

Electronic Supplementary Information

Toward eco-friendly protocols: insights into direct arylation polymerizations under aerobic conditions in anisole

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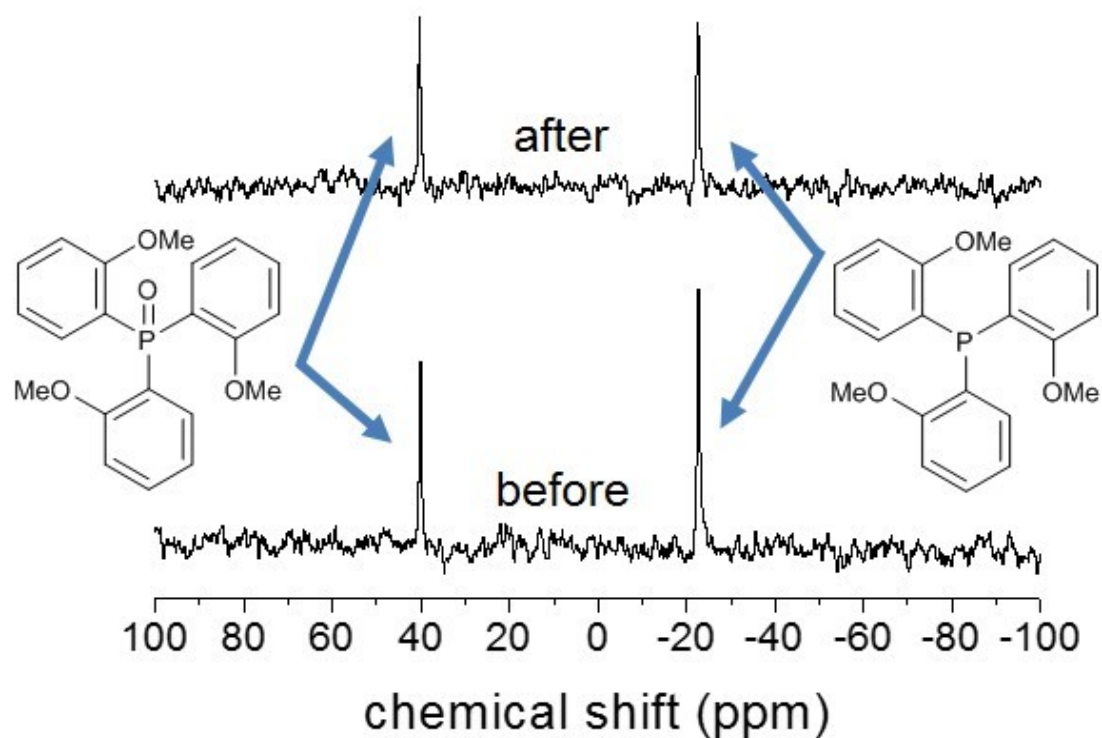


Fig. S1. ^{31}P NMR spectra (recorded in CDCl_3) of $\text{P}(o\text{-Anisyl})_3$ dispersed in anisole before and after a thermal treatment at $110\text{ }^\circ\text{C}$ for 24 h in air. The comparison clearly evidences the formation of a new species (the phosphine-oxide) immediately after the phosphine dissolution in anisole under aerobic conditions. The protection exerted by the anisole vapours against the oxygen dissolution in the solvent during the thermal treatment avoids the complete oxidation of the pristine ligand, as described in the manuscript.

Table S1. Molecular weights and yield of **P1** synthesized by using different palladium precatalysts.

Entry	Palladium source	Yield (%) ^a	M _n (Da) ^b	M _w (Da) ^b	Đ ^b
1	Pd ₂ dba ₃	42	4500	6800	1.5
2	Pd(AcO) ₂	58	5100	7000	1.4
3	Pd(PivO) ₂	53	5000	7900	1.6

^aMeasured after polymer precipitation in methanol, Soxhlet washing with methanol, acetone and hexane, Soxhlet extraction with chloroform, and reprecipitation in methanol. ^bNumber-average molecular weights (M_n), weight-average molecular weights (M_w) and dispersity (Đ) as determined by GPC (PS standards, THF).

