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Supporting Information

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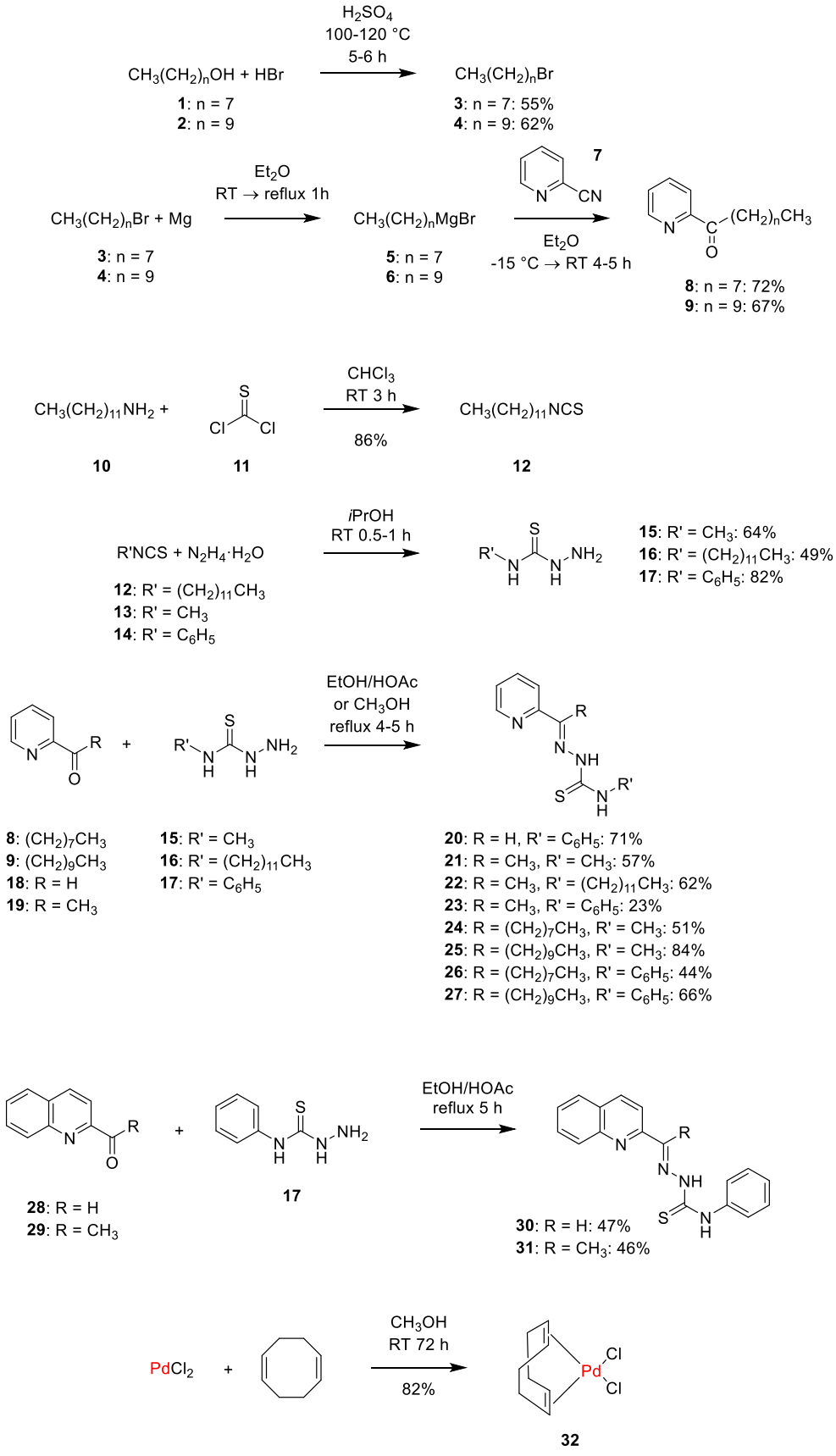
Ellina Schulz,[a] Viviane Mawamba,[b] Mario Löhr,[a] Carsten Hagemann,[a] Alexandra Friedrich,[b] and Ulrich Schatzschneider[b*]

[a] *Universitätsklinikum Würzburg, Neurochirurgische Klinik und Poliklinik, Tumorbiologisches Labor, Josef-Schneider-Str. 11, D-97070 Würzburg, Germany*

[b] *Institut für Anorganische Chemie, Julius-Maximilians-Universität Würzburg, Am Hubland, D-97074 Würzburg, Germany*

* Corresponding author: ulrich.schatzschneider@uni-wuerzburg.de;
Tel: +49 931 31 83636; Fax: +49 931 31 84605

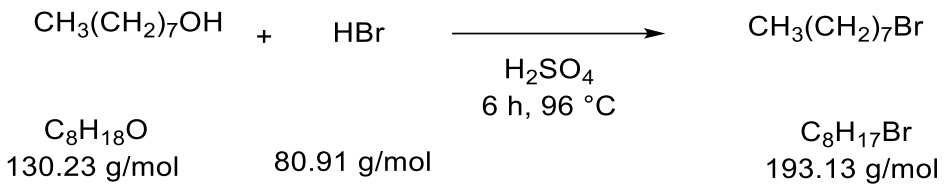
Supporting Information



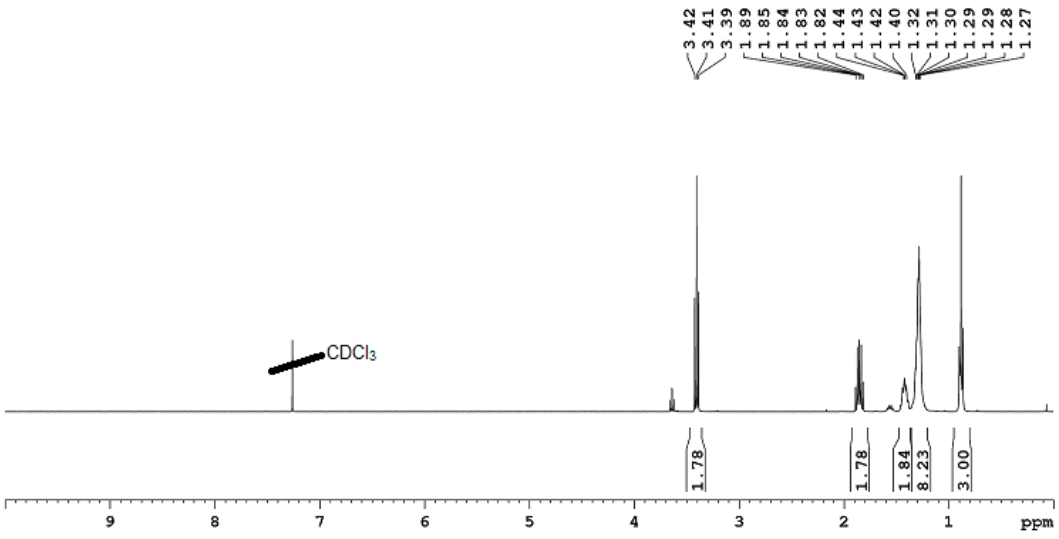
Scheme S1. Overview of the synthesis of ligand and metal complex precursors.

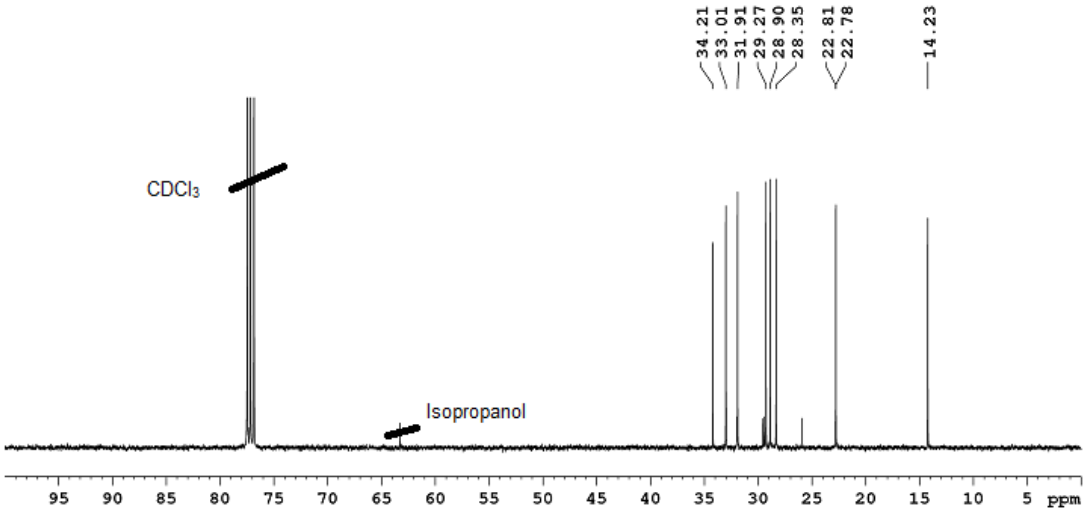
Synthesis of ligands and metal complex precursors

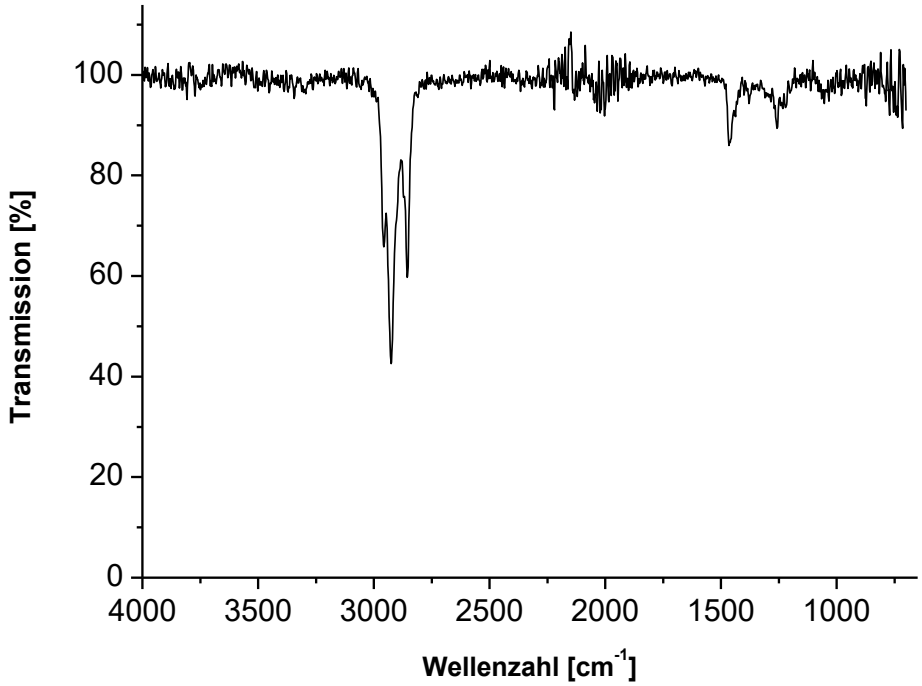
Synthesis of 1-bromooctane (3) [1]



