BEILSTEIN JOURNAL OF ORGANIC CHEMISTRY

Supporting Information

for

Selective ring-opening metathesis polymerization (ROMP) of cyclobutenes. Unsymmetrical ladderphane containing polycyclobutene and polynorbornene strands

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^{1}H and ^{13}C NMR spectra of both monomers and polymers, as well as GPC and kinetic investigation results

Figure S1: (a) Monomer conversion vs. time for **4** (solid square) and **5** (open circle) (0 °C, DCM-d_2); (b) First-order decay of **4** (solid square) and **5** (open circle) (0 °C, DCM-d_2).

Figure S2: (a) Monomer conversion vs. time for **4** (solid square) and **5** (open circle) (0 °C, THF-d_8); Right: Second-order decay of **4** (solid square) (0 °C, THF-d_8).

Figure S3: (a) ^{1}H (400 MHz) and (b) ^{13}C (100 MHz) NMR spectra of **9**..

Figure S4: (a) ^{1}H (400 MHz) and (b) ^{13}C (100 MHz) NMR spectra of **14**.

Figure S5: (a) ^{1}H (400 MHz) and (b) ^{13}C (100 MHz) NMR spectra of **8**.

Figure S6: (a) ^{1}H (400 MHz) and (b) ^{13}C (100 MHz) NMR spectra of **7**.

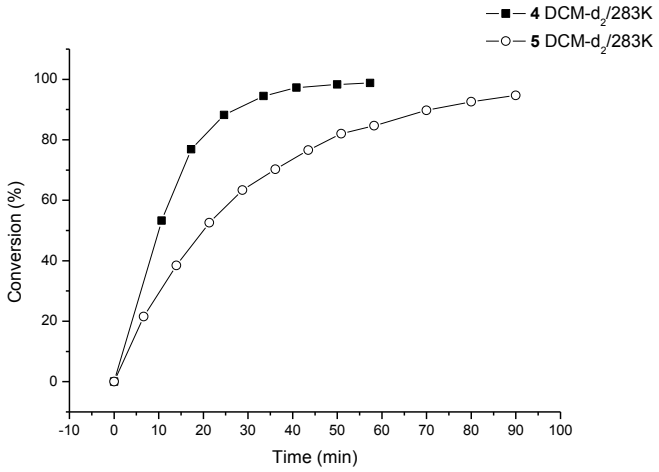
Figure S7: ^{1}H (400 MHz) and (b) ^{13}C (100 MHz) spectra of **19**.

Figure S8: Kinetics of the **6**-catalyzed reaction of **4** in CD_2Cl_2 at 10 ^oC The reaction was monitored by the decrease of the peak intensity for H-2 using the peaks for H-1 and H-1' as the internal reference. The spectra were recorded every ten minutes.

Figure S9: Kinetics of the **6**-catalyzed reaction of **5** in CD_2Cl_2 at 10 ^oC The reaction was monitored by the decrease of the peak intensity for H-2 using the peaks for H-1 and H-1' as the internal reference. The spectra were recorded every ten minutes.

Figure S10: Kinetics of the **6**-catalyzed reaction of **4** in THF at 0 ^oC The reaction was monitored by the decrease of the peak intensity for H-2 using the peaks for H-1 and H-1' as the internal reference. The spectra were recorded every twenty minutes.

(a)



(b)

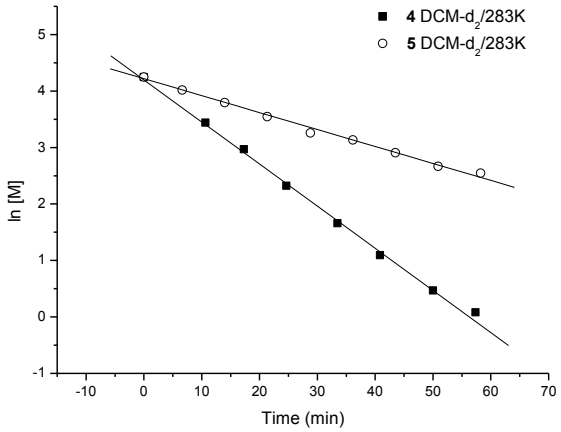
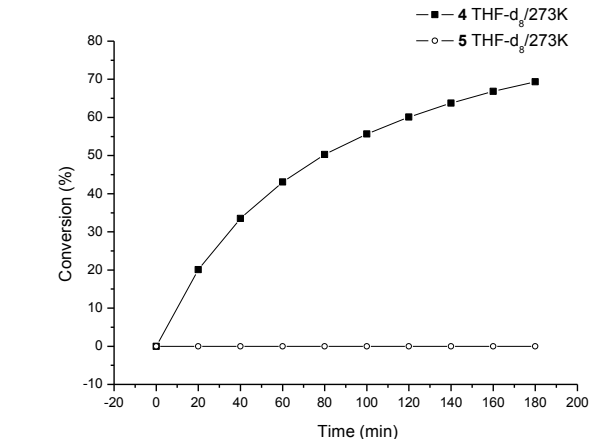


Figure S1: (a) Monomer conversion vs time for **4** (solid square) and **5** (open circle) (0 ^{o}C, DCM-d_2); (b) First-order decay of **4** (solid square) and **5** (open circle) (0 °C, DCM-d_2).