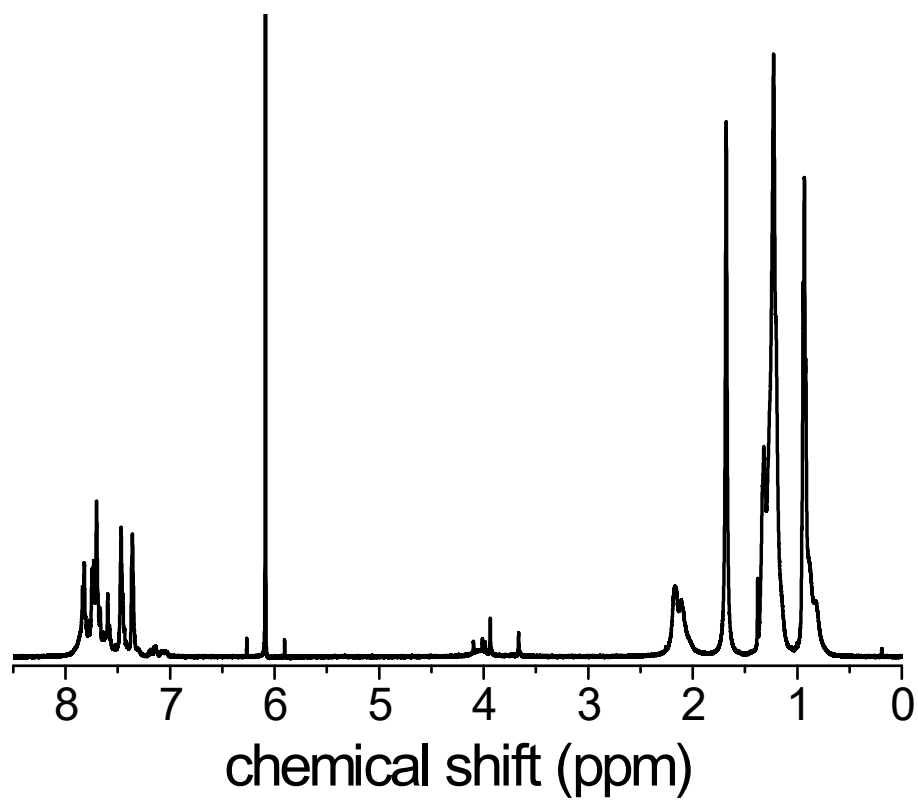


Fig. S2. ¹H NMR spectrum of **P1** (entry 5) recorded in C₂D₂Cl₄.

