

# Supporting Information

## for

### Pseudo five-component synthesis of 2,5-di(hetero)arylthiophenes via a one-pot Sonogashira–Glaser cyclization sequence

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Antovic - Dragutin.Antovic@uni-duesseldorf.de; Thomas J. J. Müller\* -

ThomasJJ.Mueller@uni-duesseldorf.de

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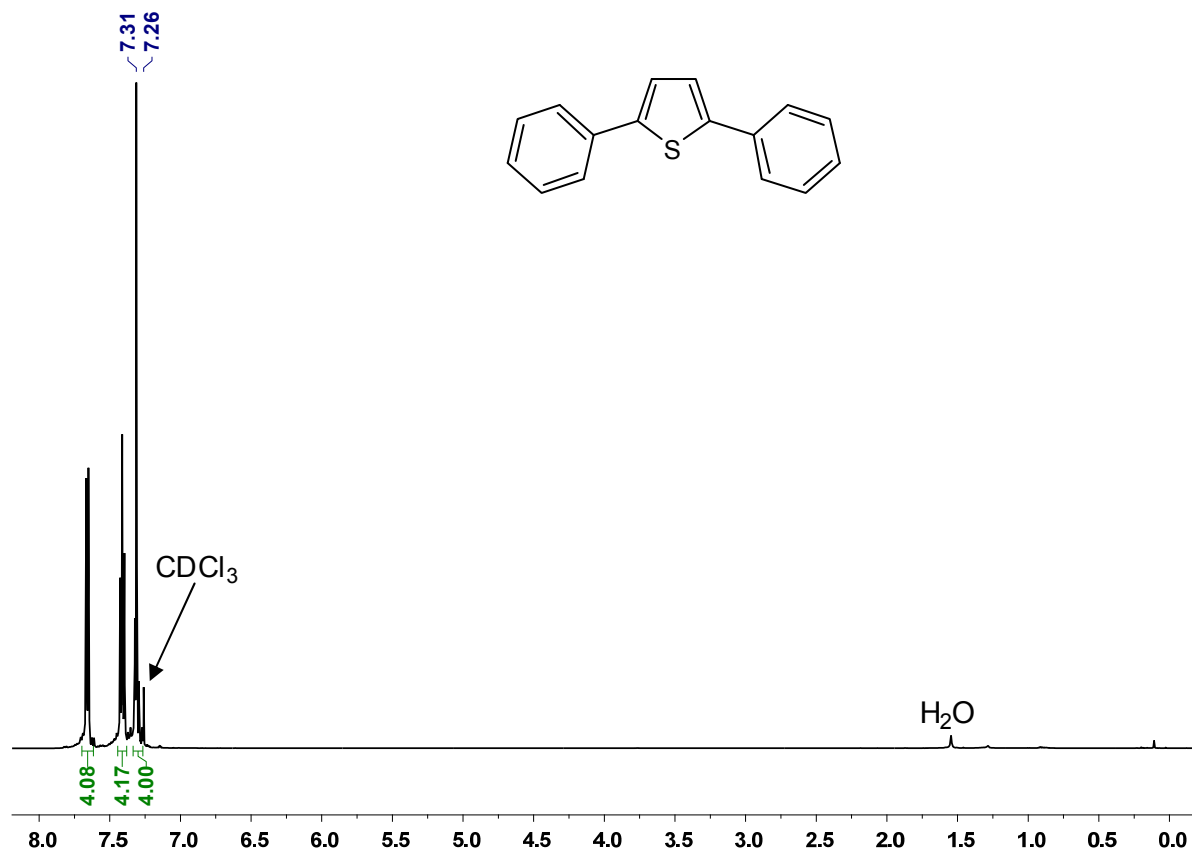
### Copies of NMR spectra of compounds 2a–l and 2p.

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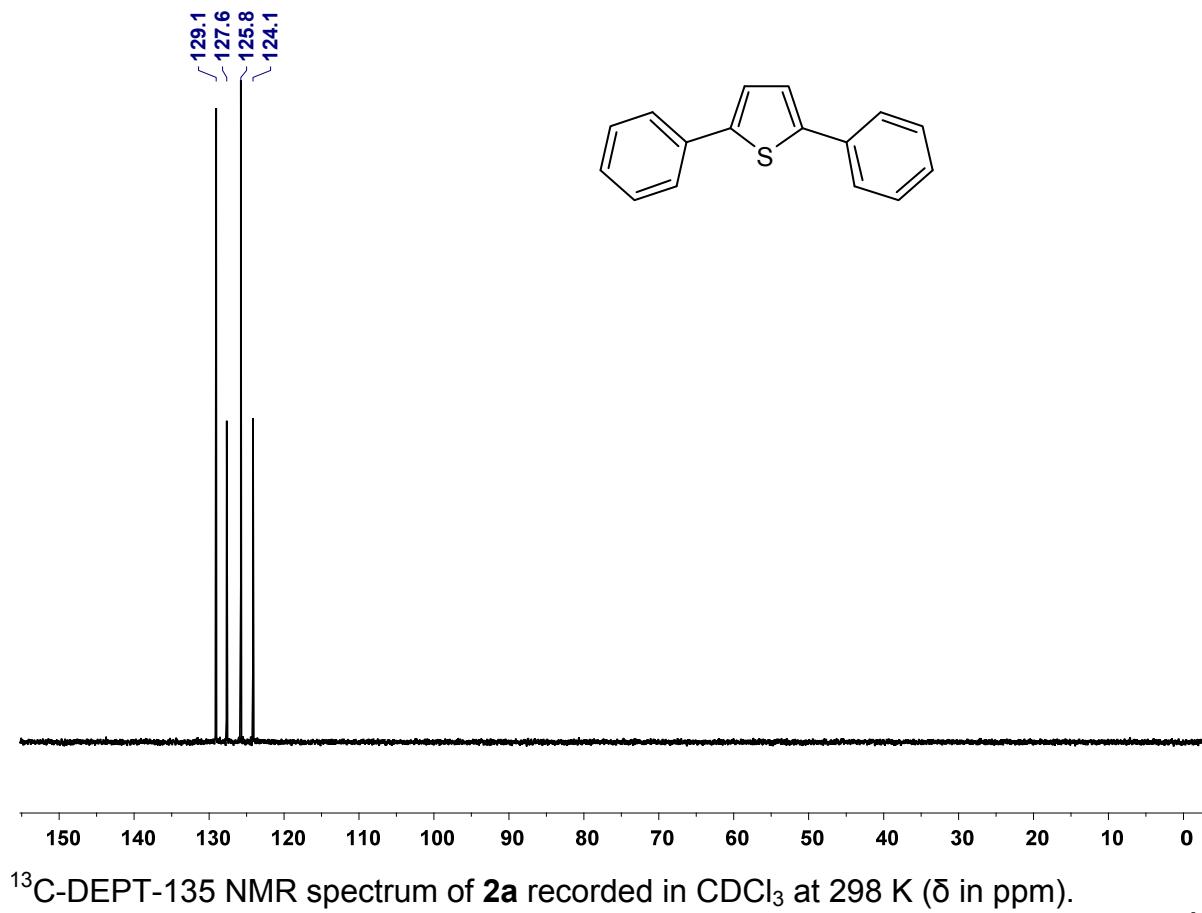
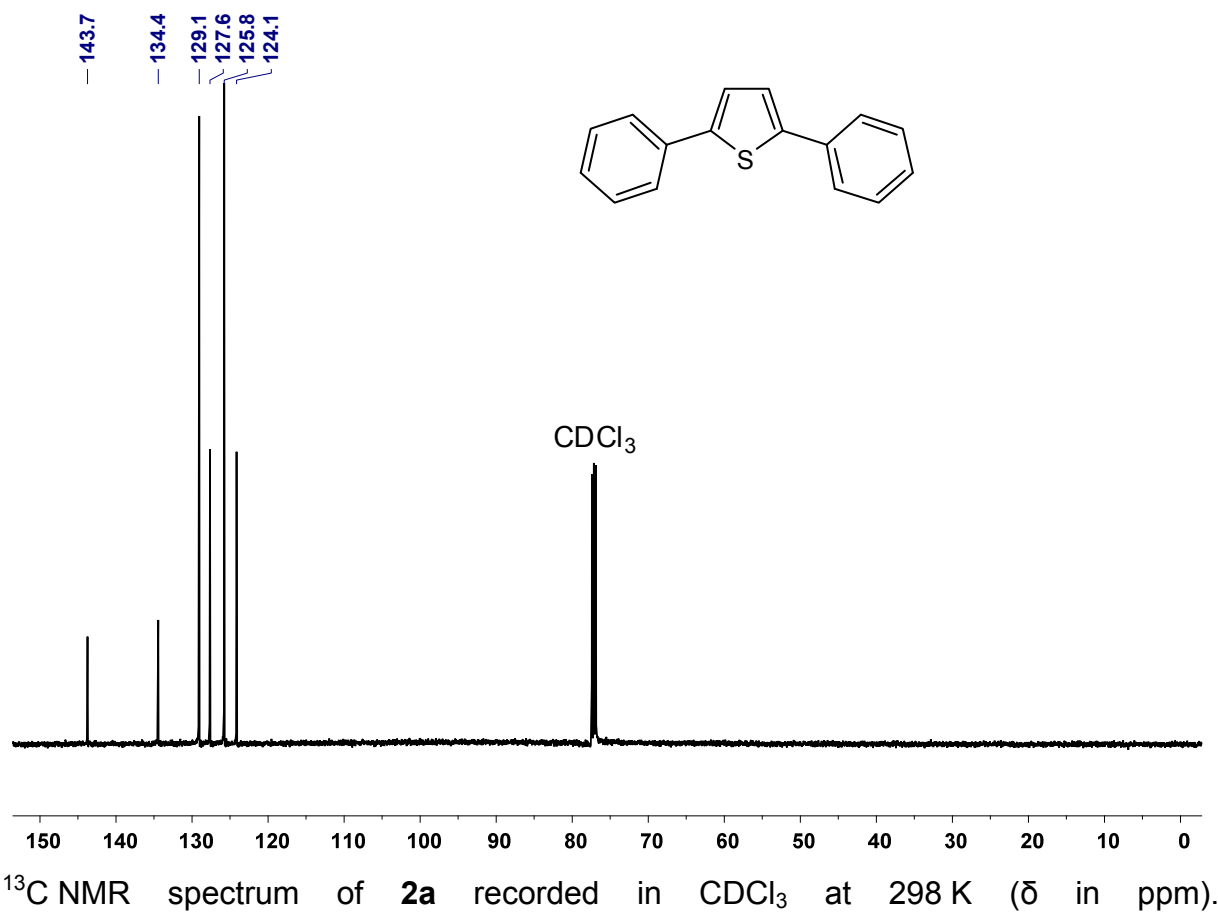
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# $^1\text{H}$ - and $^{13}\text{C}$ NMR spectra

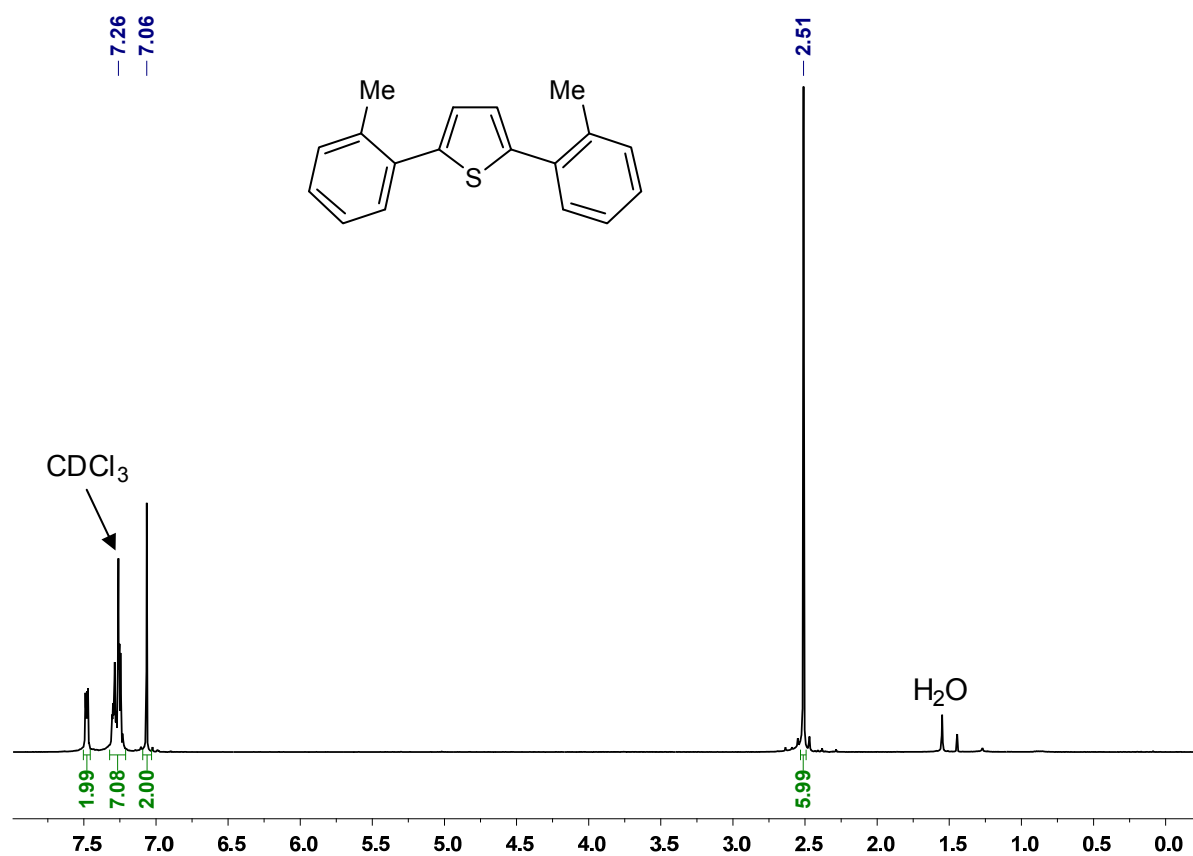
## 2,5-diphenylthiophene (2a)