(a)



(b)

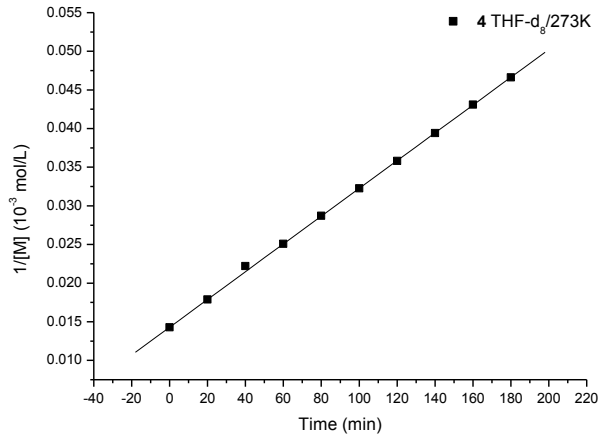
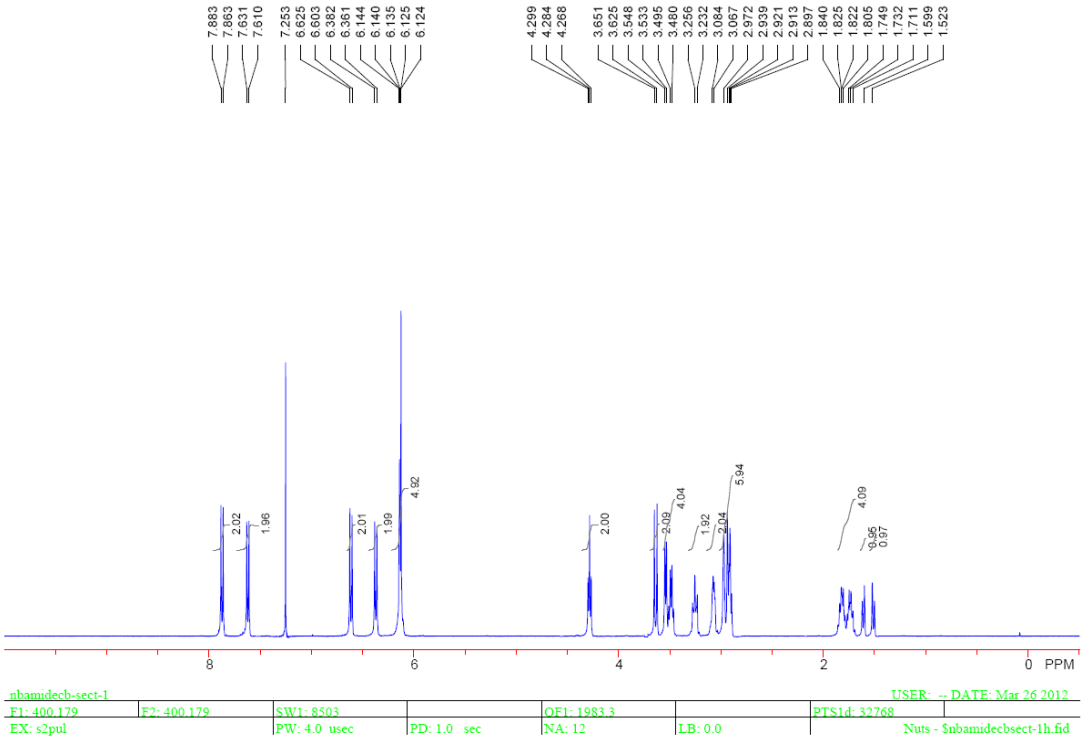
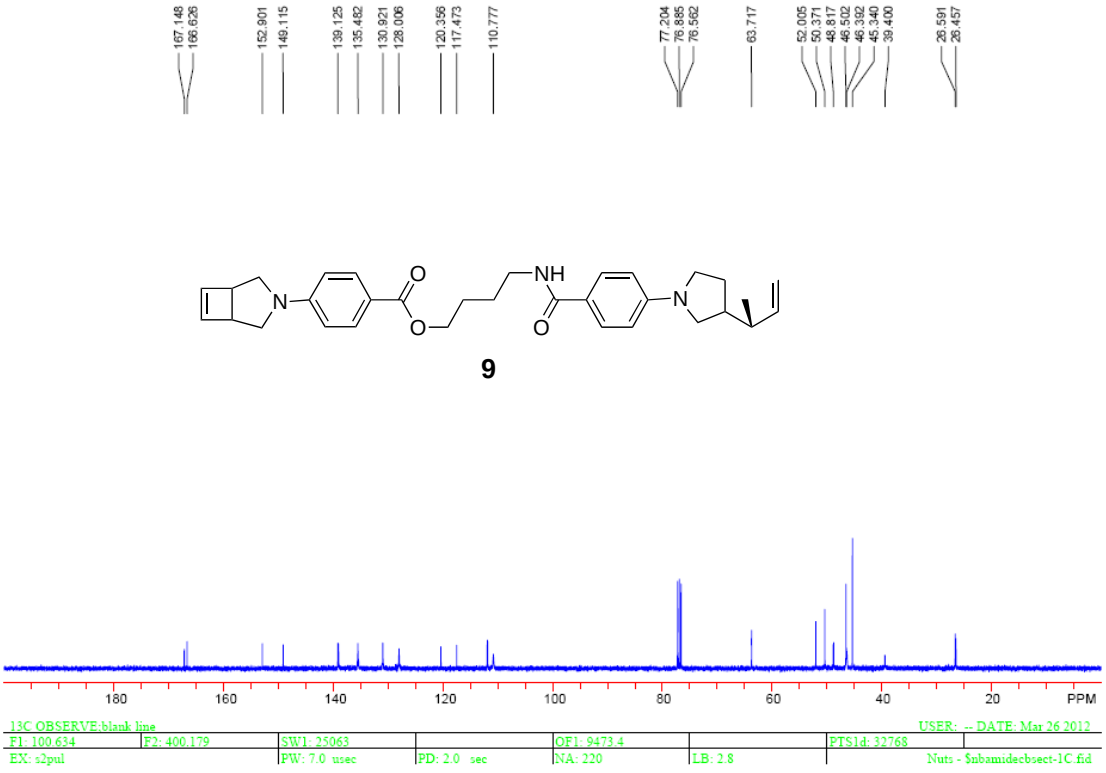


Figure S2: (a) Monomer conversion vs time for **4** (solid square) and **5** (open circle) (0 ^{o}C, THF-d_8); (b) Second-order decay of **4** (solid square) (0 °C, THF-d_8).

