

Supporting Information for

A Mechanistic Study of Cross-coupling Reactions Catalyzed by Palladium Nanoparticles Supported on Polyaniline Nanofibers

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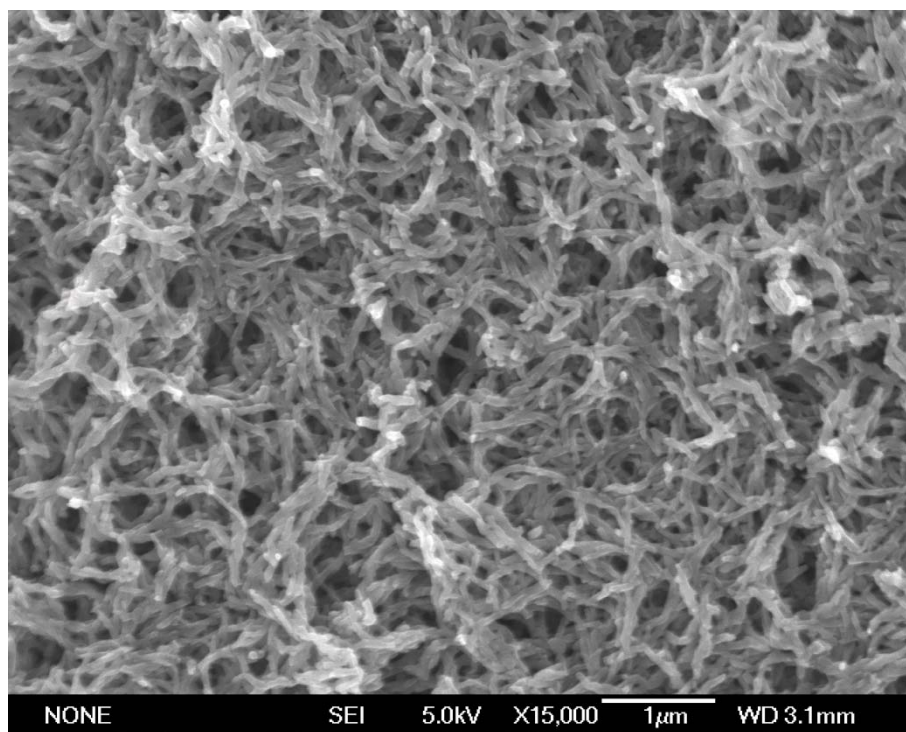


Figure S1. SEM of the palladium/polyaniline composite.

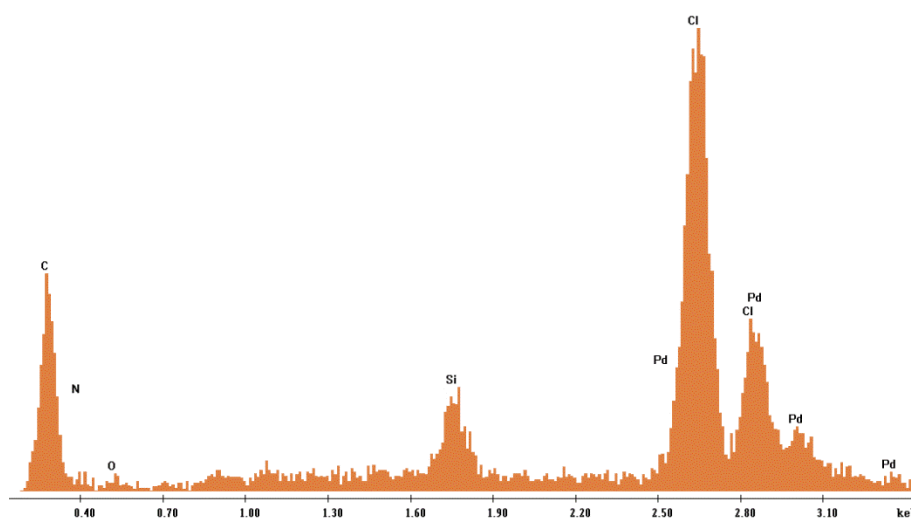
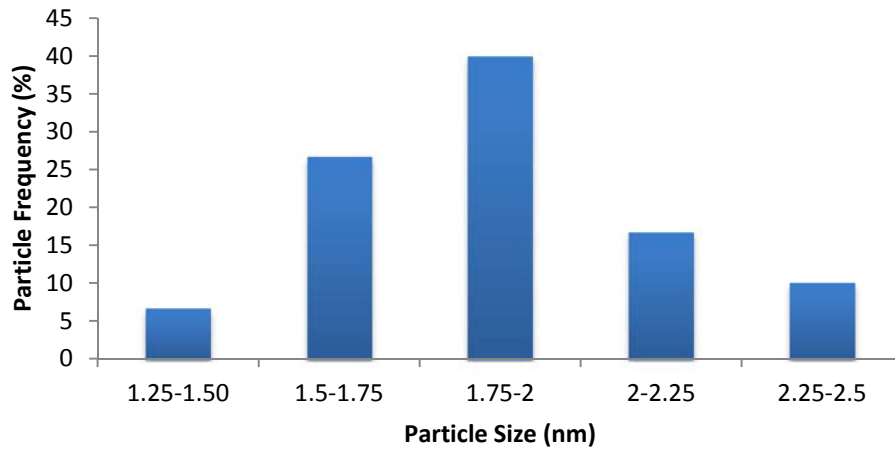
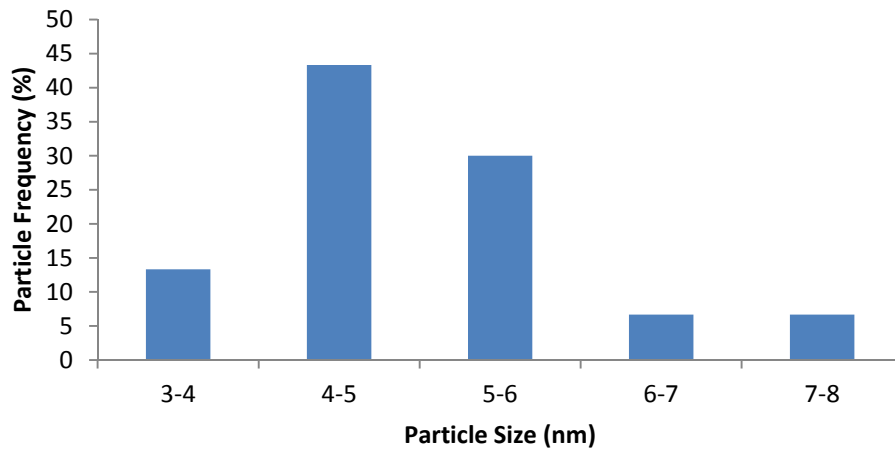


Figure S2. EDS of the palladium/polyaniline composite.

Pd on PANI before reaction



Pd on PANI after four reactions



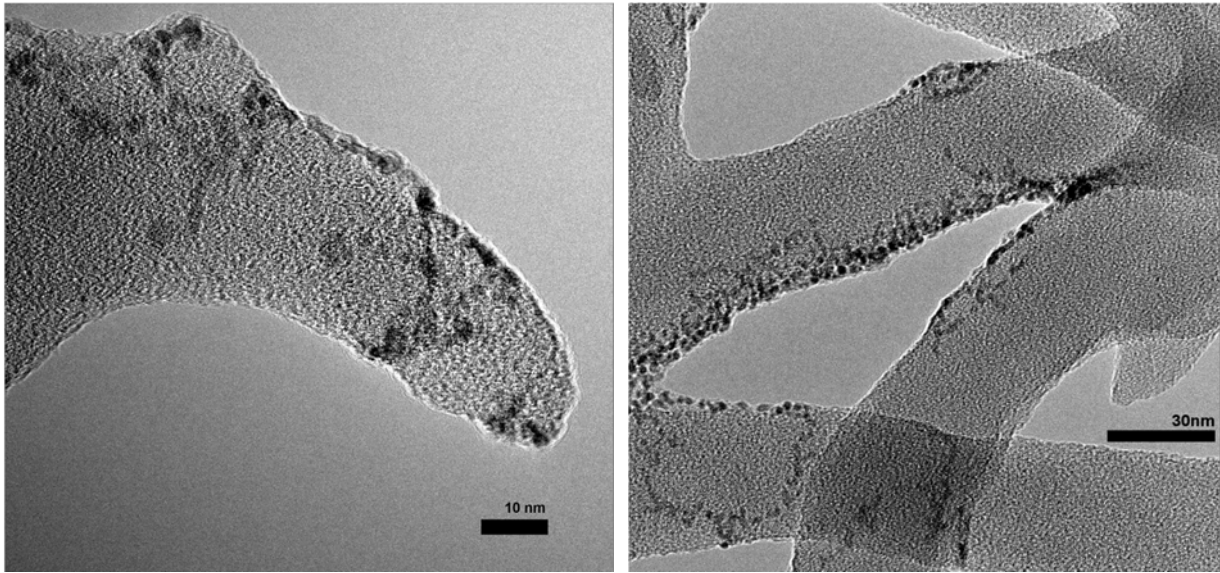
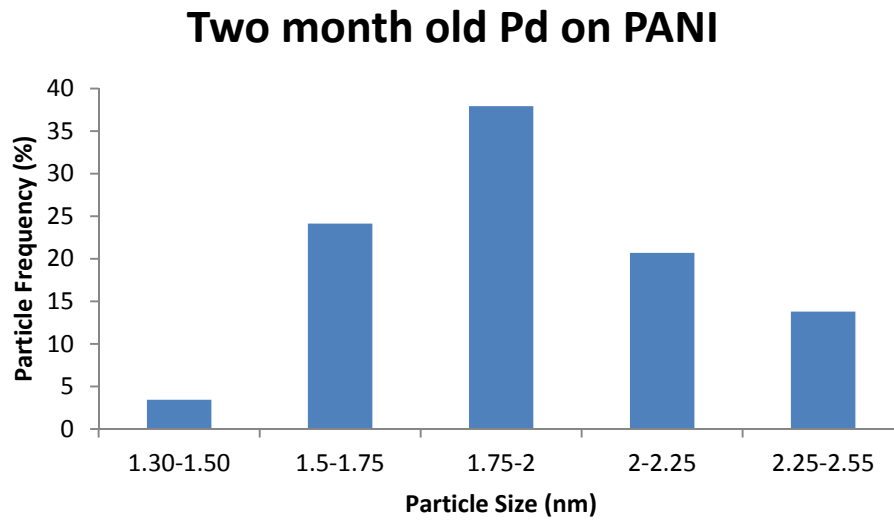


Figure S3. TEM of two month old Pd/PANI.



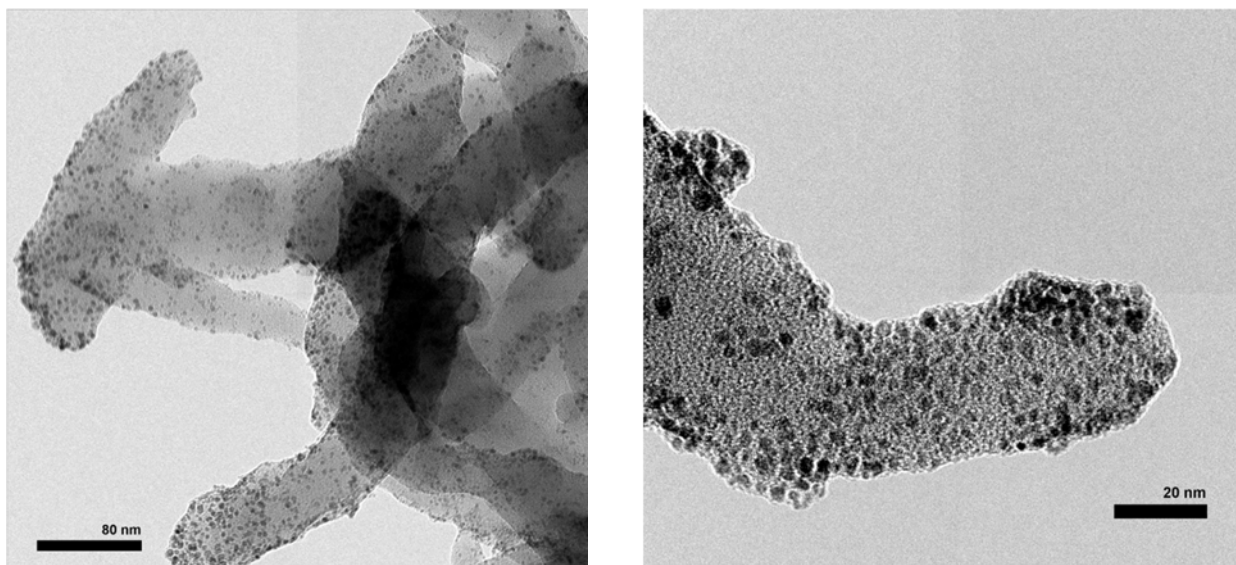
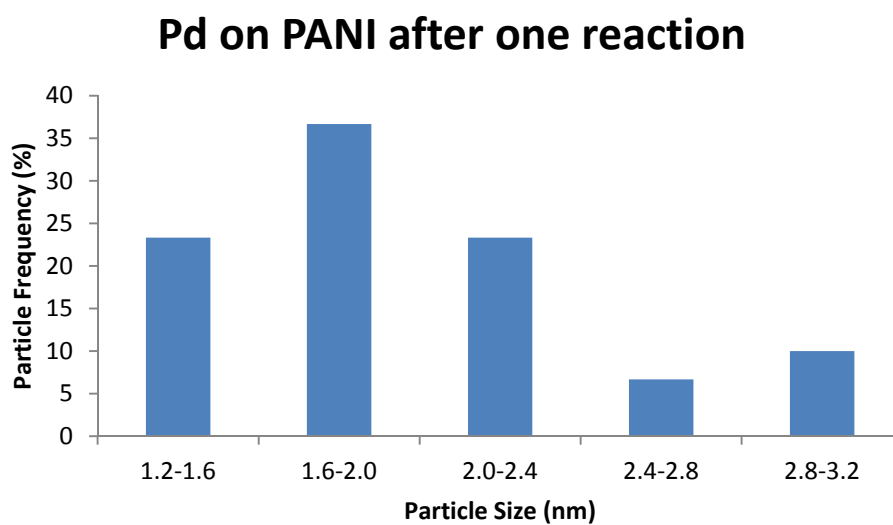


Figure S4. TEM after the first attempt at recycling.



