Supporting Information

Understanding the Interaction of Boric Acid and CO_2 with Ionic Liquids in Aqueous Medium by Multinuclear NMR Spectroscopy

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Number of pages 12

Number of figures 19

Number of tables 0

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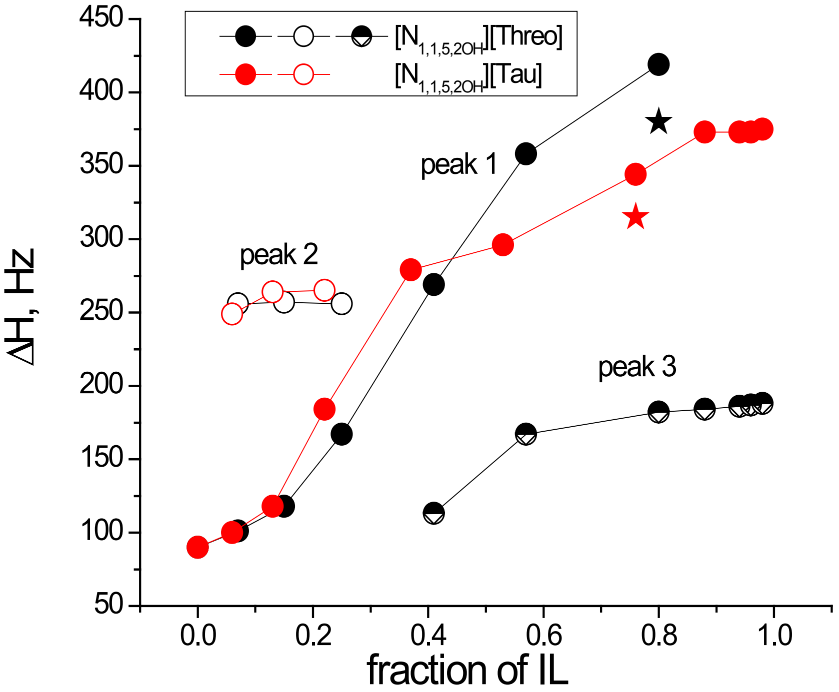

Fig. S1. [11]B NMR chemical shifts of BA, aqueous solution of mixtures of $[N_{1,1,5,2OH}]$[Threo]/ BA and $[N_{1,1,5,2OH}]$[Tau]/ BA, and of the same mixture after the CO_2 capture (stars) experiment.

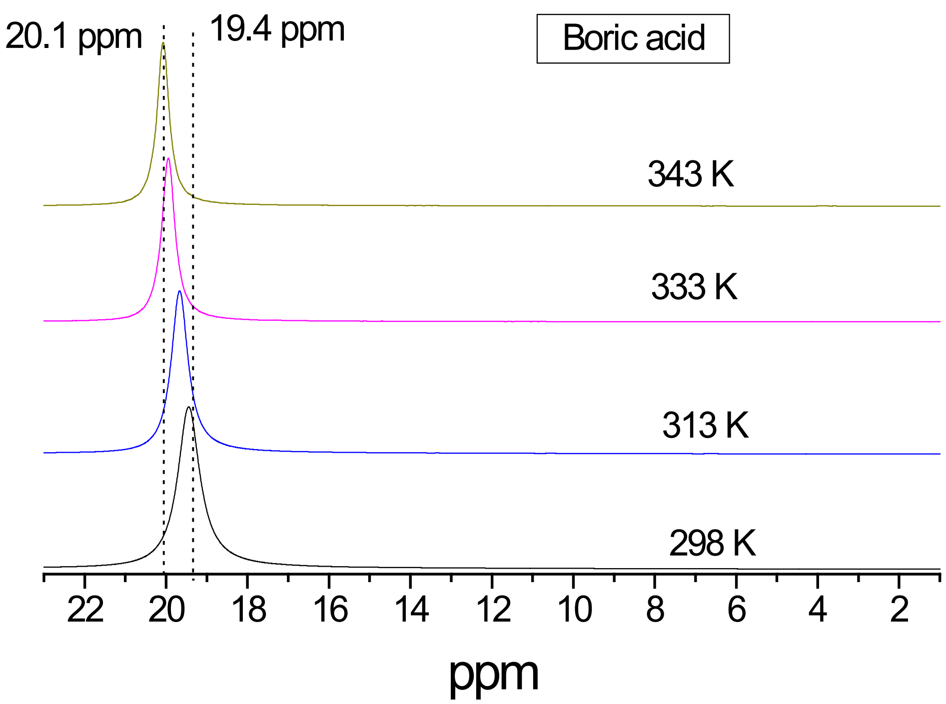

Fig. S2. [11]B NMR spectra of an aqueous solution of BA (3 mg/ml) in the temperature range 298 – 343 K.

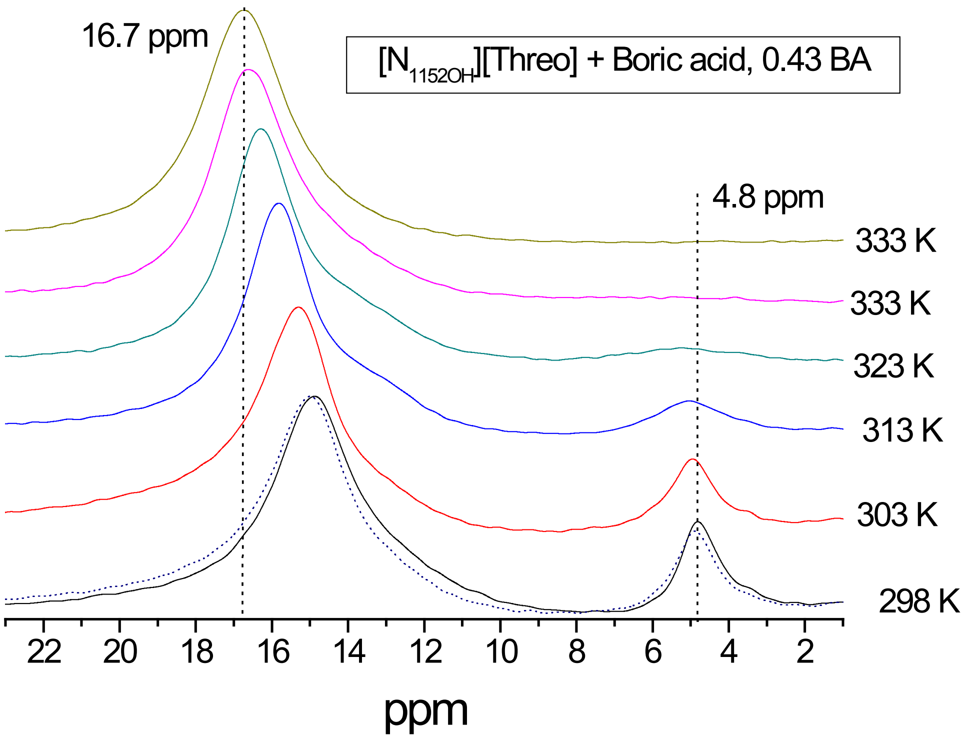

Fig. S3. [11]B NMR spectra of an aqueous solution of [$N_{1,1,4,2OH}$][Threo]/BA mixture (0.57 IL) (0.01 g/ml of IL) in the temperature range 298 – 343 K.

