

Electronic Supplementary Information (ESI)

Amphiphilic chiral block-poly(thiophene)s: Tuning the blocks.

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Table of contents:

A.	¹H and ¹³C NMR spectra	3
	Figure S1: ¹ H NMR spectrum of 2	3
	Figure S2: ¹³ C NMR spectrum of 2	4
	Figure S3: ¹ H NMR spectrum of 3	5
	Figure S4: ¹³ C NMR spectrum of 3	6
	Figure S5: ¹ H NMR spectrum of 4	7
	Figure S6: ¹³ C NMR spectrum of 4	8
	Figure S7: ¹ H NMR spectrum of P2	9
	Figure S8: ¹ H NMR spectrum of P4	10
	Figure S9: ¹ H NMR spectrum of P5	11
	Figure S10: ¹ H NMR spectrum of P6	12
B.	UV-vis & CD spectroscopy	13
1.	In solution	13
i.	Neutral media	13
	Figure S11: UV-vis, CD and g _{abs} spectra for the solvatochromism experiments of P2 in a neutral THF/MeOH mixture.	13
	Figure S12: UV-vis, CD and g _{abs} spectra for the addition of acid to P2 in a neutral THF/MeOH mixture of THF/MeOH 40/60.	14
	Figure S13: g _{abs} spectra of P3 in a neutral THF/MeOH mixture.	15
	Figure S14: UV-vis, CD and g _{abs} spectra for the addition of acid to P4 in a neutral THF/MeOH mixture of THF/MeOH 40/60.	16
	Figure S15: UV-vis, CD and g _{abs} spectra for the addition of acid to P4 in neutral THF/MeOH 40/60 mixture.	17
	Figure S16: UV-vis, CD and g _{abs} spectra for the solvatochromism experiments of P5 in a neutral THF/MeOH mixture.	18
	Figure S17: UV-vis, CD and g _{abs} spectra for the addition of acid to P5 in a neutral THF/MeOH 20/80 mixture.	19
	Figure S18: UV-vis, CD and g _{abs} spectra for the solvatochromism experiments of P6 in a neutral THF/MeOH mixture.	20
	Figure S19: UV-vis, CD and g _{abs} spectra for the addition of acid to P6 in a neutral THF/MeOH 20/80 mixture.	21
ii.	Acidic media	22
	Figure S20: UV-vis, CD and g _{abs} spectra for the solvatochromism experiments of P2 in an acidic THF/MeOH mixture.	22
	Figure S21: UV-vis, CD and g _{abs} spectra for the addition of base to P2 in an acidic THF/MeOH 40/60 mixture.	23
	Figure S22: UV-vis, CD and g _{abs} spectra for the solvatochromism experiments of P4 in an acidic THF/MeOH mixture.	24
	Figure S23: UV-vis, CD and g _{abs} spectra for the addition of base to P4 in an acidic THF/MeOH 40/60 mixture.	25
	Figure S24: UV-vis, CD and g _{abs} spectra for the solvatochromism experiments of P5 in an acidic THF/MeOH mixture.	26
	Figure S25: UV-vis, CD and g _{abs} spectra for the addition of base to P5 in an acidic THF/MeOH 20/80 mixture.	27
	Figure S26: UV-vis, CD and g _{abs} spectra for the solvatochromism experiments of P6 in an acidic THF/MeOH mixture.	28
	Figure S27: UV-vis, CD and g _{abs} spectra for the addition of base to P6 in an acidic THF/MeOH 20/80 mixture.	29
2.	In film	30
i.	Spincoated from neutral media	30
	Figure S28: UV-vis, CD and g _{abs} spectra for the annealing experiments with P2 with fast cooling.	30
	Figure S29: UV-vis, CD and g _{abs} spectra for the annealing experiments with P2 with slow cooling.	31

Figure S30: UV-vis, CD and g_{abs} spectra for the annealing experiments with P3 with fast cooling.....	32
Figure S31: UV-vis, CD and g_{abs} spectra for the annealing experiments with P4 with fast cooling.....	33
Figure S32: UV-vis, CD and g_{abs} spectra for the annealing experiments with P4 with slow cooling.....	34
Figure S33: UV-vis, CD and g_{abs} spectra for the annealing experiments with P5 with fast cooling.....	35
Figure S34: UV-vis, CD and g_{abs} spectra for the annealing experiments with P6 with fast cooling.....	36
Figure S35: UV-vis, CD and g_{abs} spectra for the annealing experiments with P6 with slow cooling.....	37
ii. Spincoated from acidic media.....	38
Figure S36: UV-vis, CD and g_{abs} spectra for the annealing experiments with P2 with fast cooling.....	38
Figure S37: UV-vis, CD and g_{abs} spectra for the annealing experiments with P3 with fast cooling.....	39
Figure S38: UV-vis, CD and g_{abs} spectra for the annealing experiments with P4 with fast cooling.....	40
Figure S39: UV-vis, CD and g_{abs} spectra for the annealing experiments with P6 with fast cooling.....	41
Figure S40: UV-vis, CD and g_{abs} spectra for the annealing experiments with P6 with slow cooling.....	42
Figure S41: UV-vis, CD and g_{abs} spectra for the spincoated films of P6 with different film thicknesses.....	43
Figure S42: UV-vis, CD and g_{abs} spectra for the annealing experiments with P6 with different film thicknesses and fast cooling..	44
Figure S43: UV-vis, CD and g_{abs} spectra for the annealing experiments with P6 with different film thicknesses and slow cooling.	45
C. Polarizing optical microscopy (POM)	46
Figure S44: POM picture of the P6 polymer sample during slow cooling from 90 °C.....	46
D. Differential scanning calorimetry (DSC) of polymers P1-P6	47

A. ^1H and ^{13}C NMR spectra

Figure S1: ^1H NMR spectrum of 2.

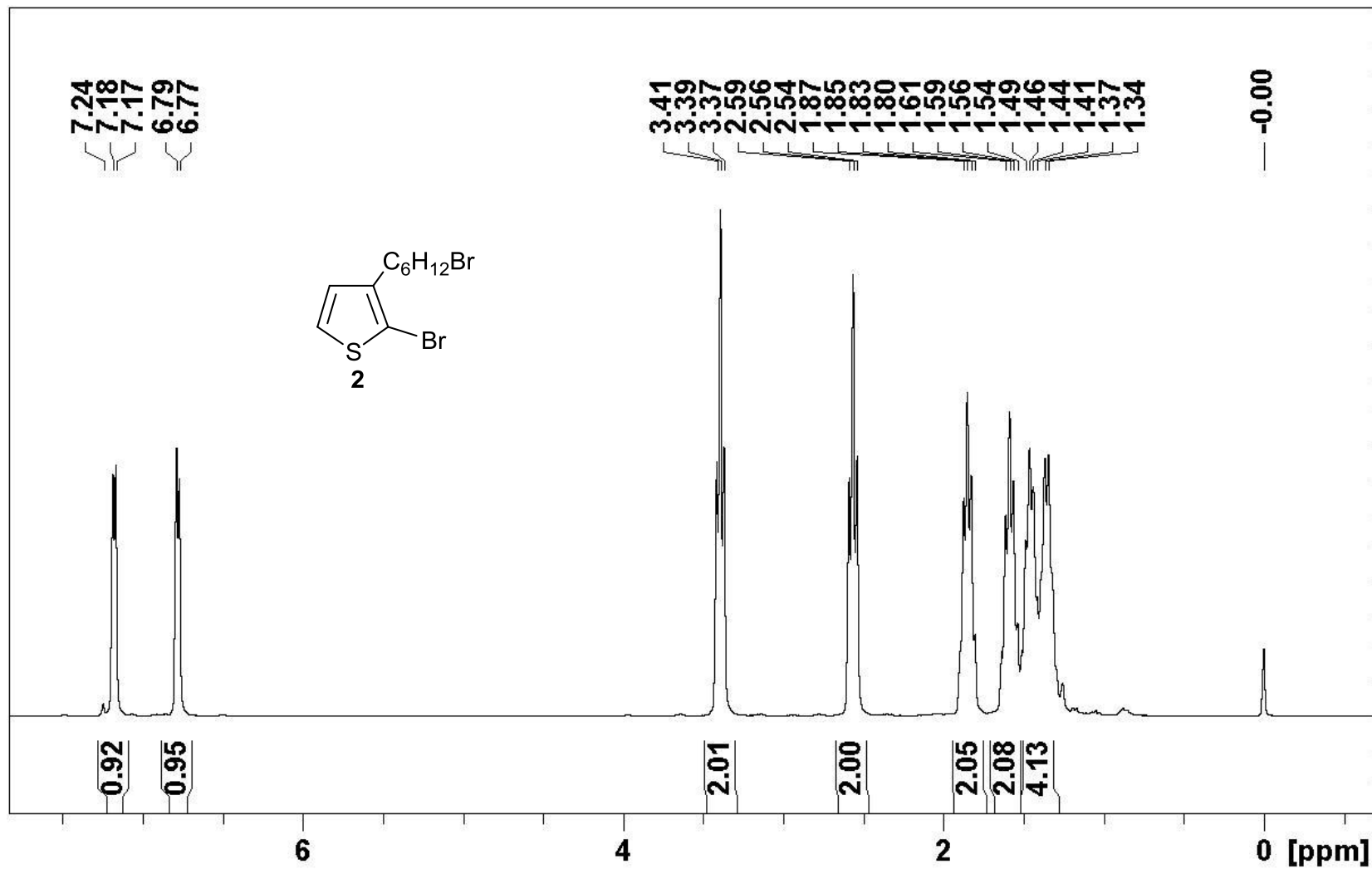


Figure S2: ^{13}C NMR spectrum of 2.

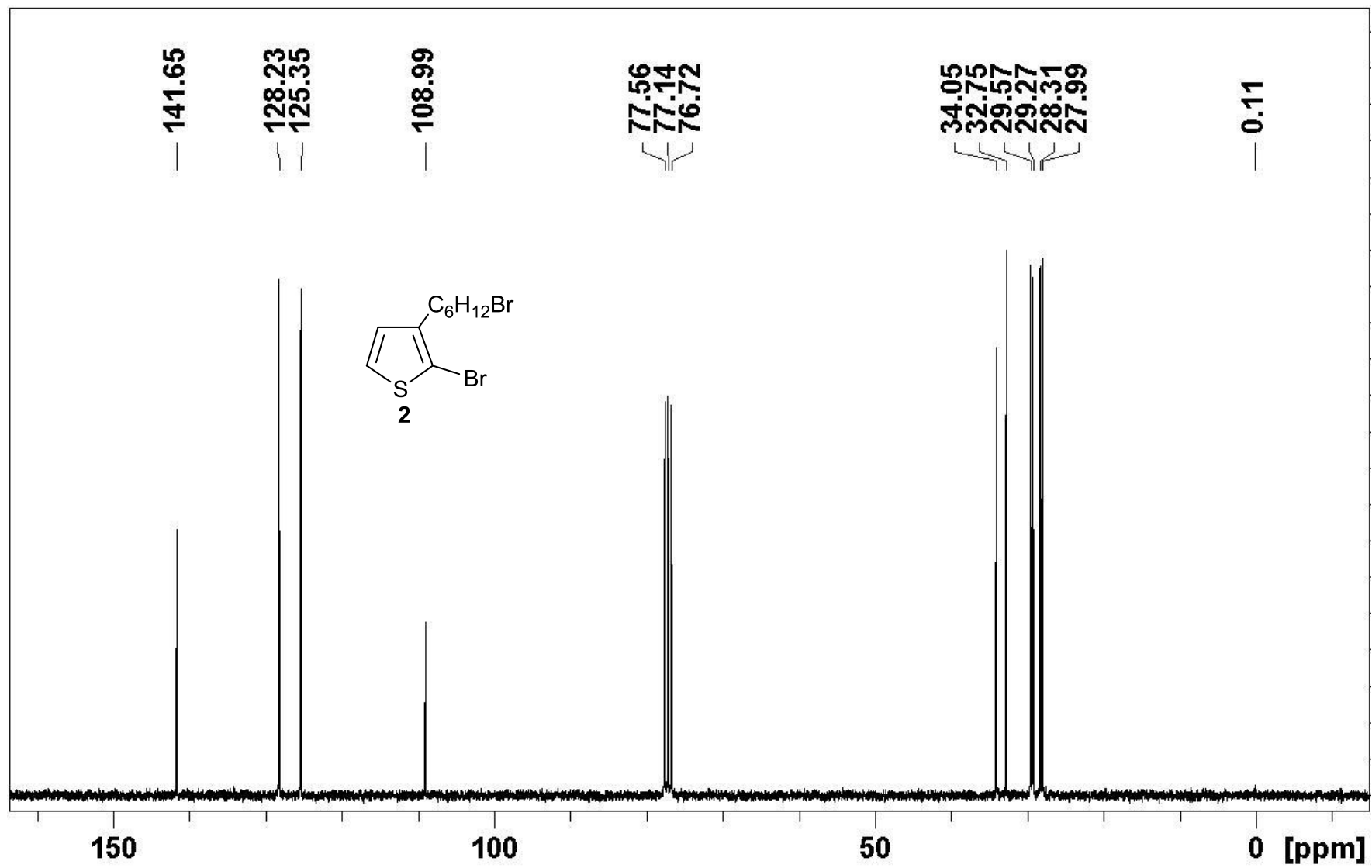


Figure S3: ^1H NMR spectrum of 3.

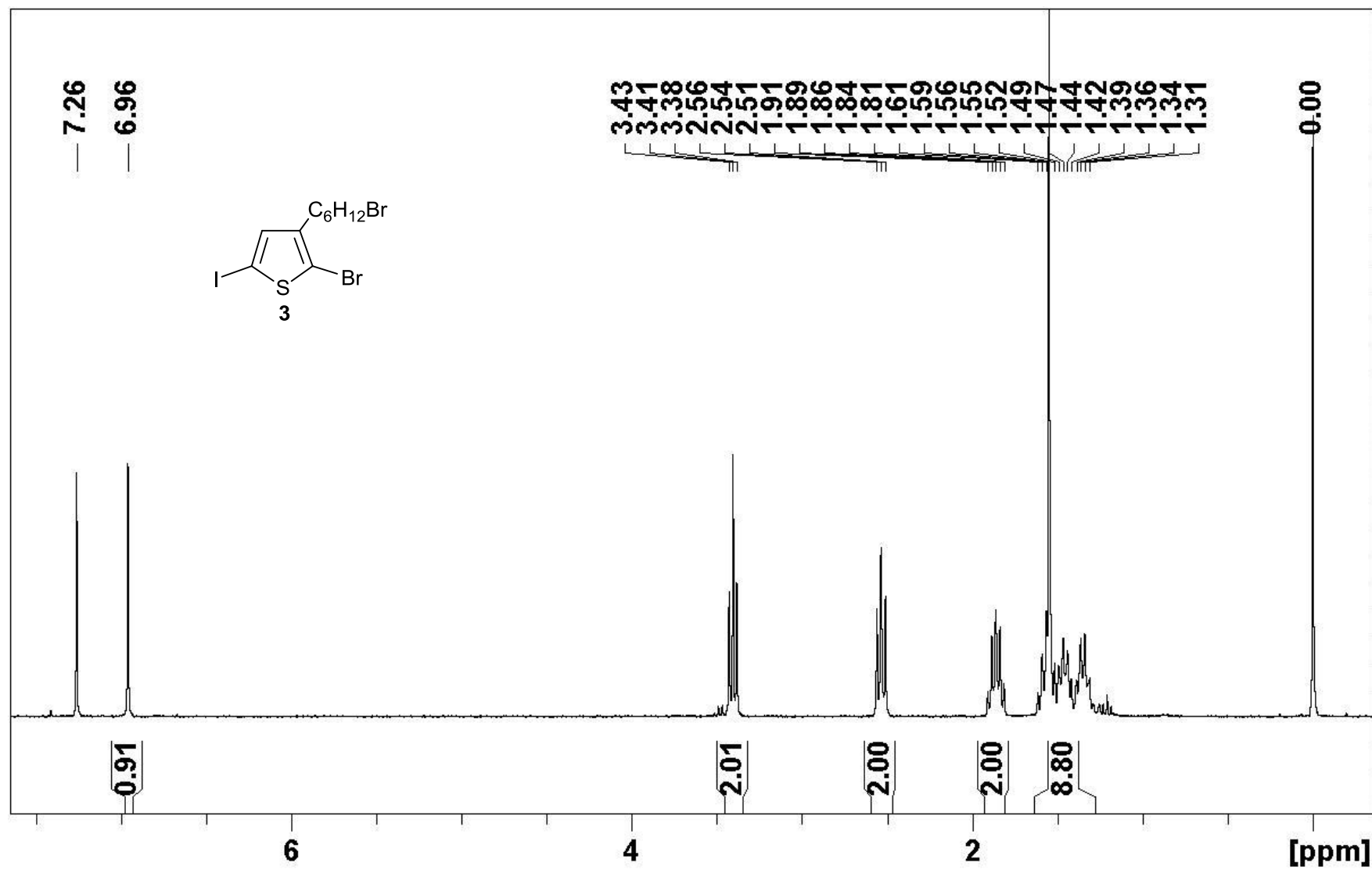


Figure S4: ^{13}C NMR spectrum of 3.

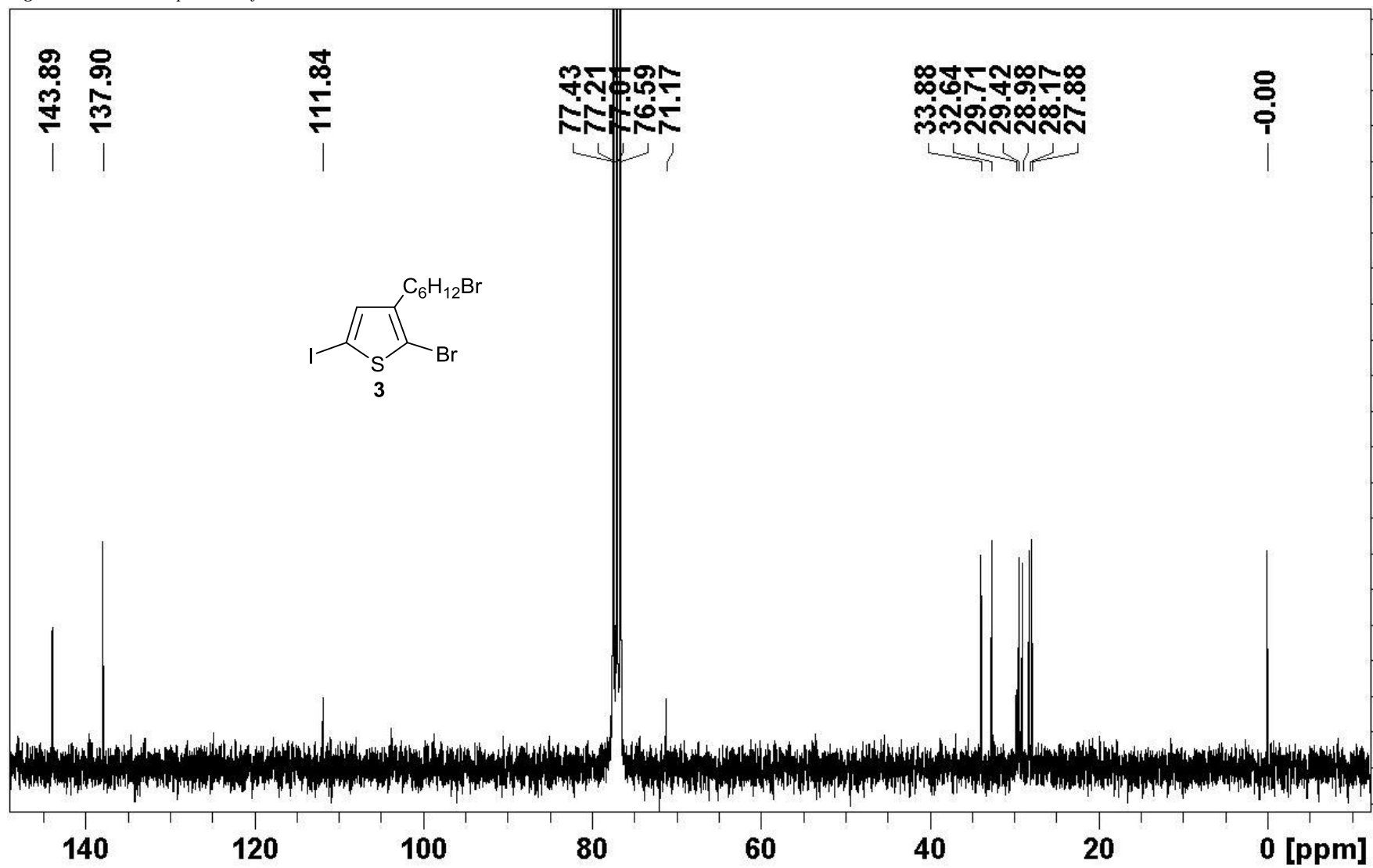


Figure S5: ^1H NMR spectrum of 4.