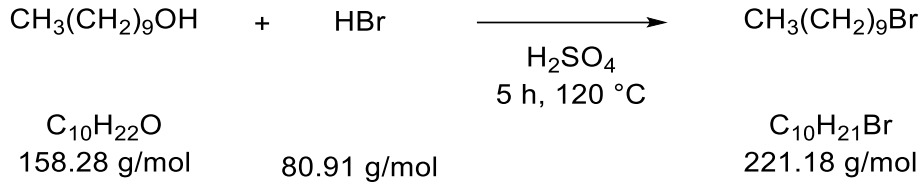
In a 250 mL round-bottom flask equipped with reflux condenser, 48% hydrobromic acid (60 g, 0.74 mol) and concentrated sulphuric acid (11 mL, 20.16 g, 0.21 mol) were dissolved in *n*-octanol (30 mL, 24.6 g, 0.19 mol). The clear solution was heated to 100 °C for 6 h. After cooling to room temperature, water (60 mL) was added, the organic phase separated, and extracted with 10% aqueous sodium hydrogen carbonate (90 mL). The aqueous phase was extracted with dichloromethane (2×20 mL), the combined organic phases dried over sodium sulphate, and the solvent removed under vacuum. The resulting yellow oil was distilled under vacuum and the main fraction with boiling point 81 °C (10^{-2} mbar) collected to obtain the product as a colourless liquid. Yield: 55% (20.35 g, 0.11 mol). **IR** (ATR): $\tilde{\nu}$ = 2957, 2925, 2855, 1465 cm^{-1}; **^{1}H NMR** (400.40 MHz, $CDCl_3$): 3.41 (t, 2H, ^3J = 6.9 Hz, CH_2Br), 1.85 (quin, 2H, ^3J = 6.7 Hz, $CH_2CH_2CH_2Br$), 1.42 (quin, 2H, ^3J = 7.5 Hz, $CH_2CH_2CH_2CH_2Br$), 1.32-1.27 (m, 8H, $(CH_2)_4CH_3$), 0.88 (t, 3H, ^3J = 7.1 Hz, CH_3) ppm; **^{13}C NMR** (100.68 MHz, $CDCl_3$): δ = 34.21 (CH_2Br), 33.02 (CH_2CH_2Br), 31.92 ($CH_2CH_2CH_3$), 29.27 ($CH_2(CH_2)_2CH_3$), 28.90 ($CH_2(CH_2)_3CH_3$), 28.35 ($CH_2(CH_2)_2Br$), 22.78 (CH_2CH_3), 14.23 (CH_3) ppm; **Elemental analysis** (%) calcd. for $C_8H_{17}Br$: C 49.75, H 9.87; found (%): C 51.76, H 9.29; due to trace amounts of *n*-octanol which remained after the distillation, no accurate CHN analysis results could be obtained.



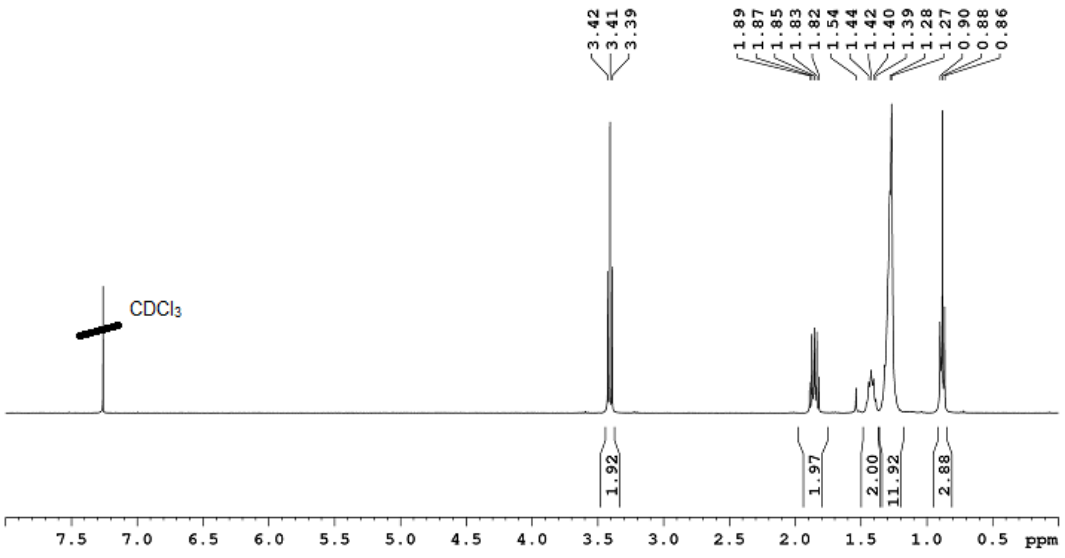

34.21
33.01
31.91
29.27
28.90
28.35
22.81
22.78
14.23
CDCl3
Isopropanol
95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 ppm

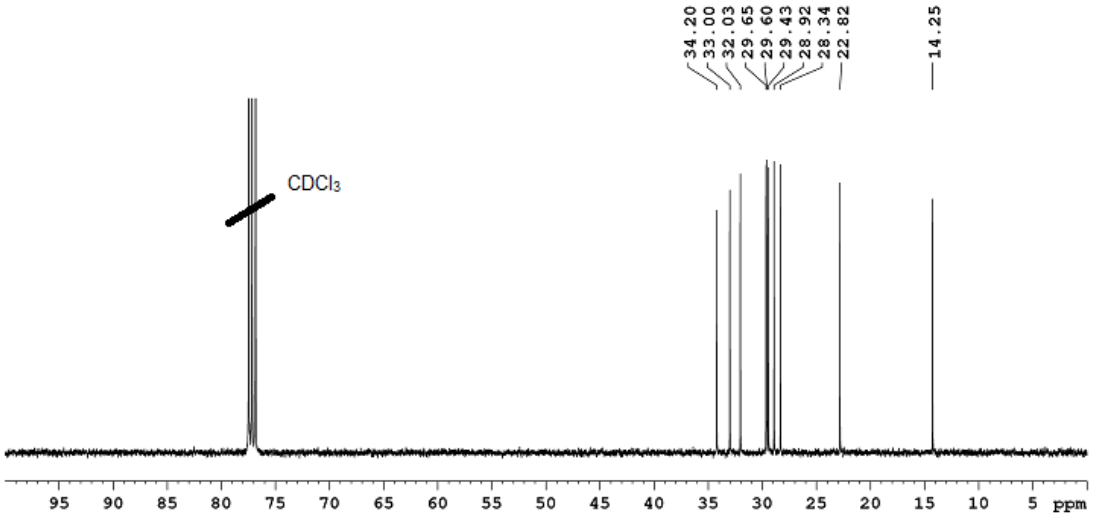

Transmission [%]
100
80
60
40
20
0
4000 3500 3000 2500 2000 1500 1000
Wellenzahl [cm-1]

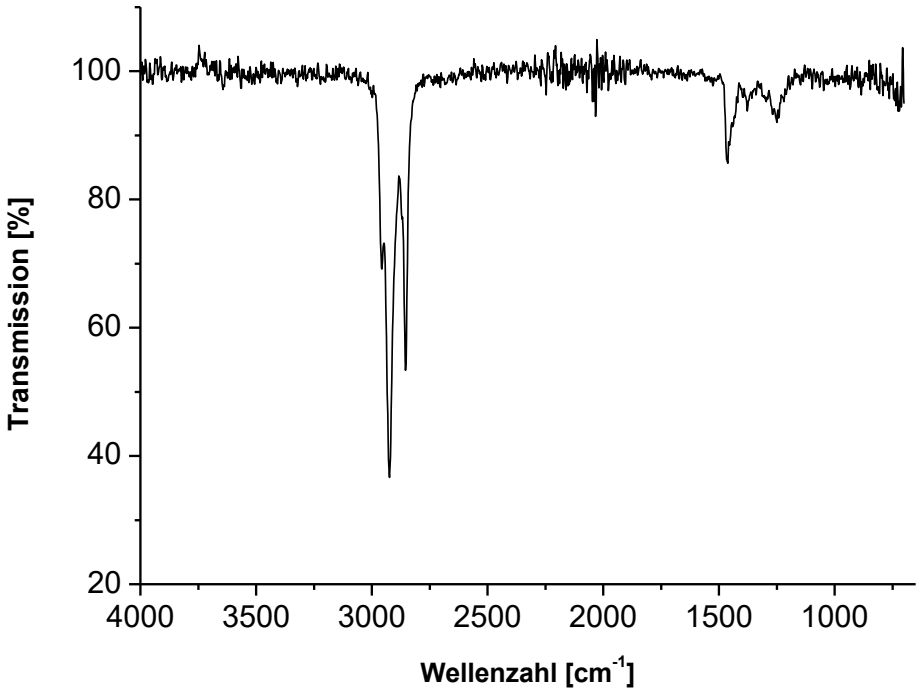
Synthesis of 1-bromodecane (4) [1]



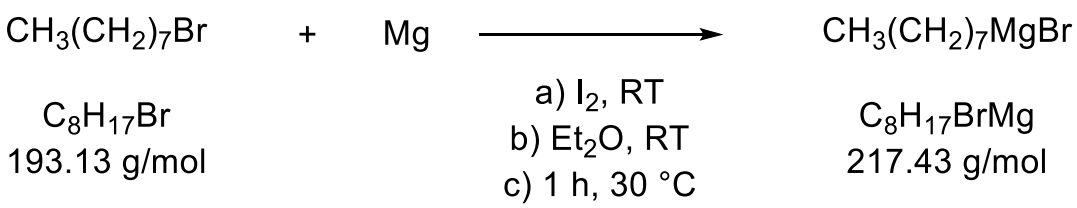
In a 250 mL round-bottom flask, 1-decanol (32 mL, 26.4 g, 0.17 mol) was cooled in ice and then, concentrated sulphuric acid (6 mL, 0.11 mol) and 48% hydrobromic acid (52.4 g, 0.64 mol) were added. The mixture was headed to reflux for 5 h and then carefully diluted with water (50 mL). The organic phase was separated and carefully washed with ice-cold concentrated sulphuric acid (2×10 mL) to removed remaining 1-decanol as well as other impurities. Then, it was washed with a mixture of methanol and water (2:1 *v*/*v*, 20 mL), water (2×10 mL), 5% aqueous sodium hydrogen carbonate (20 mL), and again water (10 mL). The organic phase was then dried over sodium sulphate and the solvent removed under vacuum. The resulting yellow liquid was distilled under vacuum (10^{-3} mbar) and the main fraction boiling at 91 °C collected to obtain the product as a colourless liquid. Yield: 62% (23.46 g, 0.11 mol). **IR** (ATR): $\tilde{\boldsymbol{\nu}}$ = 2957, 2934, 2884, 1466 cm^{-1}; **^{1}H NMR** (400.40 MHz, $CDCl_3$): δ = 3.41 (t, 2H, ^3J = 6.9 Hz, C*H*$_2$Br), 1.85 (quin, 2H, ^3J = 7.0 Hz, CH$_2$C*H*$_2$CH$_2$Br), 1.42 (quin, 2H, ^3J = 7.4 Hz, CH$_2$C*H*$_2$CH$_2$CH$_2$Br), 1.28-1.27 (m, 12H, (C*H*$_2$)$_6$CH$_3$), 0.88 (t, 3H, ^3J = 7.0 Hz, C*H*$_3$) ppm; **^{13}C NMR** (100.68 MHz, $CDCl_3$): δ = 34.20 (*C*H$_2$Br), 33.00 (*C*H$_2$CH$_2$Br), 32.03 (CH$_3$CH$_2$*C*H$_2$), 29.65 (*C*H$_2$), 29.60 (*C*H$_2$), 29.44 (*C*H$_2$), 28.92 (*C*H$_2$(CH$_2$)$_2$CH$_2$Br), 28.34 (*C*H$_2$CH$_2$CH$_2$Br), 22.82 (CH$_3$*C*H$_2$), 14.25 (*C*H$_3$) ppm; **Elemental analysis** (%) calcd. for $C_{10}H_{21}Br$: C 54.30, H 9.57; found (%):C 54.21, H 9.61.