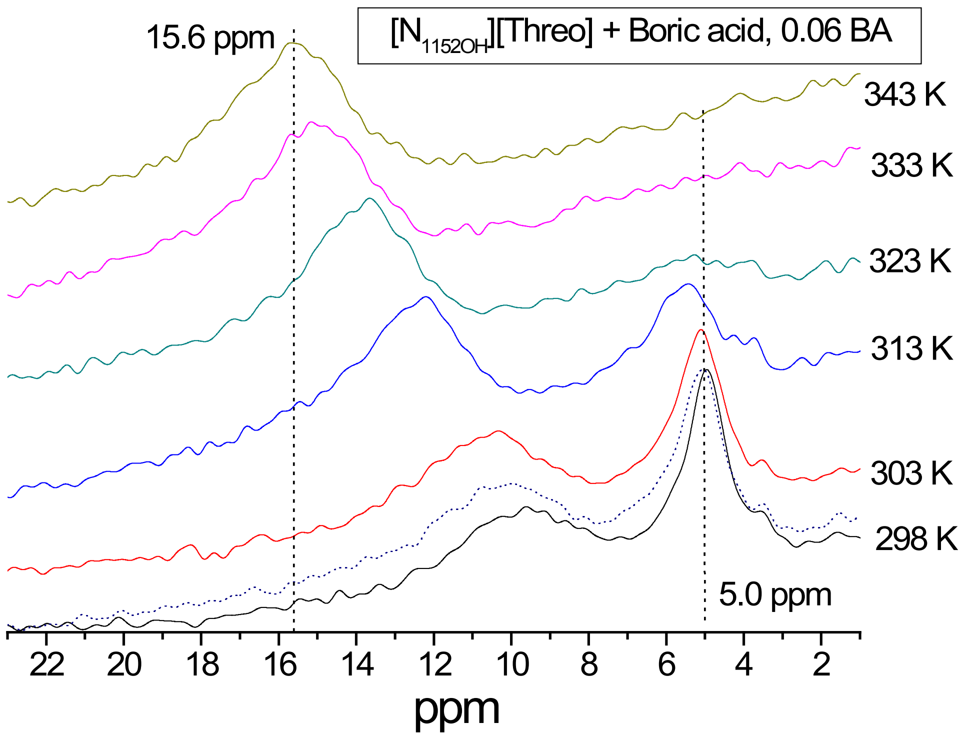

Fig. S4. [11]B NMR spectra of an aqueous solution of [$N_{1,1,4,2OH}$][Threo]/BA mixture (0.94 IL) (0.01 g/ml of IL) in the temperature range 298 – 343 K.

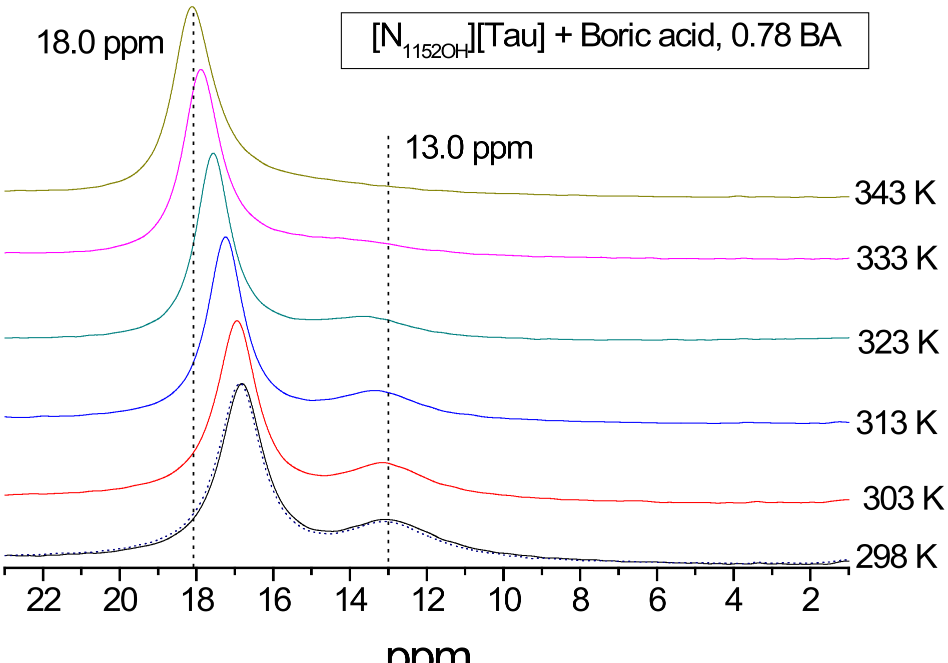

Fig. S5. ^{11}B NMR spectra of an aqueous solution of [$N_{1,1,4,2OH}$][Tau]/BA mixture (0.22 IL) (0.01 g/ml of IL) in the temperature range 298 – 343 K.

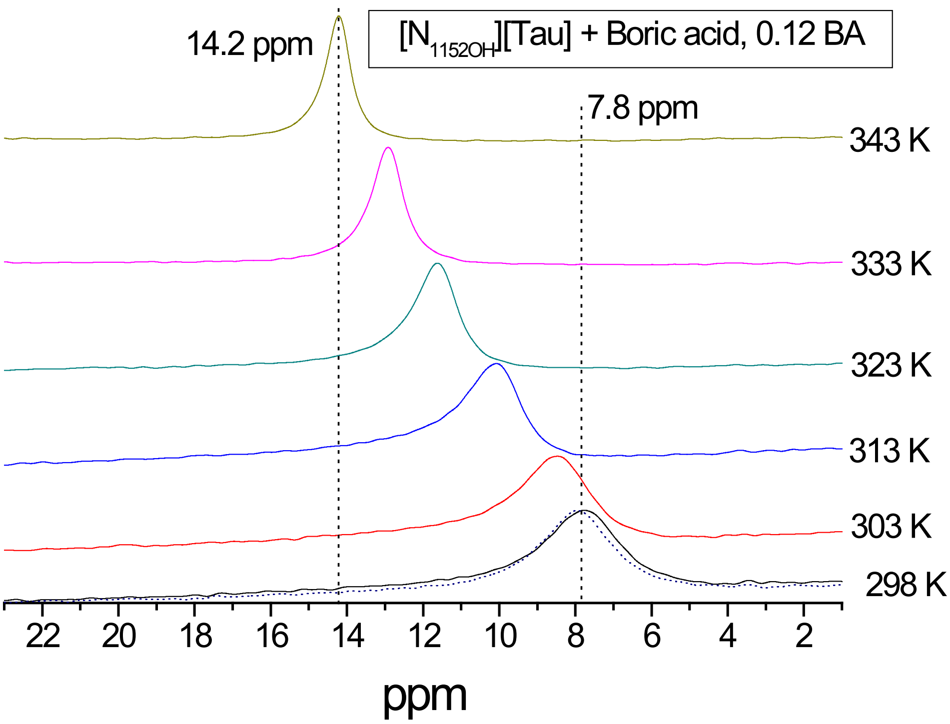

Fig. S6. ^{11}B NMR spectra of an aqueous solution of [$N_{1,1,4,2OH}$][Tau]/BA mixture (0.88 IL) (0.01 g/ml of IL) in the temperature range 298 – 343 K.