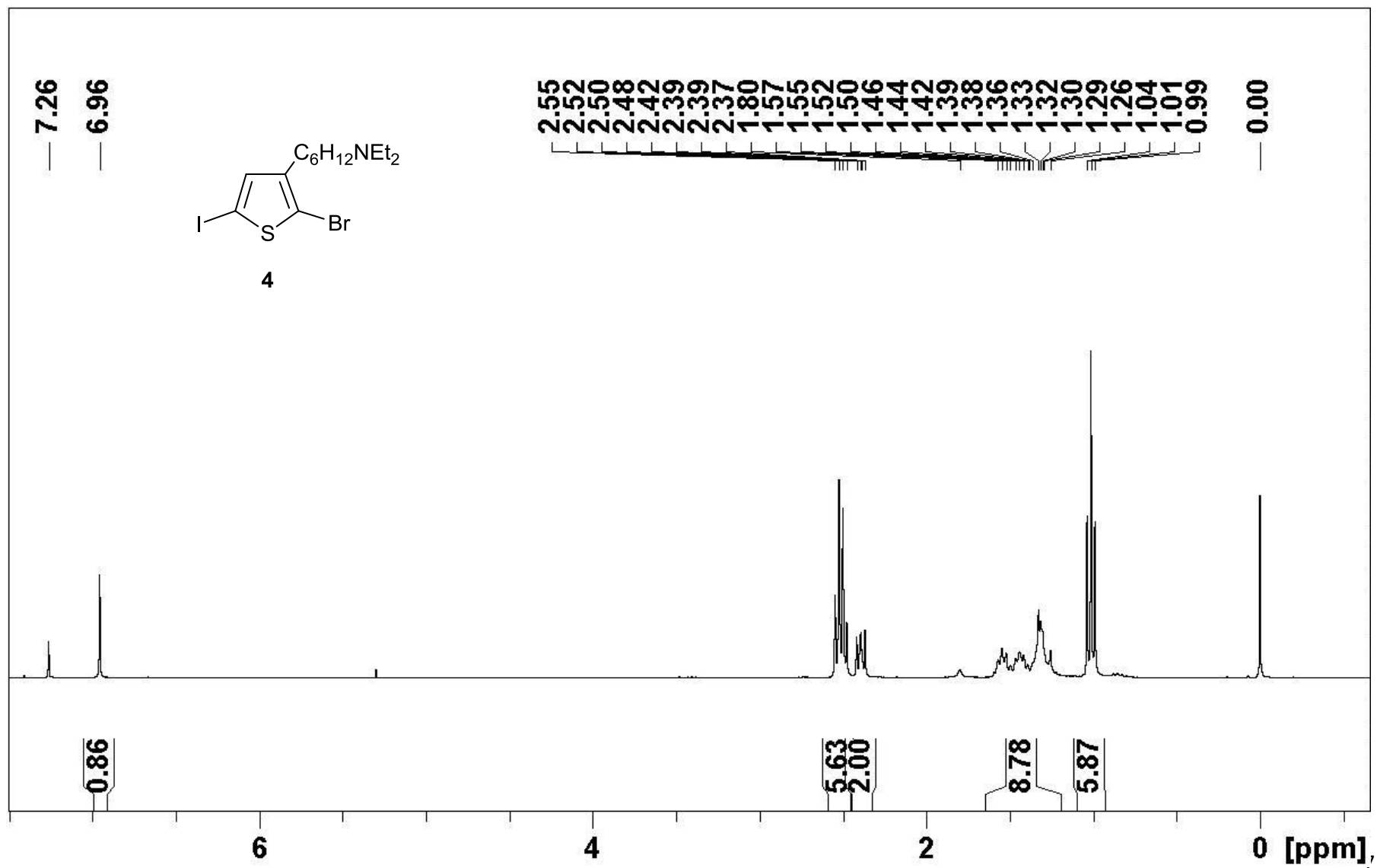


Figure S6: ^{13}C NMR spectrum of **4**.

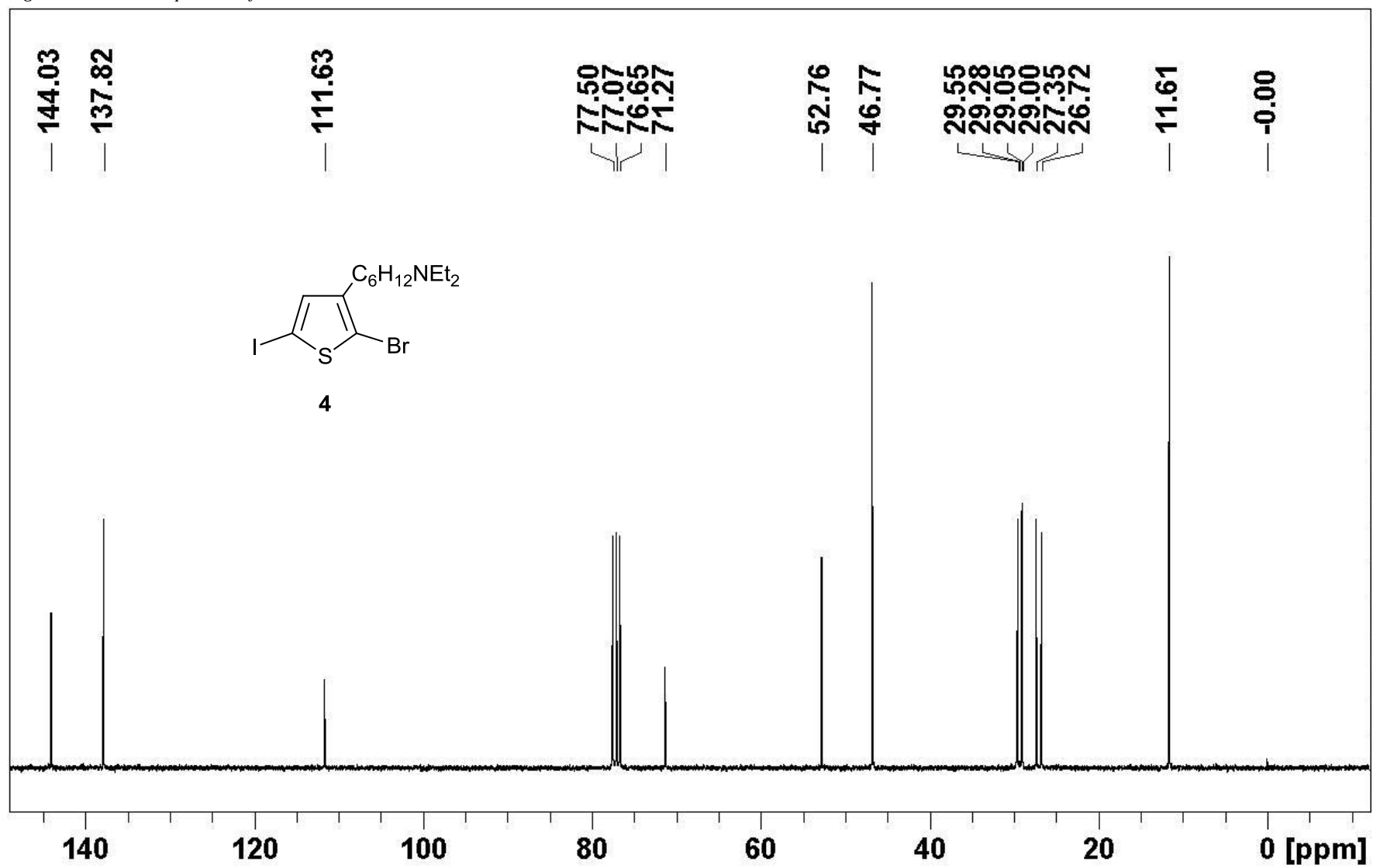


Figure S7: ^1H NMR spectrum of P2.

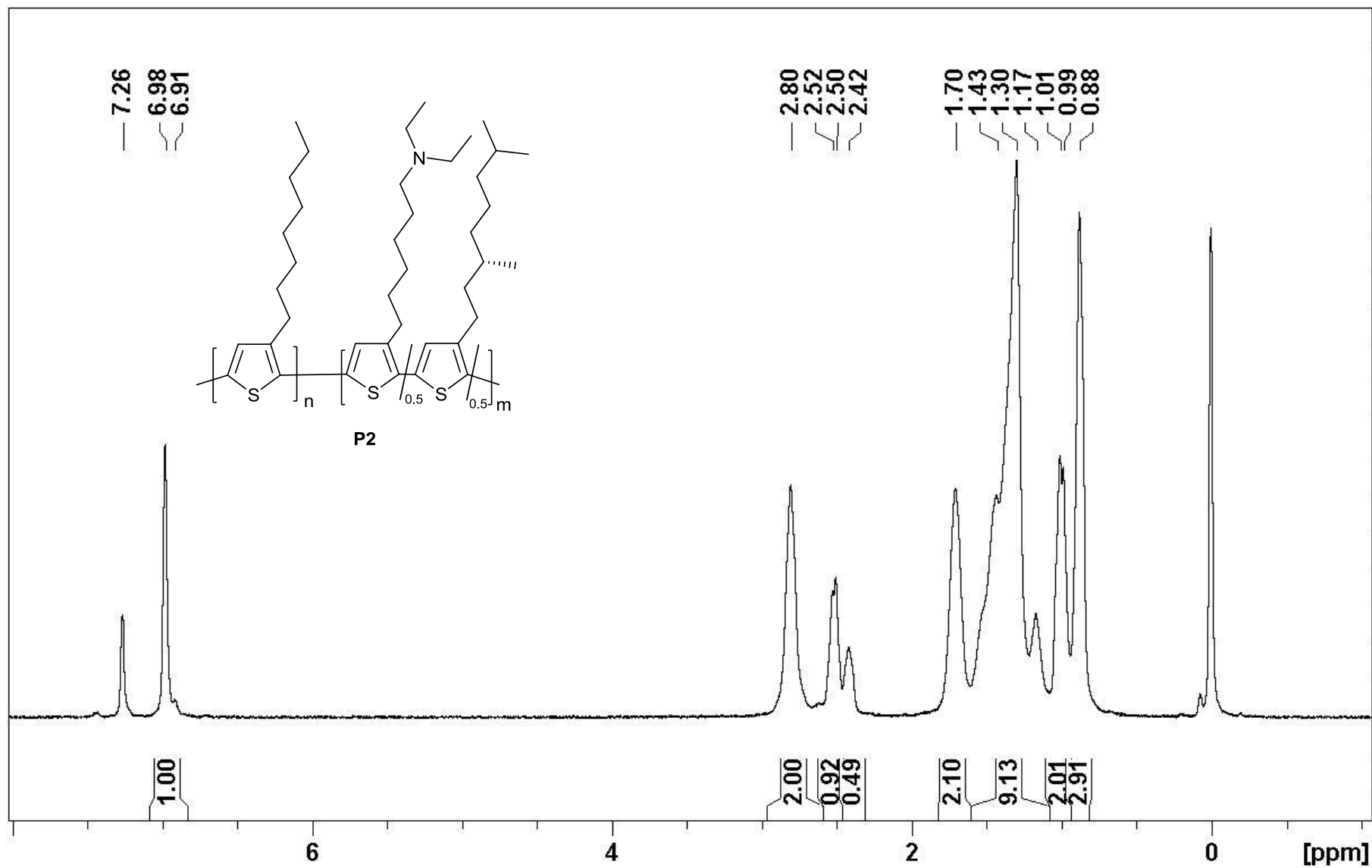


Figure S8: ^1H NMR spectrum of P4.

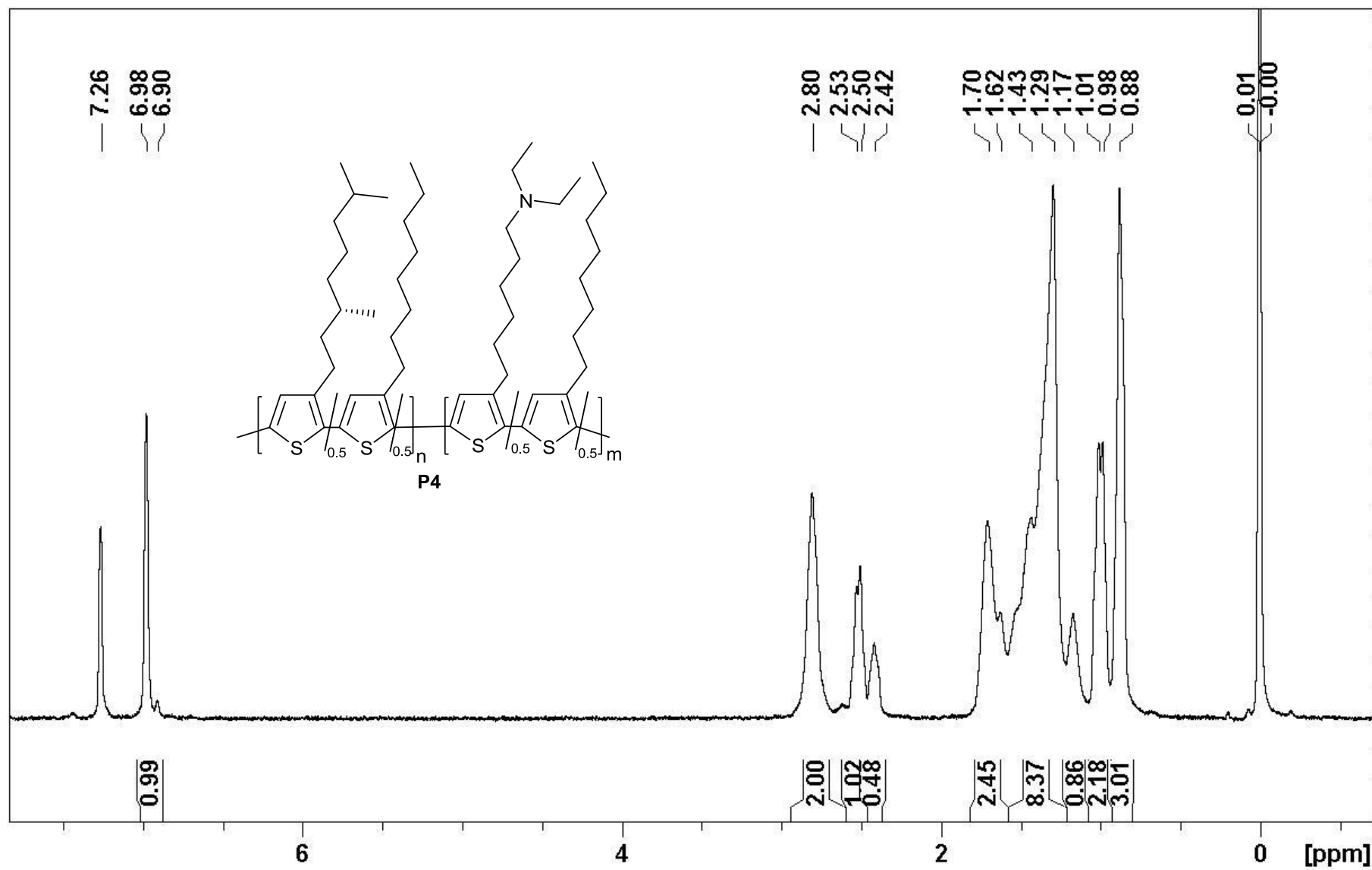


Figure S9: ^1H NMR spectrum of P5.

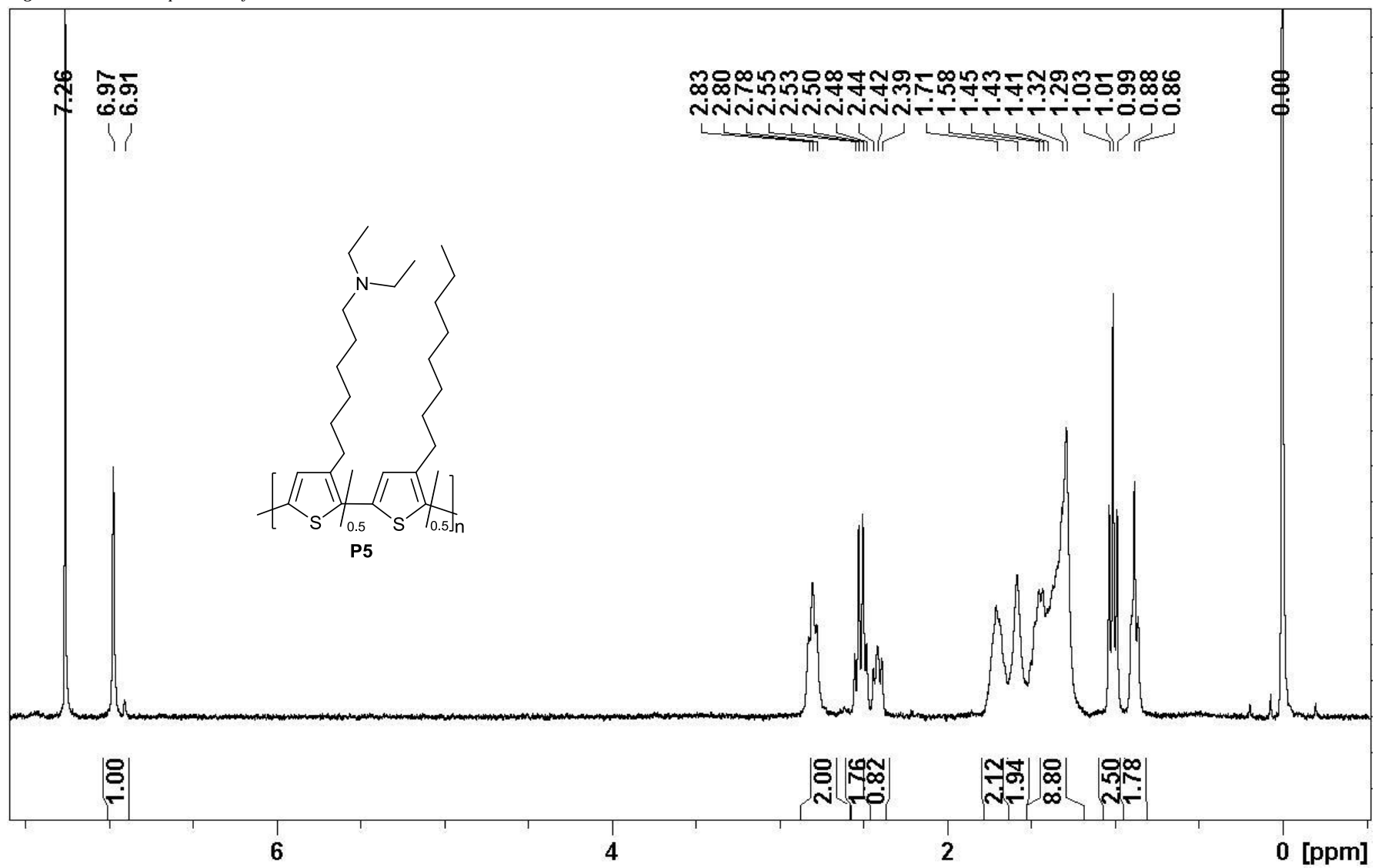
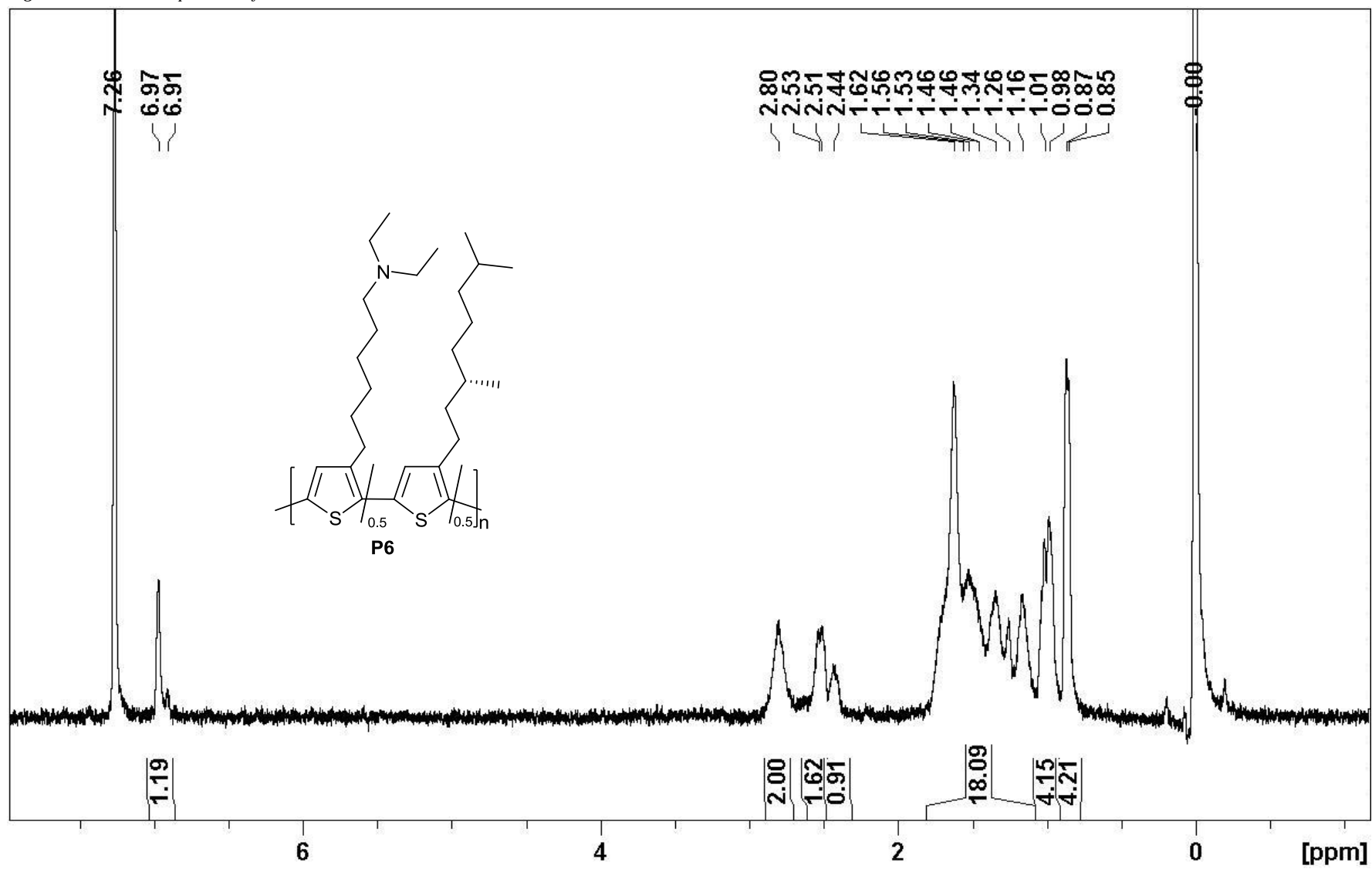


Figure S10: ^1H NMR spectrum of P6.



B. UV-vis & CD spectroscopy

1. In solution

i. Neutral media

Figure S11: UV-vis, CD and g_{abs} spectra for the solvatochromism experiments of **P2** in a neutral THF/MeOH mixture. The ratio THF/MeOH is given in the legend.