(a)



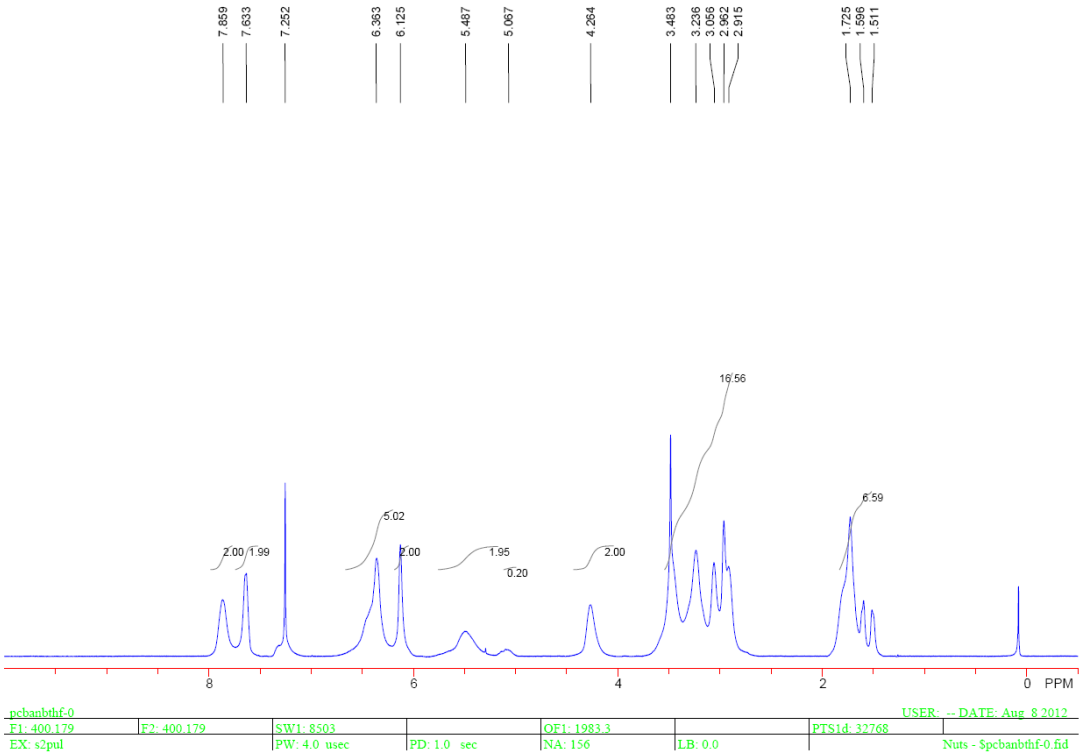
(b)



9

Figure S3: (a) ^{1}H (400 MHz) and (b) ^{13}C NMR (100 MHz) spectra of **9**.

(a)



(b)