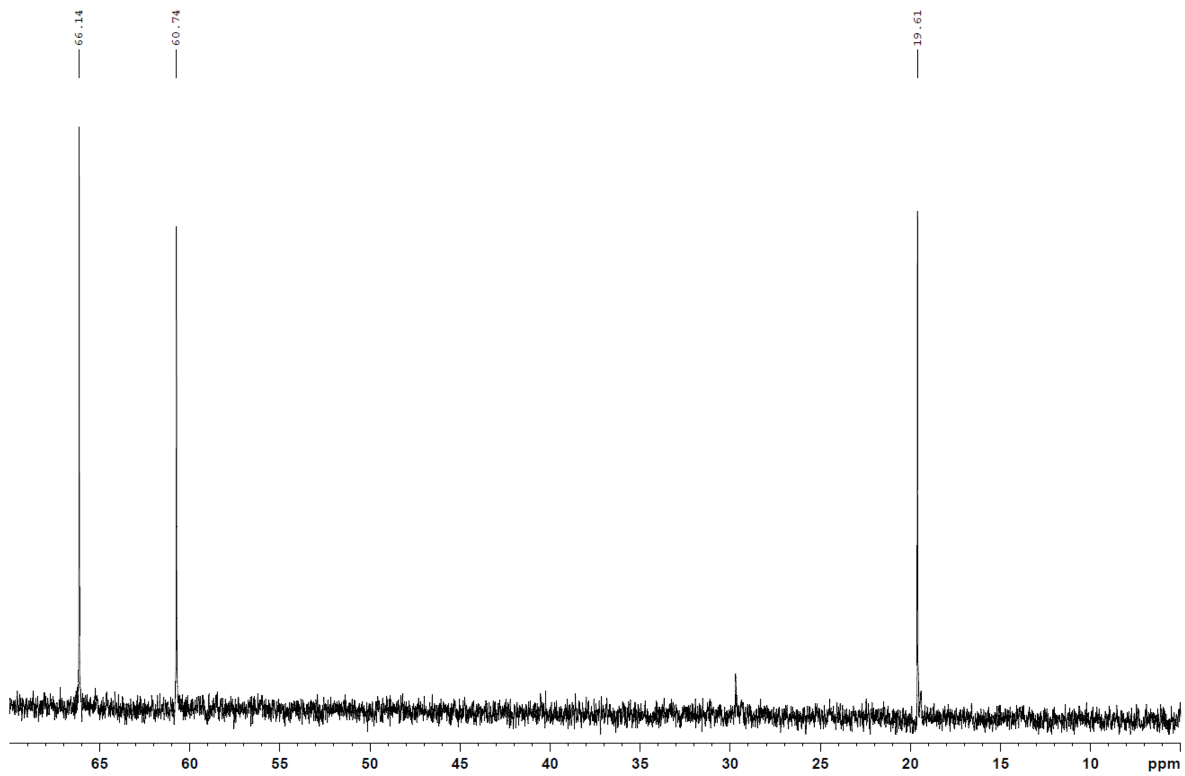

Fig. S7. 100.64 MHz ^{13}C NMR of an aqueous solution of threonine.

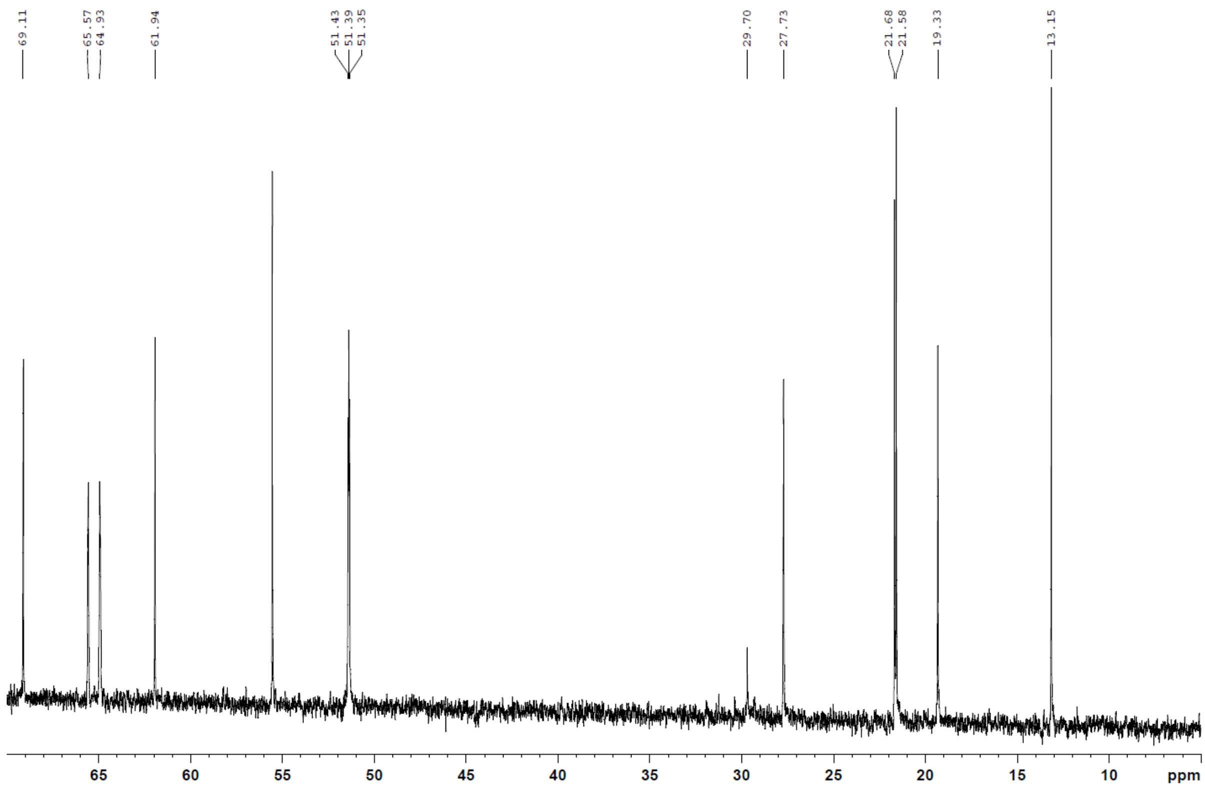

Fig. S8. 100.64 MHz ^{13}C NMR of an aqueous solution of [$N_{1,1,4,2OH}$][Threo].