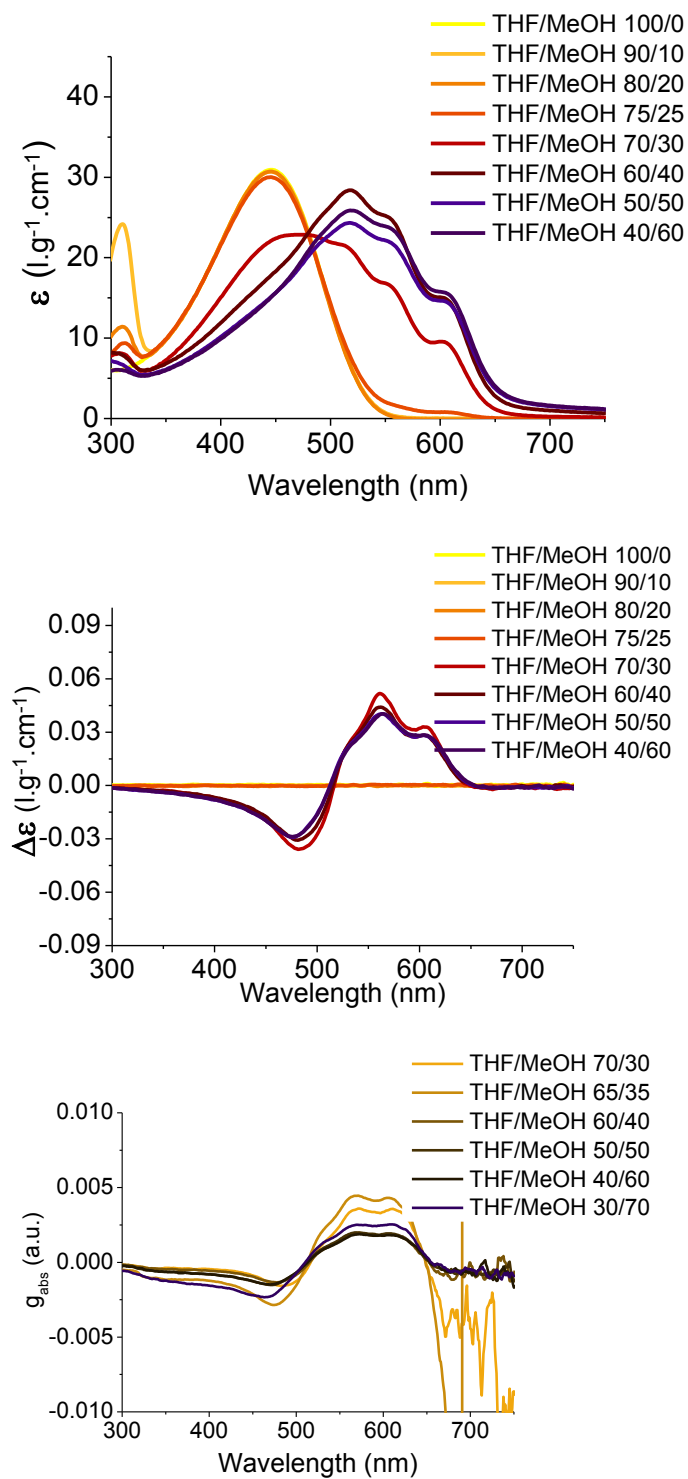


Figure S12: UV-vis, CD and g_{abs} spectra for the addition of acid to **P2** in a neutral THF/MeOH mixture of THF/MeOH 40/60.

The ratio THF/MeOH is given in the legend.

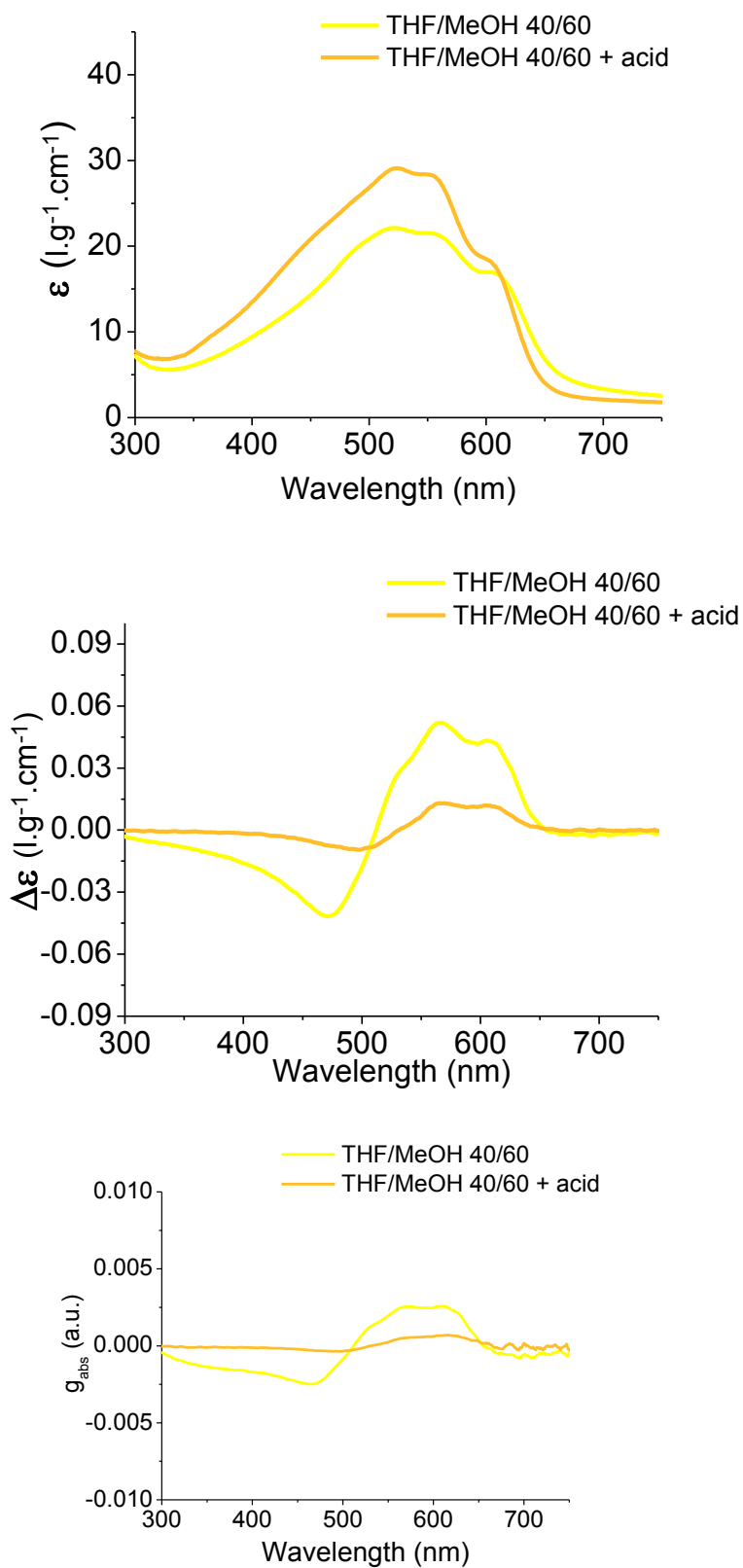


Figure S13: g_{abs} spectra of **P3** in a neutral THF/MeOH mixture.
The ratio THF/MeOH is 40/60.

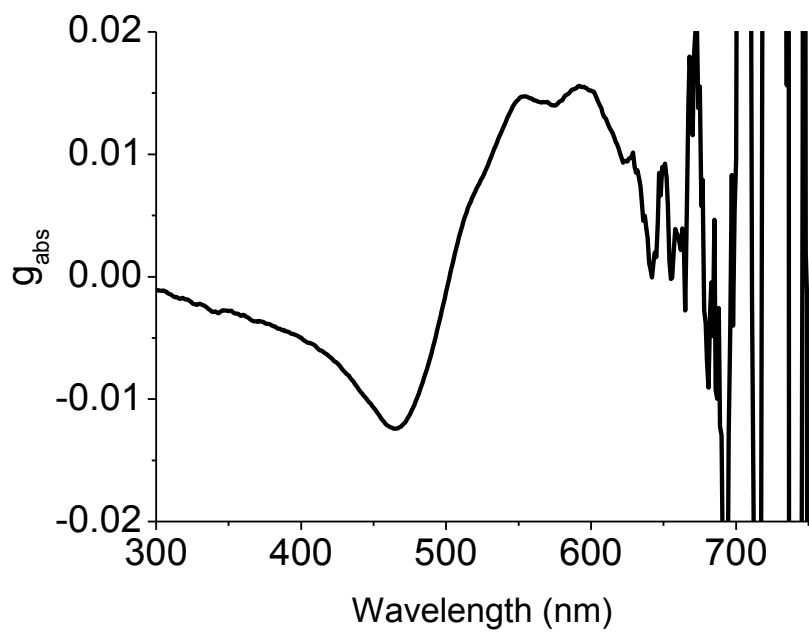


Figure S14: UV-vis, CD and g_{abs} spectra for the addition of acid to **P4** in a neutral THF/MeOH mixture of THF/MeOH 40/60.

The ratio THF/MeOH is given in the legend.

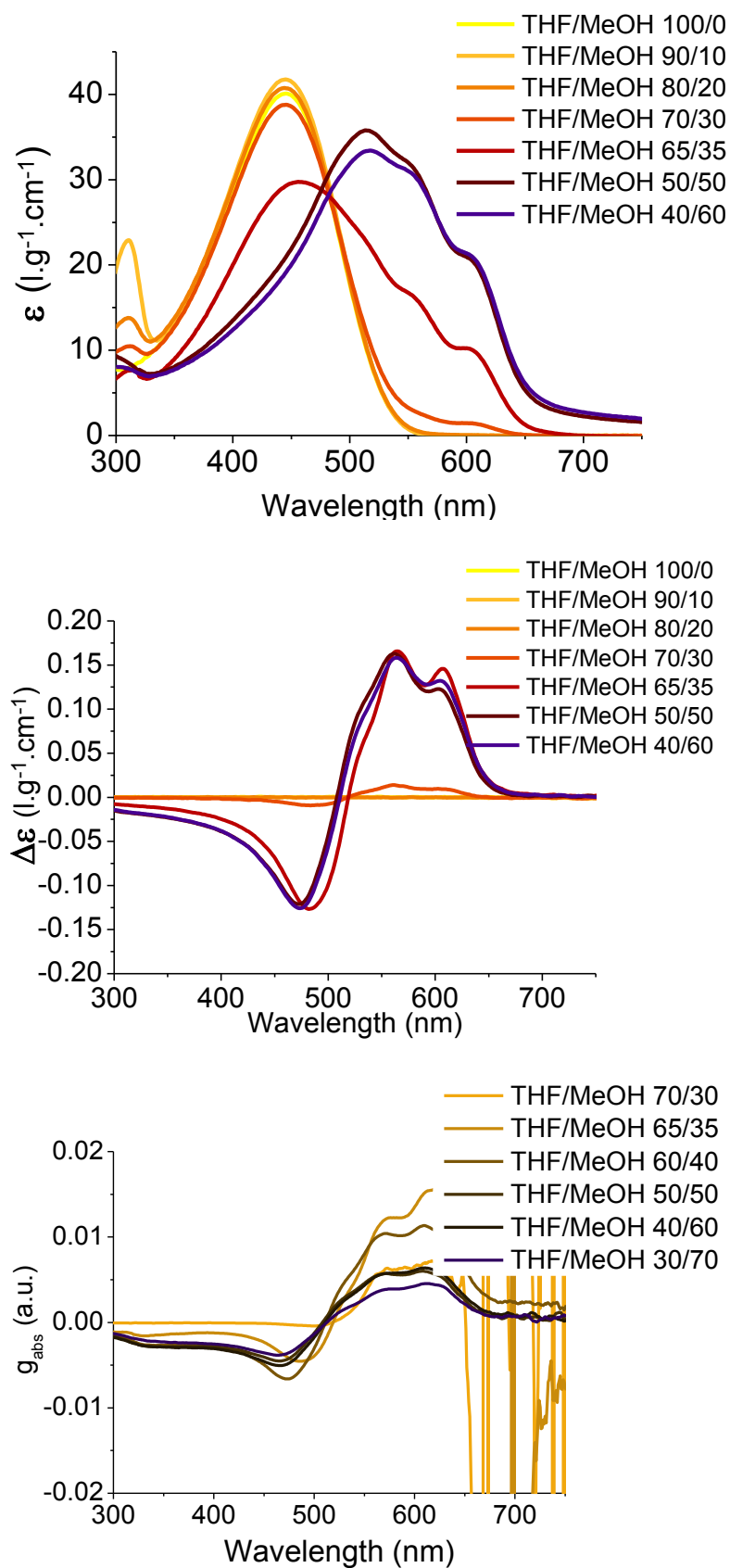


Figure S15: UV-vis, CD and g_{abs} spectra for the addition of acid to **P4** in neutral THF/MeOH 40/60 mixture. The ratio THF/MeOH is given in the legend.

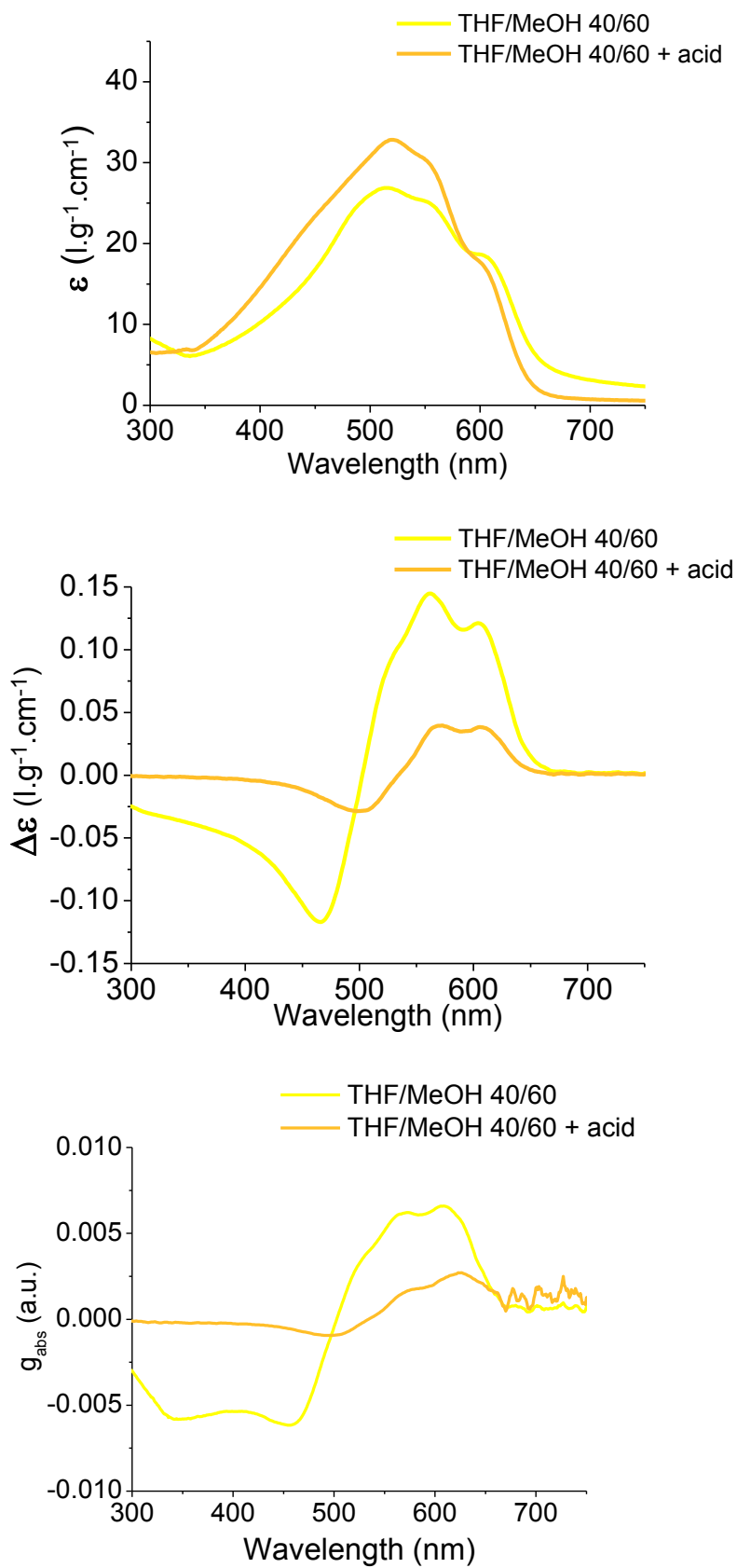


Figure S16: UV-vis, CD and g_{abs} spectra for the solvatochromism experiments of **P5** in a neutral THF/MeOH mixture. The ratio THF/MeOH is given in the legend.

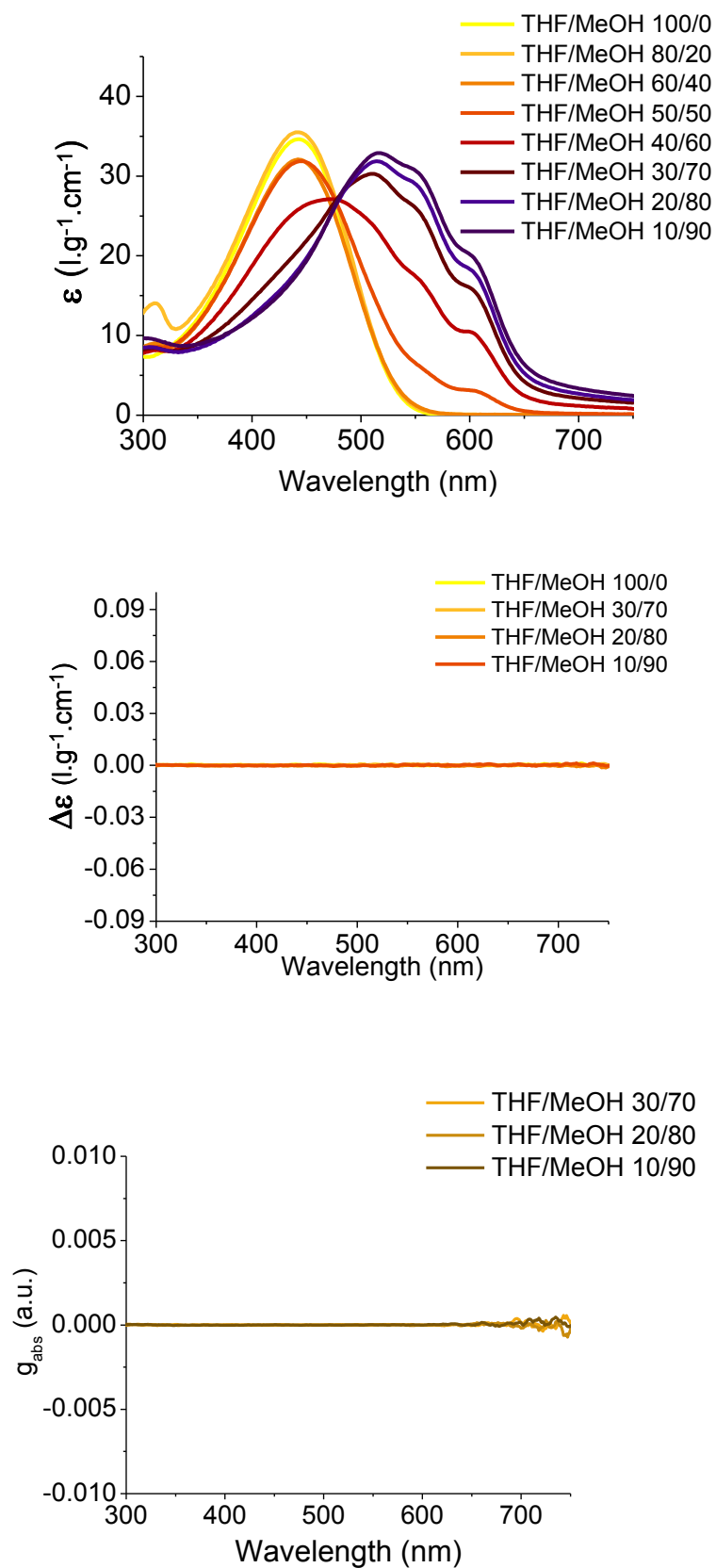


Figure S17: UV-vis, CD and g_{abs} spectra for the addition of acid to **P5** in a neutral THF/MeOH 20/80 mixture. The ratio THF/MeOH is given in the legend.

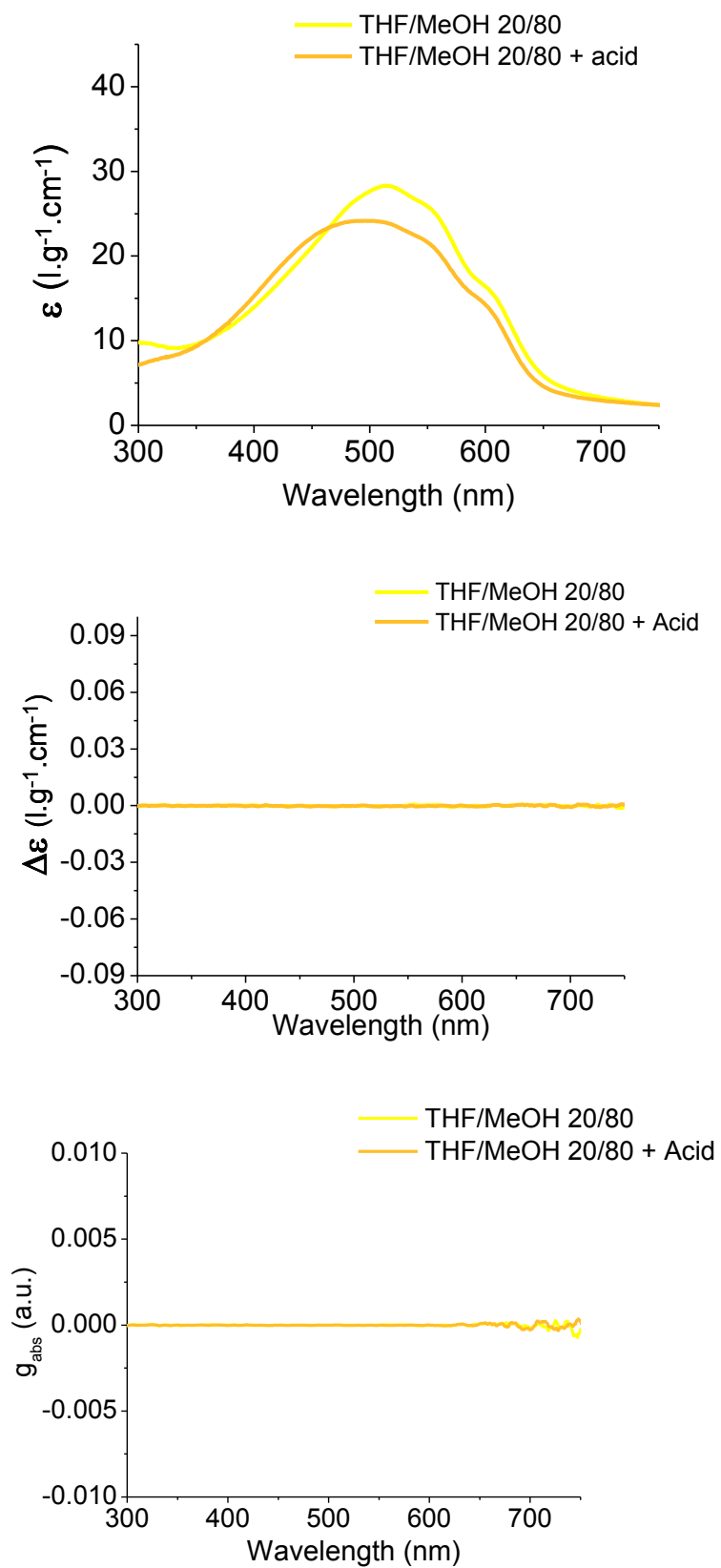


Figure S18: UV-vis, CD and g_{abs} spectra for the solvatochromism experiments of **P6** in a neutral THF/MeOH mixture. The ratio THF/MeOH is given in the legend.