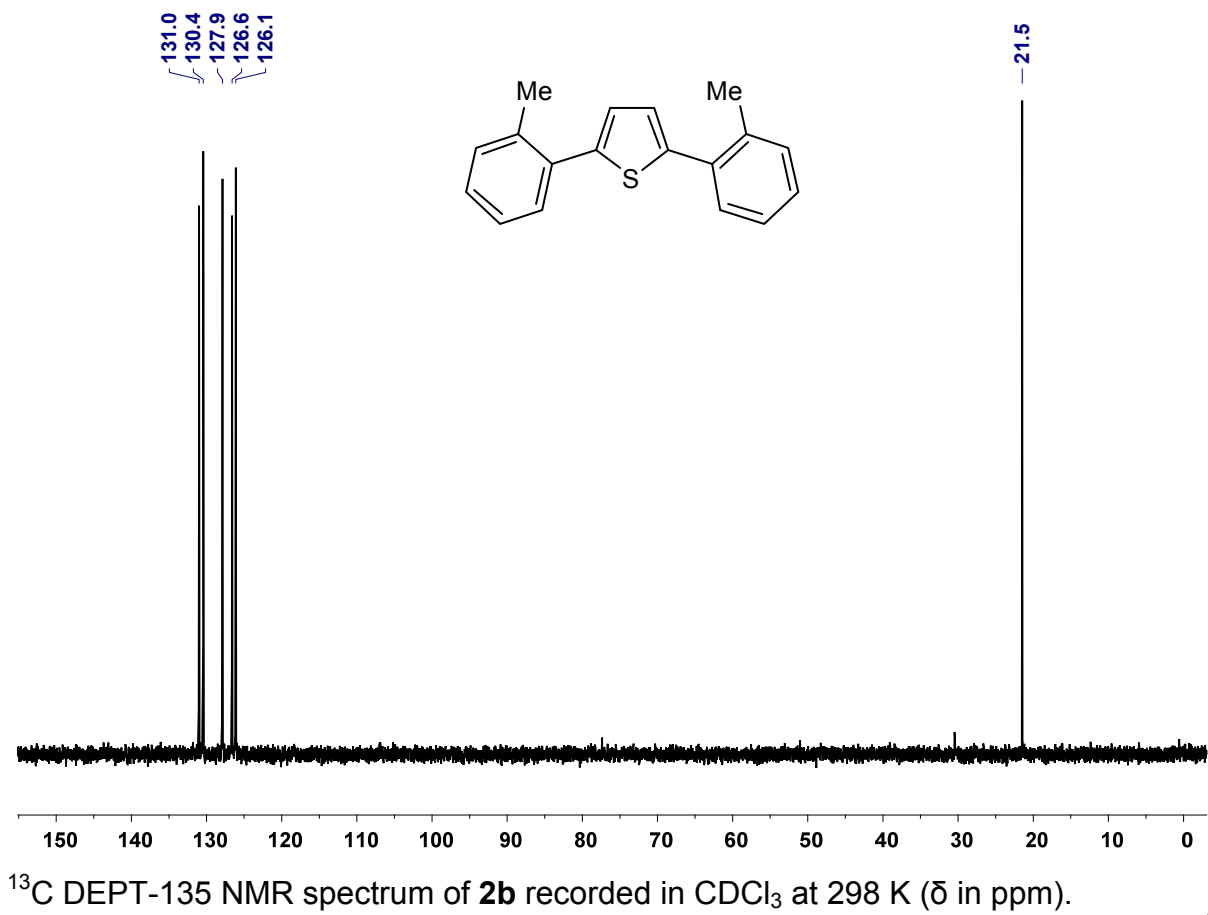
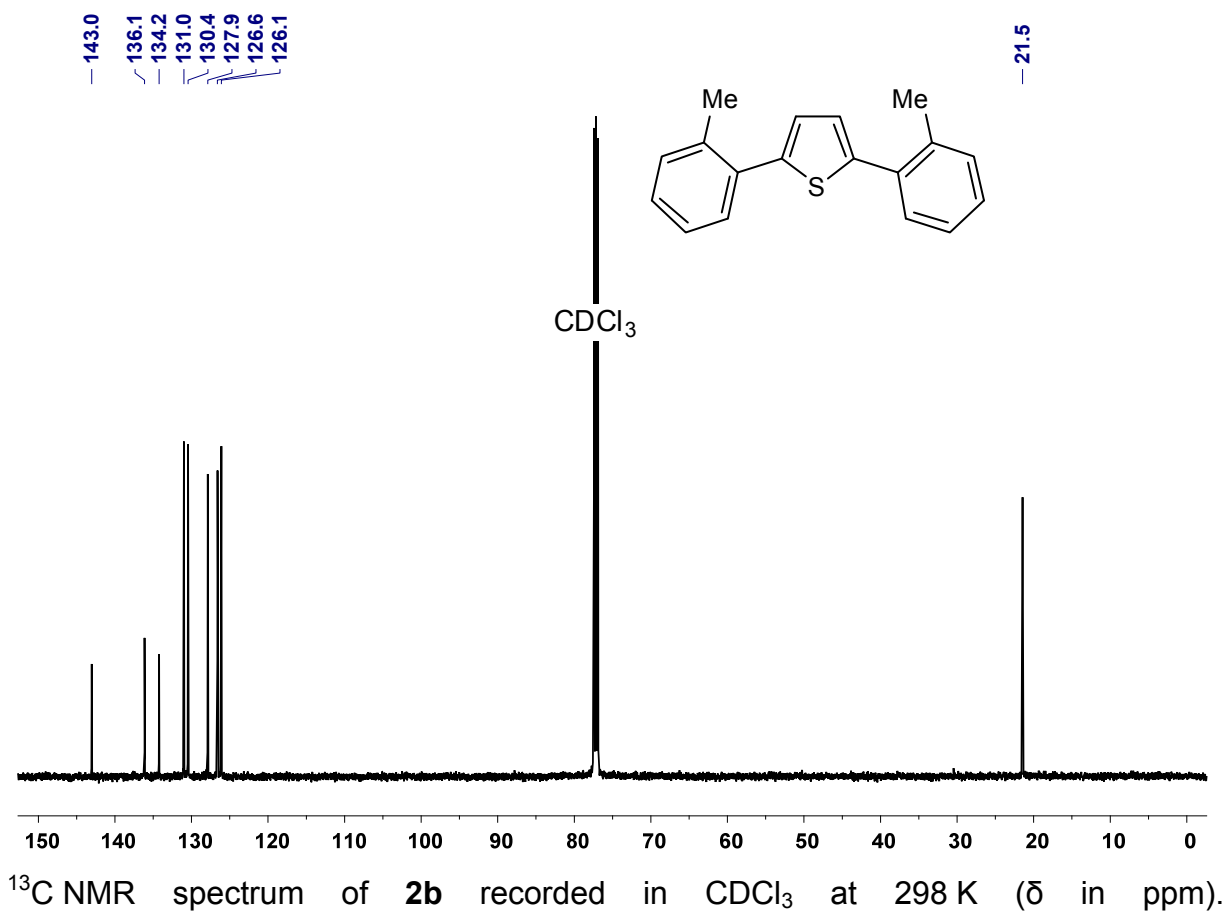
$^1\text{H}$  NMR spectrum of **2a** recorded in  $\text{CDCl}_3$  at 298 K ( $\delta$  in ppm).



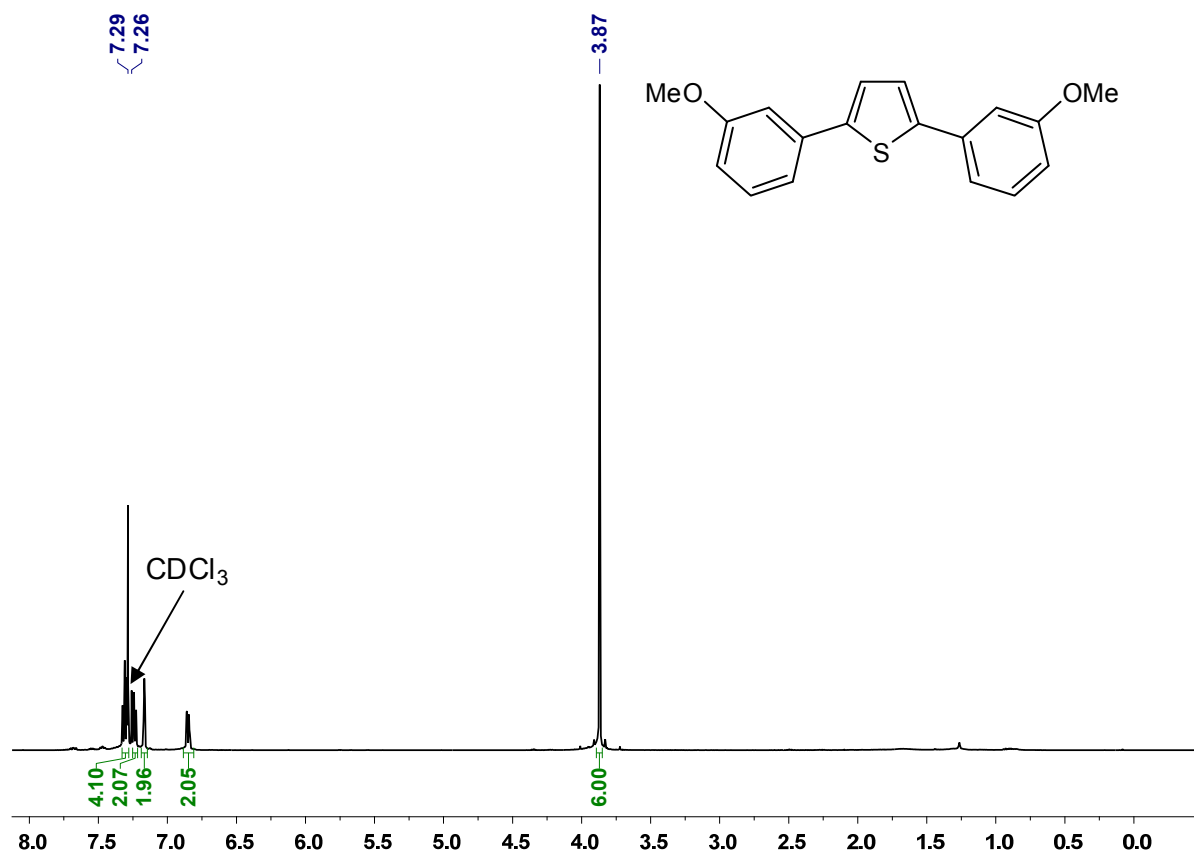
## 2,5-di(o-tolyl)thiophene (2b)



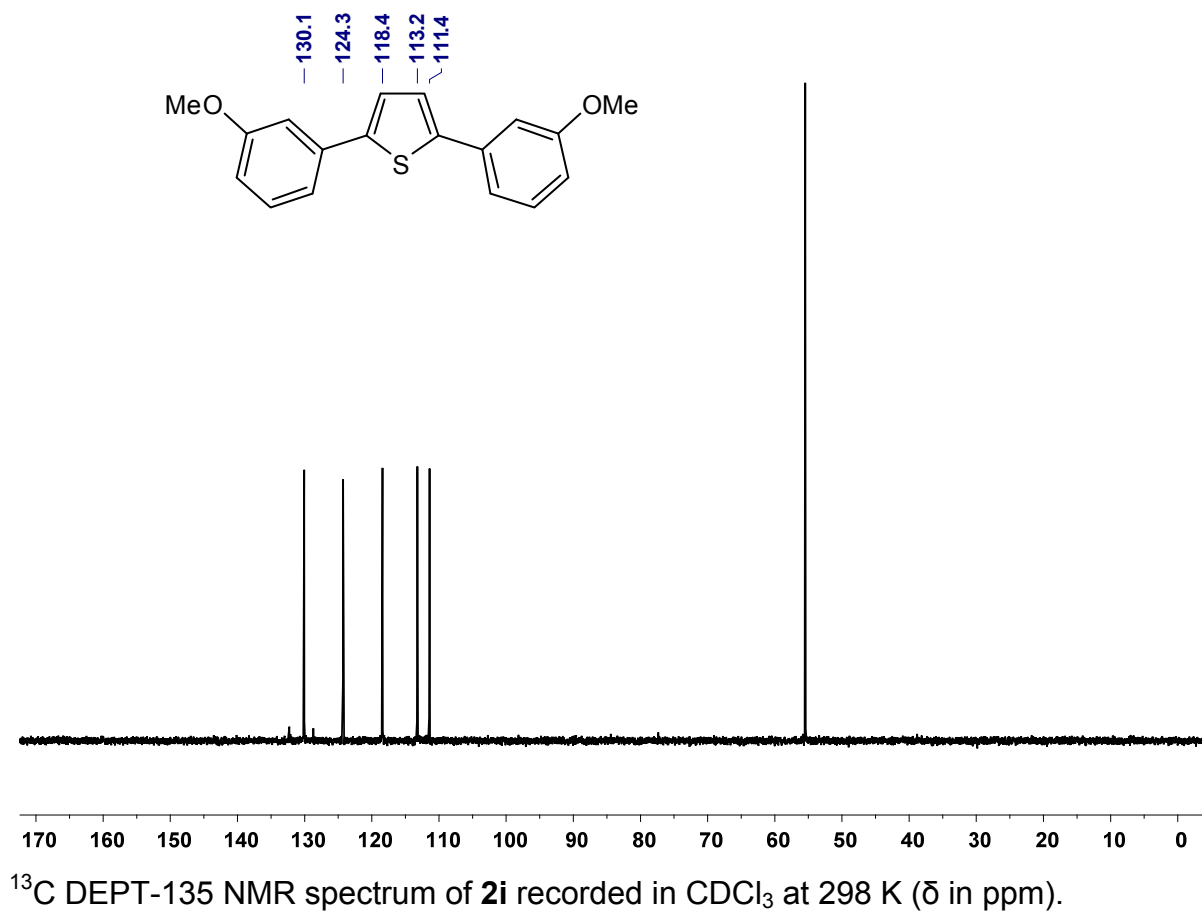
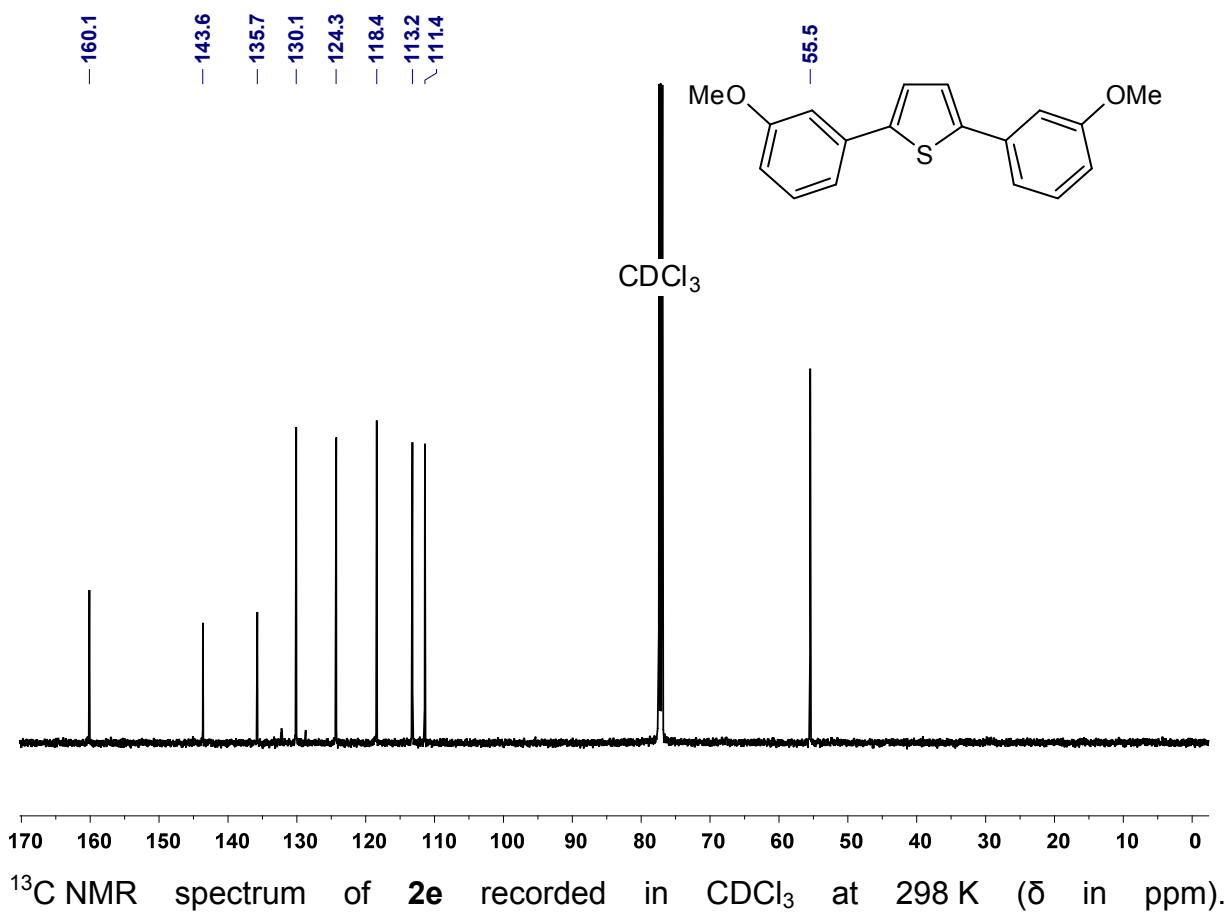
<sup>1</sup>H NMR spectrum of **2b** recorded in CDCl<sub>3</sub> at 298 K (δ in ppm).



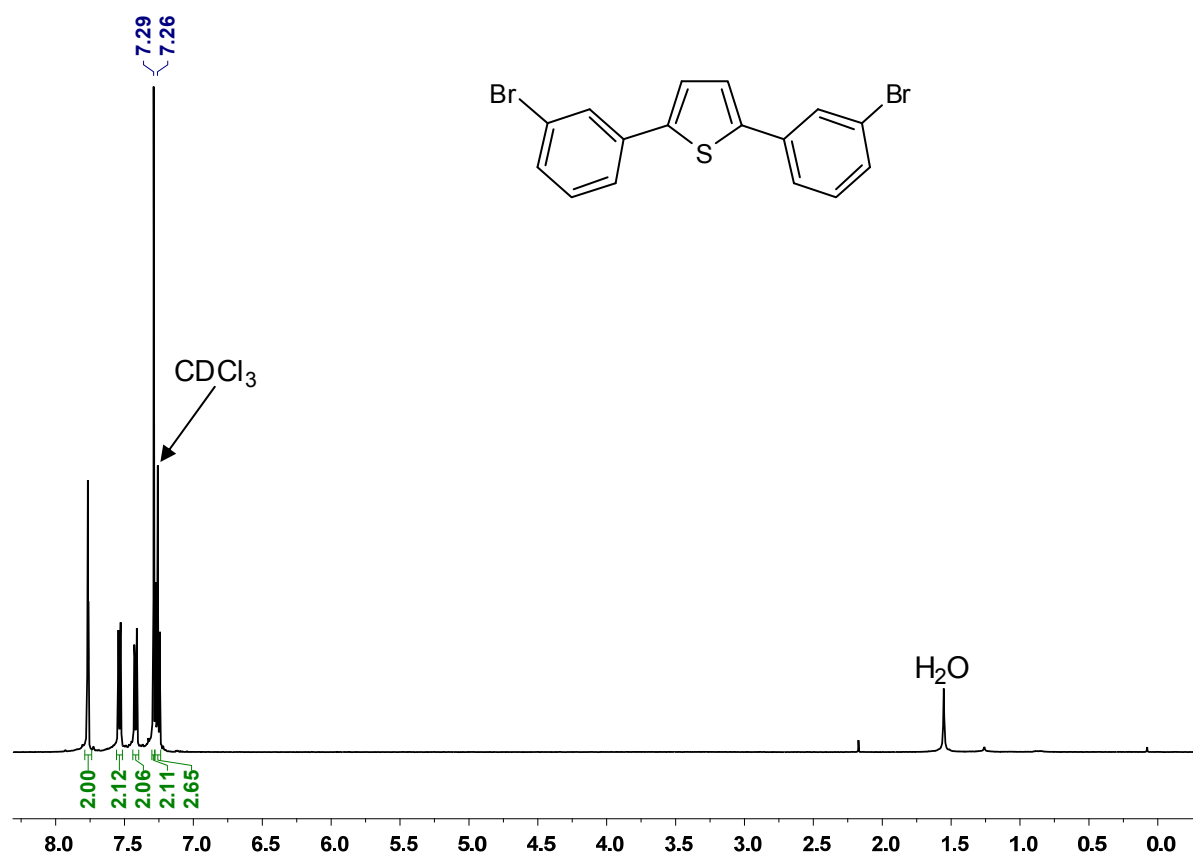
## 2,5-bis(3-methoxyphenyl)thiophene (2c)



<sup>1</sup>H NMR spectrum of **2c** recorded in CDCl<sub>3</sub> at 298 K (δ in ppm).