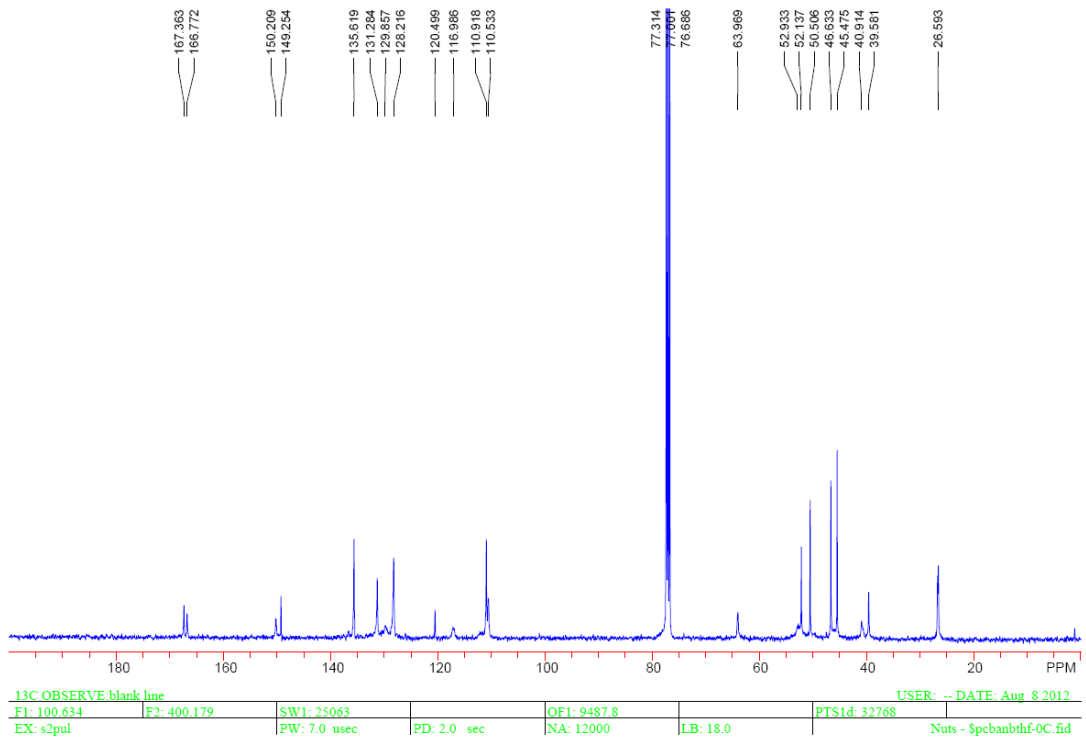
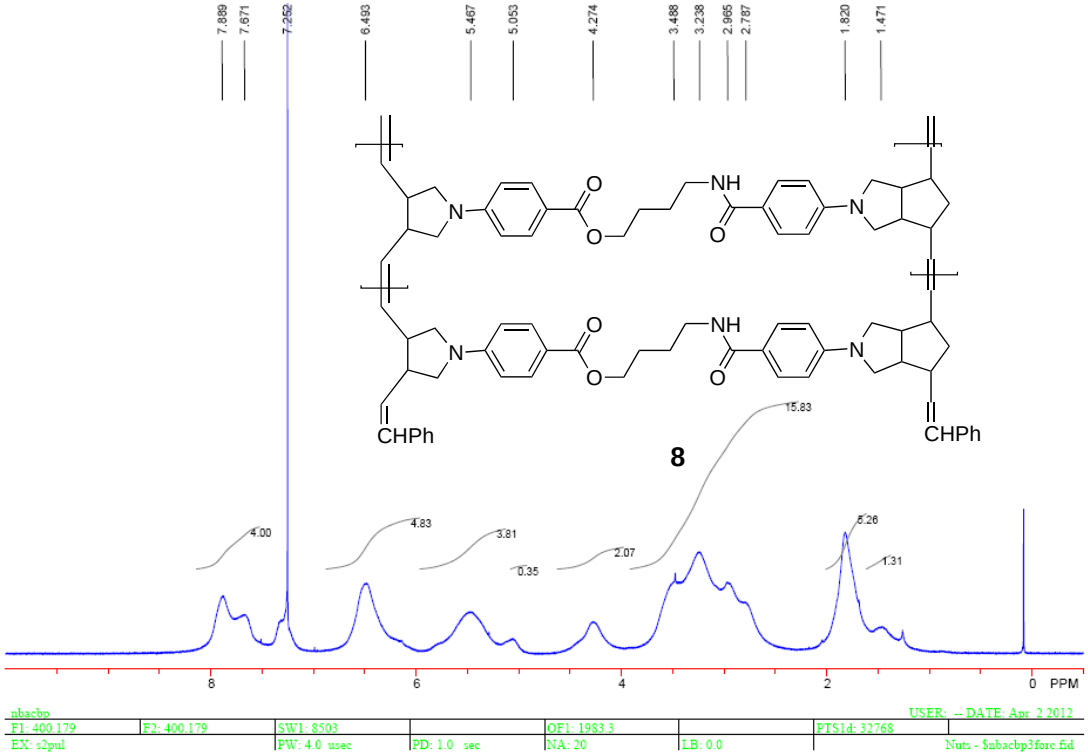


Figure S4: (a) ^{1}H (400 MHz) and (b) ^{13}C (100 MHz) NMR spectra of **14**.

(a)



(b)