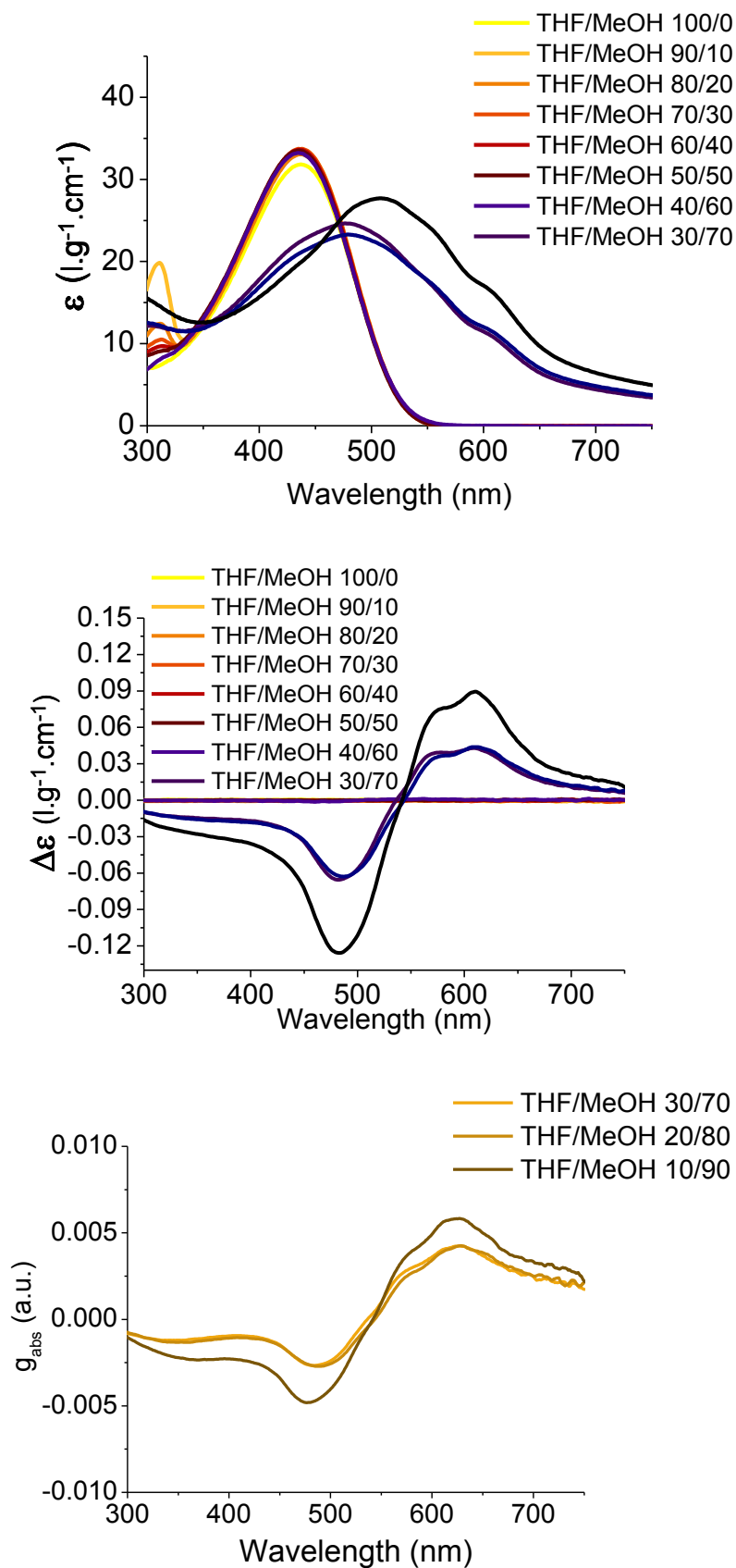
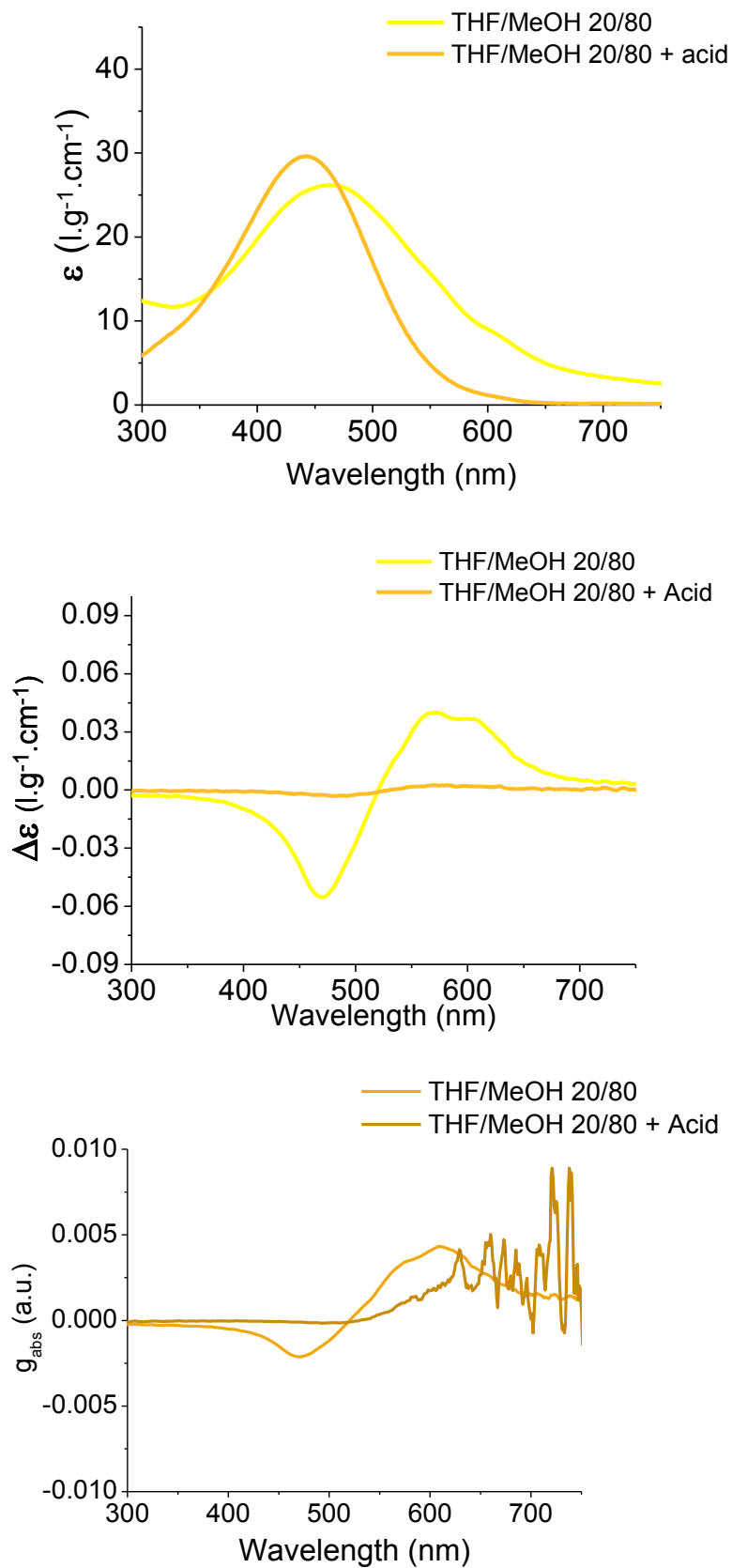


Figure S19: UV-vis, CD and g_{abs} spectra for the addition of acid to **P6** in a neutral THF/MeOH 20/80 mixture. The ratio THF/MeOH is given in the legend.



ii. *Acidic media*

Figure S20: UV-vis, CD and g_{abs} spectra for the solvatochromism experiments of **P2** in an acidic THF/MeOH mixture. The ratio THF/MeOH is given in the legend.

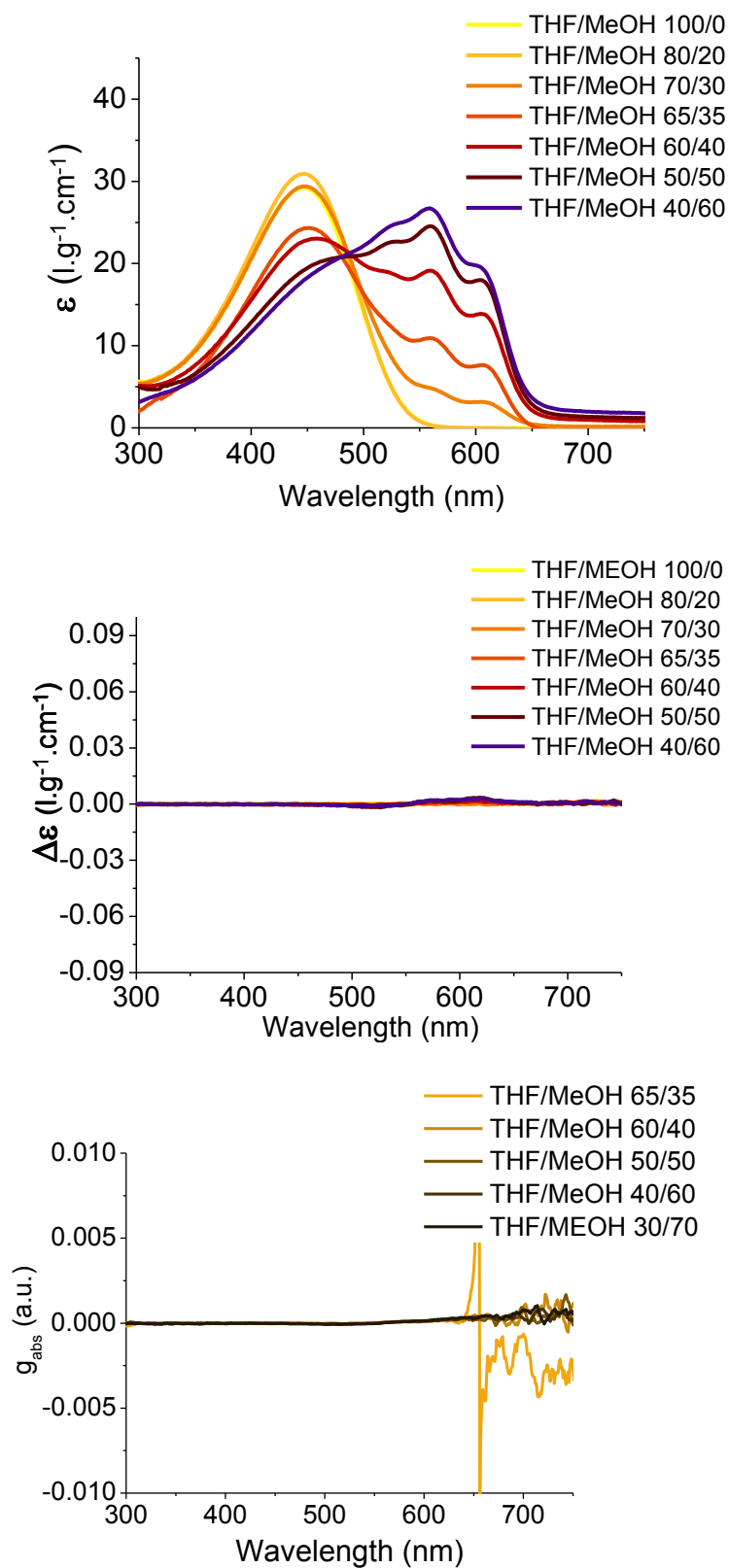


Figure S21: UV-vis, CD and g_{abs} spectra for the addition of base to **P2** in an acidic THF/MeOH 40/60 mixture. The ratio THF/MeOH is given in the legend.

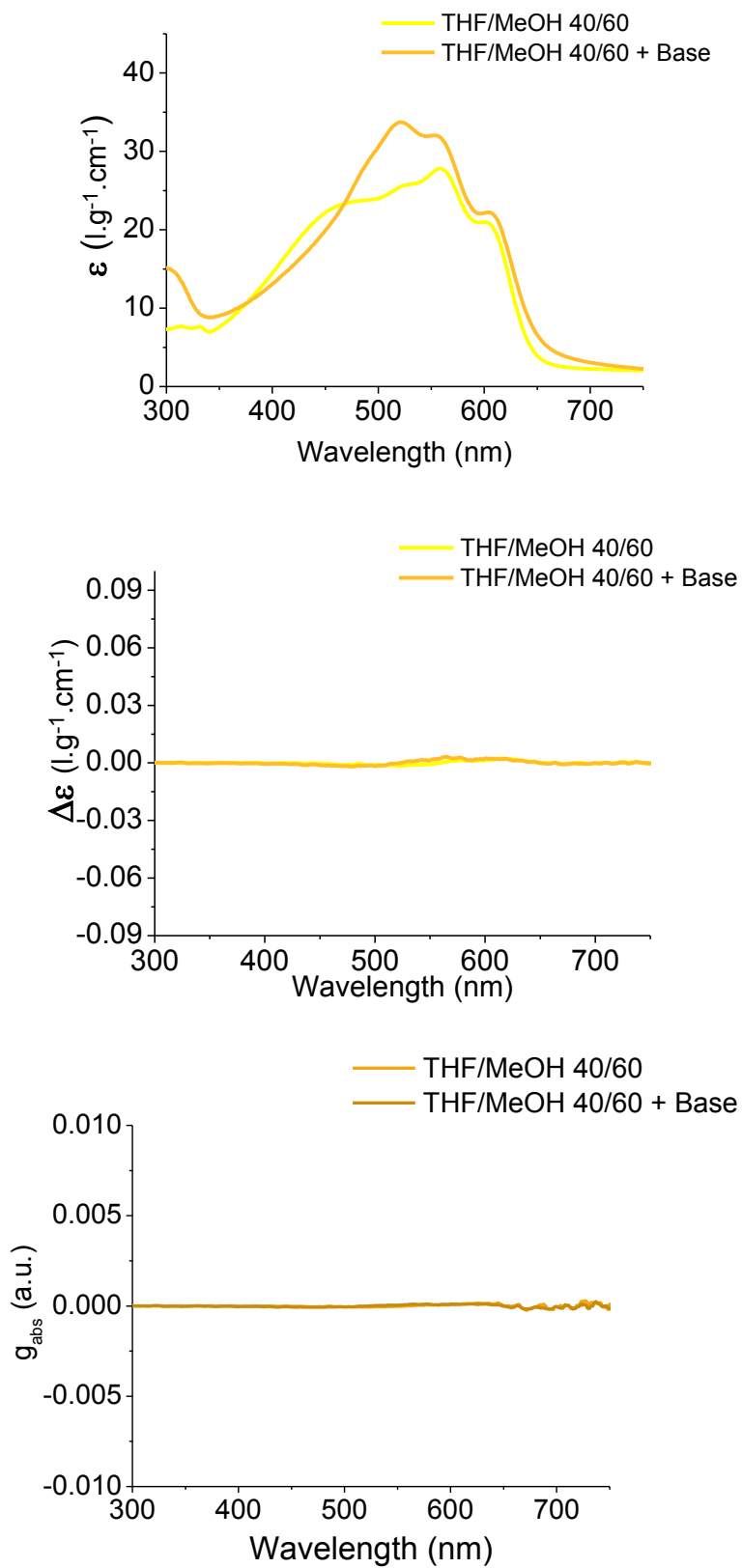


Figure S22: UV-vis, CD and g_{abs} spectra for the solvatochromism experiments of **P4** in an acidic THF/MeOH mixture. The ratio THF/MeOH is given in the legend.

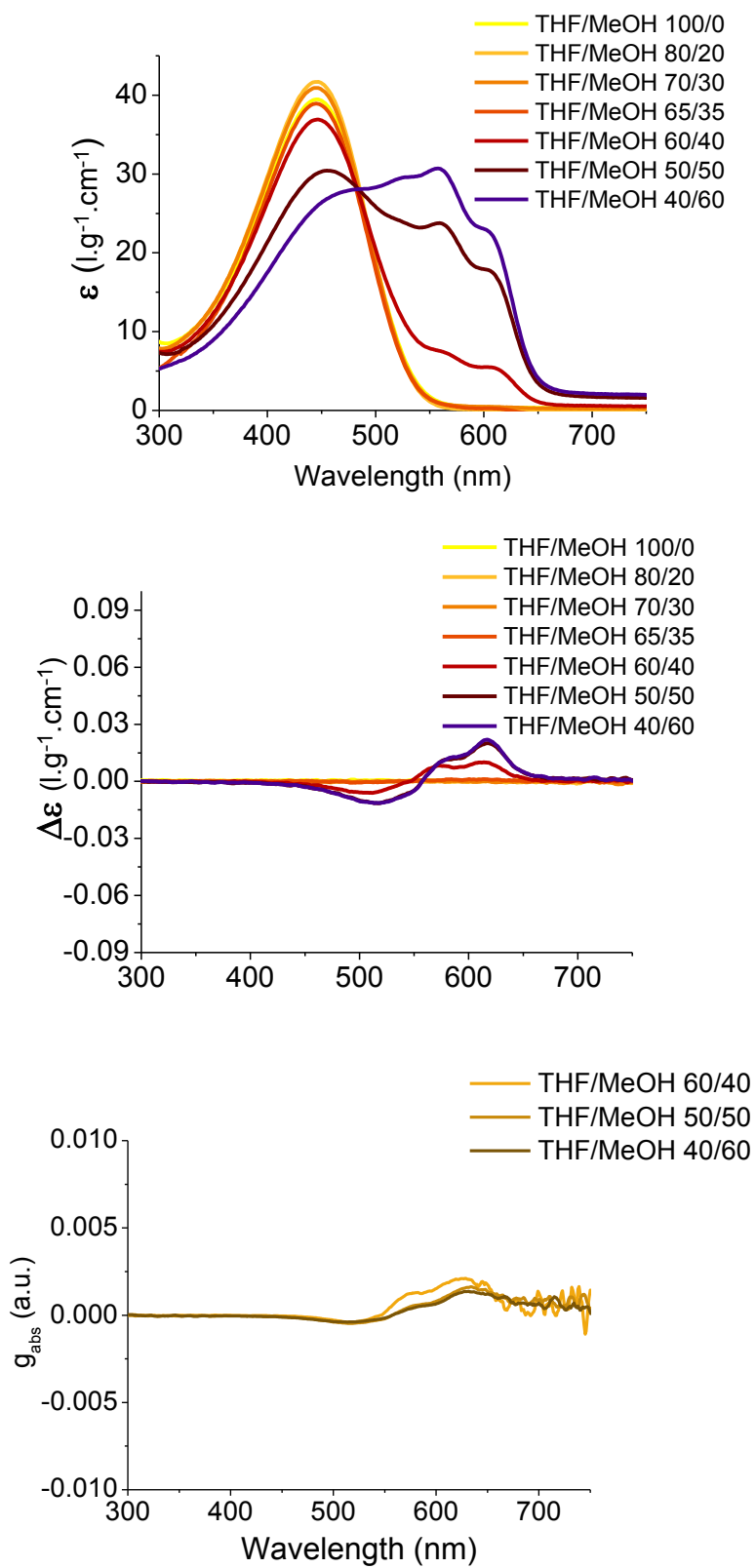


Figure S23: UV-vis, CD and g_{abs} spectra for the addition of base to **P4** in an acidic THF/MeOH 40/60 mixture. The ratio THF/MeOH is given in the legend.

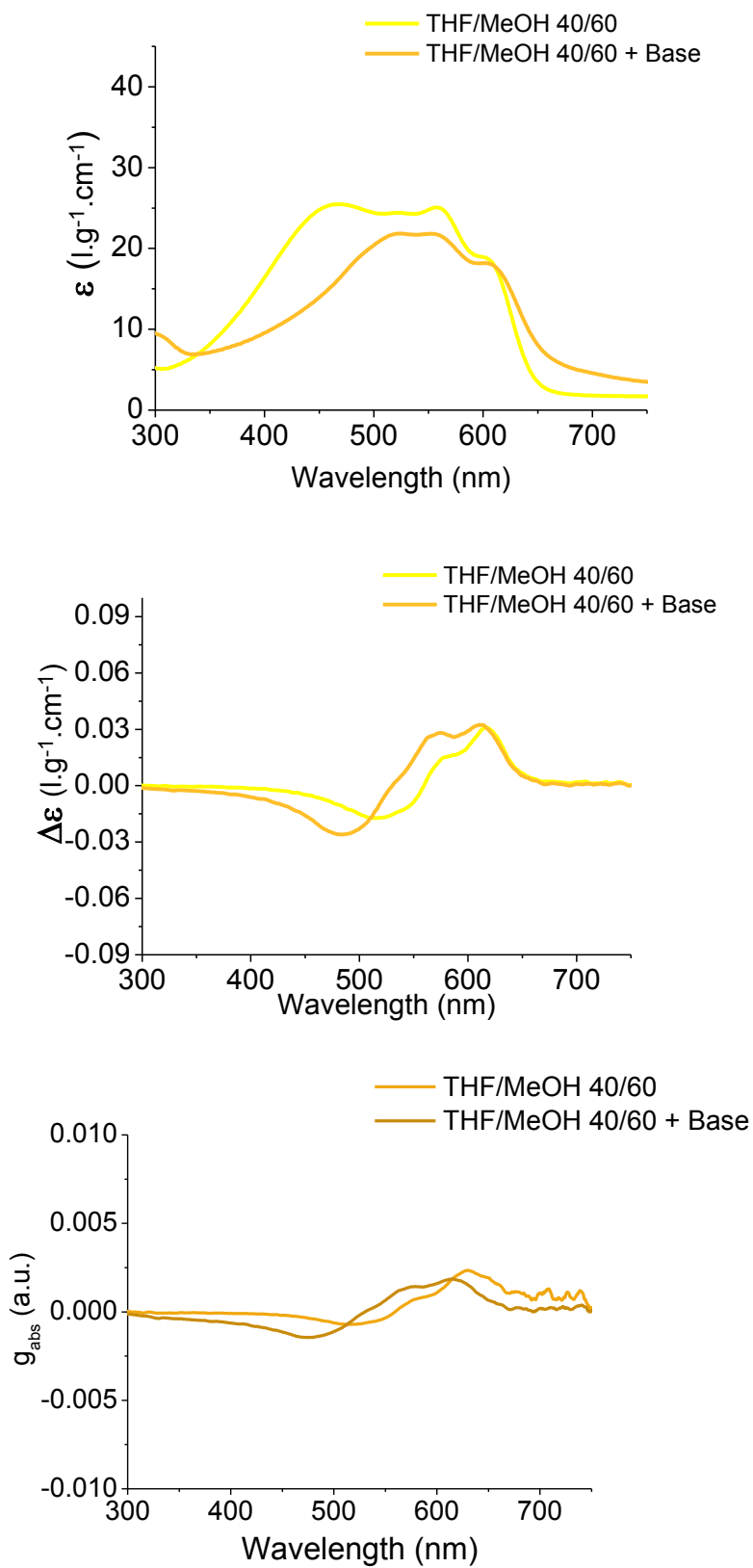


Figure S24: UV-vis, CD and g_{abs} spectra for the solvatochromism experiments of **P5** in an acidic THF/MeOH mixture. The ratio THF/MeOH is given in the legend.