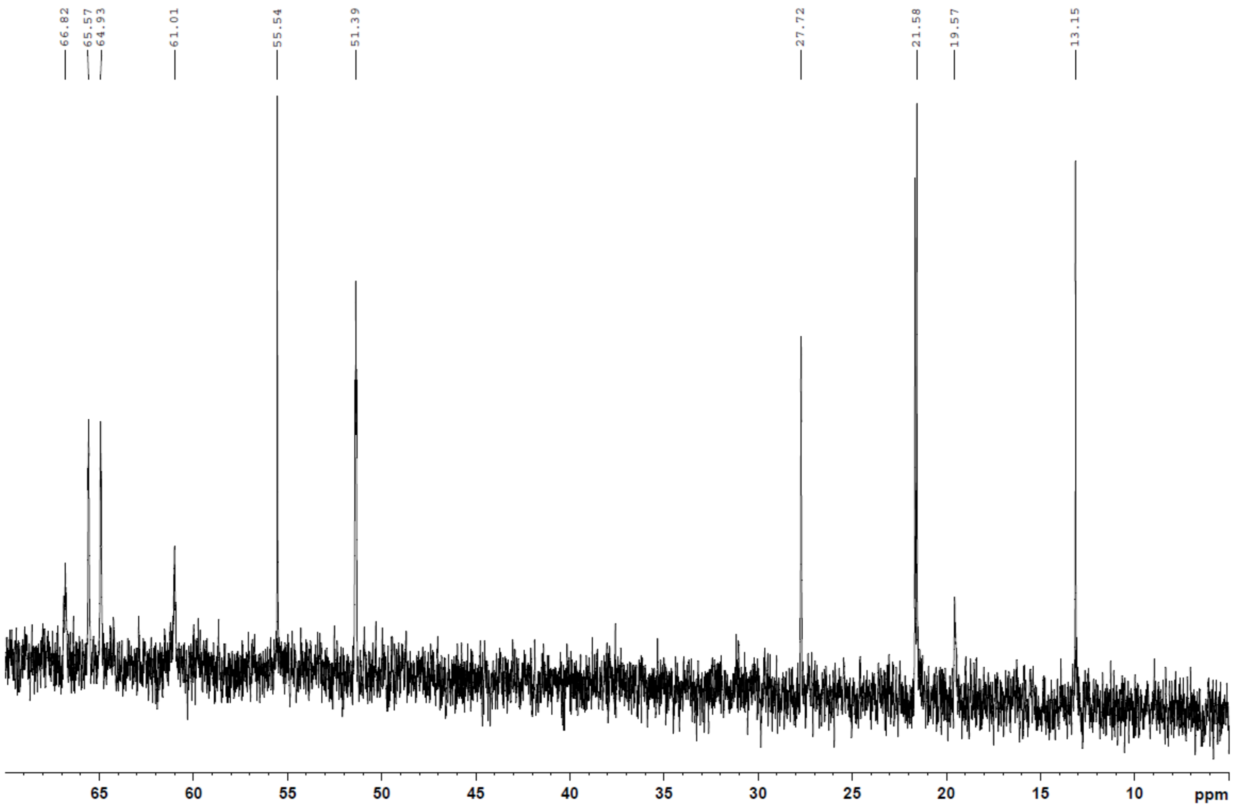

Fig. S9. 100.64 MHz ^{13}C NMR of an aqueous solution of $[N_{1,1,4,2OH}]$[Threo]/BA mixture (0.25 molar fraction of IL).

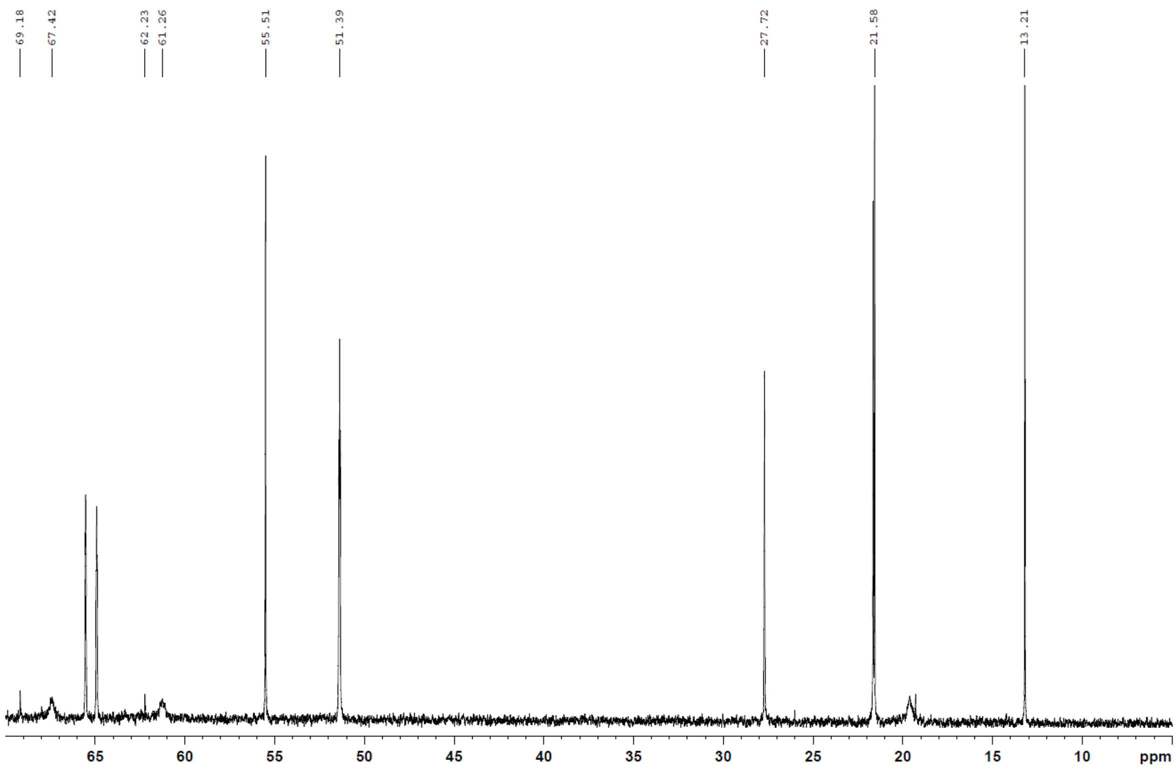

Fig. S10. 100.64 MHz ^{13}C NMR of an aqueous solution of $[N_{1,1,4,2OH}]$[Threo]/BA mixture (0.53 molar fraction of IL).

