

(Supporting Information)

Effect of Anion in Carboxylate-Based Ionic Liquids on Catalytic Activity of Transesterification with Vinyl Esters and the Solubility of Cellulose

Daisuke Hirose,^a Samuel Budi Wardhana Kusuma,^a Shuhei Nomura,^a Makoto Yamaguchi,^a
Yoshiro Yasaka,^a Ryohei Kakuchi^b and Kenji Takahashi^{*a}

^a*Graduate School of Natural Science and Technology, Kanazawa University, Kakuma-machi, Kanazawa 920-1192, Japan,* ^b*Division of Molecular Science, Graduate School and Technology, Gunma University, 1-5-1 Tenjin-cho, Kiryu 376-8515, Gunma, Japan*

*To whom correspondence should be addressed. E-mail: ktkenji@staff.kanazawa-u.ac.jp.

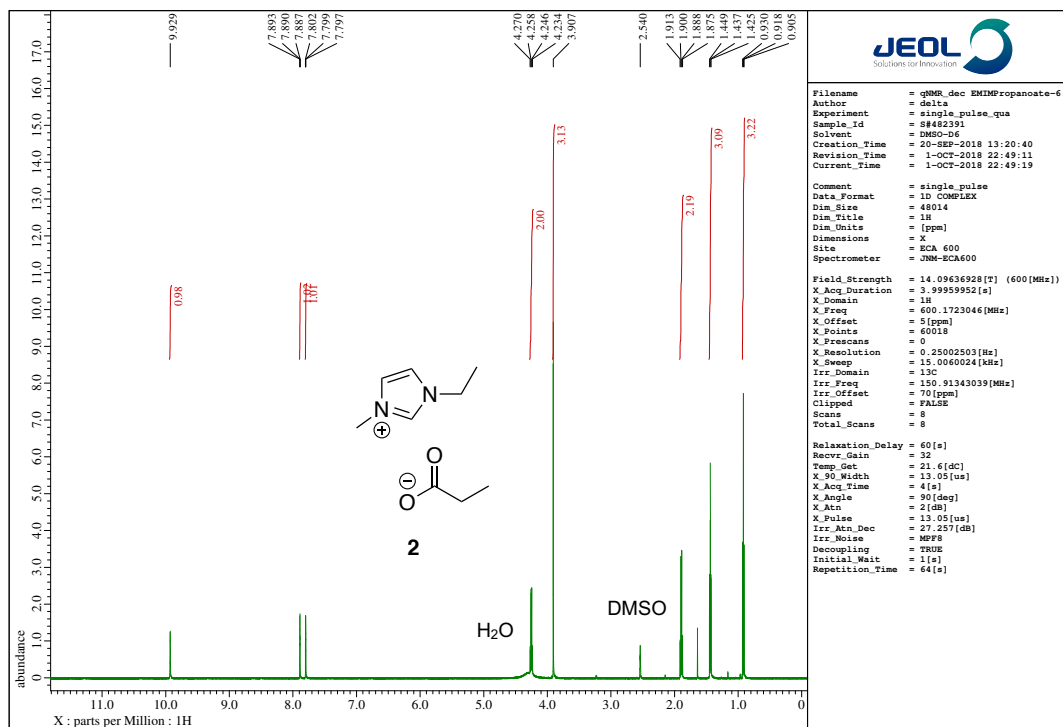


Figure S1. ¹H NMR spectrum of 1-ethyl-3-methylimidazolium propionate (2) in DMSO-*d*₆ at rt.

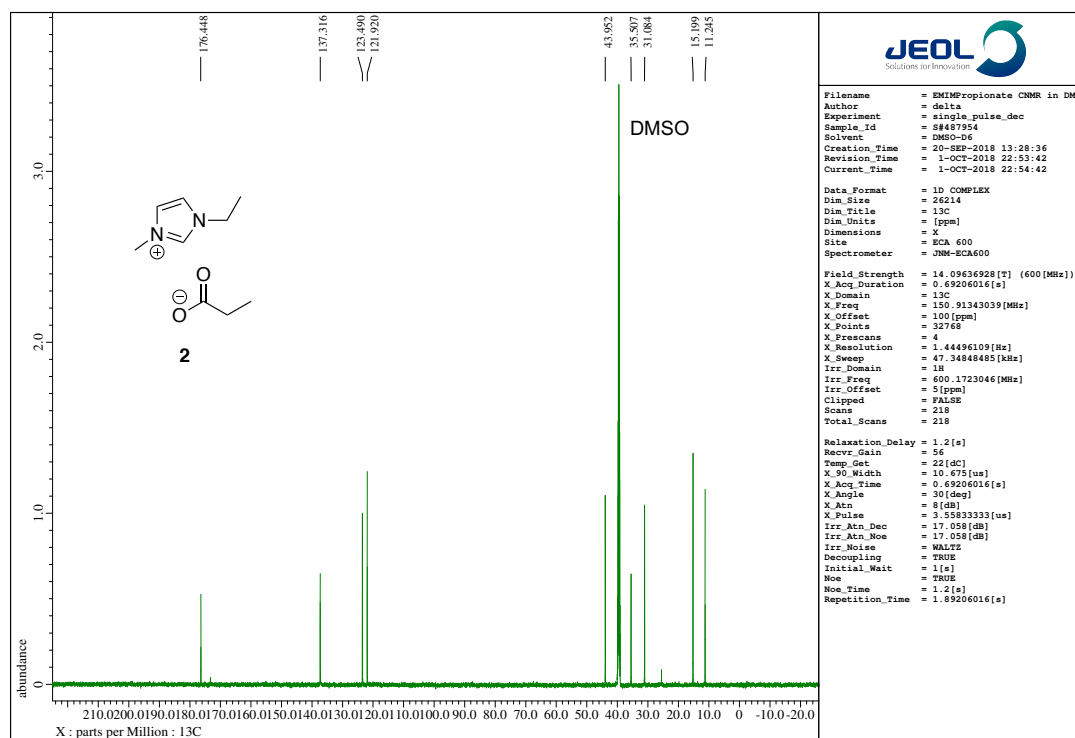


Figure S2. ¹³C NMR spectrum of 1-ethyl-3-methylimidazolium propionate (2) in DMSO-*d*₆ at rt.