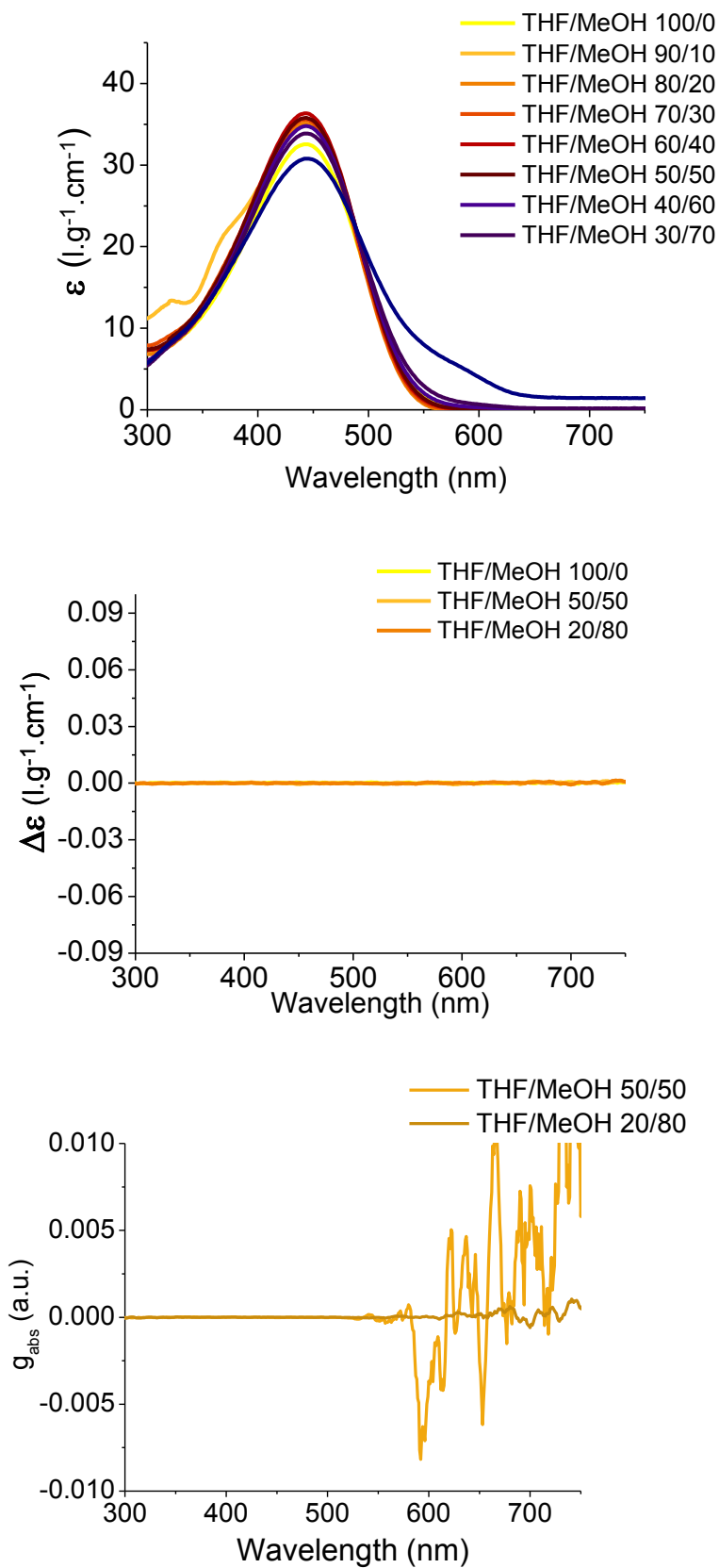


Figure S25: UV-vis, CD and g_{abs} spectra for the addition of base to **P5** in an acidic THF/MeOH 20/80 mixture. The ratio THF/MeOH is given in the legend.

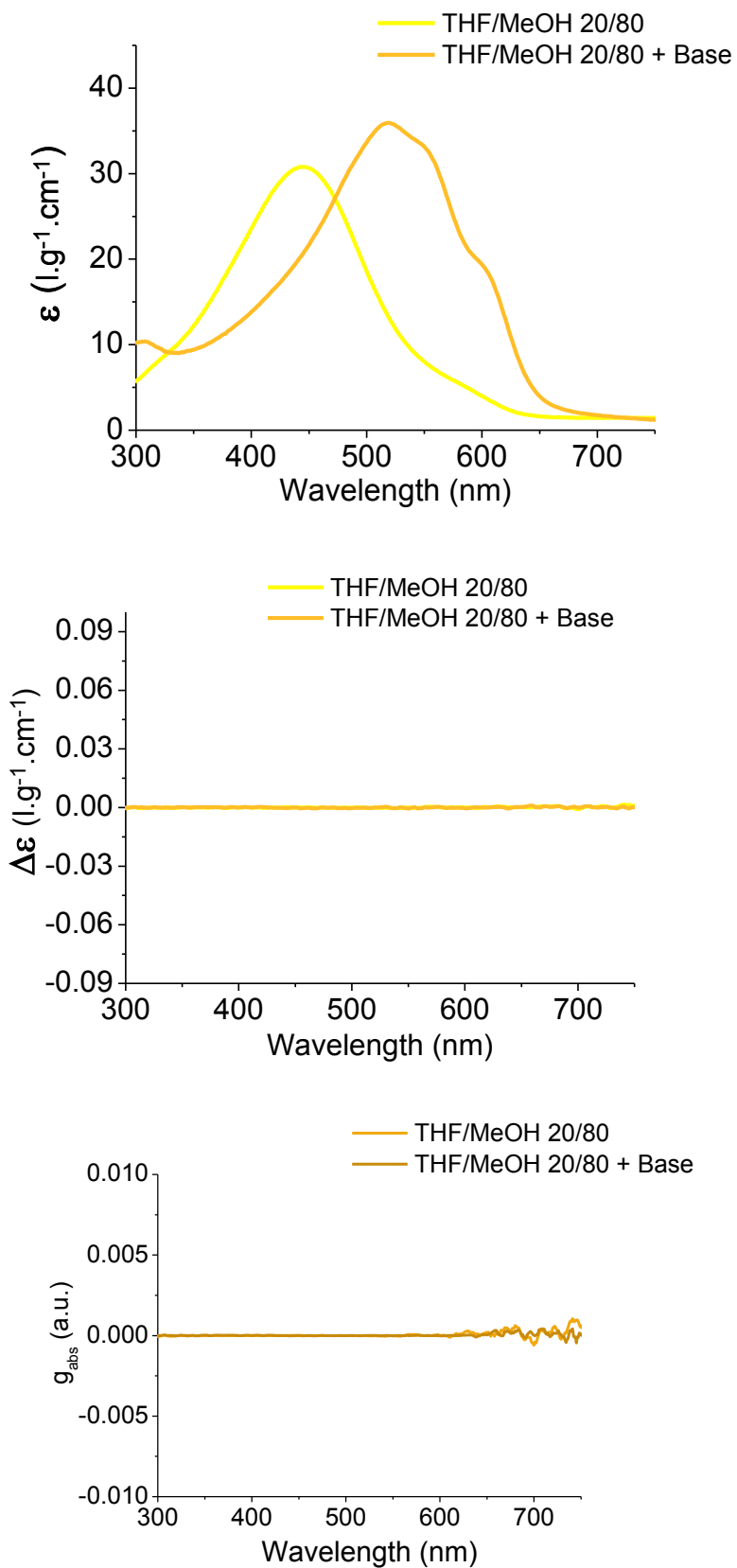


Figure S26: UV-vis, CD and g_{abs} spectra for the solvatochromism experiments of **P6** in an acidic THF/MeOH mixture. The ratio THF/MeOH is given in the legend.

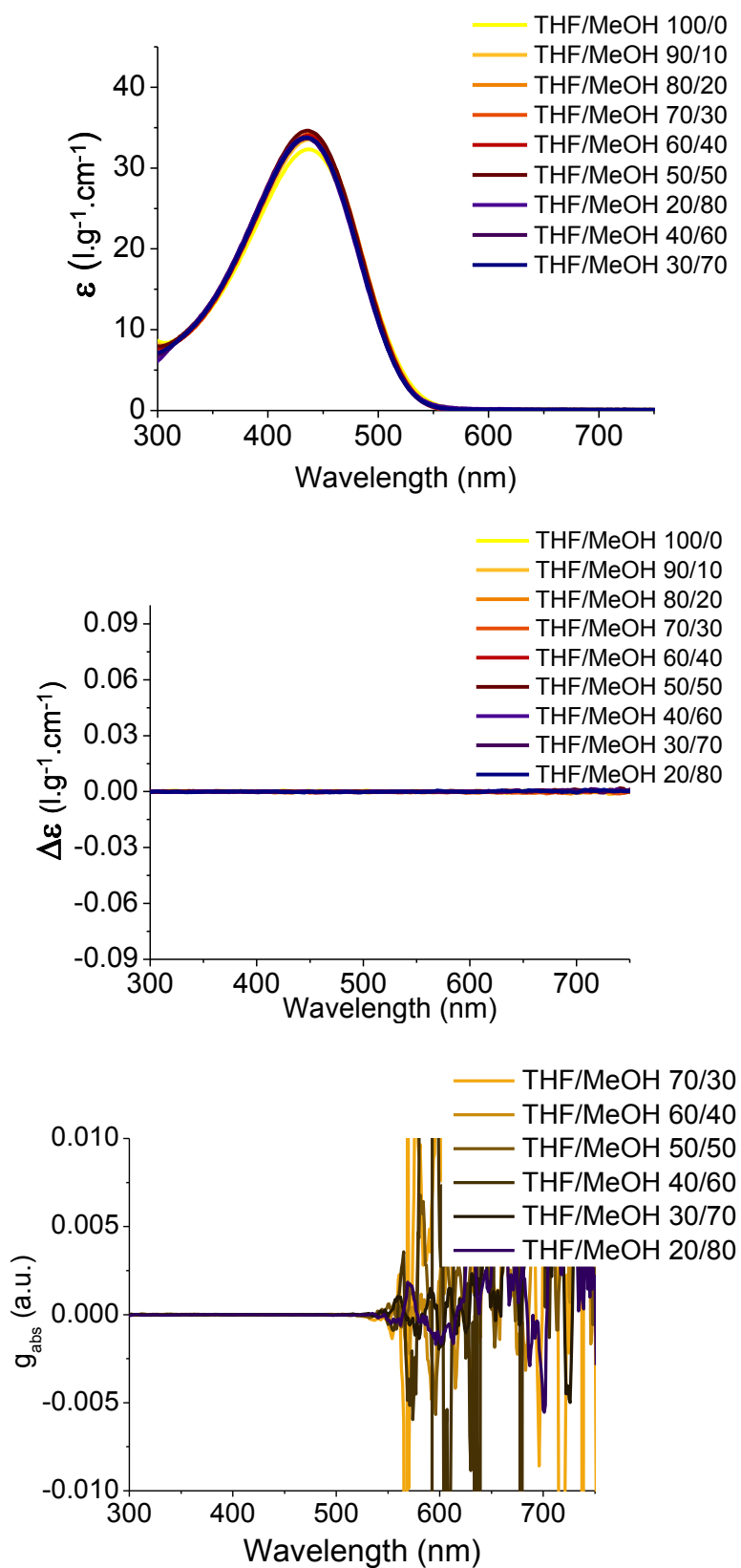
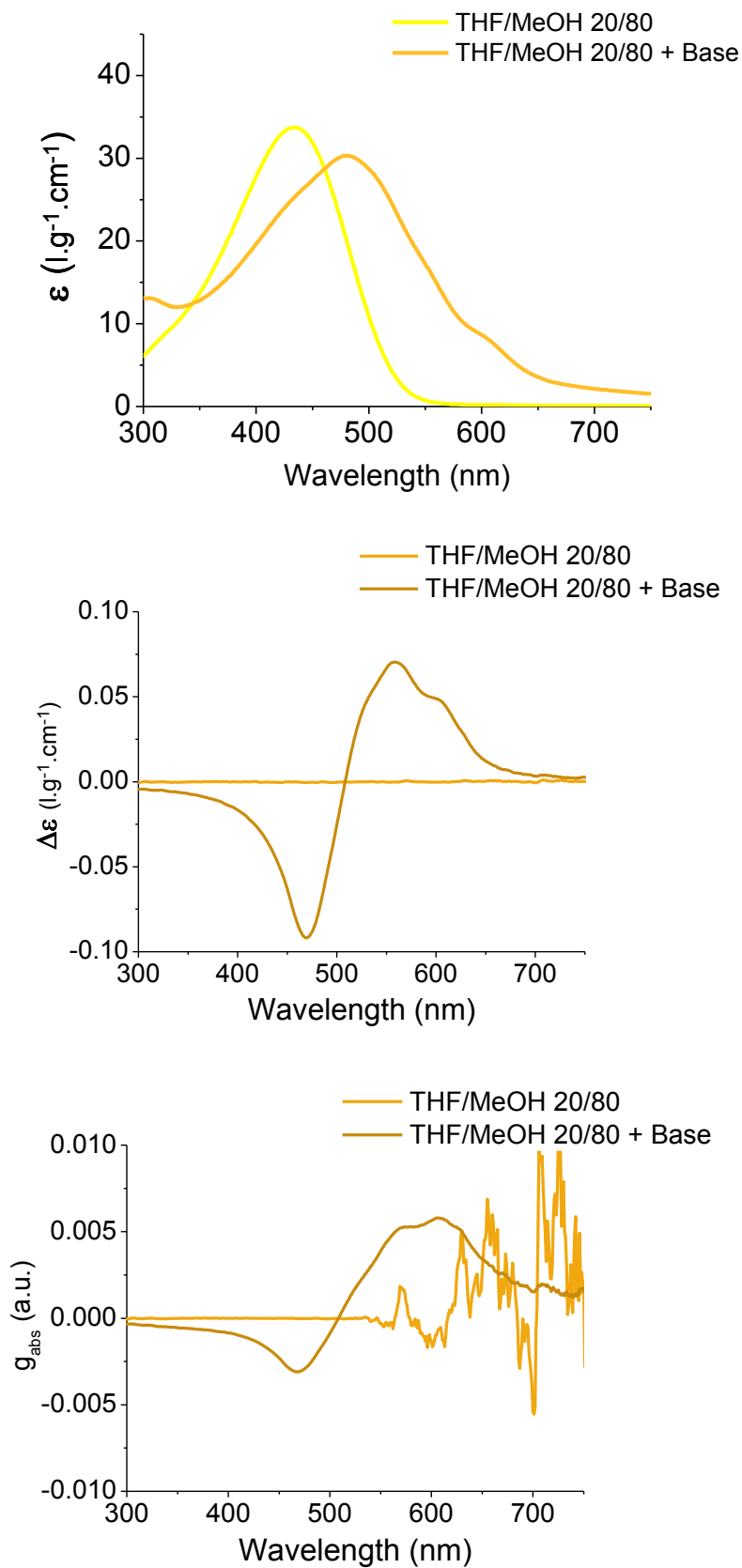


Figure S27: UV-vis, CD and g_{abs} spectra for the addition of base to **P6** in an acidic THF/MeOH 20/80 mixture. The ratio THF/MeOH is given in the legend.



2. In film

Films were prepared by spin coating from neutral or acidified THF solutions (1200 rpm, 20 s) and the solutions were filtered with a 0.20 μm filter prior to spin coating.

i. Spincoated from neutral media

Figure S28: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P2** with fast cooling.

Each run, the film is annealed for 1 min at the temperature given in the legend and cooled fast at room T.

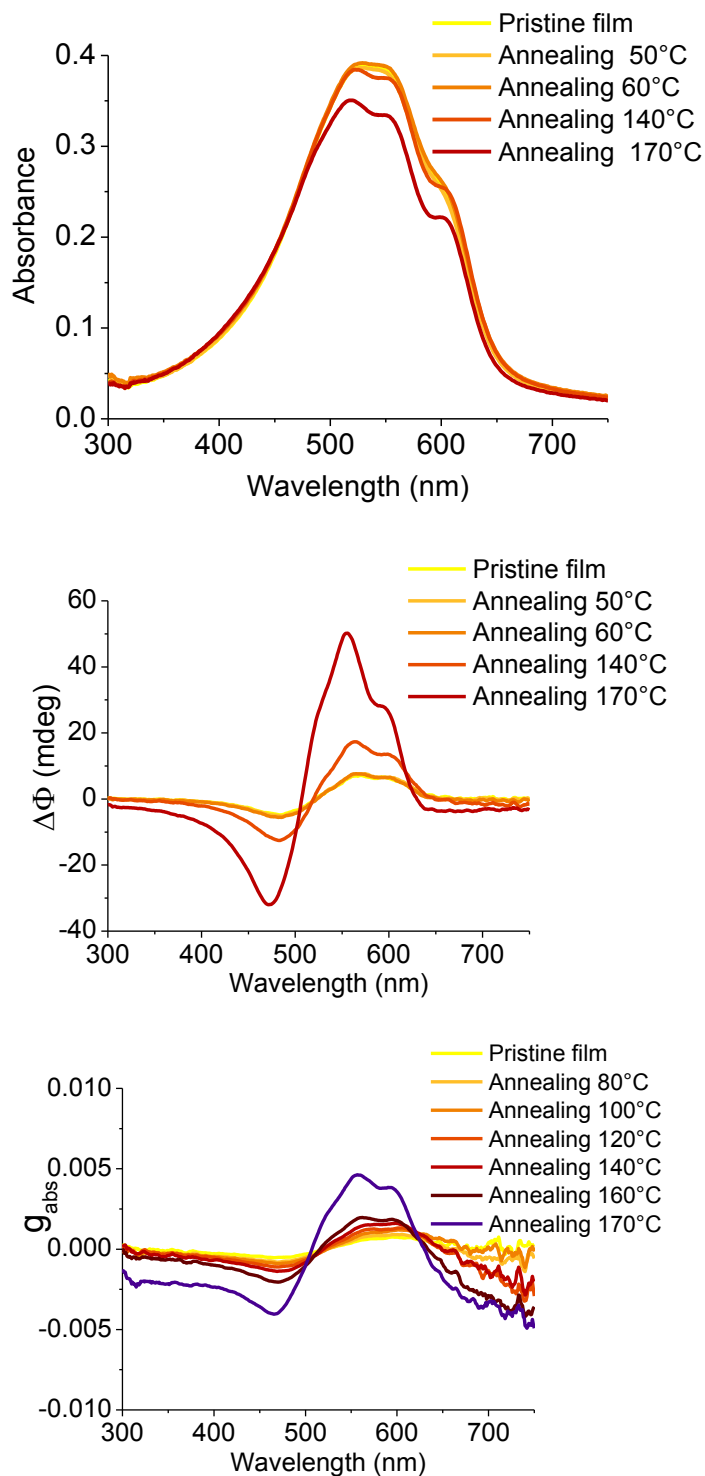


Figure S29: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P2** with slow cooling.
Each run, the film is annealed for 1 min at the temperature given in the legend and cooled slow at $2\text{ }^{\circ}\text{C min}^{-1}$.

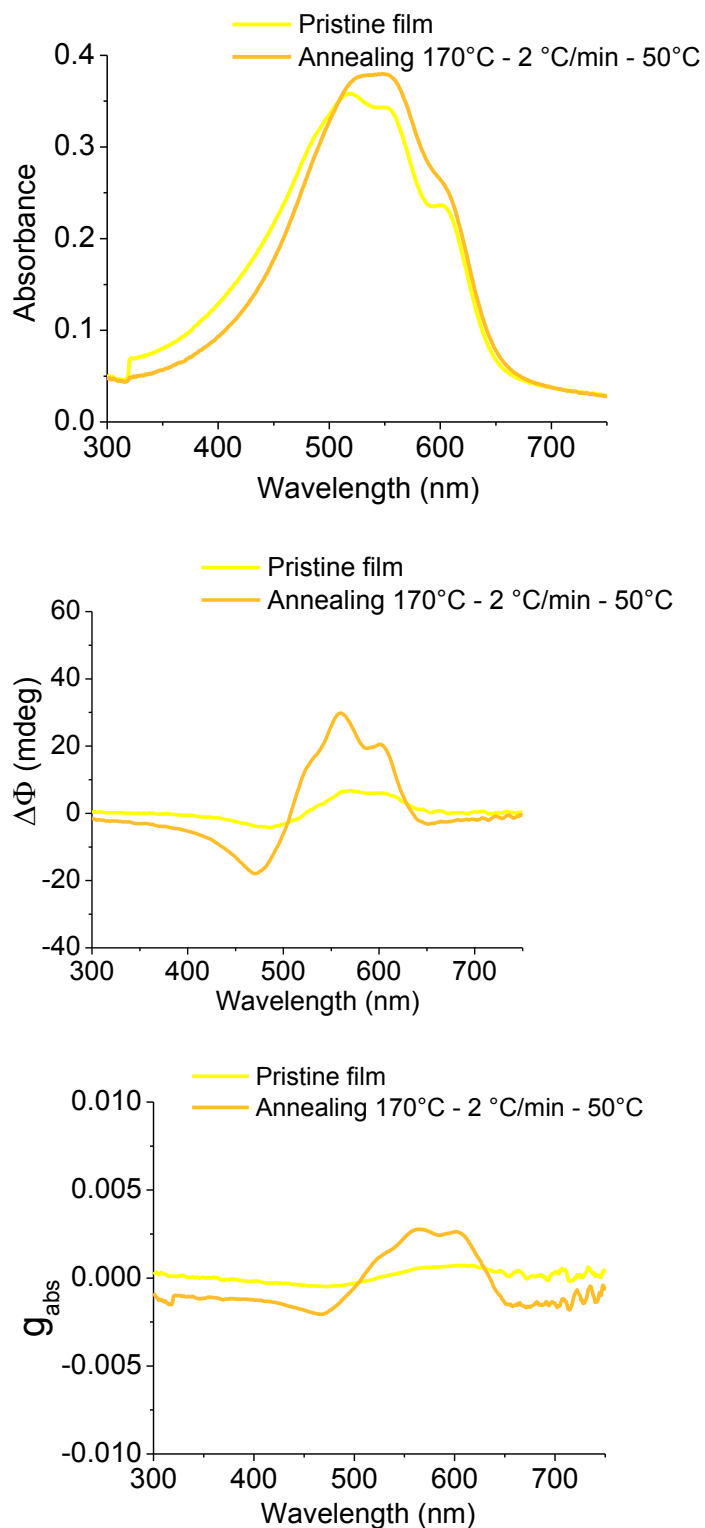


Figure S30: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P3** with fast cooling.

