A Thermally Crosslinked Functionalized Polydicyclopentadiene (*f*PDCPD) with a High T_g and Tunable Surface Energy

Jun Chen, Fraser P. Burns, Matthew G. Moffitt, and Jeremy E. Wulff*

Department of Chemistry, University of Victoria,
Victoria, British Columbia, Canada V8W 3V6

Supporting Information

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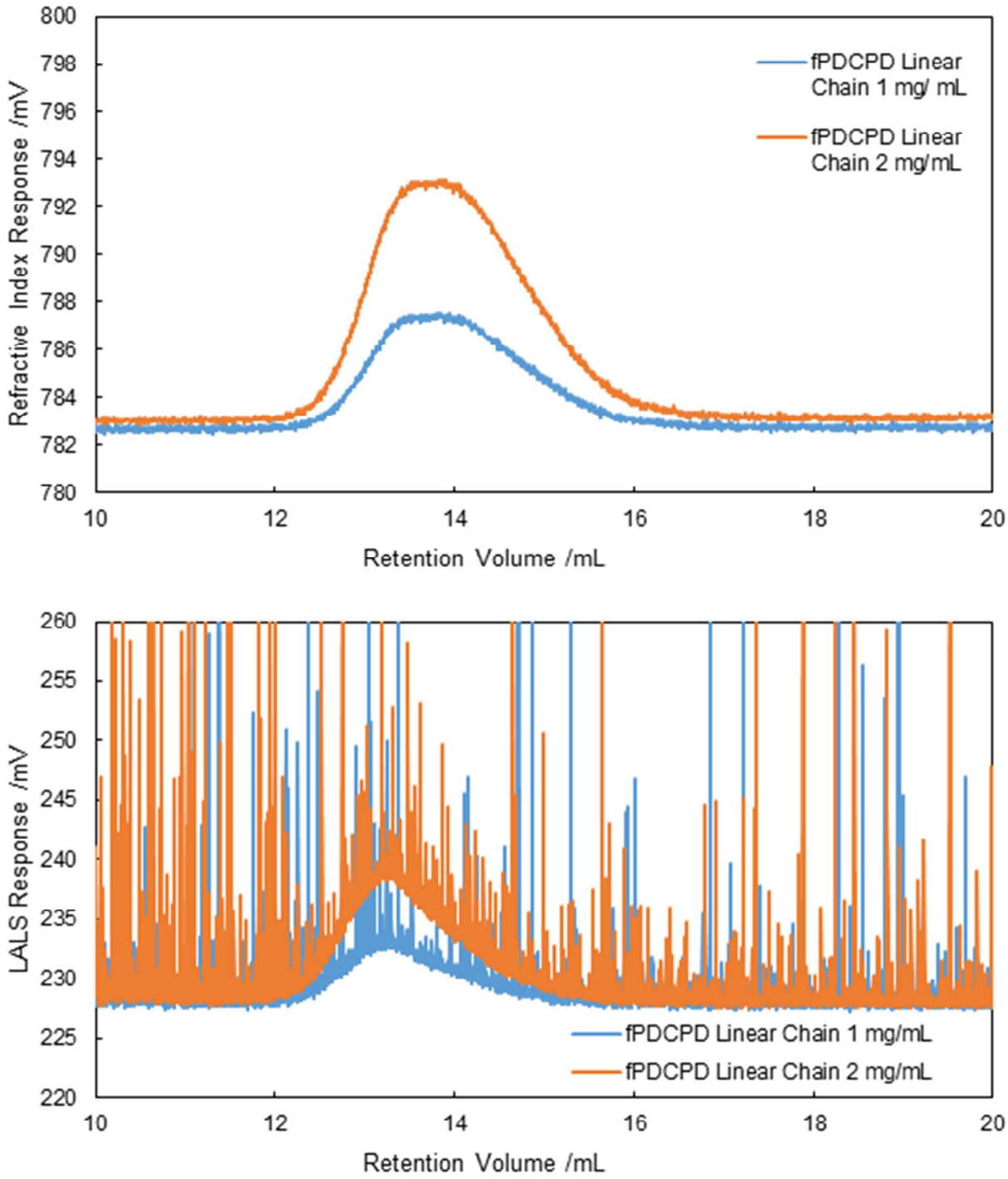

Figure S1A. GPC traces of a freshly-prepared (~4-hour-old) sample of polymer **5**. Top trace: refractive index detection. Bottom trace: low angle light scattering detection. Calculated data:
1 mg/mL sample: Mw = 94445 Da, Mn = 39824 Da, PDI = 2.37, dn/dc = 0.103;
2 mg/mL Sample: Mw = 93290 Da, Mn = 47684 Da, PDI = 1.96, dn/dc = 0.108.

