Electronic Supplementary Material (ESI) for RSC Advances.

Ionic liquids as recyclable and separable reaction media in Rh-catalyzed decarbonylation of aromatic and aliphatic aldehydes

Phillip Malcho, Eduardo J. García-Suárez, and Anders Riisager*

Centre for Catalysis and Sustainable Chemistry, Department of Chemistry, Technical University of Denmark, DK-2800 Kgs. Lyngby, Denmark

*Corresponding author: E-mail address: ar@kemi.dtu.dk (A. Riisager); Fax: (+45) 45883136

*Corresponding author: Tel: +45 45252233; Fax: +45 45883136; E-mail: ar@kemi.dtu.dk

Supporting Information

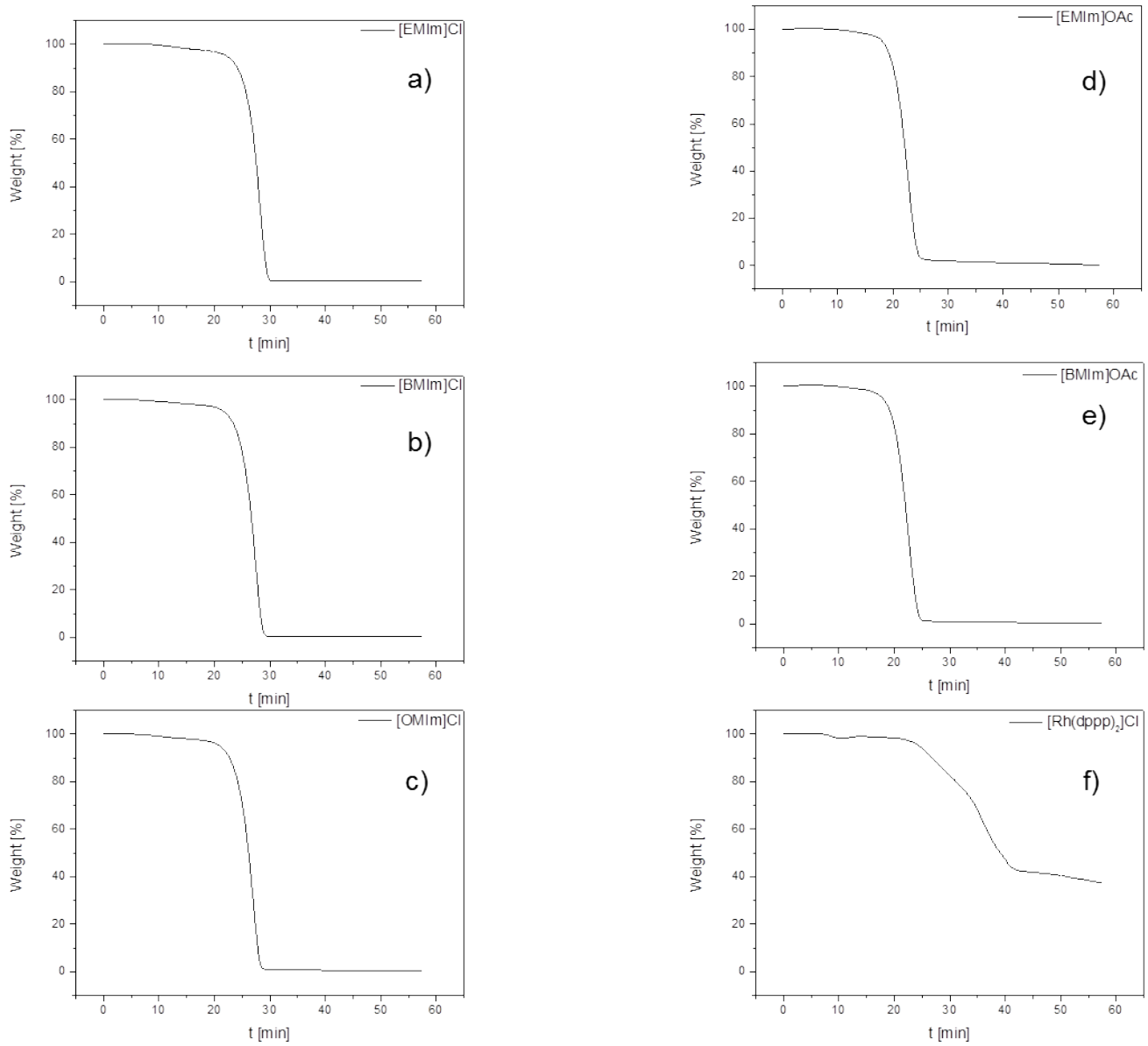
Table of contents

S1 TGA profiles a) [EMIm]Cl, b) [BMIm]Cl, c) [OMIm]Cl, d) [EMIm]OAc, e) [BMIm]OAc and f) $[Rh(dppp)_2]Cl$