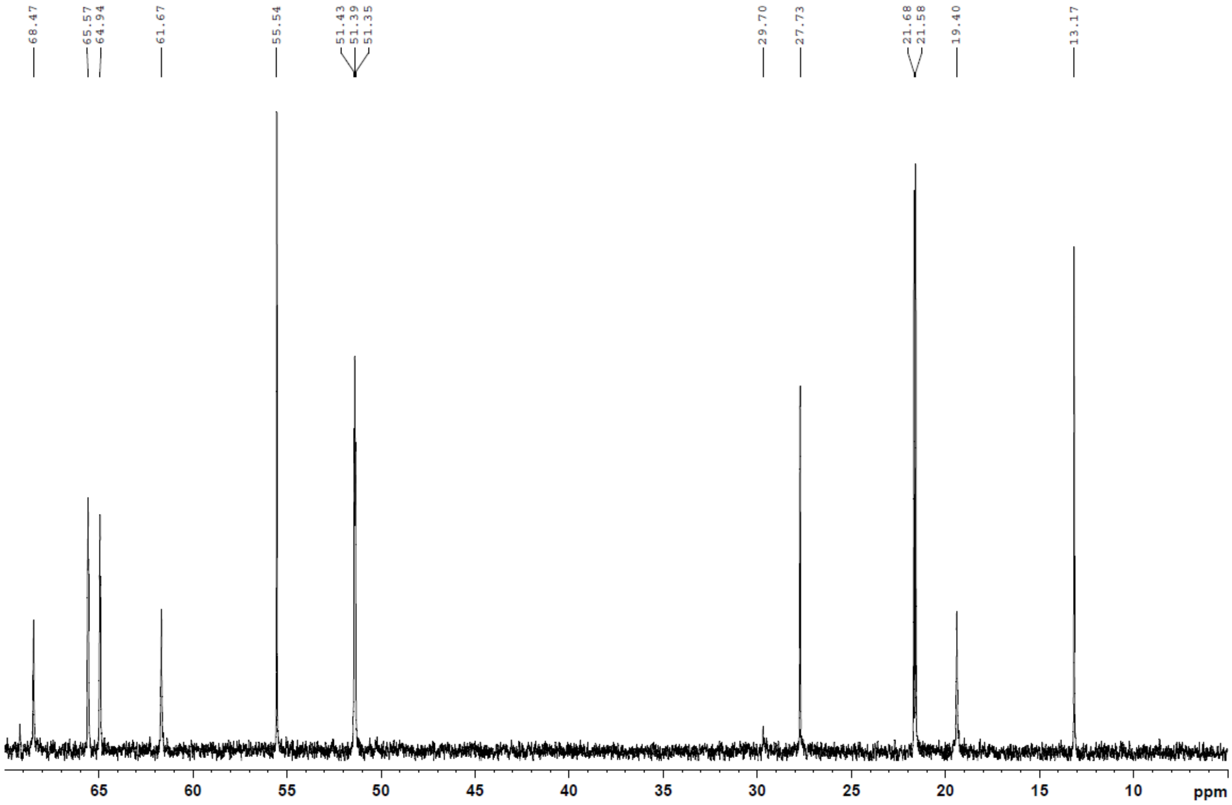

Fig. S11. 100.64 MHz ^{13}C NMR of an aqueous solution of [$N_{1,1,4,2OH}$][Threo]/BA mixture (0.8 molar fraction of IL).

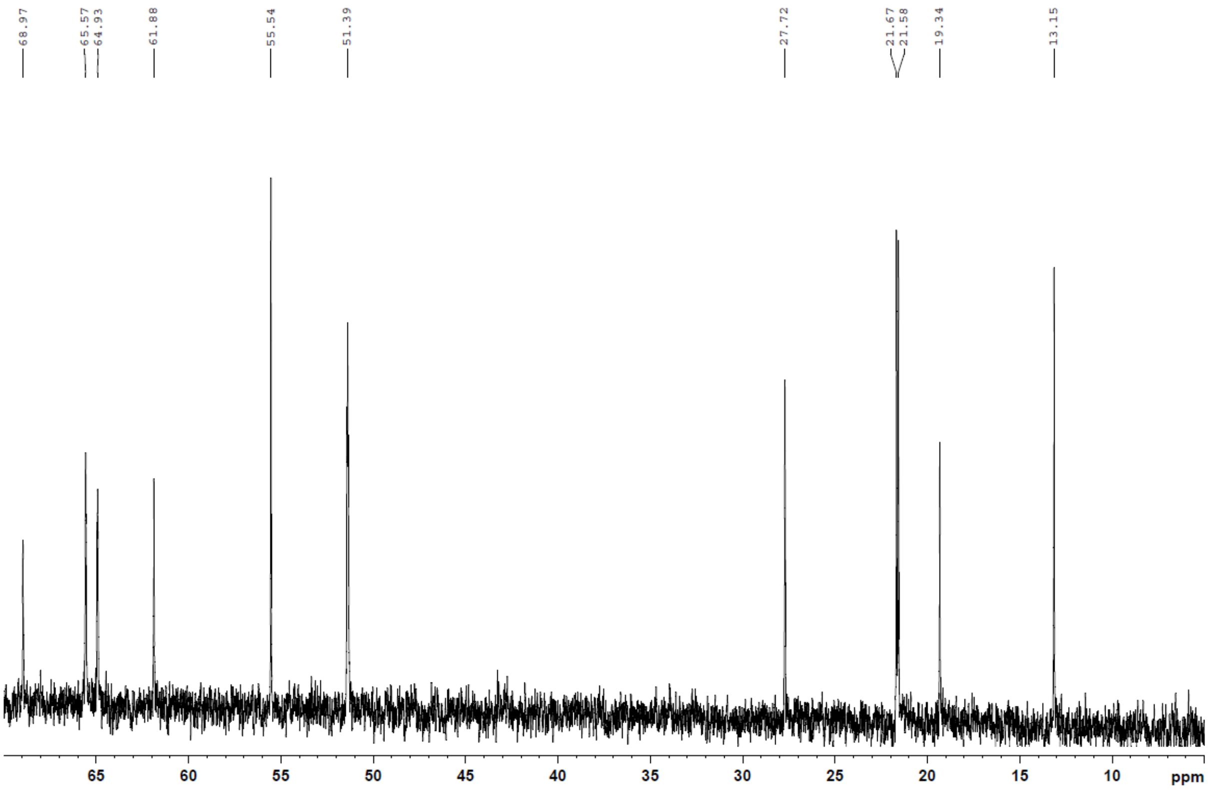

Fig. S12. 100.64 MHz ^{13}C NMR of an aqueous solution of [$N_{1,1,4,2OH}$][Threo]/BA mixture (0.94 molar fraction of IL).