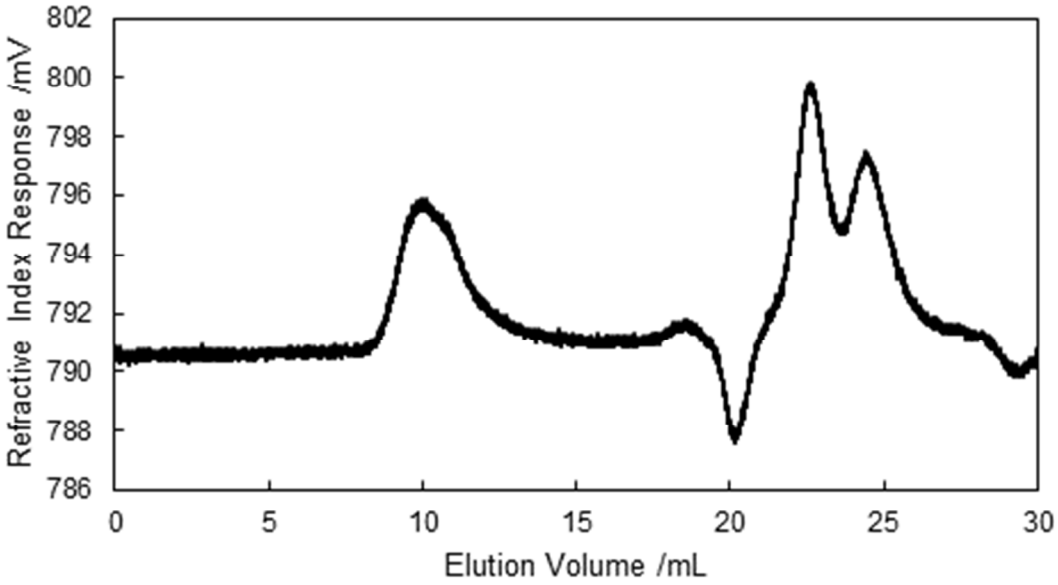

Figure S1B. GPC refractive index trace of a 2-day-old sample of polymer **5**. The peak at 10 mL elution volume corresponds to M_w and M_n values of 30036272 and 29802748 Da, respectively. The calculated PDI is M_w/M_n = 1.008, but this number is not particularly meaningful given the amount of oxidative crosslinking that the sample has evidently experienced prior to analysis.

Figure S2. Comparison between freshly prepared polymer **5** solution and 3-day-old suspension. We attribute the appearance of cloudiness to the precipitation of oxidatively crosslinked polymer.

Table S1. Measured Contact Angles for *f*PDCPD and PDCPD.

polymer	left (°)	right (°)	overall (°)
methyl ester (H_2O)	87.0 ± 1.1	87.4 ± 0.8	87.2 ± 0.9
carboxylate salt (H_2O)	63.3 ± 3.0	63.9 ± 2.2	63.6 ± 2.5
carboxylic acid (H_2O)	28.8 ± 1.1	29.2 ± 1.2	29.0 ± 1.1
methyl ester (CH_2I_2)	46.0 ± 0.8	45.6 ± 1.0	45.8 ± 0.9
carboxylate salt (CH_2I_2)	46.1 ± 1.7	46.6 ± 1.5	46.4 ± 1.5
carboxylic acid (CH_2I_2)	52.0 ± 1.6	52.4 ± 1.3	52.2 ± 1.4
PDCPD (H_2O)	119.4 ± 1.2	120.1 ± 1.5	119.8 ± 1.3

