

Supplementary Material

Novel push-pull thieno[2,3-*b*]indole-based dyes for efficient dye-sensitized solar cells (DSSCs)

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^d Frumkin Institute of Physical Chemistry and Electrochemistry RAS, Moscow, 119071, Russia

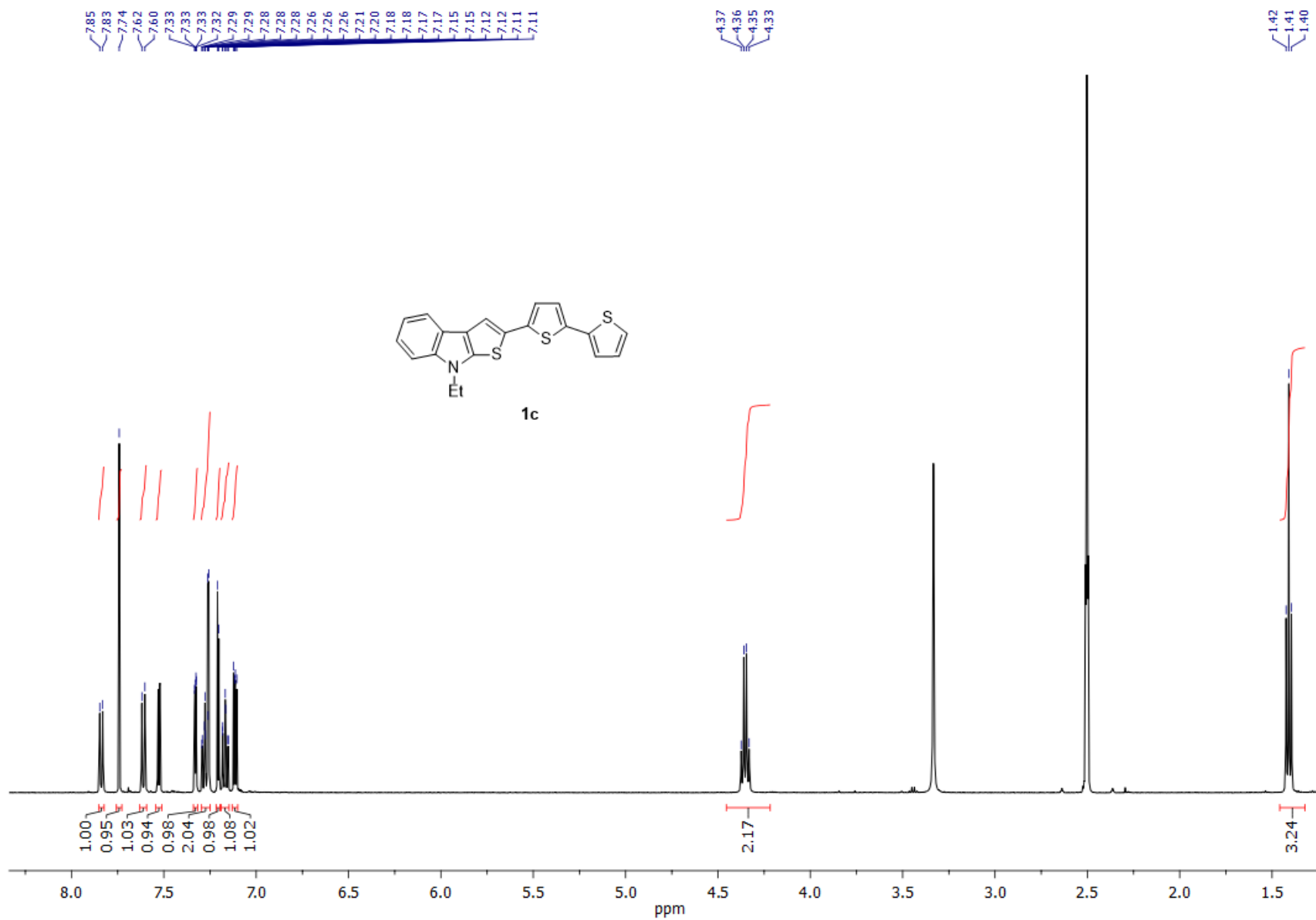
^e Department of Chemistry, National Research Tomsk State University, Tomsk, 634050, Russia

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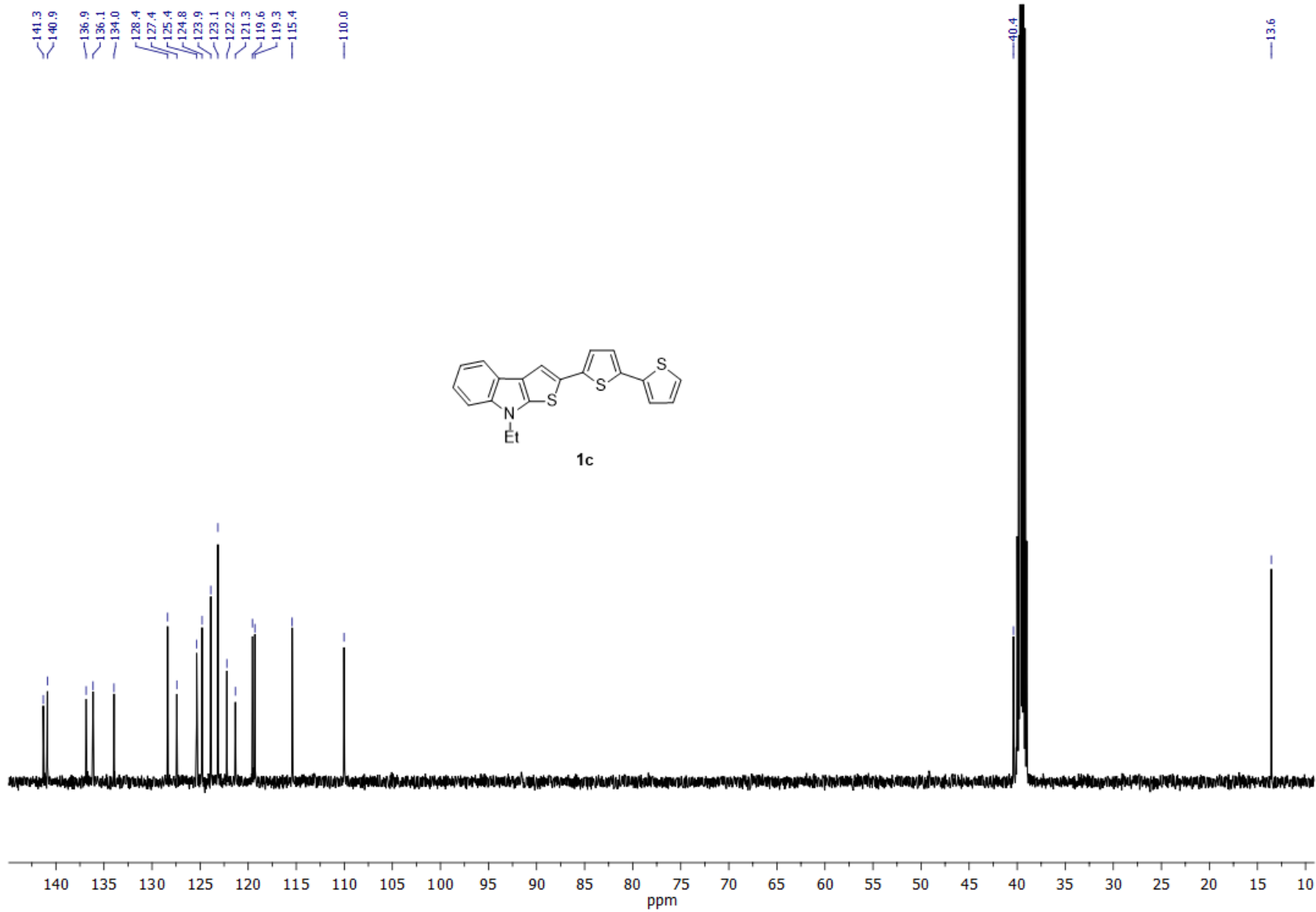
Content

<i>¹H and ¹³C NMR spectra of all new compounds</i>	S2 – S26
<i>Cyclic voltammetry (CV) curves of dyes IK 3-6</i>	S27– S28

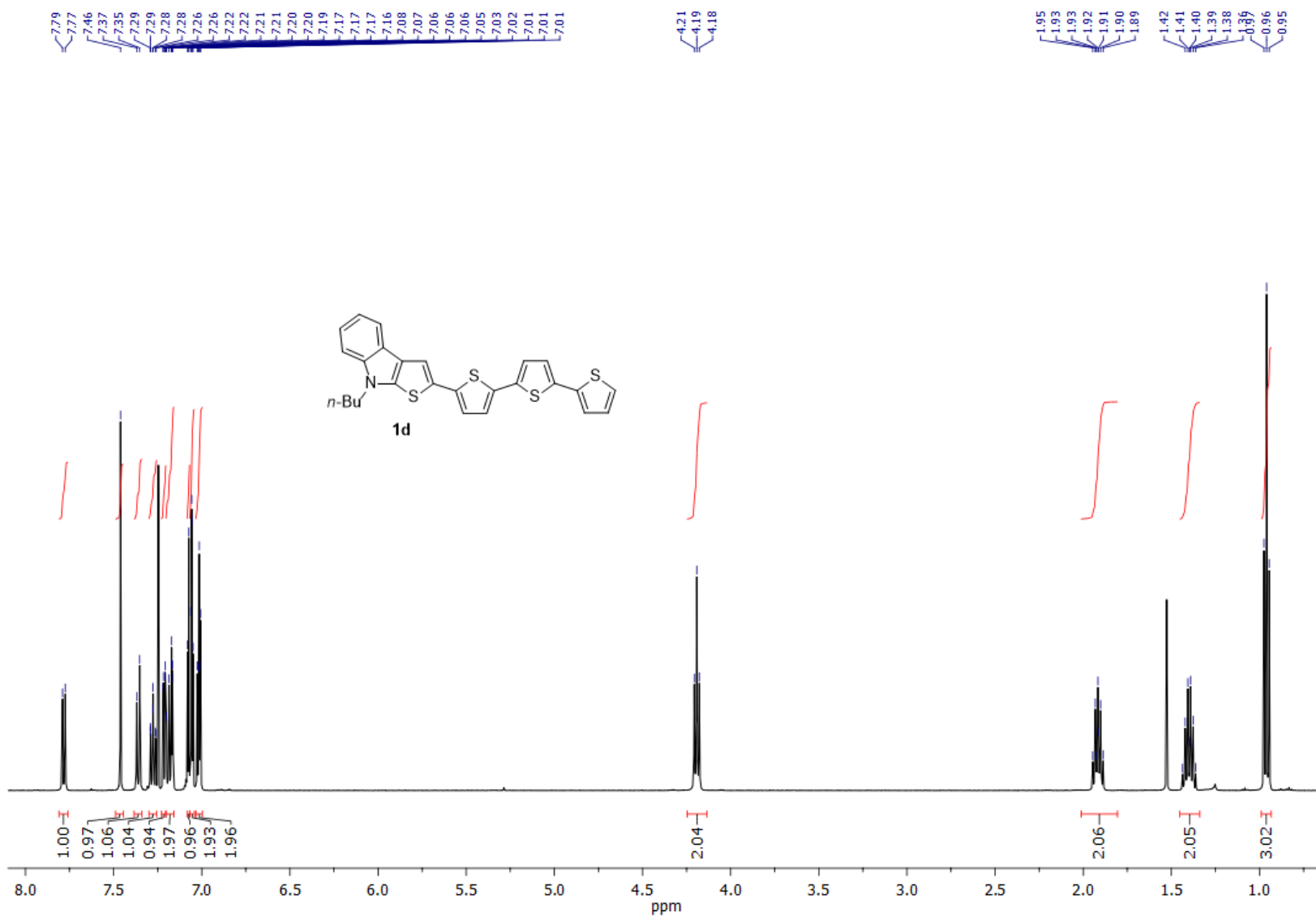
¹H NMR (solvent: DMSO-d₆)