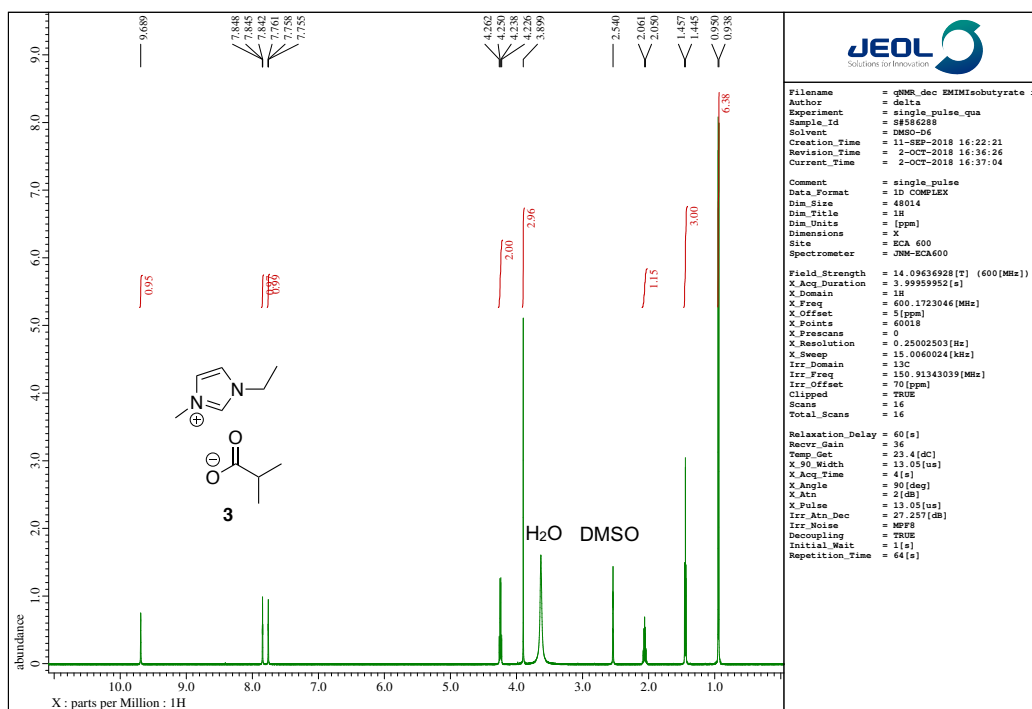


Figure S3. ¹H NMR spectrum of 1-ethyl-3-methylimidazolium isobutyrate (3) in DMSO-*d*₆ at rt.

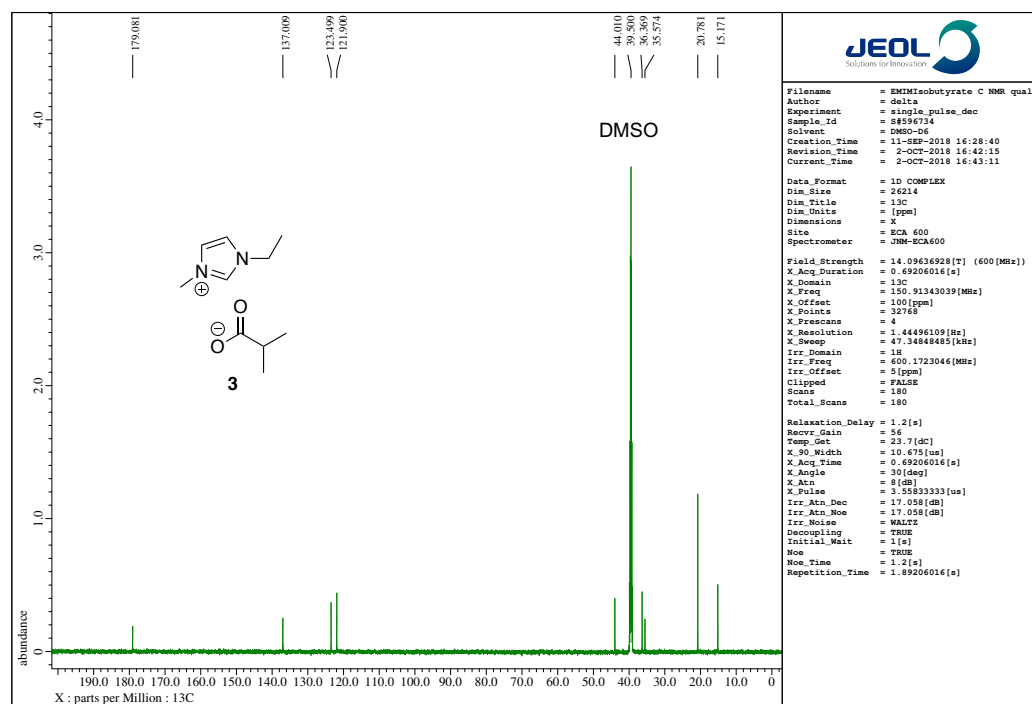


Figure S4. ¹³C NMR spectrum of 1-ethyl-3-methylimidazolium isobutyrate (3) in DMSO-*d*₆ at rt.

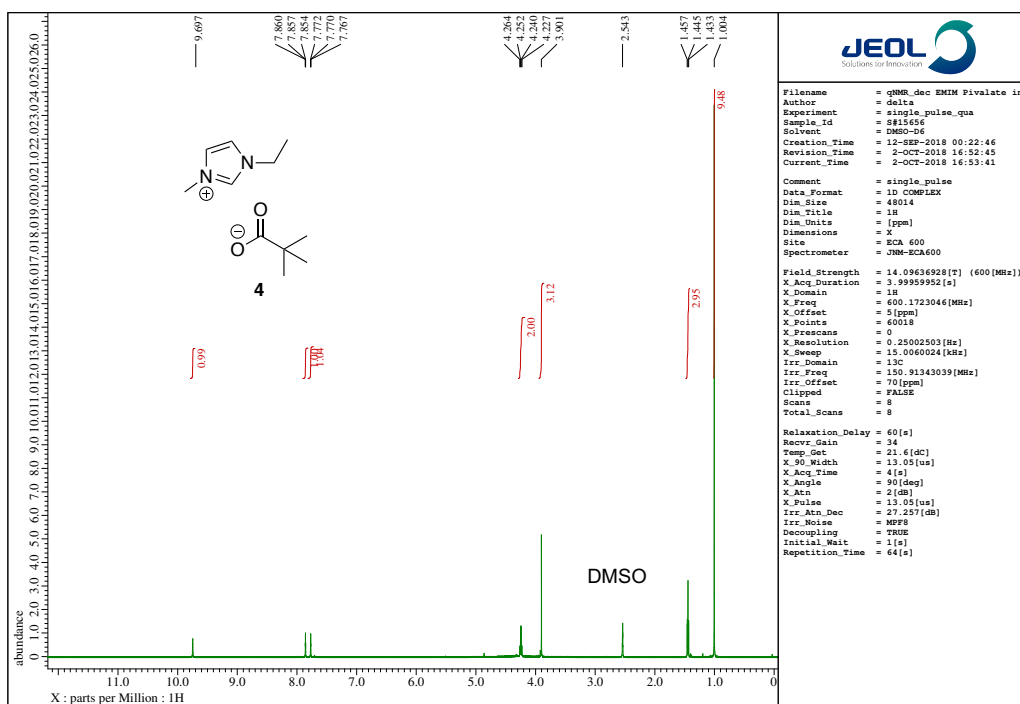


Figure S5. ¹H NMR spectrum of 1-ethyl-3-methylimidazolium pivalate (4) in DMSO-*d*₆ at rt.