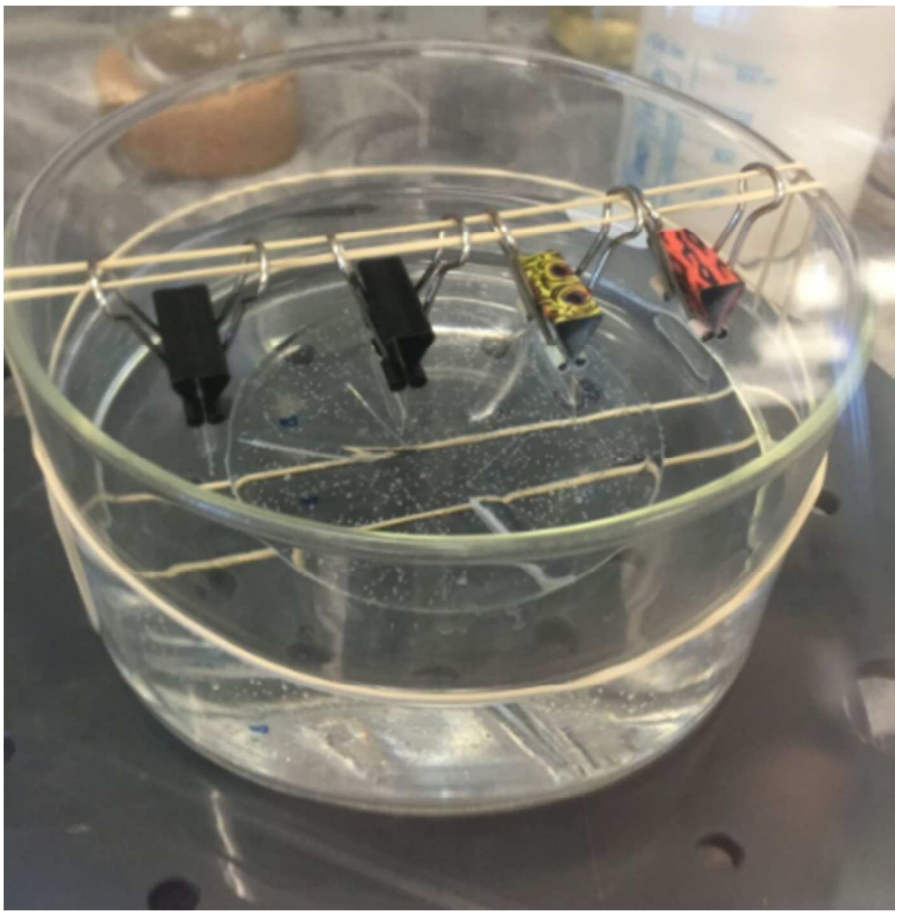

Figure S3. Apparatus used for the preparation of slides half coated with polymer **6** and half with polymer **7**. Glass cover slips were first spin coated with linear polymer **5**, then incubated in a 180 ºC oven under vacuum overnight to provide crosslinked polymer **6**. The slides were then supported by clips and partially immersed in a solution of methanolic NaOH to facilitate (partial) hydrolysis of surface ester groups.

Figure S4. ^{1}H NMR spectrum for compounds **3** and **4** (prepared as a mixture).

Figure S5. ^{13}C NMR spectrum for compounds **3** and **4** (prepared as a mixture).

