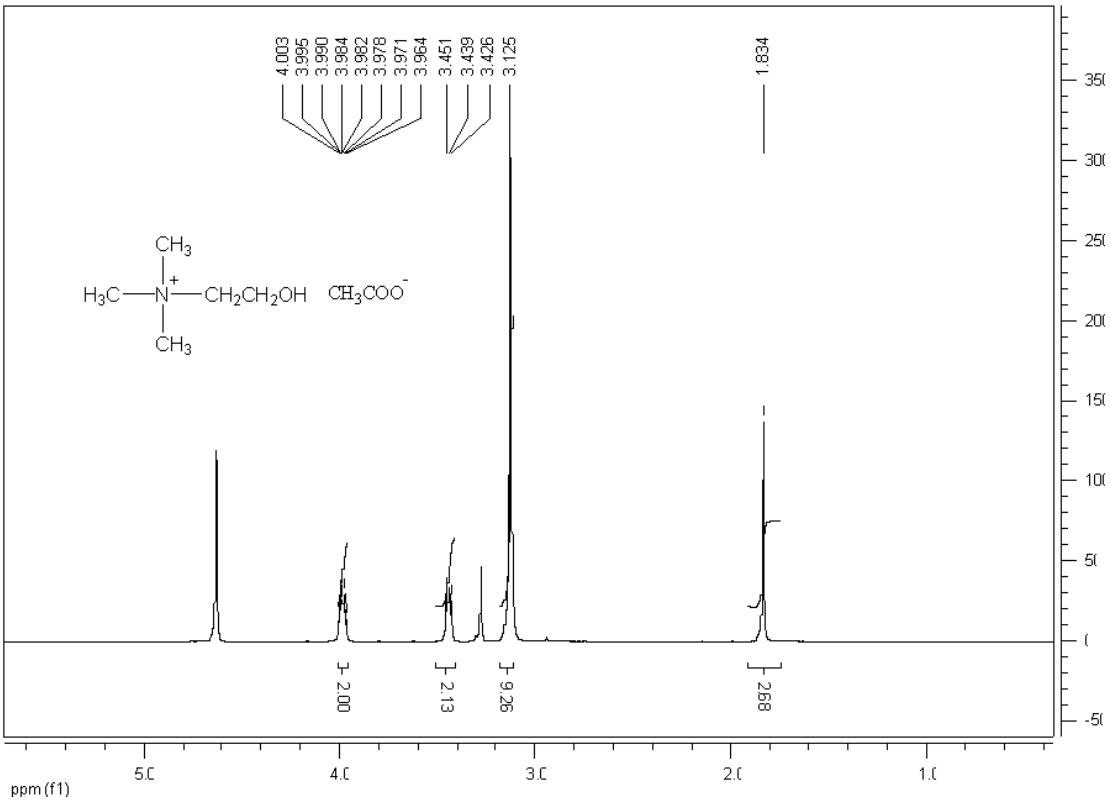
Table S1. pH values investigations.