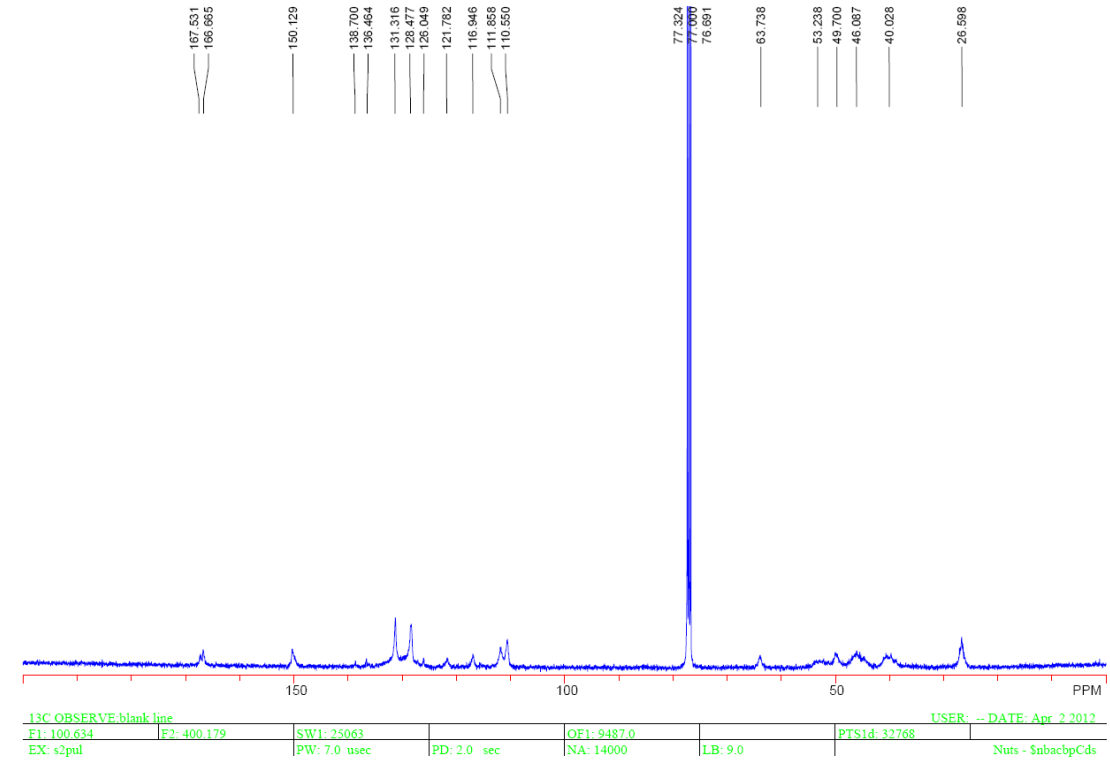
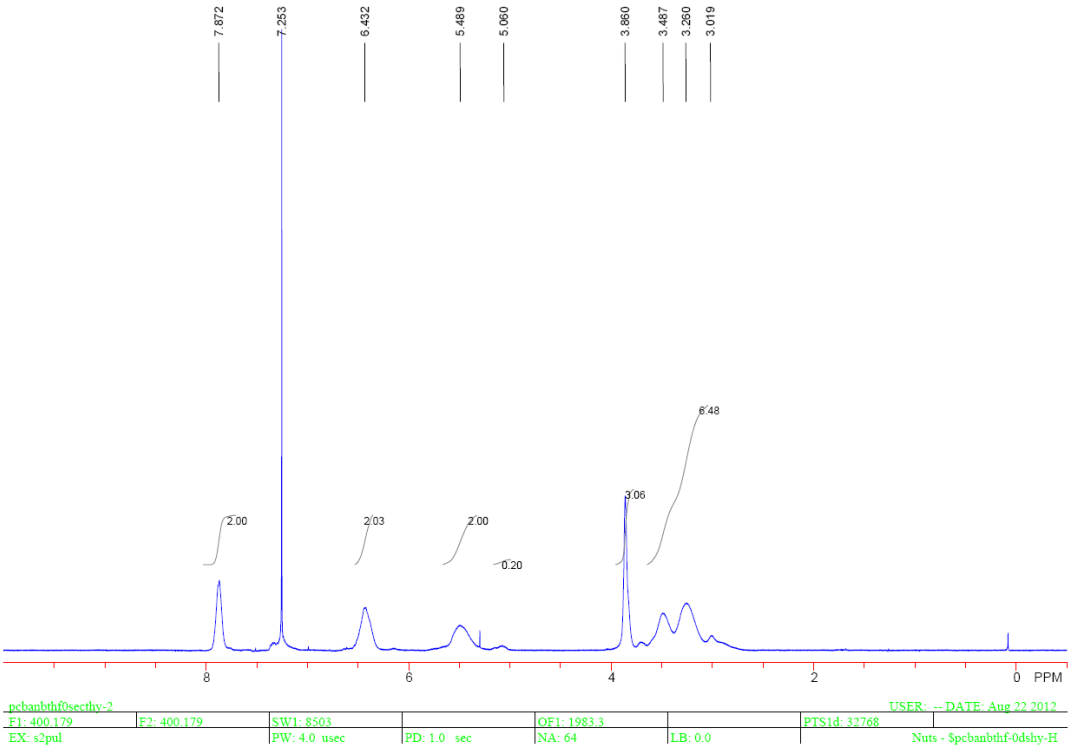


Figure S5: (a) ^{1}H (400 MHz) and (b) ^{13}C (100 MHz) NMR spectra of **8**.

(a)



(b)

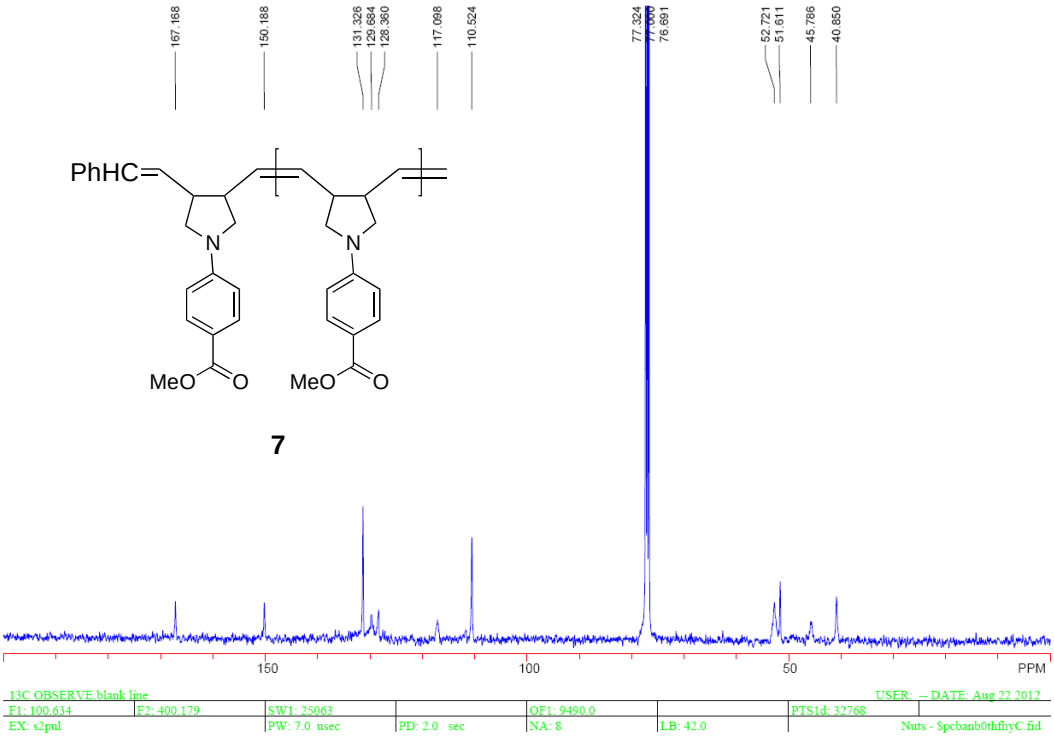


Figure S6: (a) ^{1}H (400 MHz) and (b) ^{13}C (100 MHz) NMR spectra of **7**.