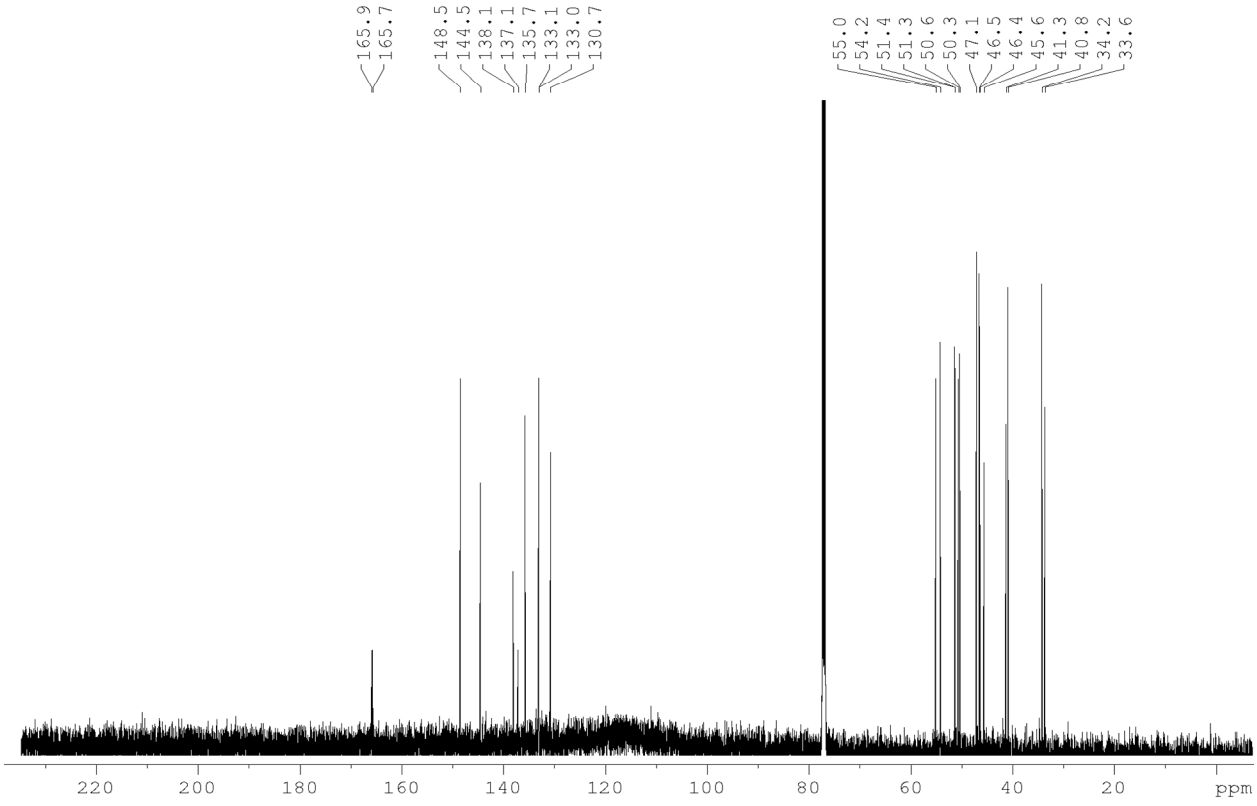

Figure S6. ^{1}H NMR spectrum for partially purified compound **3**.

(recovered ether supernatant from the synthesis of polymer **5**; contains solvent impurity)

