Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supplementary Information for

Enantio- and Diastereoselective Polymerization: Asymmetric Allylic Alkylation Catalyzed by a Planar-Chiral Cp'Ru Complex

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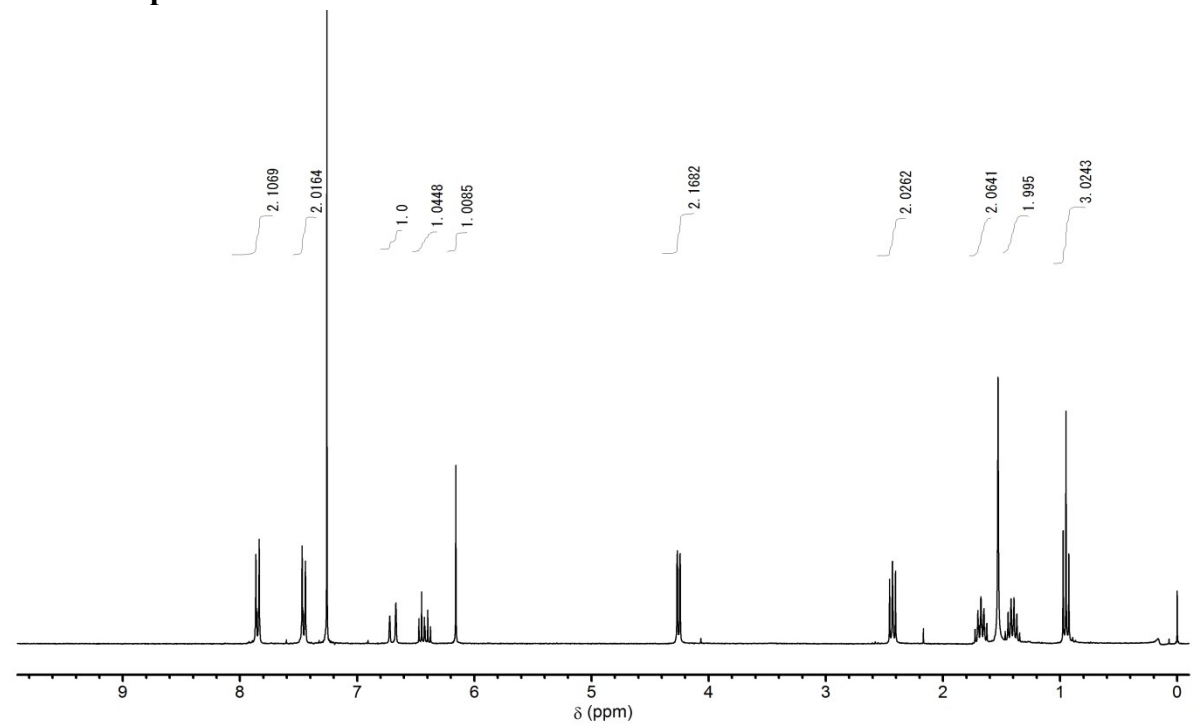
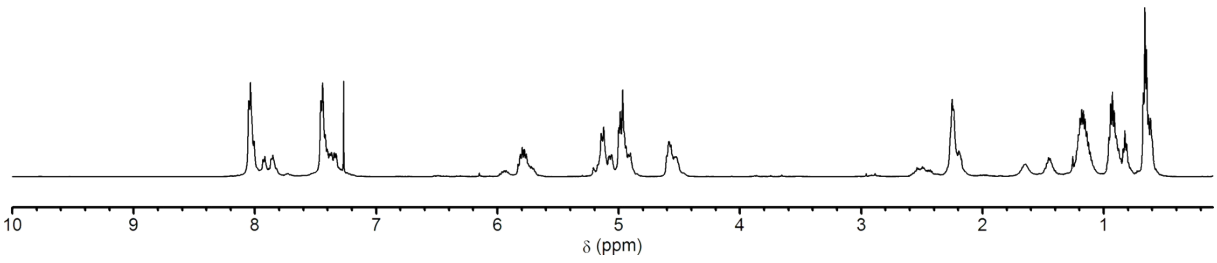
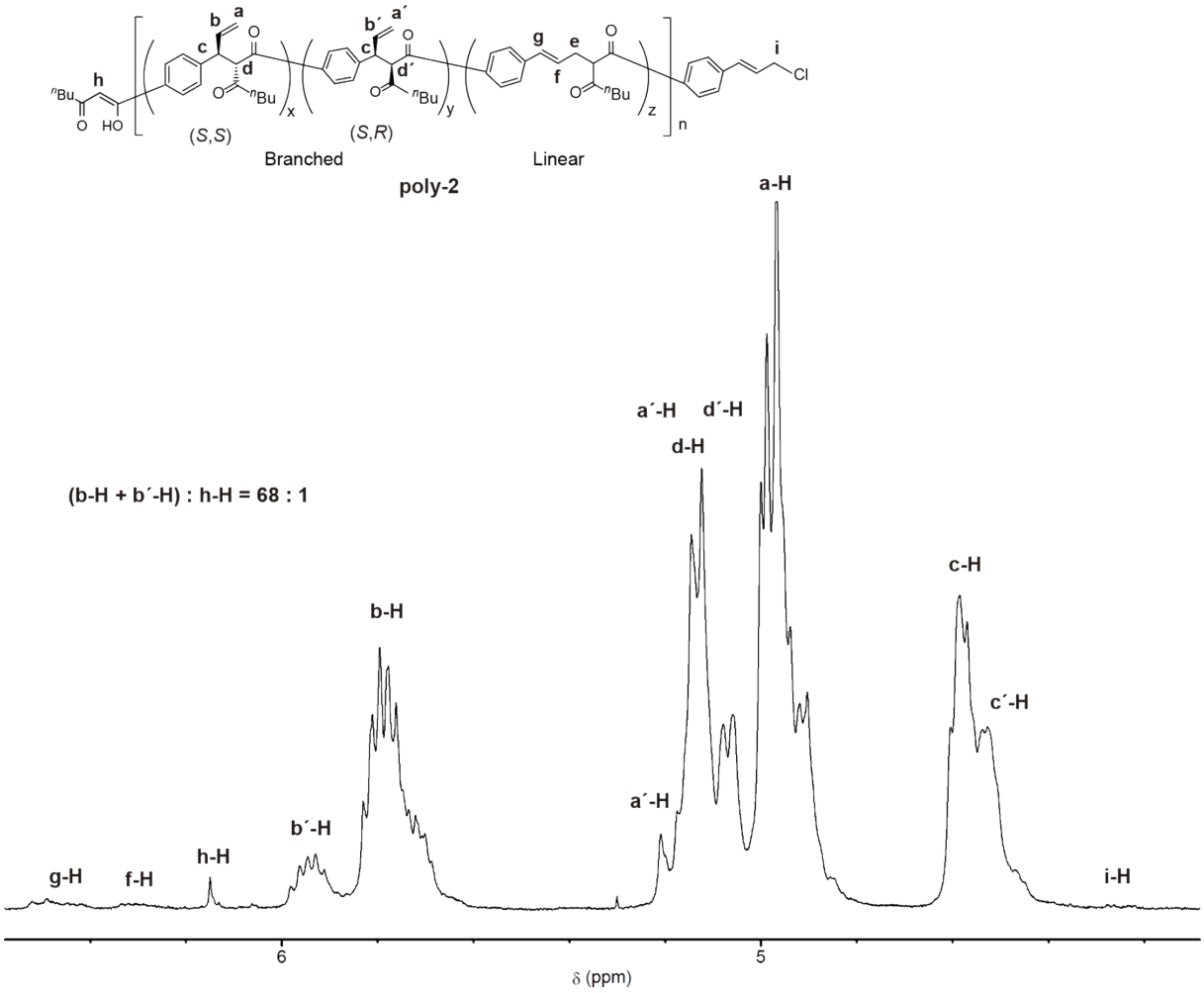
^{1}H NMR Spectrum of 2