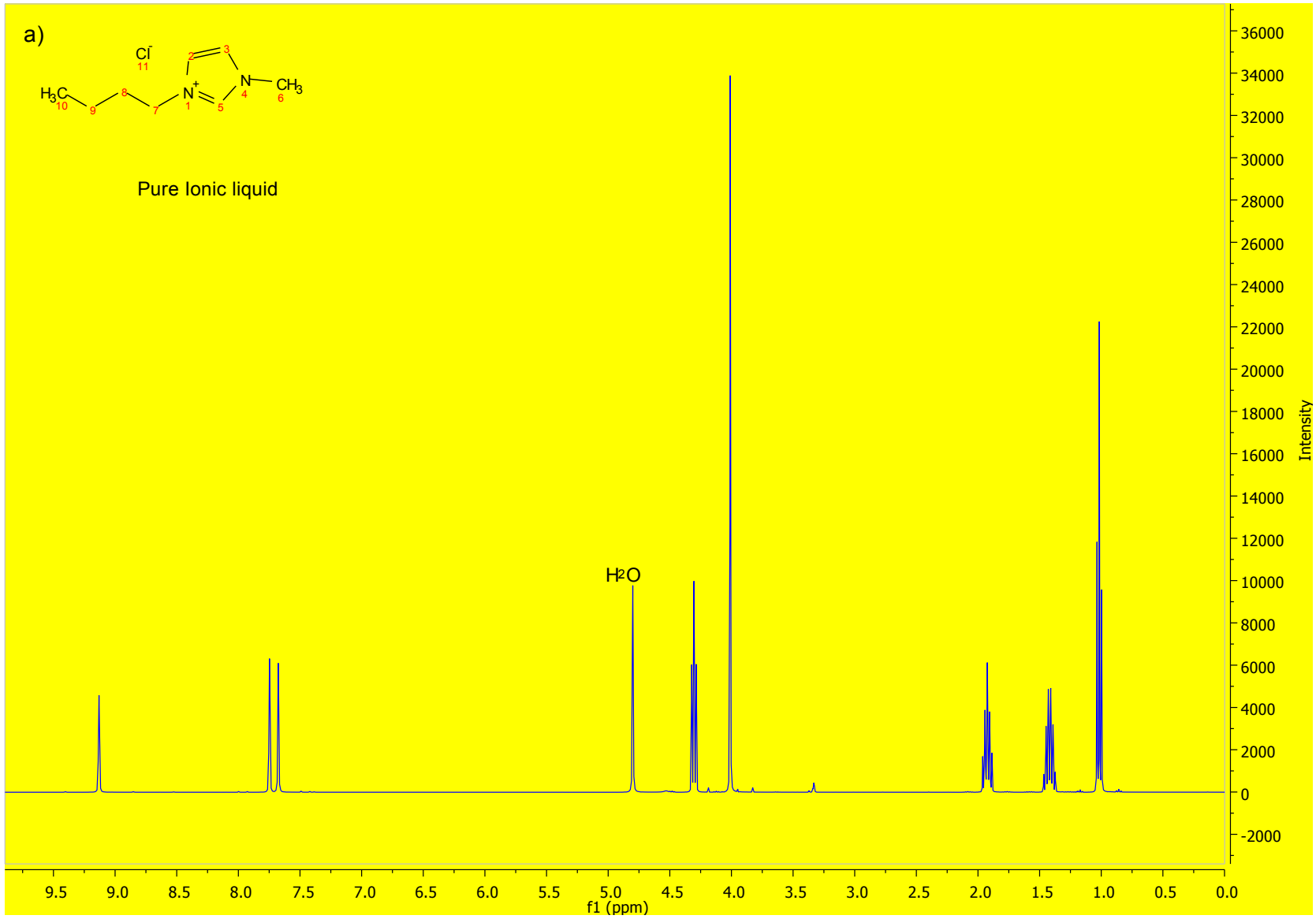
S2 ^1H NMR spectra a) pure ionic liquid; b) extracted ether-phase after reaction; c) ionic liquid phase after reaction