S2

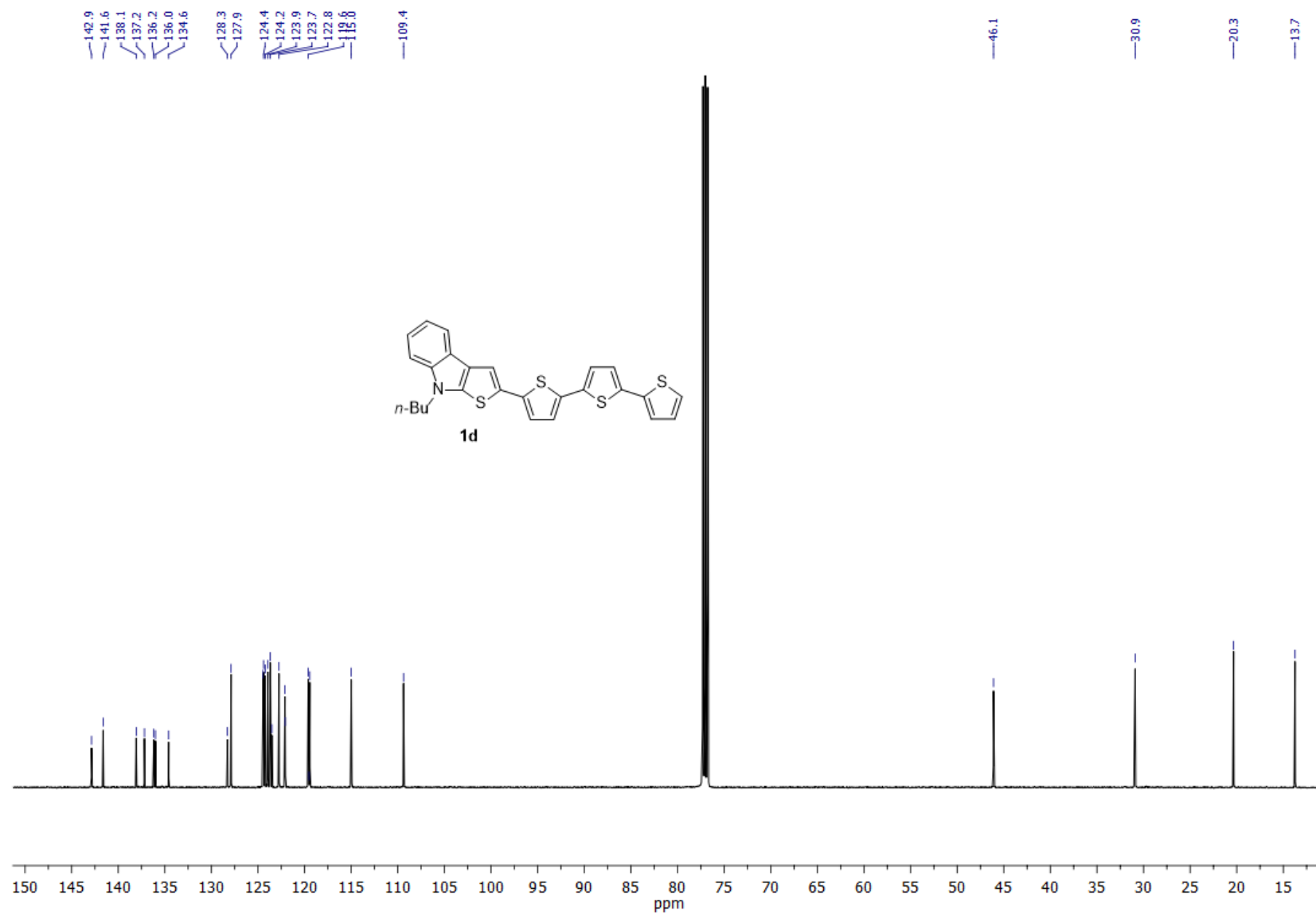
^{13}C NMR (solvent: $\text{DMSO-}d_6$)

S3

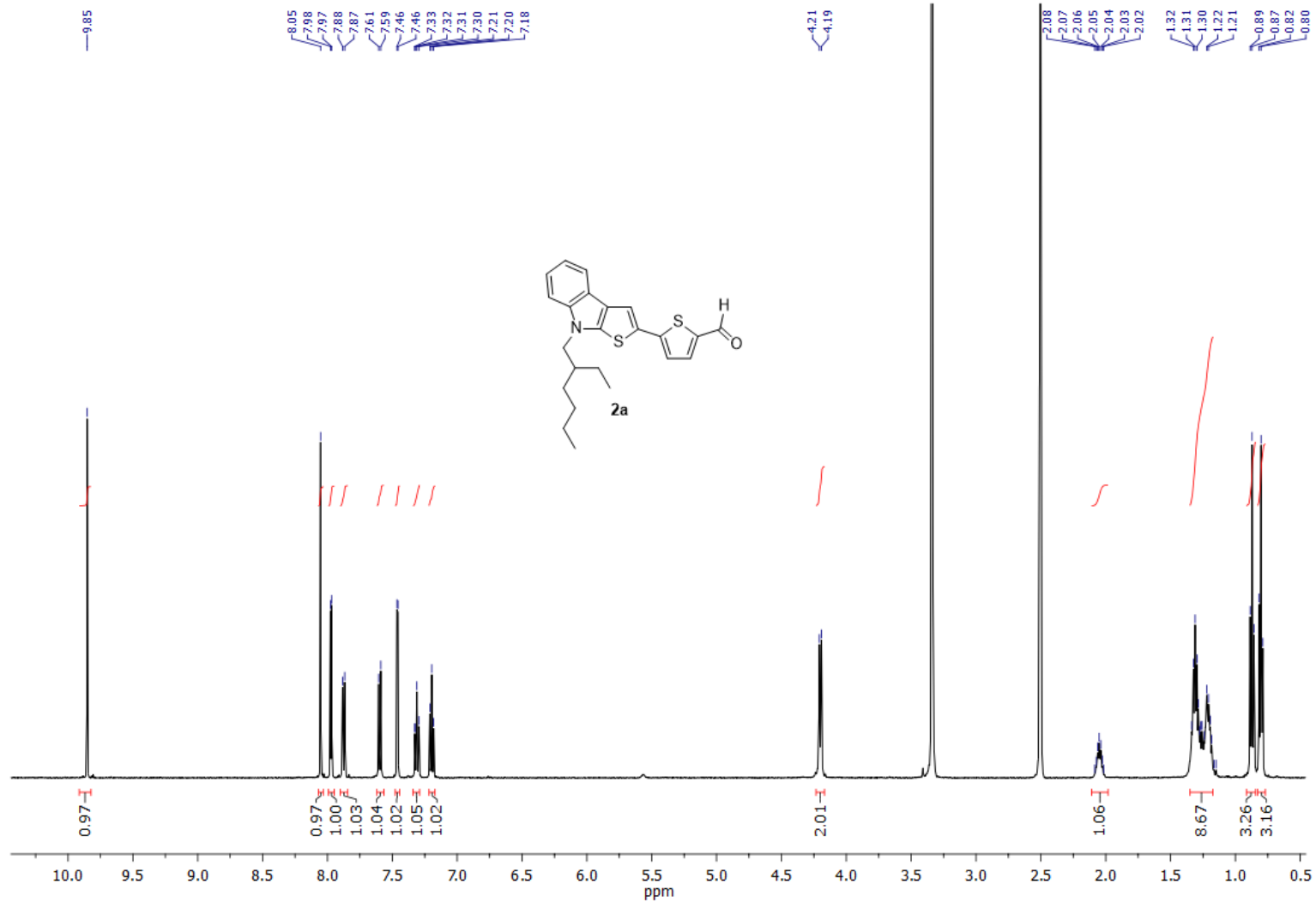


¹H NMR (solvent: CDCl₃)

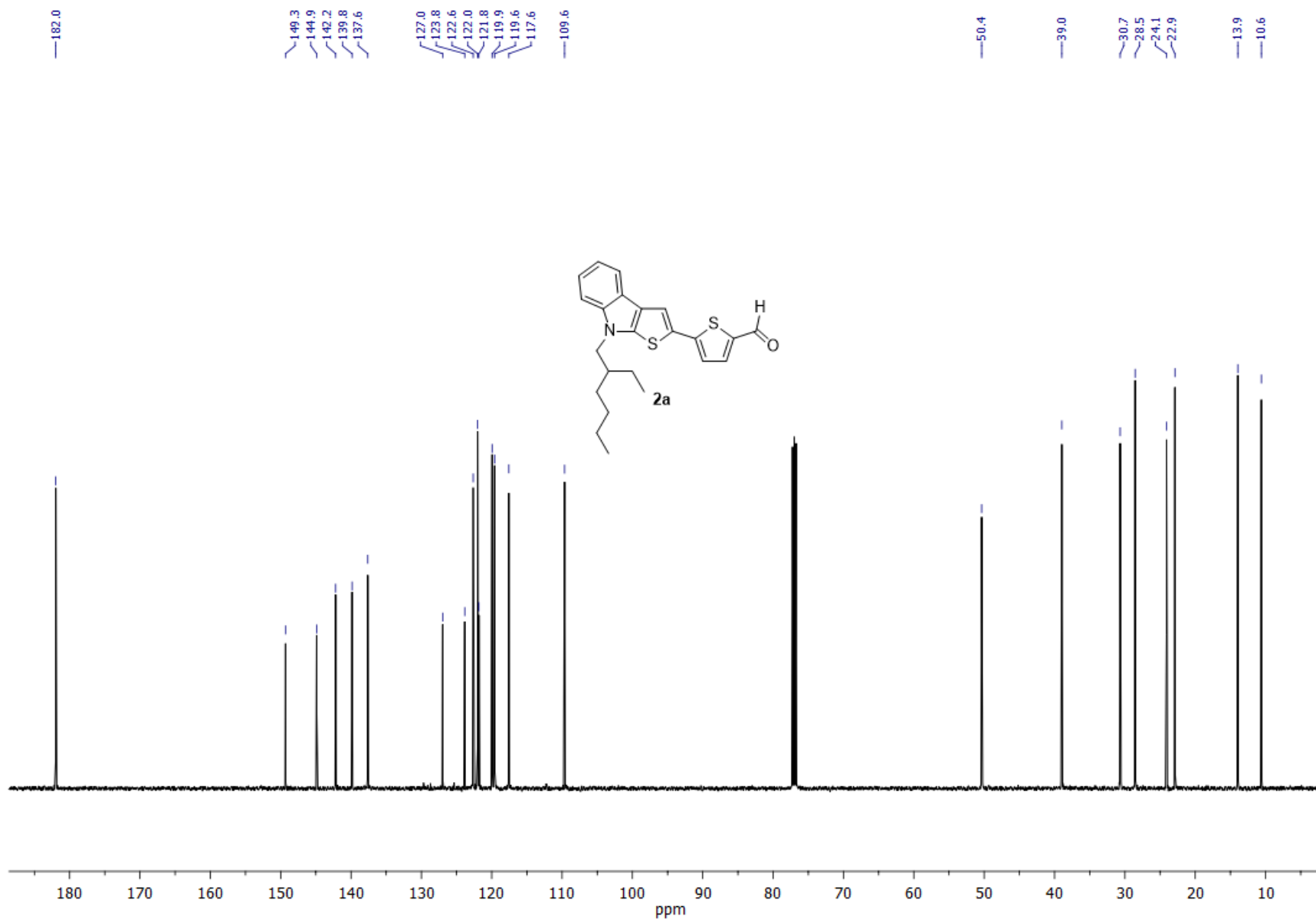
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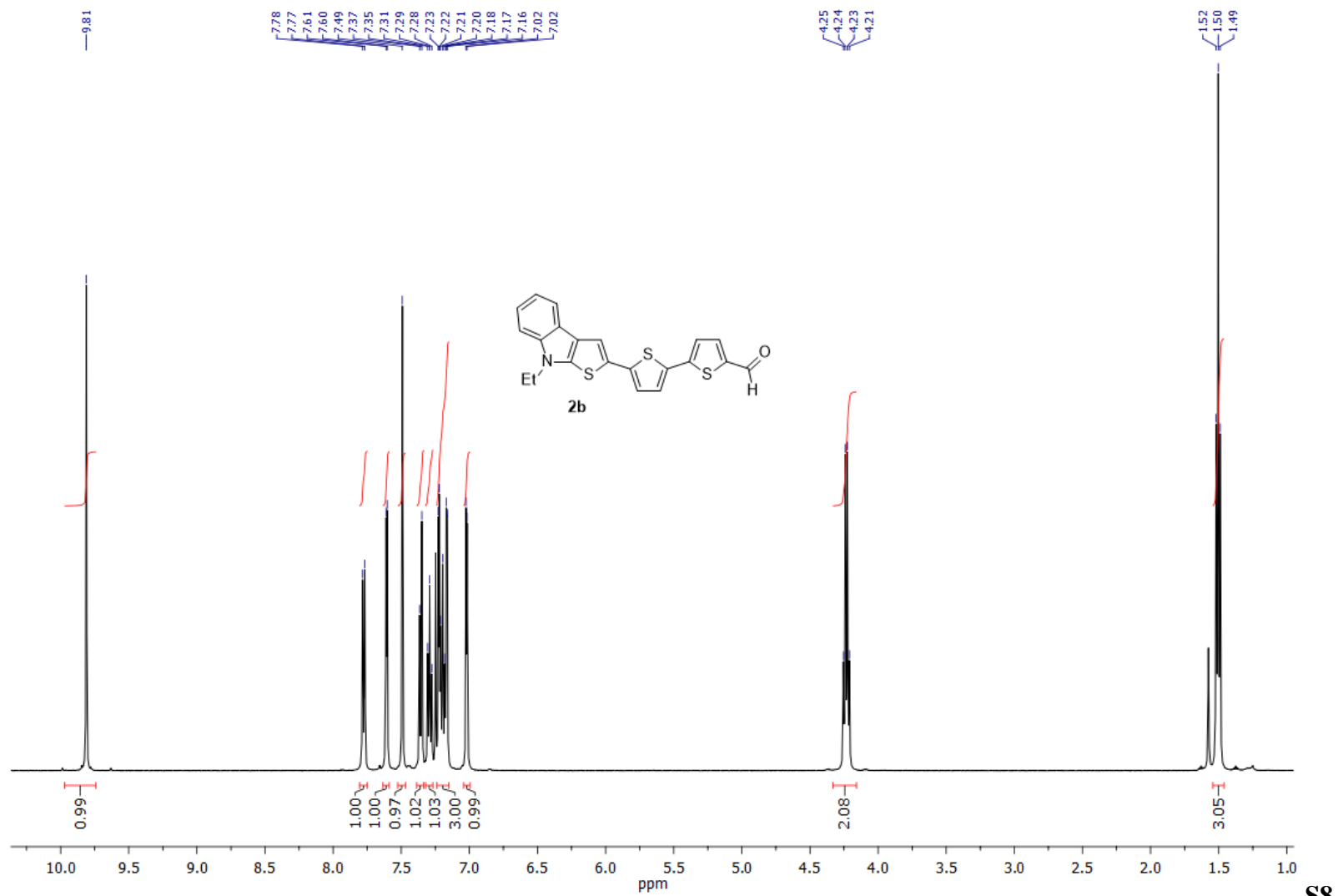
^{13}C NMR (solvent: CDCl_3)