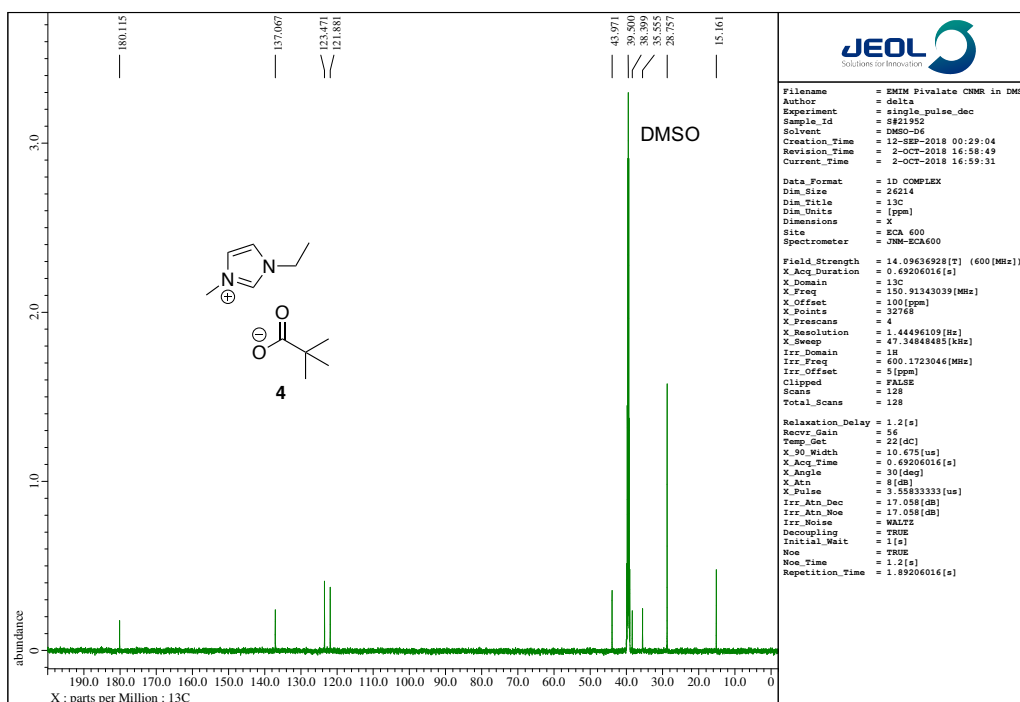


Figure S6. ¹³C NMR spectrum of 1-ethyl-3-methylimidazolium pivalate (4) in DMSO-*d*₆ at rt.

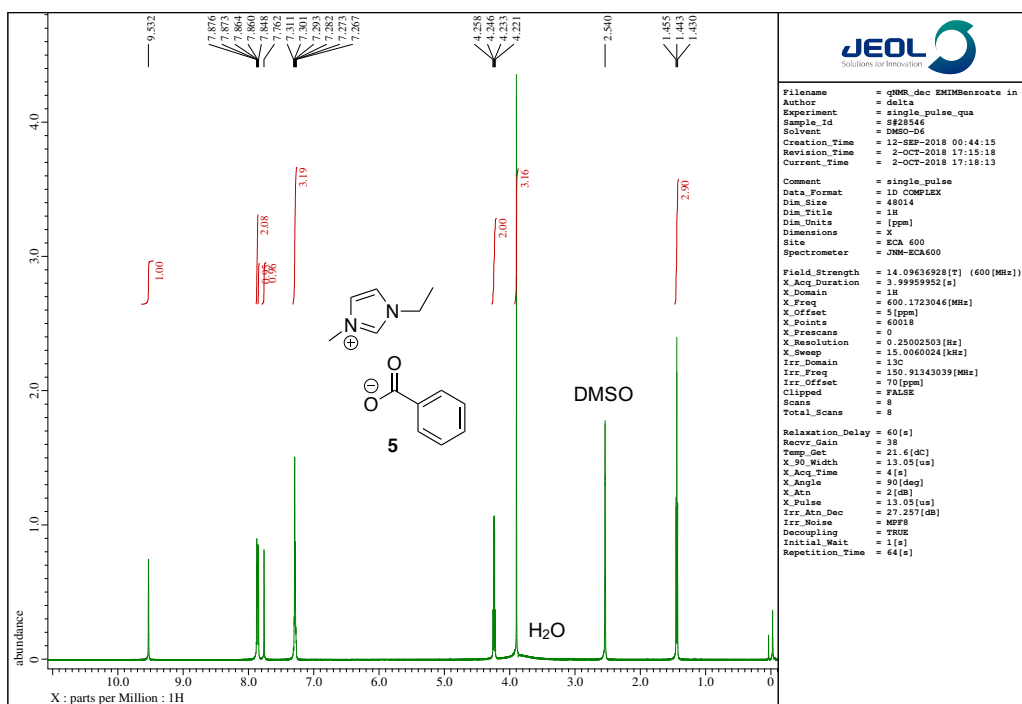


Figure S7. ¹H NMR spectrum of 1-ethyl-3-methylimidazolium benzoate (5) in DMSO-*d*₆ at rt.