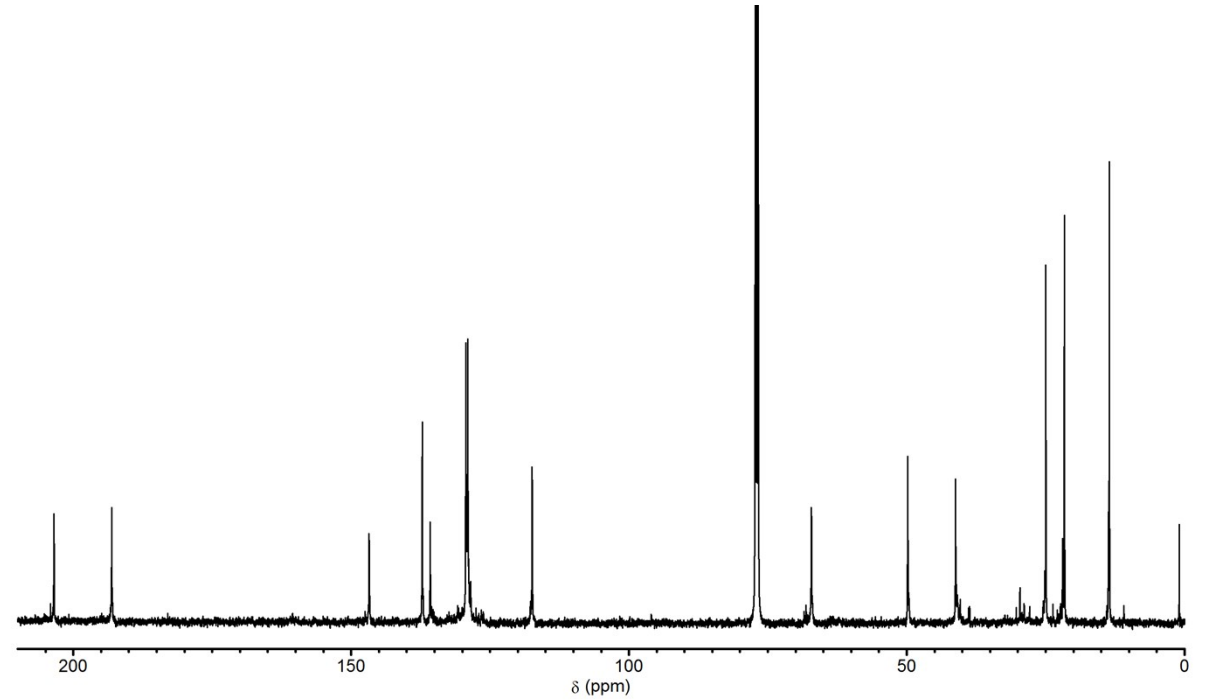


^{1}H NMR Spectrum of poly-2

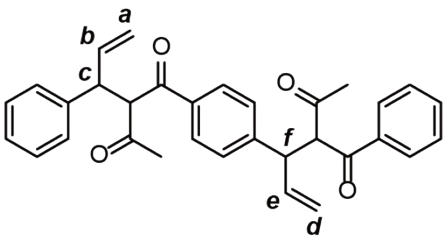




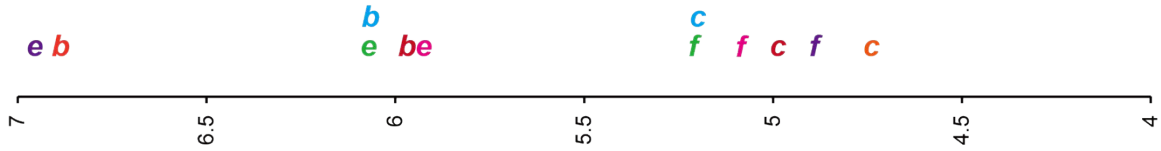
^{13}C NMR Spectrum of poly-2



Simulation of ^{1}H NMR spectrum of 6 Using DFT (B3LYP-GIAO/6-311+G(2df,2p)) Calculation