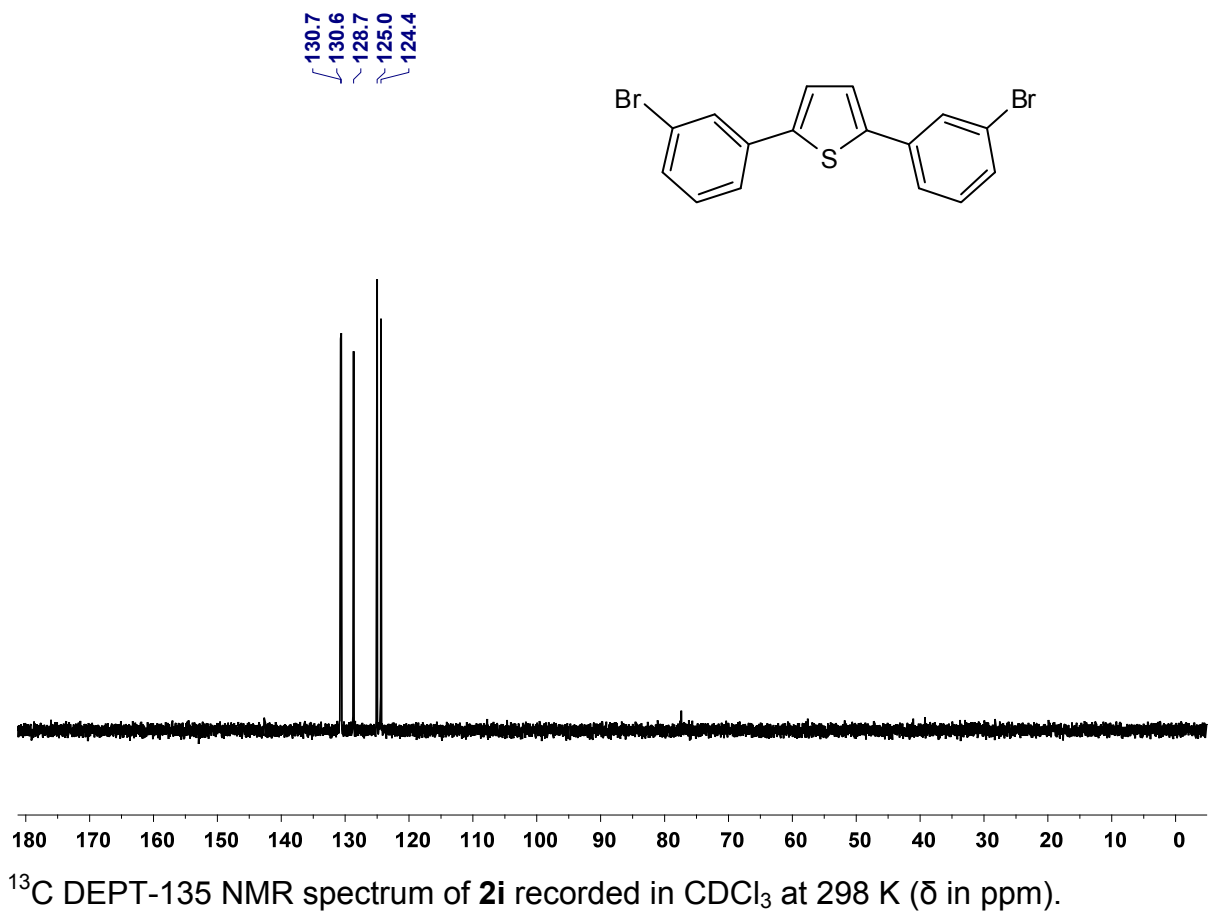
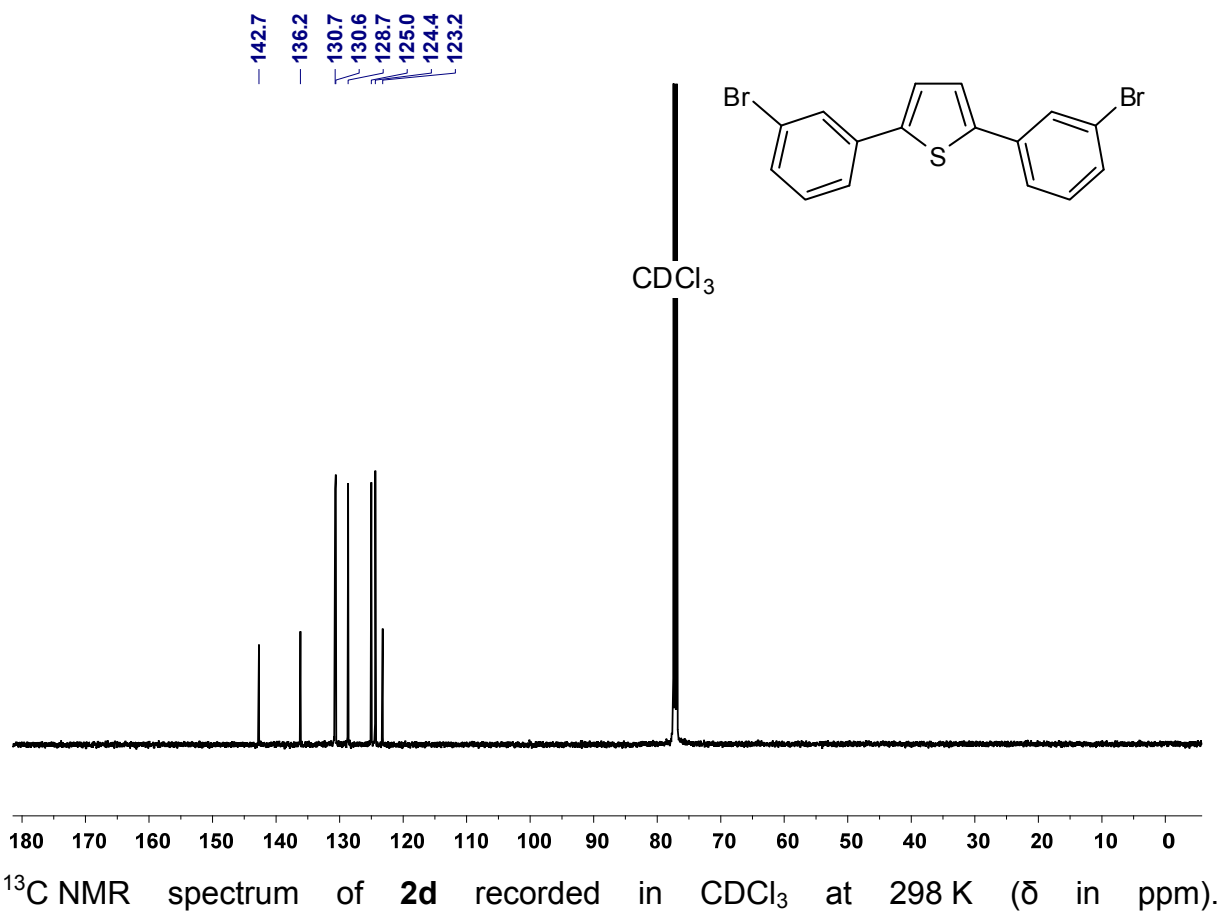


## 2,5-bis(3-bromophenyl)thiophene (2d)

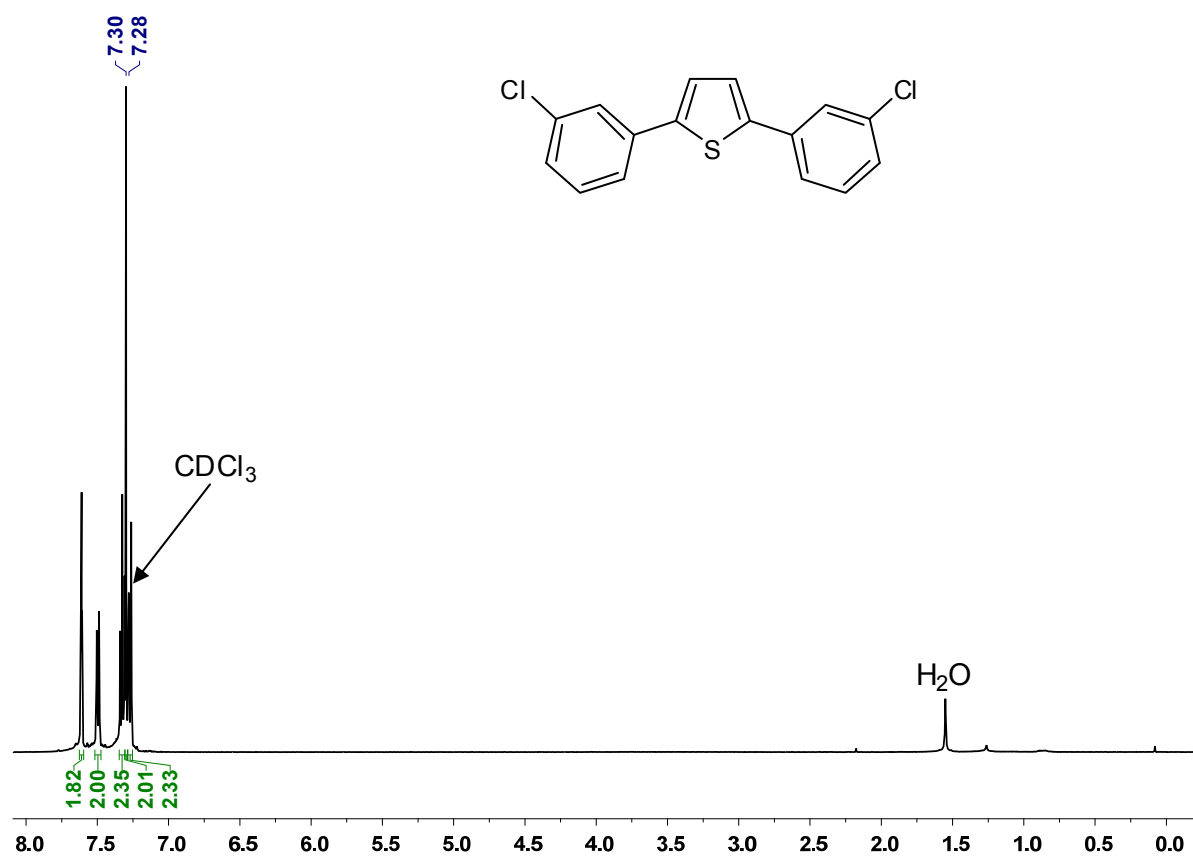


<sup>1</sup>H NMR spectrum of **2d** recorded in CDCl<sub>3</sub> at 298 K (δ in ppm).

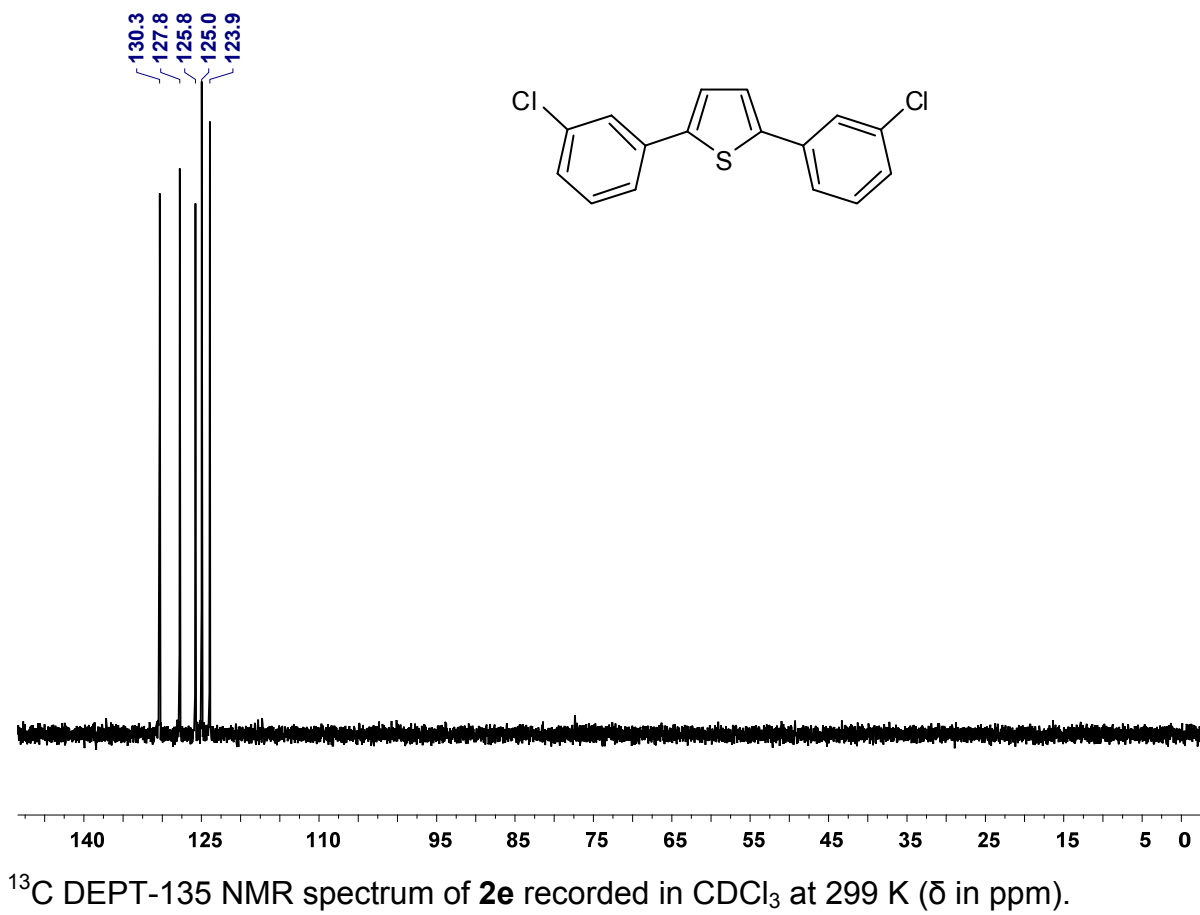
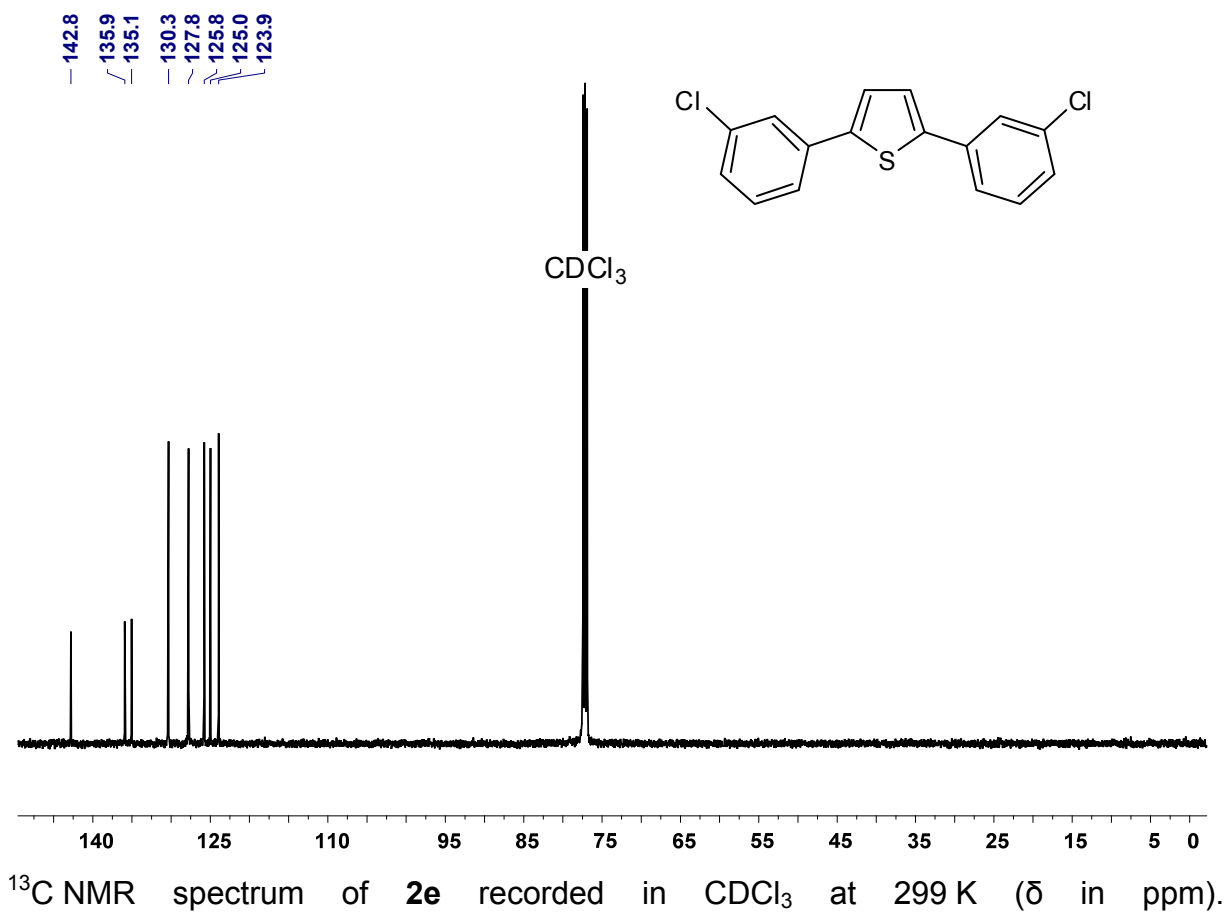