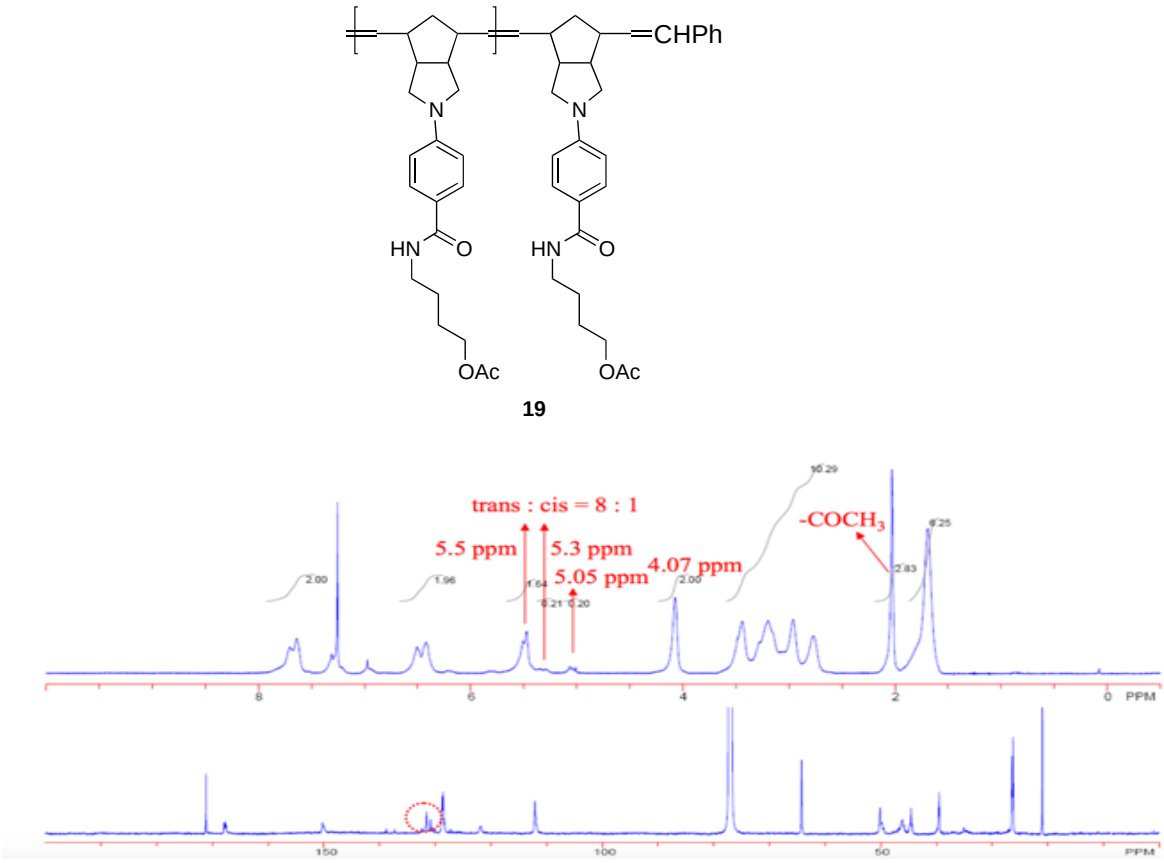


Figure S7: (a) ^{1}H (400 MHz) and (b) ^{13}C (100 MHz) NMR spectra of **19**.