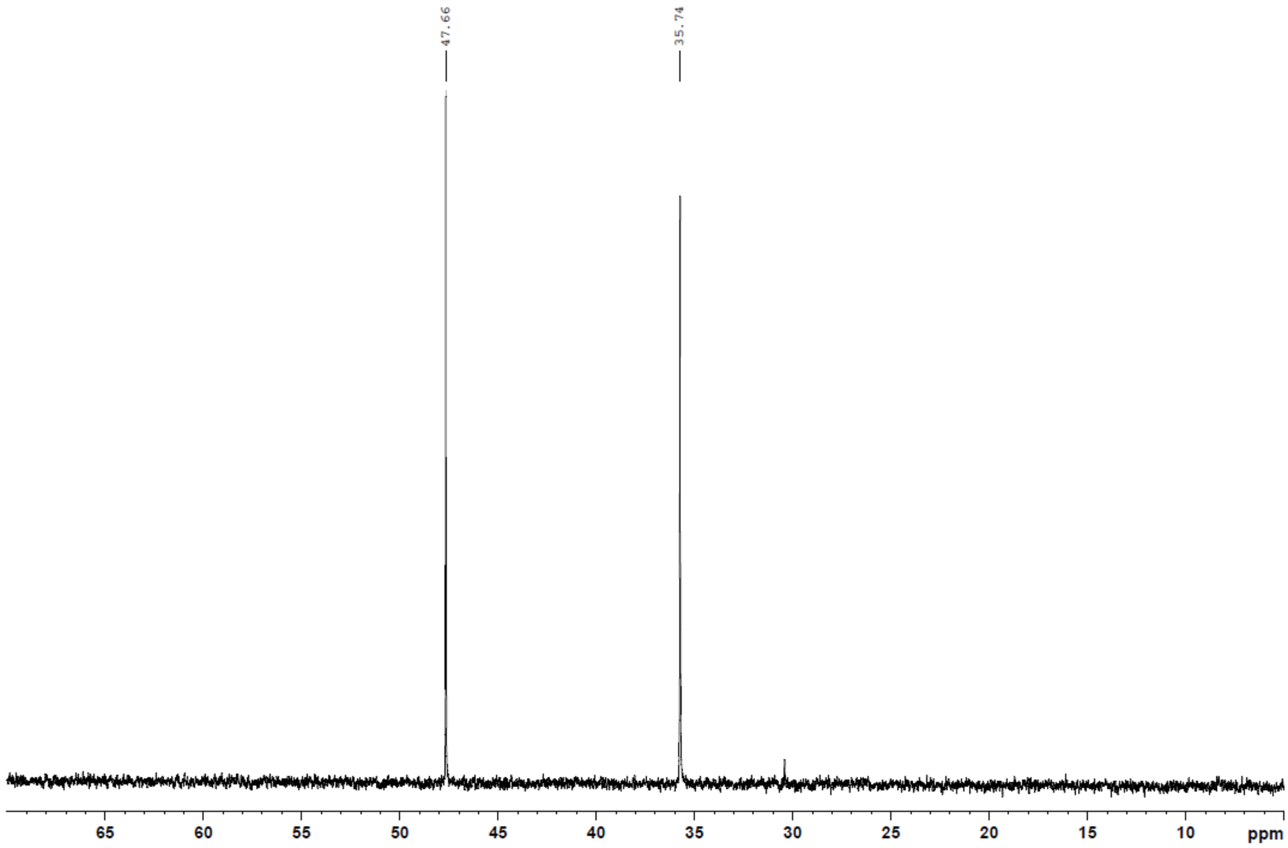

Fig. S13. 100.64 MHz ^{13}C NMR of an aqueous solution of taurine.

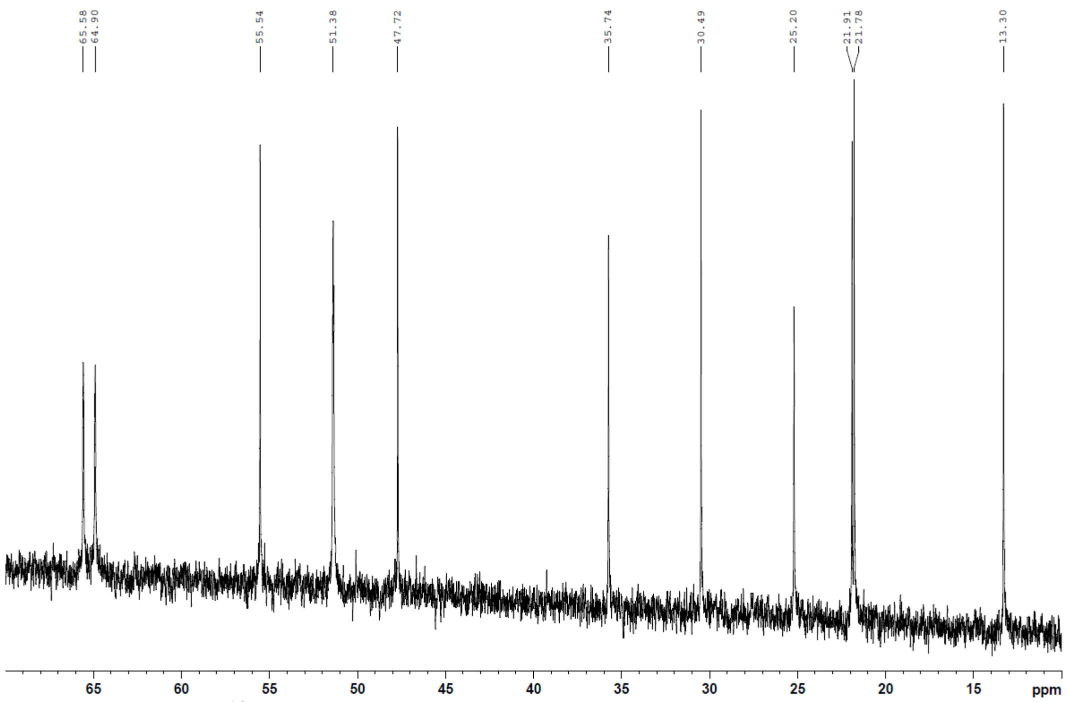

Fig. S14. 100.64 MHz ^{13}C NMR of an aqueous solution of $[N_{1,1,4,2OH}]$[Tau]/BA mixture (0.06 molar fraction of IL).