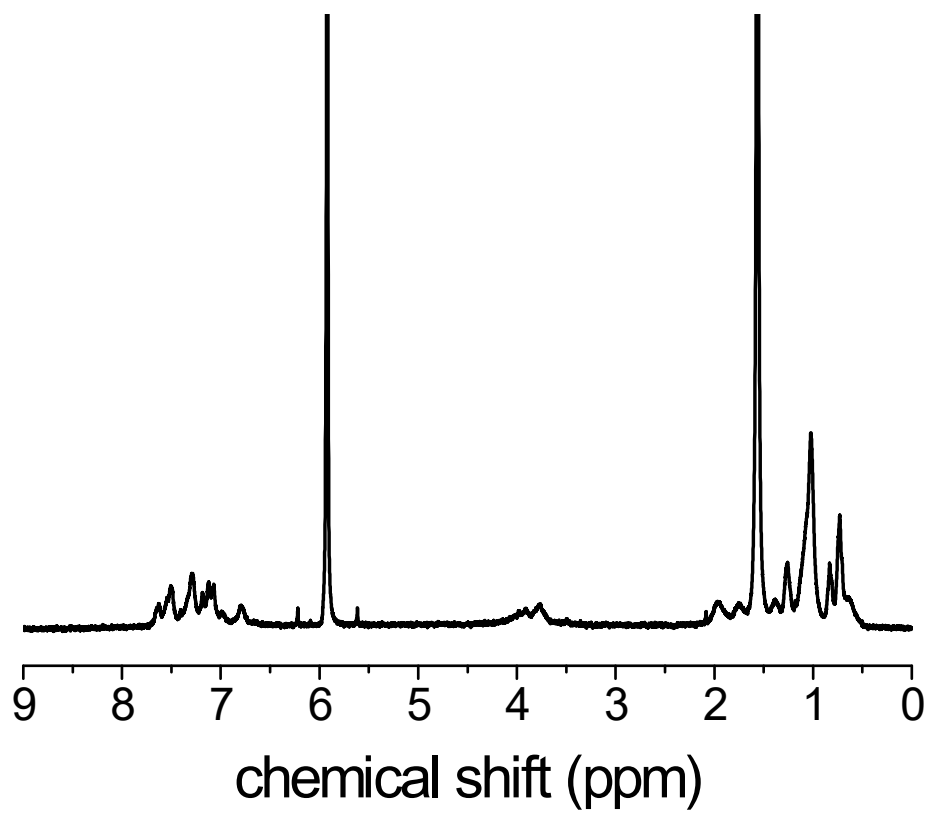


Fig. S3. ^1H NMR spectrum of **P2** recorded in $\text{C}_2\text{D}_2\text{Cl}_4$.

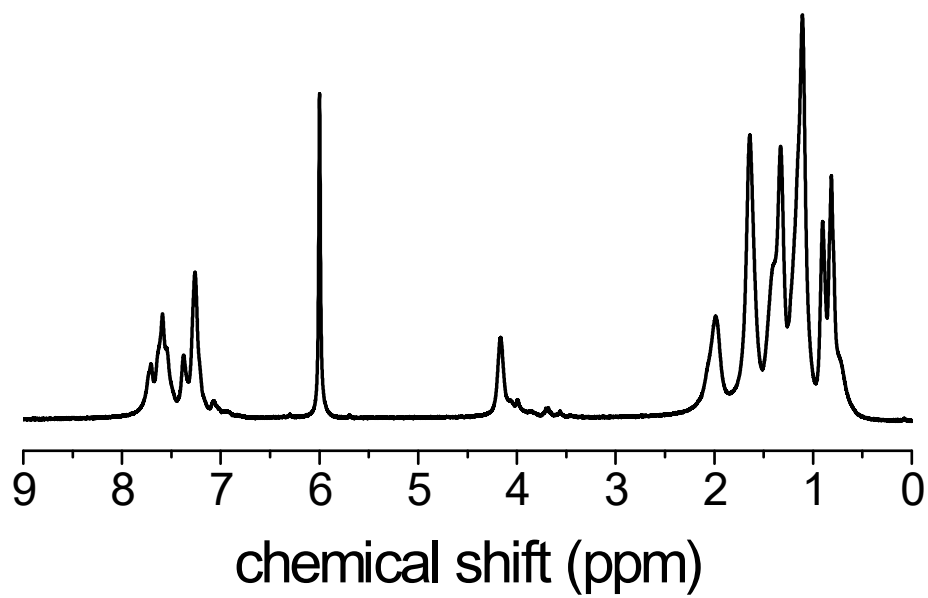


Fig. S4. ^1H NMR spectrum of **P3** recorded in $\text{C}_2\text{D}_2\text{Cl}_4$.