34.20
33.00
32.03
29.65
29.60
29.43
28.92
28.34
22.82
14.25
CDCl3
95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 ppm

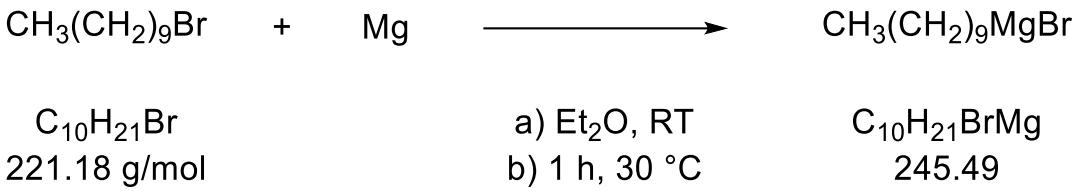

Transmission [%]
100
80
60
40
20
4000 3500 3000 2500 2000 1500 1000
Wellenzahl [cm-1]

Synthesis of *n*-octylmagnesium bromide (5) [2]



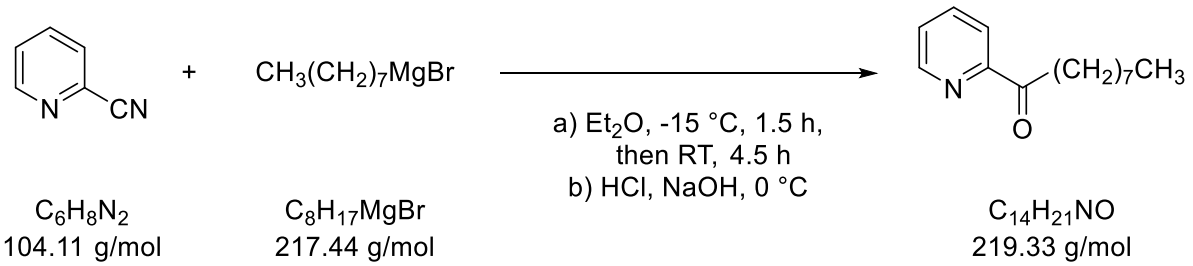
In a three-neck round-bottom flask equipped with a dropping funnel, anhydrous magnesium chips (1.34 g, 55.0 mmol) were mixed with a few crystals of iodine and kept under argon overnight. The, anhydrous and peroxide-free diethyl ether (10 mL) was added. The dropping funnel was charged with a solution of 1-bromooctane (8.75 mL, 9.71 g, 50 .3 mmol) in diethyl ether (10 mL) and a few drops carefully added to the magnesium chips in diethyl ether. When the solution started to boil, dropwise addition was slowly continued. After complete addition, the reaction mixture was heated to reflux for 1 h and then a sample taken and titrated with 1 M oxalic acid (2 mL) using phenolphthalein as an indicator. The resulting approx. 2 M solution of the Grignard reactant was then directly used in the next step.

Synthesis of *n*-decylmagnesium bromide (6) [2]



In a three-neck round-bottom flask equipped with a dropping funnel, anhydrous magnesium chips (521 mg, 21.4 mmol) were layered with anhydrous peroxide-free diethyl ether (15 mL). Then, the dropping funnel was charged with a solution of 1-bromodecane (5 mL, 5.35 g, 24.2 mmol) in diethyl ether (10 mL). A small amount of this solution (approx. 0.7 mL) was added to the magnesium chips until the diethyl ether started to boil. Then, the remaining 1-bromodecane was added dropwise and the reaction mixture heated to reflux for 1 h. The resulting solution of the Grignard reactant was then directly used in the next step.

Synthesis of 1-(pyridin-2-yl)nonan-1-one (8) [2]

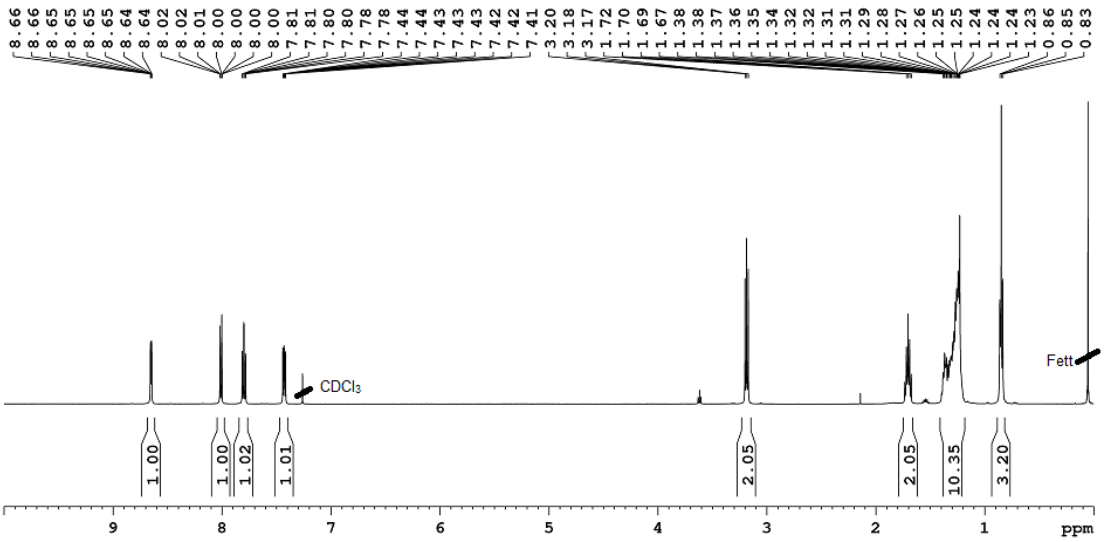


$C_6H_8N_2$ 104.11 g/mol

$C_8H_{17}MgBr$ 217.44 g/mol

$C_{14}H_{21}NO$ 219.33 g/mol

In a three-neck round-bottom flask equipped with a dropping funnel, 2-cyanopyridine (2.08 g, 20 mmol) was dissolved in anhydrous diethyl ether (40 mL) under argon and cooled to -15 °C with a mixture of sodium chloride and ice. Then, 2 M *n*-octylmagnesium bromide (20 mL, 40 mmol) was slowly added. The solution turned dark and stirring was continued at -15 °C for 1.5 h. The reaction was then warmed to room temperature over 4.5 h and quenched by added of 2 M hydrochloric acid (15 mL). After stirring at 0 °C for 15 min, the resulting yellow solution was adjusted with 2 M aqueous sodium hydroxide (approx. 15 mL) to pH 8–9. The organic phase was then separated, dried over sodium sulphate, and the solvent removed under vacuum. The resulting solid material was purified by column chromatography on silica using a mixture of petrol ether und ethyl acetate (9:1 *v*/*v*) as the eluent. After removal of the solvent under vacuum, the product was obtained as a yellow oil. Yield: 72% (3.16 g, 14.4 mmol). **IR** (ATR): $\tilde{\boldsymbol{\nu}}$ = 2961, 2925, 2854, 1703 (C=O), 1697, 1258, 1087, 1008, 795, 788 cm^{-1}; **^{1}H NMR** (500.13 MHz, $CDCl_3$): δ = 8.65 (ddd, 1H, ^3J = 4.8 Hz, ^4J = 1.7 Hz, ^5J = 0.9 Hz, H6), 8.01 (td, 1H, ^3J = 7.8 Hz, ^4J = 1.2 Hz, H3), 7.80 (dt, 1H, ^3J = 7.7 Hz, ^4J = 1.7 Hz, H4), 7.43 (ddd, 1H, ^3J = 7.6 Hz, ^3J = 4.8 Hz, ^4J = 1.3 Hz, H5), 3.18 (t, 2H, ^3J = 7.3 Hz, C(C*H*$_2$)=O), 1.70 (quin, 2H, ^3J = 7.3 Hz, C(C*H*$_2$CH$_2$)O), 1.38-1.21 (m, 10H, CH$_3$C*H*$_2$), 0.85 (t, 3H, ^3J = 7.0 Hz, C*H*$_3$) ppm; **^{13}C NMR** (125.76 MHz, $CDCl_3$): δ = 202.31 (*C*=O), 153.68 (C2), 148.99 (C6), 136.94 (C4), 127.04 (C5), 121.85 (C3), 37.82 (C(*C*H$_2$)O), 31.96 (*C*H$_2$CH$_2$CH$_3$), 29.80 (CH$_3$(CH$_2$)$_2$*C*H$_2$) 29.56 (CH$_3$(CH$_2$)$_3$*C*H$_2$), 29.47 (CH$_3$(CH$_2$)$_4$*C*H$_2$), 29.29 (CH$_3$(CH$_2$)$_5$*C*H$_2$), 24.10 (CH$_3$(CH$_2$)$_6$*C*H$_2$), 22.76 (CH$_3$*C*H$_2$) 14.20 (*C*H$_3$) ppm; **MS** (ASAP): *m*/*z* = 220.1691 $[M+H]^+$; **Elemental analysis** (%) calcd. for $C_{14}H_{21}NO$: C 76.67, H 9.65, N 6.39; found (%): C 76.57, H 9.94, N 6.36.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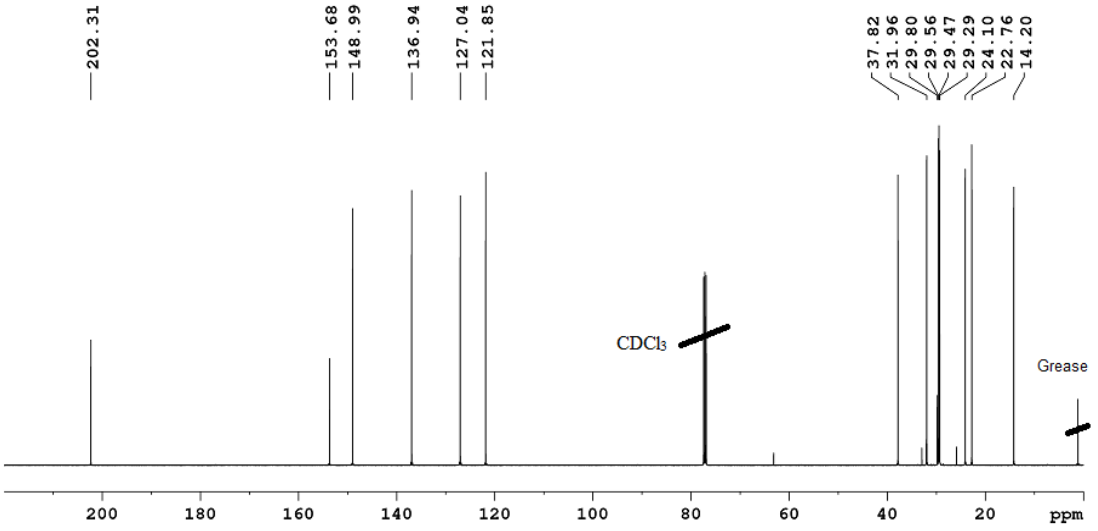
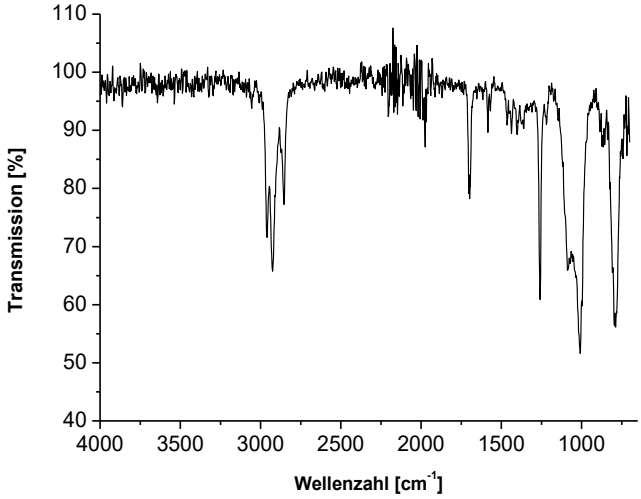
CDCl3
Fett
1.00 1.00 1.02 1.01 2.05 2.05 10.35 3.20
9 8 7 6 5 4 3 2 1 ppm