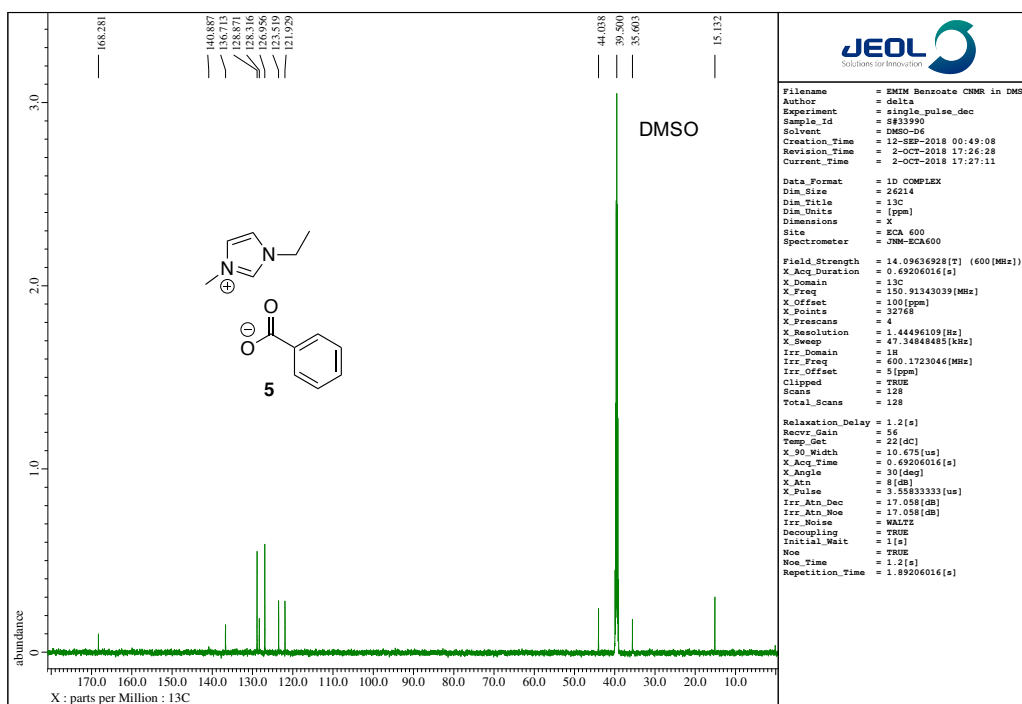


Figure S8. ¹³C NMR spectrum of 1-ethyl-3-methylimidazolium benzoate (5) in DMSO-*d*₆ at rt.

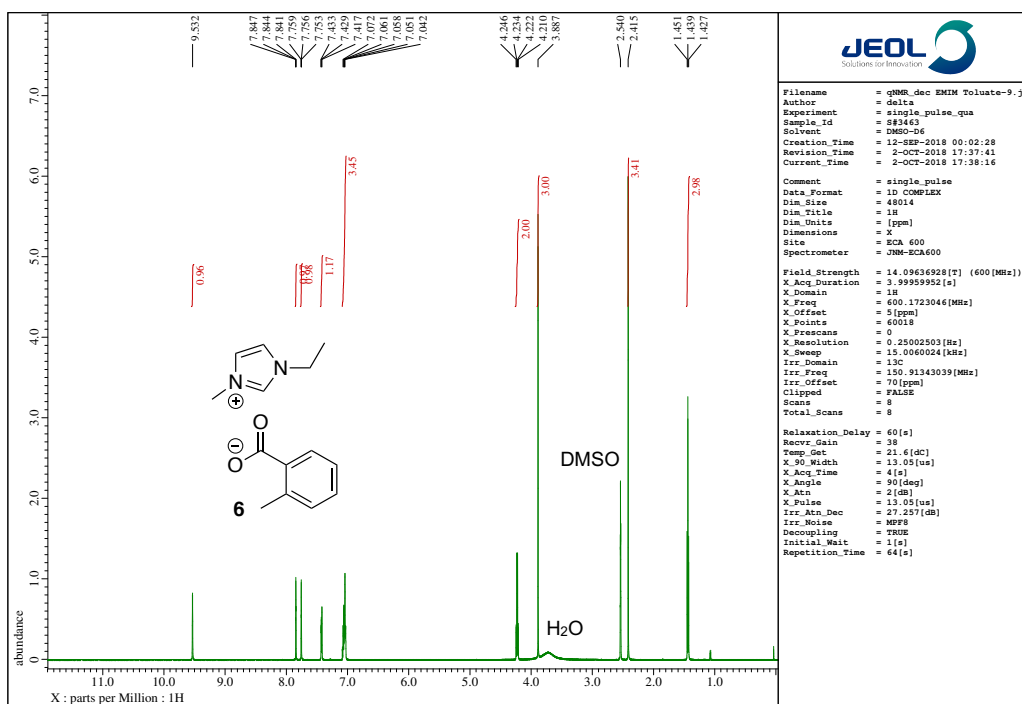


Figure S9. ¹H NMR spectrum of 1-ethyl-3-methylimidazolium *o*-toluate (6) in DMSO-*d*₆ at rt.

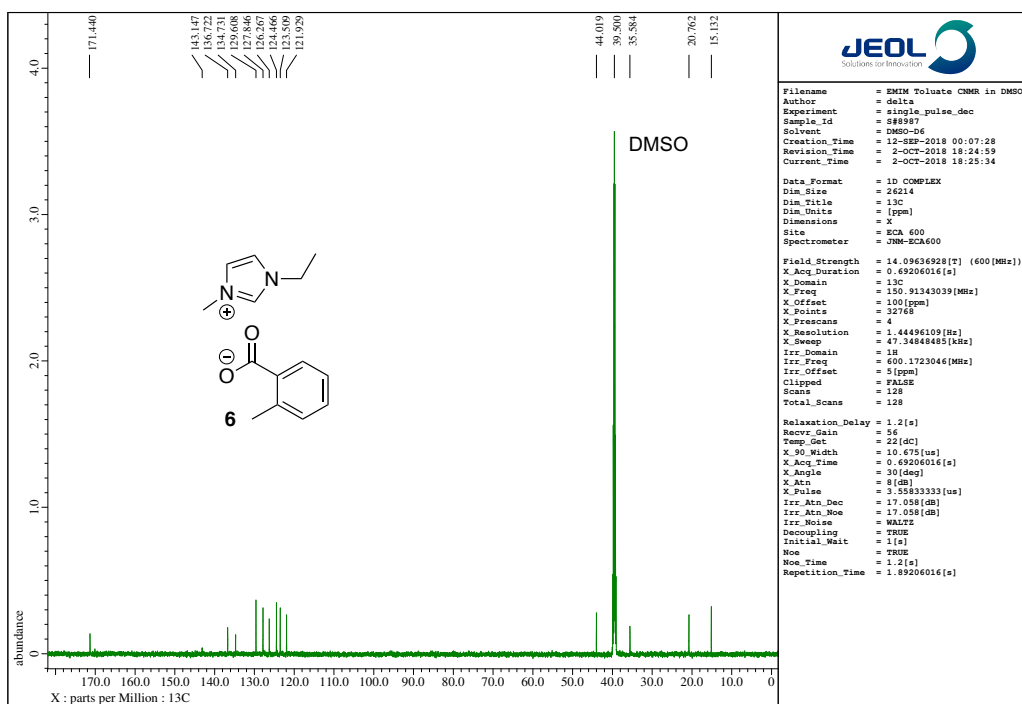


Figure S10. ¹³C NMR spectrum of 1-ethyl-3-methylimidazolium *o*-toluate (6) in DMSO-*d*₆ at rt.