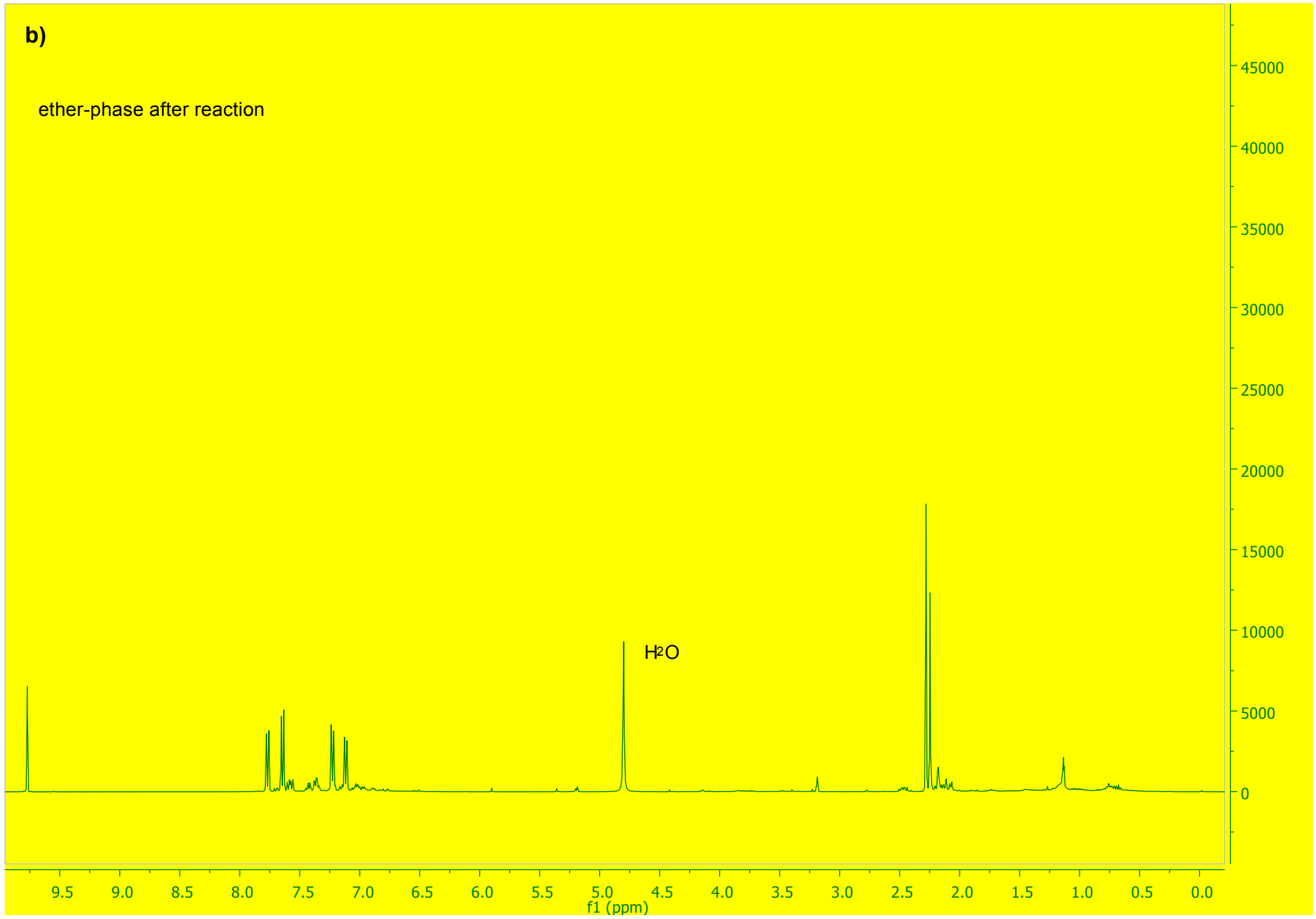
S3 Comparison of ^1H NMR spectra of the pure ionic liquid and extracted ether-phase after reaction