202.31
153.68 148.99 136.94 127.04 121.85
37.82 31.96 29.80 29.56 29.47 29.29 24.10 22.76 14.20
CDCl3
Grease
200 180 160 140 120 100 80 60 40 20 ppm


Transmission [%]
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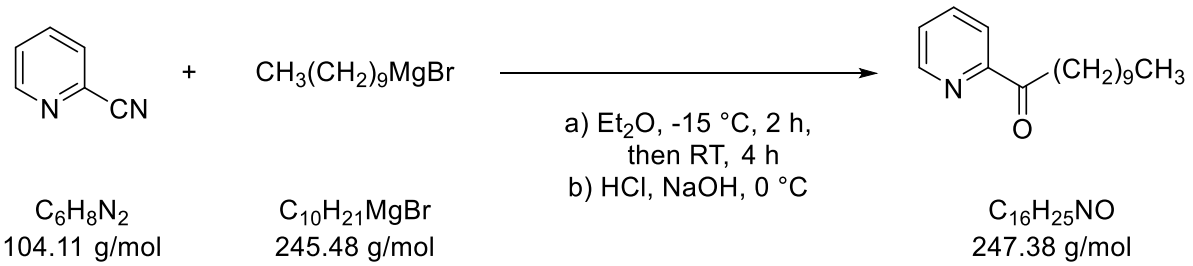
4000 3500 3000 2500 2000 1500 1000
Wellenzahl [cm-1]

Synthesis of 1-(pyridin-2-yl)undecan-1-one (9) [2]

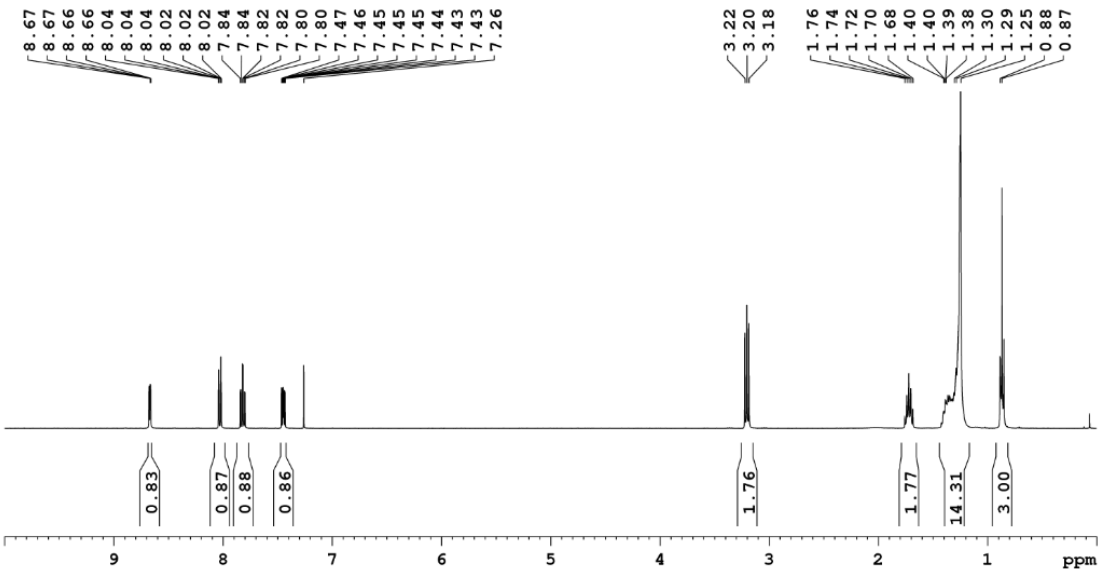


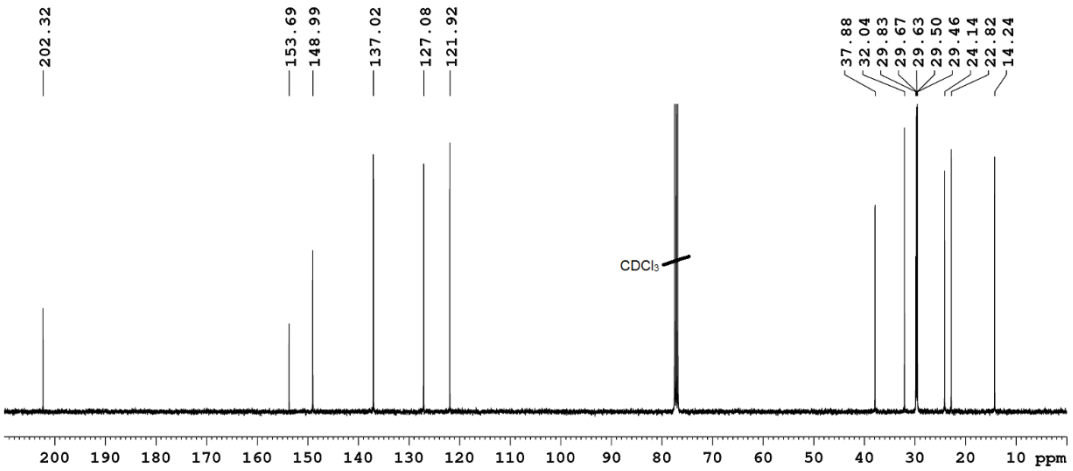
$C_6H_8N_2$ 104.11 g/mol

$C_{10}H_{21}MgBr$ 245.48 g/mol

$C_{16}H_{25}NO$ 247.38 g/mol

In a three-neck round-bottom flask equipped with a dropping funnel, 2-cyanopyridine (2.08 g, 20 mmol) was dissolved in anhydrous diethyl ether (40 mL) under argon and cooled to -15 °C with a mixture of sodium chloride and ice. Then, *n*-decylmagnesium bromide (15 mL, 30 mmol) was slowly added. The resulting yellow solution was stirred at -15 °C for 2 h and then warmed to room temperature over 4 h. After quenching with 2 M hydrochloric acid (11 mL), stirring was continued at 0 °C for 15 min. Then, 2 M aqueous sodium hydroxide (10 mL) was added to adjust the mixture to pH 8–9. The organic phase was separated, dried over sodium sulphate, and the solvent removed under vacuum. The resulting solid material was purified by column chromatography on silica using a mixture of petrol ether und ethyl acetate (9:1 *v*/*v*) as the eluent. After removal of the solvent under vacuum, the product was obtained as a yellow oil. Yield: 67% (3.25 g, 13.13 mmol). **IR** (ATR): $\tilde{\boldsymbol{\nu}}$ = 3250, 2923, 2853, 1703 (C=O), 1693, 1584, 1463, 1436, 995 cm^{-1} ; **^{1}H NMR** (400.40 MHz, $CDCl_3$): δ = 8.68 (ddd, 1H, ^3J = 4.8 Hz, ^4J = 1.7 Hz, ^5J = 0.9 Hz, H6), 8.03 (td, 1H, ^3J = 7.8 Hz, ^4J = 1.7 Hz, H3), 7.84 (dt, 1H, ^3J = 7.7 Hz, ^4J = 1.7 Hz, H4), 7.47 (ddd, 1H, ^3J = 7.6 Hz, ^3J = 4.8 Hz, ^4J = 1.3 Hz, H5), 3.21 (t, 2H, ^3J = 7.5 Hz, CH_2CH_2CO), 1.72 (quin, 2H, ^3J = 7.4 Hz, CH_2CH_2CO), 1.41-1.25 (m, 14H, $(CH_2)_7CH_3$), 0.85 (t, 3H, ^3J = 6.9 Hz, CH_3) ppm; **^{13}C NMR** (100.68 MHz, $CDCl_3$): δ = 202.32 ($C(CH_2)$=O), 153.69 (C2), 148.99 (C6), 137.02 (C4), 127.08 (C5), 121.92 (C3), 37.88 ($C(CH_2)$=O), 32.04 ($CH_2CH_2CH_3$), 29.83 (CH_2), 29.80 (CH_2), 29.67 (CH_2), 29.63 (CH_2), 29.50 (CH_2), 28.46 (CH_2), 24.14 ($C(CH_2CH_2)$=O), 22.82 (CH_3CH_2) 14.24 (CH_3) ppm; **Elemental analysis** (%) calcd. for $C_{16}H_{25}NO$: C 77.68, H 10.19, N 5.66; found (%): C 77.82, H 10.38, N 5.62.


8.67
8.67
8.66
8.66
8.04
8.04
8.02
8.02
8.02
7.84
7.84
7.82
7.82
7.80
7.80
7.47
7.46
7.45
7.45
7.45
7.44
7.43
7.43
7.26
3.22
3.20
3.18
1.76
1.74
1.72
1.70
1.68
1.40
1.40
1.39
1.38
1.30
1.29
1.25
0.88
0.87
0.83
0.87
0.88
0.86
1.76
1.77
14.31
3.00
9
8
7
6
5
4
3
2
1
ppm


202.32
153.69
148.99
137.02
127.08
121.92
37.88
32.04
29.83
29.67
29.63
29.50
29.46
24.14
22.82
14.24
CDCl3
200
190
180
170
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150
140
130
120
110
100
90
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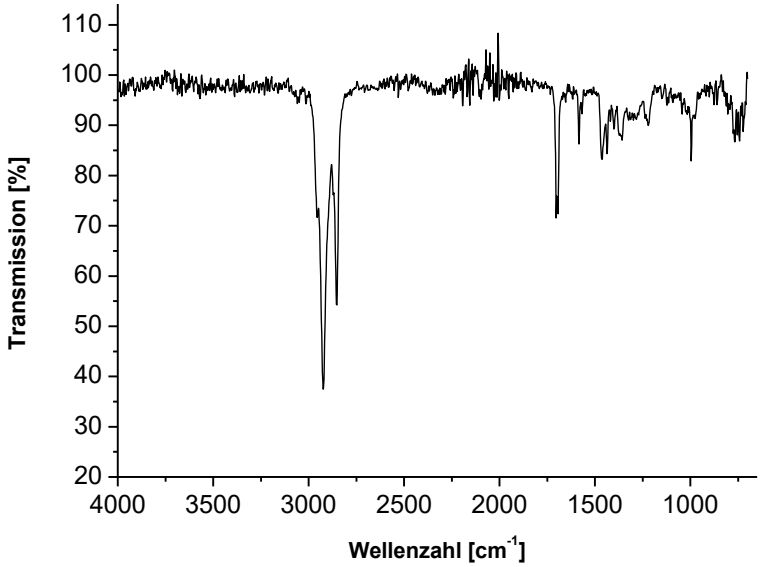
70
60
50
40
30
20
10
ppm