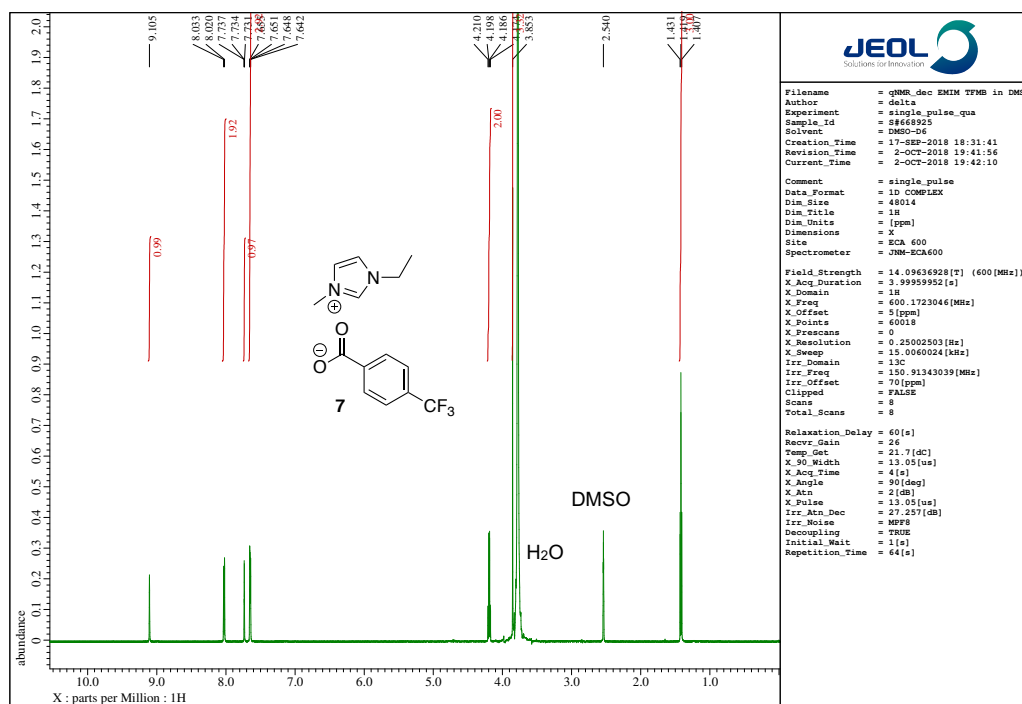


Figure S11. ¹H NMR spectrum of 1-ethyl-3-methylimidazolium *p*-trifluoromethylbenzoate (7) in DMSO-*d*₆ at rt.

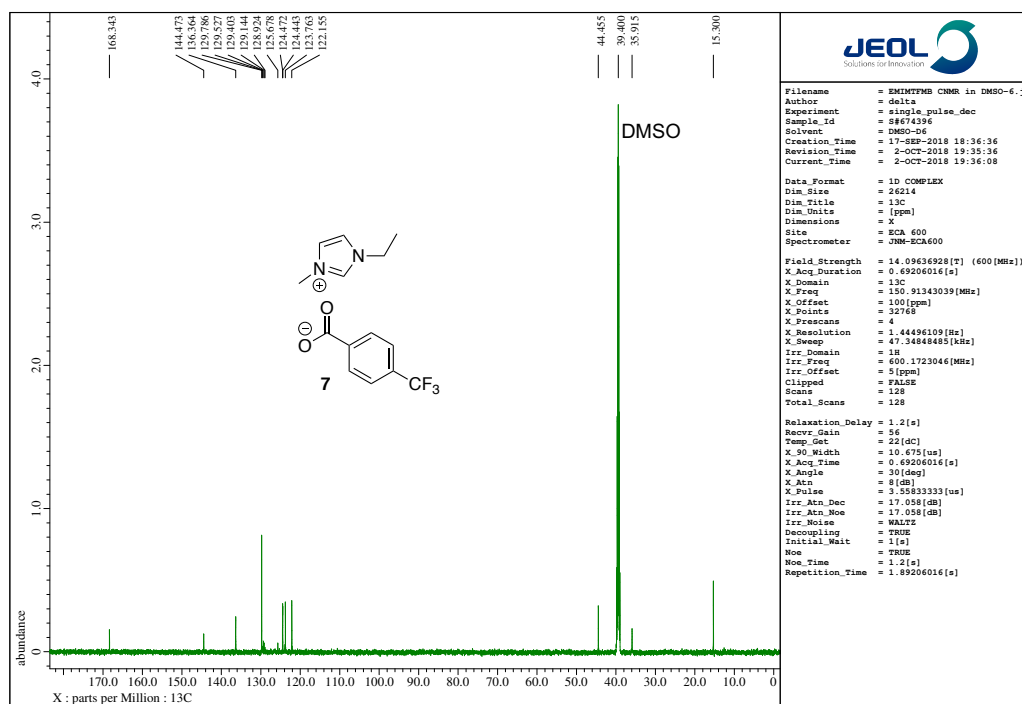


Figure S12. ¹³C NMR spectrum of 1-ethyl-3-methylimidazolium *p*-trifluoromethylbenzoate (7) in DMSO-*d*₆ at rt.