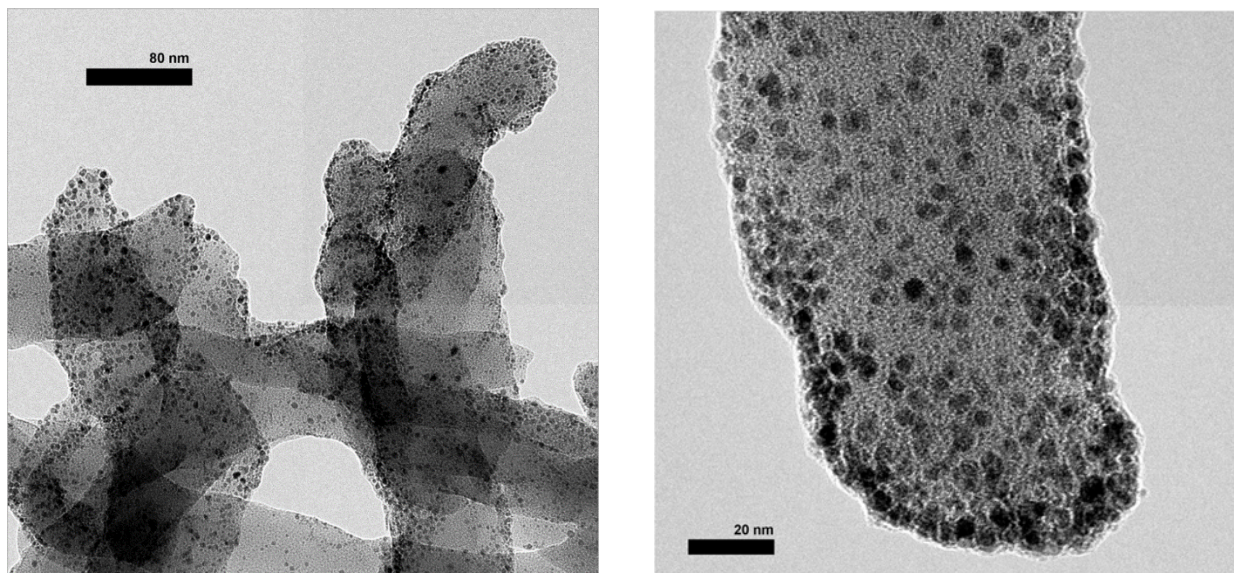
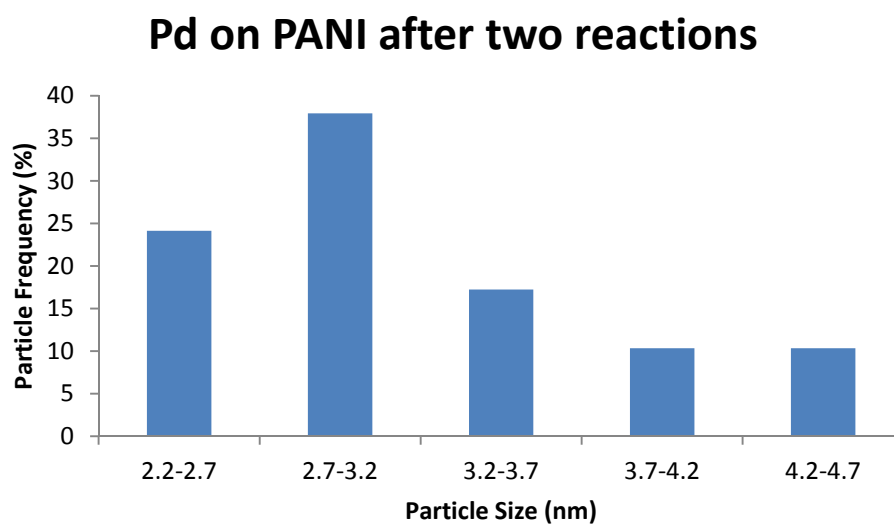


Figure S5. TEM after the second attempt at recycling.



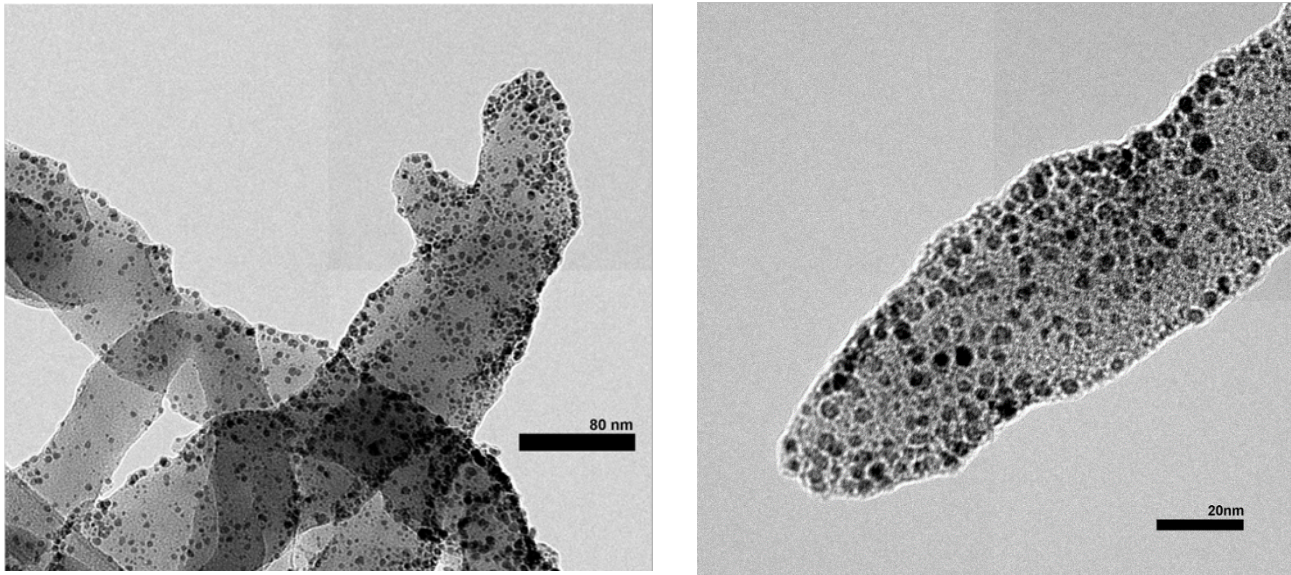
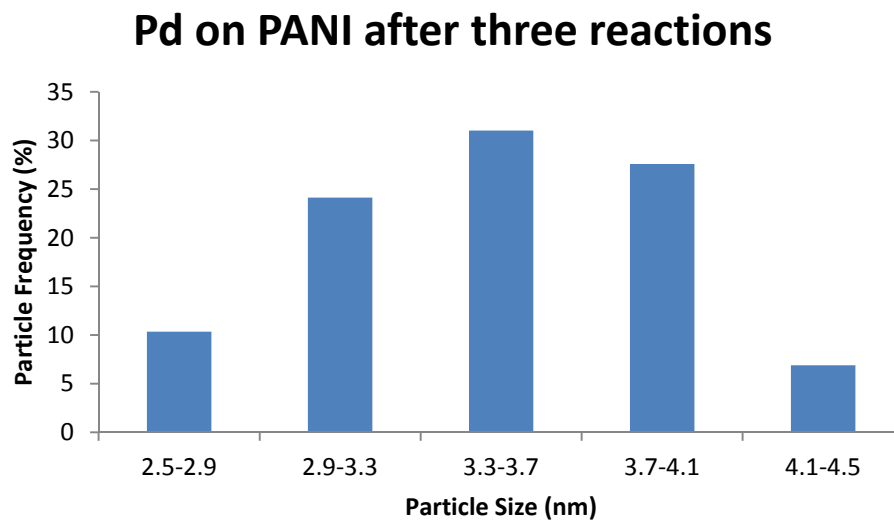


Figure S6. TEM after the third attempt at recycling.



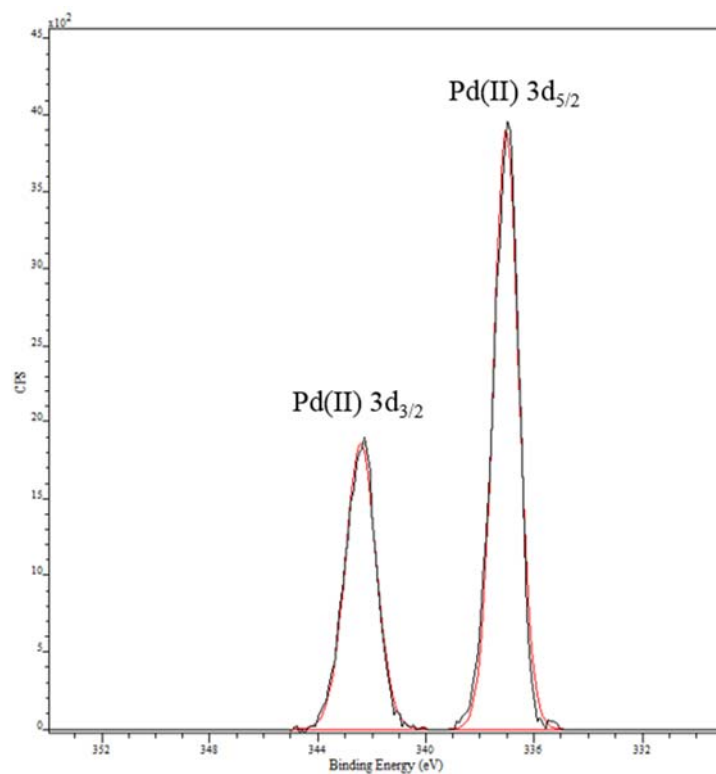


Figure S7. XPS of Pd/PANI after 30 min.

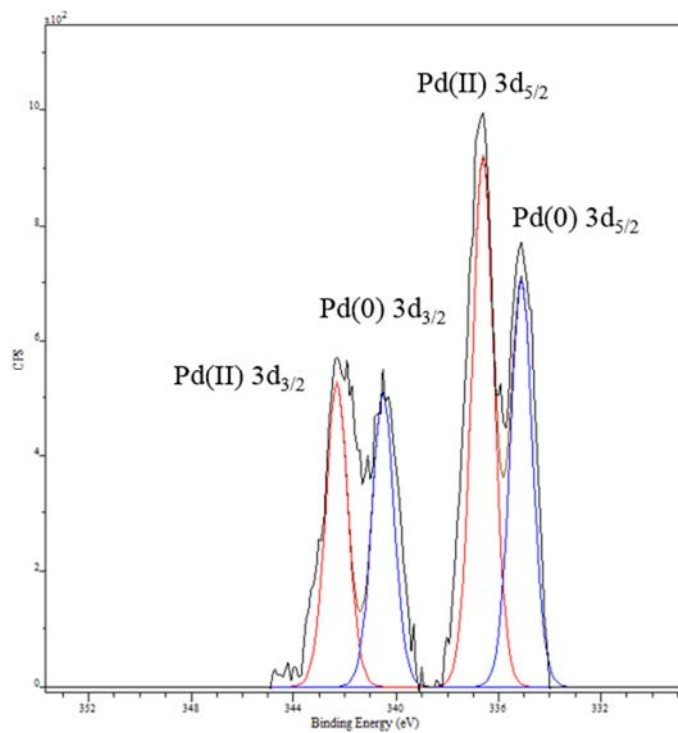


Figure S8. XPS of Pd/PANI after the first attempt at recycling.