Transmission [%]
110
100
90
80
70
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50
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4000
3500
3000
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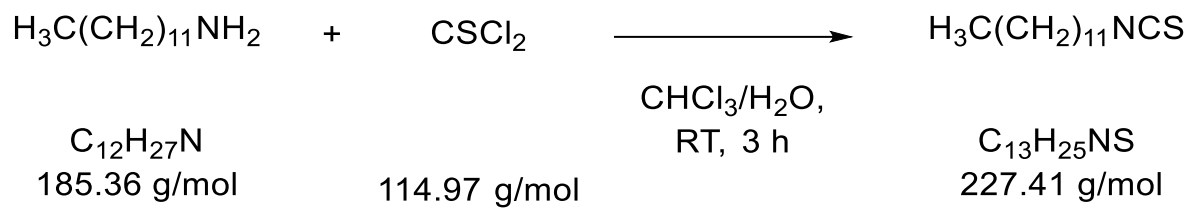
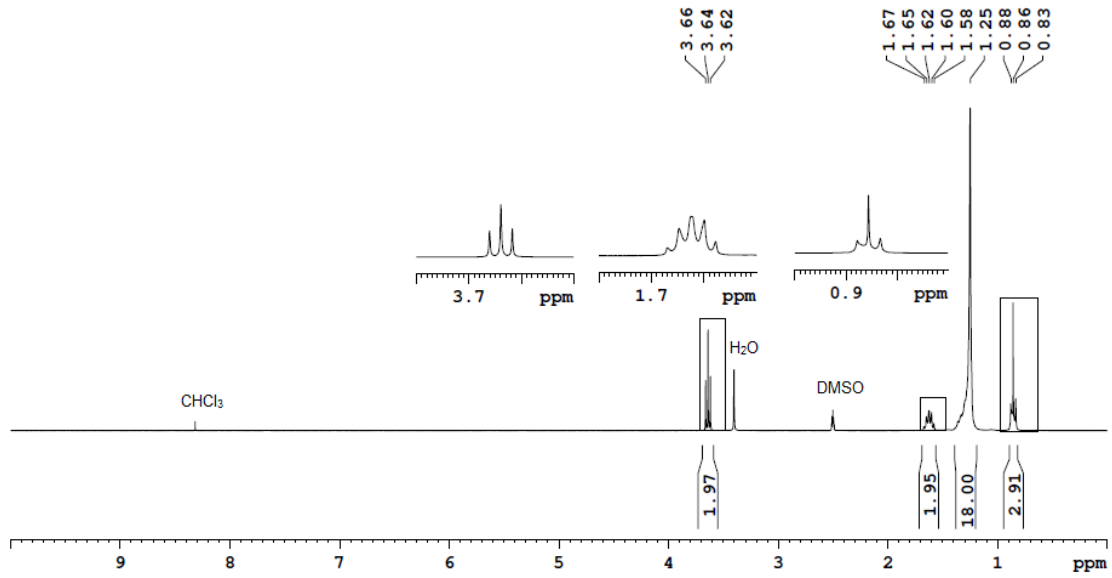
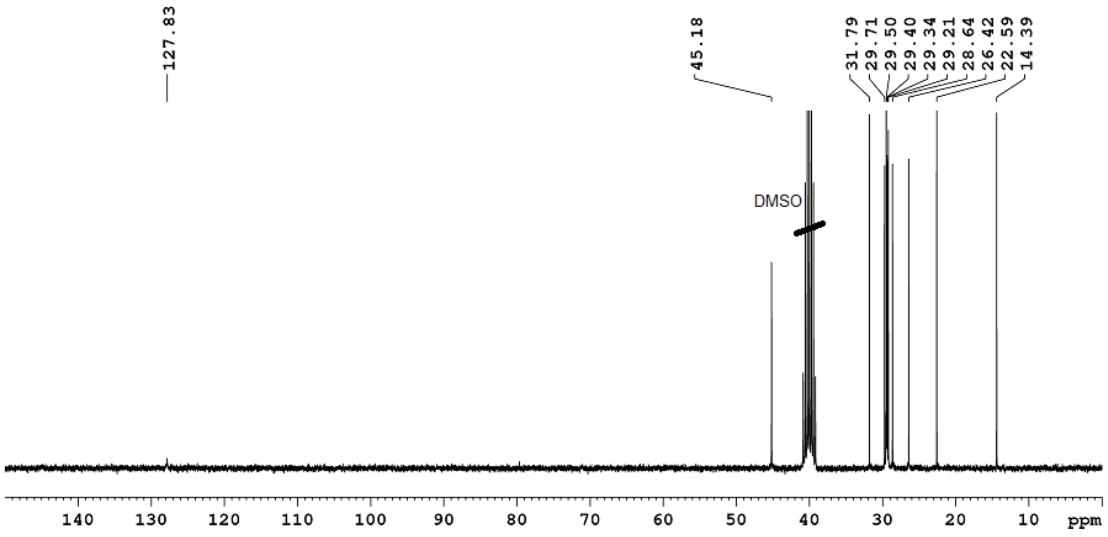
2000
1500
1000
Wellenzahl [cm-1]

Synthesis of *n*-dodecyl isothiocyanate (12)[3]

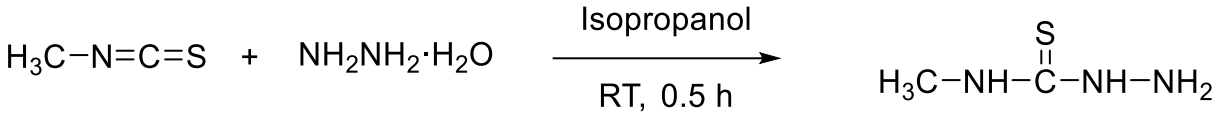


Attention!!! Thiophosgene is a malodorous, highly volatile, and extremely toxic liquid. It should only be handeled in a well-ventilated fume hood by experienced personnel. Particular care has to be taken when opening the original bottle due to significant overpressure inside. In a 250 mL round-bottom flask equipped with a reflux condenser, thiophosgene (0.7 mL, 1.04 g, 9 mmol) was dissolved in chloroform (15 mL). Then, a solution of dodecylamine (1.85 g, 10 mmol) in chloroform (10 mL) was slowly added via syringe. After complete addition, water (5 mL) was slowly added, followed by 1 M aqueous sodium hydroxide (24 mL). Stirring at room temperature was continued for 3 h and then, chloroform (10 mL) and *n*-pentane (20 mL) added. The organic phase was separated and the aqueous phase extracted with chloroform (2×25 mL) and *n*-pentane (2×25 mL). The combined organic phases were dried over sodium sulphate and the solvent removed under vacuum to obtain the product as a yellow-orange oil. Yield: 86% (1.96 g, 8.6 mmol). **^{1}H NMR** (500.13 MHz, DMSO-d_6): δ = 3.64 (t, 2H, ^3J = 6.5 Hz, CH_2N), 1.62 (quin, 2H, ^3J = 7.0 Hz, $CH_2CH_2CH_2NCS$), 1.25 (s, 18H, $(CH_2)_9CH_3$), 0.86 (t, 3H, ^3J = 6.7 Hz, CH_2CH_3) ppm; **^{13}C NMR** (125.76 MHz, DMSO-d_6): δ = 127.82 (*C*=S), 45.18 (CH_2NCS), 31.77 ($CH_2CH_2CH_3$), 29.58 (CH_2CH_2NCS), 29.54 (CH_2), 29.50 (CH_2), 29.49 (CH_2), 29.31 (CH_2), 29.19 (CH_2), 26.82 ($CH_2CH_2CH_2NCS$), 22.57 (CH_2CH_3), 14.43 (CH_3) ppm; **Elemental analysis** (%) calcd. for $C_{13}H_{25}NS$: C 68.66, H 11.08, N 6.16, S 14.10; found (%): C 68.95, H 10.62, N 6.93, S 13.88.


3.66
3.64
3.62
1.67
1.65
1.62
1.60
1.58
1.25
0.88
0.86
0.83
3.7 ppm
1.7 ppm
0.9 ppm
H2O
DMSO
CHCl3
1.97
1.95
18.00
2.91
9
8
7
6
5
4
3
2
1
ppm

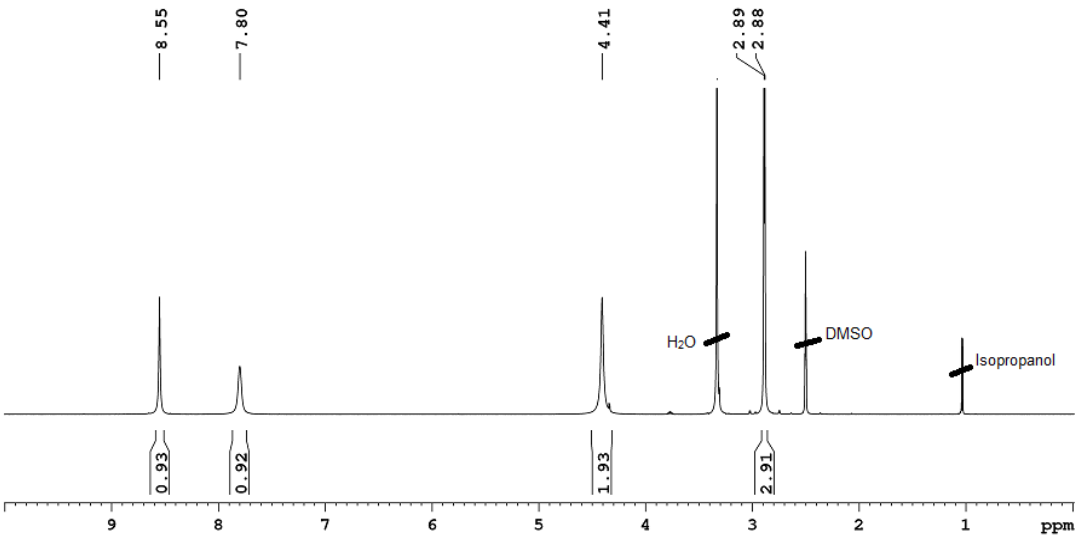

127.83
45.18
31.79
29.71
29.50
29.40
29.34
29.21
28.64
26.42
22.59
14.39
DMSO
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

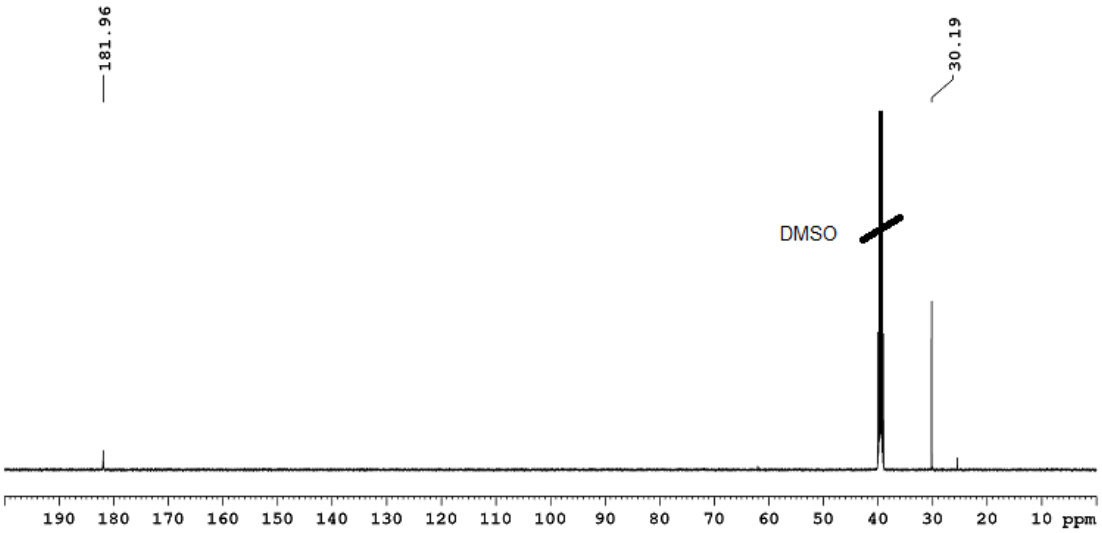
Synthesis of *N*-methylhydrazine carbothioamide (15) [4]