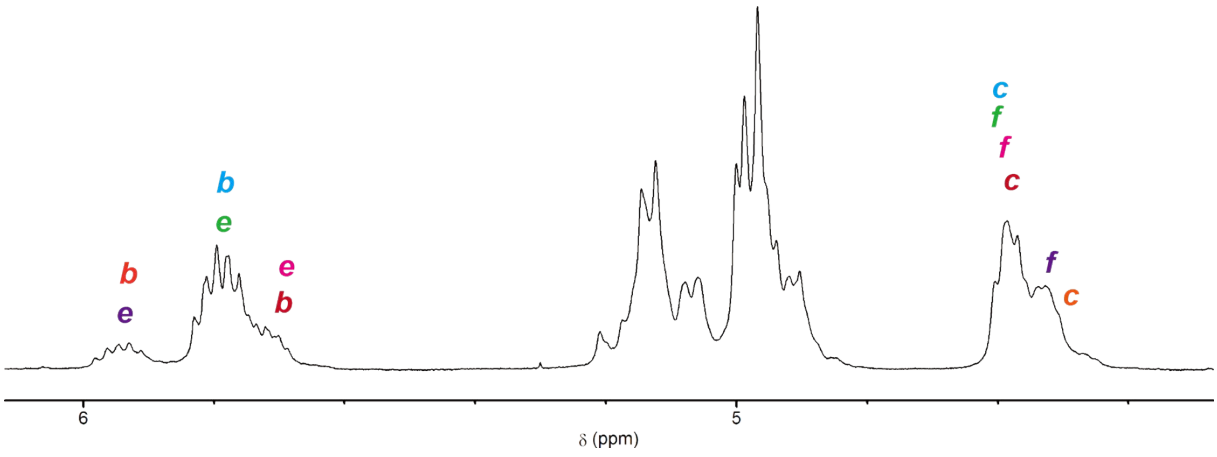


(S,S)-(S,S) (S,S)-(S,S) (S,S)-(S,R) (S,S)-(S,R) (S,R)-(S,S) (S,R)-(S,S)

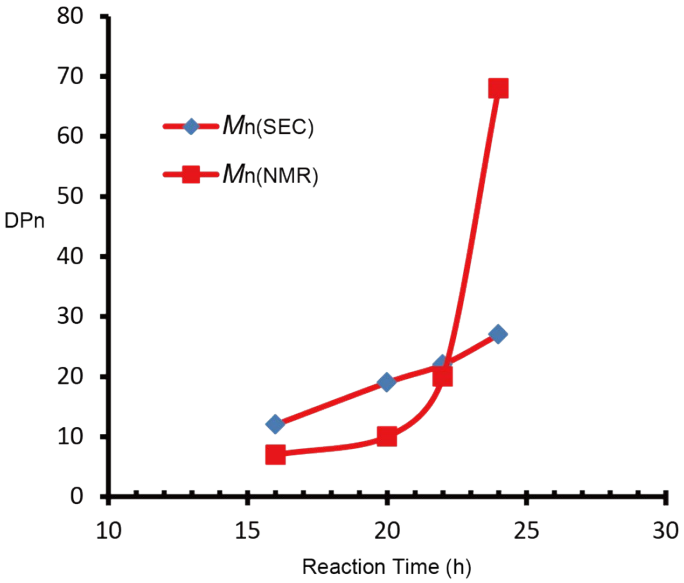


	6-(*S*,*S*),(*S*,*S*)	**6**-(*S*,*S*),(*S*,*R*)	**6**-(*S*,*R*),(*S*,*S*)
b	6.08	6.07	6.91
c	5.19	4.99	4.74
e	5.97	6.94	5.96
f	5.19	4.89	5.08

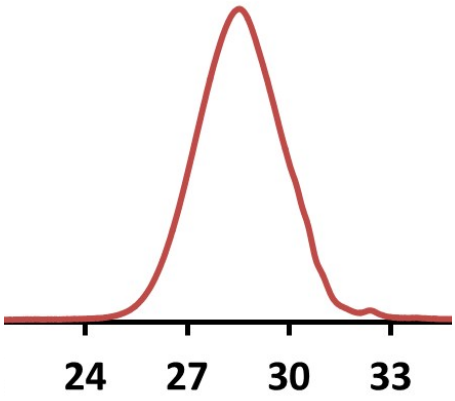
Assignment of ^{1}H NMR Spectrum of Poly-2 Based on DFT (B3LYP-GIAO/6-311+G(2df,2p)) Calculation