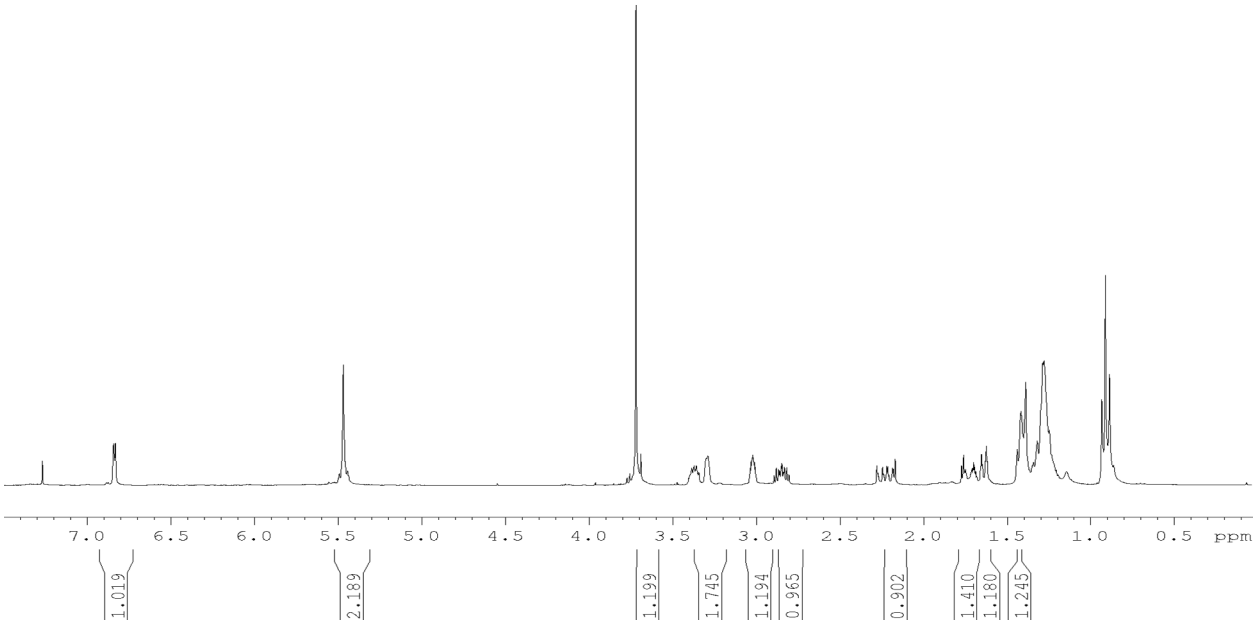

Figure S7. ^{1}H NMR spectrum for partially purified compound **4**.

(from conjugate addition of benzyl amine to the mixture of **3** and **4**; contains minor impurities)

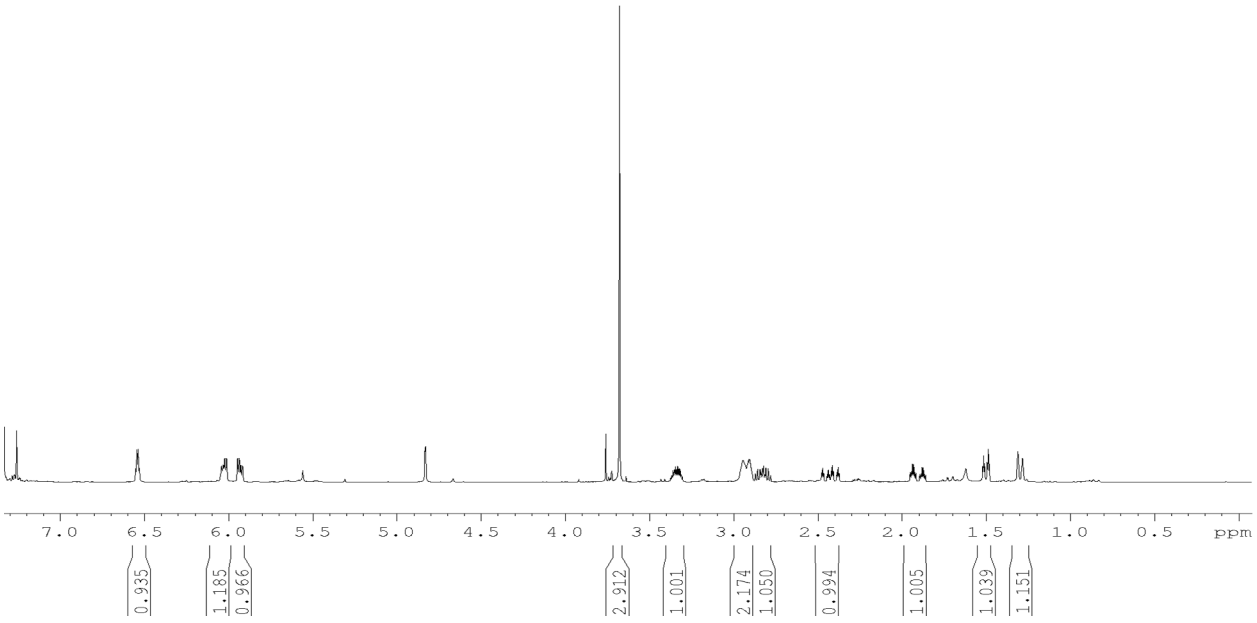

Figure S8. ^{1}H NMR spectrum for linear polymer **5**.