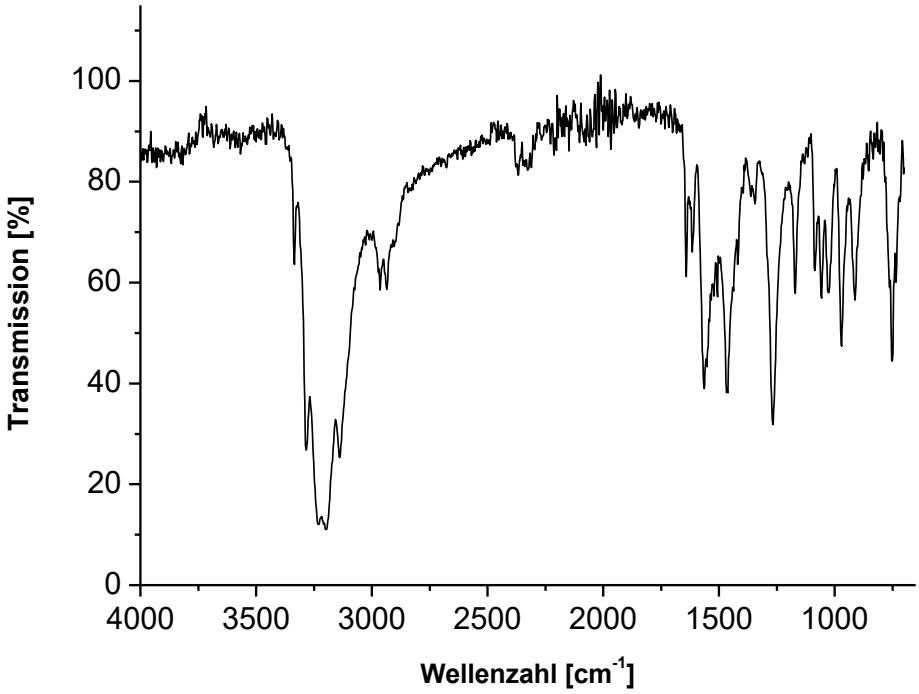


C_2H_3NS	N_2H_6O	$C_2H_7N_3S$
73.11 g/mol	50.06 g/mol	105.16 g/mol

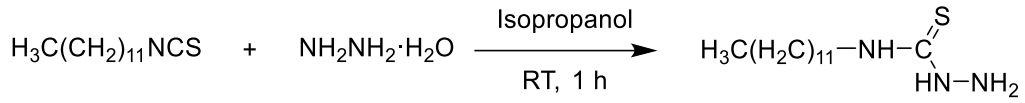
In a 100 mL round-bottom flask, hydrazine hydrate (2 mL, 2.06 g, 41 mmol) was dissolved in isopropanol (20 mL). Then, methyl isothiocyanate (1.51 g, 21 mmol) was slowly added, leading to immediate formation of a white precipitate. After stirring at room temperature for 1 h, the solid material was collected by filtration, washed with isopropanol (3×5 mL) and dried under vacuum to obtain the product as a white solid. Yield: 64% (1.43 g, 13.5 mmol). **IR** (ATR): $\tilde{\boldsymbol{\nu}}$ = 3283, 3196 (NH), 3139, 2964, 2935, 1564, 1507, 1463, 1267, 1171, 1057, 1027, 971, 912, 751 (C=S) cm^{-1}; **^{1}H NMR** (500.13 MHz, DMSO-d_6): δ = 8.55 (s, 1H, N*H*NH_2), 7.80 (s, 1H, CH_3N*H*), 4.41 (s, 2H, NHNH_2), 1.03 (d, ^3J = 4.9 Hz, 3H, CH_3) ppm; **^{13}C NMR** (125.76 MHz, DMSO-d_6): δ = 182.43 (*C*=S), 30.65 (CH_3) ppm; **Elemental analysis** (%) calcd. for $C_2H_7N_3S$: C 22.84, H 6.71, N 39.96, S 30.49; found (%): C 22.70, H 6.61, N 41.55, S 31.55.




181.96
30.19
DMSO
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm


Transmission [%]
100
80
60
40
20
0
4000 3500 3000 2500 2000 1500 1000
Wellenzahl [cm-1]

Synthesis of *N*-dodecylhydrazine carbothioamide (16) [4]

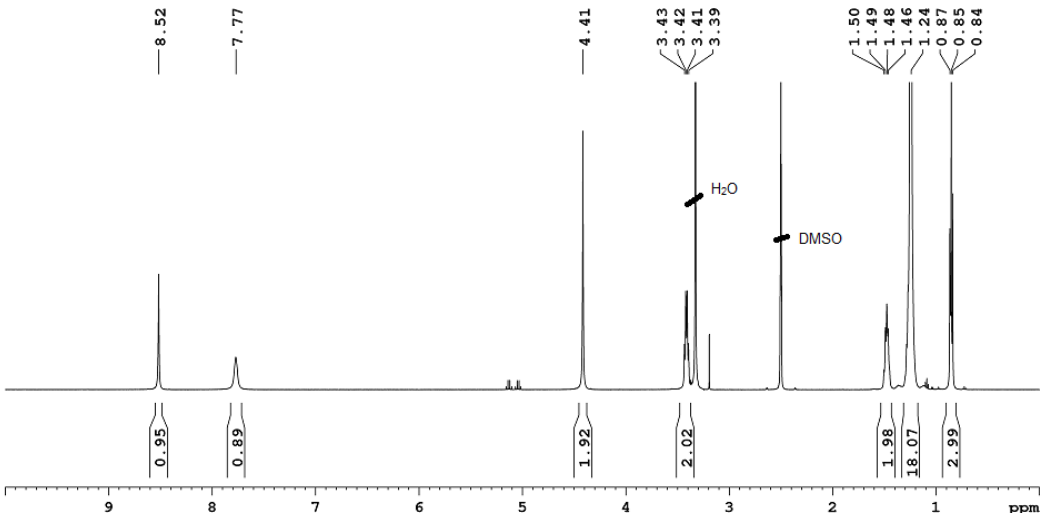


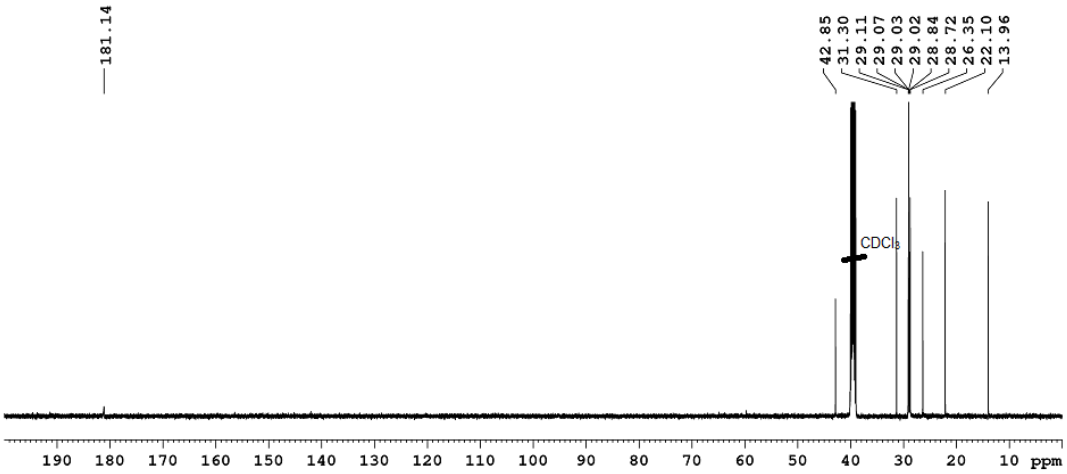
$C_{13}H_{25}NS$ 227.41 g/mol

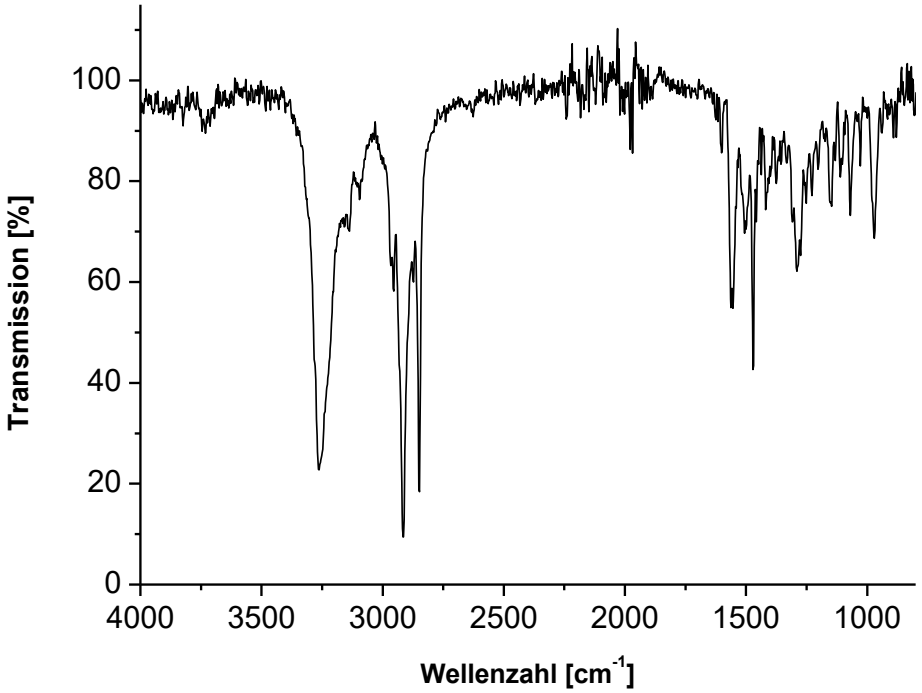
N_2H_6O 50.06 g/mol

$C_{13}H_{29}N_3S$ 259.46 g/mol

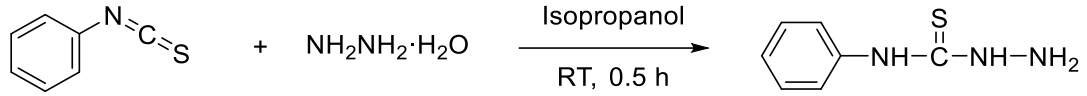
In a 100 mL round-bottom flask, hydrazine hydrate (0.5 mL, 0.516 g, 10.3 mmol) was dissolved in isopropanol (30 mL). Then, dodecyl isothiocyanate (1.35 mg, 6 mmol) was added dropwise. The yellow solution gradually turned colourless and a solid material started to precipitate. After stirring at room temperature for 60 min, the resulting colourless product was filtered off, washed with isopropanol (3x5 mL) and dried under vacuum. Yield: 49% (765 mg, 2.95 mmol). **IR** (ATR): $\tilde{\boldsymbol{\nu}}$ = 3264 (NH_2), 2915 (CH_2), 2849 (CH_2), 1562, 1555, 1471 cm^{-1}; **^{1}H NMR** (500.13 MHz, DMSO-d_6): δ = 8.52 (s, 1H, N*H*NH_2), 7.77 (s, 1H, $C_{12}H_{25}$N*H*), 4.41(s, 2H, NHNH_2), 3.42 (q, 2H, ^3J = 6.9 Hz, CH_2CH_2NH), 1.50-1.46 (quin, 2H, ^3J = 6.8 Hz, $CH_2CH_2CH_2NH$), 1.24 (s, 18H, $(CH_2)_9CH_3$), 0.85 (t, 3H, ^3J = 6.8 Hz, CH_2CH_3) ppm; **^{13}C NMR** (125.76 MHz, DMSO-d_6): δ = 181.14 (*C*=S), 42.85 (CH_2NH), 31.30 (CH_2CH_2NH), 29.11 ($CH_2CH_2CH_3$), 29.07 (CH_2), 29.03 (CH_2), 29.02 (CH_2), 28.84 (CH_2), 28.72 (CH_2), 26.35 ($CH_2CH_2CH_2NH$), 22.10 (CH_2CH_3), 13.96 (CH_3) ppm; **Elemental analysis** (%) calcd. for $C_{13}H_{29}N_3S$: C 60.18, H 11.27, N 16.20, S 12.36; found (%): C 60.29, H 11.55, N 16.25, S 11.97.