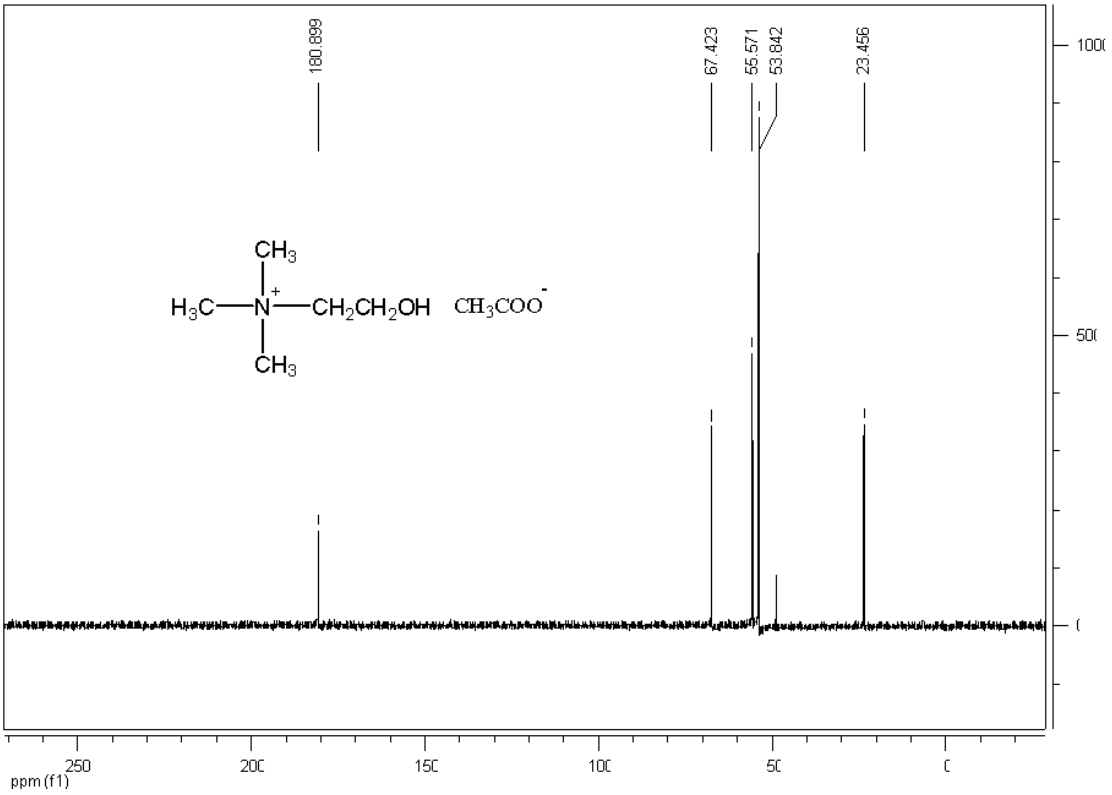
ILs	[Ch][OH]	[Ch][Ac]	[Ch][Pr]	[Ch][Bu]	[Ch][OTf]	[Ch][Lac]
pH	12.85	7.49	7.71	7.85	7.23	7.09

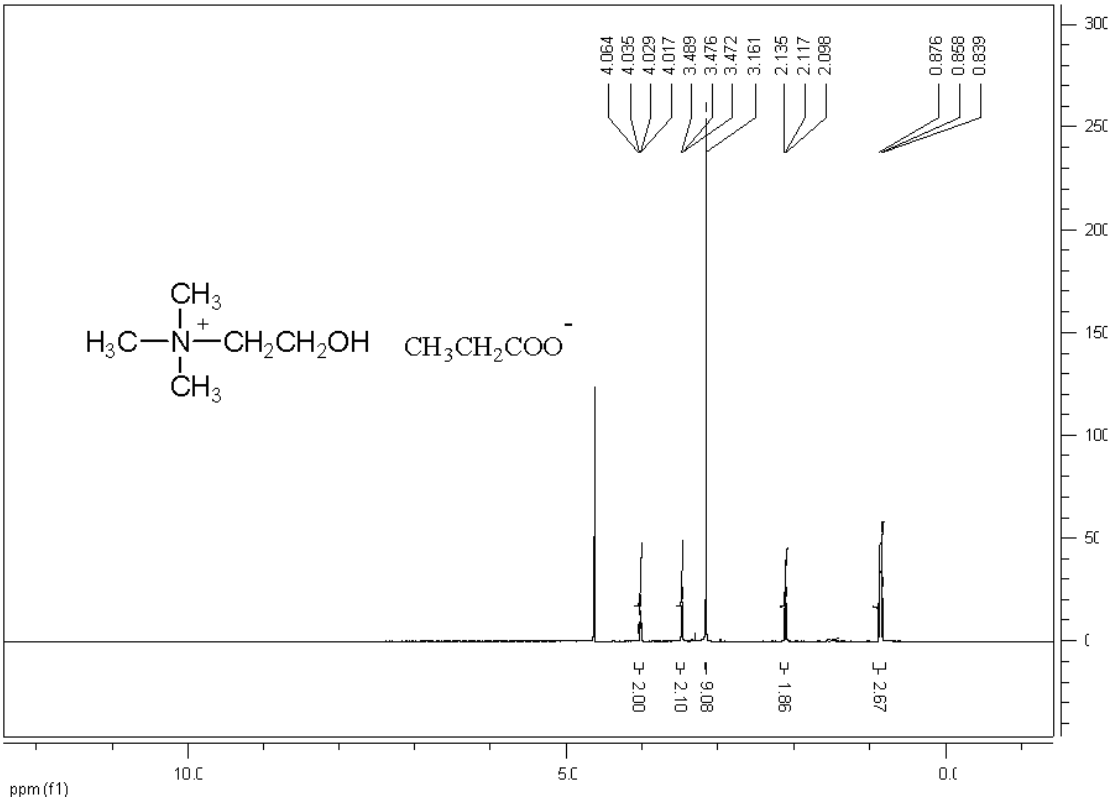
2. All Spectrums of the Choline Hydroxide Based Ionic Liquids