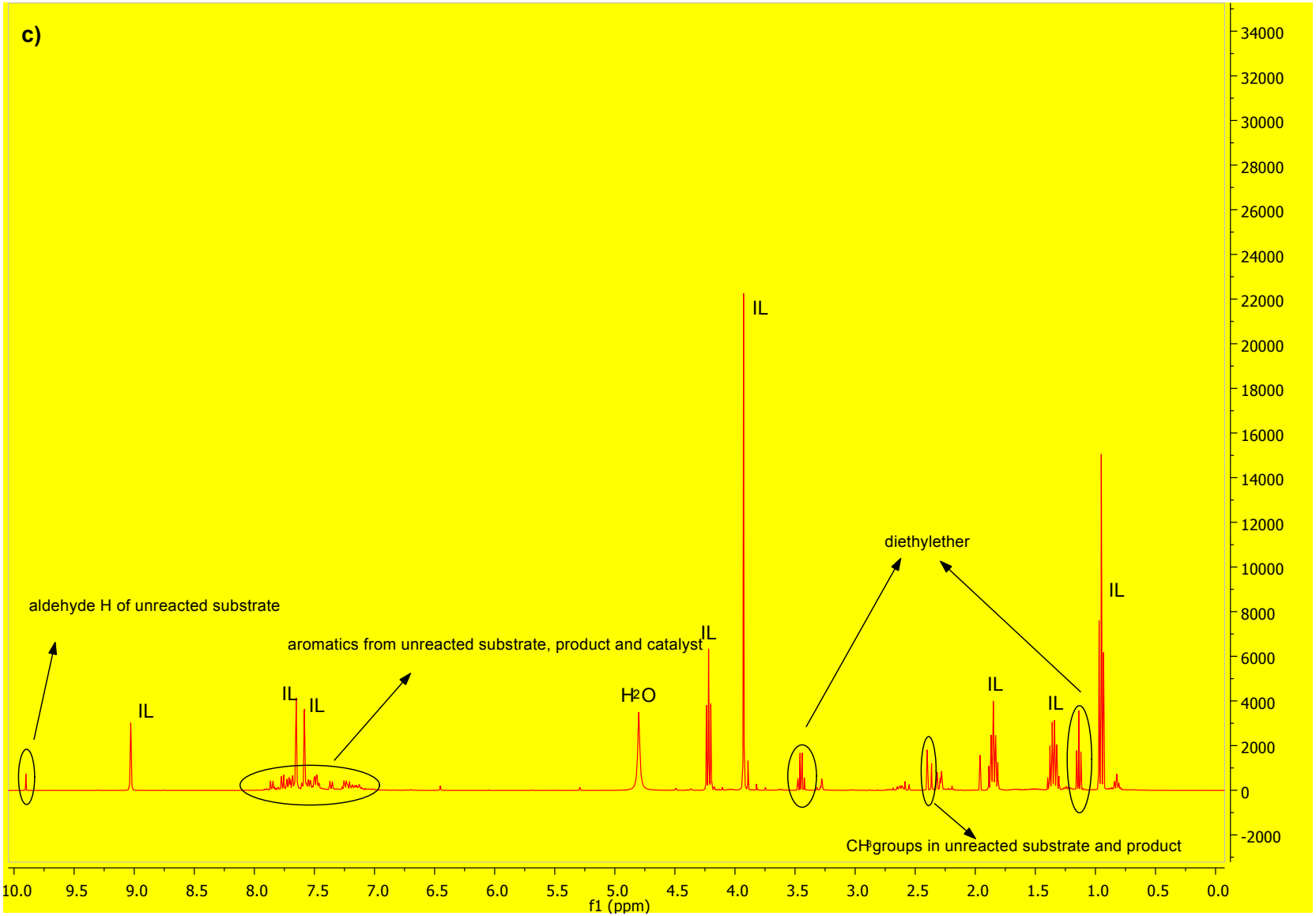
S4 Comparison of ^1H NMR spectra of pure ionic liquid and extracted ionic liquid phase after reaction