NMR spectra

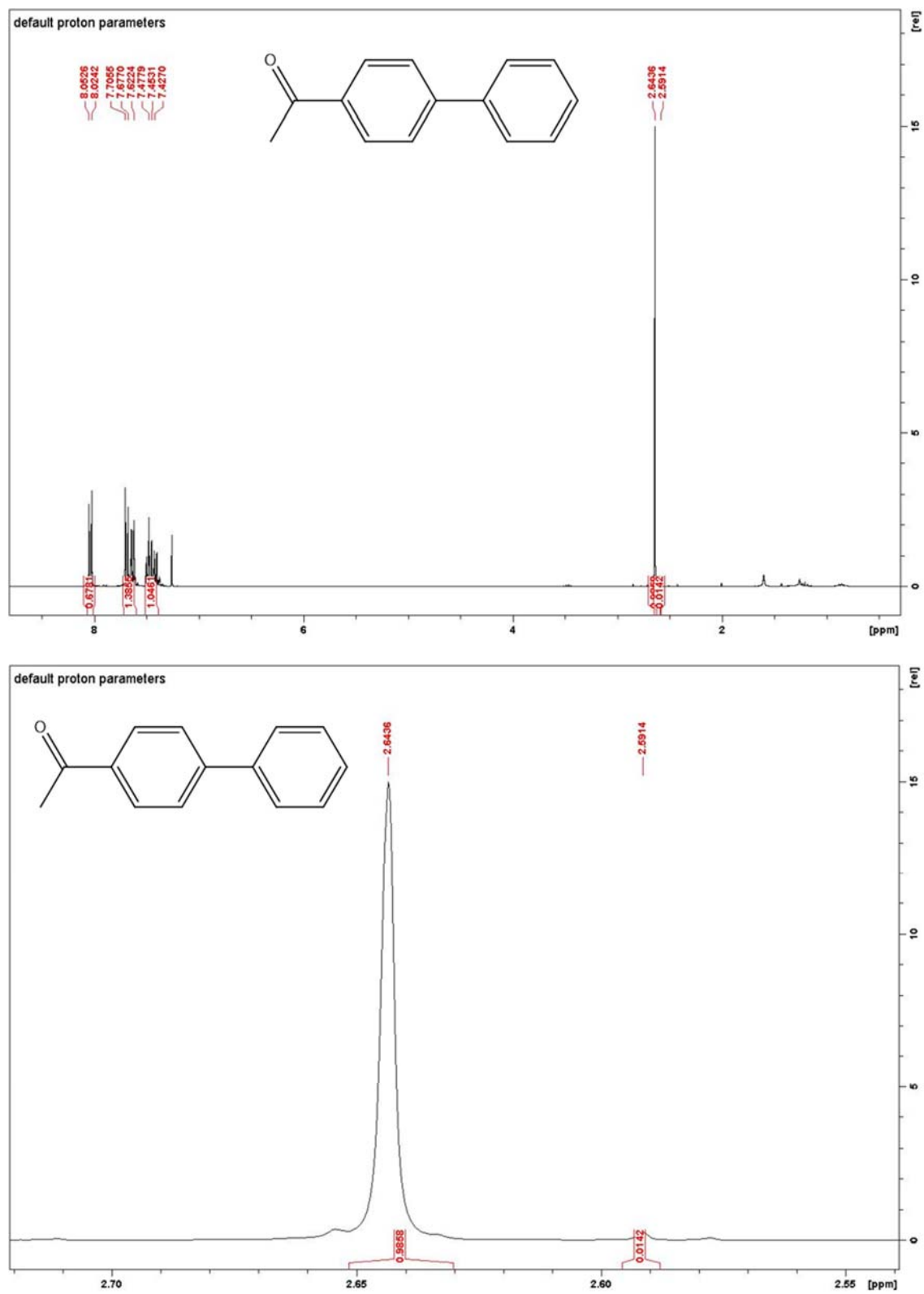


Figure S9. ¹H NMR spectra (300 MHz, CDCl₃) for the conversion of *p*-chloroacetophenone.

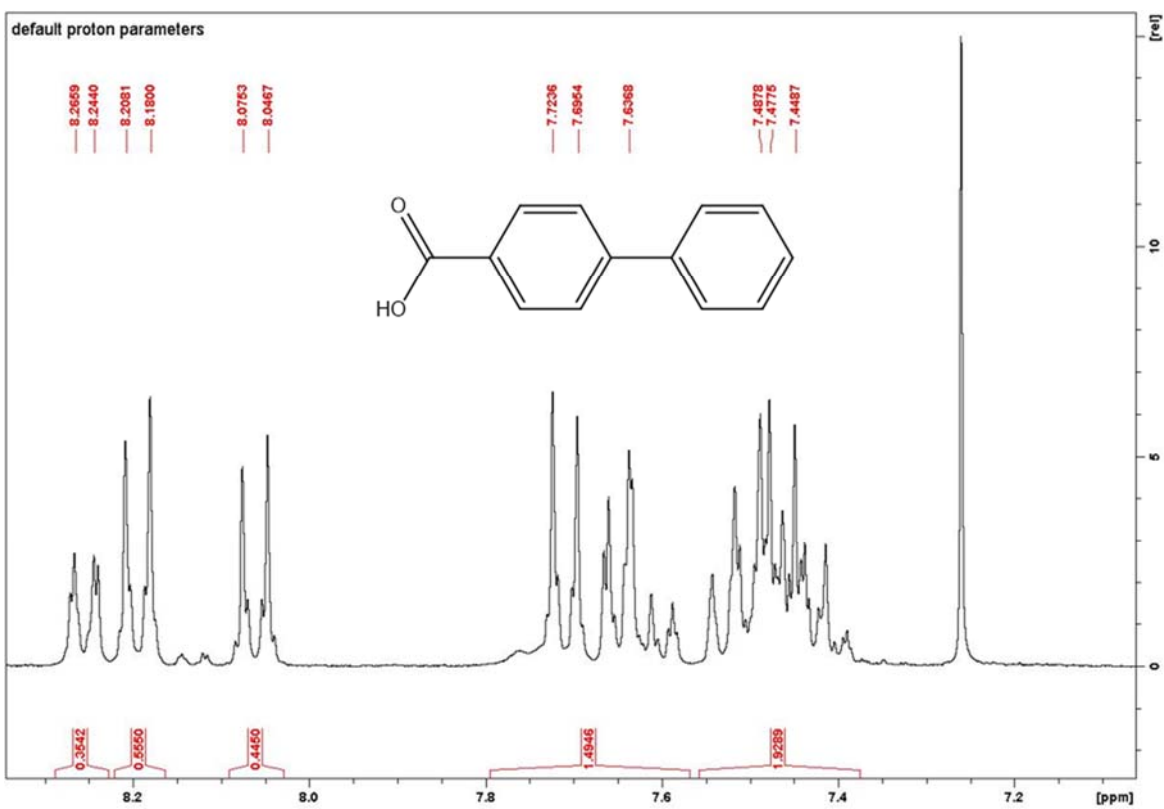
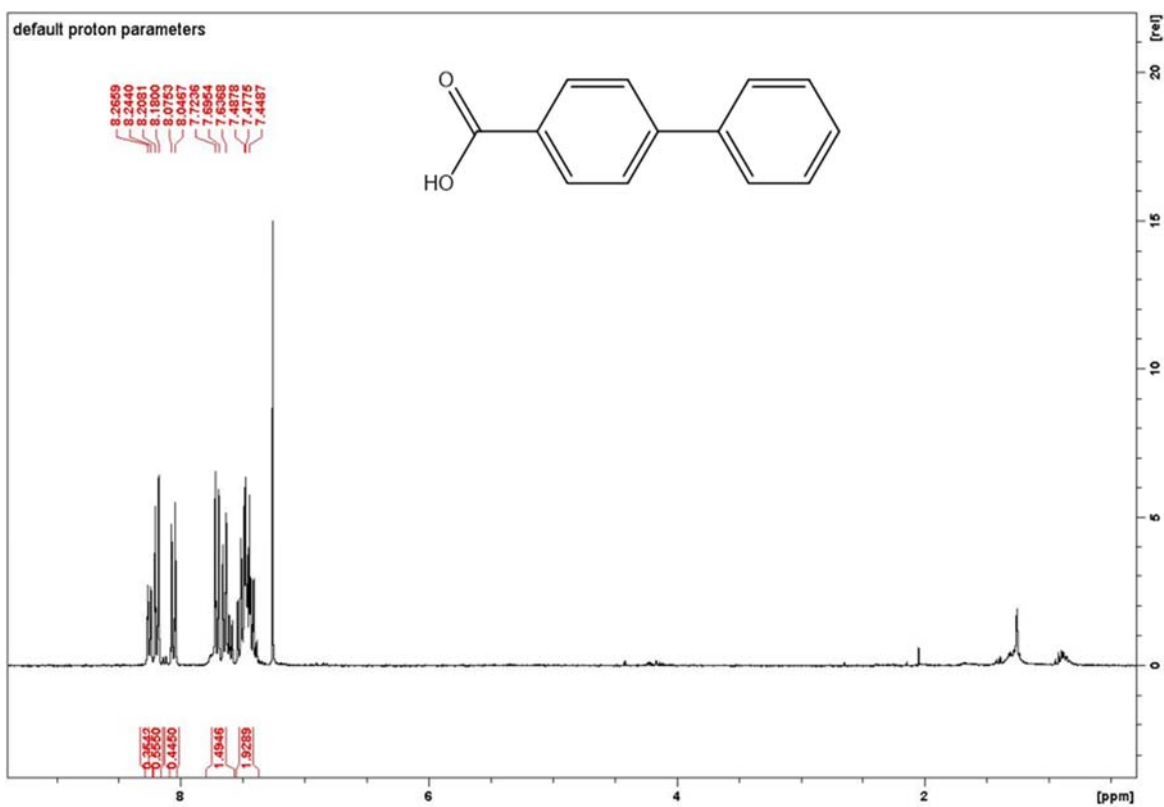


Figure S10. ^1H NMR spectra (300 MHz, CDCl_3) for the conversion of *p*-chlorobenzoic acid.

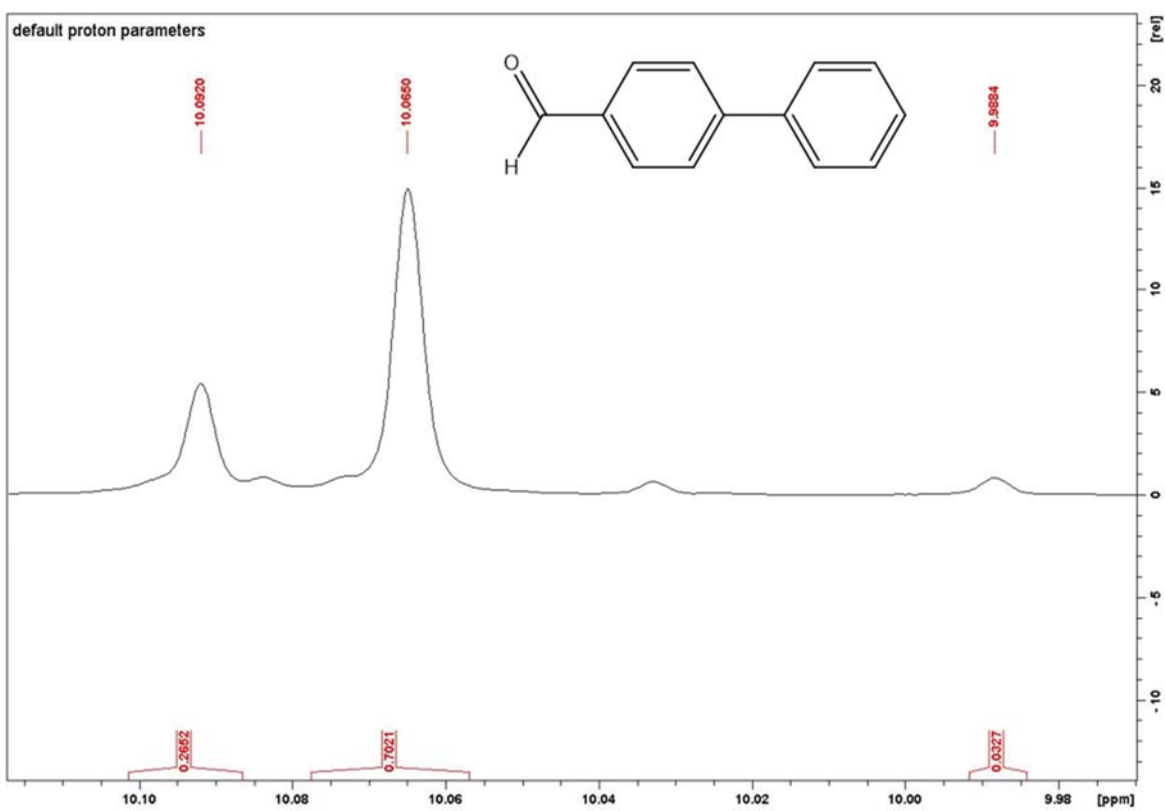
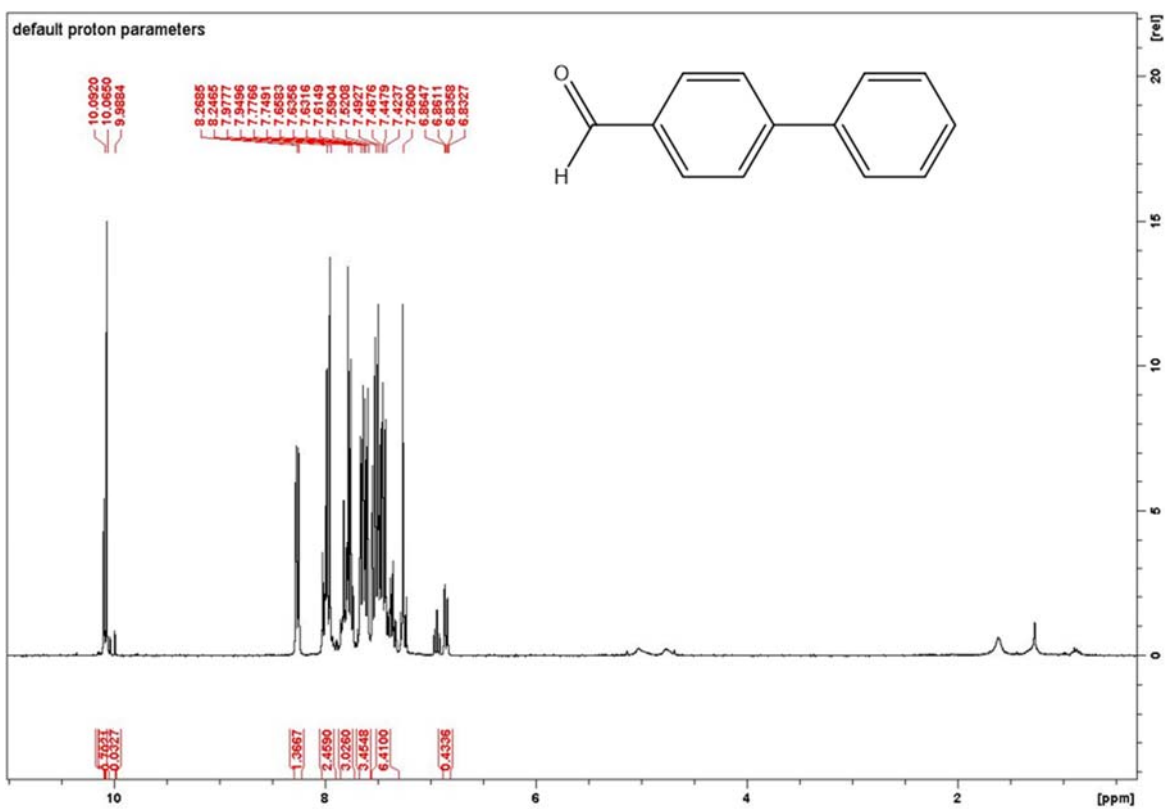