S5

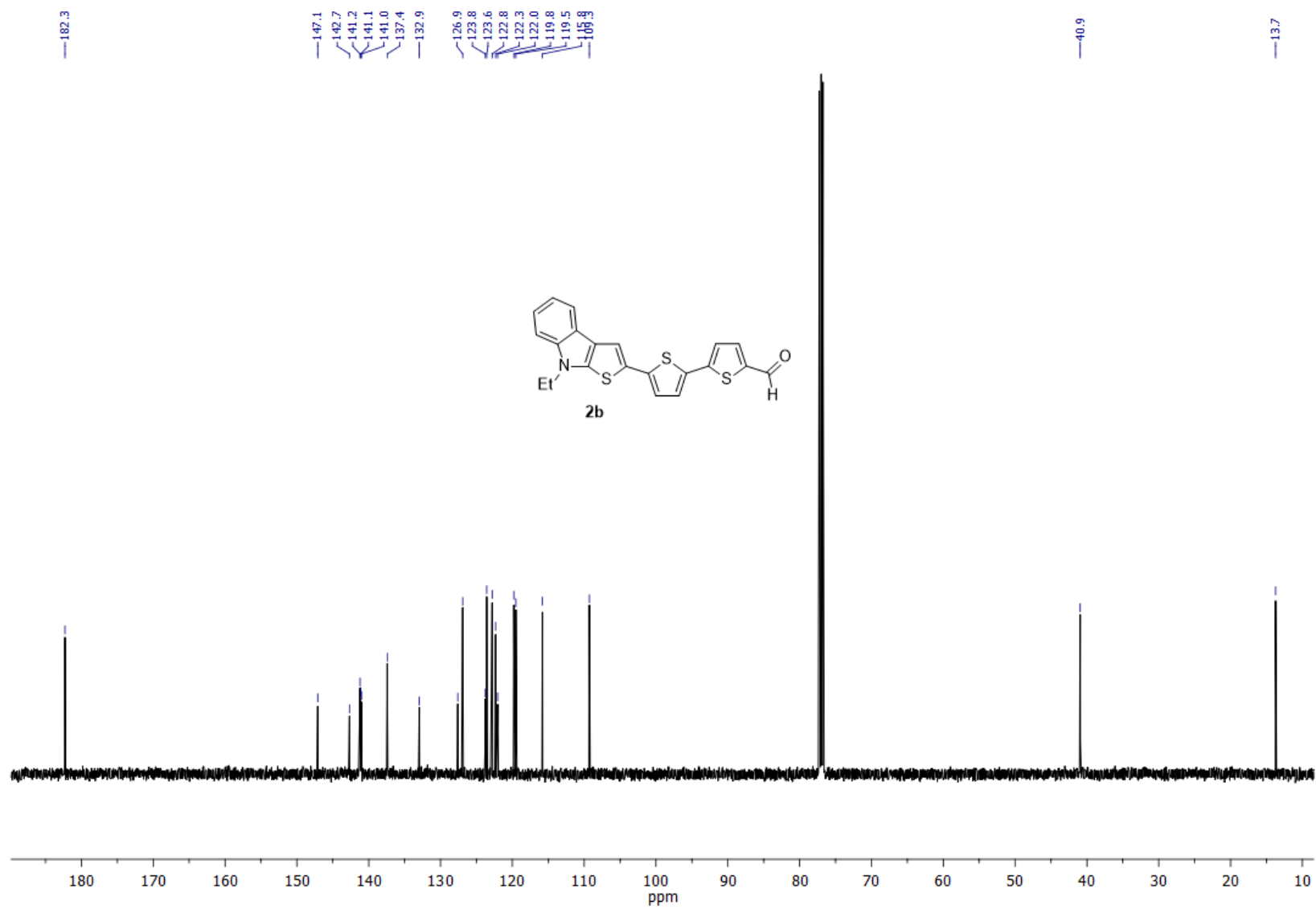
^1H NMR (solvent: $\text{DMSO-}d_6$)

S6

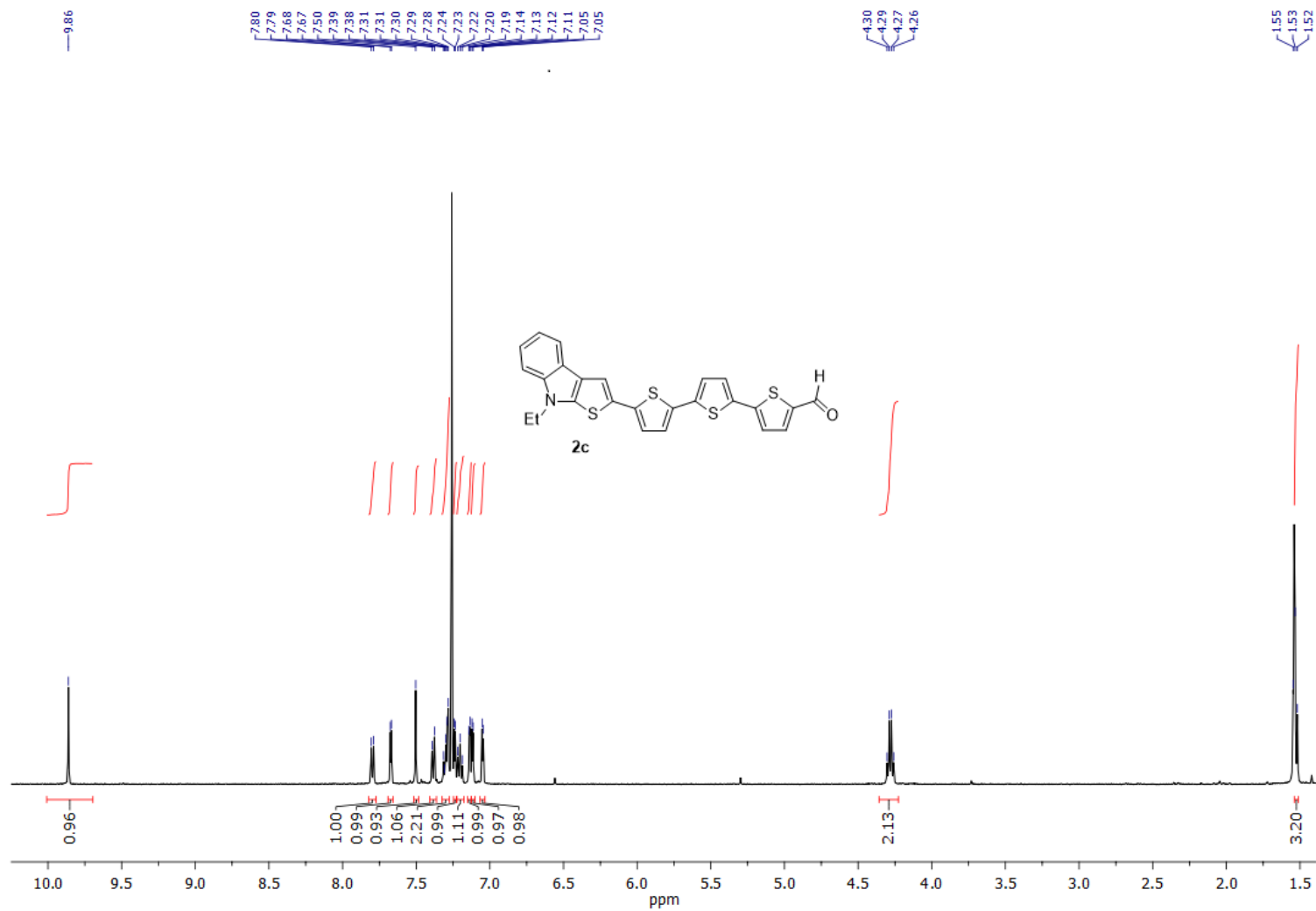
^{13}C NMR (solvent: CDCl_3)

^1H NMR (solvent: CDCl_3)

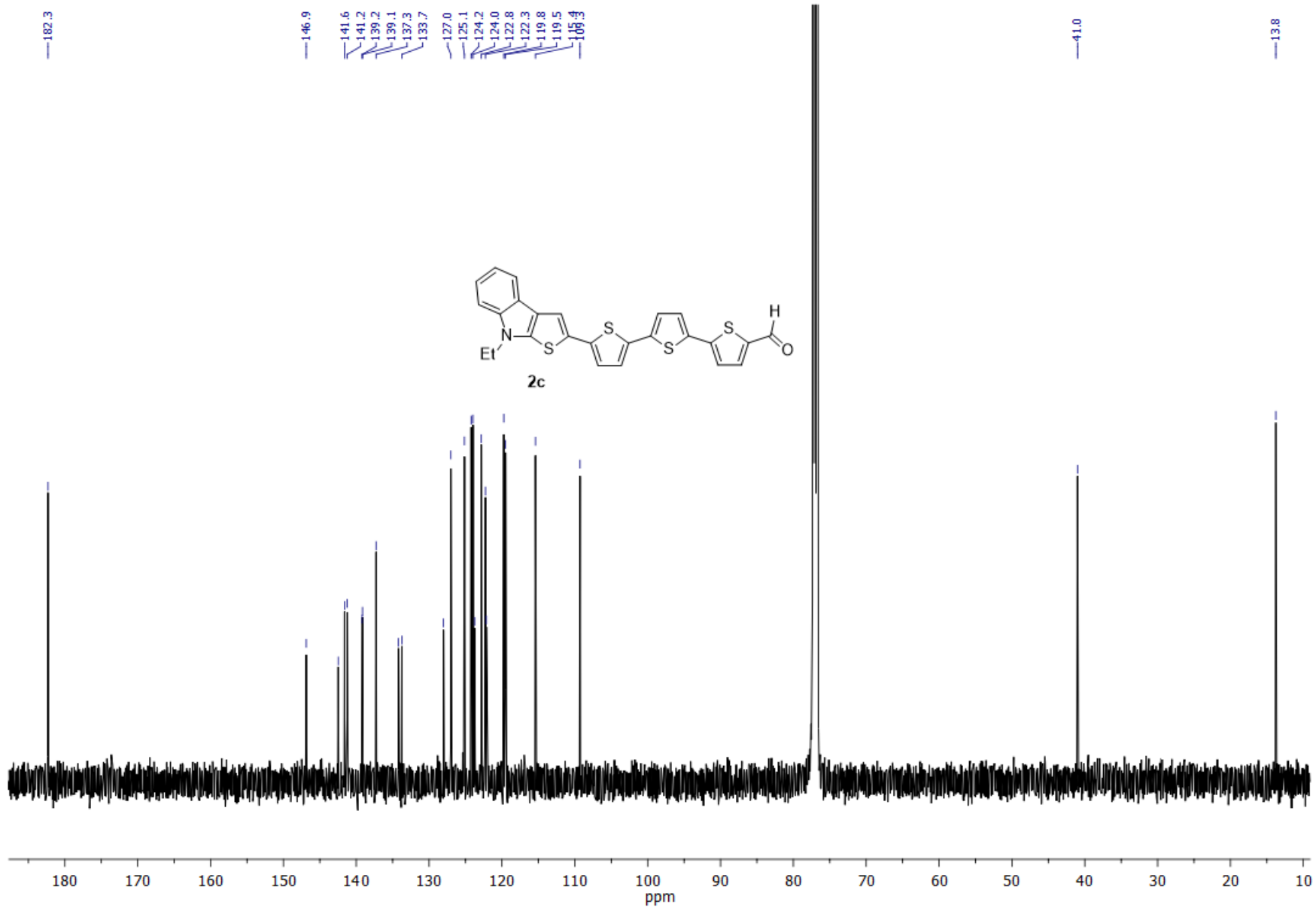
S8

^{13}C NMR (solvent: CDCl_3)