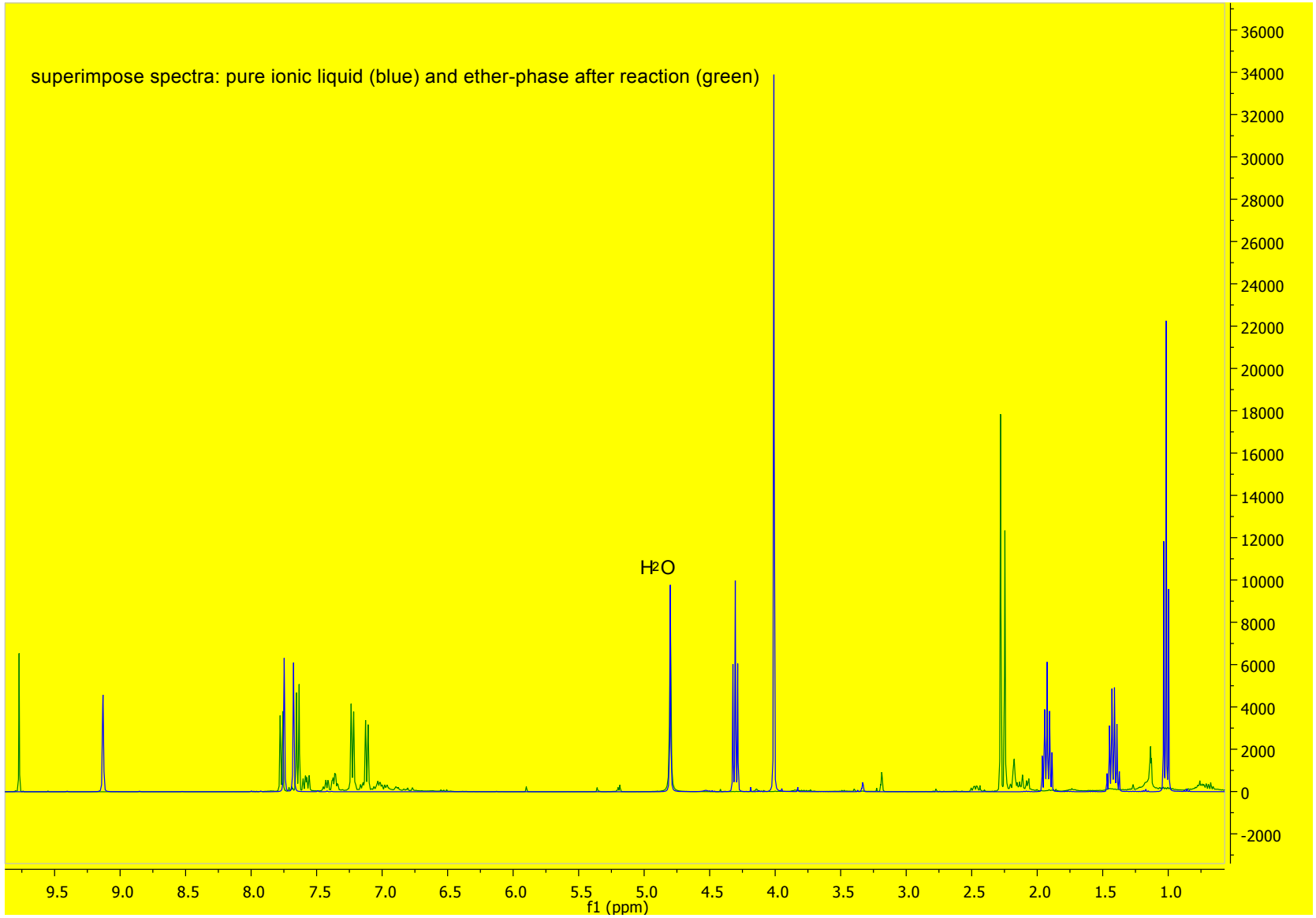
S1. TGA profiles for a) [EMIm]Cl, b) [BMIm]Cl, c) [OMIm]Cl, d) [EMIm]OAc, e) [BMIm]OAc and f) $[Rh(dppp)_2]Cl$. Heating rate of 10 °C/min from room temperature to 600 °C.


a)
Cl-
11
2
3
N
4
CH3
6
H3C
10
9
8
7
N+
1
5
Pure Ionic liquid
H2O
36000
34000
32000
30000
28000
26000
24000
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
-2000
Intensity
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
f1 (ppm)