Figure S11. ^1H NMR spectra (300 MHz, CDCl_3) for the conversion of *p*-chlorobenzaldehyde.

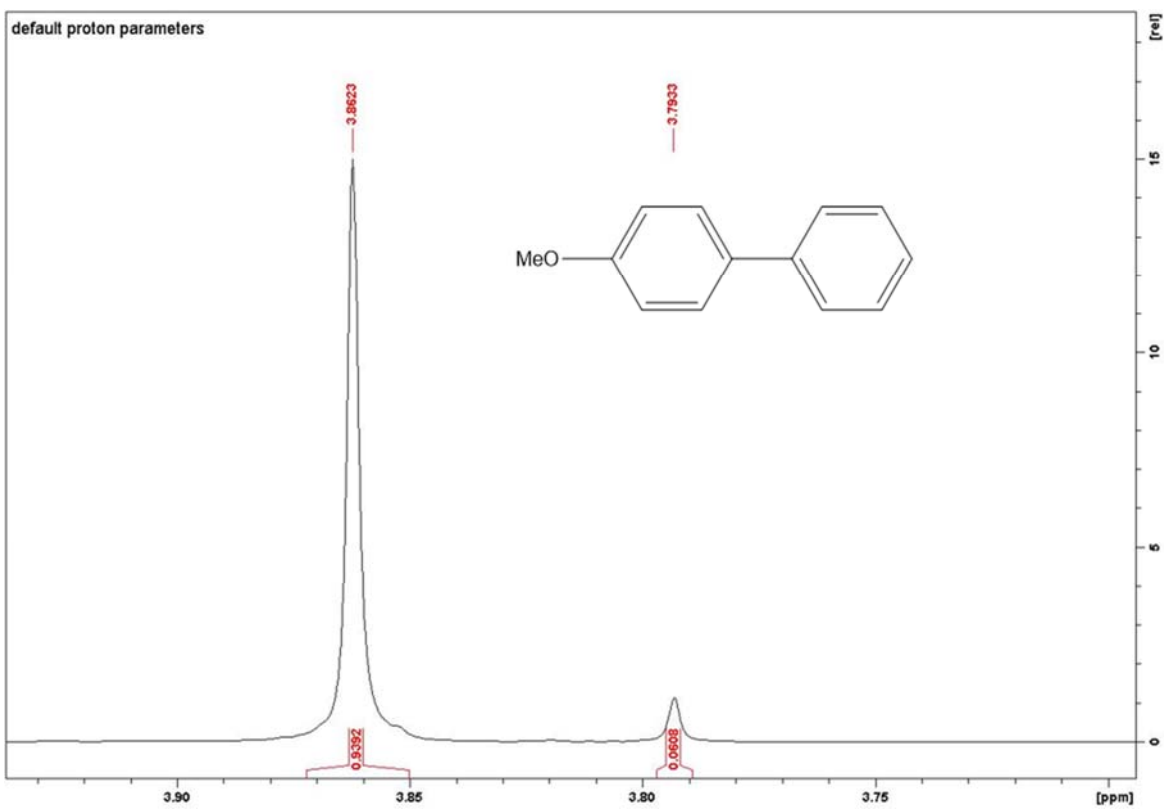
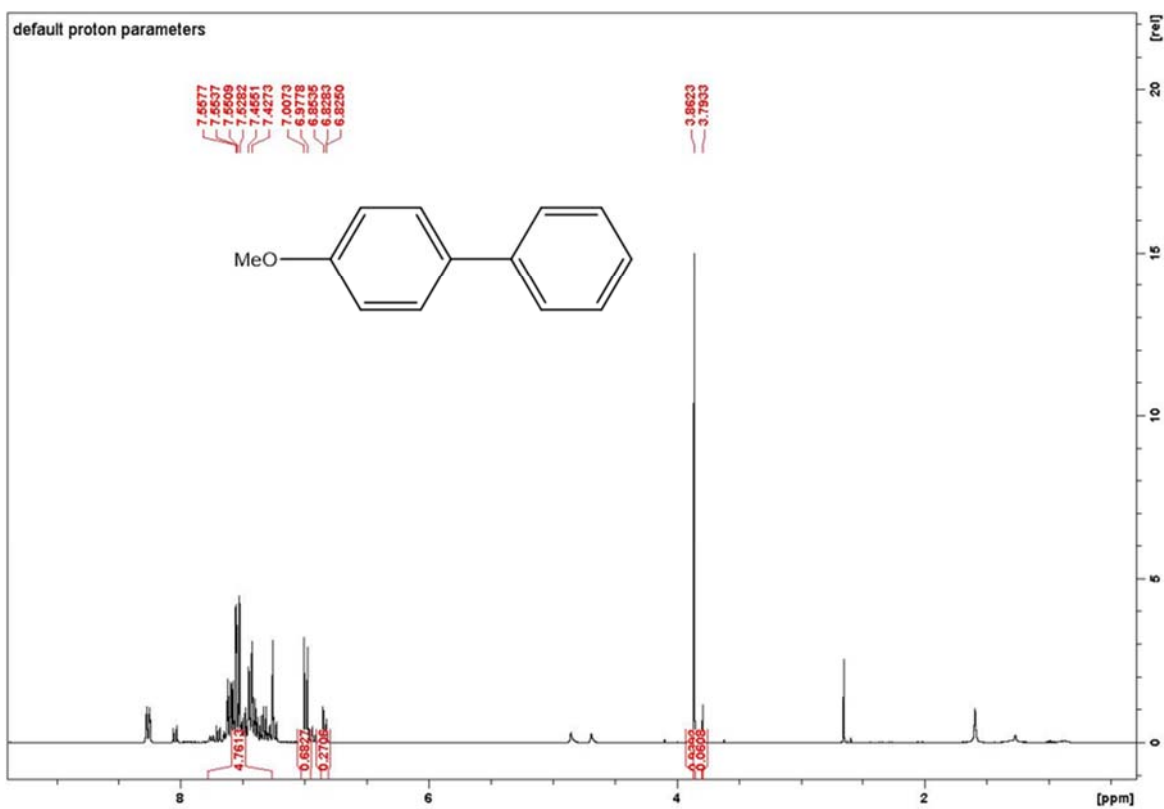


Figure S12. ^1H NMR spectra (300 MHz, CDCl_3) for the conversion of *p*-chloroanisole.

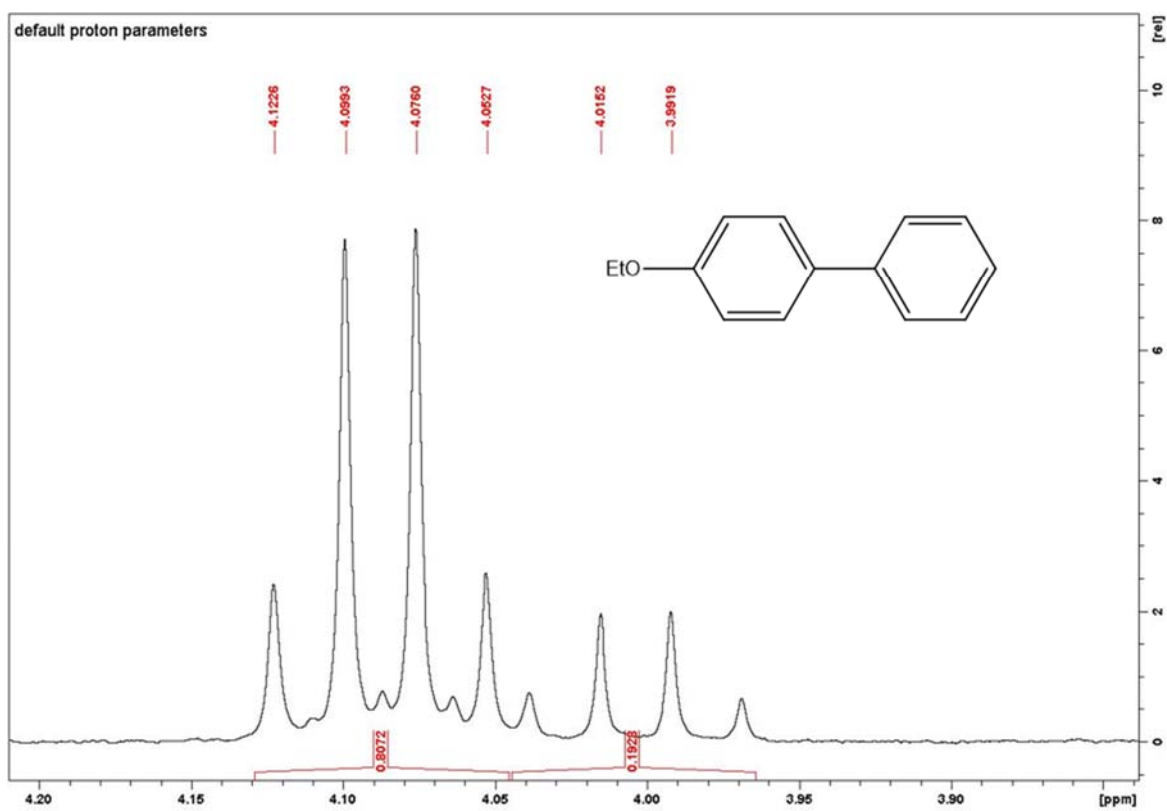
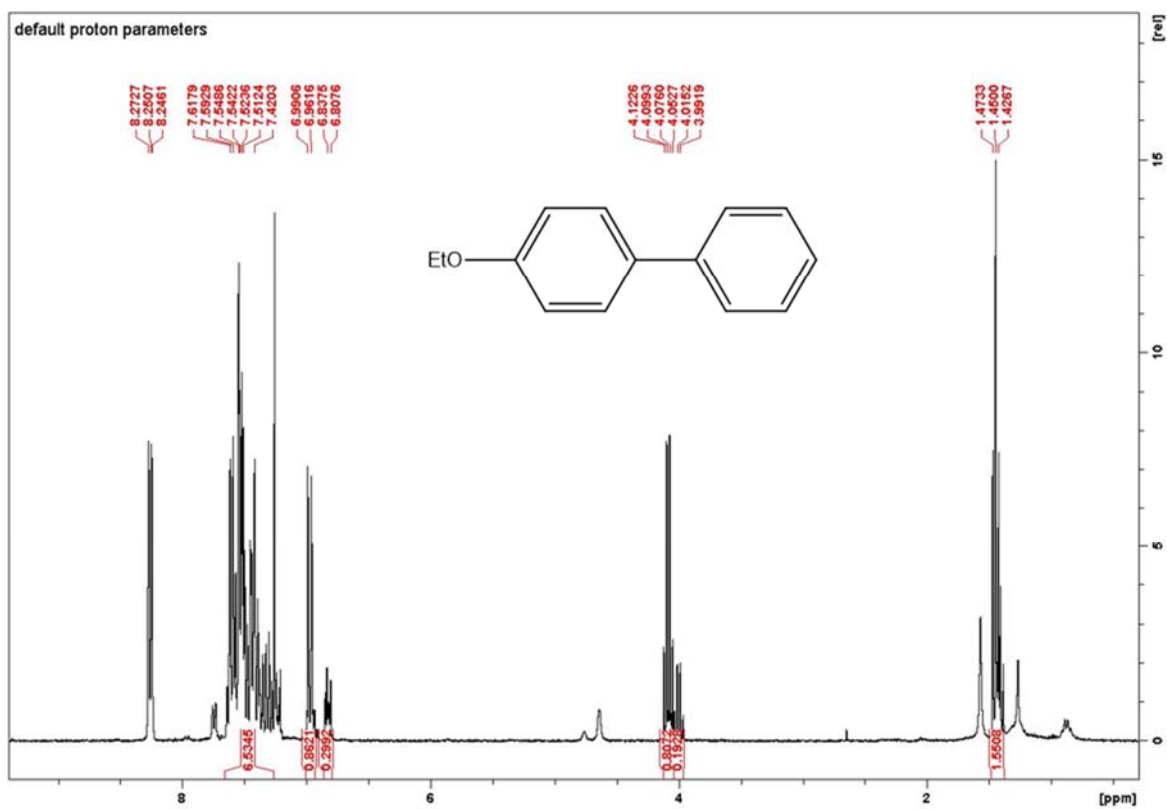


Figure S13. ^1H NMR spectra (300 MHz, CDCl_3) for the conversion of *p*-chloroethoxybenzene.