S9

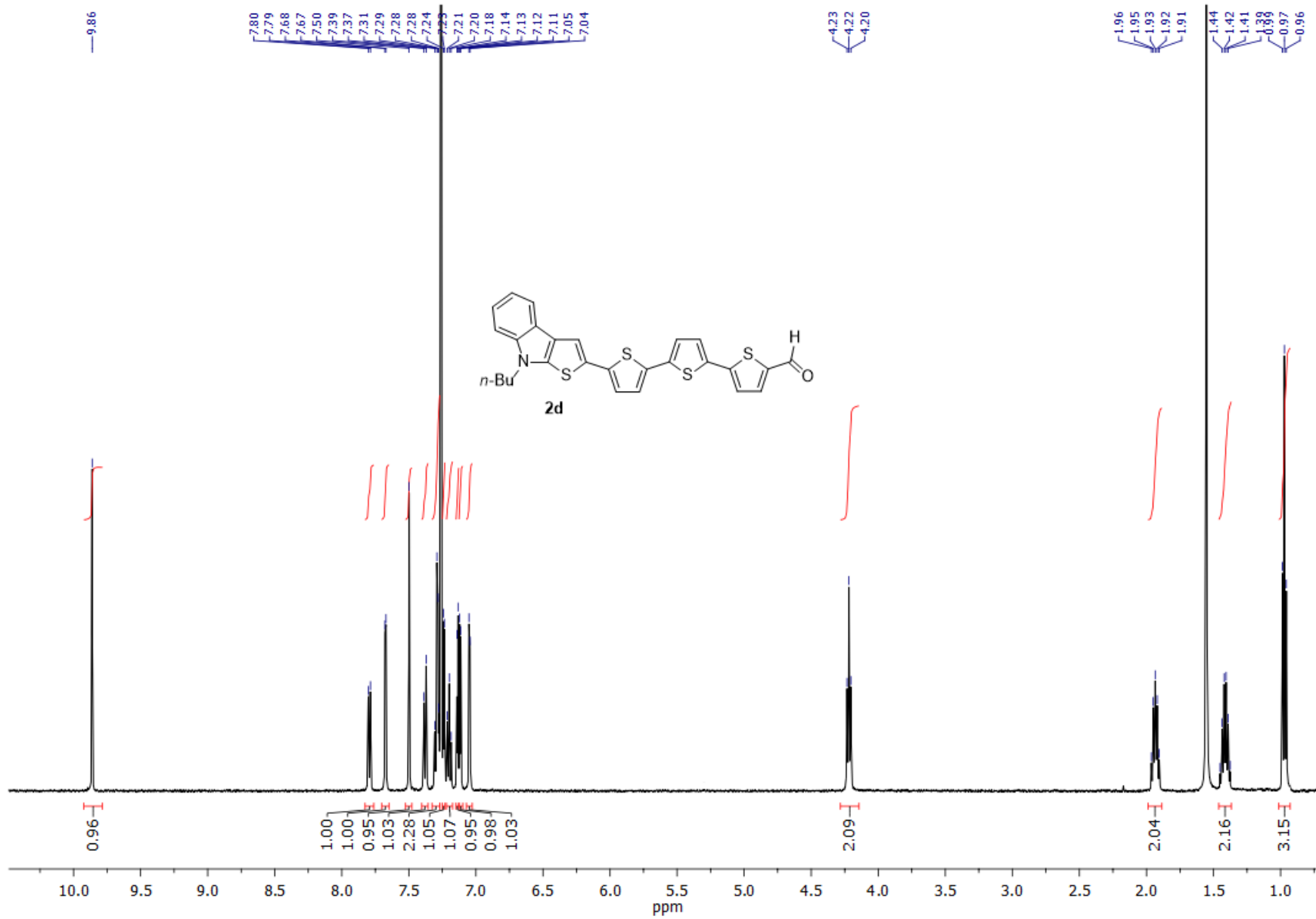
^1H NMR (solvent: CDCl_3)

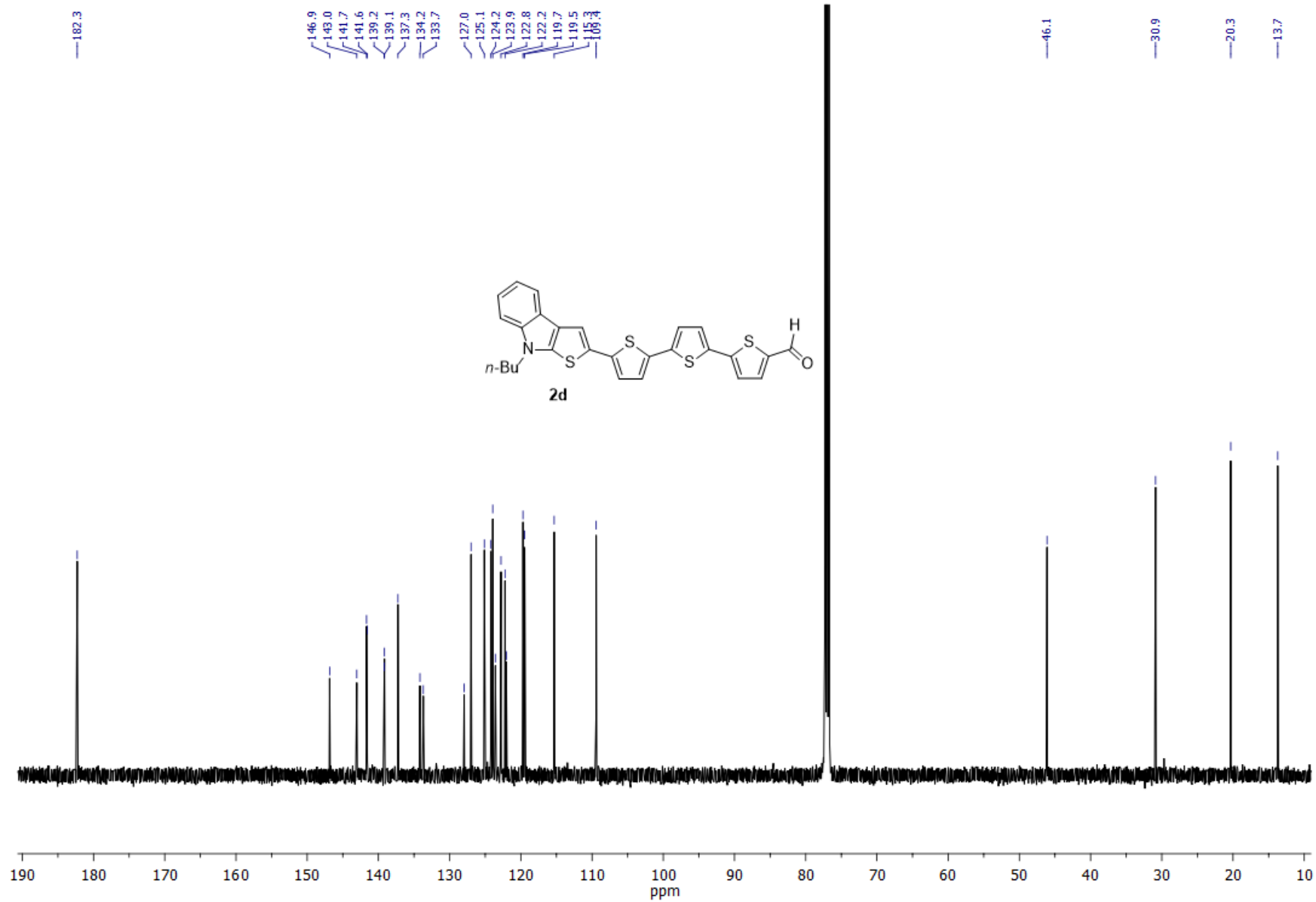
S10

^{13}C NMR (solvent: CDCl_3)

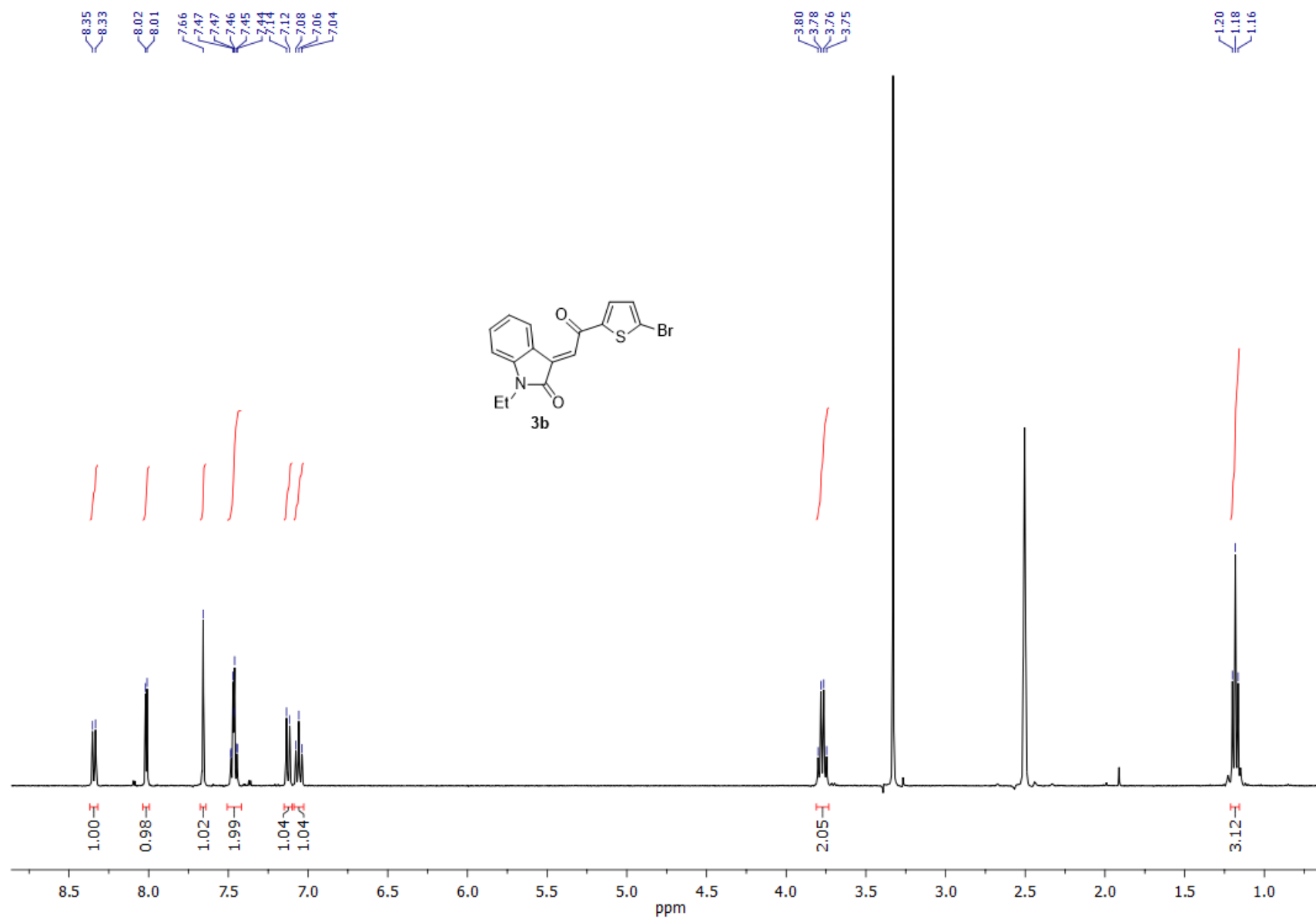
S11

¹H NMR (solvent: CDCl₃)