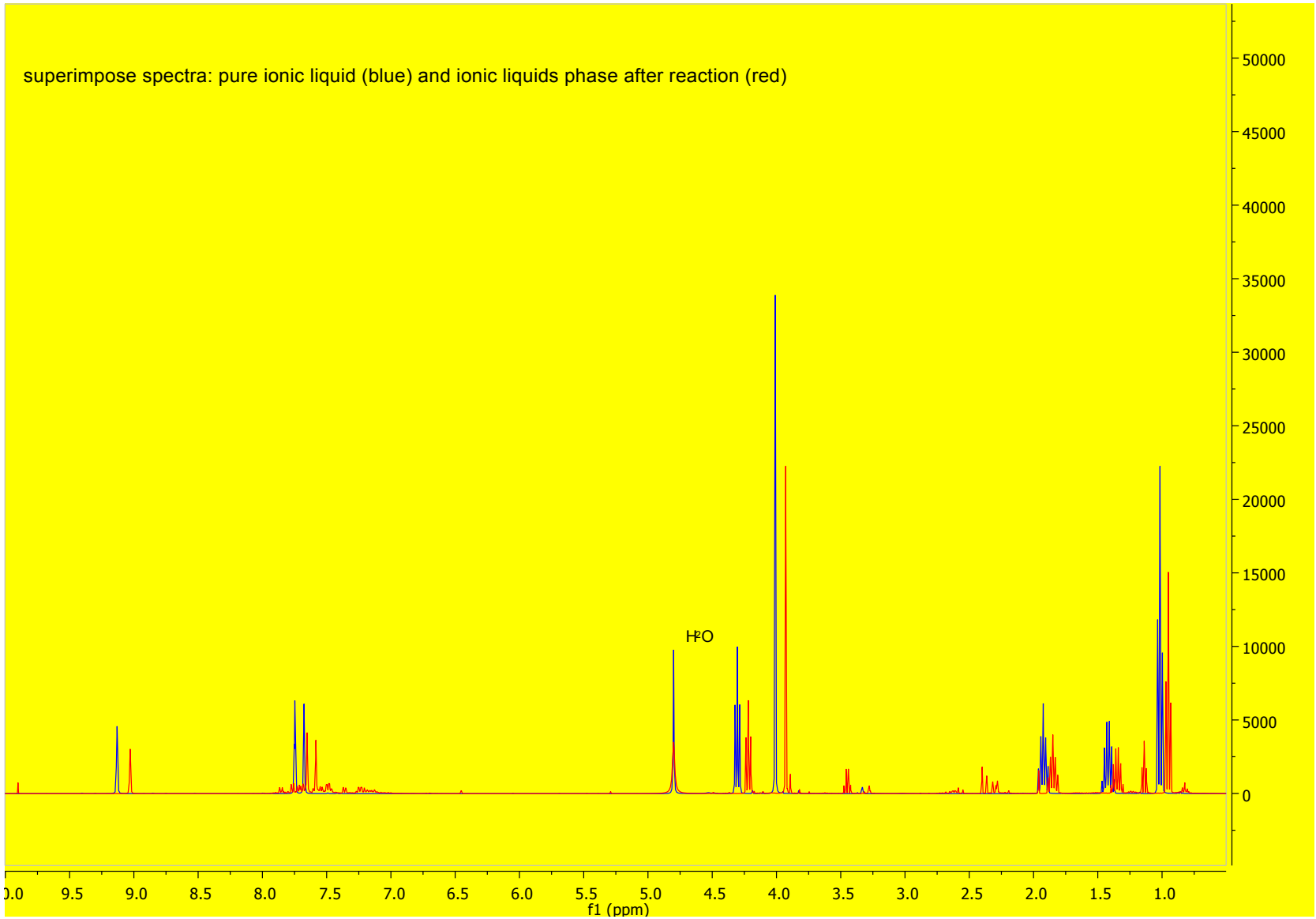

b)
ether-phase after reaction
H2O
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
f1 (ppm)



S2 ^{1}H NMR spectra a) pure ionic liquid; b) extracted ether-phase after reaction; c) ionic liquid phase after reaction


superimpose spectra: pure ionic liquid (blue) and ether-phase after reaction (green)
H2O
36000
34000
32000
30000
28000
26000
24000
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
-2000
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
f1 (ppm)

S3 Comparison of ^{1}H NMR spectra of the pure ionic liquid and extracted ether-phase after reaction



S4 comparison of ^{1}H NMR spectra of pure ionic liquid and extracted ionic liquid phase after reaction