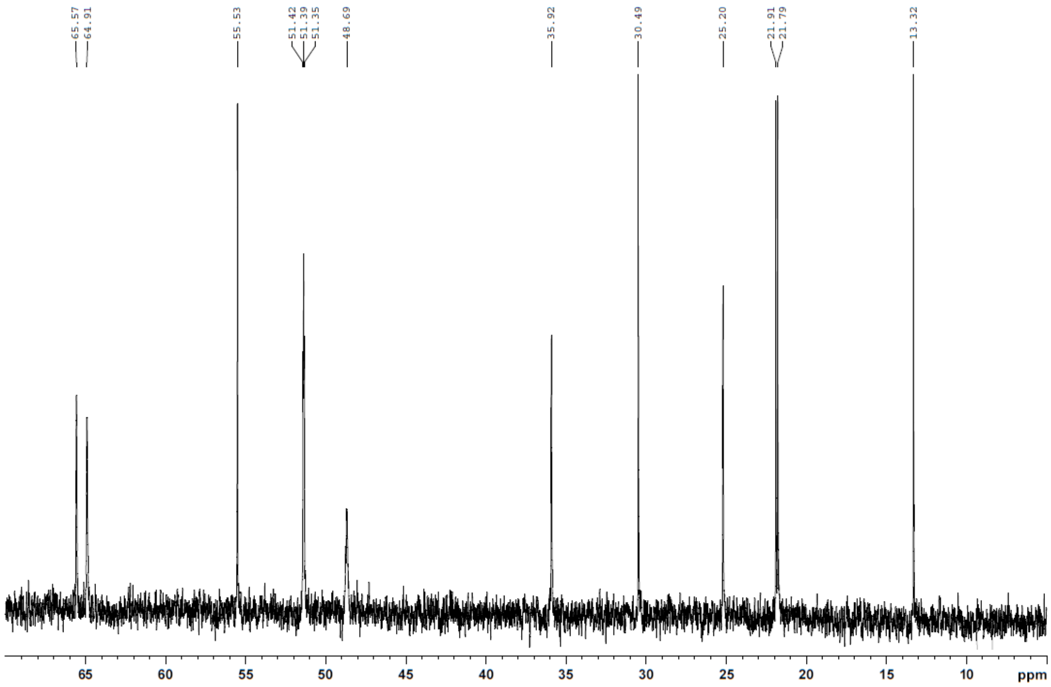

Fig. S15. 100.64 MHz ^{13}C NMR of an aqueous solution of $[N_{1,1,4,2OH}]$[Tau]/BA mixture (0.22 molar fraction of IL).

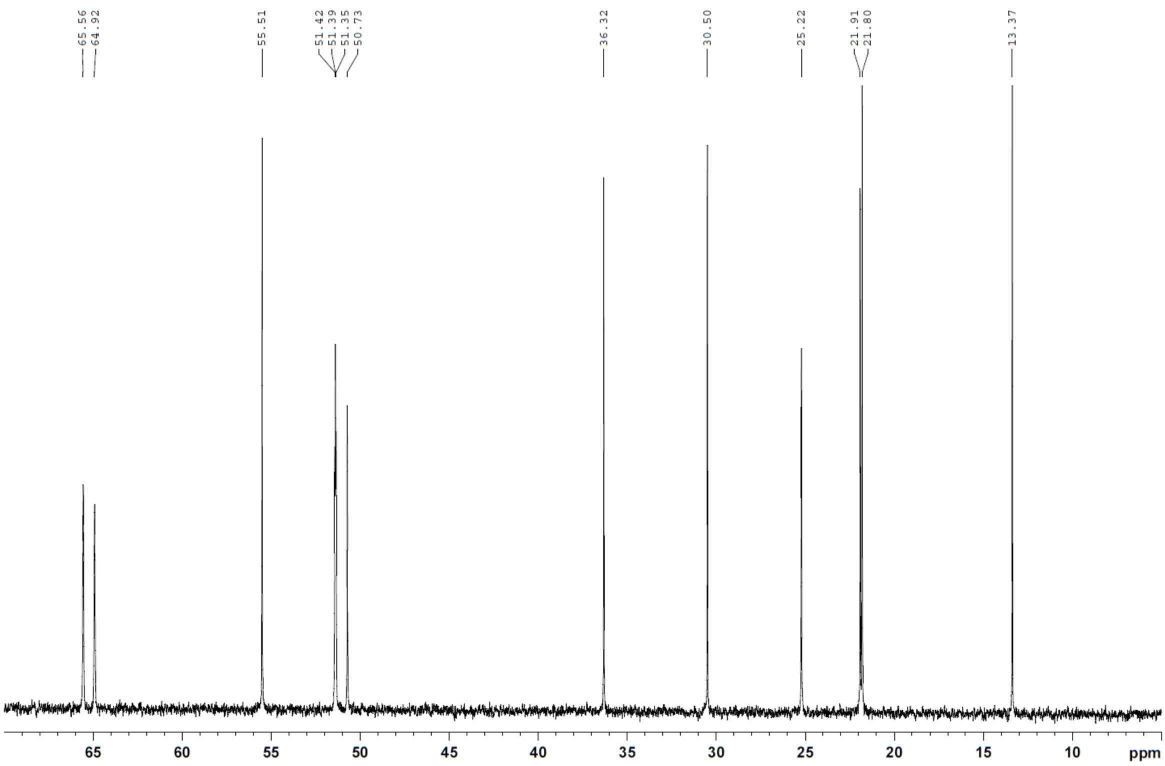

Fig. S16. 100.64 MHz ^{13}C NMR of an aqueous solution of $[N_{1,1,4,2OH}]$[Tau]/BA mixture (0.53 molar fraction of IL).