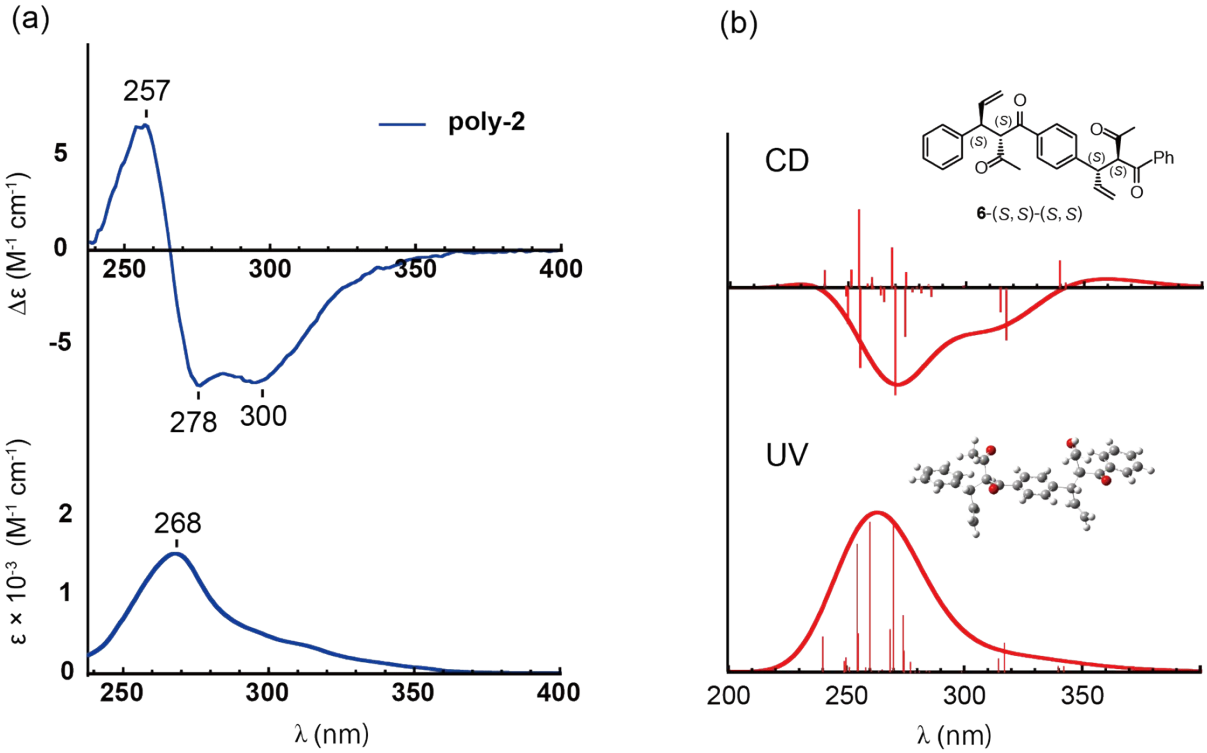
Time dependence of polymerization degree determined by ^{1}H NMR or SEC.



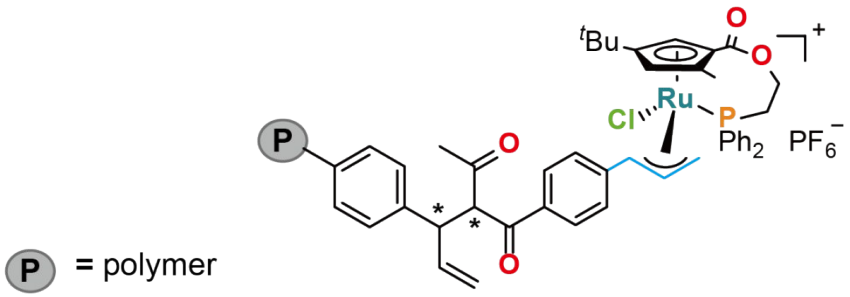
The SEC spectrum of crude product poly-2 (Table 1, entry 5).

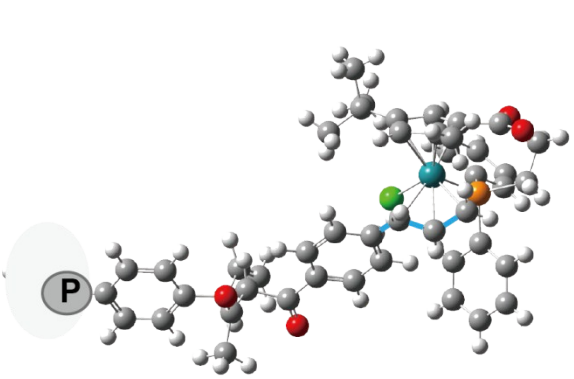


TD-DFT (B3LYP/6-31G) simulated CD and UV spectra of 6-(*S*,*S*)-(*S*,*S*)**

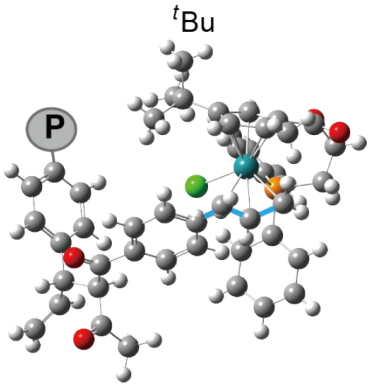


The proposed coordination structure of (*S*)-7. The structures are based on simulated structures of 5-(*S*,*S*) and 5-(*S*,*R*).





(*S*,*S*)-allylic chloride ((*S*)-**7**)



(*S*,*R*)-allylic chloride ((*S*)-**7**)