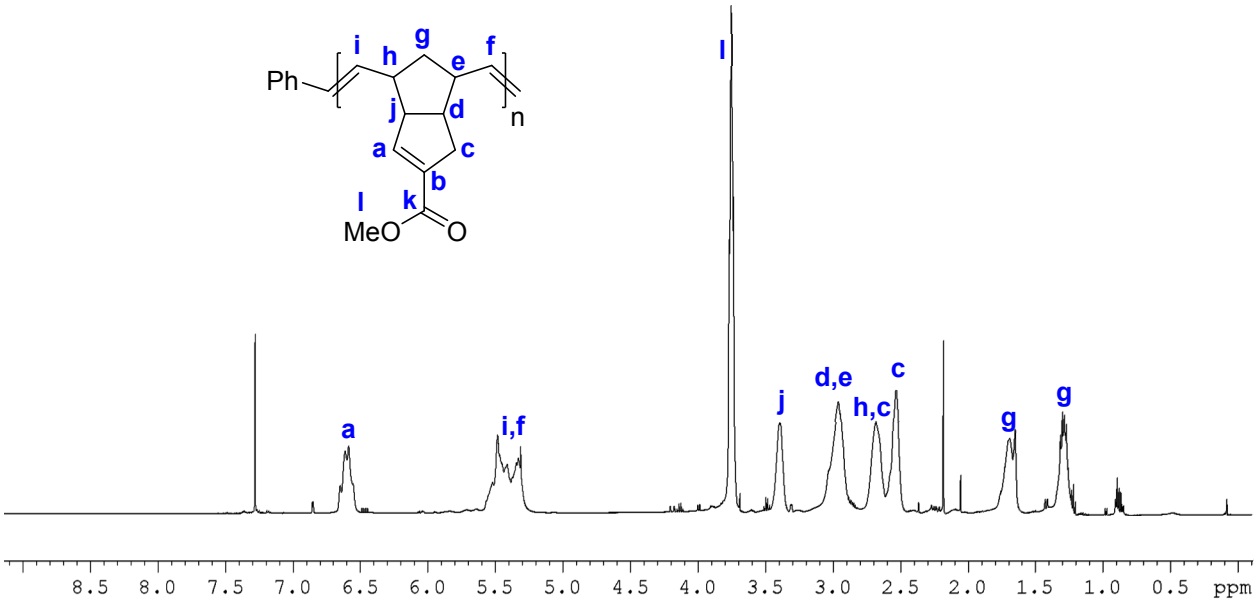

Figure S9. ^{13}C NMR spectrum for linear polymer **5**.

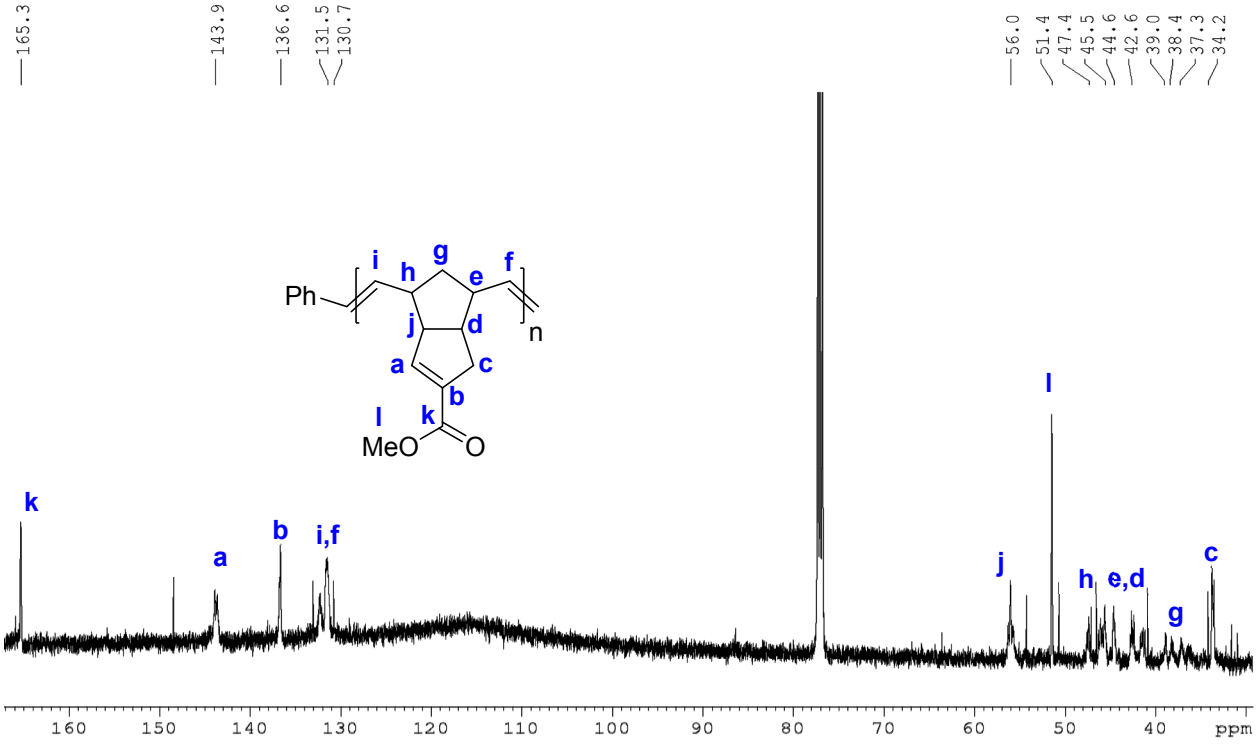

Figure S10. HSQC spectrum for linear polymer **5**.