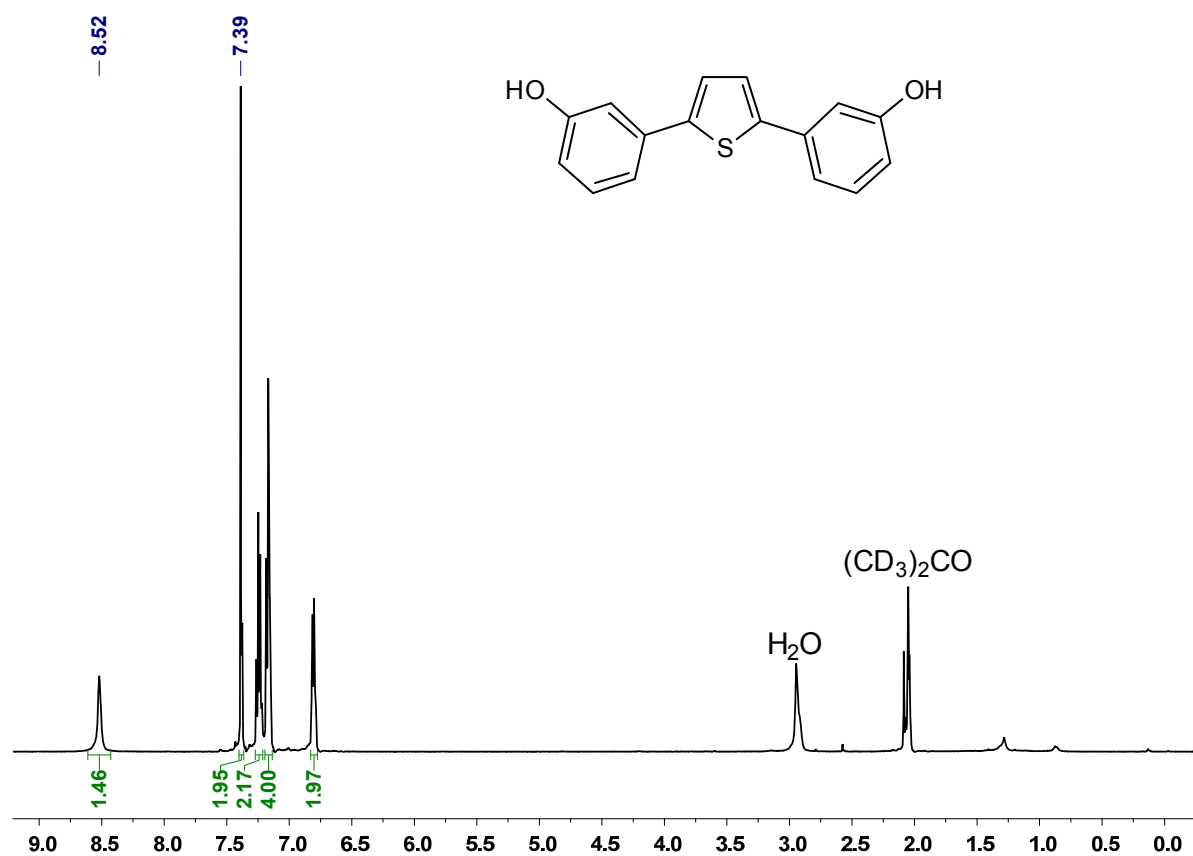
## 2,5-bis(3-chlorophenyl)thiophene (2e)



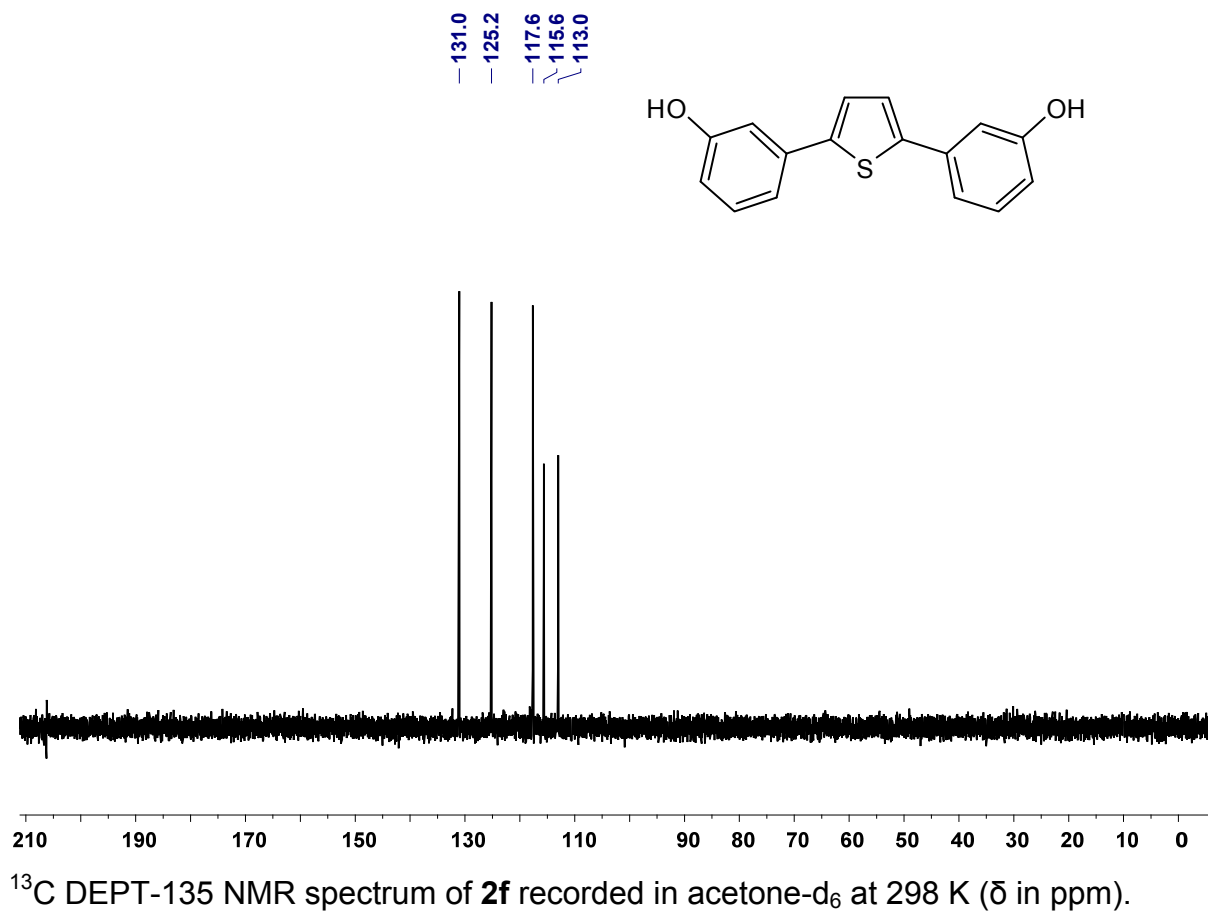
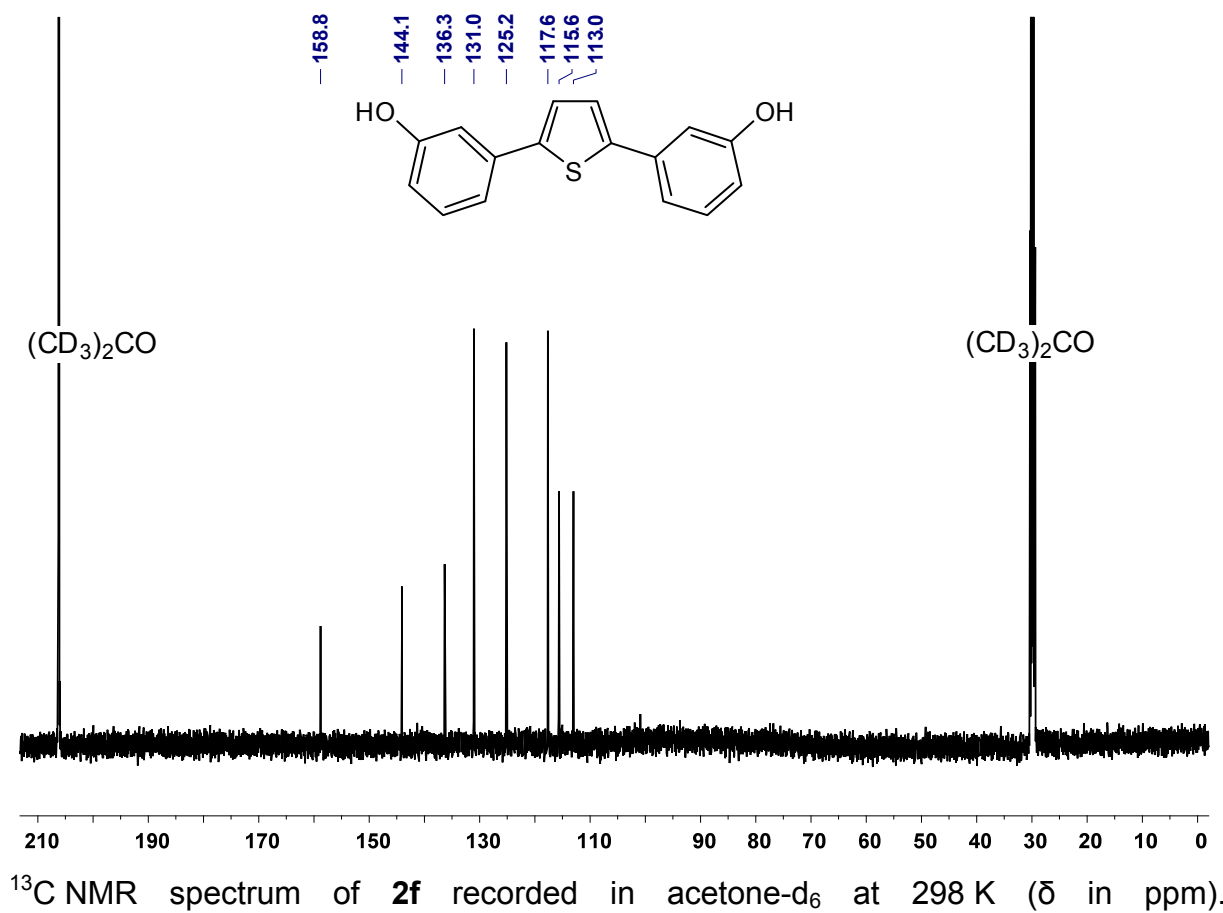
$^1\text{H}$  NMR spectrum of **2e** recorded in  $\text{CDCl}_3$  at 299 K ( $\delta$  in ppm).



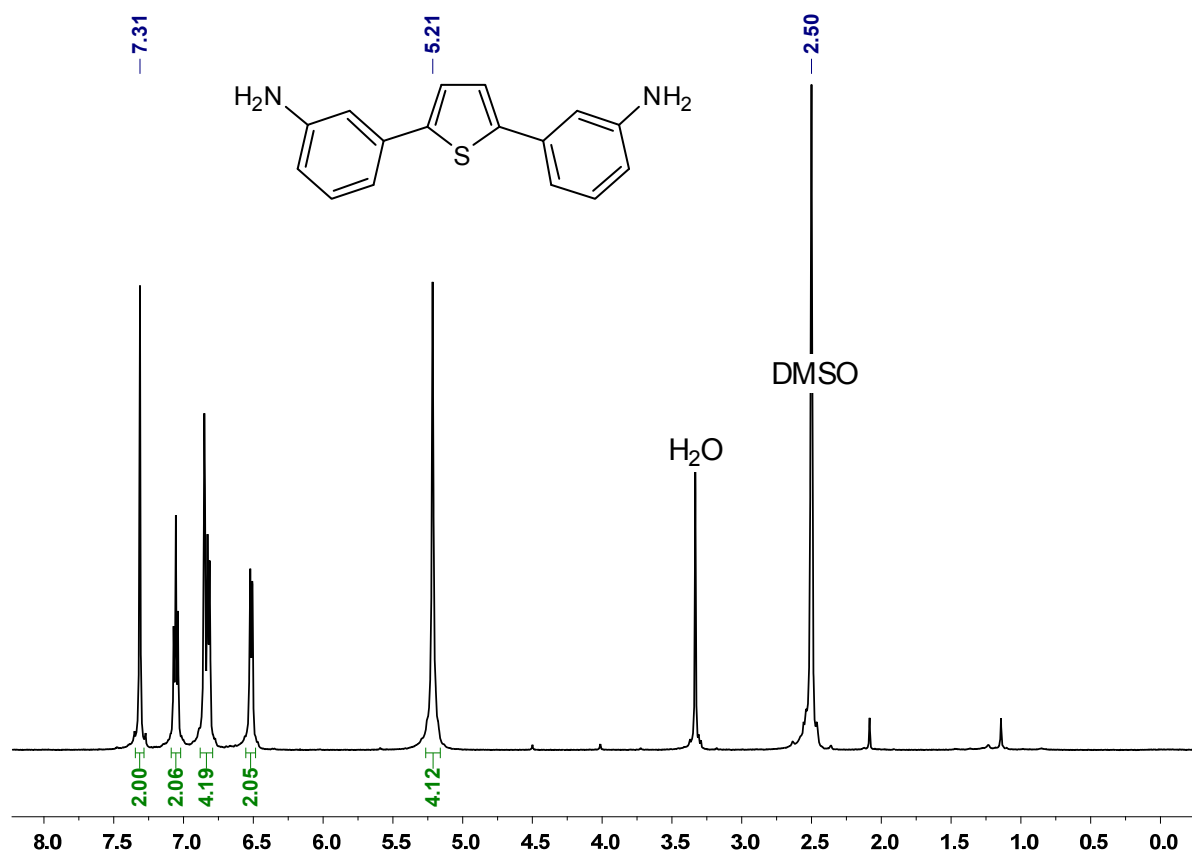
### 3,3'-(thiophene-2,5-diyl)diphenol (**2f**)