Each run, the film is annealed for 1 min at the temperature given in the legend and cooled fast at room T.

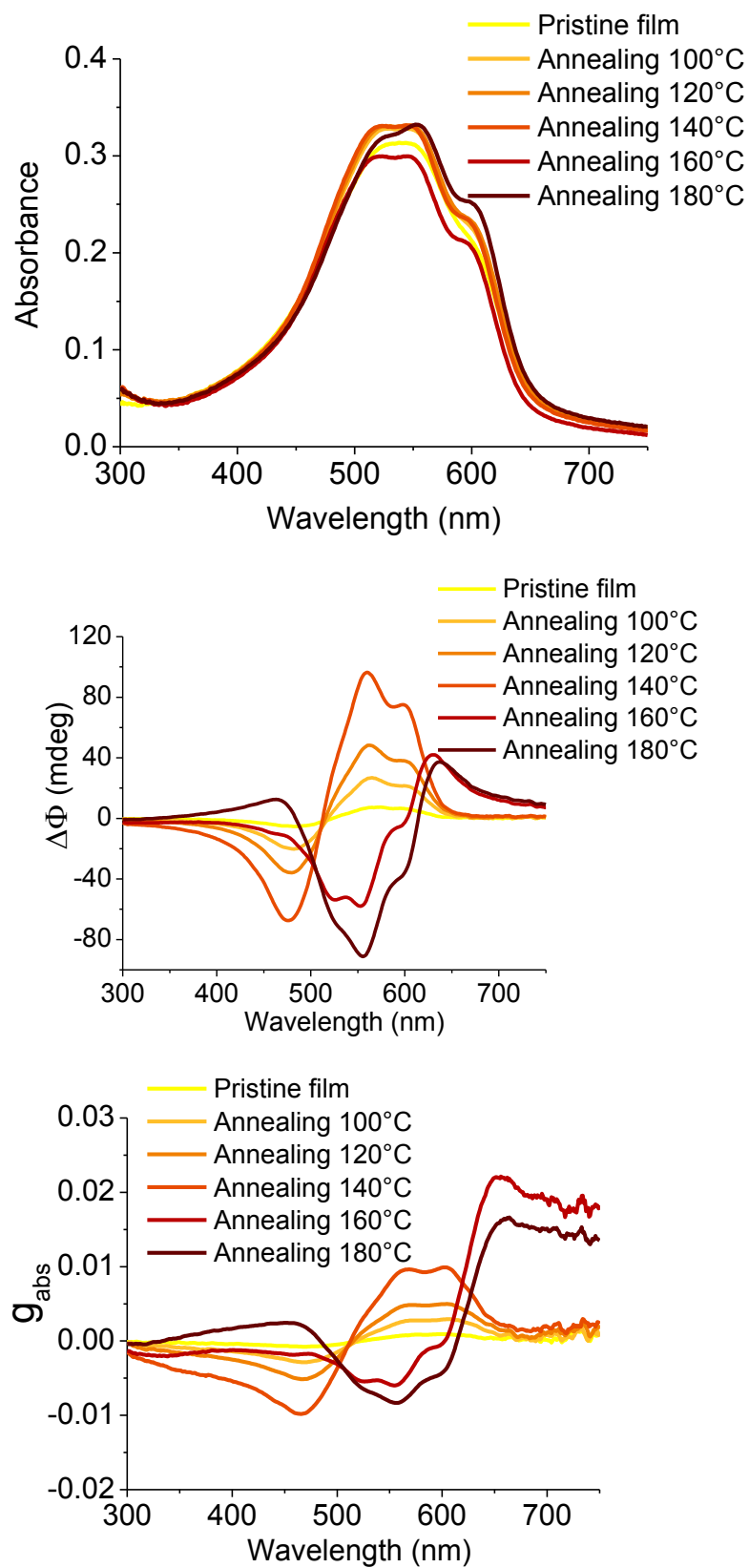


Figure S31: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P4** with fast cooling.
Each run, the film is annealed for 1 min at the temperature given in the legend and cooled fast at room T.

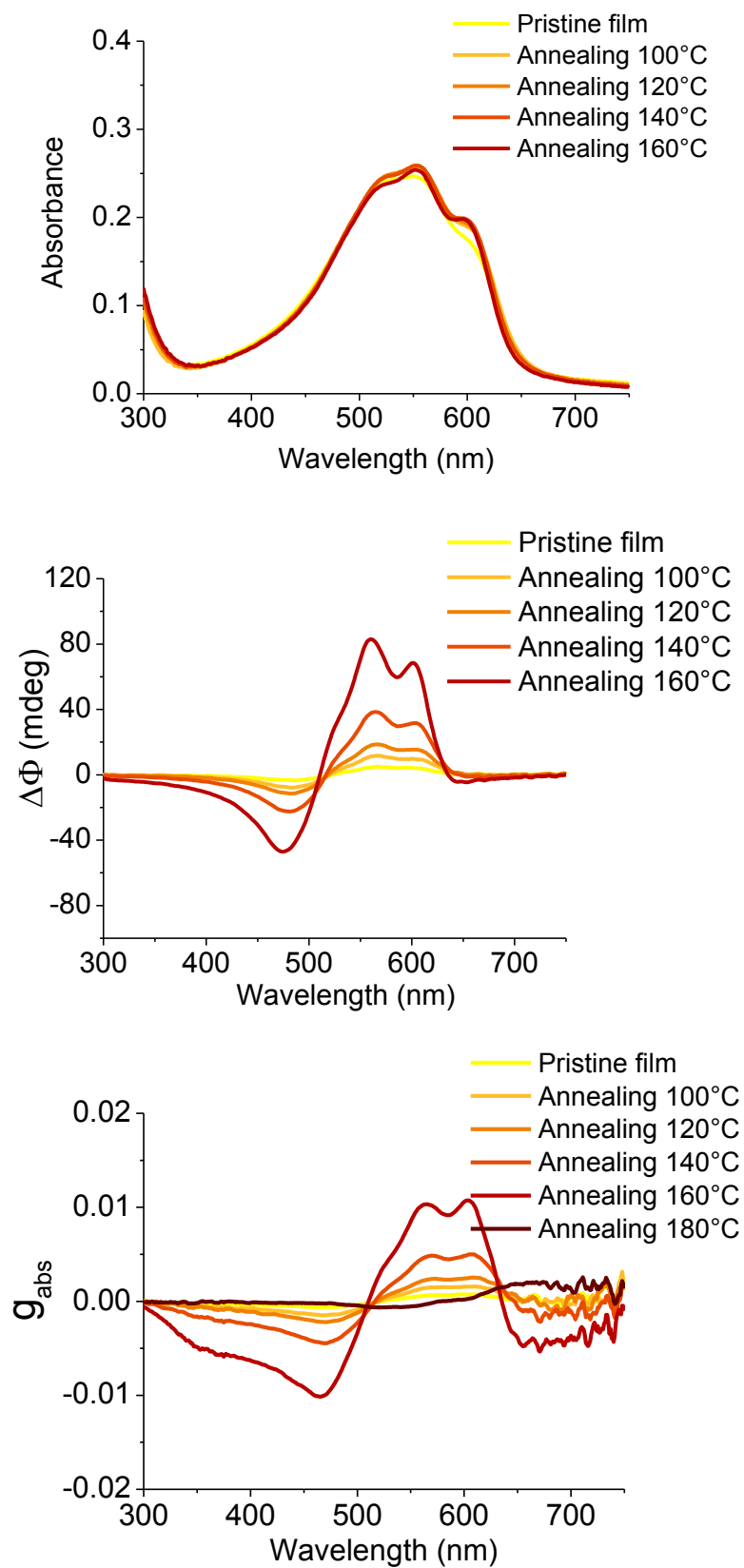


Figure S32: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P4** with slow cooling.
Each run, the film is annealed for 1 min at the temperature given in the legend and cooled slow at $2\text{ }^{\circ}\text{C min}^{-1}$.

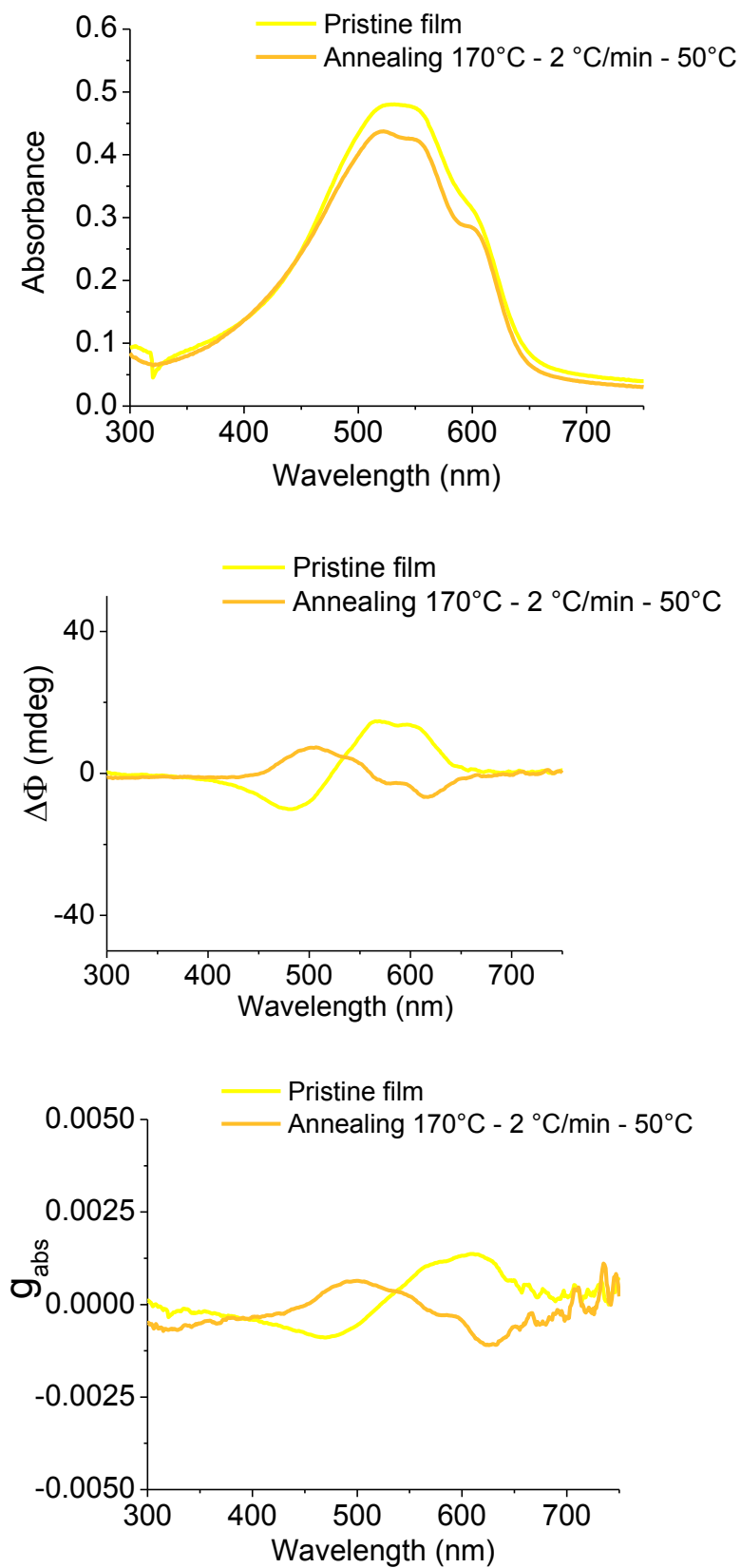


Figure S33: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P5** with fast cooling.
Each run, the film is annealed for 1 min at the temperature given in the legend and cooled fast at room T.

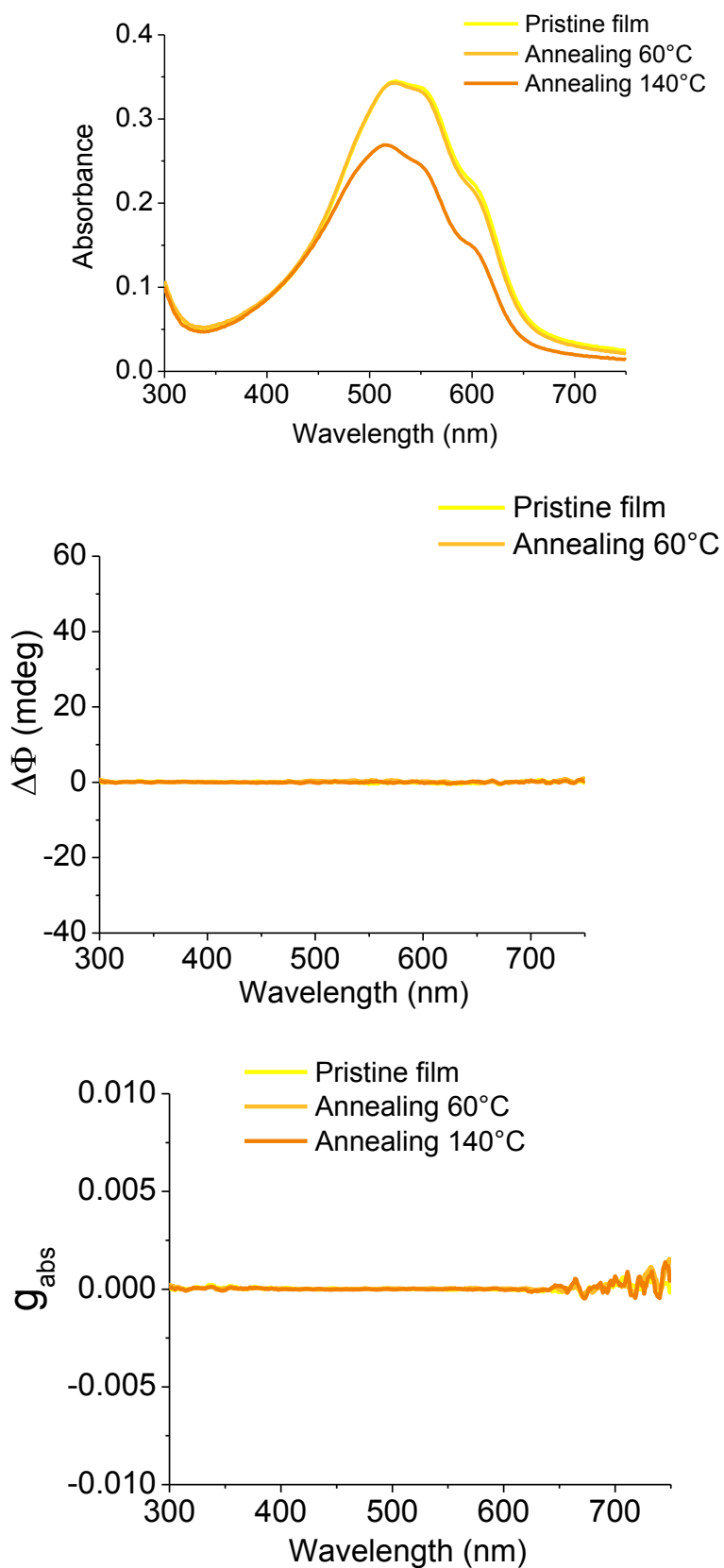


Figure S34: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P6** with fast cooling. Each run, the film is annealed for 1 min at the temperature given in the legend and cooled fast at room T.

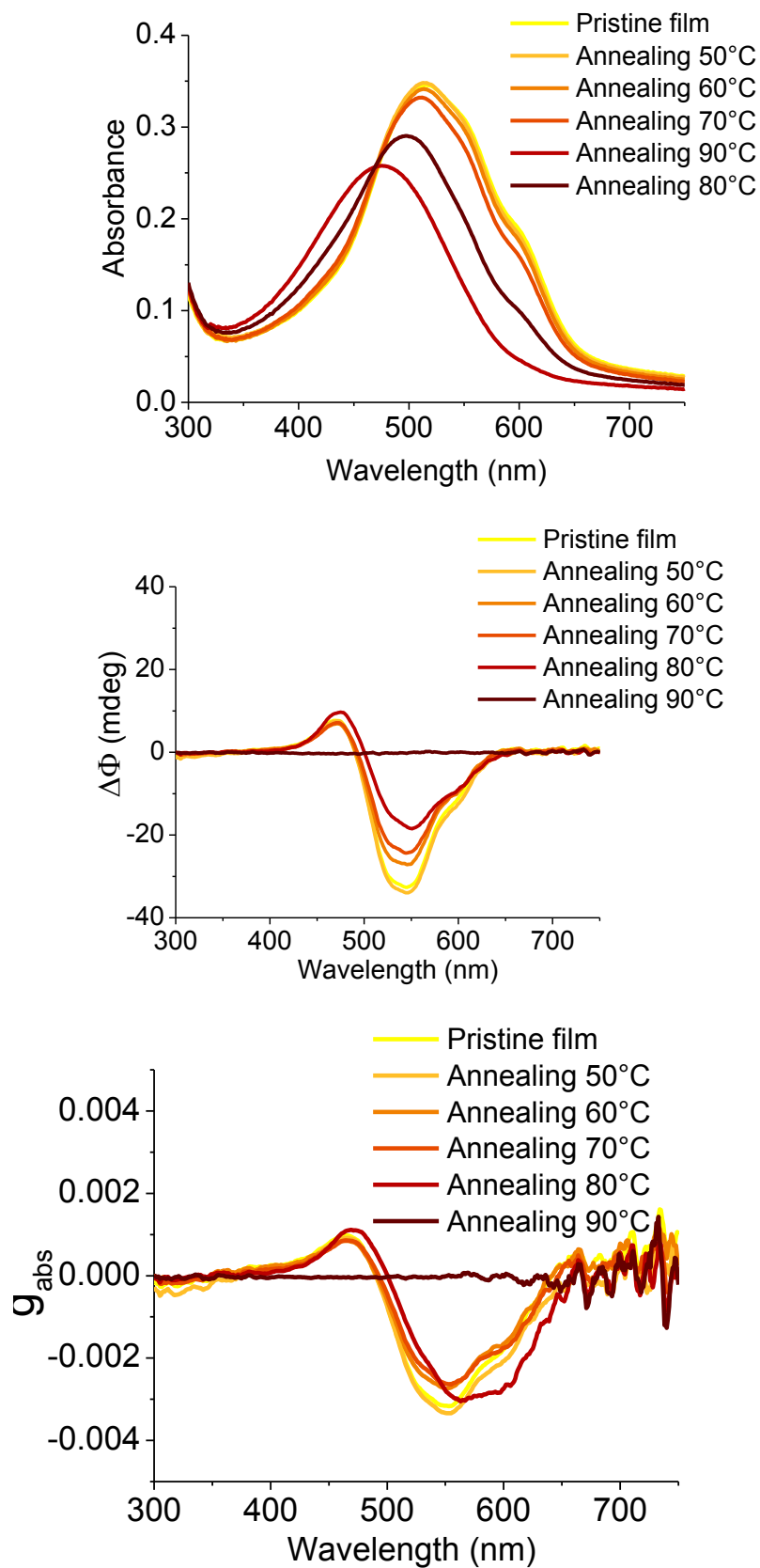
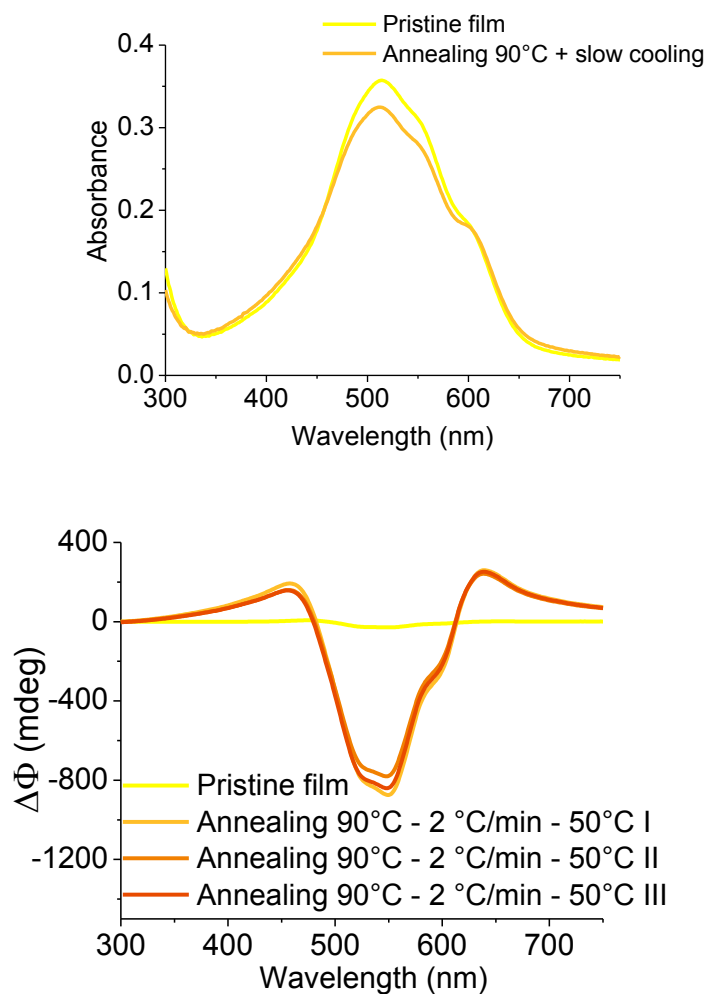
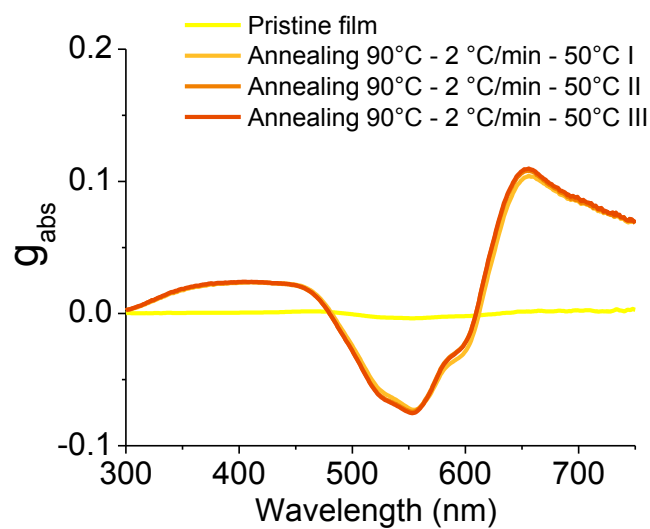


Figure S35: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P6** with slow cooling.
Each run, the film is annealed for 1 min at the temperature given in the legend and cooled slow at $2\text{ }^{\circ}\text{C min}^{-1}$.