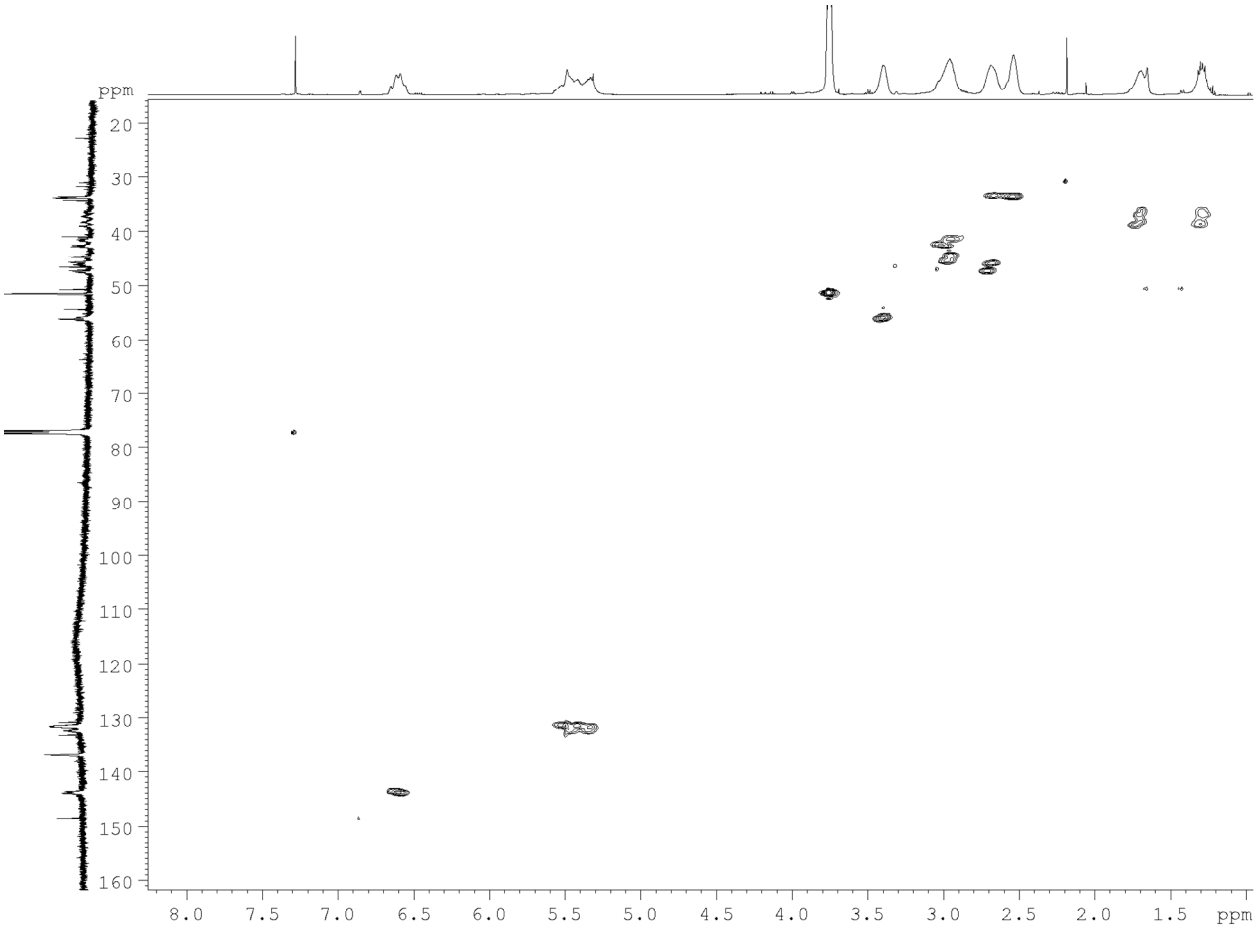

Figure S11. COSY spectrum for linear polymer **5**.