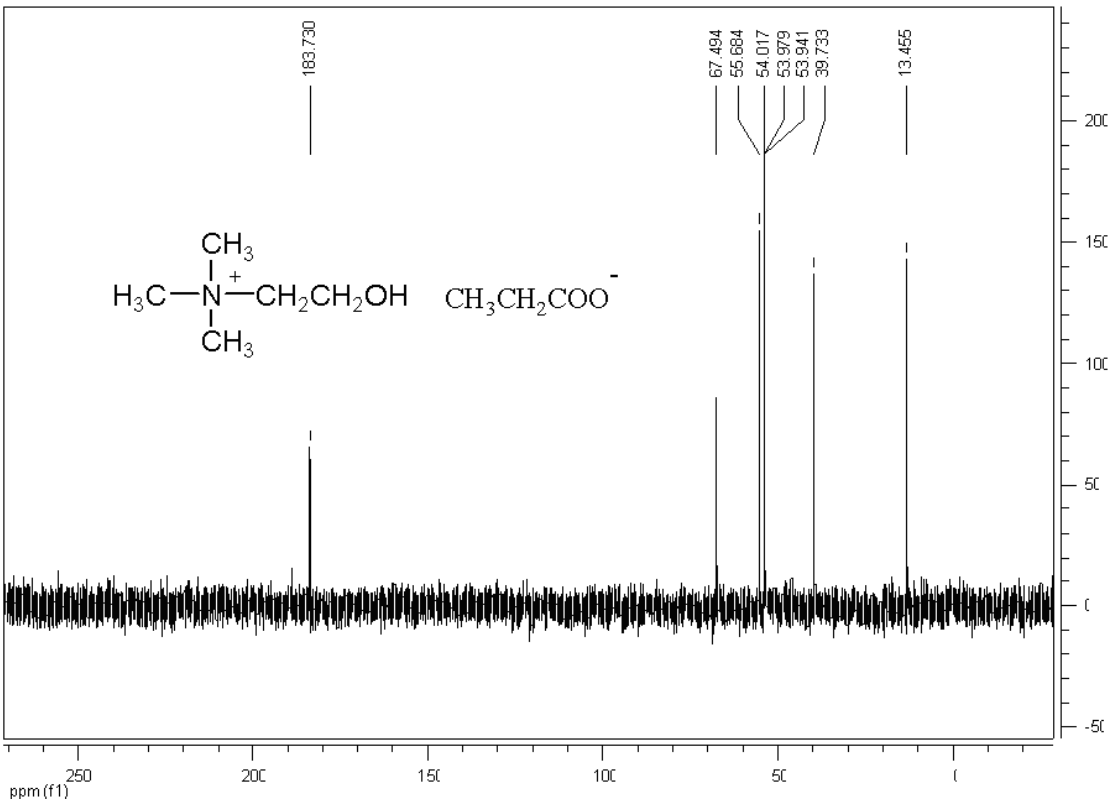


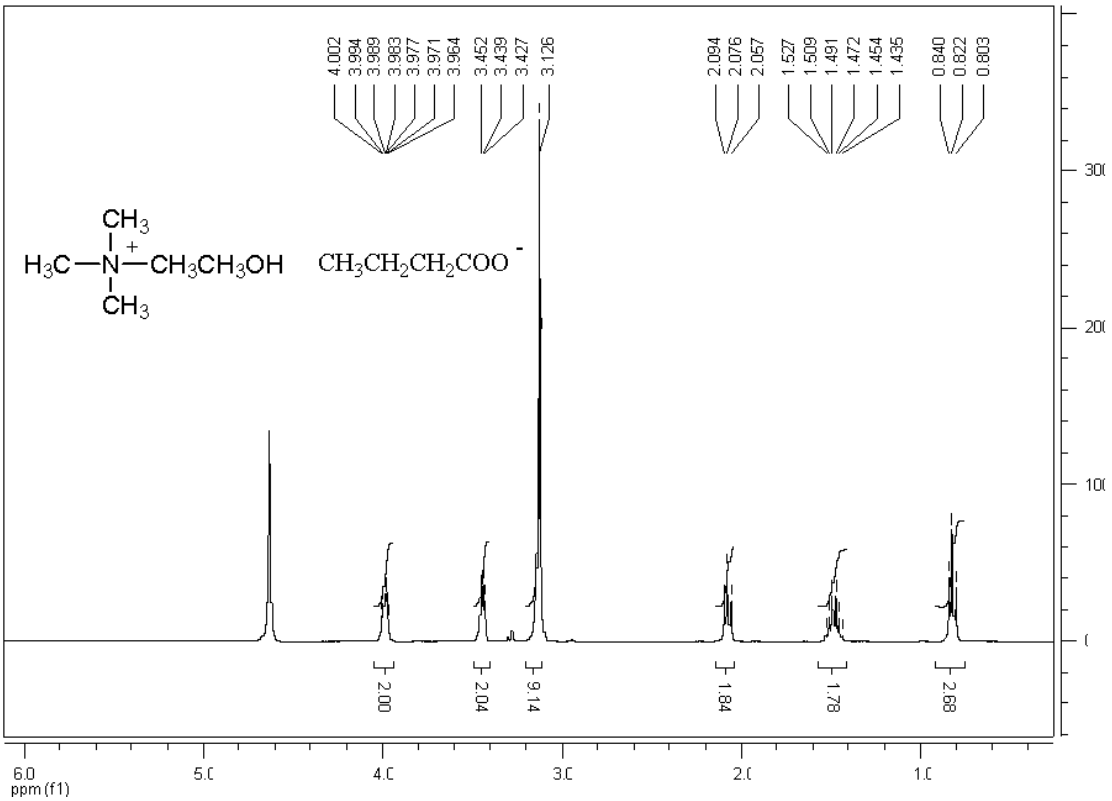

67.864
55.733
53.914
53.838
48.917
ppm (f1)