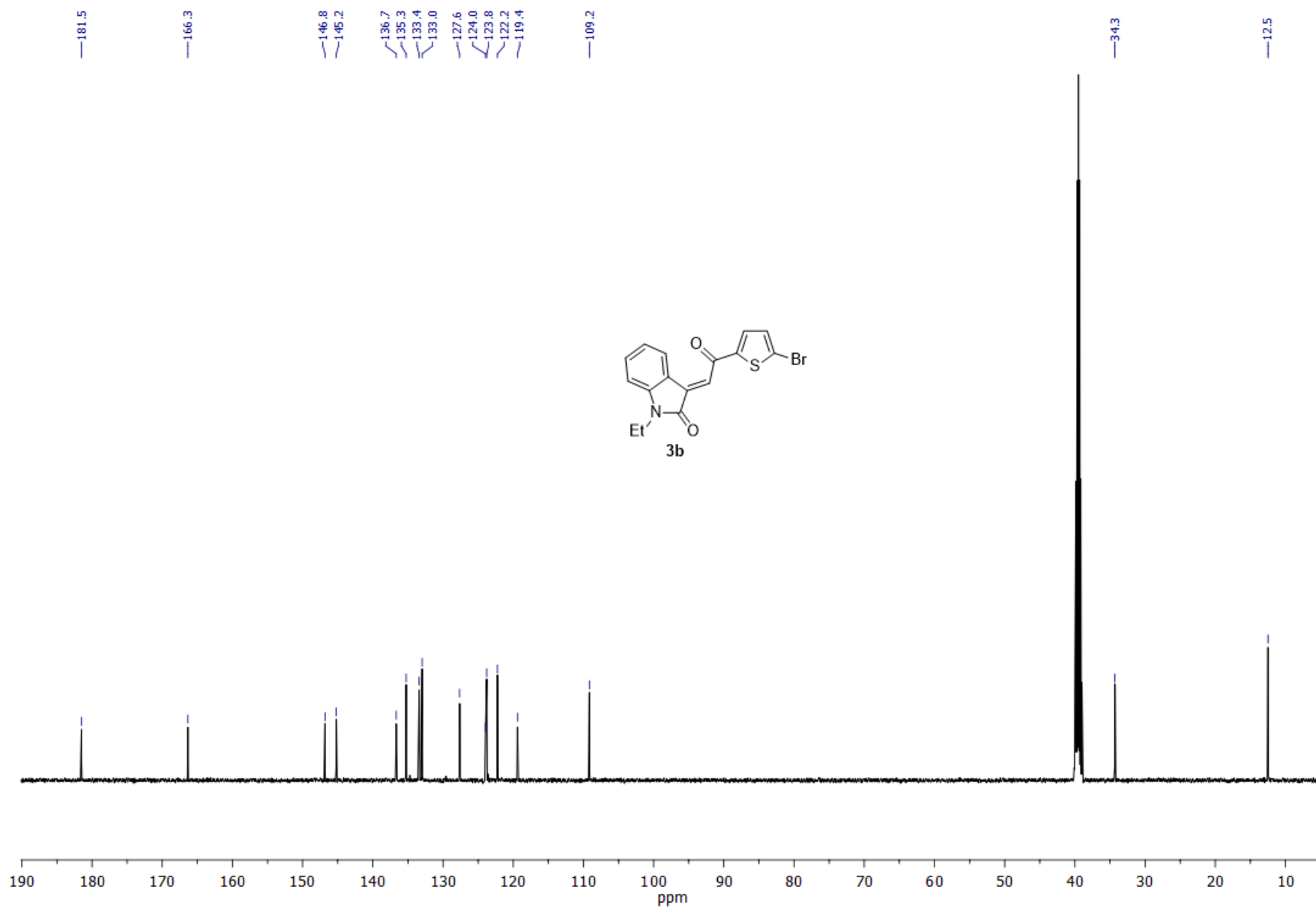


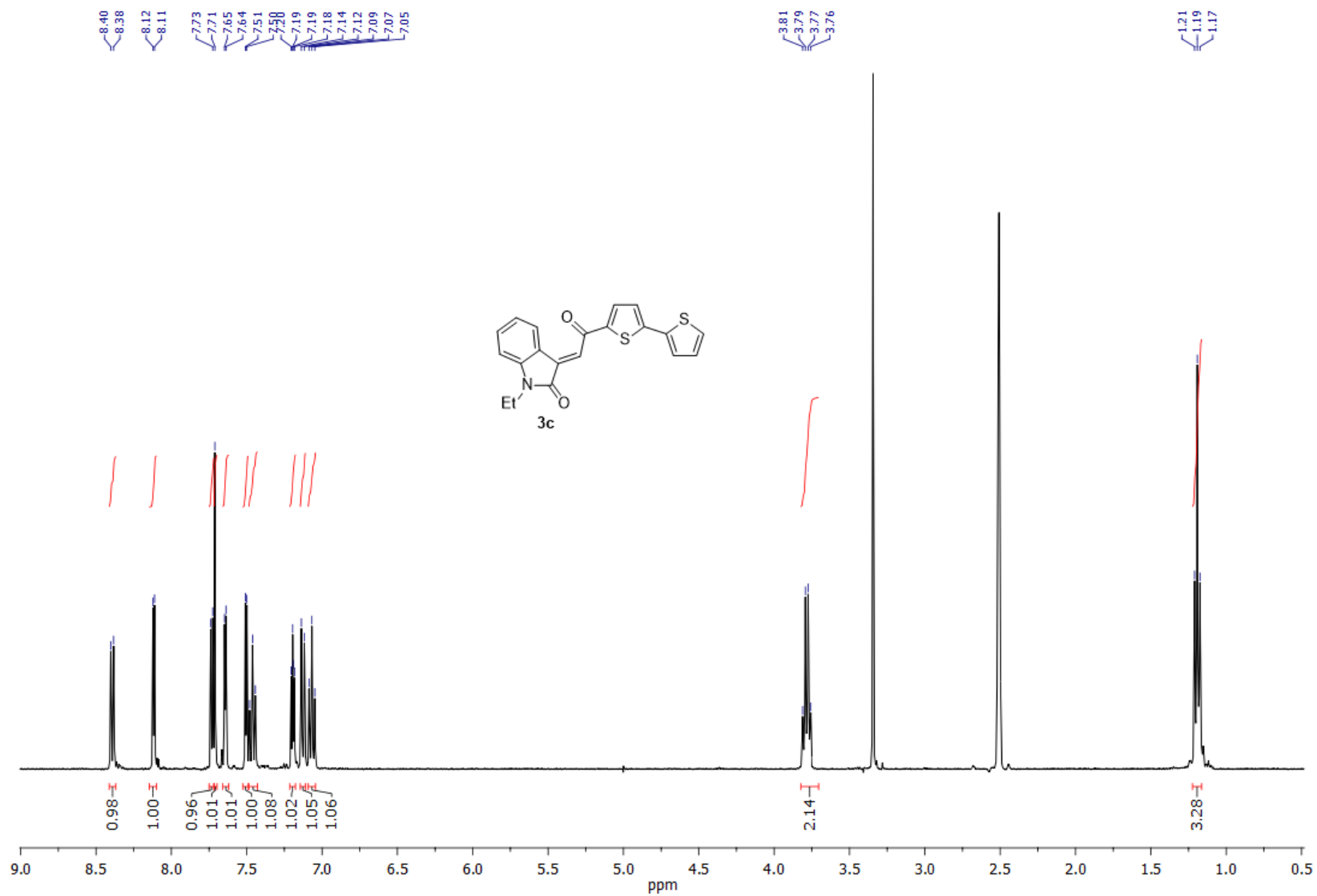
^{13}C NMR (solvent: CDCl_3)

S13

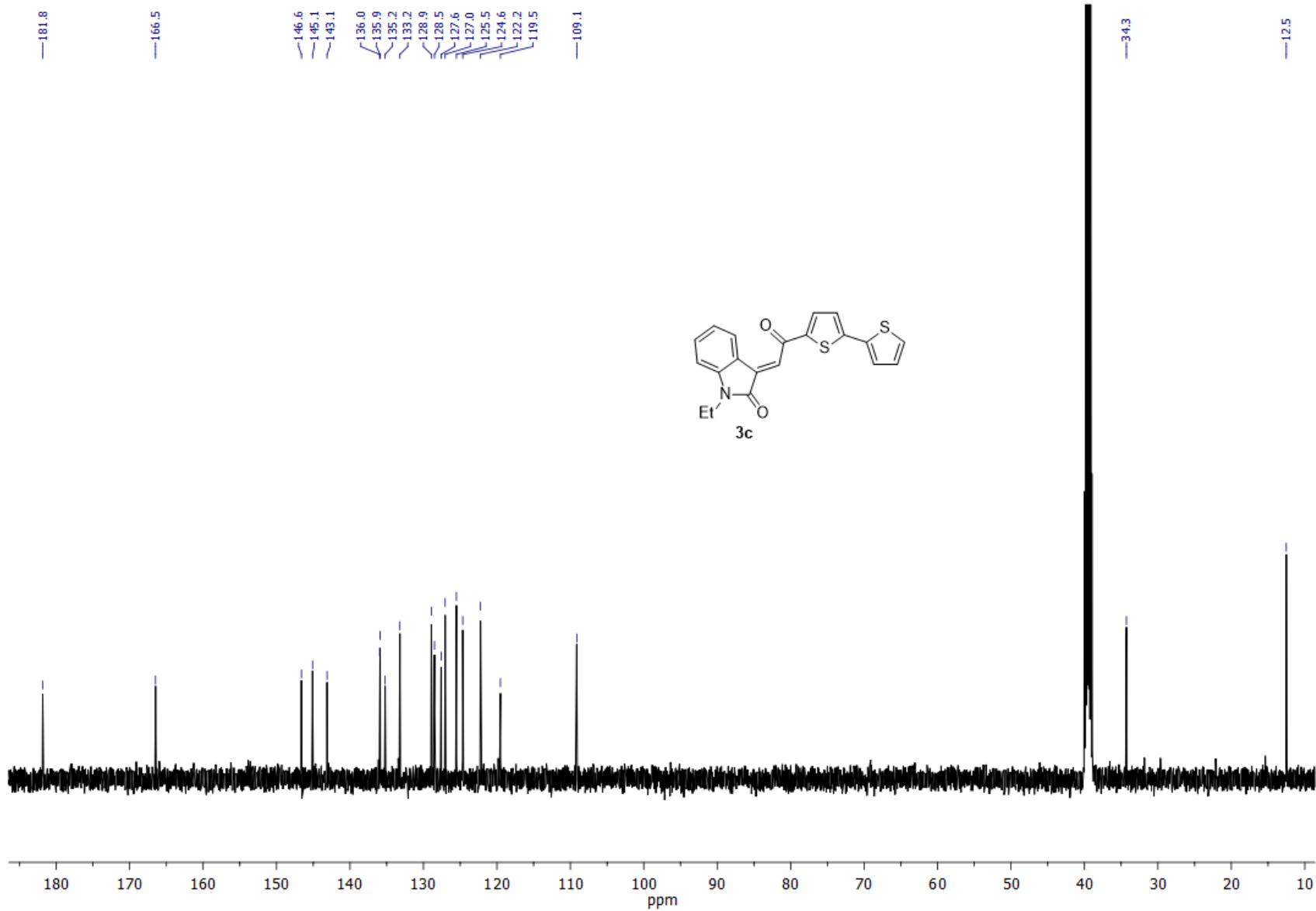
^1H NMR (solvent: $\text{DMSO-}d_6$)

S14

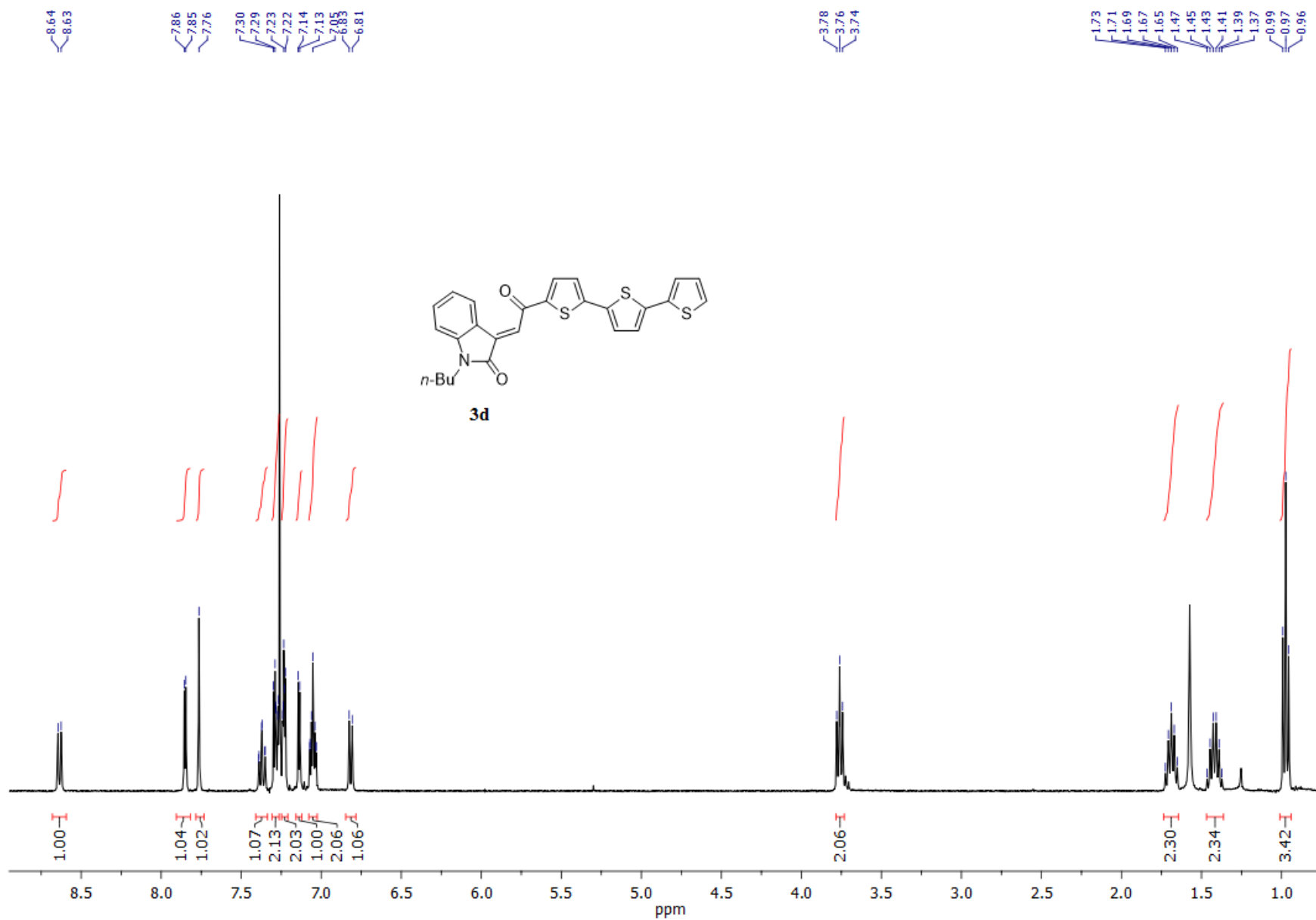
^{13}C NMR (solvent: $\text{DMSO-}d_6$)