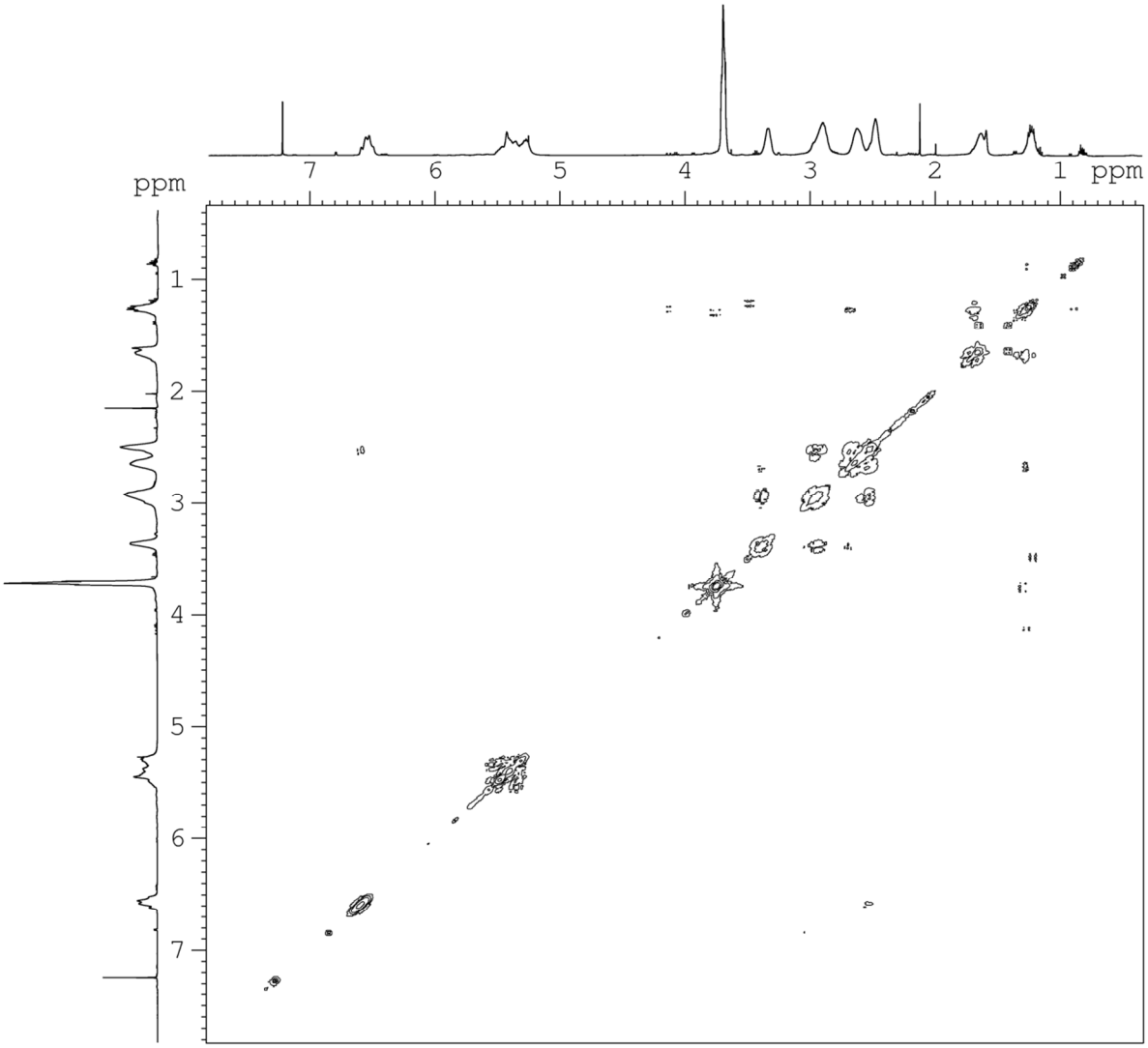

Figure S12. Estimated molecular weight of **5** by NMR (in CD_2Cl_2).