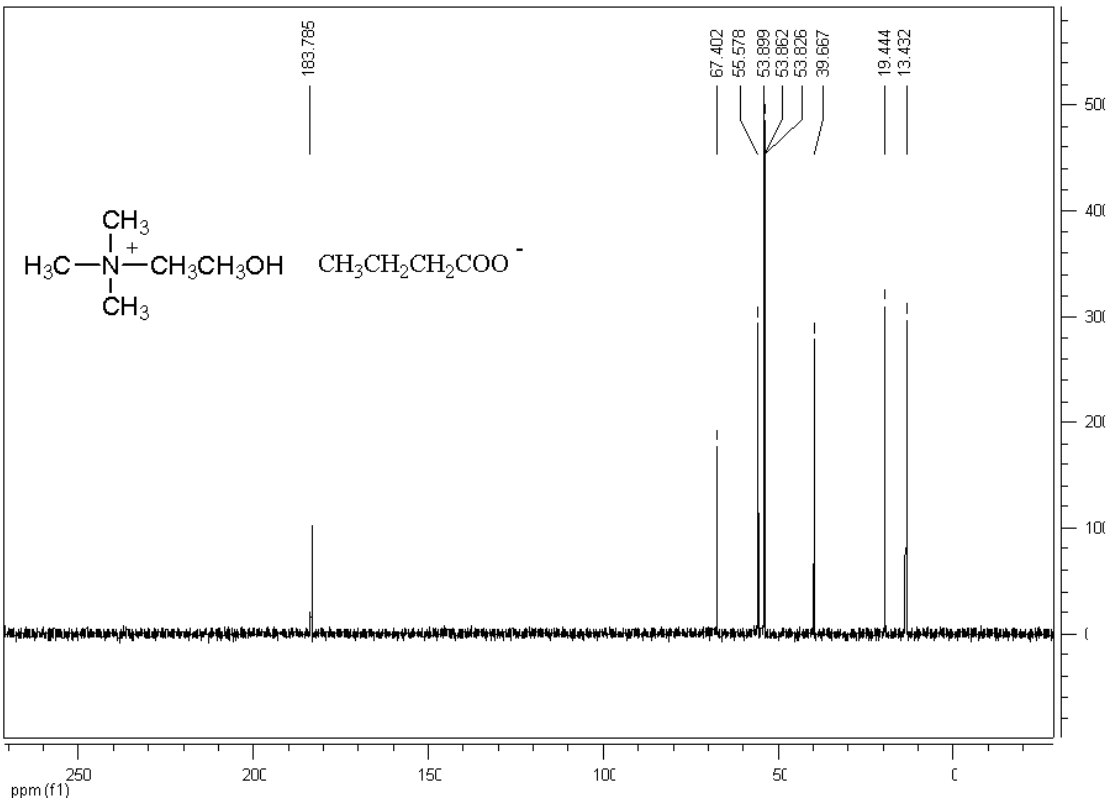

4.003
3.995
3.990
3.984
3.982
3.978
3.971
3.964
3.451
3.439
3.426
3.125
1.834
2.00
2.13
9.26
2.88
ppm (f1)

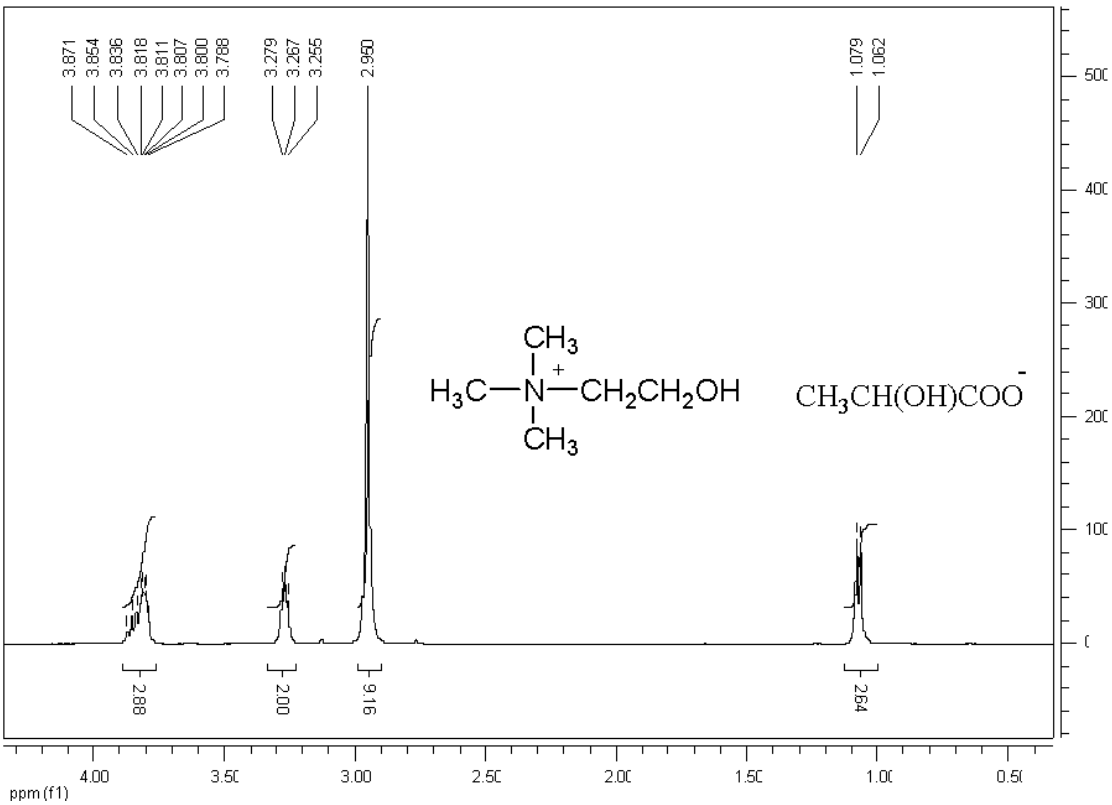

180.899
67.423
55.571
53.842
23.456
CH3
H3C—N+—CH2CH2OH
CH3
CH3COO-
ppm (f1)