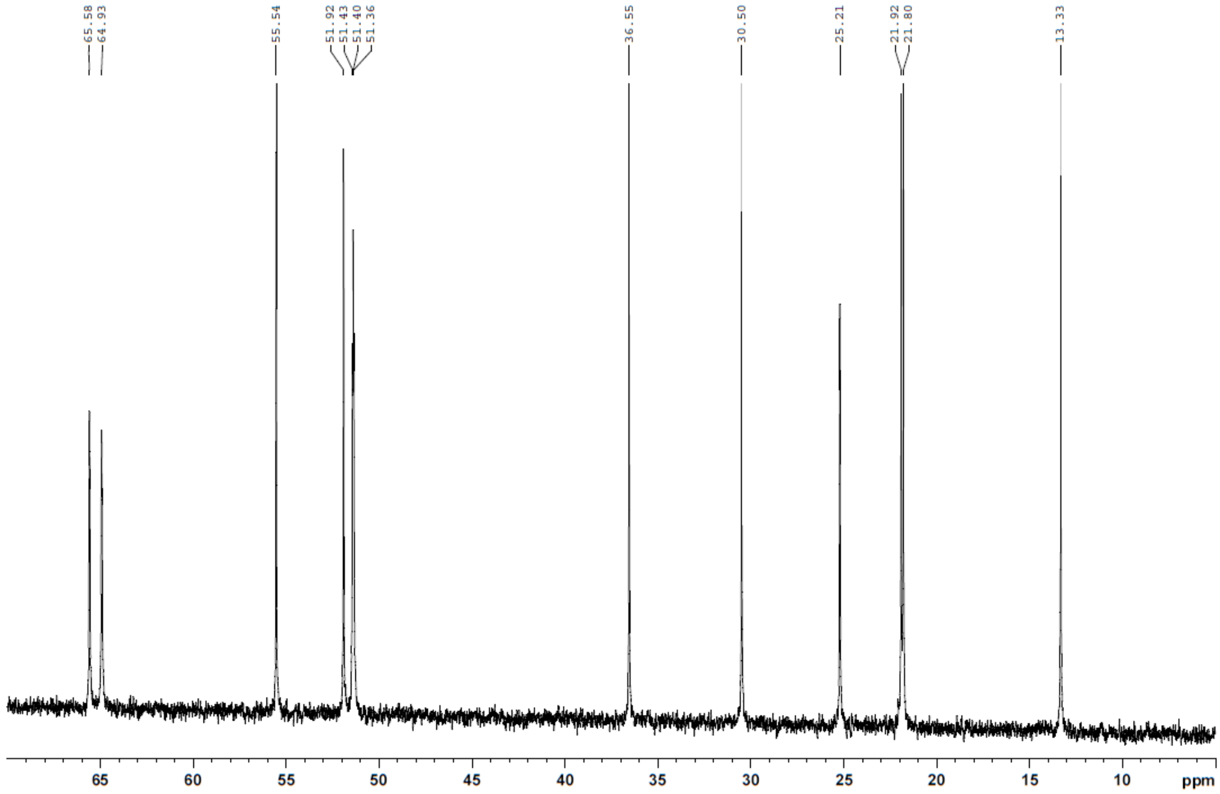

Fig. S17. 100.64 MHz ^{13}C NMR of an aqueous solution of $[N_{1,1,4,2OH}]$[Tau]/BA mixture (0.76 molar fraction of IL).

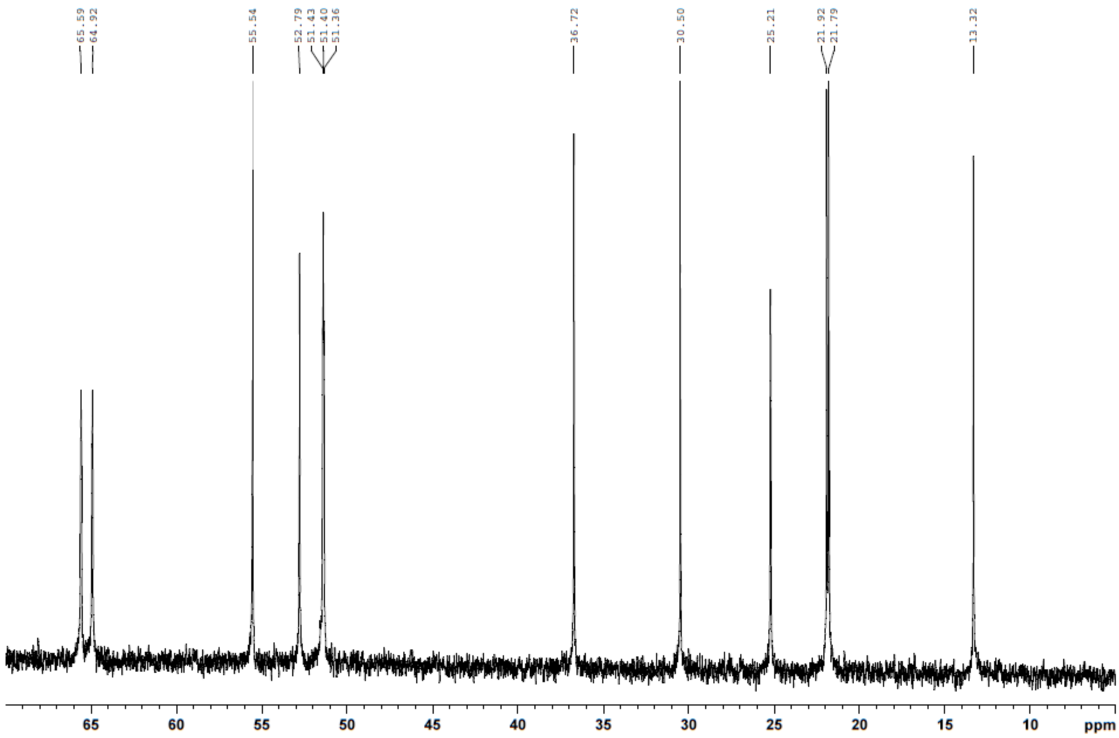

Fig. S18. 100.64 MHz ^{13}C NMR of an aqueous solution of $[N_{1,1,4,2OH}]$[Tau]/BA mixture (0.94 molar fraction of IL).

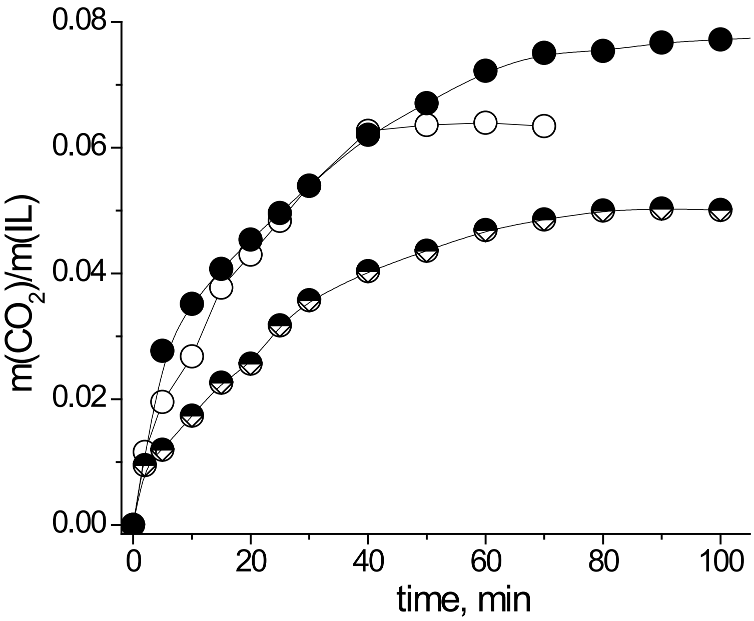

Fig. S19. CO_2 absorption kinetics for $[N_{1,1,4,2OH}]$[Threo] – water mixtures (50/50 wt%). Solid symbols indicate the sample without boric acid, open symbols correspond to 8.5 wt.% of boric acid and half-filled symbols correspond to 9.7 wt.% (limit of saturation) of boric acid relative to the mass of ionic liquid. The absorption experiment was performed at room temperature by purging the CO_2 gas through the needle with a tip placed at the bottom of the tube. The flow rate was about 1.5 ml/min at 1 bar pressure. Weight of the sample was determined gravimetrically using a Mettler Toledo analytical balance (0.1 mg accuracy).