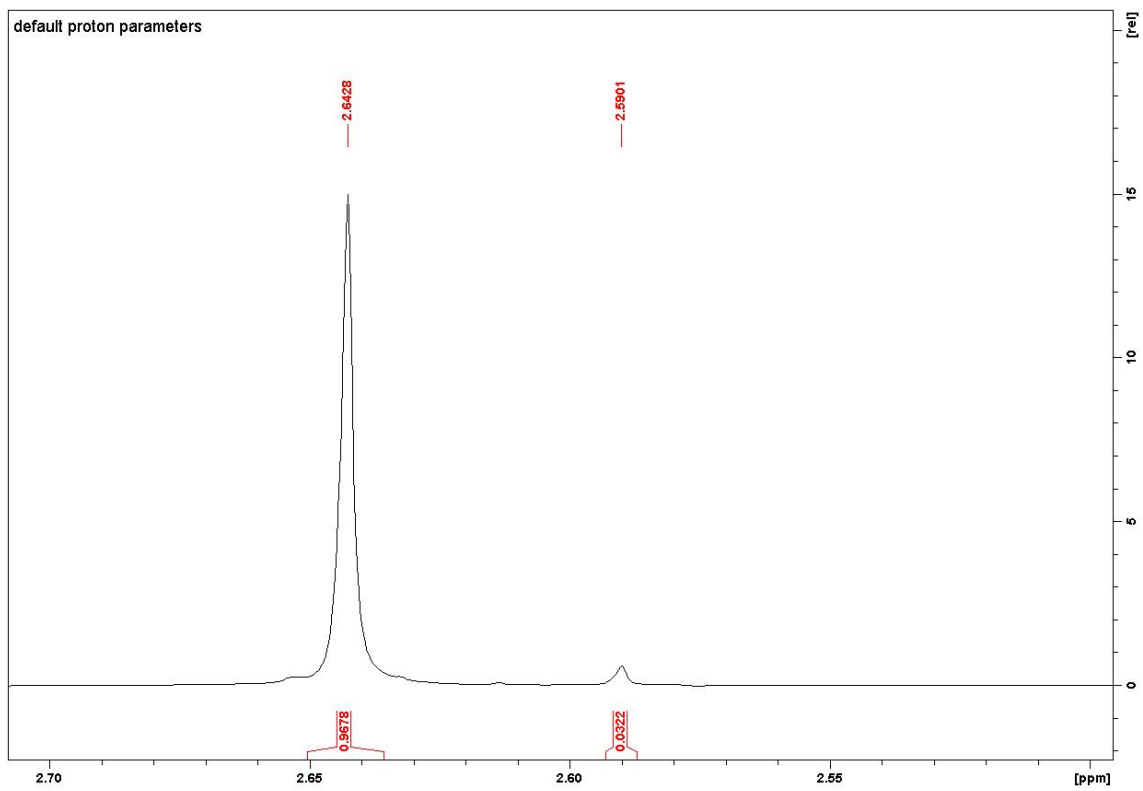
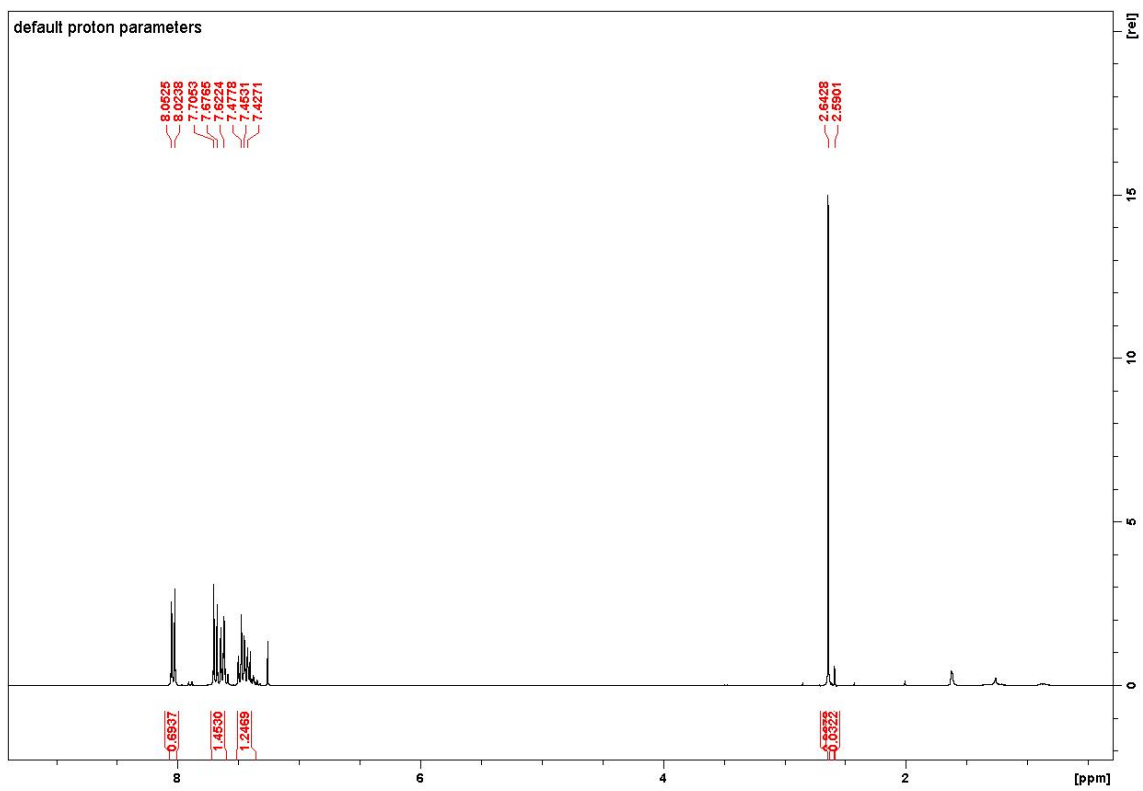


Figure S14. ^1H NMR spectra (300 MHz, CDCl_3) for the conversion of *p*-chloroacetophenone with two-month old Pd/PANI composite.

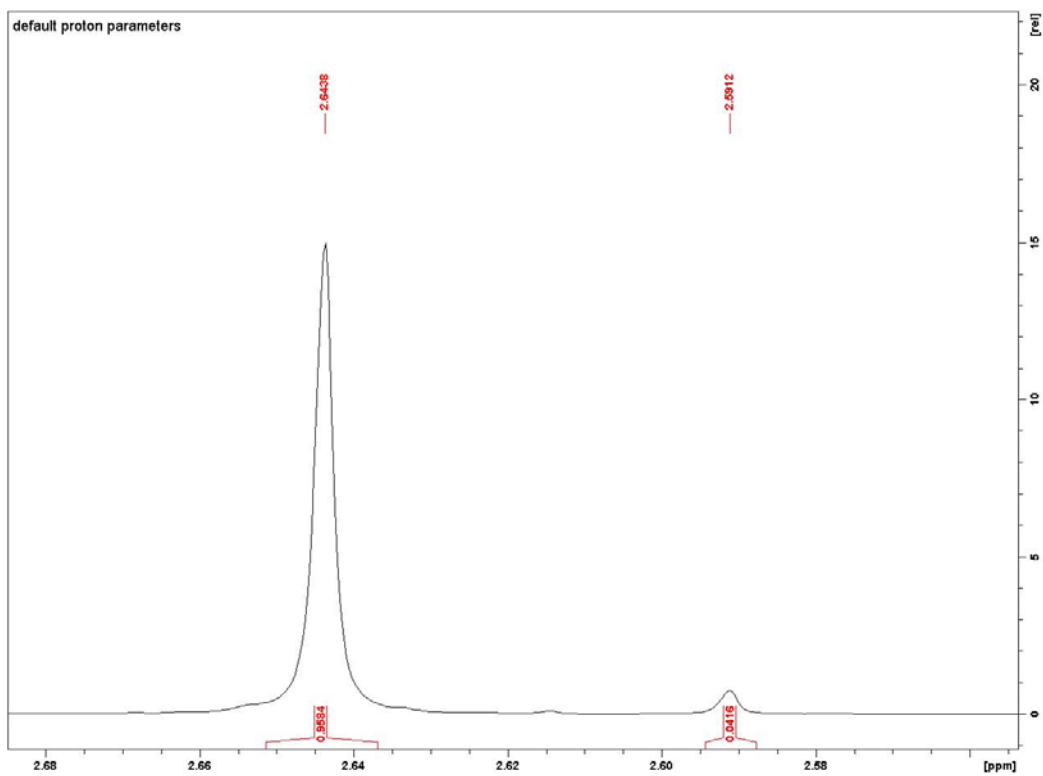
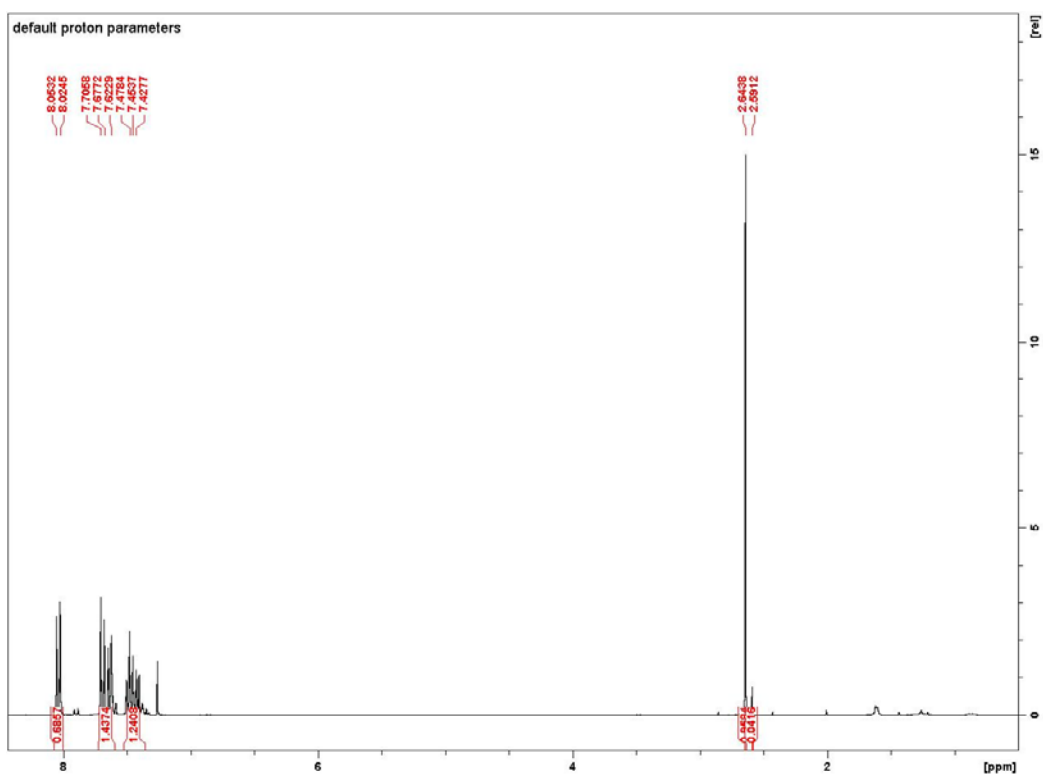


Figure S15. ^1H NMR spectra (300 MHz, CDCl_3) for the conversion of *p*-chloroacetophenone after the first attempt at recycling.