181.14
42.85
31.30
29.11
29.07
29.03
29.02
28.84
28.72
26.35
22.10
13.96
CDCl3
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm


Transmission [%]
100
80
60
40
20
0
4000 3500 3000 2500 2000 1500 1000
Wellenzahl [cm-1]

Synthesis of *N*-phenylhydrazine carbothioamide (17) [4]

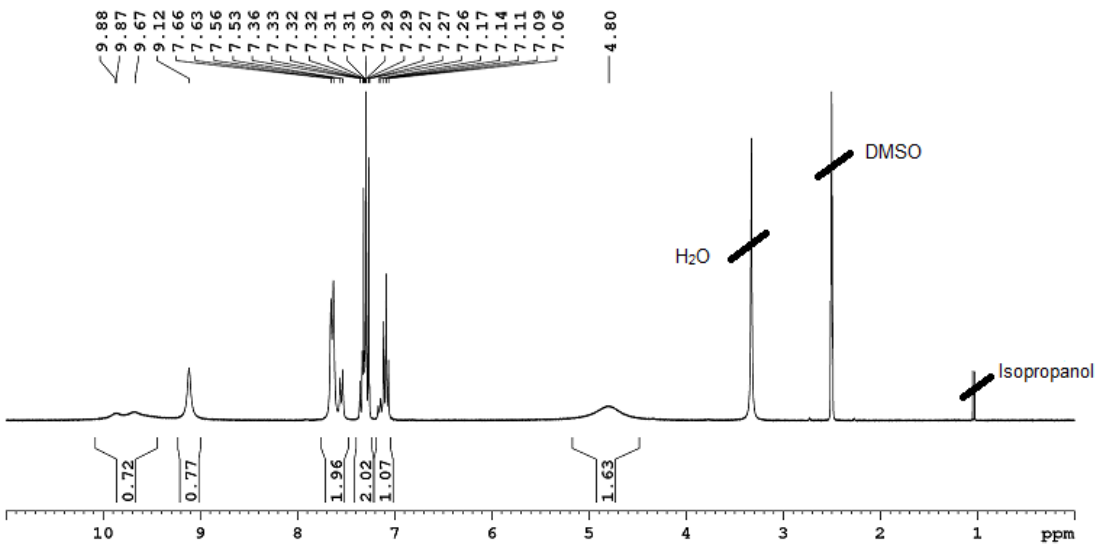


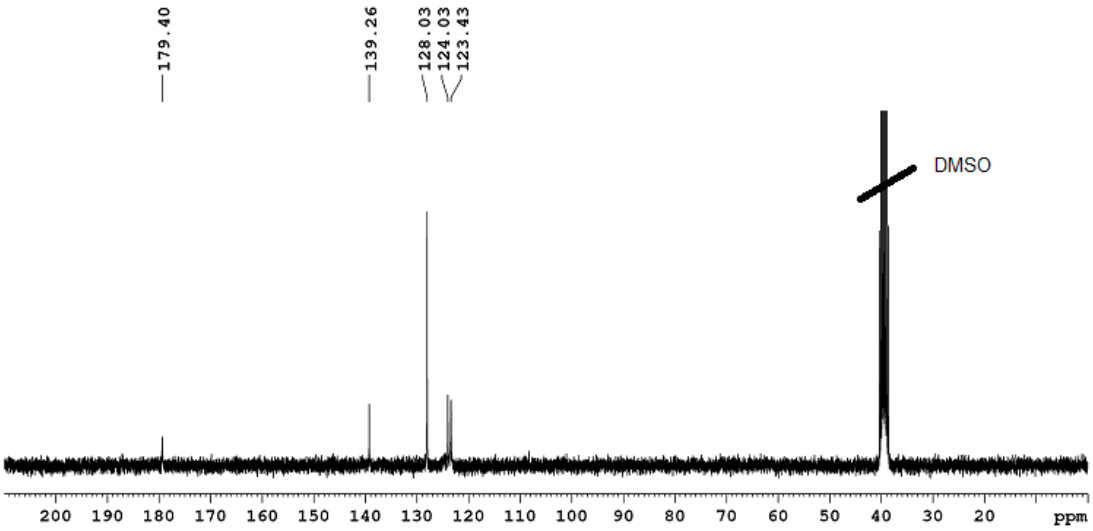
C_7H_5NS
135.19 g/mol

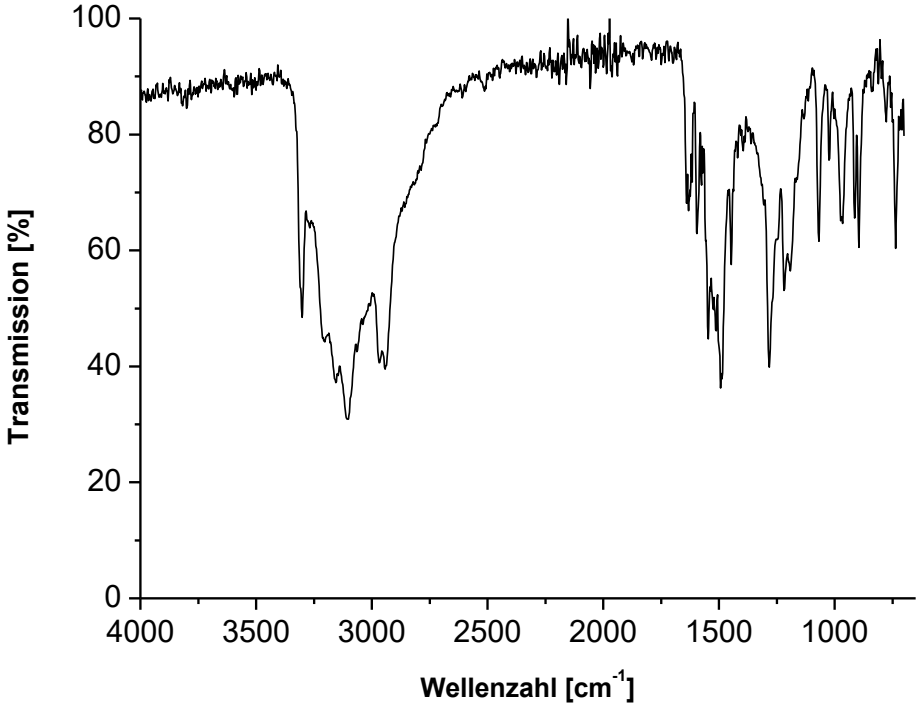
N_2H_6O
50.06 g/mol

$C_7H_9N_3S$
167.23 g/mol

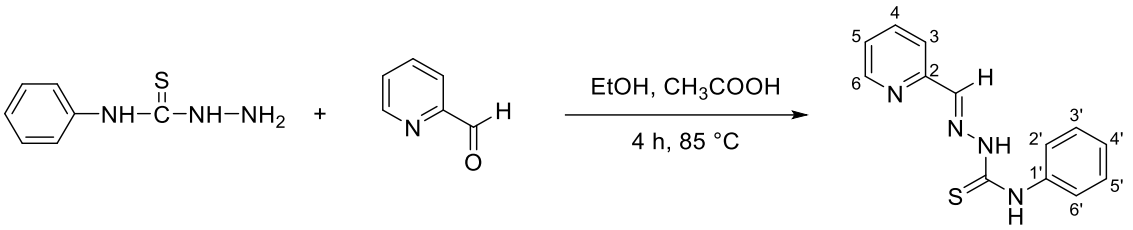
In a 100 mL round-bottom flask, hydrazine hydrate (2 mL, 2.06 g, 41 mmol) was dissolved in isopropanol (20 mL). Then, phenyl isothiocyanate (2.5 mL, 2.84 g, 21 mmol) was added dropwise, leading to immediate formation of a white precipitate. After stirring at room temperature for 30 min, the solid material was collected by filtration, washed with isopropanol (3×5 mL) and dried under vacuum to obtain the product as a white solid. Yield: 82% (2.74 g, 16.40 mmol). **IR** (ATR): $\tilde{\nu}$ = 3301, 3155, 3103, 2943, 1596, 1546, 1521, 1447, 1282, 1218, 1192, 1068, 966, 913, 895, 737 (C=S) cm^{-1}; **^{1}H NMR** (500.13 MHz, DMSO-*d*$_6$): δ = 9.81 (m, 1H, N*H*NH$_2$), 9.11 (s, 1H, C_6H_5N*H*), 7.66-7.53 (m, 2H, H2/H6), 7.37-7.28 (m, 2H, H3/H5), 7.09 (t, 1H, ^3J = 7.3 Hz, H4), 4.80 (s, 2H, NHN*H*$_2$) ppm; **^{13}C NMR** (125.76 MHz, DMSO-*d*$_6$): δ = 179.88 (*C*=S), 139.74 (C1), 128.51 (C2/C6), 124.51 (C3/C5), 123.91 (C4) ppm; **Elemental analysis** (%) calcd. for $C_7H_9N_3S$: C 50.28, H 5.42, N 25.13, S 19.17; found (%): C 50.18, H 5.19, N 23.29, S 19.39.




179.40
139.26
128.03
124.03
123.43
DMSO
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20
ppm


Transmission [%]
100
80
60
40
20
0
4000 3500 3000 2500 2000 1500 1000
Wellenzahl [cm-1]

Synthesis of *N*-phenyl-2-(pyridin-2-ylmethylen)hydrazin-1-carbothioamide $HL_{py}^{H,Ph}$ (20)
[5, 6]