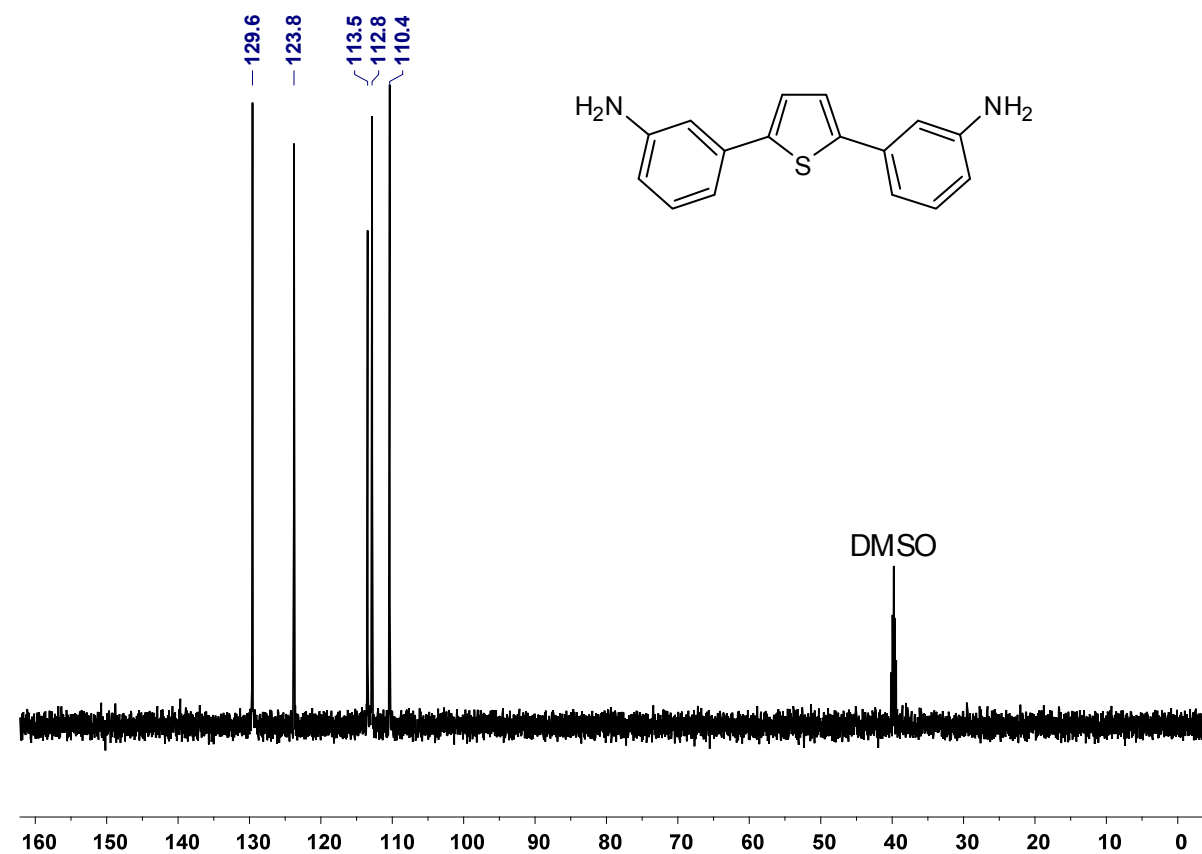
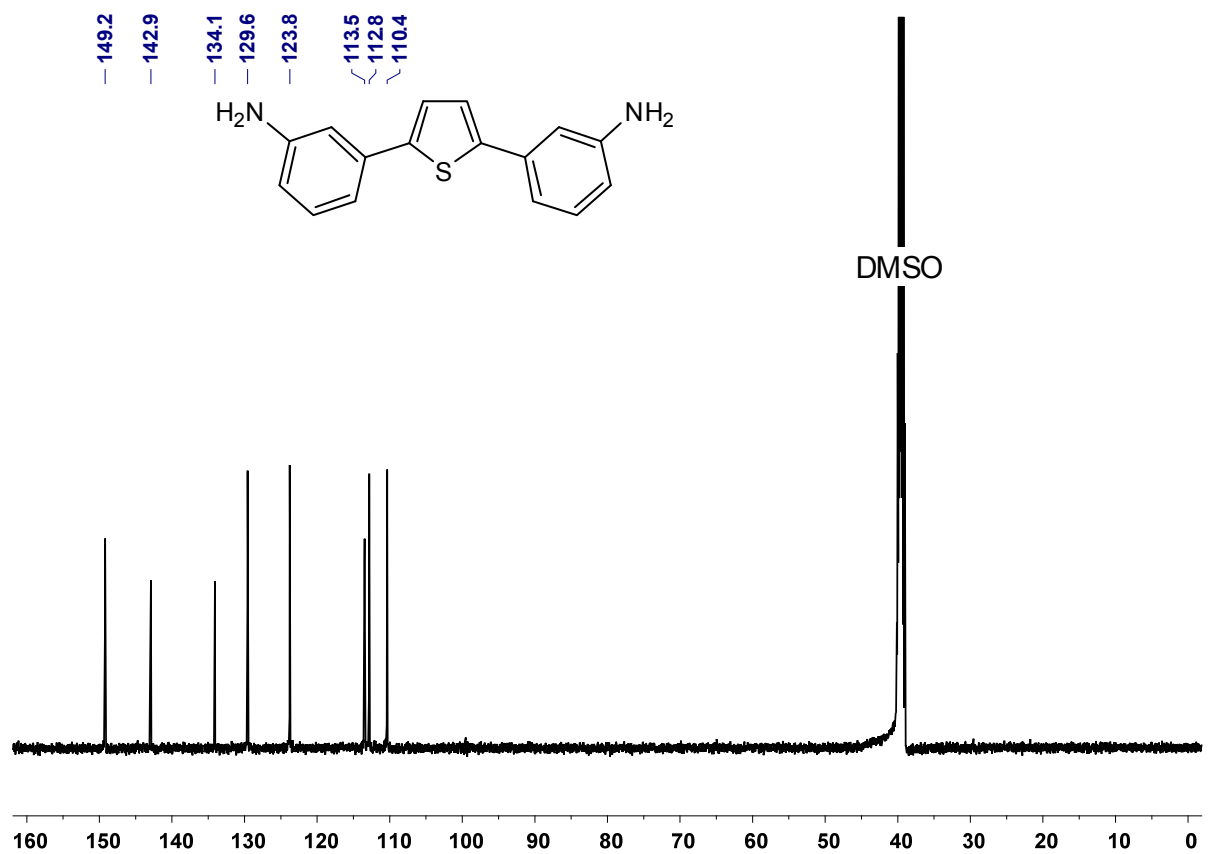
<sup>1</sup>H NMR spectrum of **2f** recorded in acetone-d<sub>6</sub> at 298 K (δ in ppm).



### 3,3'-(thiophene-2,5-diyl)dianiline (2g)

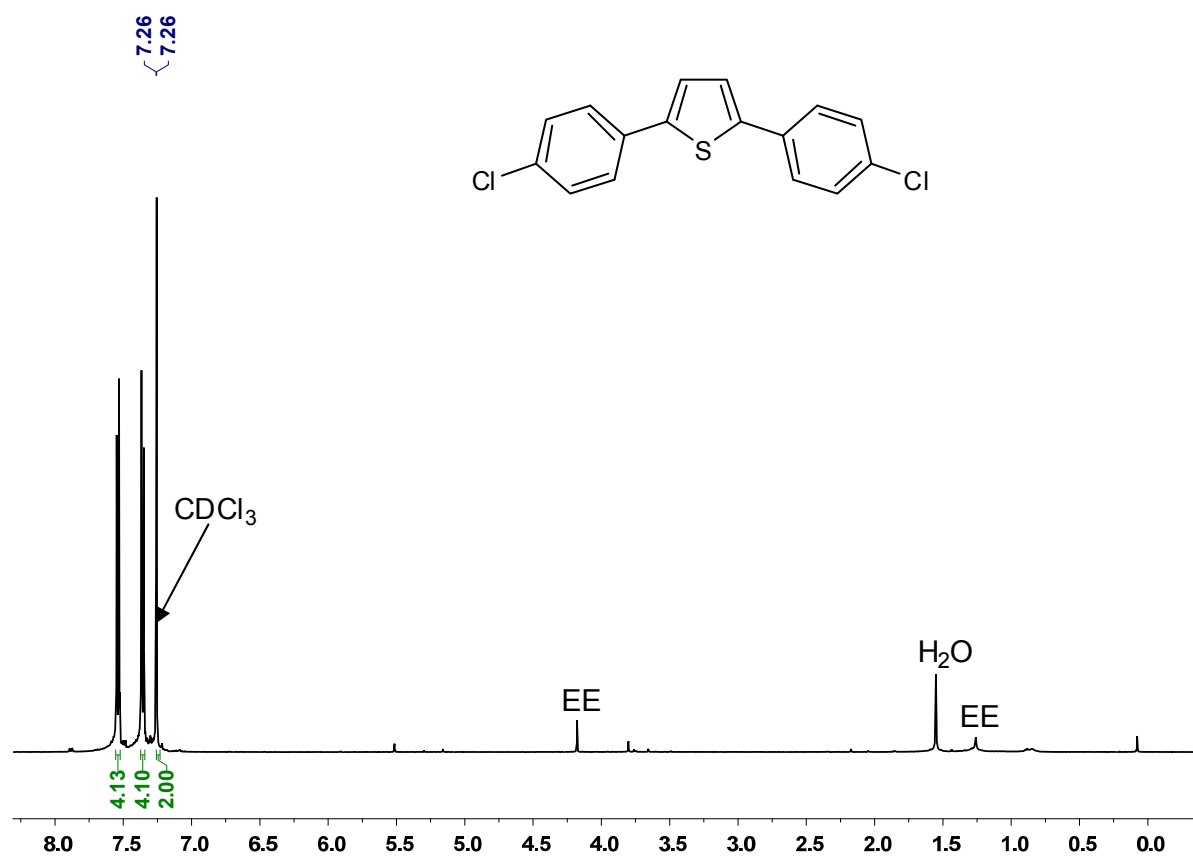


<sup>1</sup>H NMR spectrum of **2g** recorded in DMSO-d<sub>6</sub> at 298 K (δ in ppm).



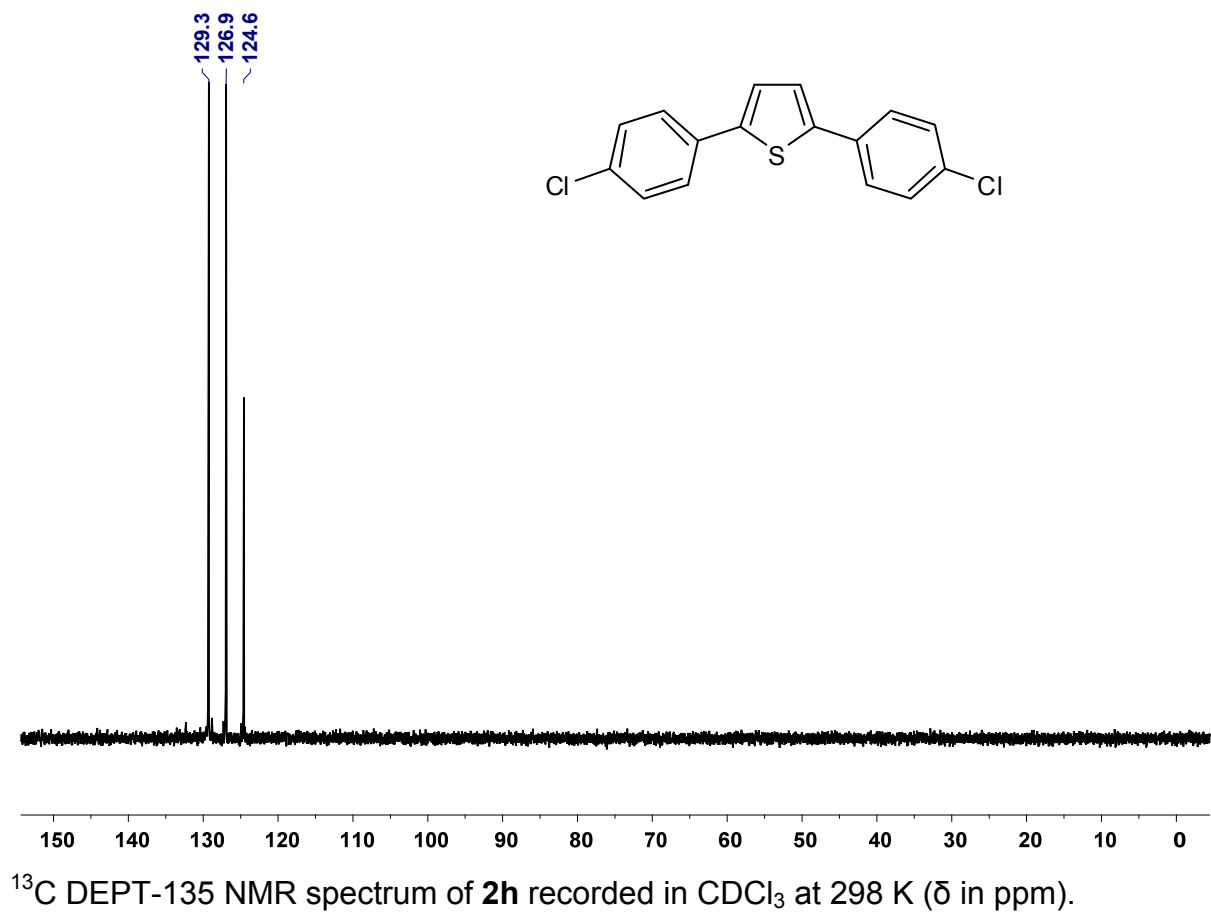
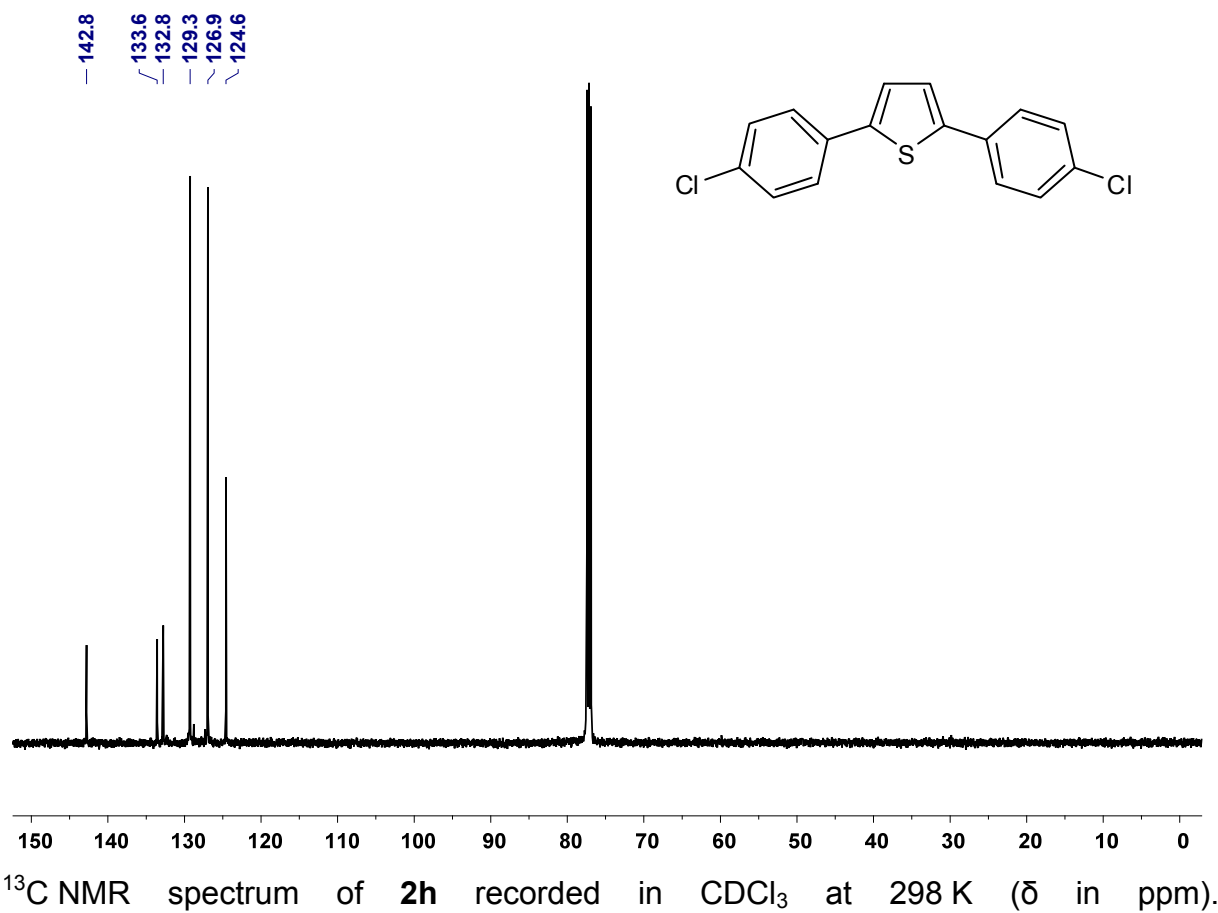
<sup>13</sup>C DEPT-135 NMR spectrum of **2g** recorded in DMSO-d<sub>6</sub> at 298 K (δ in ppm).