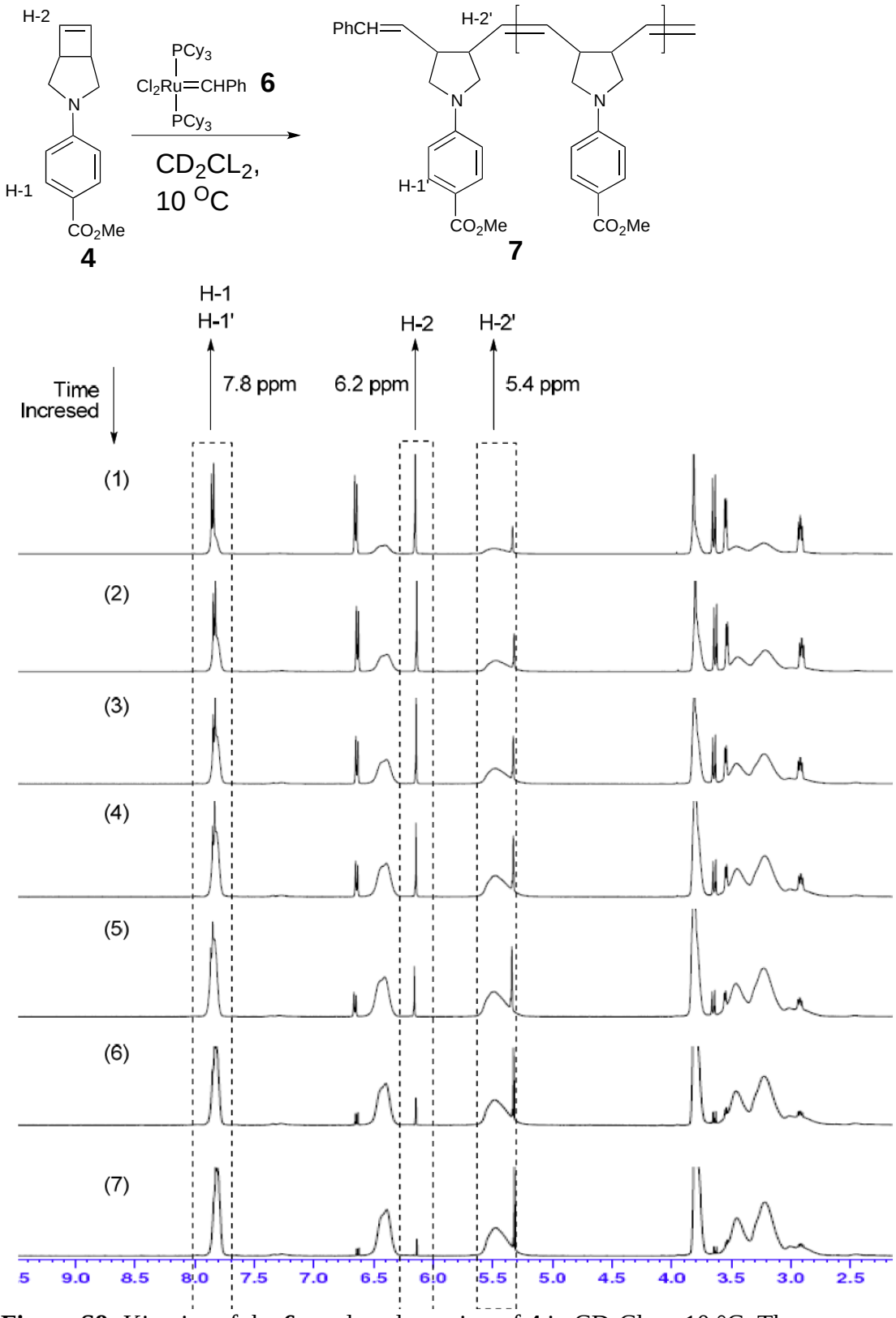


Figure S8: Kinetics of the **6**-catalyzed reaction of **4** in CD_2Cl_2 at 10 °C The reaction was monitored by the decrease of the peak intensity for H-2 using the peaks for H-1 and H-1' as the internal reference. The spectra were recorded every ten minutes.