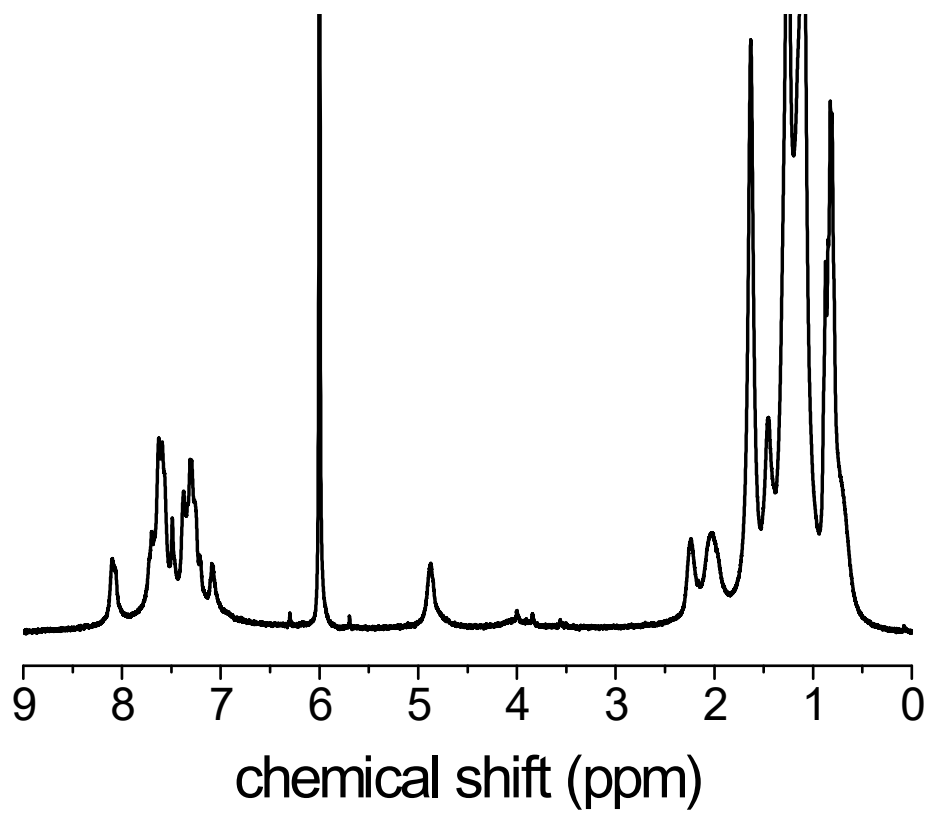


Fig. S5. ^1H NMR spectrum of **P4** recorded in $\text{C}_2\text{D}_2\text{Cl}_4$.

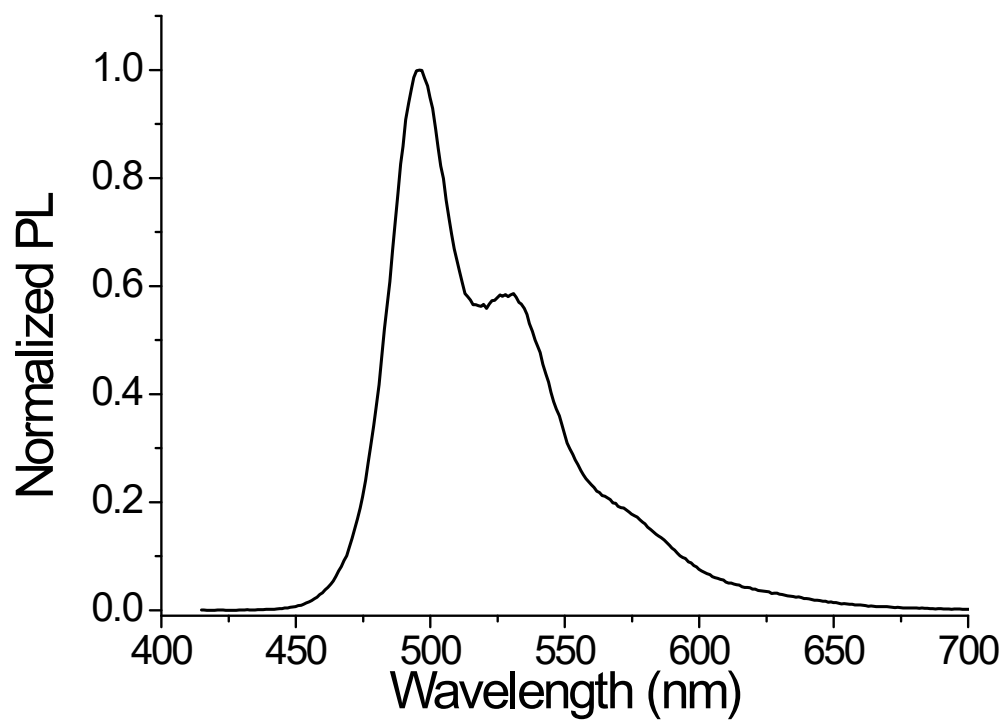


Fig. S6. PL spectrum of **P1** recorded in chloroform.