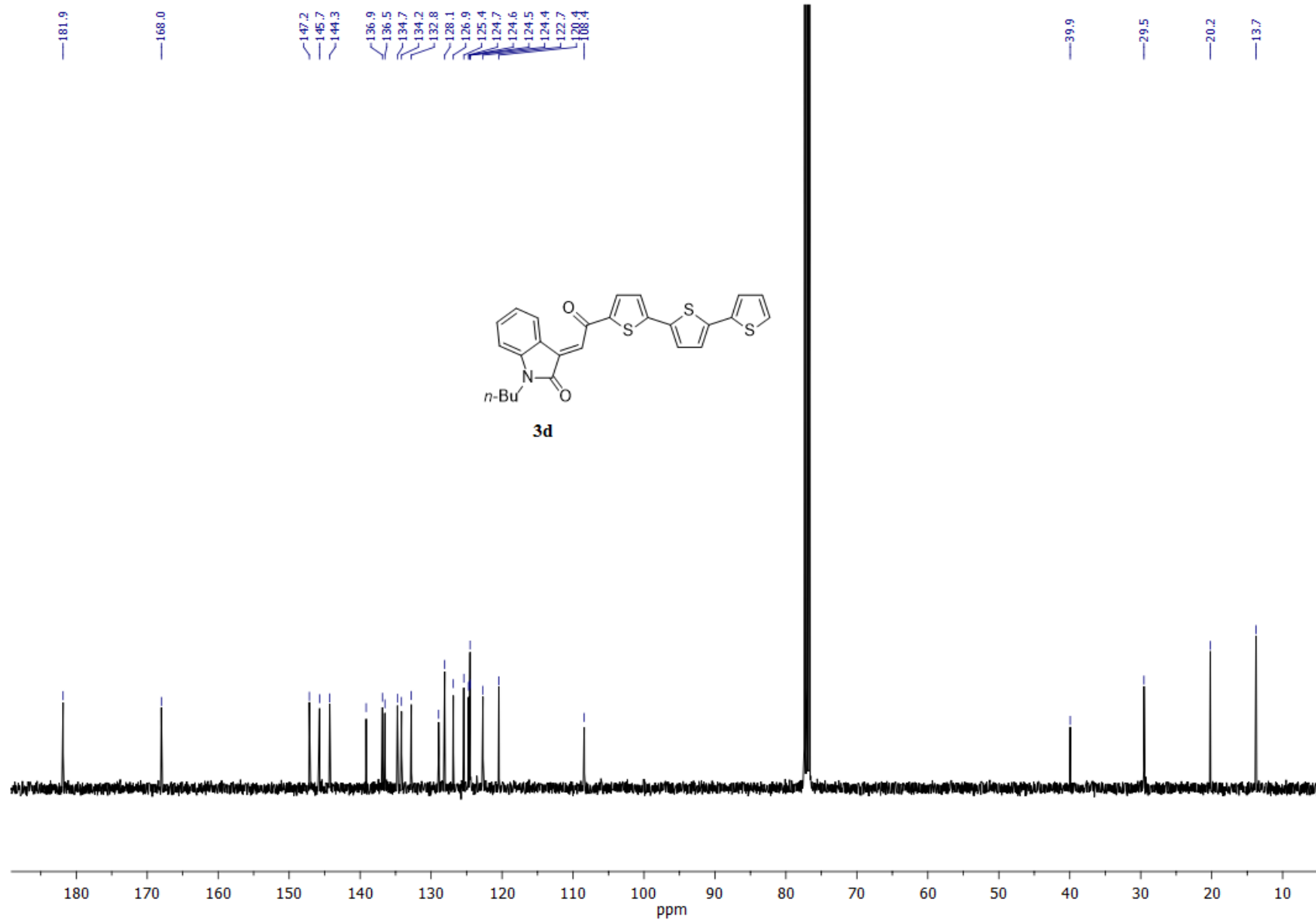
^1H NMR (solvent: $\text{DMSO-}d_6$)

S16

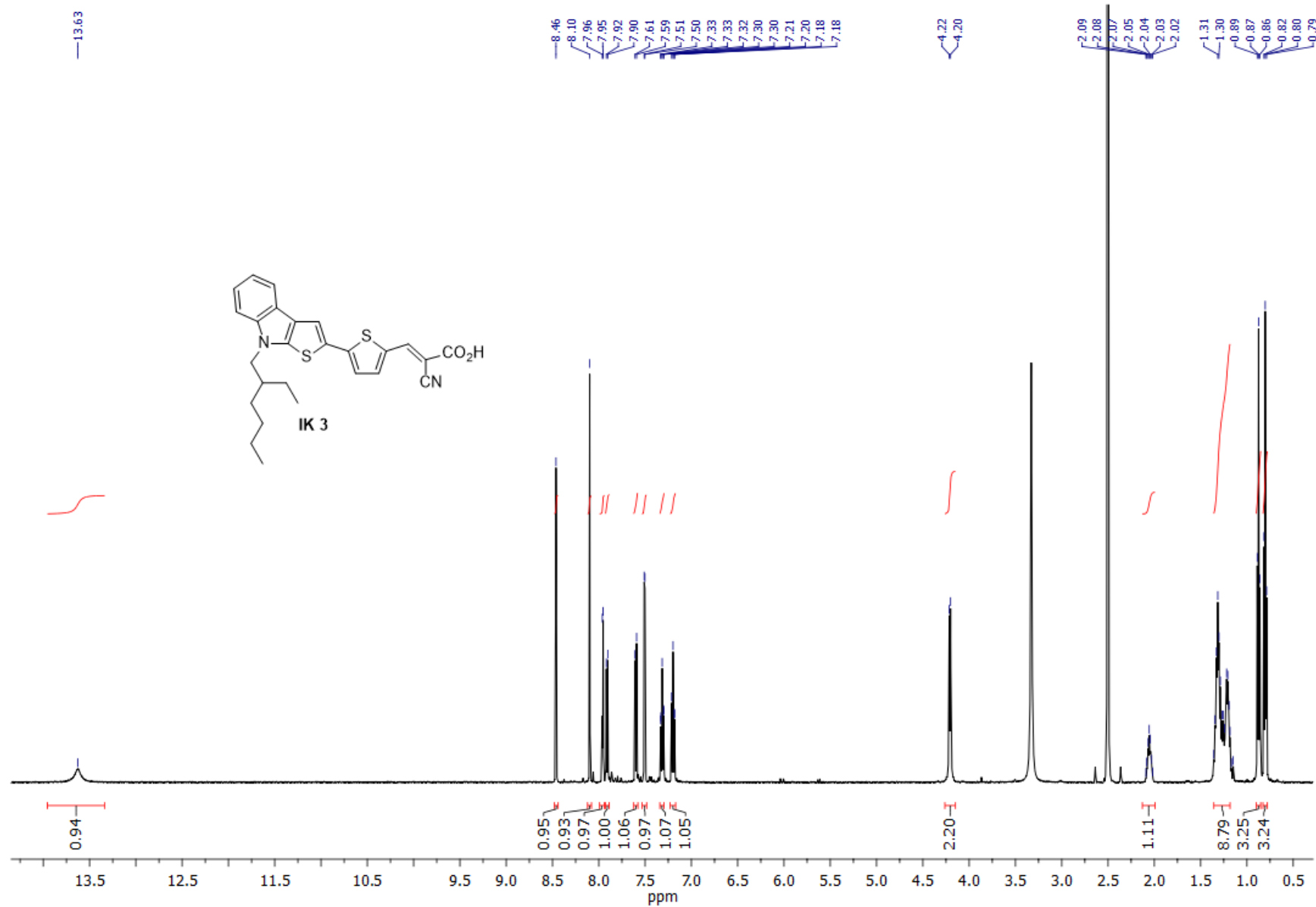
^{13}C NMR (solvent: $\text{DMSO-}d_6$)

S17

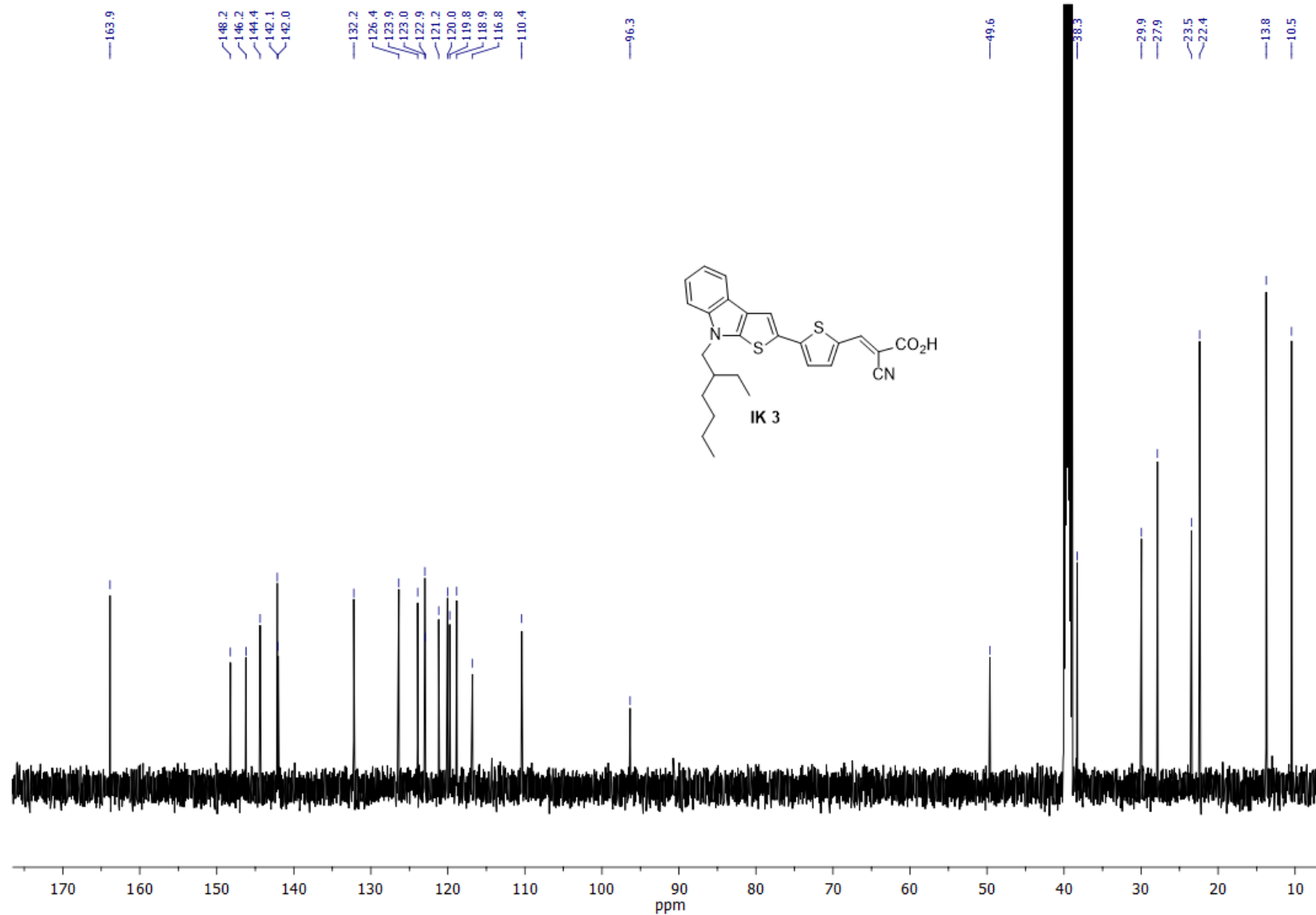
^1H NMR

^{13}C NMR

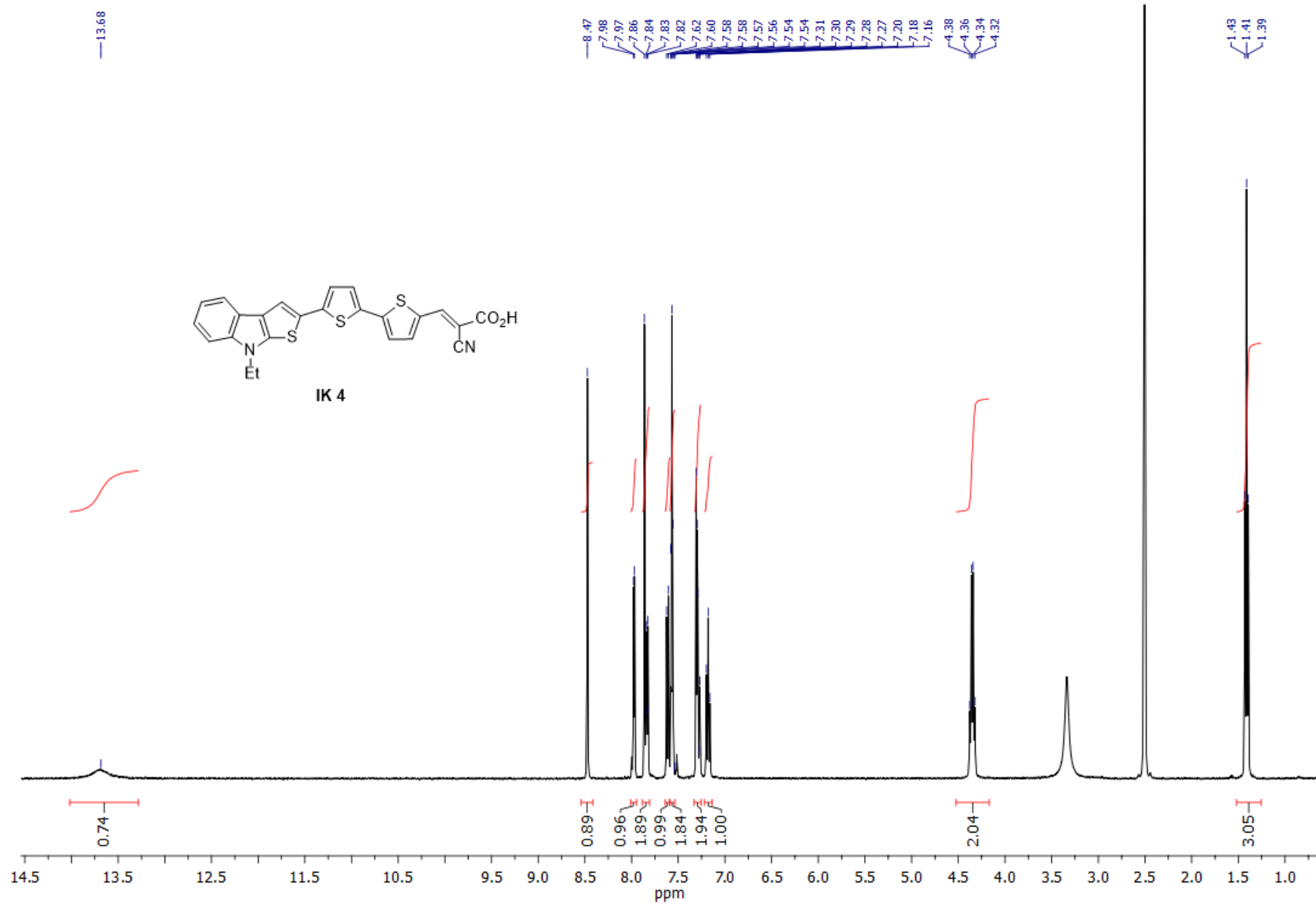
S19

^1H NMR (solvent: DMSO- d_6)