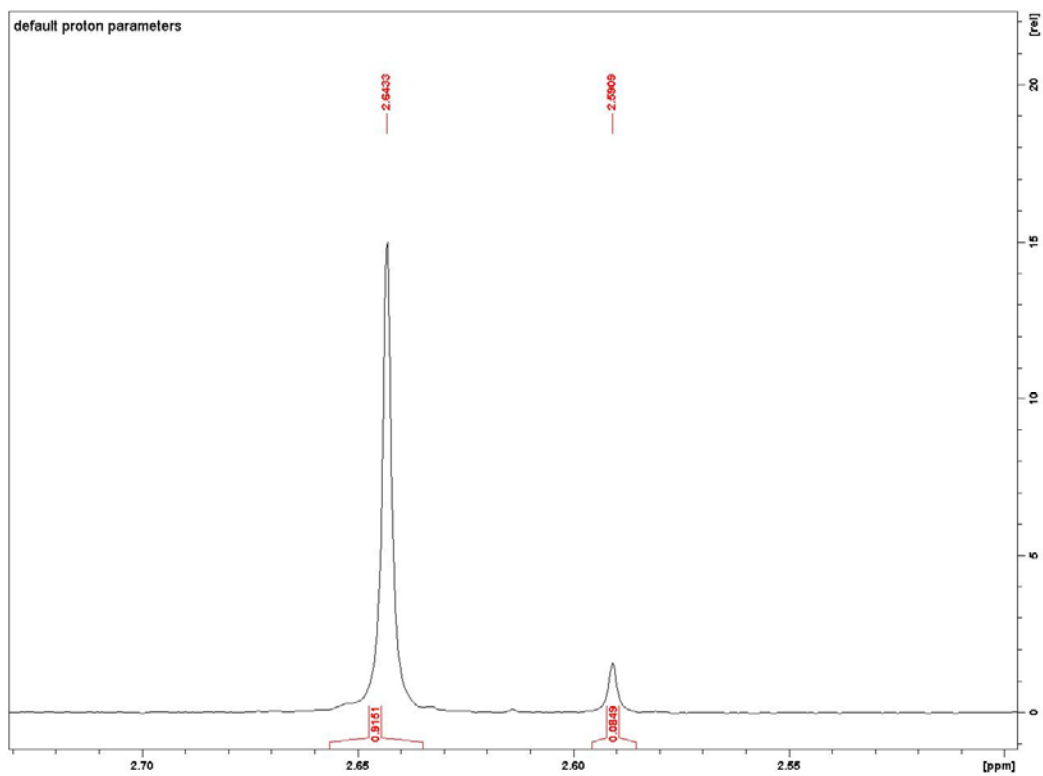
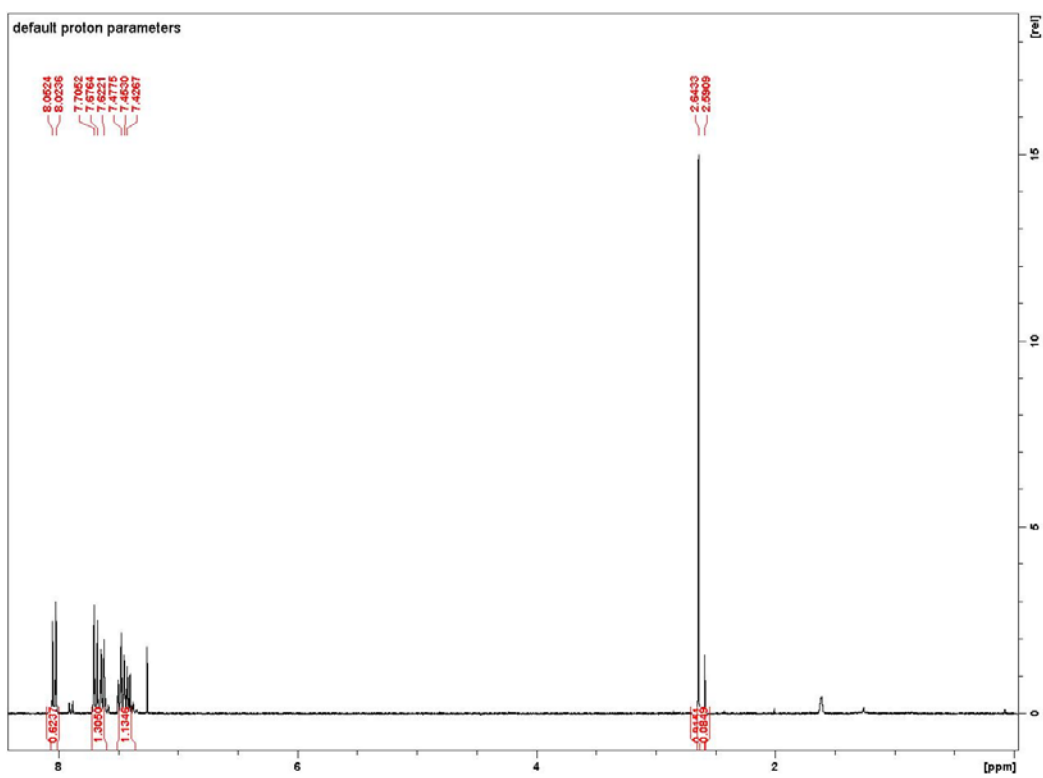


Figure S16. ^1H NMR spectra (300 MHz, CDCl_3) for the conversion of *p*-chloroacetophenone after the second attempt at recycling.

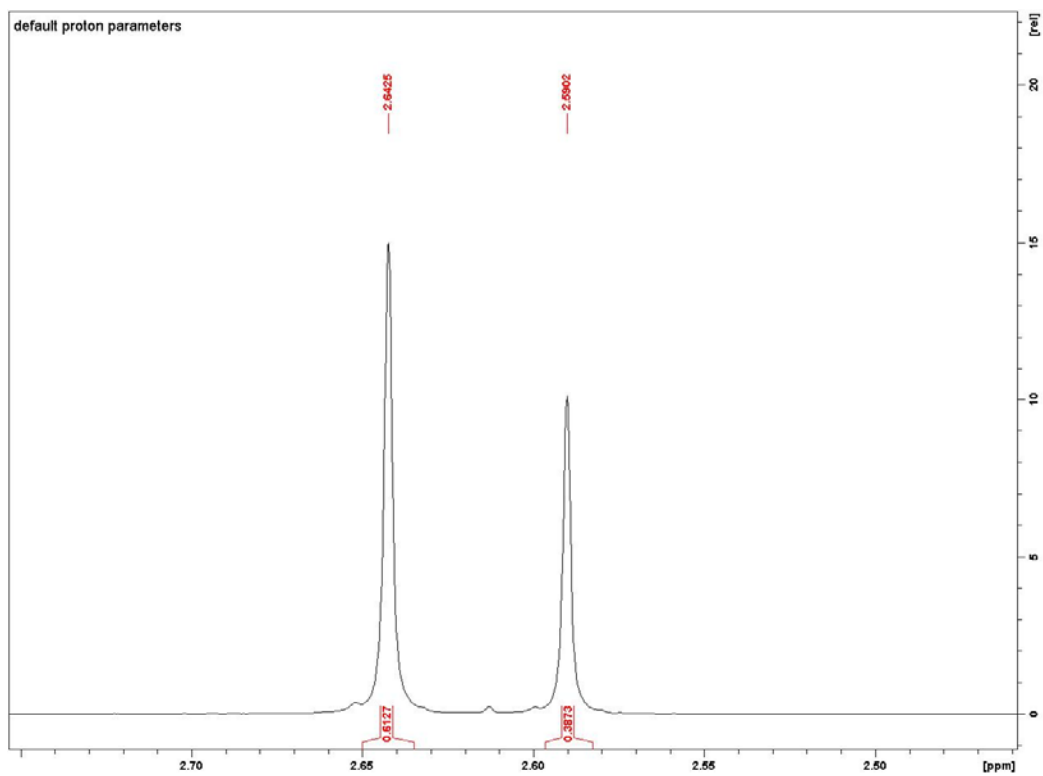
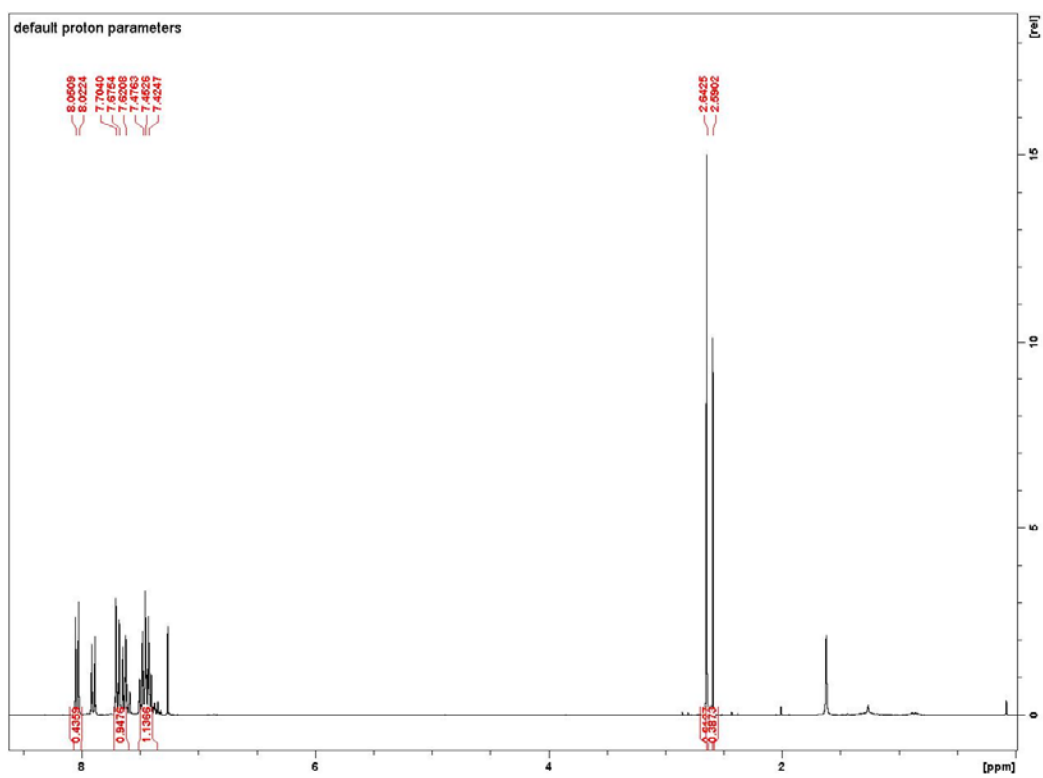


Figure S17. ^1H NMR spectra (300 MHz, CDCl_3) for the conversion of *p*-chloroacetophenone after the third attempt at recycling.

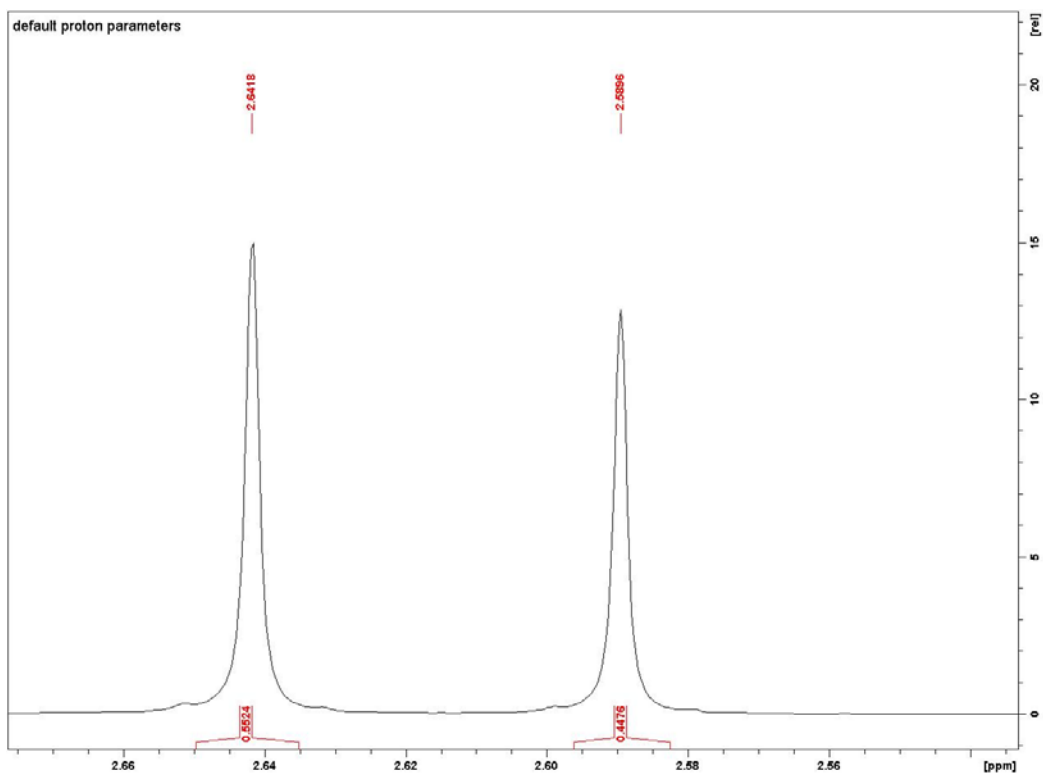
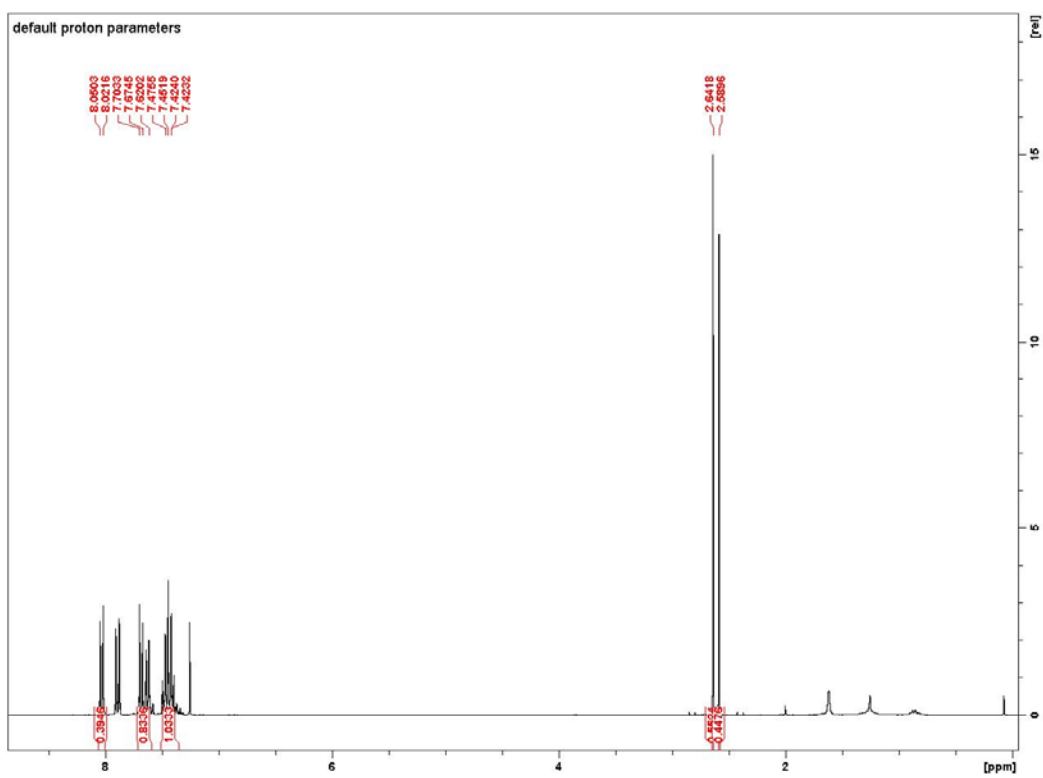