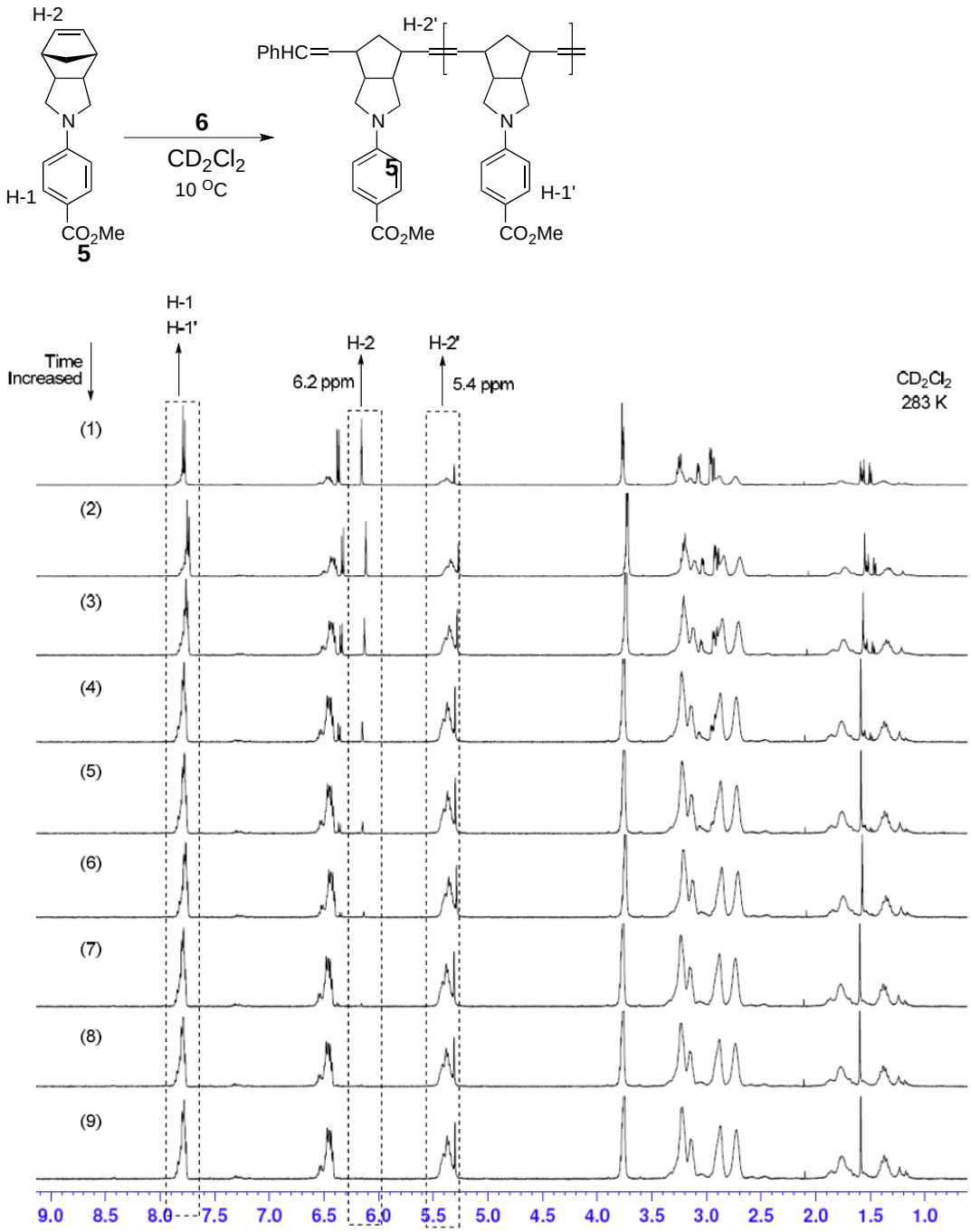


Figure S9: Kinetics of the **6**-catalyzed reaction of **5** in CD_2Cl_2 at 10 °C The reaction was monitored by the decrease of the peak intensity for H-2 using the peaks for H-1 and H-1' as the internal reference. The spectra were recorded every ten minutes.

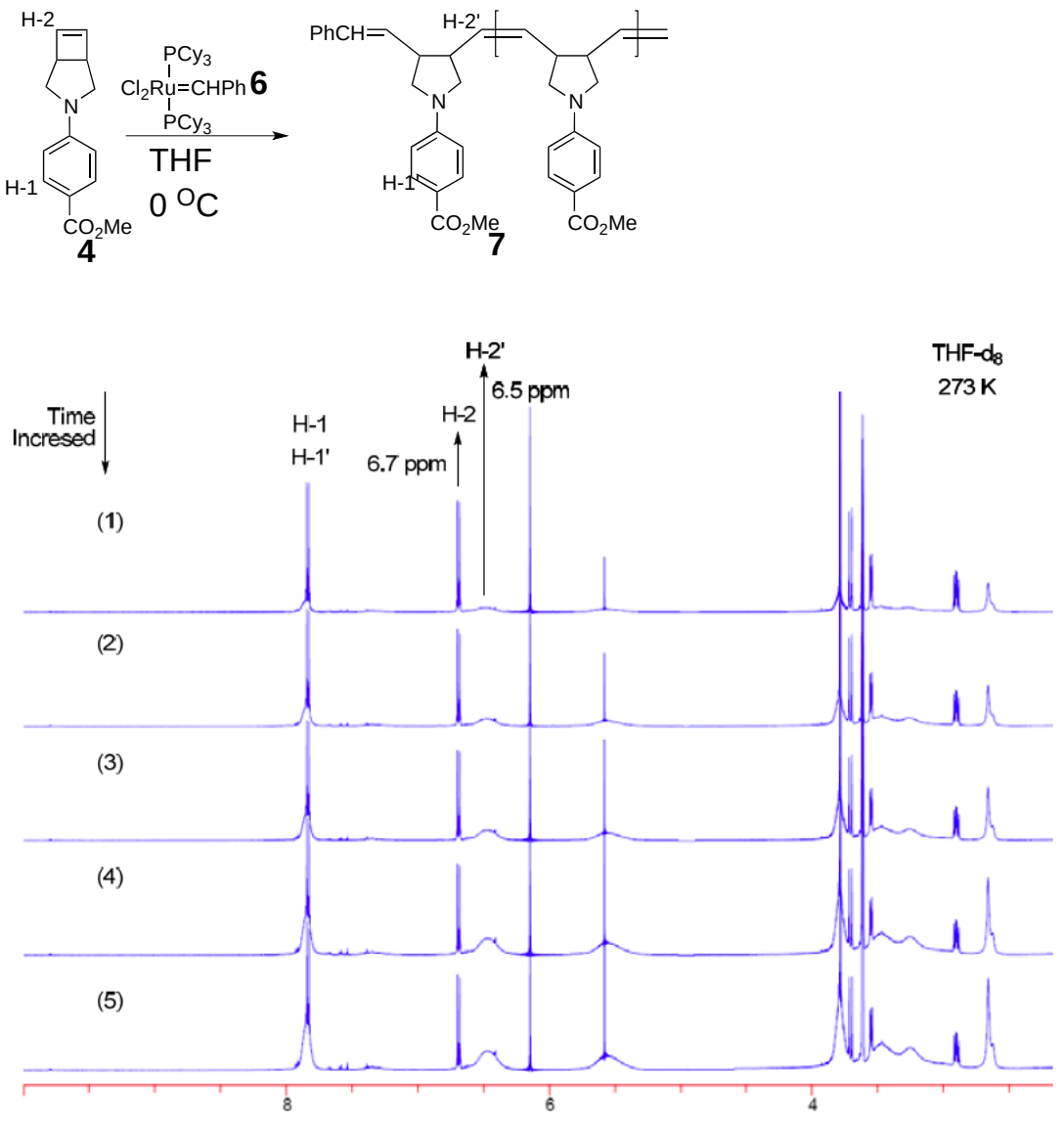


Figure S10: Kinetics of the **6**-catalyzed reaction of **4** in THF at 0 °C The reaction was monitored by the decrease of the peak intensity for H-2 using the peaks for H-1 and H-1' as the internal reference. The spectra were recorded every twenty minutes.