I, II an III holds different measurements of the same film but under different angles. .



ii. *Spincoated from acidic media*

Figure S36: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P2** with fast cooling.

Each run, the film is annealed for 1 min at the temperature given in the legend and cooled fast at room T.

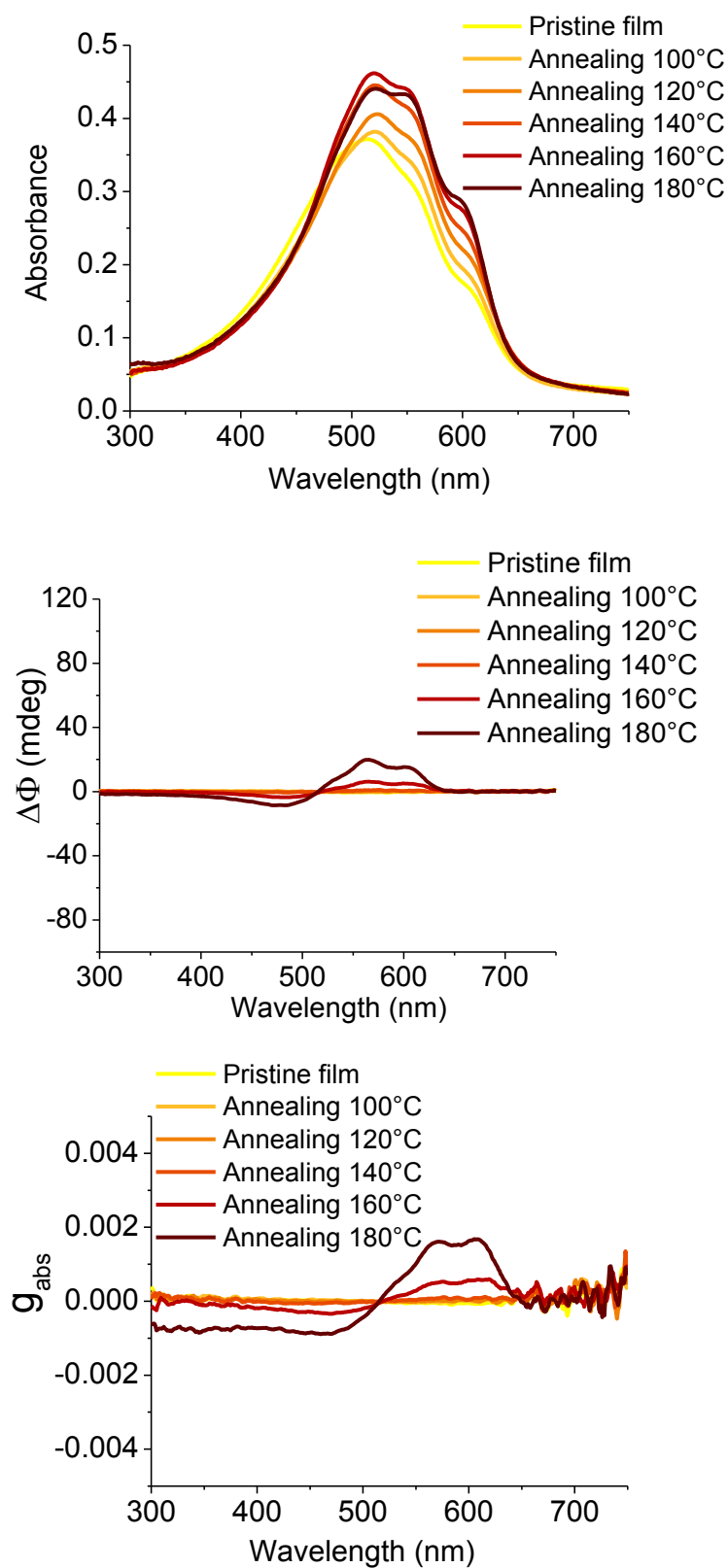


Figure S37: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P3** with fast cooling.
Each run, the film is annealed for 1 min at the temperature given in the legend and cooled fast at room T.

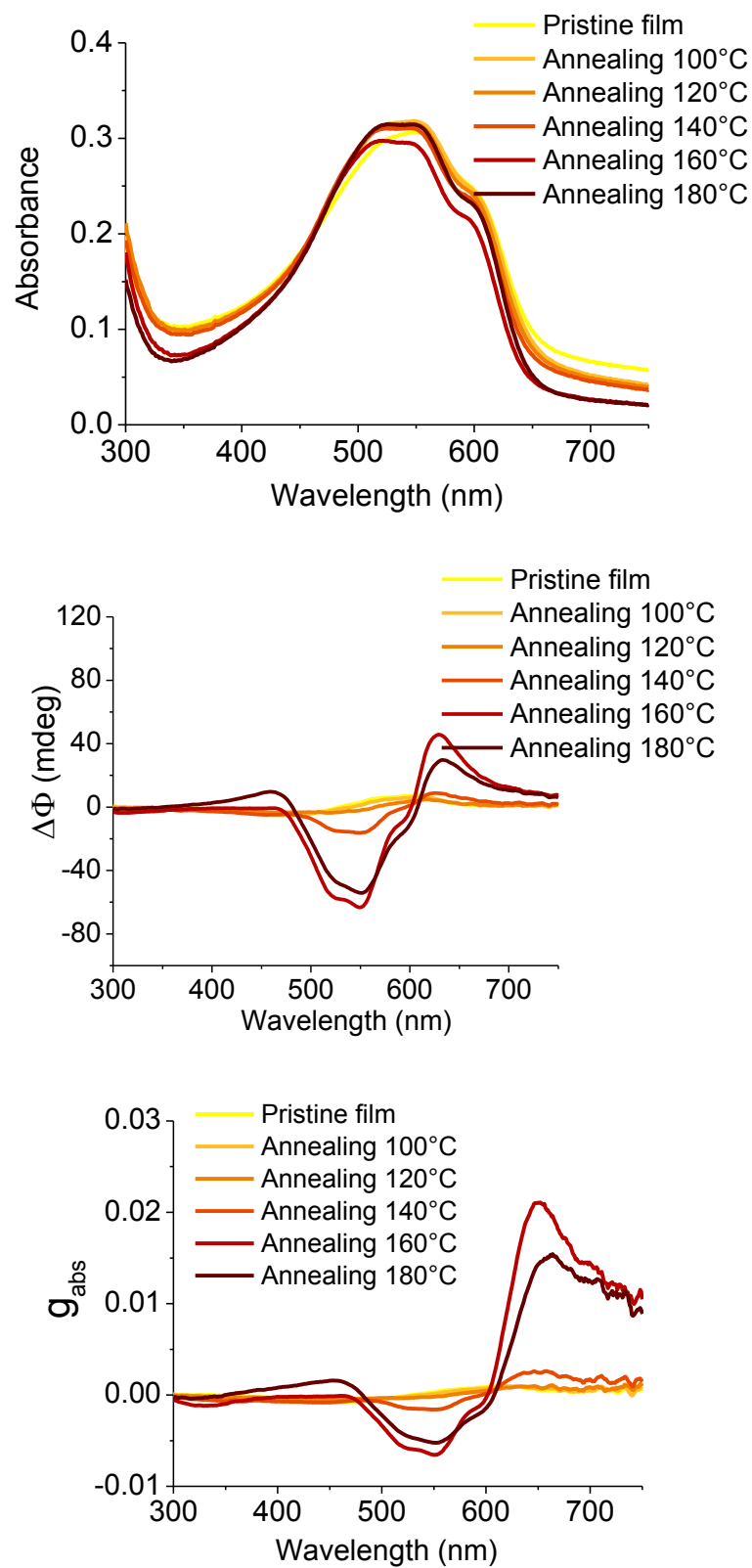


Figure S38: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P4** with fast cooling.

Each run, the film is annealed for 1 min at the temperature given in the legend and cooled fast at room T.

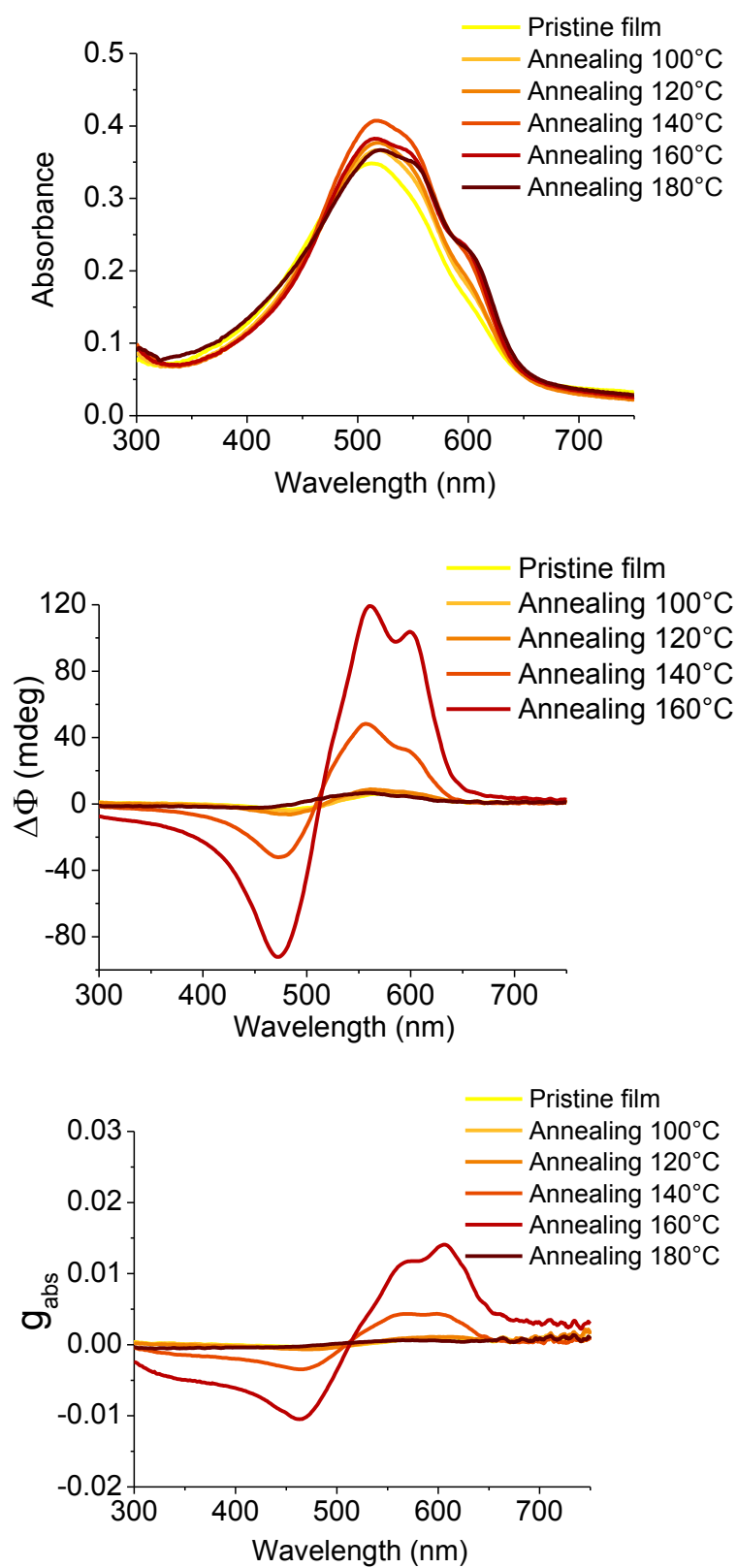


Figure S39: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P6** with fast cooling.
Each run, the film is annealed for 1 min at the temperature given in the legend and cooled fast at room T.

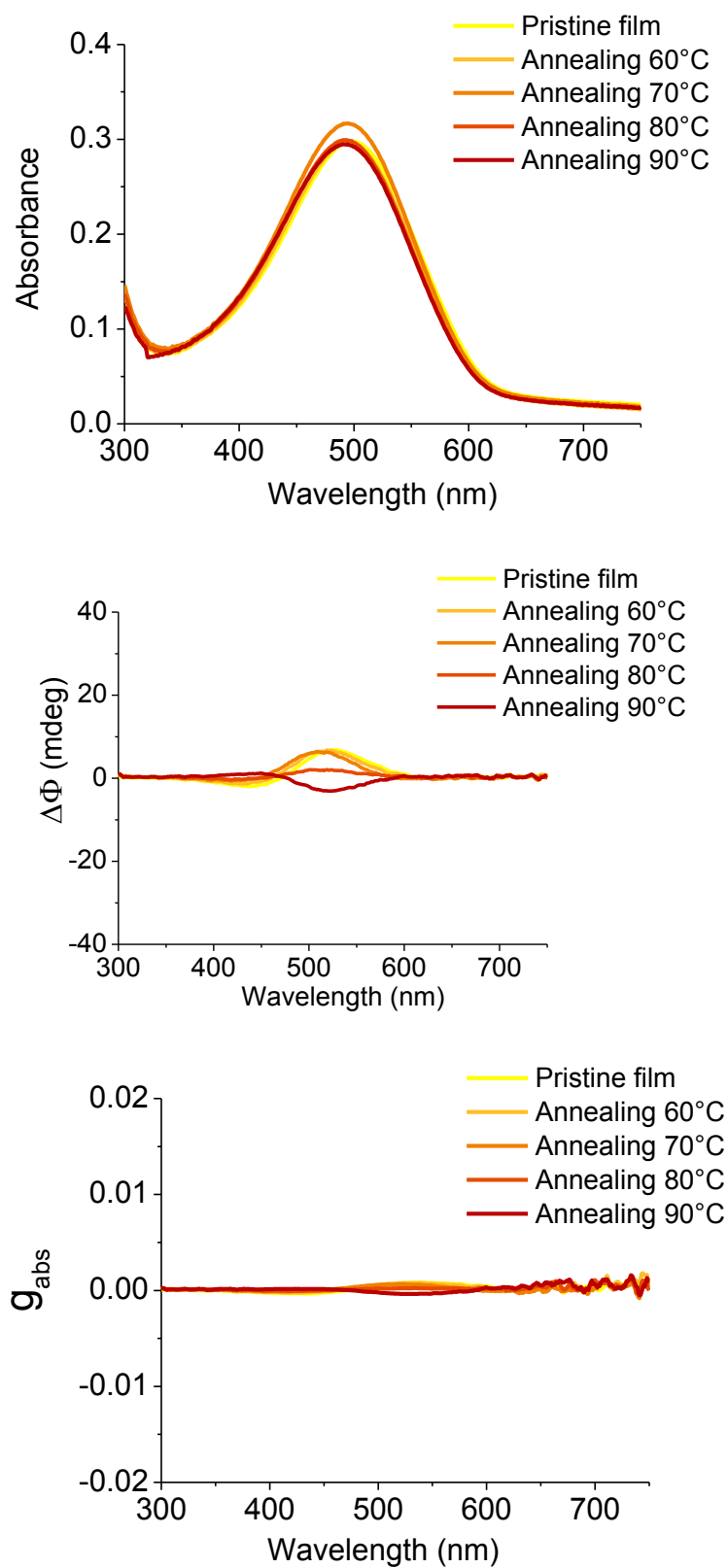


Figure S40: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P6** with slow cooling.
Each run, the film is annealed for 1 min at the temperature given in the legend and cooled slow at $2\text{ }^{\circ}\text{C min}^{-1}$.

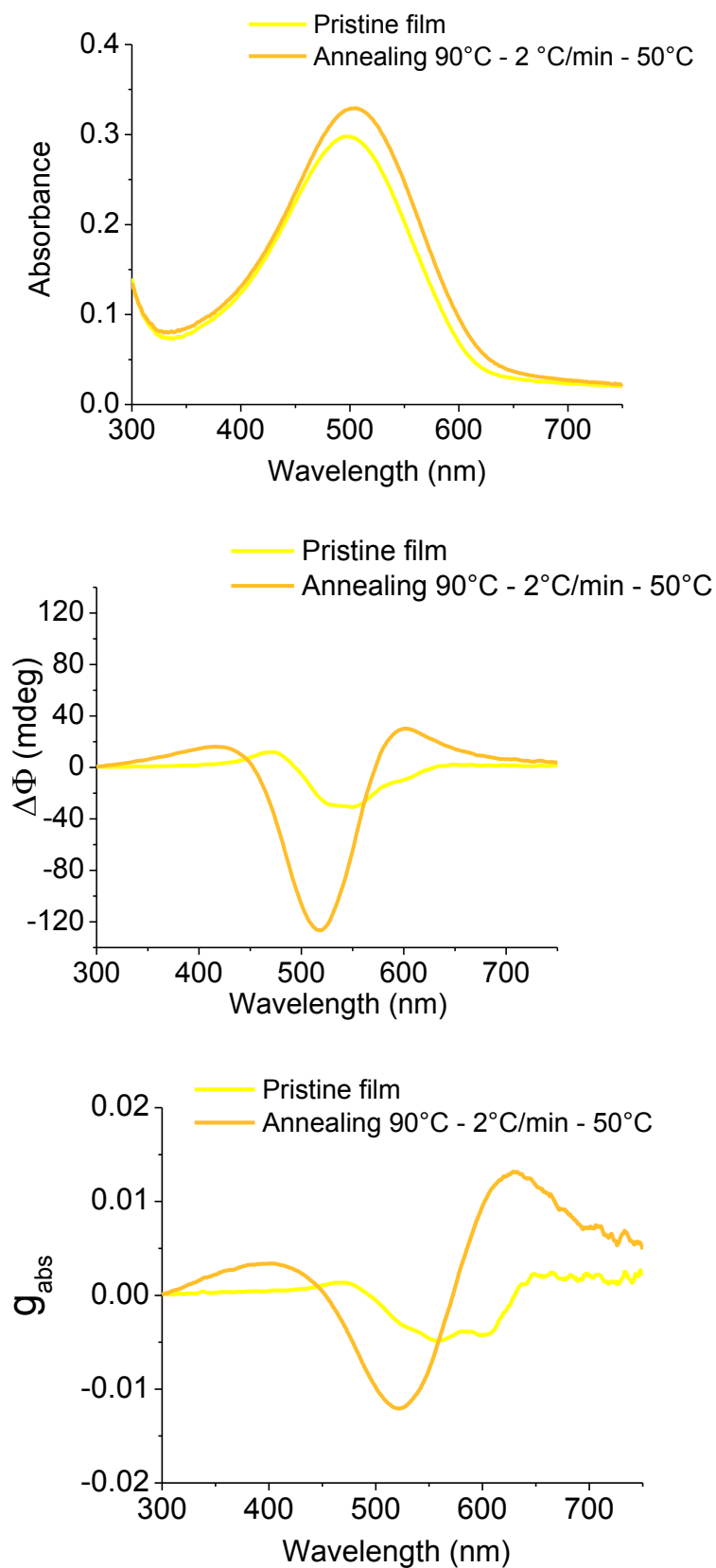


Figure S41: UV-vis, CD and g_{abs} spectra for the spincoated films of **P6** with different film thicknesses. The concentration of the solution in mg/ml used for spincoating is given at the end of the label in the legend.

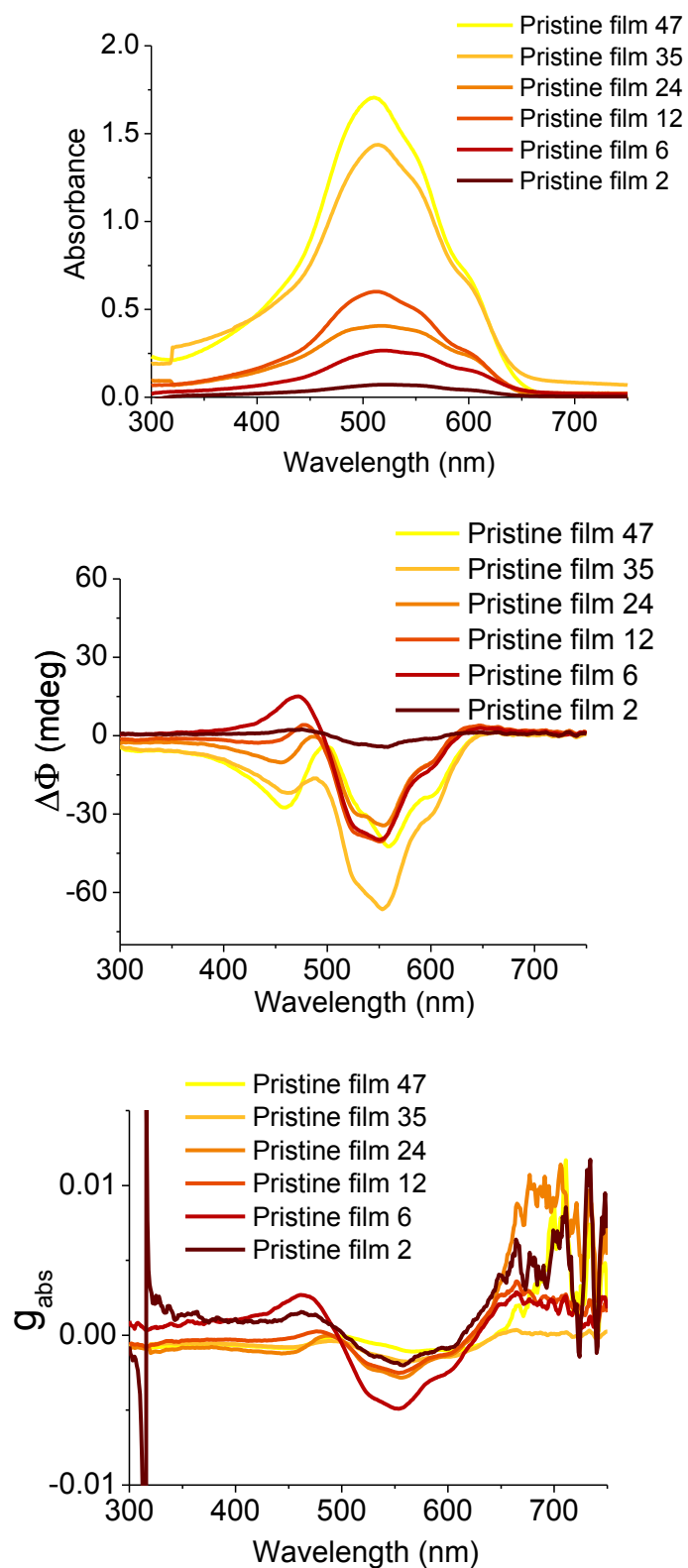


Figure S42: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P6** with different film thicknesses and fast cooling.