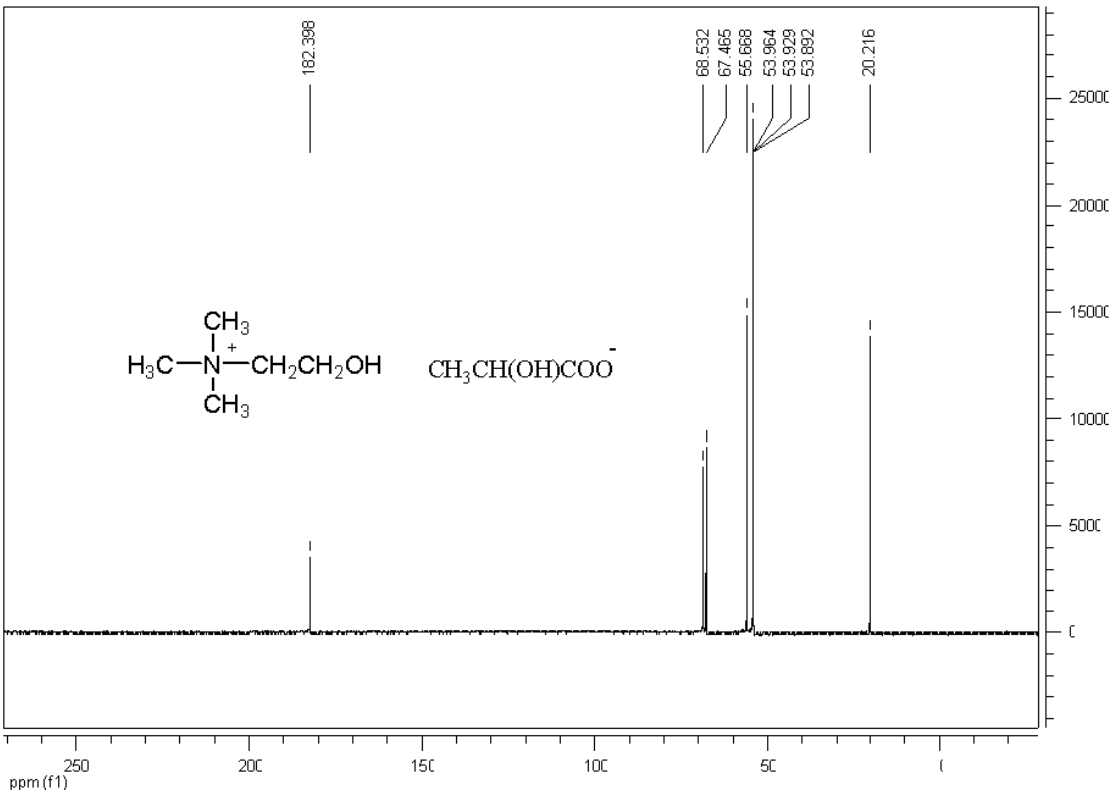

4.064
4.035
4.029
4.017
3.489
3.476
3.472
3.161
2.135
2.117
2.098
0.876
0.858
0.839
2.00
2.10
9.08
1.86
2.67
CH3
H3C—N+—CH2CH2OH
CH3
CH3CH2COO-
ppm (f1)