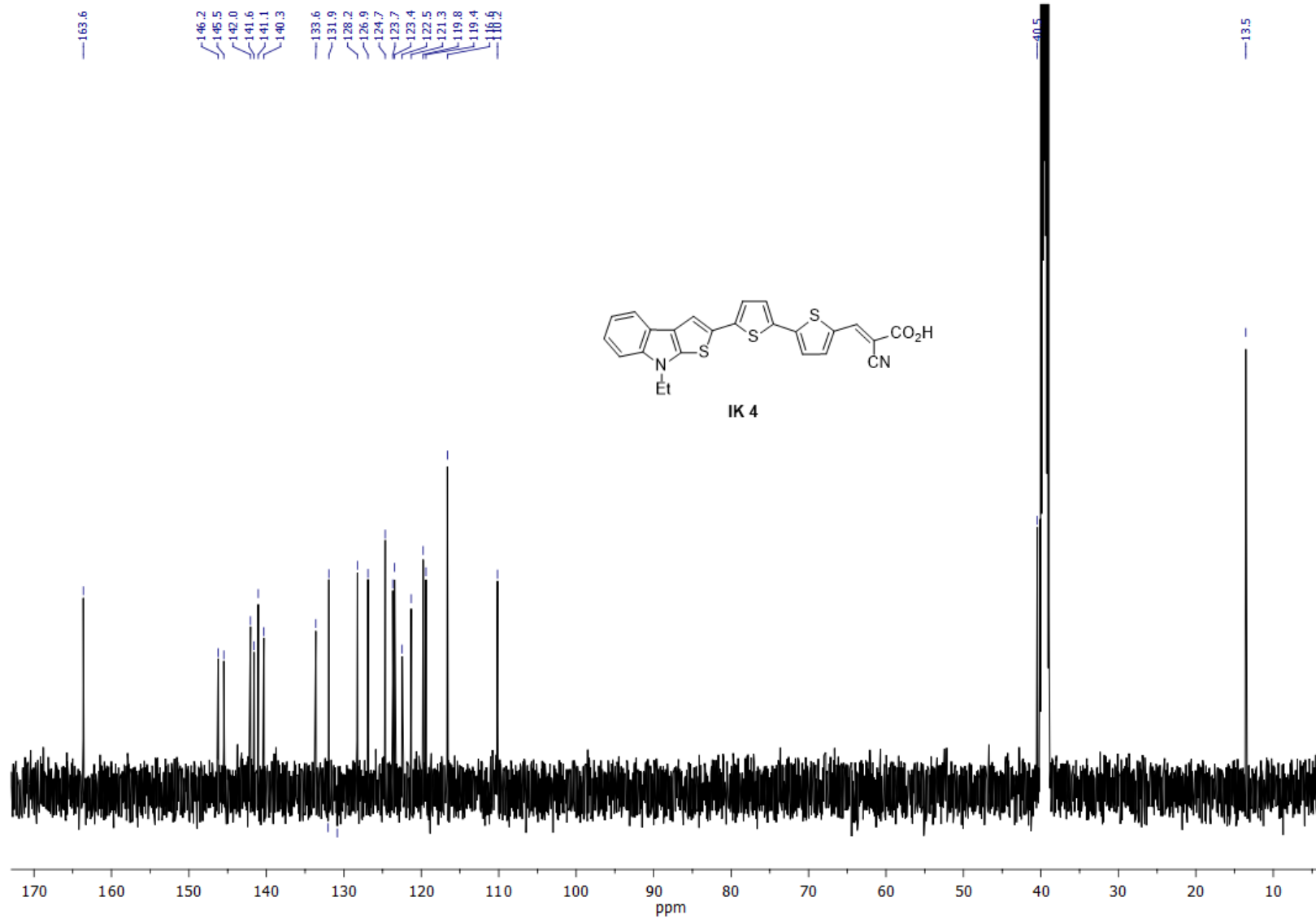
S20

^{13}C NMR (solvent: $\text{DMSO-}d_6$)

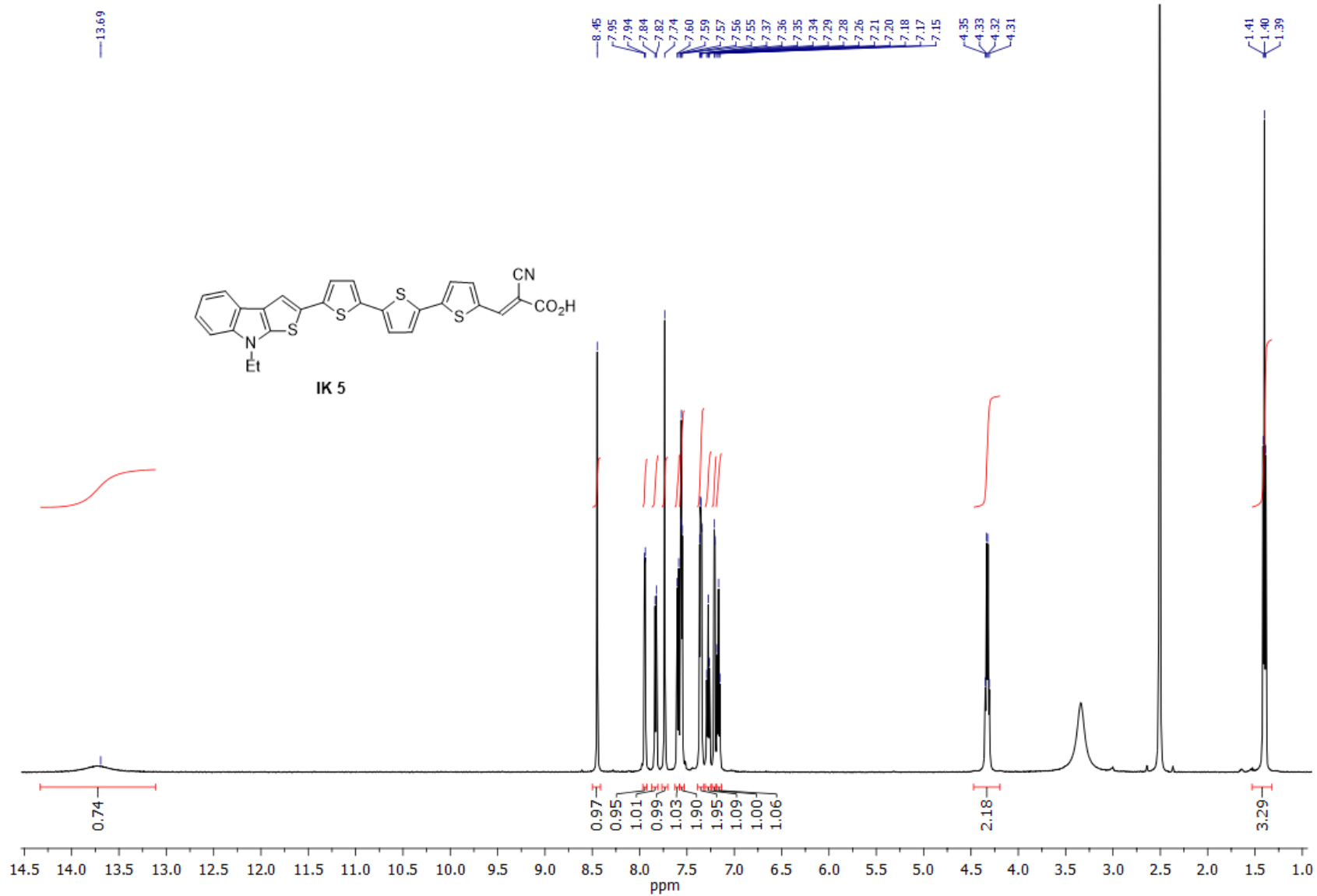
S21

^1H NMR (solvent: $\text{DMSO-}d_6$)

S22

^{13}C NMR (solvent: $\text{DMSO-}d_6$)

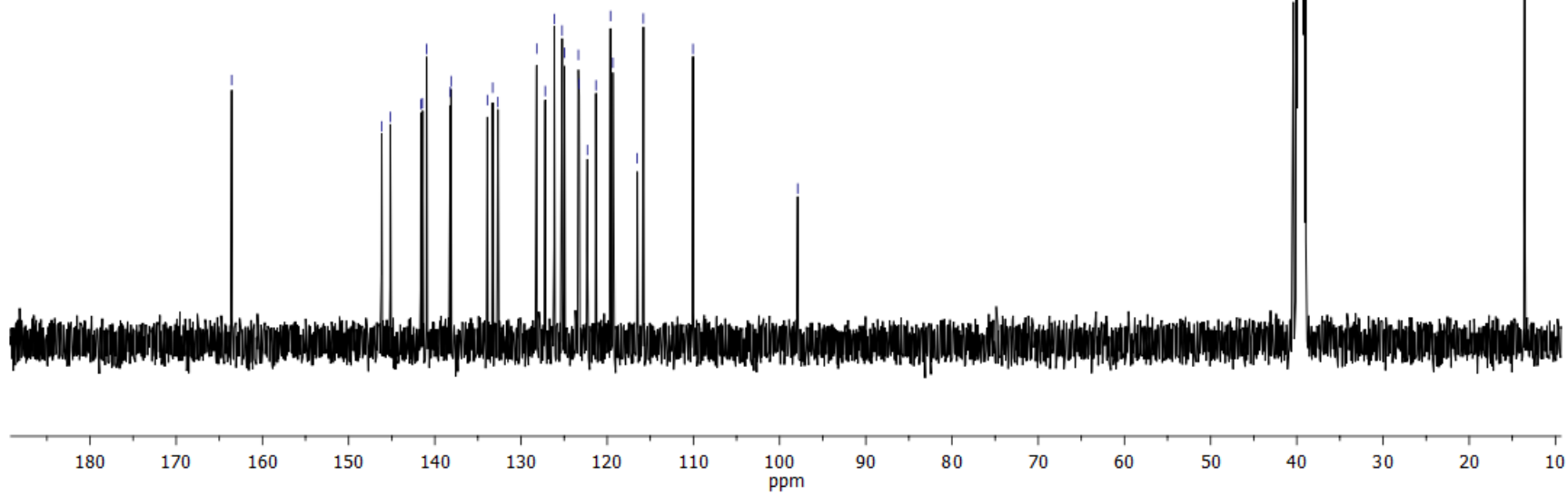
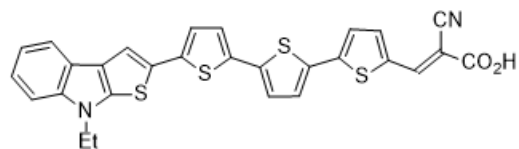
S23

^1H NMR (solvent: DMSO- d_6)