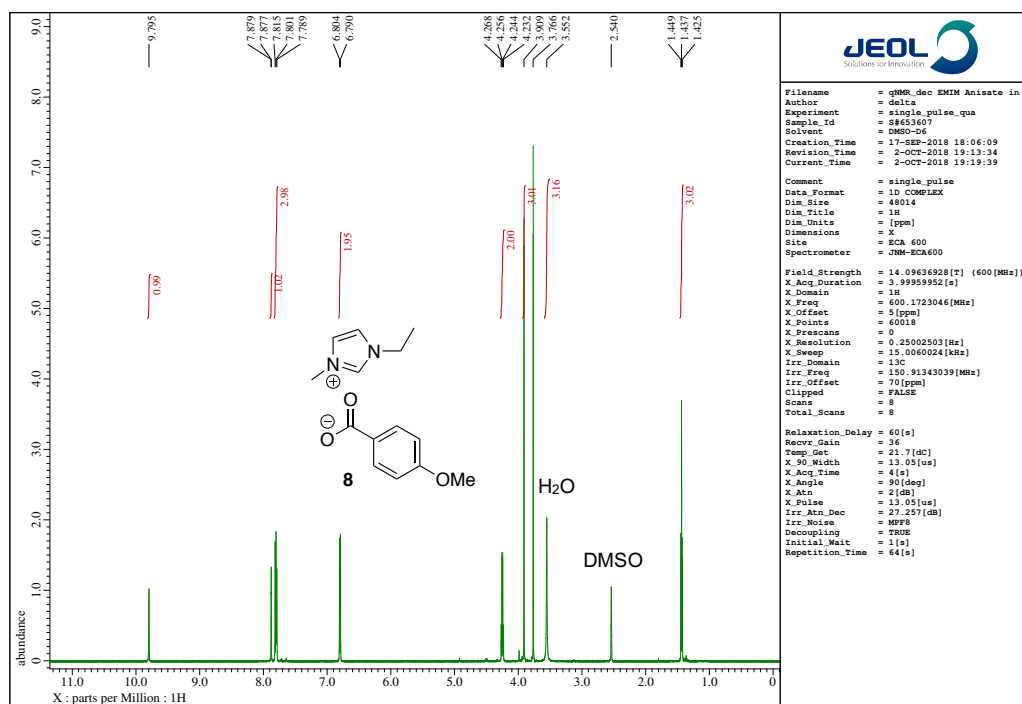


Figure S13. ¹H NMR spectrum of 1-ethyl-3-methylimidazolium *p*-anisate (8) in DMSO-*d*₆ at rt.

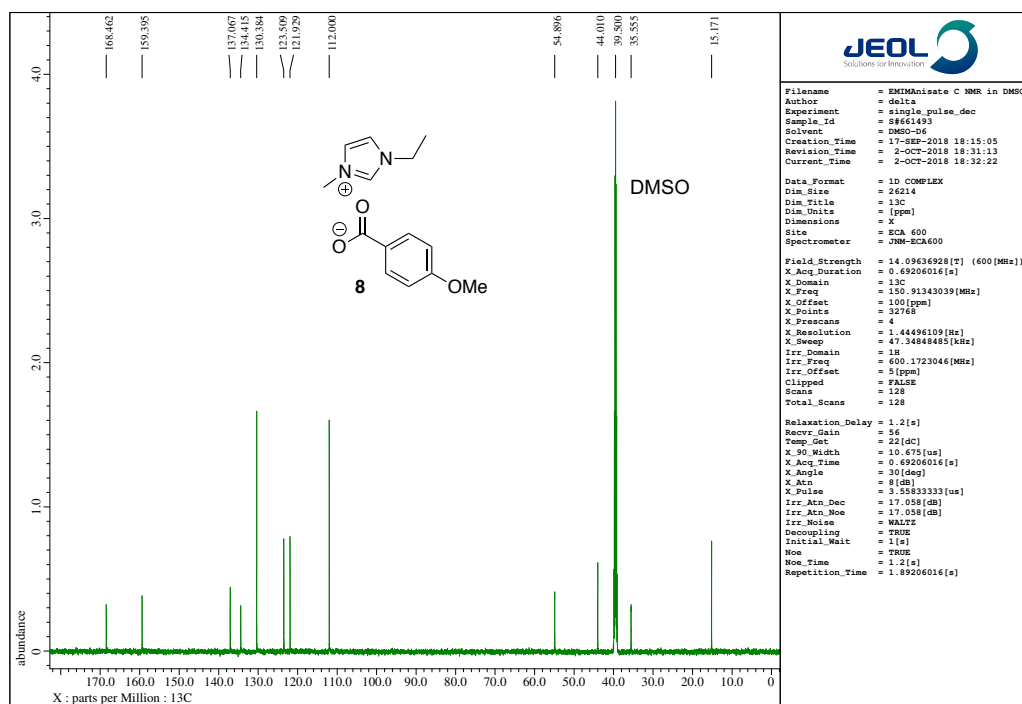


Figure S14. ¹³C NMR spectrum of 1-ethyl-3-methylimidazolium *p*-anisate (8) in DMSO-*d*₆ at rt.

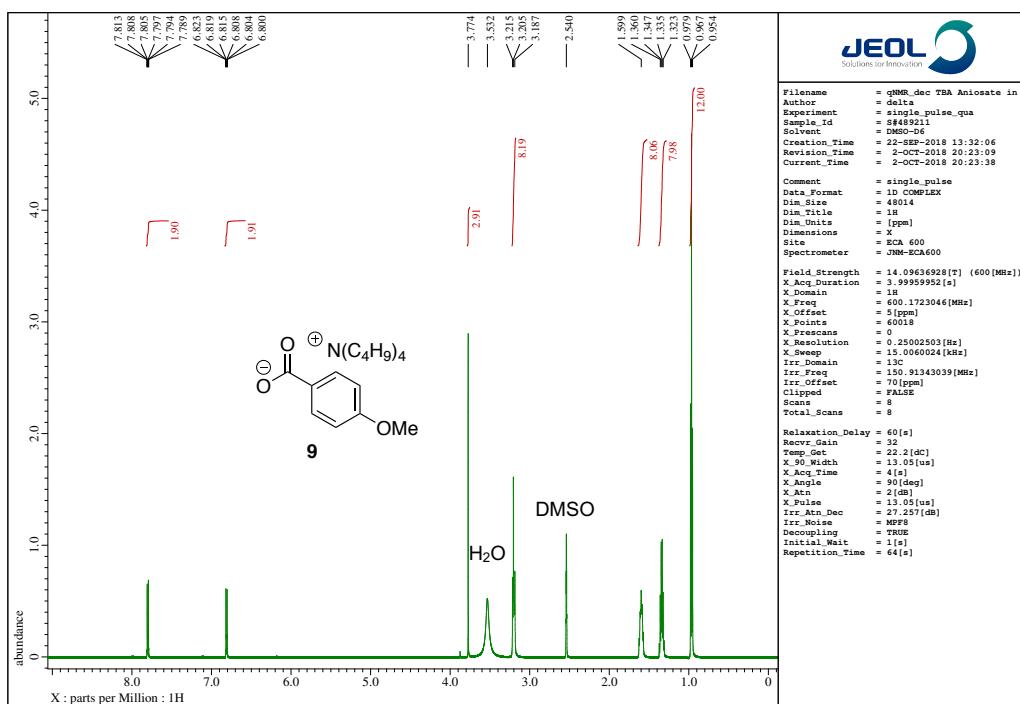


Figure S15. ¹H NMR spectrum of tetrabutylammonium *p*-anisate (9) in DMSO-*d*₆ at rt.