Figure S18. ^1H NMR spectra (300 MHz, CDCl_3) for the conversion of *p*-chloroacetophenone after the fourth attempt at recycling.

Table S1. Monitoring the reaction of 4-acetylbiphenyl over time

4-acetylbiphenyl conversion	
Time (h)	Conversion (%)
2	86
3	92
4	98

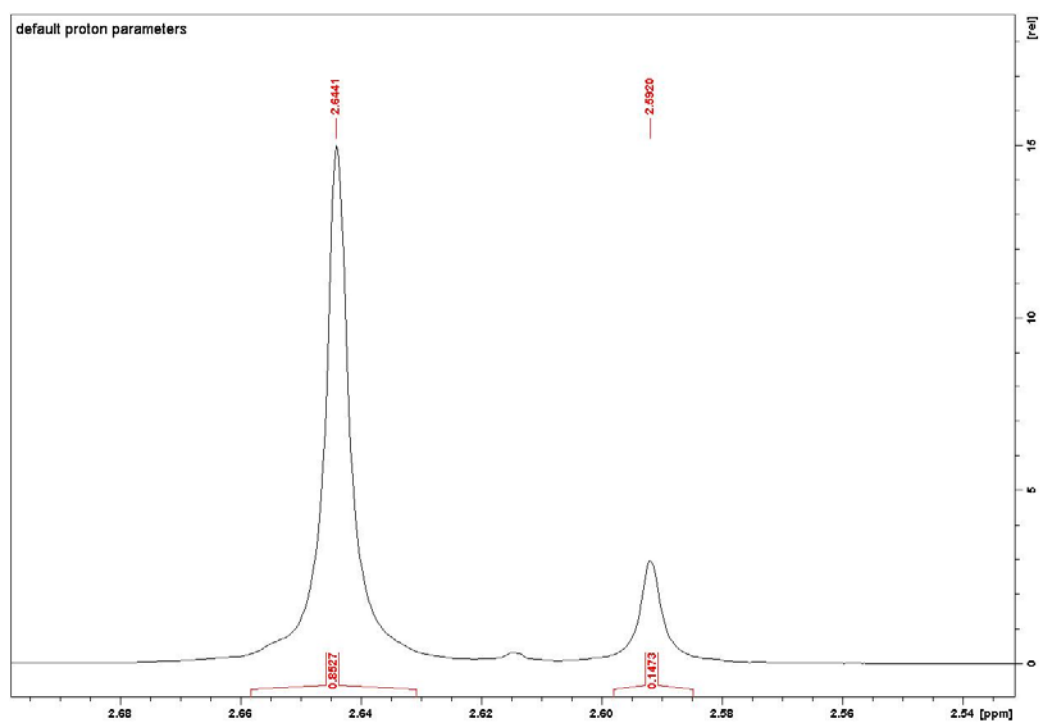
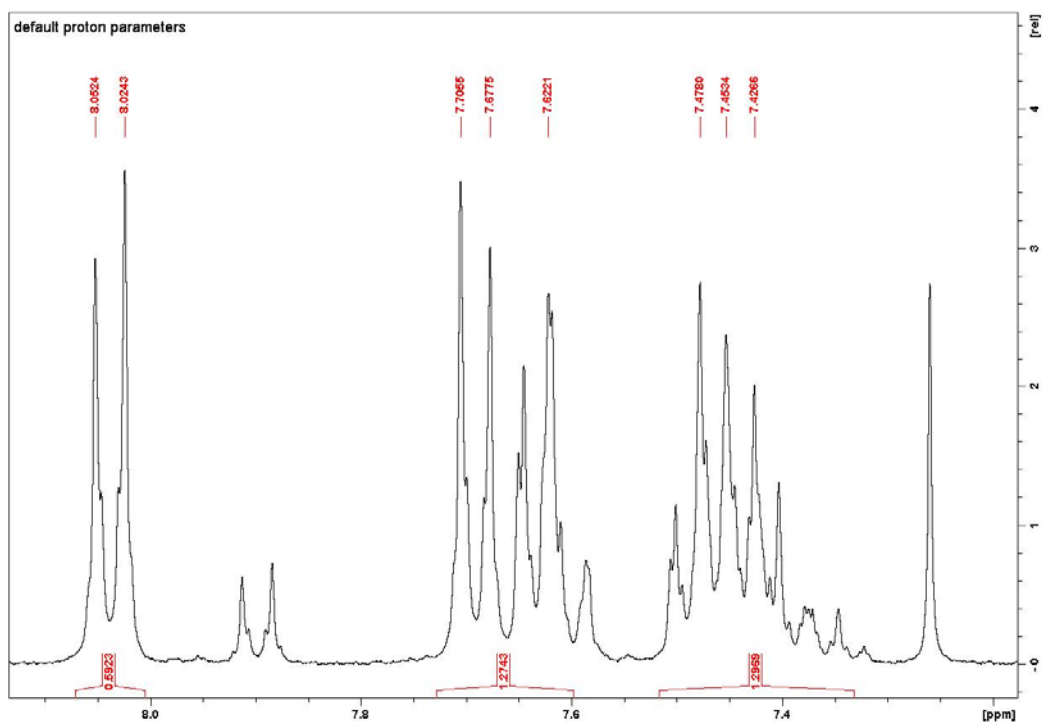


Figure S19. ^1H NMR spectra (300 MHz, CDCl_3) for the conversion of *p*-chloroacetophenone after 2 h.

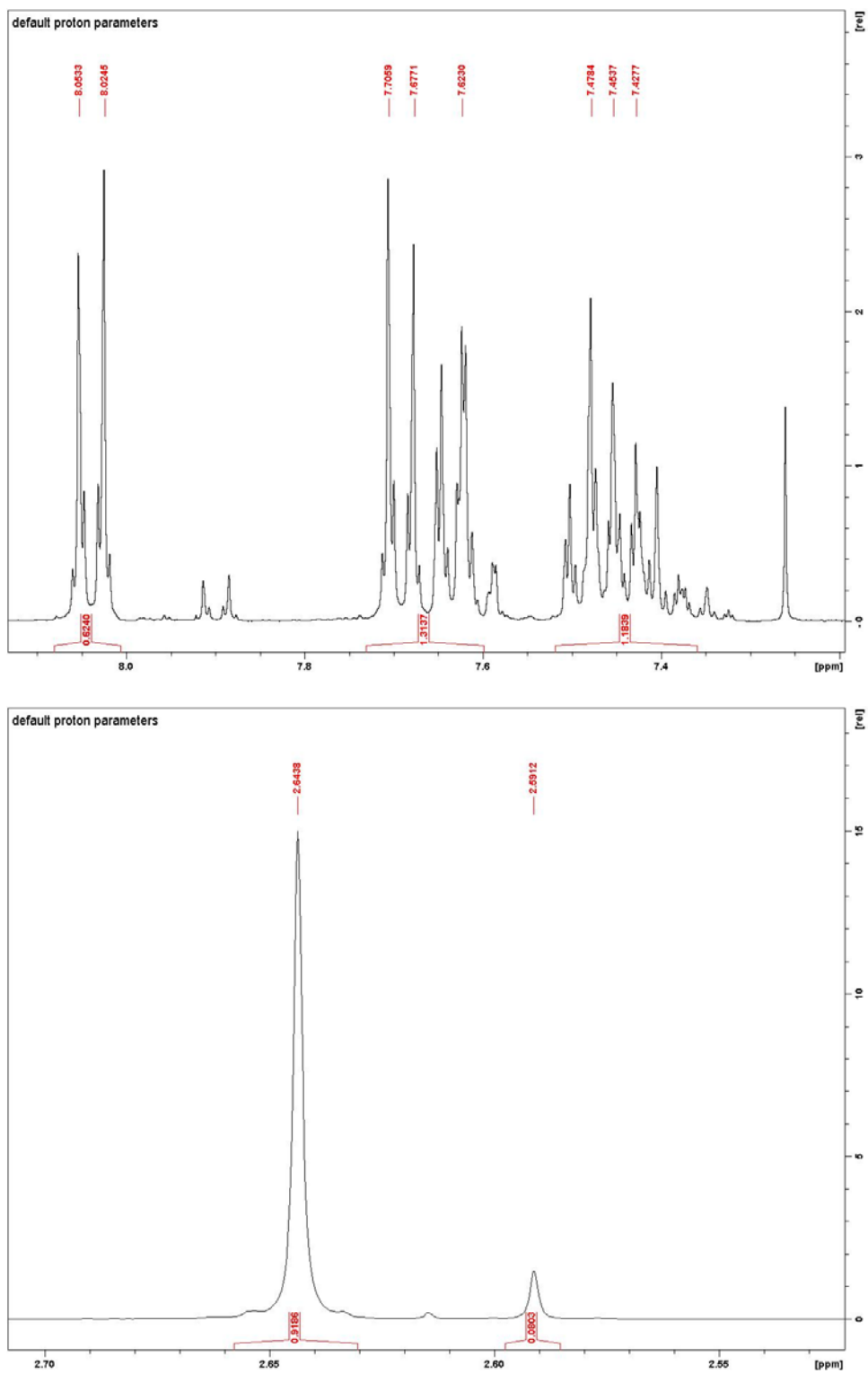


Figure S20. ¹H NMR spectra (300 MHz, CDCl₃) for the conversion of *p*-chloroacetophenone after 3 h.

