PET depolymerisation in supercritical ethanol catalysed by [Bmim][BF_4]

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Electronic Supplementary Information (ESI)

1. *Figure S1*

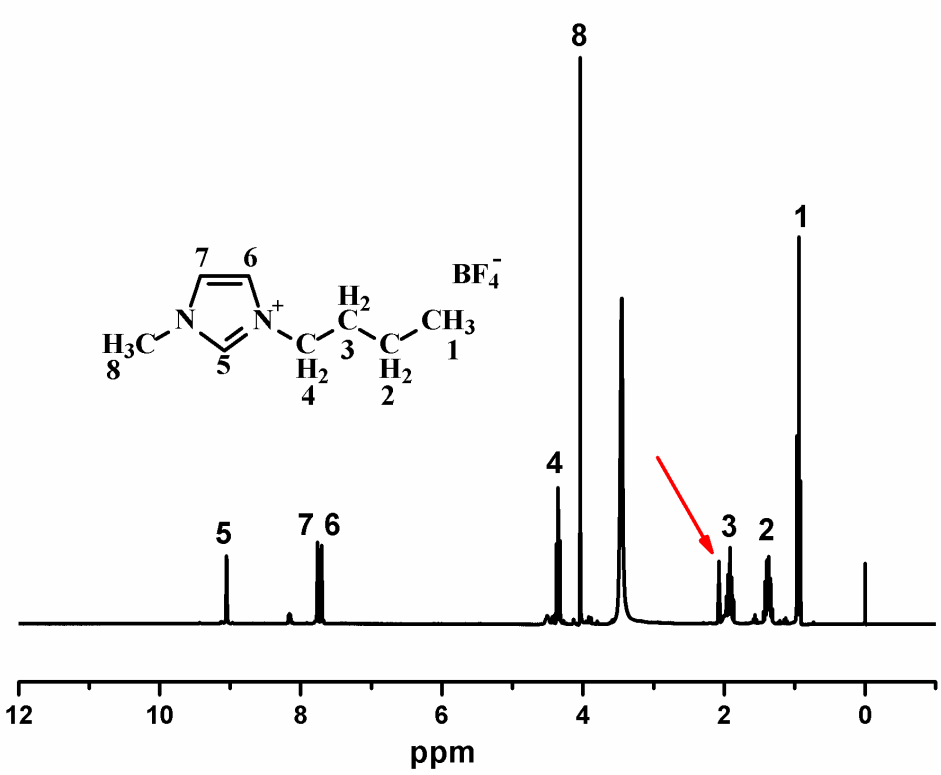

Figure S1 - ^{1}H NMR spectra of recovering of the ionic liquid after the depolymerisation reaction, (run 8).

The ^{1}H NMR spectrum of [Bmim][BF_4] recovered after the depolymerisation reaction (run 8) shows that there were no changes in [Bmim] [BF_4] after be exposed to conditions of run 8. This indicates that ionic liquid remains stable and it is not decomposed during the reaction. The peak at δ = 2.07 ppm in Figure S1 indicated presence of small amount of DET in the recovered LI.