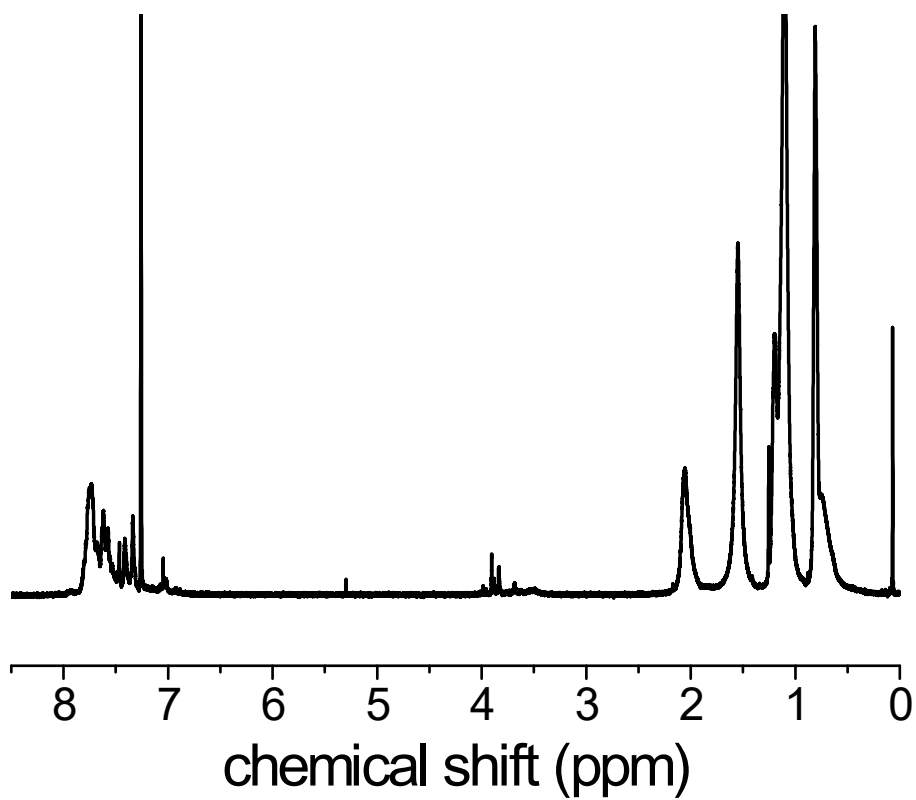


Fig. S7. ^1H NMR spectrum of **P5** recorded in CDCl_3 .