## 2,5-bis(4-chlorophenyl)thiophene (2h)

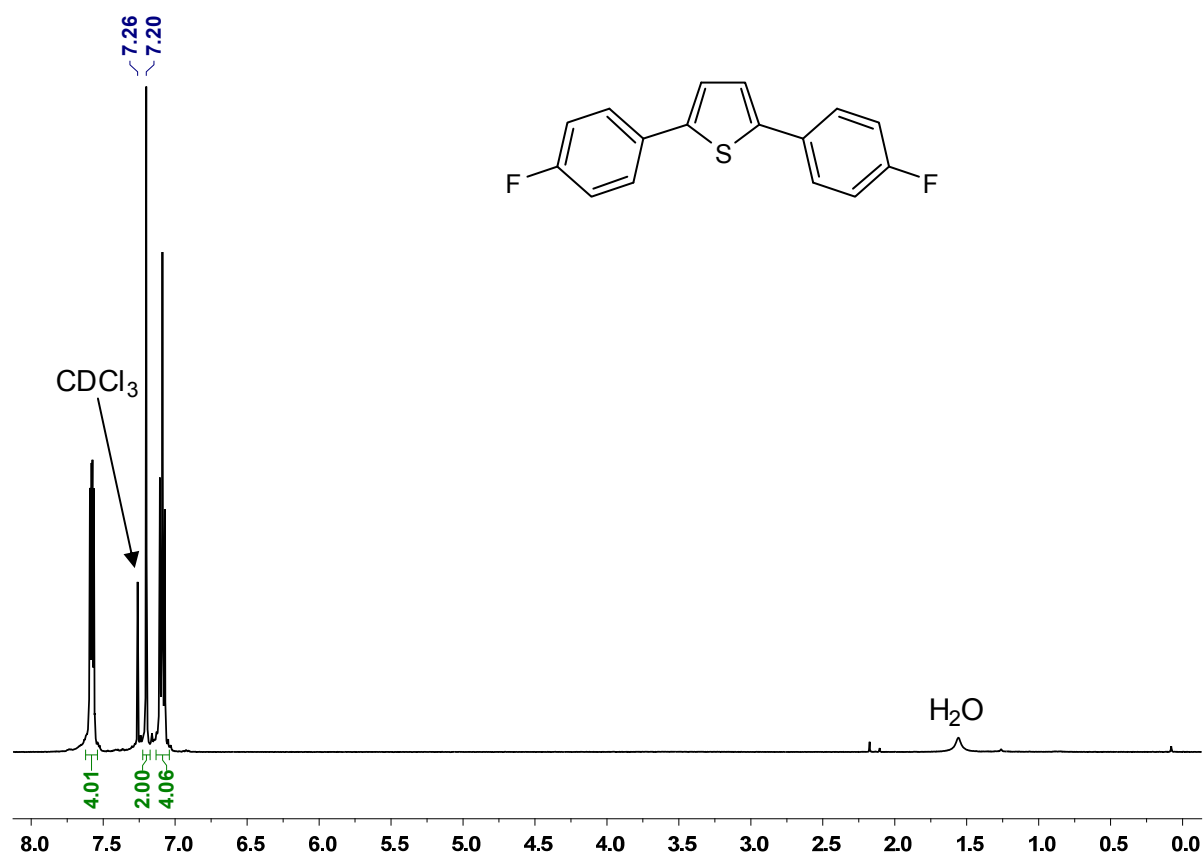


<sup>1</sup>H NMR spectrum of **2h** recorded in CDCl<sub>3</sub> at 298 K (δ in ppm).

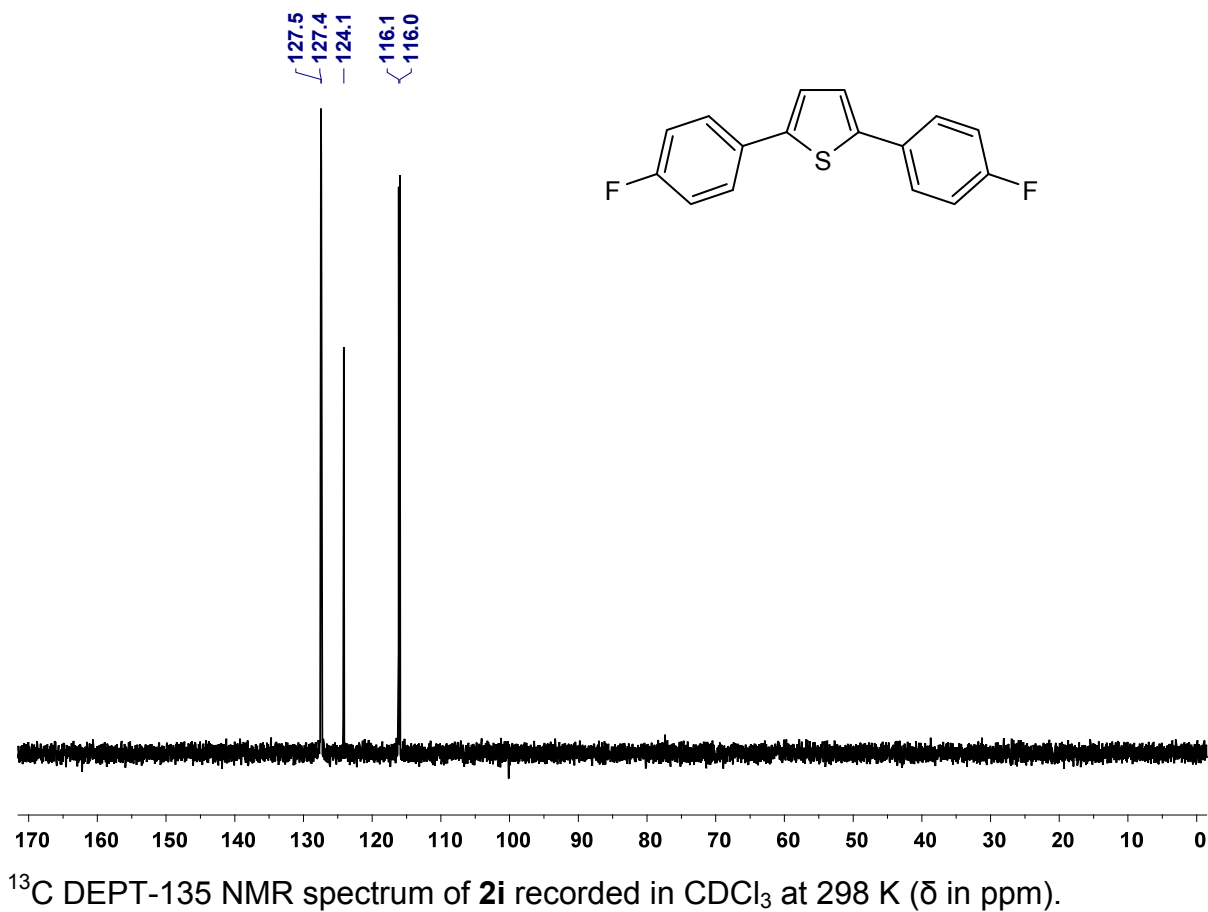
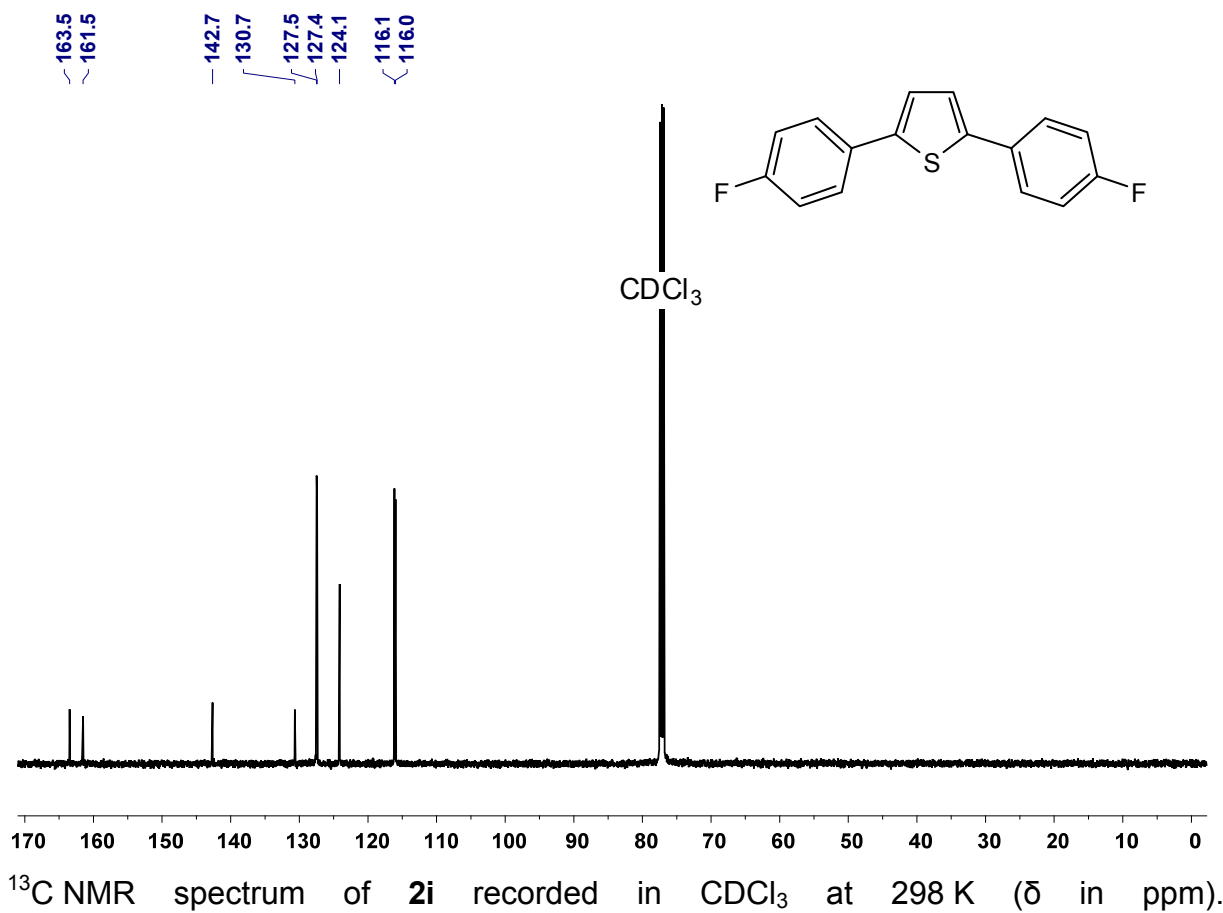




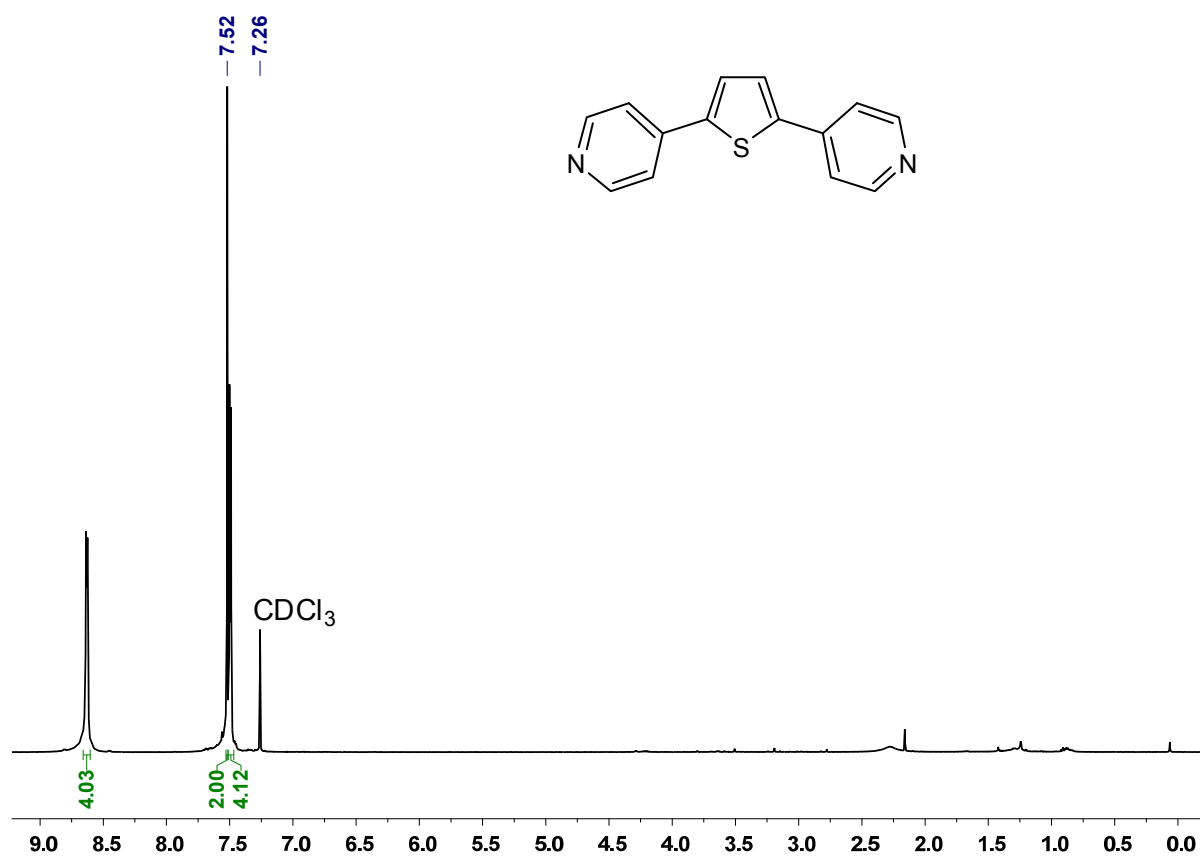
## 2,5-bis(4-fluorophenyl)thiophene (**2i**)



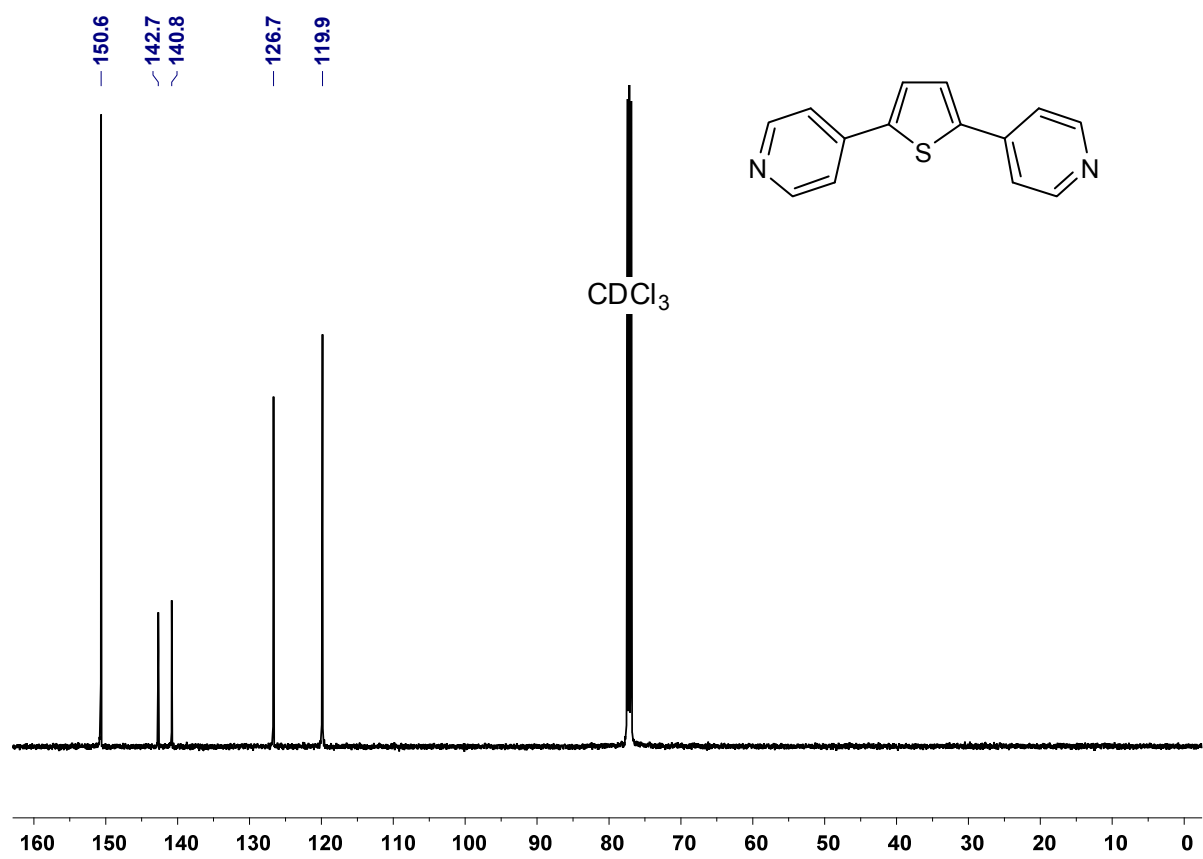
$^1\text{H}$  NMR spectrum of **2i** recorded in  $\text{CDCl}_3$  at 298 K ( $\delta$  in ppm).