2. Figure S2

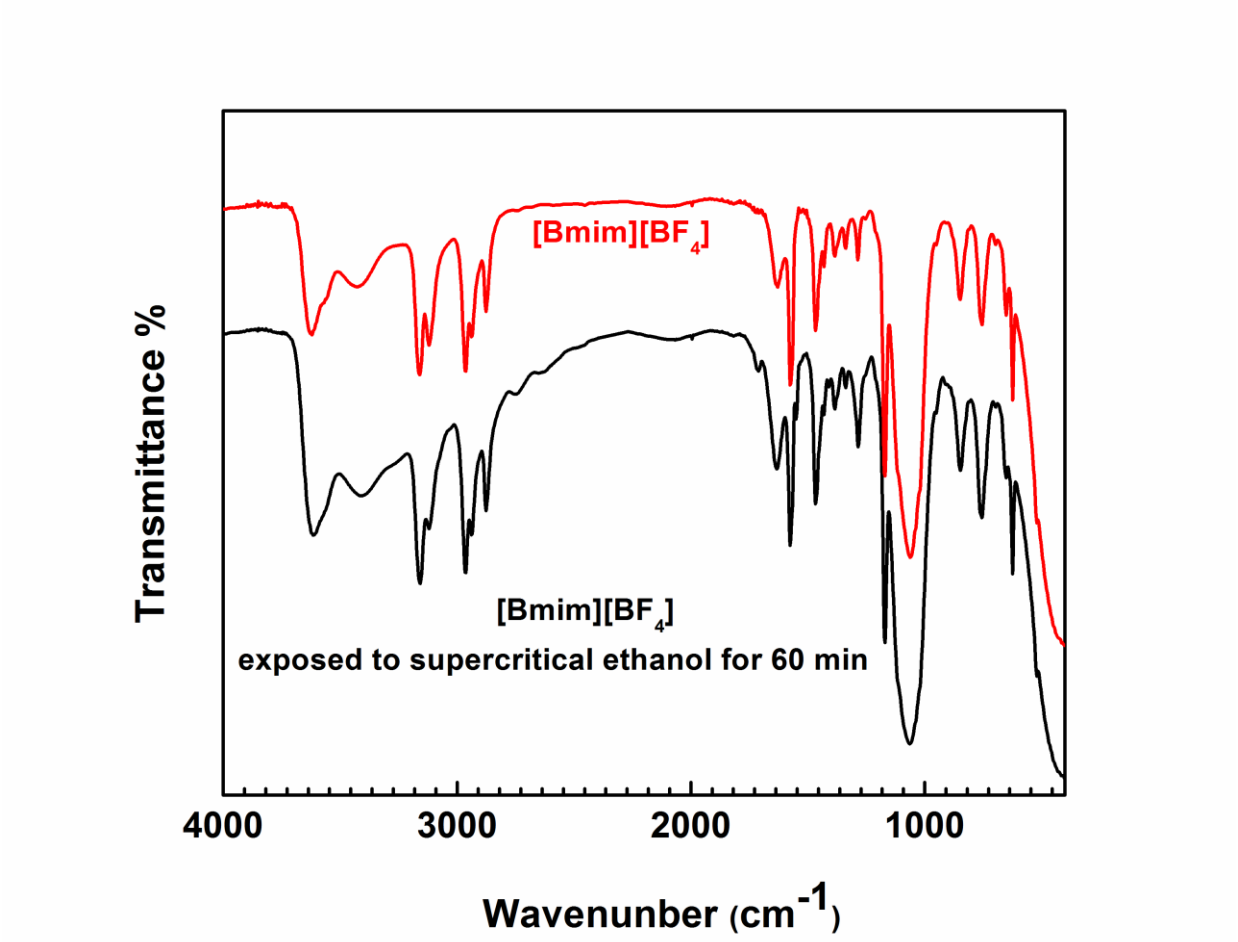

Figure S2 - FTIR spectra to ionic liquid [Bmim][BF_4] in the EtOH room temperature (RT) and exposed to supercritical ethanol (EtOHsc) after 60 min.