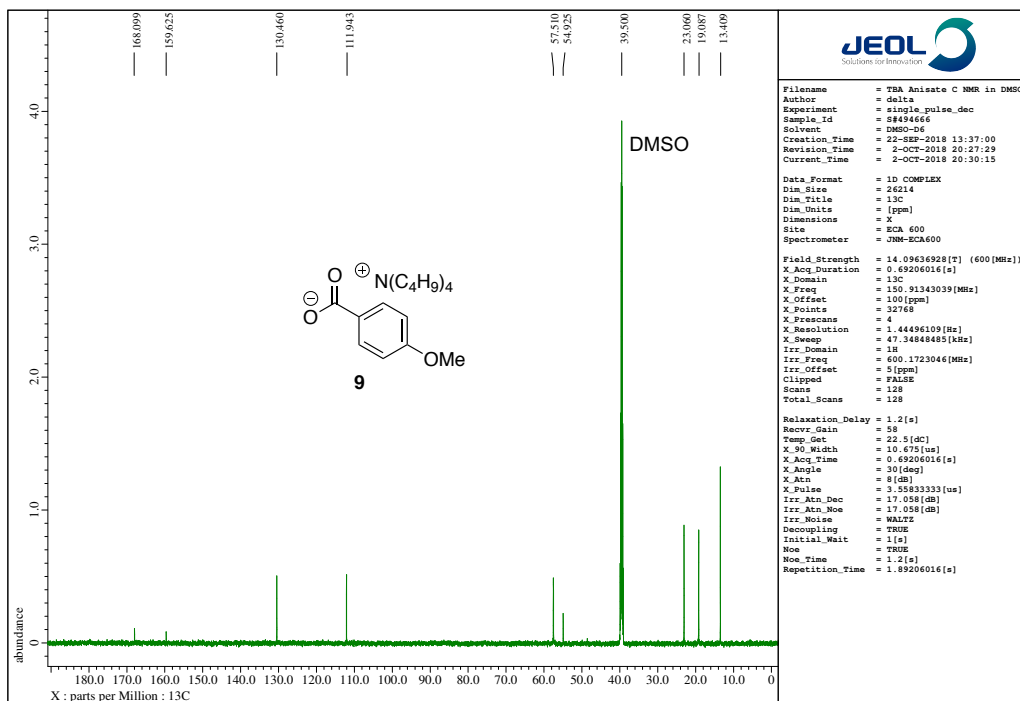


Figure S16. ¹³C NMR spectrum of tetrabutylammonium *p*-anisate (9) in DMSO-*d*₆ at rt.

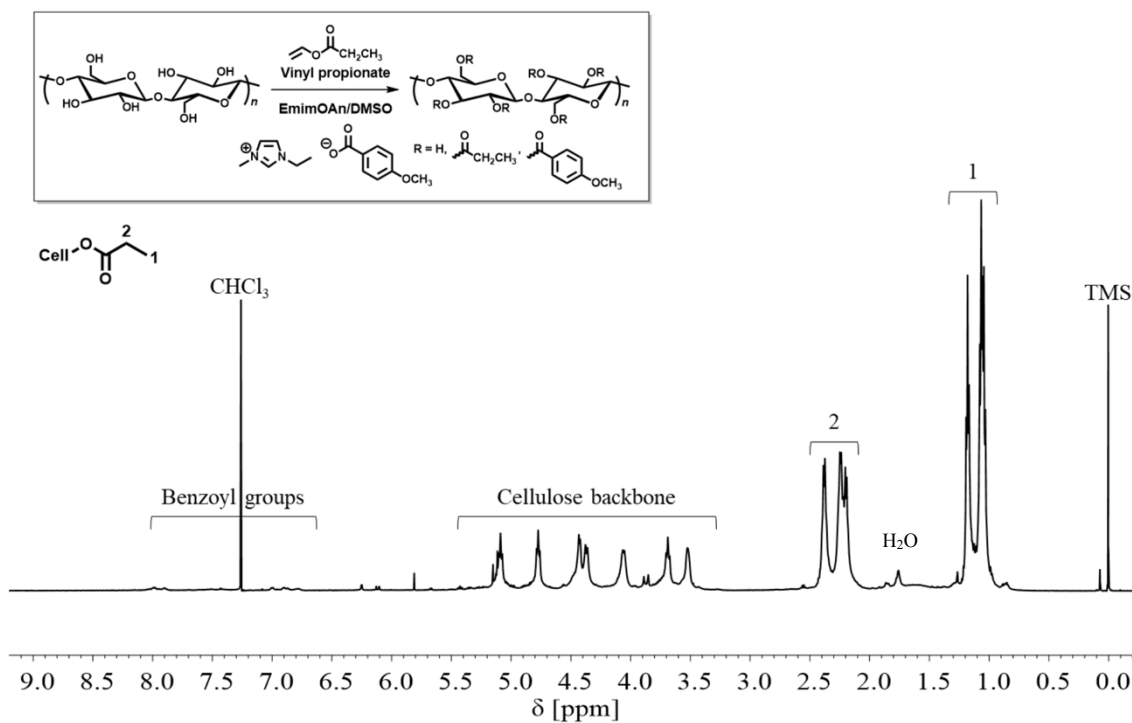


Figure S17. ¹H NMR spectrum of cellulose propionate *p*-anisate in CDCl₃ at 55°C (Table 2, Run 11).