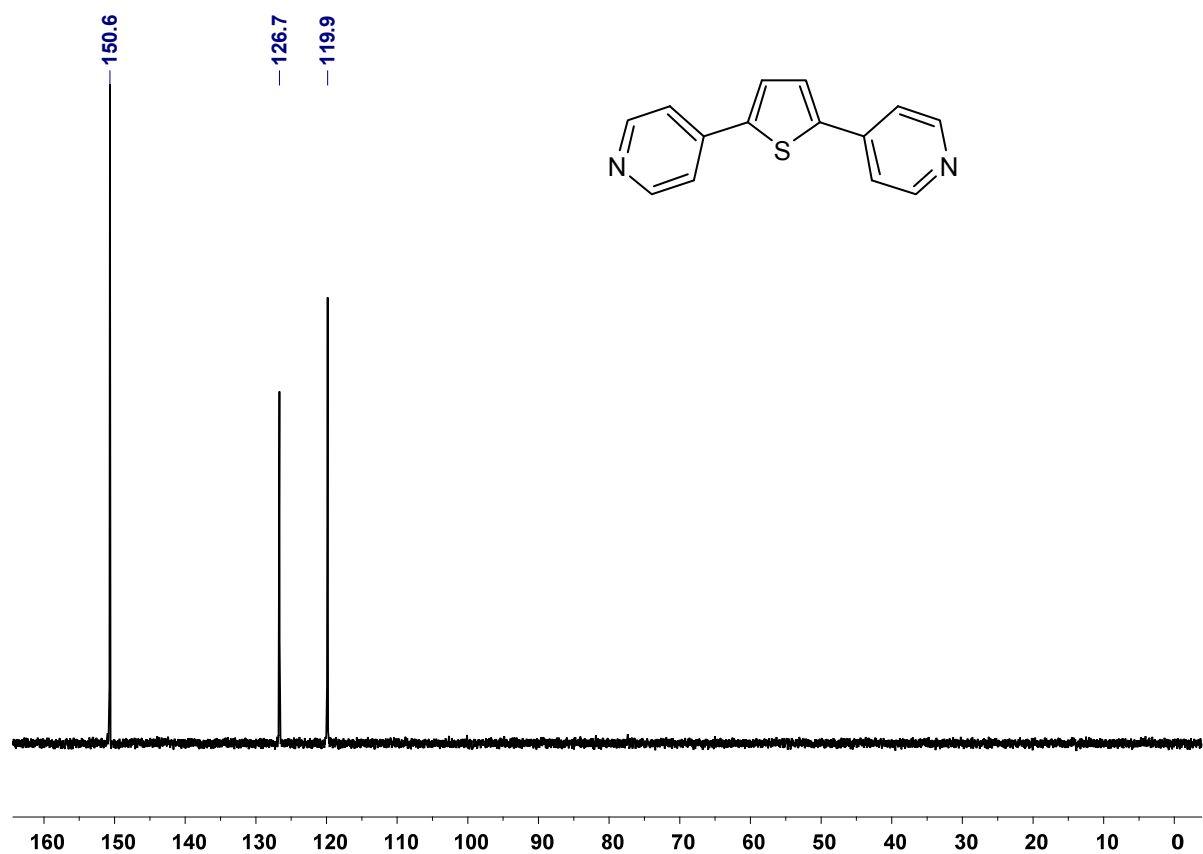
## 2,5-di(pyridin-4-yl)thiophene (**2j**)



<sup>1</sup>H NMR spectrum of **2j** recorded in CDCl<sub>3</sub> at 298 K (δ in ppm).

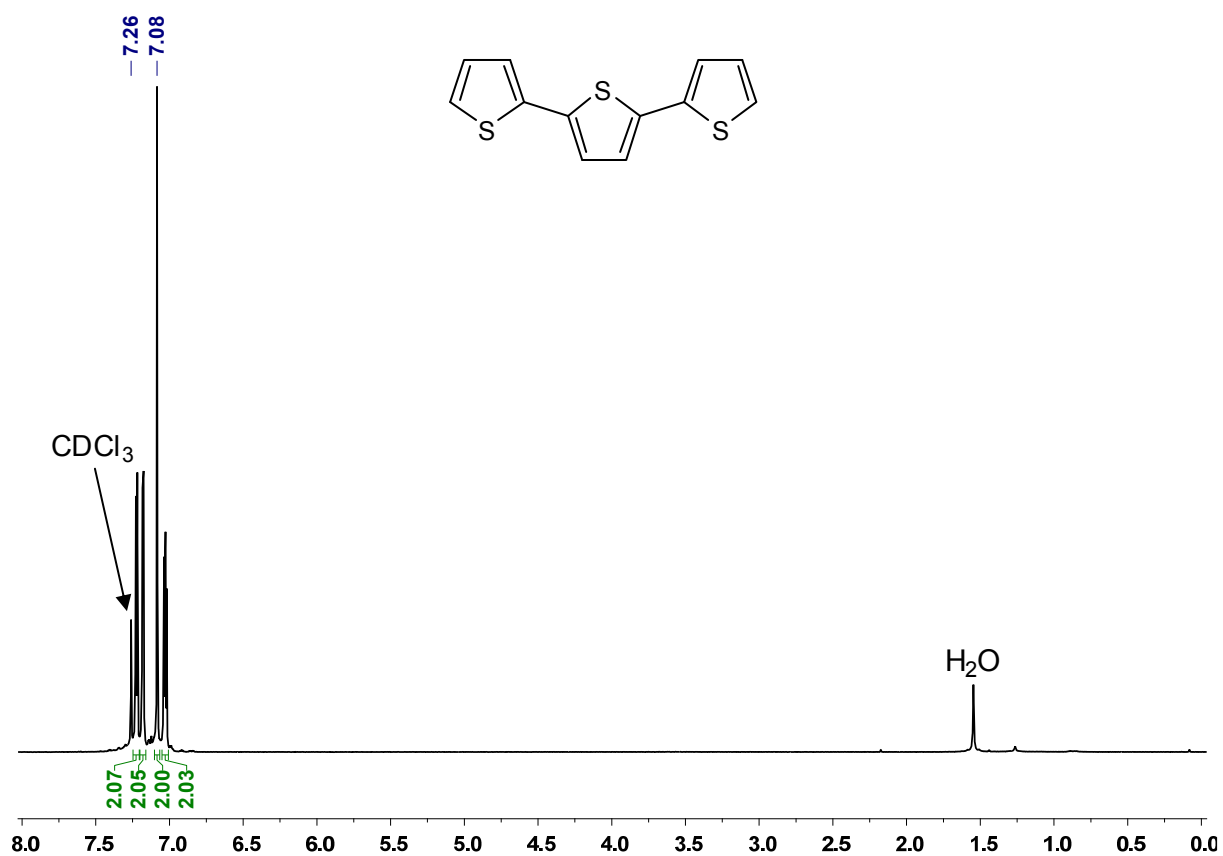


<sup>13</sup>C NMR spectrum of **2j** recorded in CDCl<sub>3</sub> at 298 K (δ in ppm).

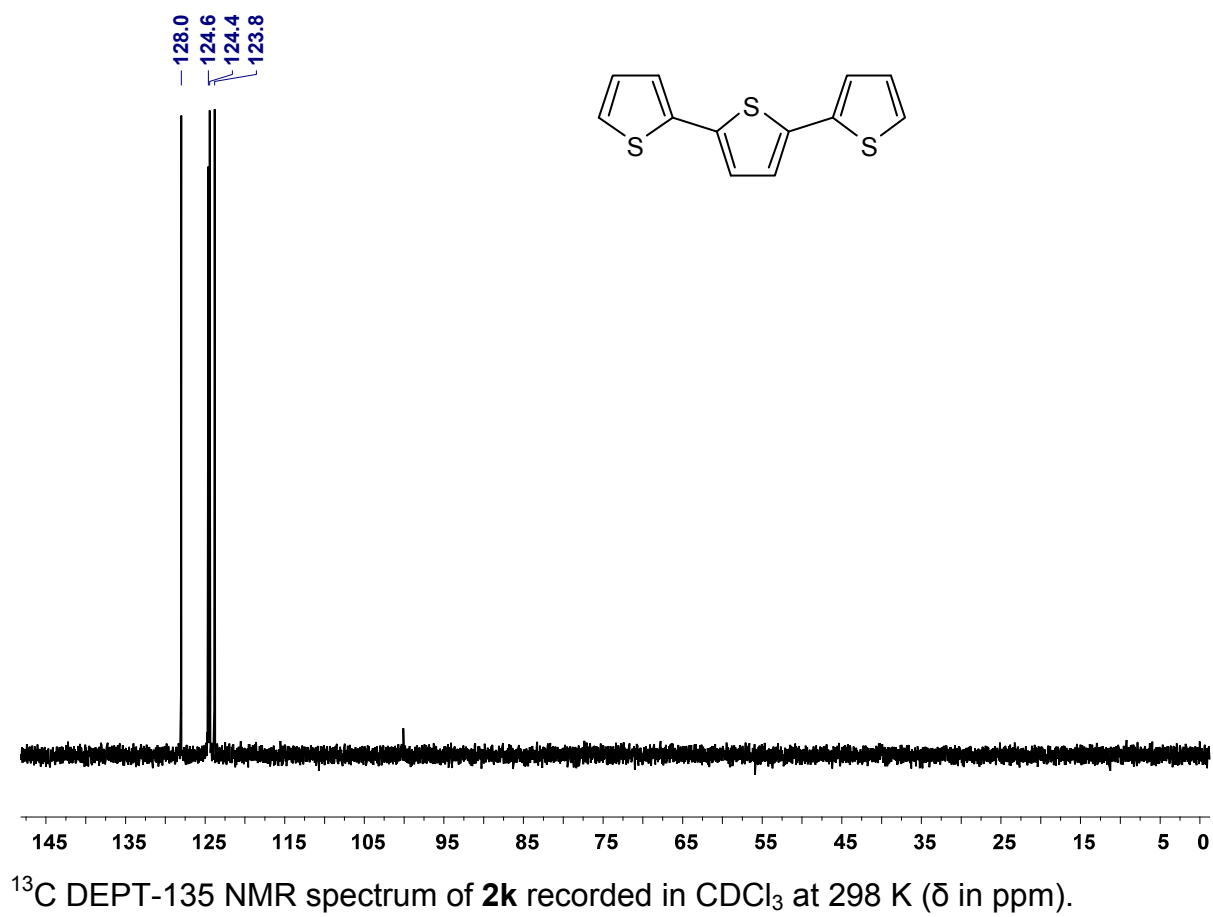
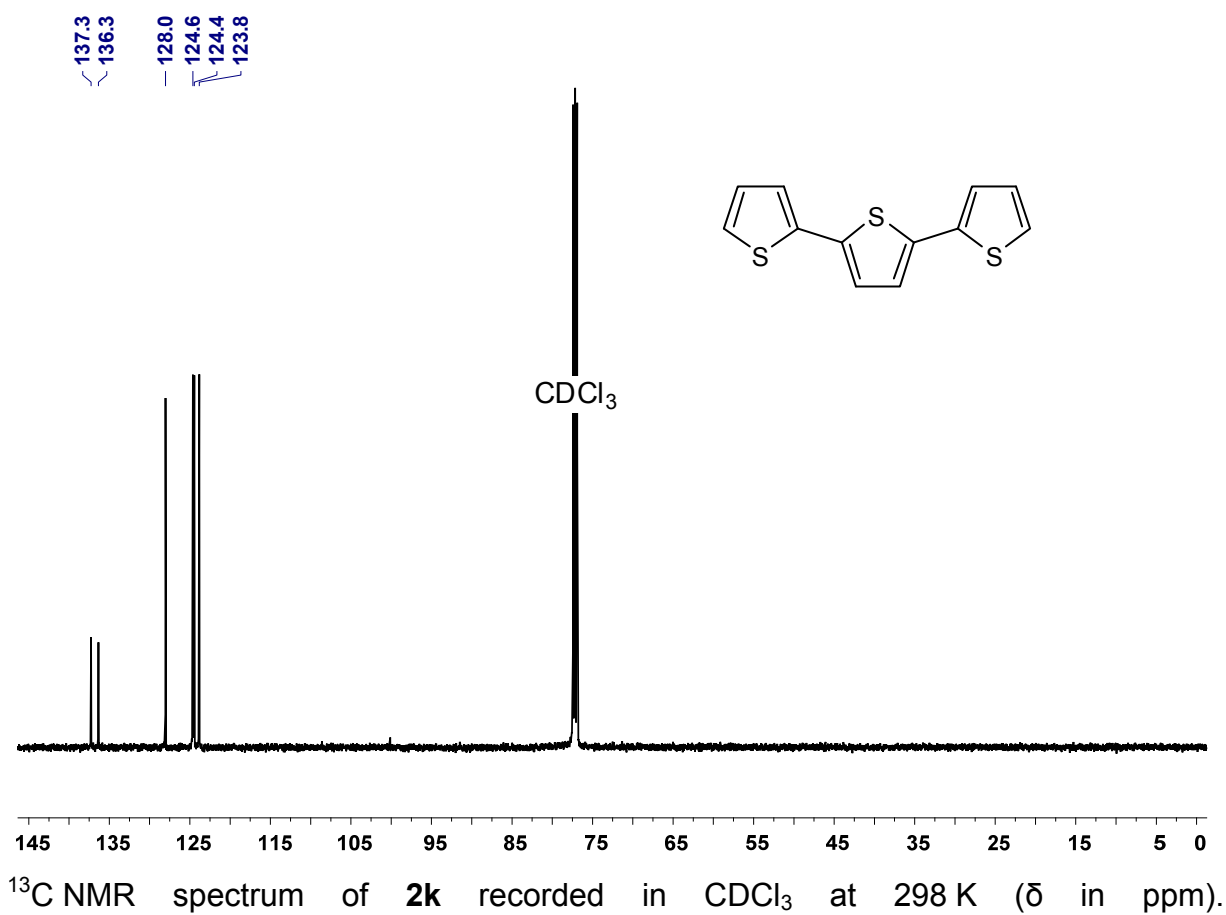


<sup>13</sup>C DEPT-135 NMR spectrum of **2j** recorded in CDCl<sub>3</sub> at 298 K (δ in ppm).

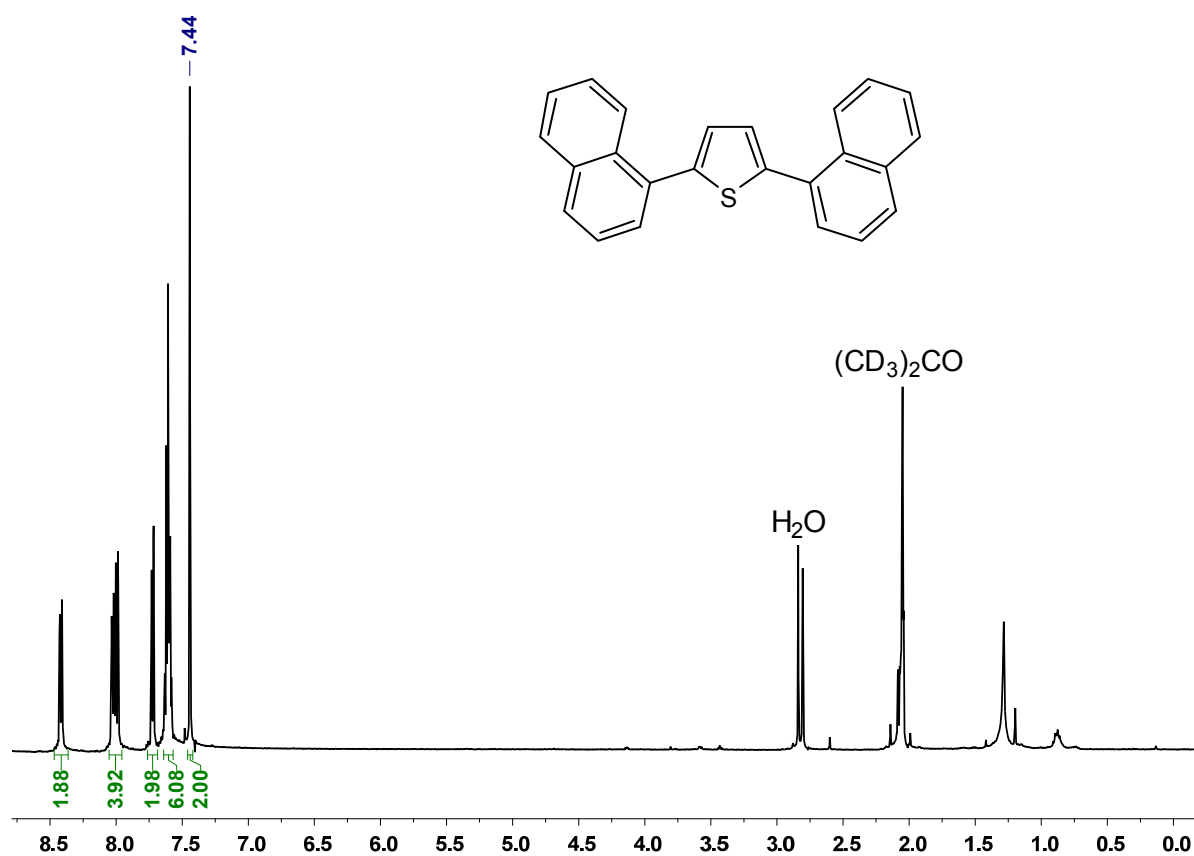
# [2,2':5',2'']-terthiophene (2k)



<sup>1</sup>H NMR spectrum of **2k** recorded in CDCl<sub>3</sub> at 298 K (δ in ppm).