3. Figure S3

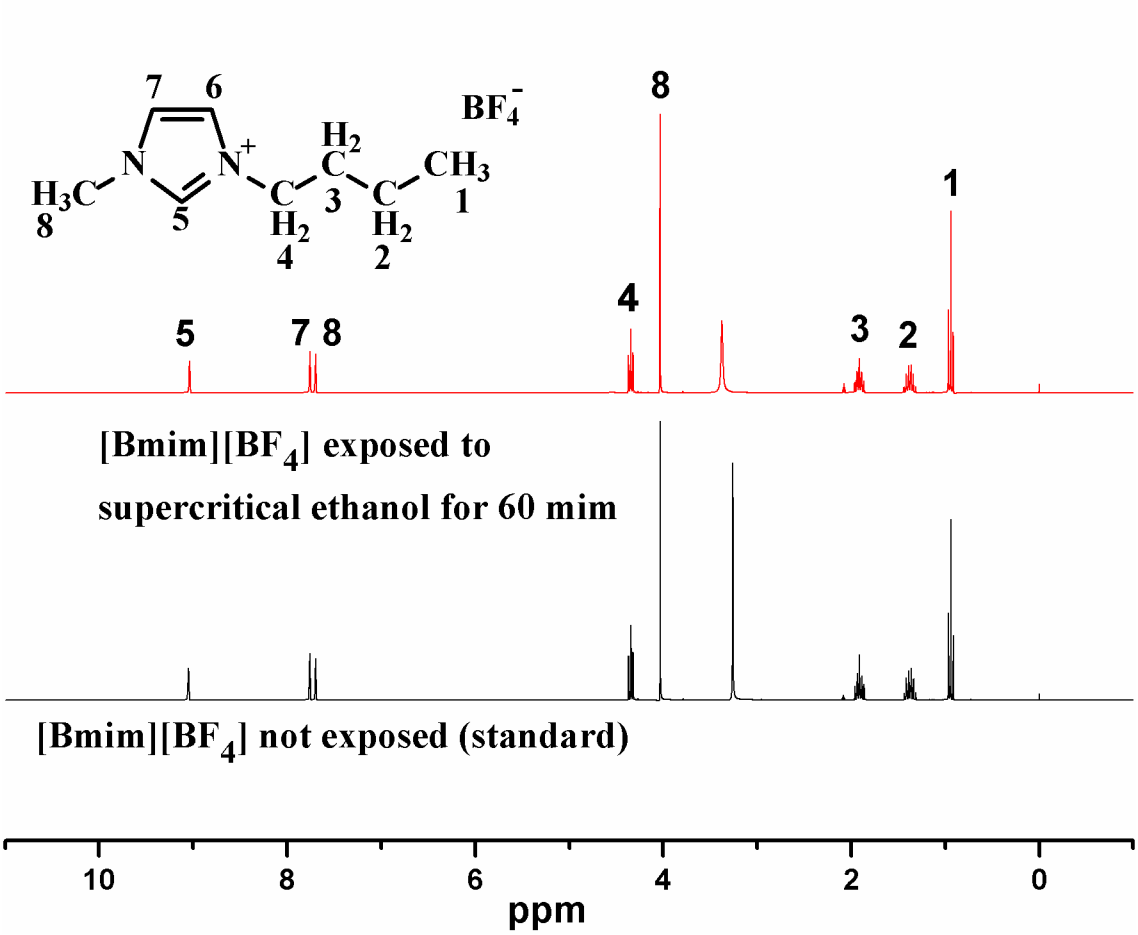

Figure S3 - ^{1}H NMR spectra of ionic liquid [Bmim][BF_4] exposed to supercritical ethanol for 60 min and [Bmim][BF_4] not exposed.

Figure S2 and S3 show, respectively, the FTIR and ^{1}H NMR spectra of [Bmim][BF_4] obtained before and after the ionic liquid (IL) be exposed to 115 atm and 255 ^{o}C for 60 min (but not in presence of PET). These spectra help the analysis of the stability of [Bmim][BF_4] under supercritical ethanol (scEtOH) used for PET depolymerisation. Figures S2 and S3 indicated that [Bmim][BF_4] was chemically stable when exposed to these T and P conditions for 60 min. Thus, no changes were observed in the [Bmim][BF_4] demonstrating that the LI actuates as catalyst in the PET depolymerisation under scEtOH. Joining to Fig. S1 it can be pointed out that the [Bmim][BF_4] can be recovered and reused in a further PET depolymerisation reaction.