Each run, the film is annealed for 1 min at the temperature given in the legend and cooled fast at room T. The concentration of the solution in mg/ml used for spincoating is given at the end of the label in the legend.

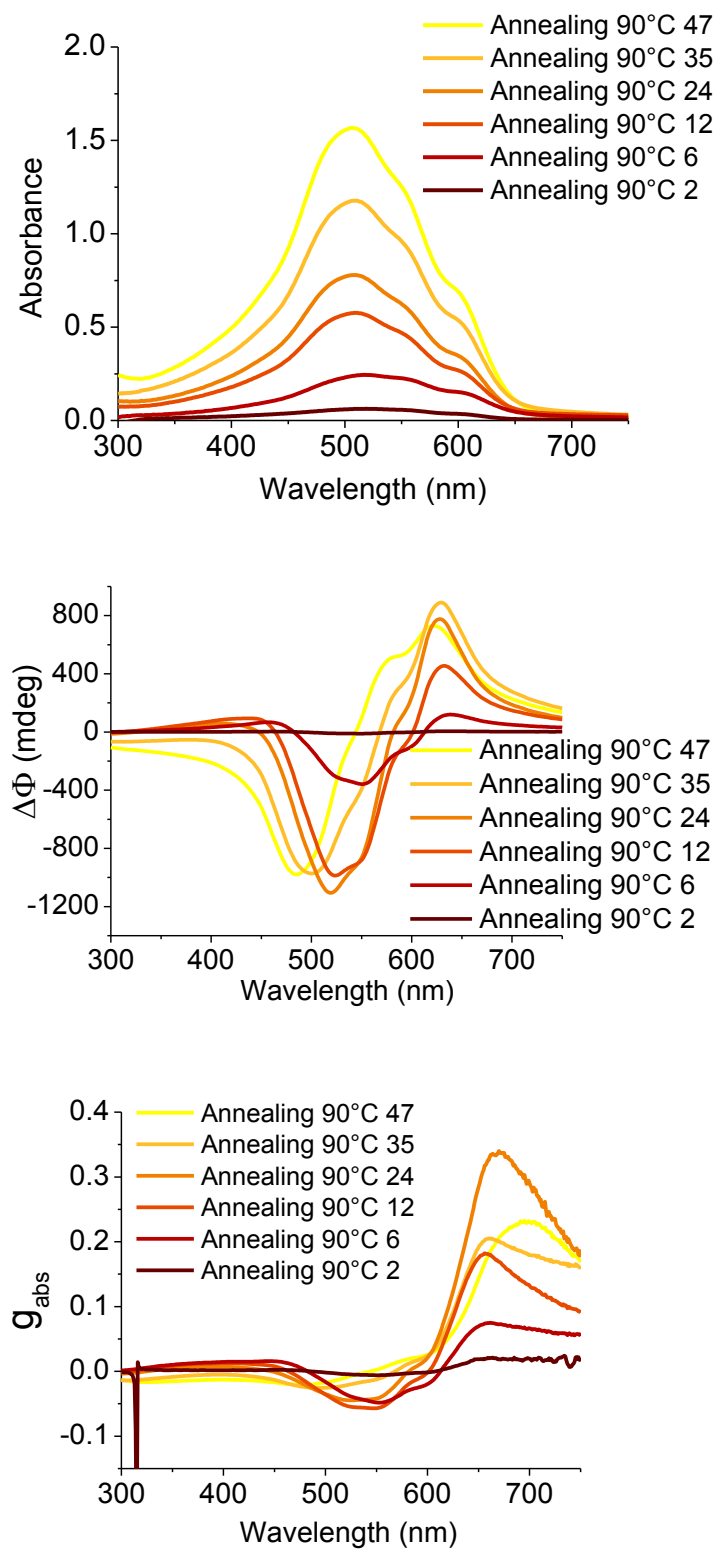
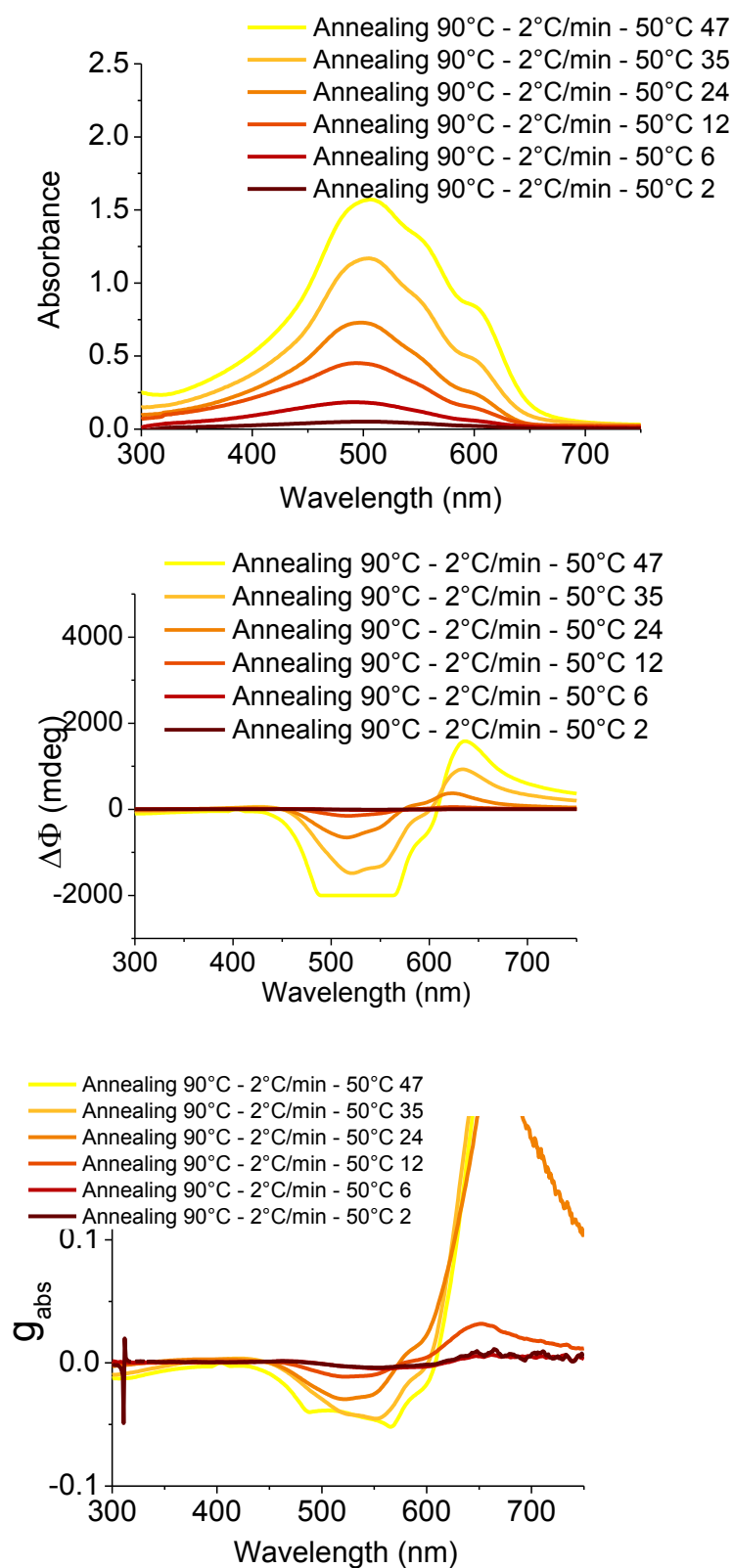


Figure S43: UV-vis, CD and g_{abs} spectra for the annealing experiments with **P6** with different film thicknesses and slow cooling.

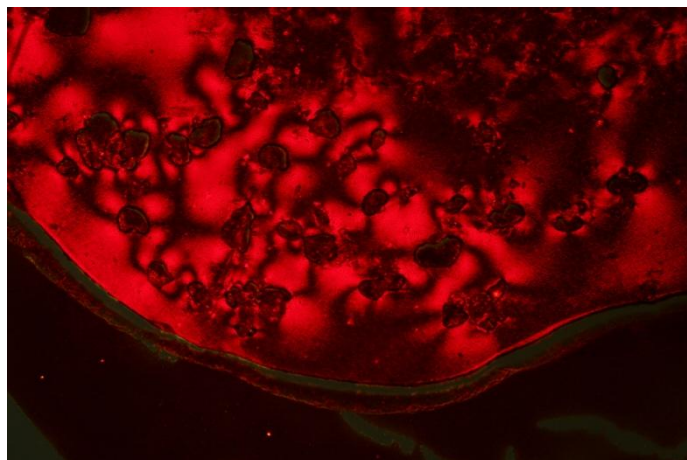
Each run, the film is annealed for 1 min at the temperature given in the legend and cooled slow at $2\text{ }^{\circ}\text{C min}^{-1}$. The concentration of the solution in mg/ml used for spincoating is given at the end of the label in the legend.



C. Polarizing optical microscopy (POM)

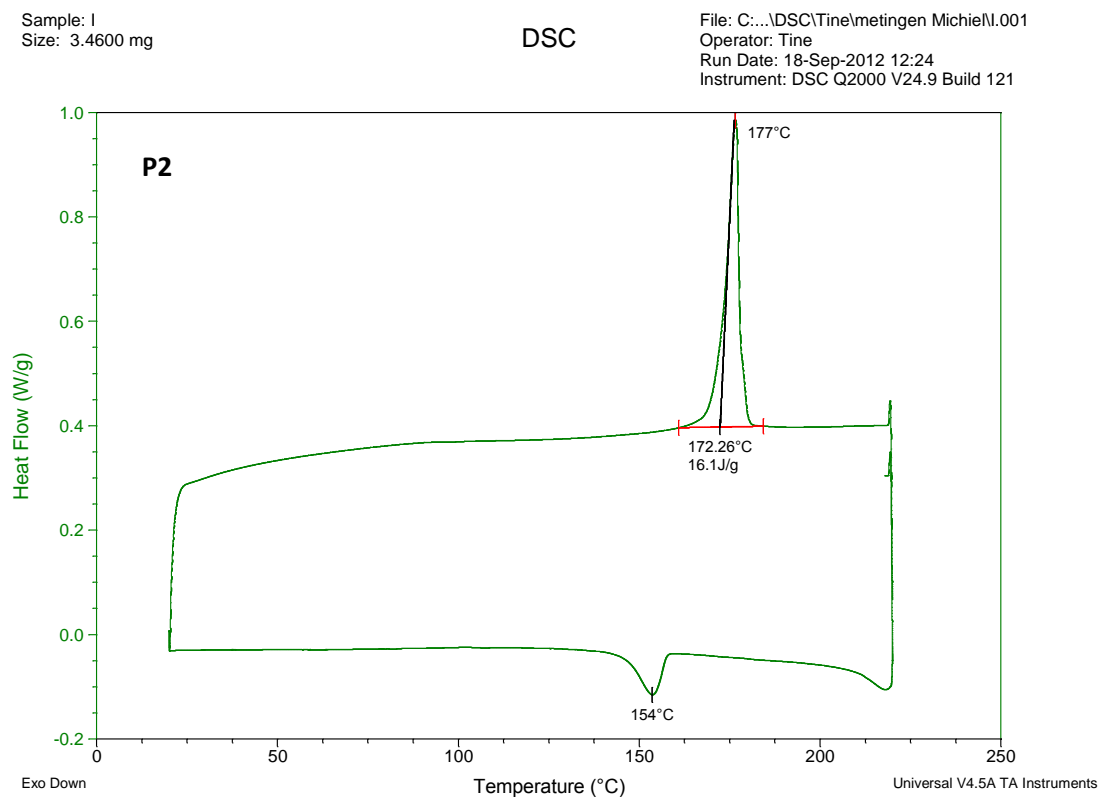
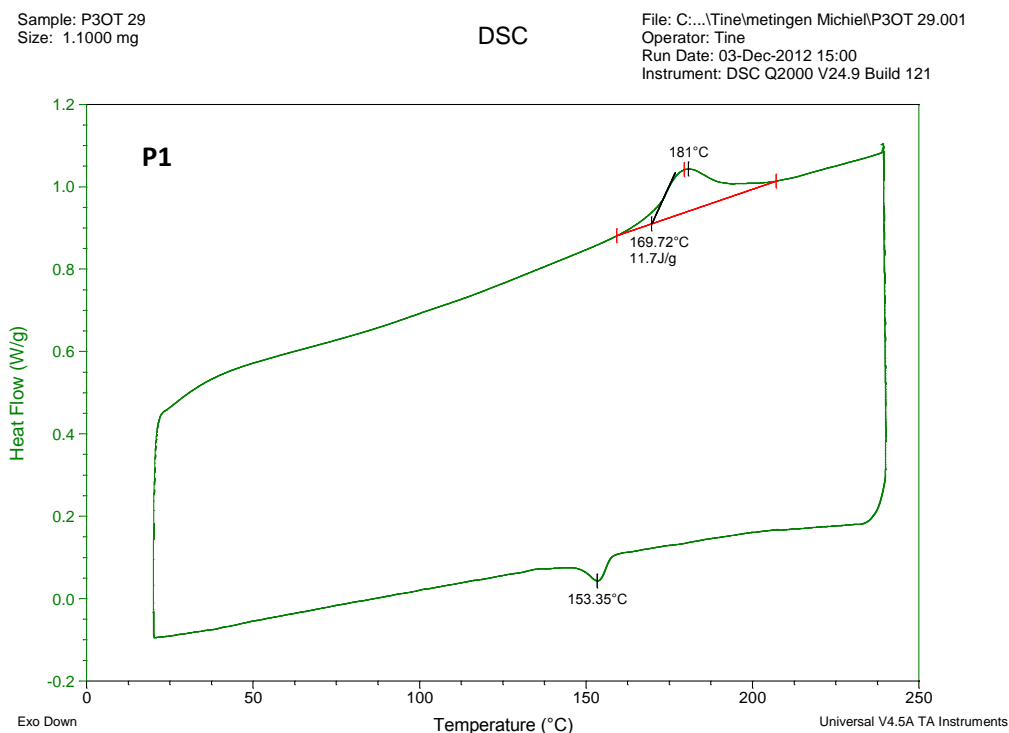
Figure S44: POM picture of the **P6** polymer sample during slow cooling from 90 °C.

The picture of the defect texture was taken at 68 °C (100 × magnification).



D. Differential scanning calorimetry (DSC) of polymers P1-P6

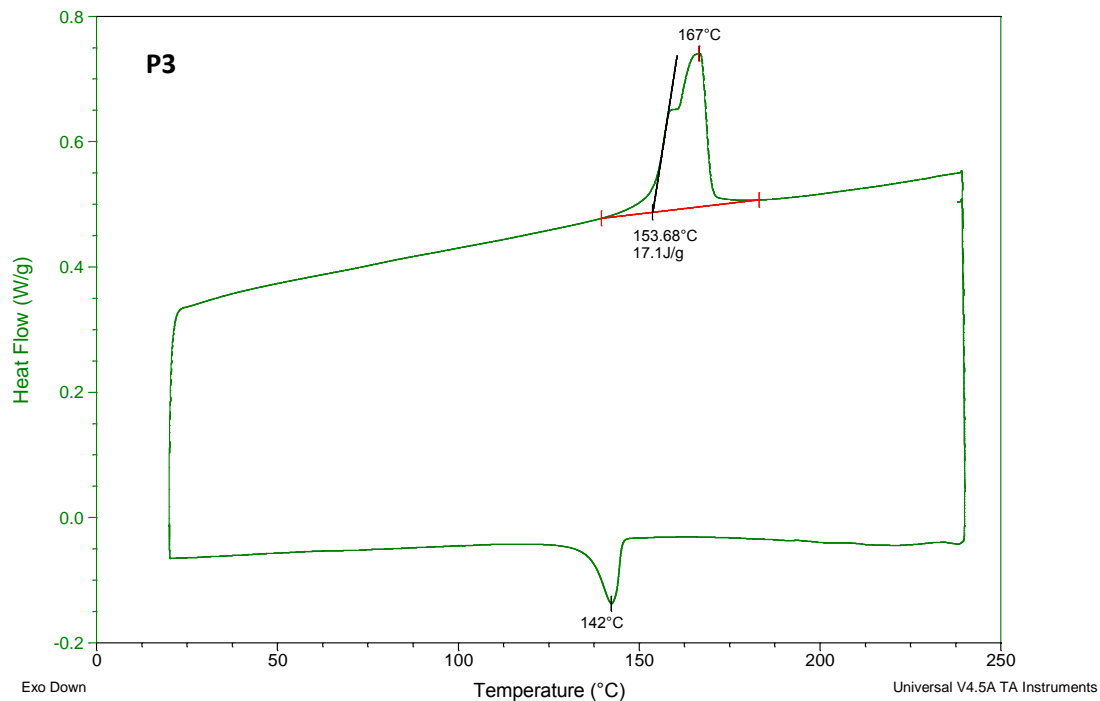
The polymers were first heated well above their melting temperature, kept at this temperature for 15 minutes and then slowly cooled down at $2^{\circ}\text{C min}^{-1}$. Finally, the melting temperatures were also determined by reheating the samples at $10^{\circ}\text{C min}^{-1}$.



Sample: P3OT20-co-P3OT18
Size: 3.4500 mg

DSC

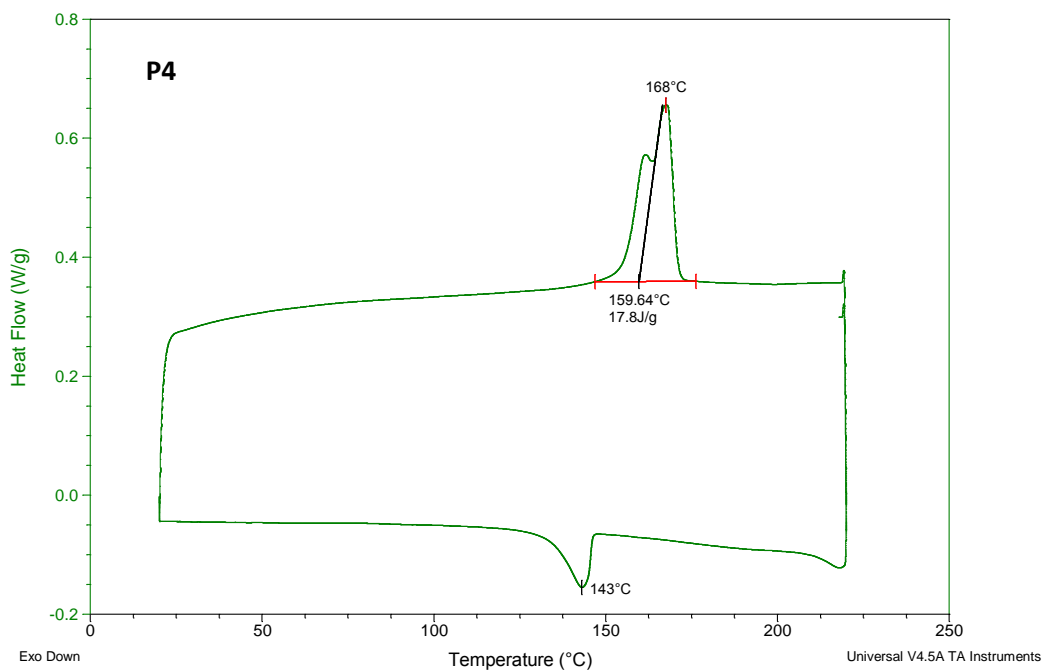
File: C:\...\P3OT20-co-P3OT18.001
Operator: Tine
Run Date: 03-Dec-2012 18:29
Instrument: DSC Q2000 V24.9 Build 121



Sample: II
Size: 4.5400 mg

DSC

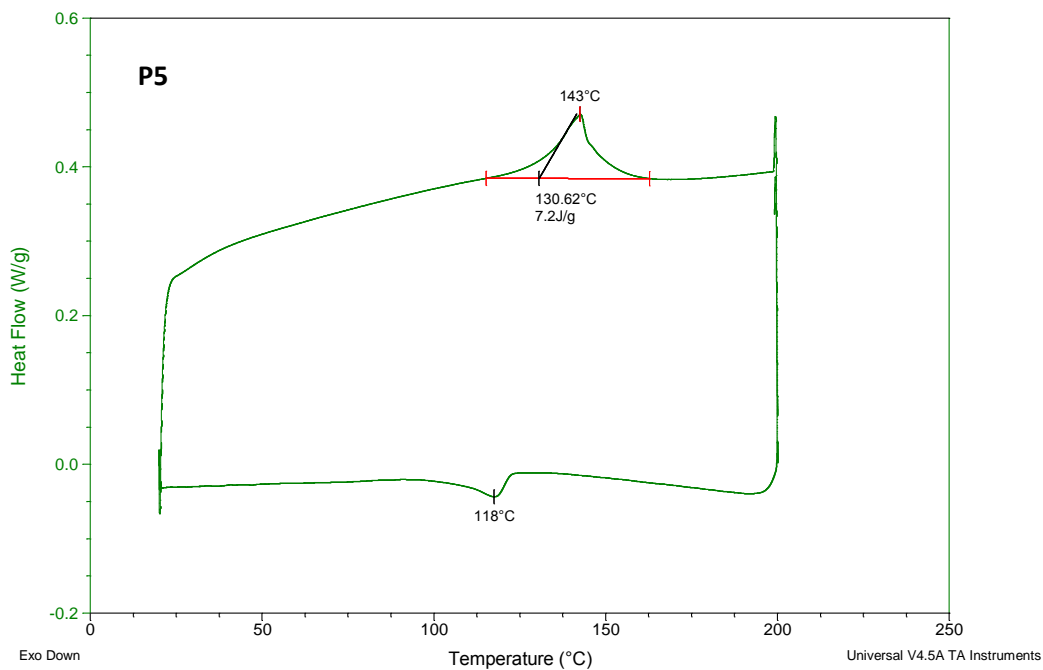
File: C:\...DSC\Tine\metingen Michiel\II.001
Operator: Tine
Run Date: 18-Sep-2012 15:29
Instrument: DSC Q2000 V24.9 Build 121



Sample: C8N
Size: 2.4900 mg

DSC

File: C:\...metingen Michiel\C8N tot 180.001
Operator: Tine
Run Date: 01-Oct-2012 18:38
Instrument: DSC Q2000 V24.9 Build 121



Sample: C10N
Size: 3.2400 mg

DSC

File: C:\...metingen Michiel\C20N tot 180.001
Operator: Tine
Run Date: 01-Oct-2012 15:36
Instrument: DSC Q2000 V24.9 Build 121