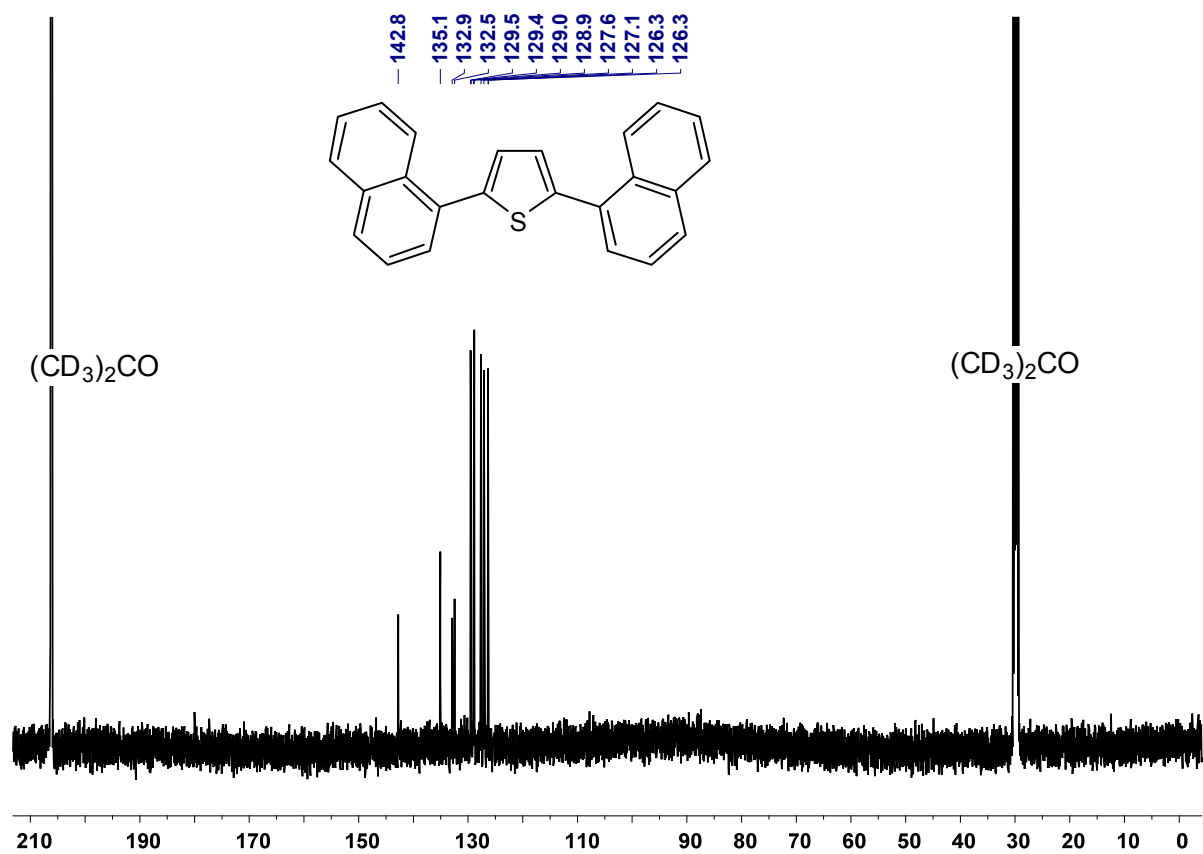


## 2,5-di(naphthalen-1-yl)thiophene (2I)

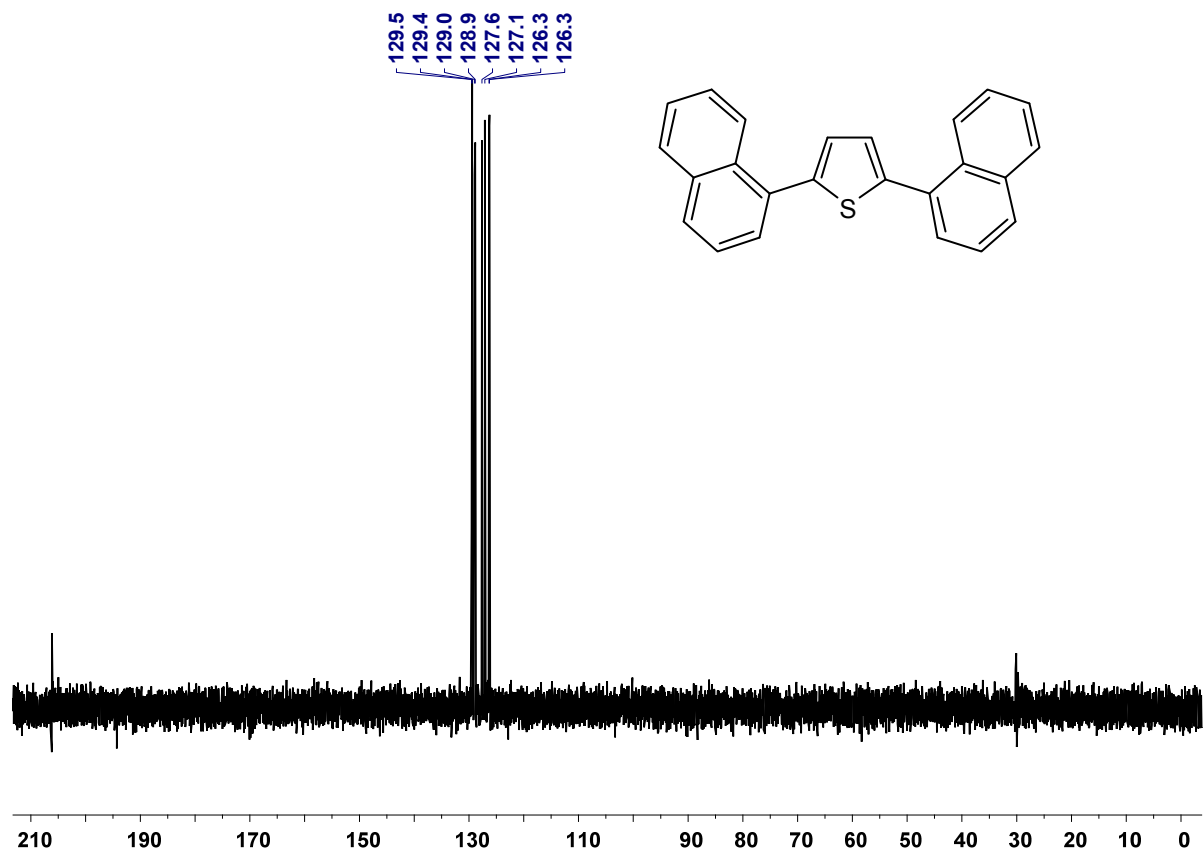


<sup>1</sup>H NMR spectrum of **2I** recorded in acetone-d<sub>6</sub> at 298 K (δ in ppm).



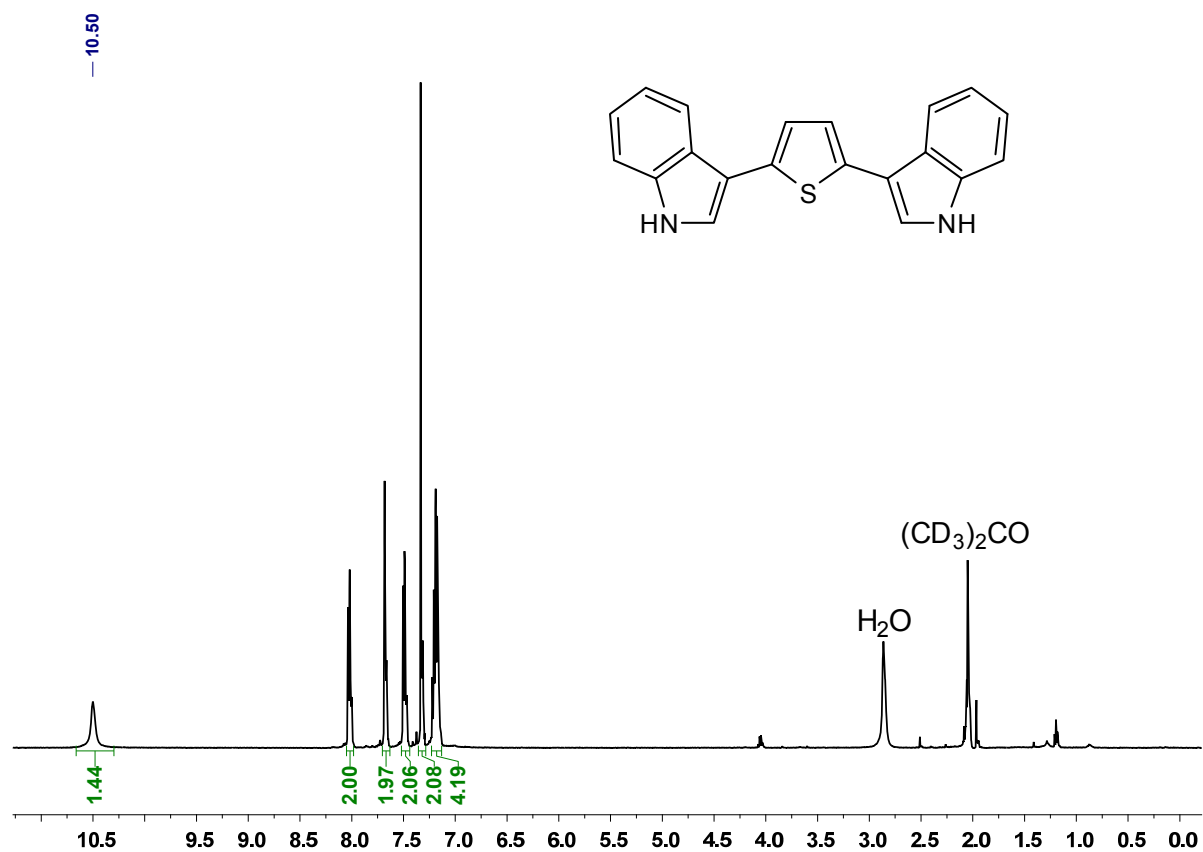


$^{13}\text{C}$  NMR spectrum of **2I** recorded in acetone- $\text{d}_6$  at 298 K ( $\delta$  in ppm).

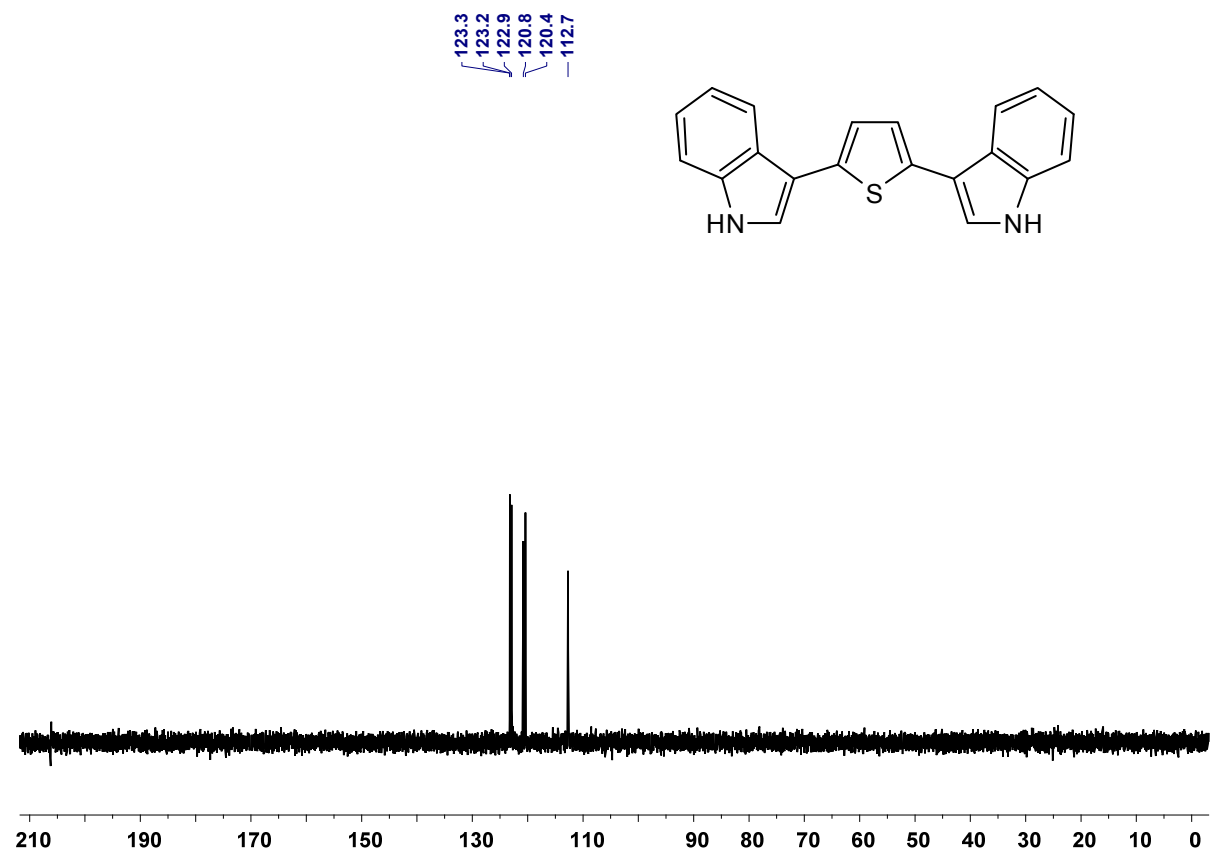
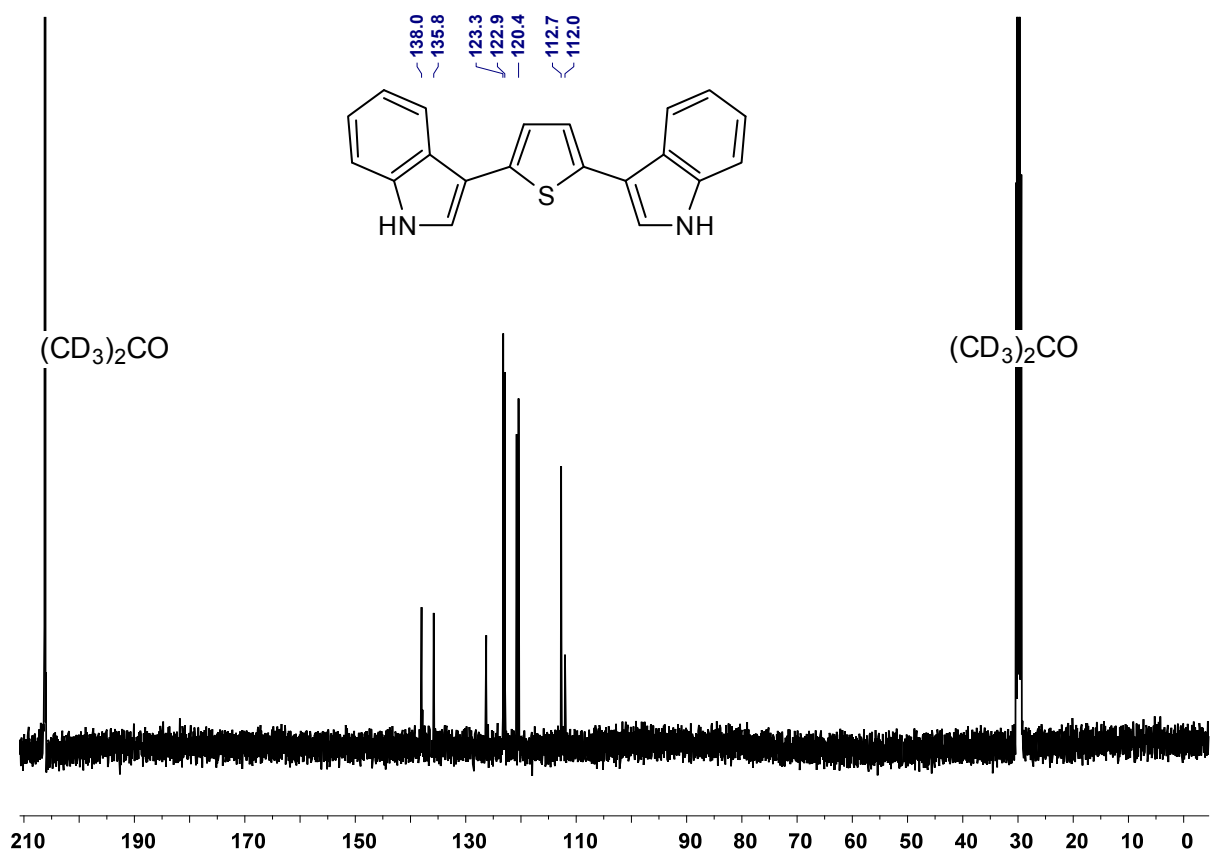


$^{13}\text{C}$  DEPT-135 NMR spectrum of **2I** recorded in acetone- $\text{d}_6$  at 298 K ( $\delta$  in ppm).

## 2,5-di(1*H*-indol-3-yl)thiophene (**2p**)



<sup>1</sup>H NMR spectrum of **2p** recorded in acetone-d<sub>6</sub> at 298 K ( $\delta$  in ppm).



$^{13}\text{C}$  DEPT-135 NMR spectrum of **2p** recorded in acetone- $\text{d}_6$  at 298 K ( $\delta$  in ppm).