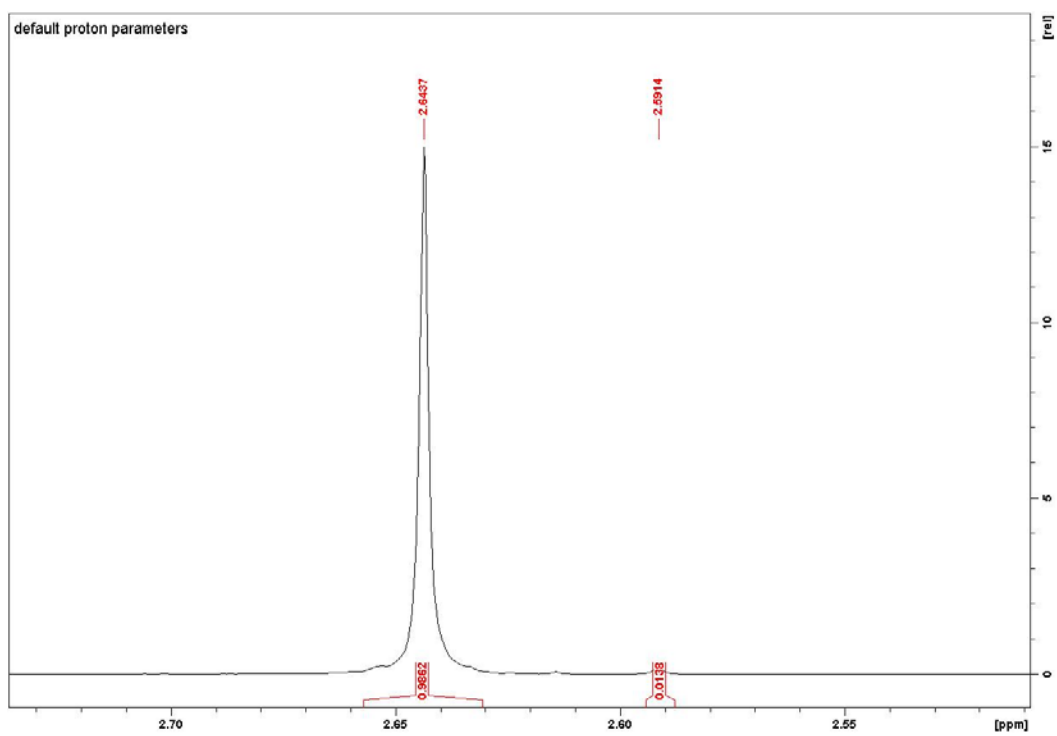
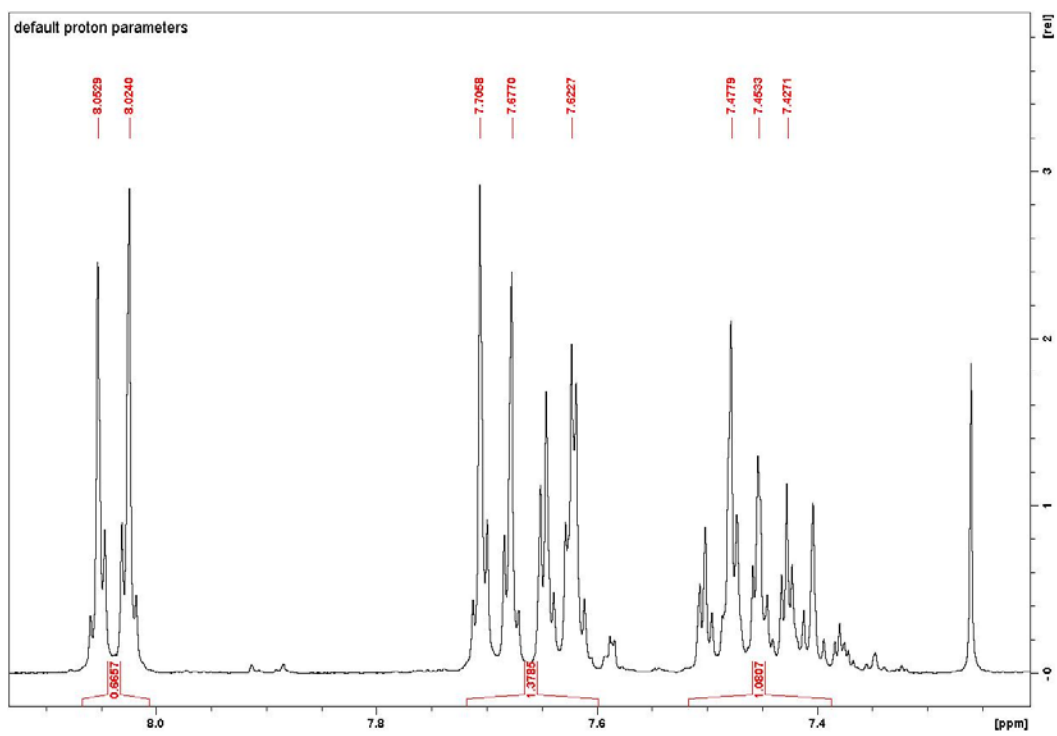


Figure S21. ^1H NMR spectra (300 MHz, CDCl_3) for the conversion of *p*-chloroacetophenone after 4 h.

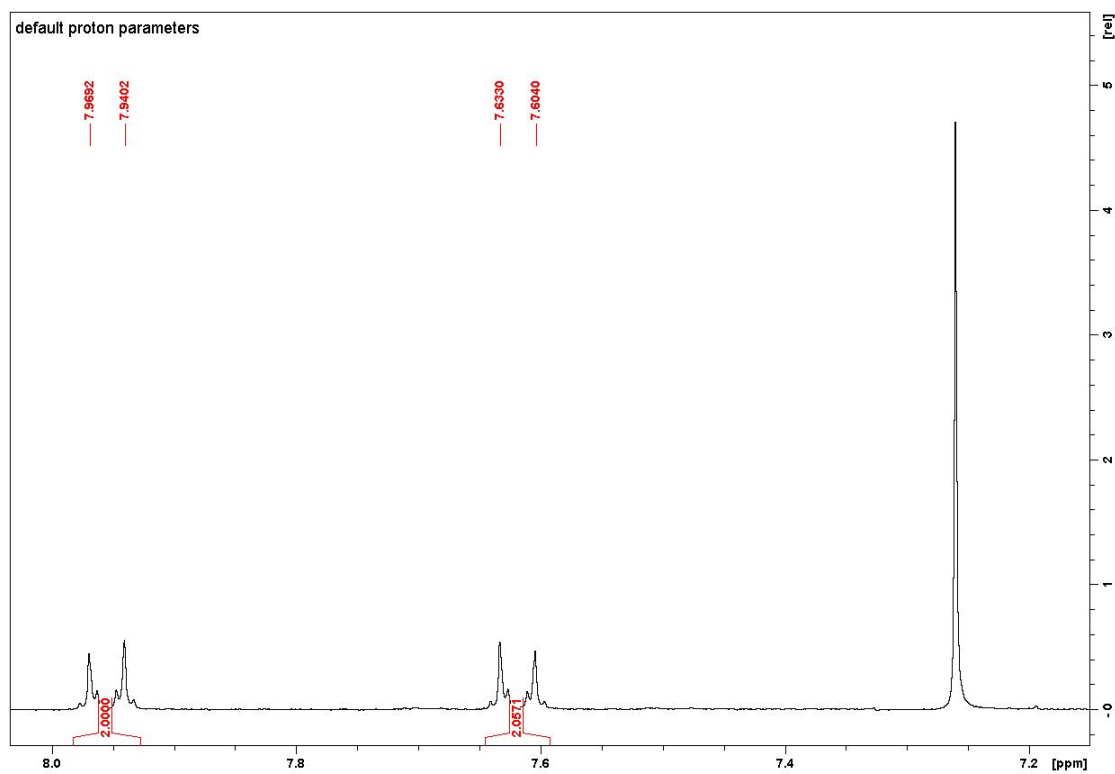


Figure S22. ^1H NMR spectrum (300 MHz, CDCl_3) of *p*-bromobenzoic acid.

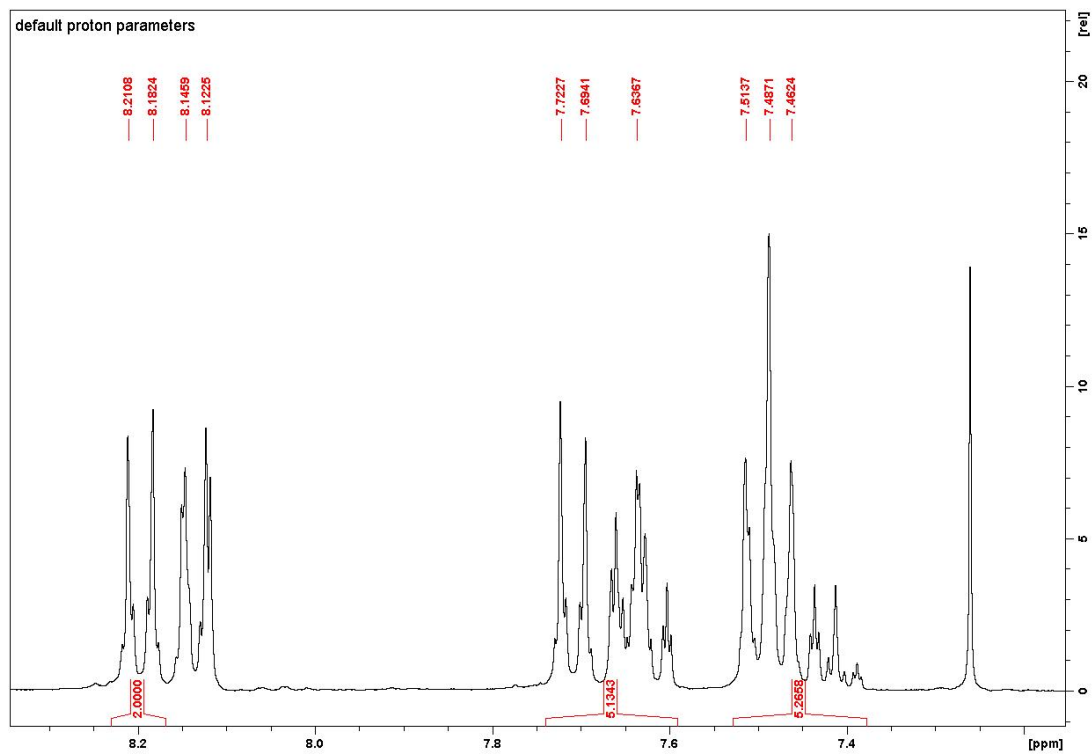


Figure S23. ^1H NMR spectrum (300 MHz, CDCl_3) of 4-biphenylbenzoic acid.

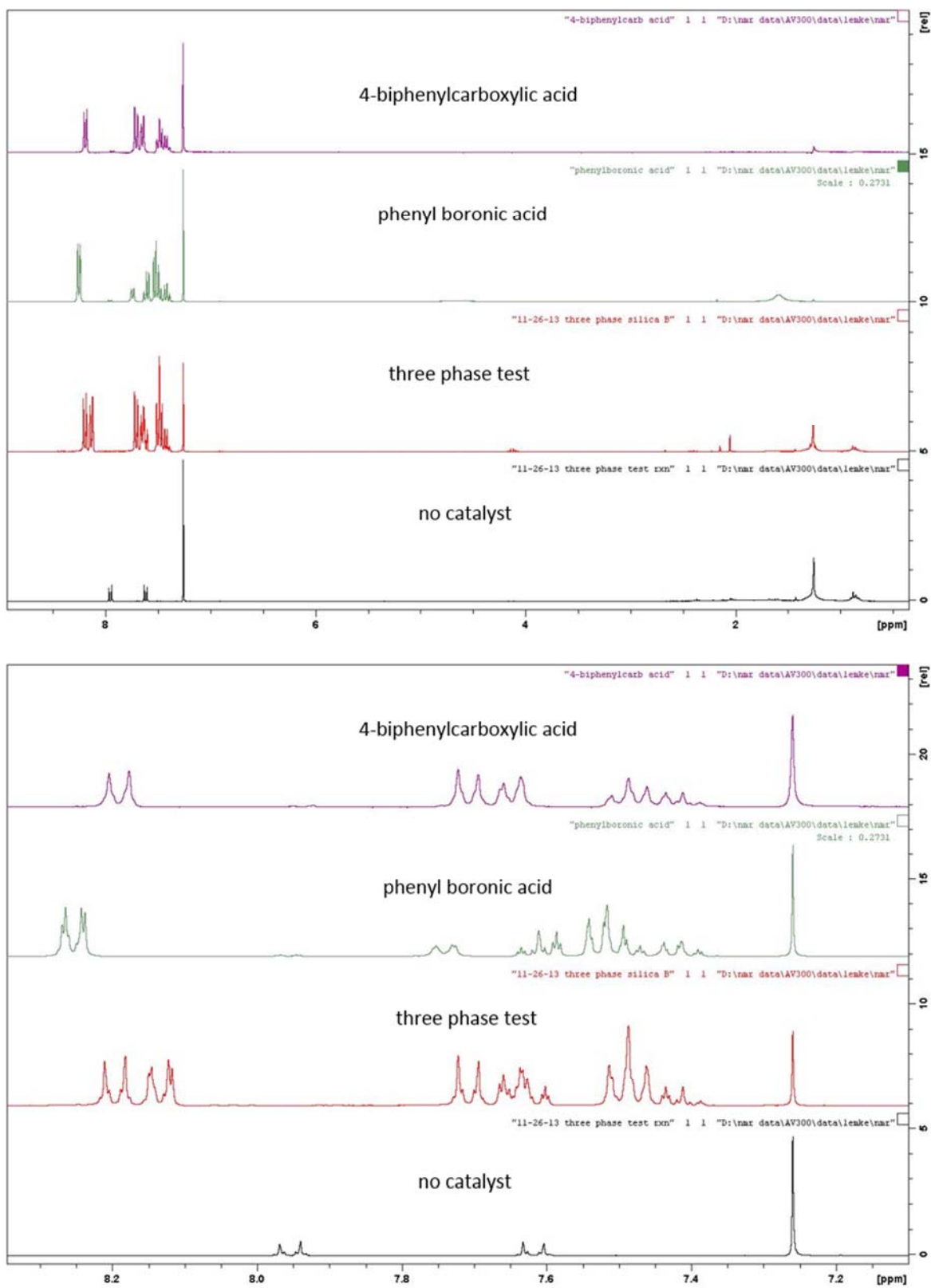


Figure S24. Comparison of ^1H NMR spectra (300 MHz, CDCl_3) for the three-phase test reaction.