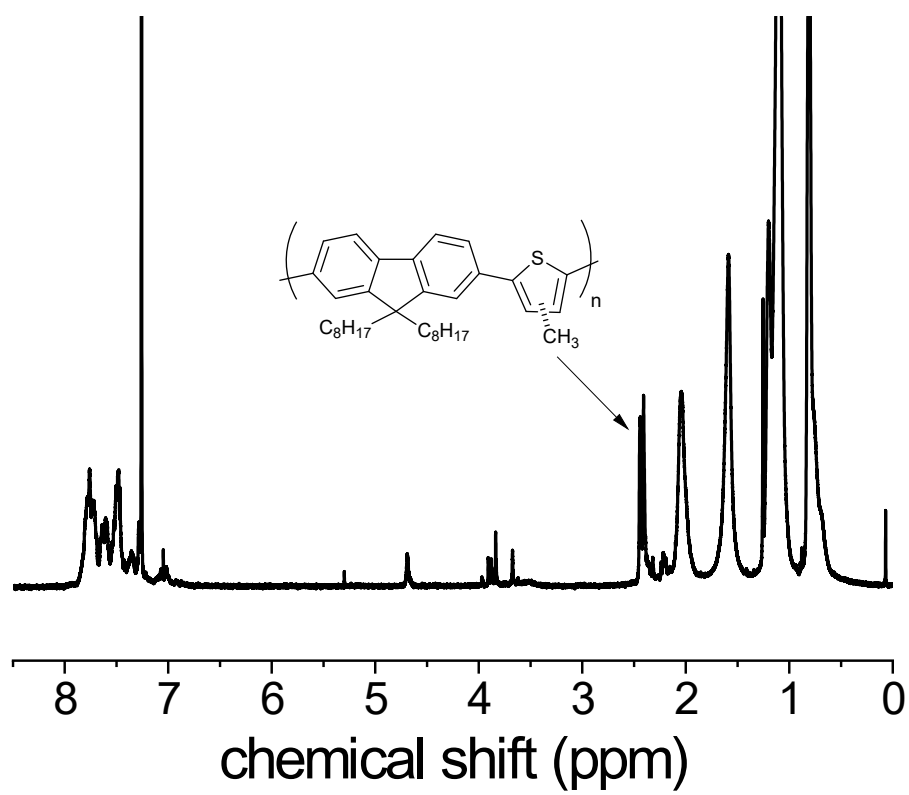


Fig. S8. ^1H NMR spectrum of **P6** recorded in CDCl_3 .

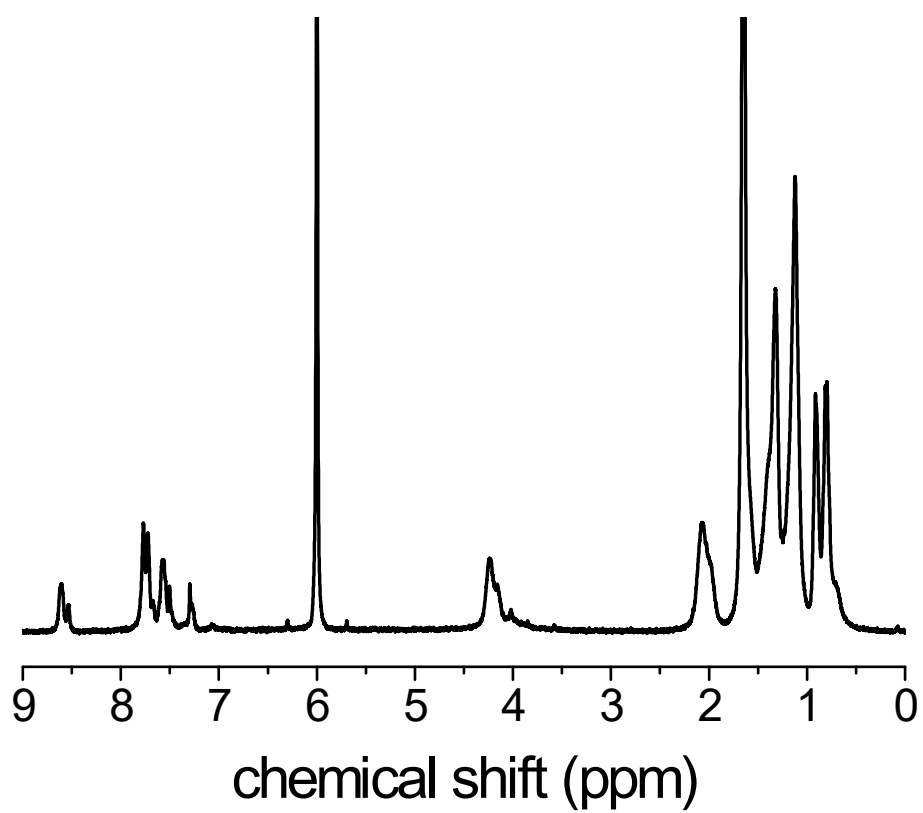


Fig. S9. ^1H NMR spectrum of **P8** recorded in $\text{C}_2\text{D}_2\text{Cl}_4$.