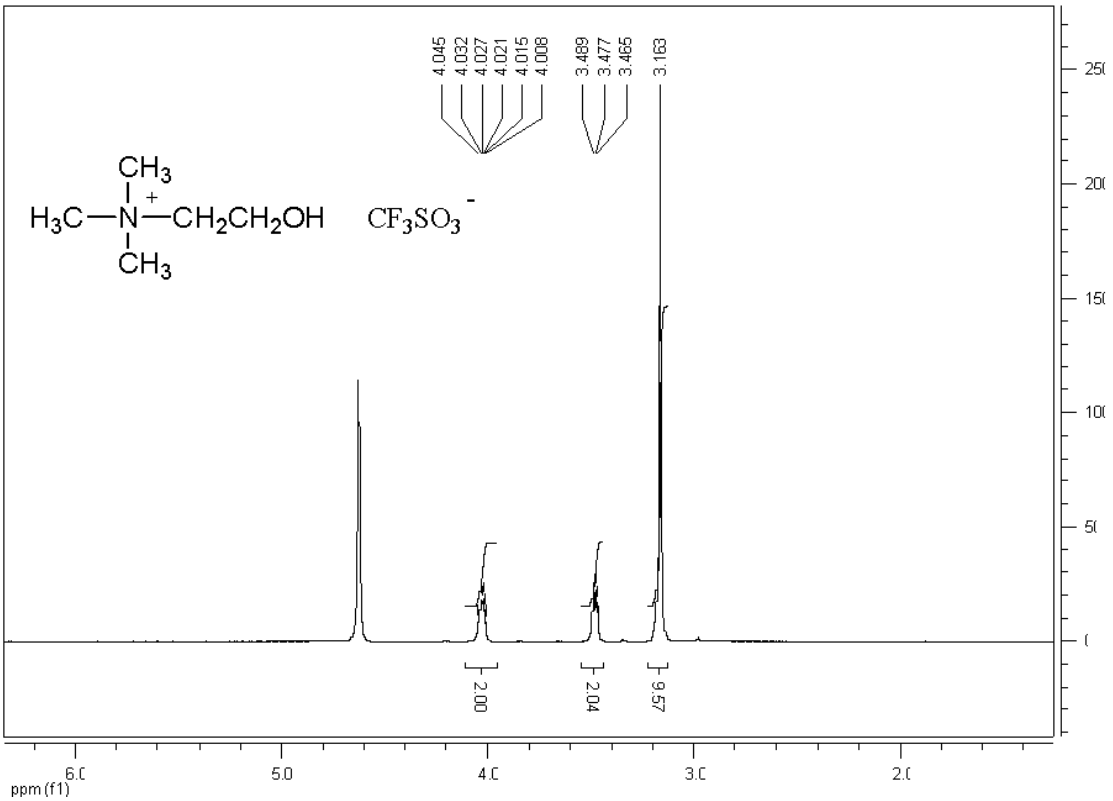

183.730
67.494
55.684
54.017
53.979
53.941
39.733
13.455
ppm (f1)

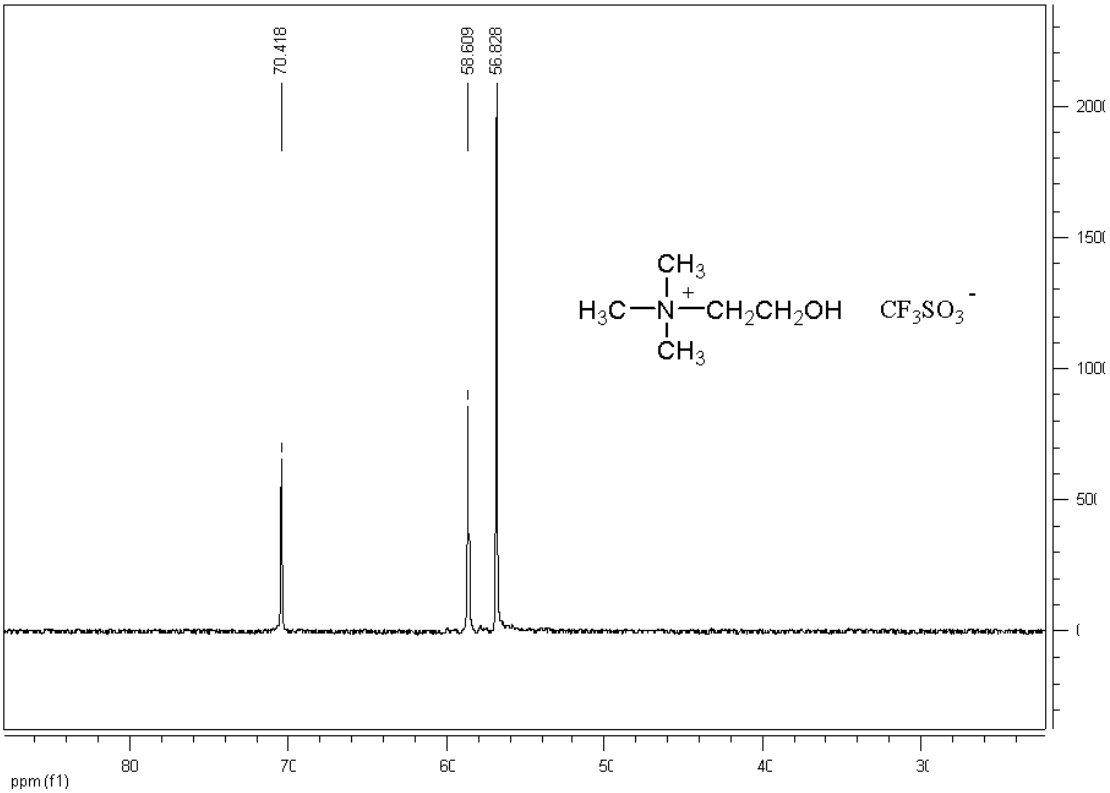

4.002
3.994
3.989
3.983
3.977
3.971
3.964
3.452
3.439
3.427
3.126
2.094
2.076
2.057
1.527
1.509
1.491
1.472
1.454
1.435
0.840
0.822
0.803
2.00
2.04
9.14
1.84
1.78
2.68
ppm (f1)