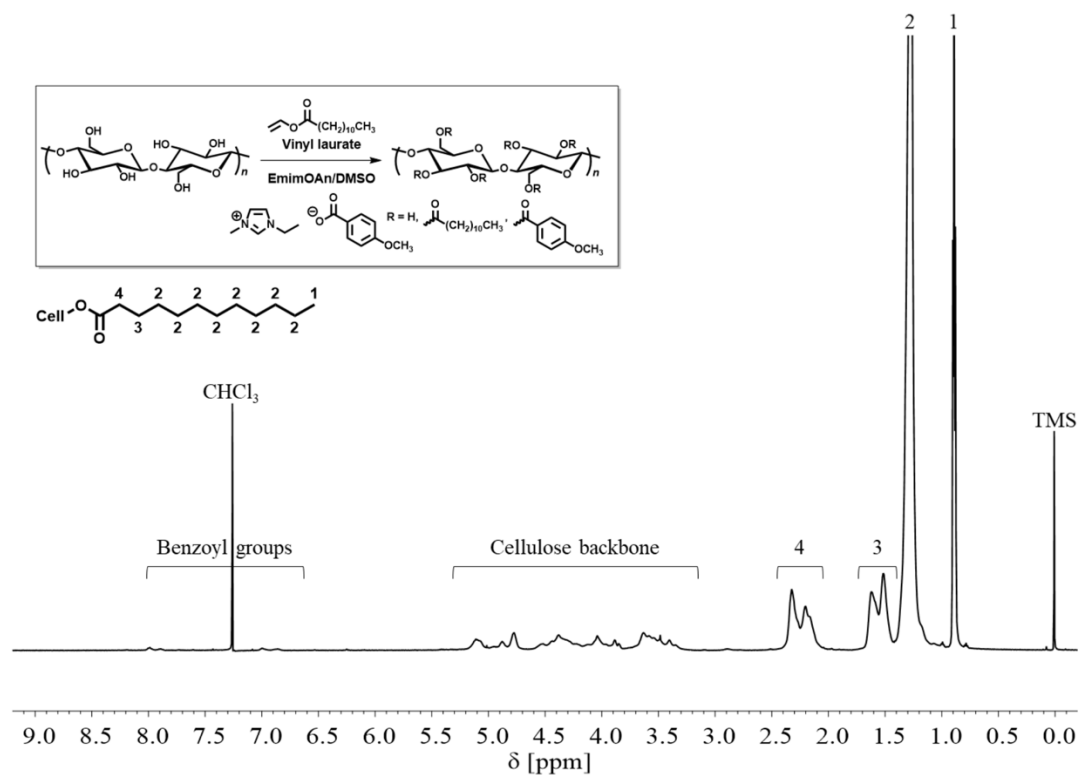


Figure S18. ¹H NMR spectrum of cellulose laurate *p*-anisate in CDCl₃ at 55°C (Table 2, Run 12).

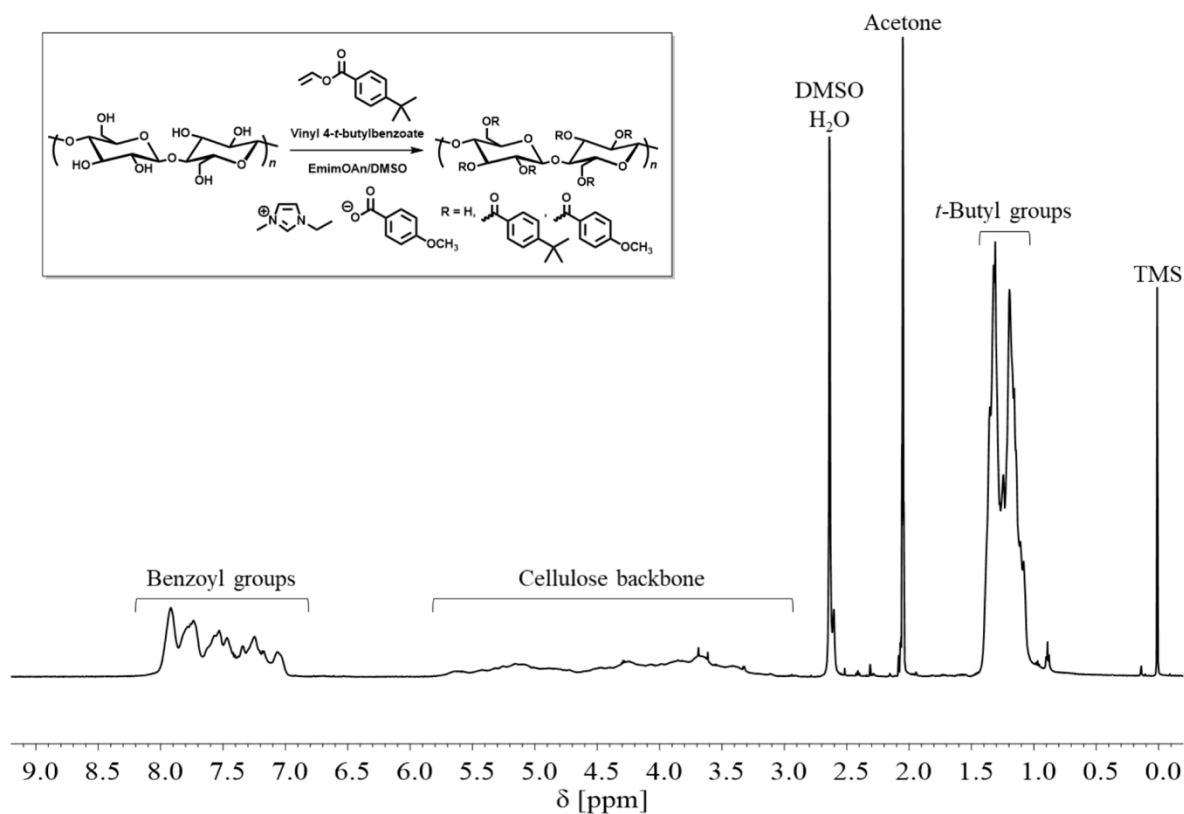


Figure S19. ^1H NMR spectrum of cellulose *p*-*tert*-butylbenzoate *p*-anisate in acetone- d_6 at 55°C (Table 2, Run 13).

Table S1. Solubility test (1.0 mg/mL) of resulting cellulose esters (runs 1–9) at room temperature.

	Toluene	CHCl_3	THF	Acetone	DMF	DMSO	MeOH	H_2O
Run 1	○	○	○	○	○	○	X	X
Run 2	—	○	—	○	—	—	X	X
Run 3	—	○	—	○	—	—	X	X
Run 4	—	○	—	○	—	—	X	X
Run 5	—	○	—	○	—	—	X	X
Run 6	—	○	—	○	—	—	X	X
Run 7	—	○	—	○	—	—	X	X
Run 8	○	○	○	○	○	○	X	X
Run 9	X	X	X	X	X	X	X	X

○: Soluble, X: Insoluble (lower than 1.0 mg/mL), —: No data