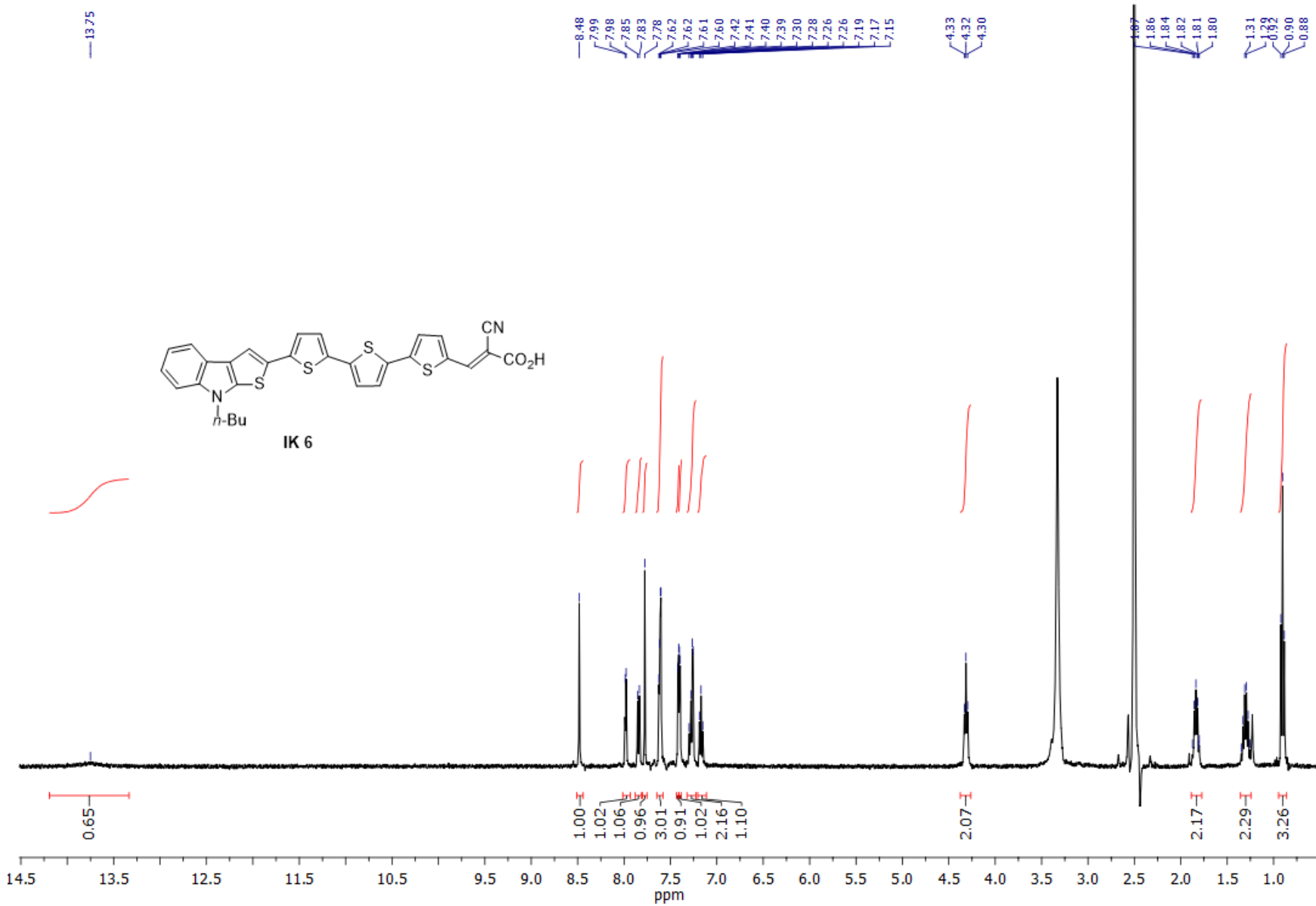
S24

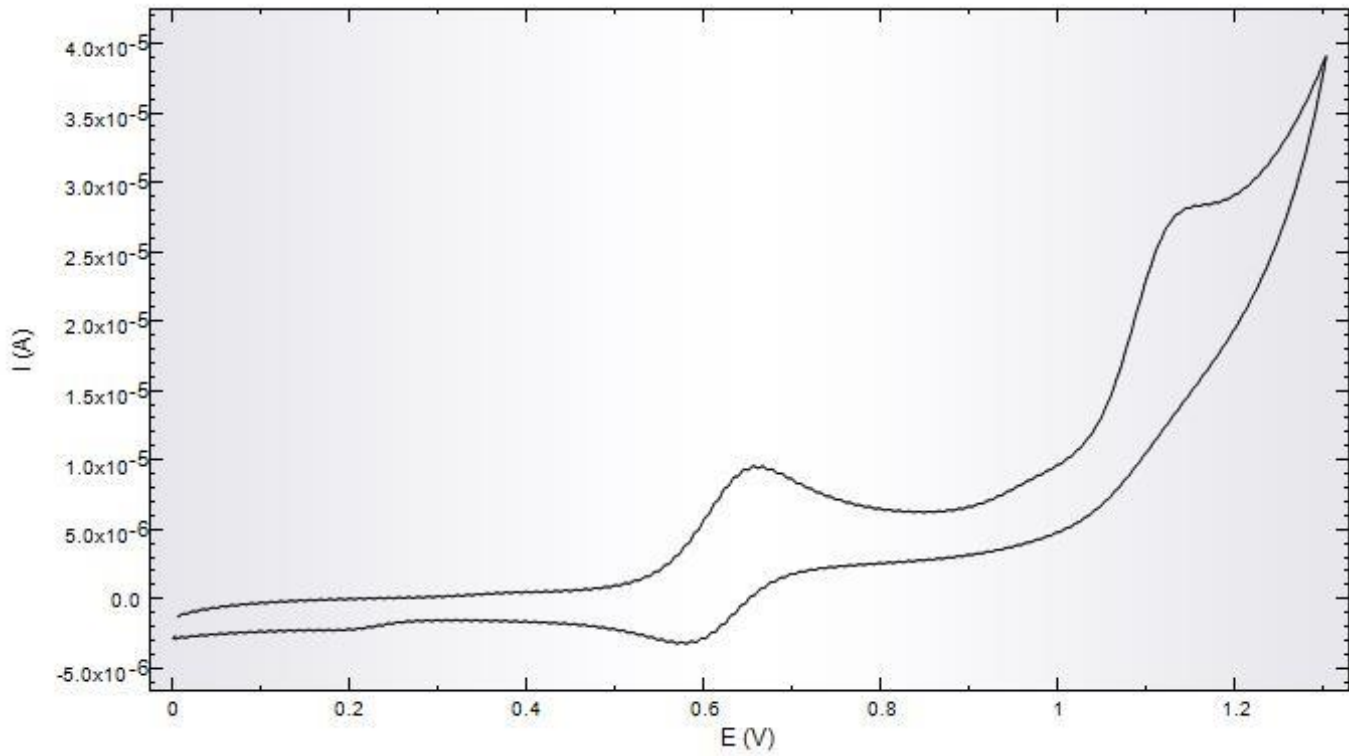
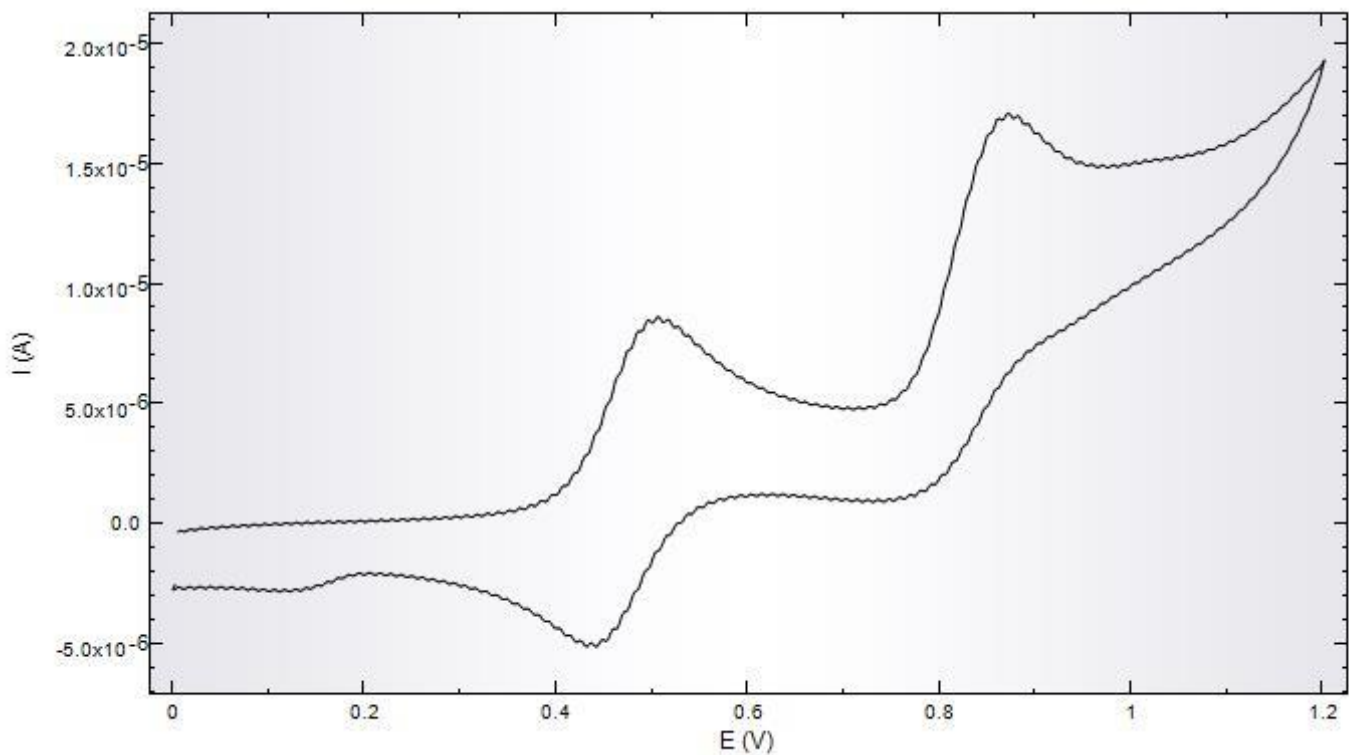
¹³C NMR (solvent: DMSO-d₆)

163.6
 146.2
 145.2
 141.6
 141.4
 140.9
 138.2
 138.1
 133.9
 133.3
 132.7
 128.2
 126.1
 125.2
 125.0
 123.4
 119.6
 119.3
 115.8
 97.9
 40.4
 13.5

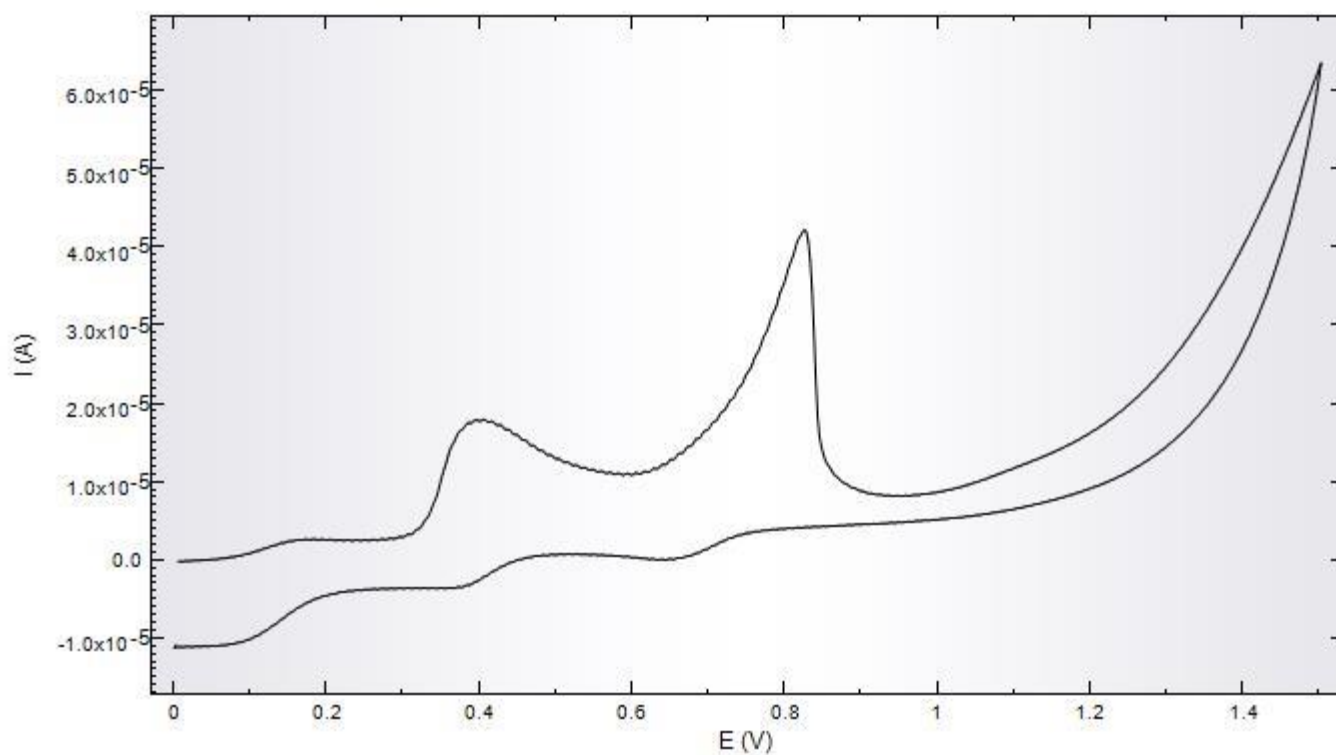


S25

^1H NMR (solvent: $\text{DMSO-}d_6$)

*Cyclic voltammetry (CV) curves of dyes IK 3-6***CV curve of dye IK 3****CV curve of dye IK 4**

S27

CV curve of dye IK 5**CV curve of dye IK 6**