183.785
67.402
55.578
53.899
53.862
53.826
39.667
19.444
13.432
CH3
H3C—N+—CH2CH2OH
CH3
CH3CH2CH2COO-
ppm (f1)


3.871
3.854
3.836
3.818
3.811
3.807
3.800
3.788
3.279
3.267
3.255
2.950
1.079
1.062
CH3
H3C—N+—CH2CH2OH
CH3
CH3CH(OH)COO-
2.88
2.00
9.16
2.94
ppm (f1)


182.398
68.532
67.465
55.668
53.964
53.929
53.892
20.216
CH3
H3C—N+—CH2CH2OH
CH3
CH3CH(OH)COO-
ppm (f1)


4.045
4.032
4.027
4.021
4.015
4.008
3.489
3.477
3.465
3.163
CH3
H3C—N+—CH2CH2OH
CH3
CF3SO3-
2.00
2.04
9.57
ppm (f1)



3. The Comparison of Two Carbon Spectrums to Confirm the Existence of Hydrogen Bond between Aromatic Aldehyde and Hydroxyl Group at the Side Chain of [Ch][OH]

Figure S1. Carbon spectrum of benzaldehyde in DMSO.

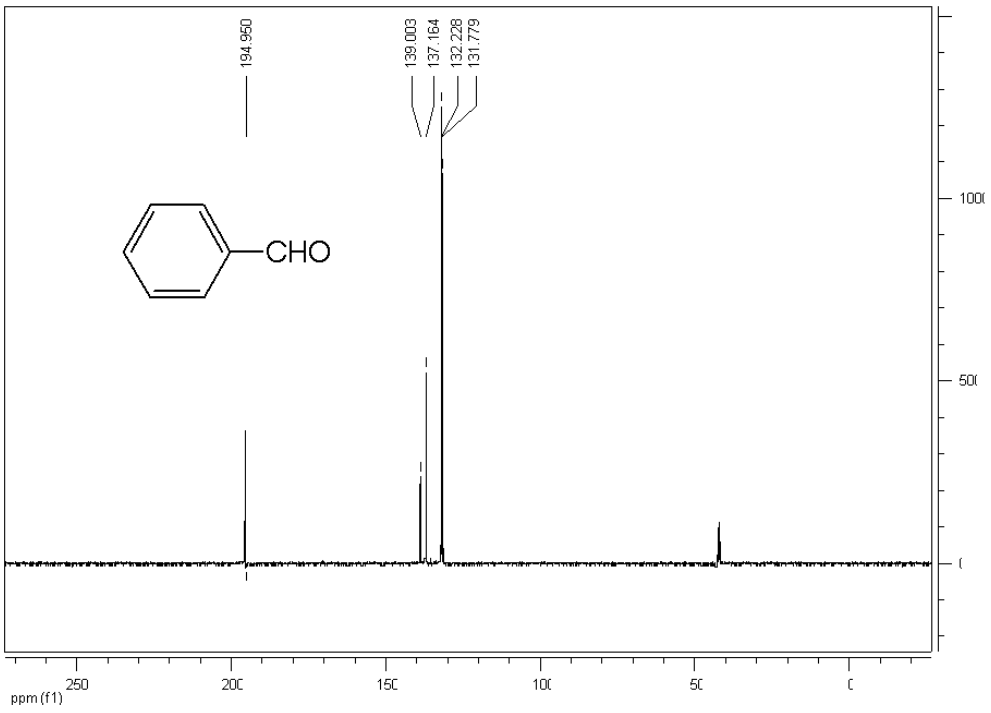


Figure S2. Carbon spectrum of the mixture of benzaldehyde and [Ch][OH] in DMSO. It can be observed from Figures 1 and 2 that the chemical shift is changed from 194.99 to 171.79 when equiv [Ch][OH] is added to the benzaldehyde, which shows the existence of the hydrogen bond interaction between carboxyl group of benzaldehyde and hydroxyl group of [Ch][OH].