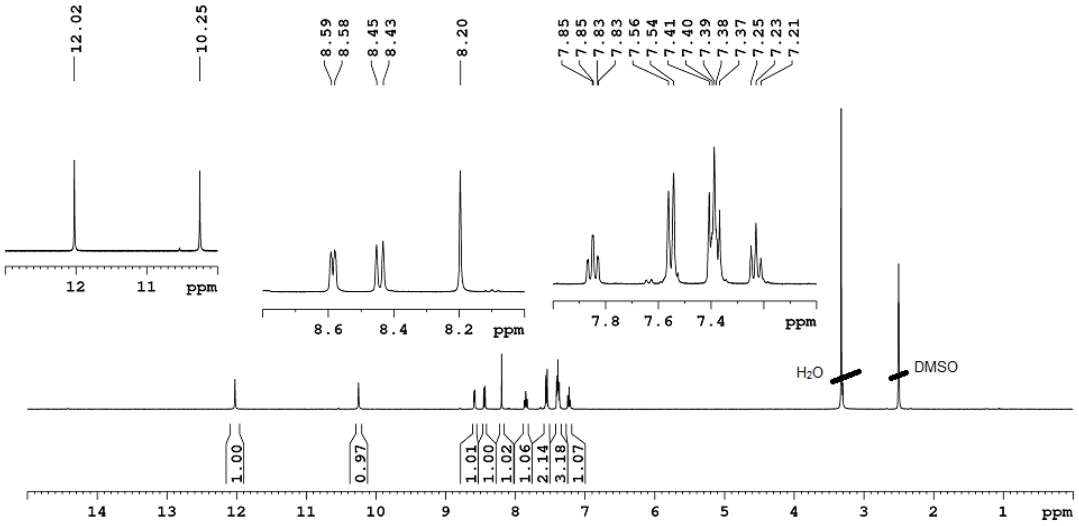


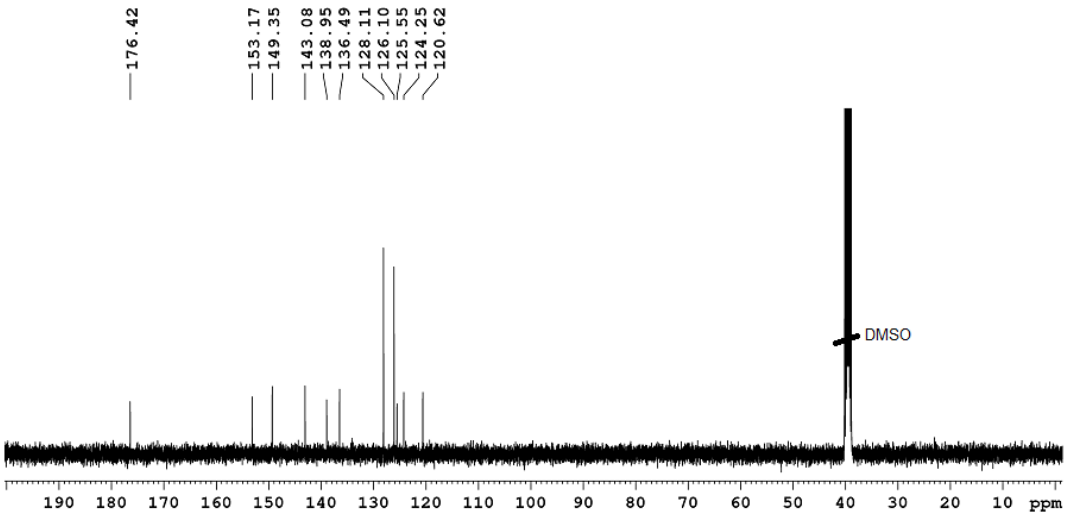
$C_7H_9N_3S$
167.23 g/mol

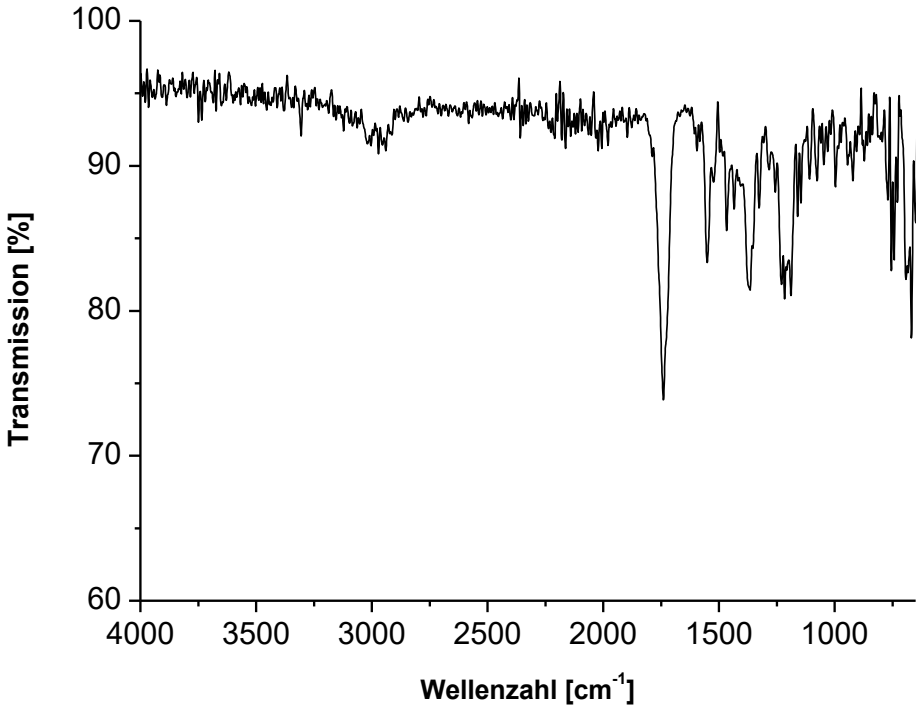
C_6H_5NO
107.11 g/mol

$C_{13}H_{12}N_4S$
256.33 g/mol

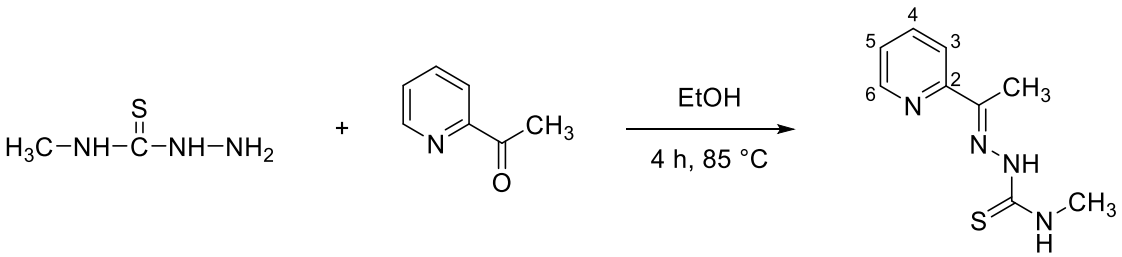
N-Phenylhydrazine carbothioamide (539 mg, 3.22 mmol) und pyridine-2-carbaldehyde (0.35 mL, 394 mg, 4.24 mmol) were mixed in ethanol (30 mL). Then, glacial acetic acid (0.25 mL) was added and the suspension heated to 85 °C for 4 h. After cooling to room temperature, the resulting solid was filtered off, washed with ethanol (2×10 mL) and diethyl ether (2×5 mL), and dried under vacuum to obtain the product as a colourless solid. Yield: 71% (582 mg, 2.27 mmol). **IR** (ATR): $\tilde{\boldsymbol{\nu}}$ = 1740, 1549, 1465, 1369, 1219, 1191, 694, 666 cm^{-1}; **^{1}H NMR** (400.40 MHz, DMSO-d_6): δ = 12.02 (s, 1H, CHNN*H*), 10.25 (s, 1H, C_6H_5N*H*), 8.59 (d, 1H, ^3J = 4.8 Hz, H6), 8.44 (d, H3, ^3J = 8.0 Hz, H3), 8.20 (s, 1H, C*H*N), 7.85 (dt, 1H, ^3J = 7.7 Hz, ^4J = 1.3 Hz, H4), 7.55 (d, 2H, ^3J = 7.6 Hz, H2´/H6´), 7.41-7.37 (m, 3H, H3´/H5´, H5), 7.23 (t, 1H, ^3J = 7.4 Hz, H4´) ppm; **^{13}C NMR** (100.68 MHz, DMSO-d_6): δ = 176.42 (*C*=S), 153.17 (C2), 149.35 (C6), 143.08 (*C*H=N), 138.95 (C1´), 136.49 (C4), 128.11 (C3´/C5´), 126.10 (C4´), 125.55 (C2´/C6´), 124.25 (C5), 120.62 (C3) ppm; **Elemental analysis** (%) calcd. for $C_{13}H_{12}N_4S$: C 60.91, H 4.72, N 21.86, S 12.51; found (%): C 60.79, H 4.81, N 21.99, S 12.45.




176.42
153.17
149.35
143.08
138.95
136.49
128.11
126.10
125.55
124.25
120.62
DMSO
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm


Transmission [%]
100
90
80
70
60
4000
3500
3000
2500
2000
1500
1000
Wellenzahl [cm-1]

Synthesis of *N*-methyl-2-(1-(pyridin-2-yl)ethyliden)hydrazin-1-carbothioamide $HL_{py}^{CH3,CH3}$ (21) [5, 6]

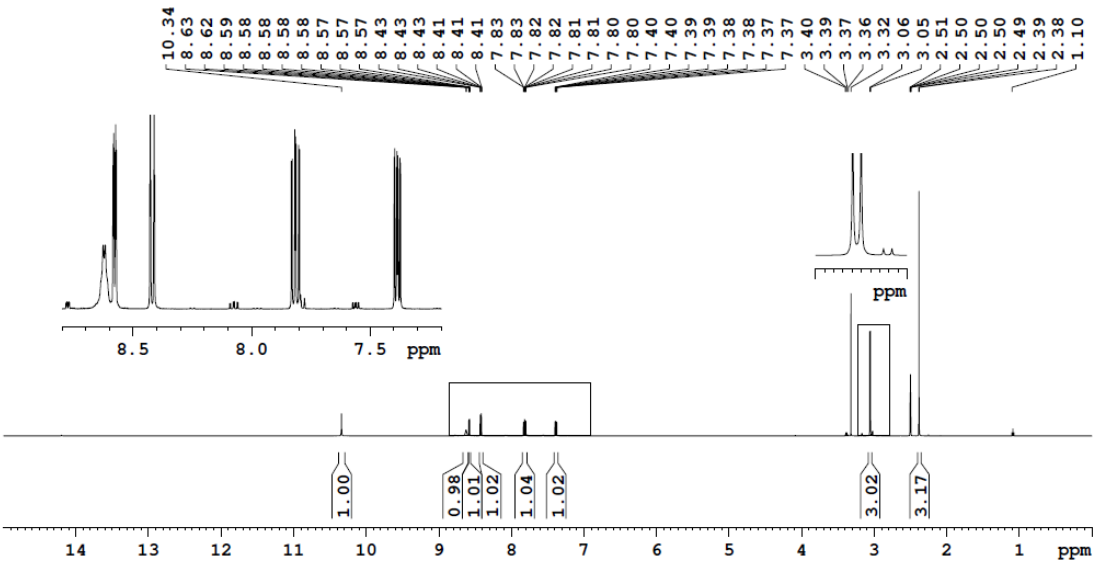


$C_2H_7N_3S$
105.16 g/mol

C_7H_7NO
121.14 g/mol

$C_9H_{12}N_4S$
208.28 g/mol

In a round-bottom flask, *N*-methylhydrazine carbothioamide (500 mg, 4.75 mmol) was dissolved in methanol (30 mL) with heating to 70 °C. Then, 2-acetylpyridine (0.56 mL, 605.7 mg, 5 mmol) was added and the clear solution heated to 70 °C for 4 h. After cooling to room temperature, the solvent was partially removed under vacuum. The resulting pale-yellow solid was filtered off, washed with methanol (2×5 mL) and diethyl ether (2×5 mL), and finally dried under vacuum. Yield: 57% (572 mg, 2.75 mmol). **IR** (ATR): $\tilde{\nu}$ = 3281, 3228 (NH), 1535 (C=N), 1495, 1473, 1458, 1433, 1419, 1408, 1230, 1148, 1073, 1035, 779 (C-S) cm^{-1}; **^{1}H NMR** (500.13 MHz, DMSO-d_6): δ = 10.34 (s, 1H, C(CH_3)NN*H*), 8.62 (q, 1H, ^3J = 4.4 Hz, CH_3N*H*), 8.58 (ddd, 1H, ^3J = 4.8 Hz, ^4J = 1.8 Hz, ^5J =1.0 Hz, H6), 8.42 (td, 1H, ^3J = 8.1 Hz, ^4J = 1.1 Hz, H3), 7.82 (ddd, 1H, ^3J = 8.2 Hz, ^3J = 7.4 Hz, ^4J = 1.8 Hz, H4), 7.38 (ddd, 1H, ^3J = 7.6 Hz, ^3J = 4.8 Hz, ^4J = 1.3 Hz, H5), 3.05 (d, 3H, ^3J = 4.6 Hz, C*H*$_3$NH), 2.38 (s, 3H, C(C*H*$_3$)N) ppm; **^{13}C NMR** (125.76 MHz, DMSO-d_6): δ = 179.16 (*C*=S), 155.22 (C2), 148.93 (C6), 148.32 (*C*(CH_3)=N), 136.77 (C4), 124.35 (C5), 121.24 (C3), 31.64 (*C*H_3NH), 12.57 (C(*C*H_3)=N) ppm; **Elemental analysis** (%) calcd. for $C_9H_{12}N_4S$: C 51.90, H 5.81, N 26.90, S 15.40; found (%): C 51.44, H 5.94, N 26.59, S 15.84.


10.34
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8.62
8.59
8.58
8.58
8.58
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8.57
8.57
8.43
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8.41
8.41
8.41
7.83
7.83
7.82
7.82
7.81
7.81
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7.40
7.39
7.39
7.38
7.38
7.37
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3.39
3.37
3.36
3.32
3.06
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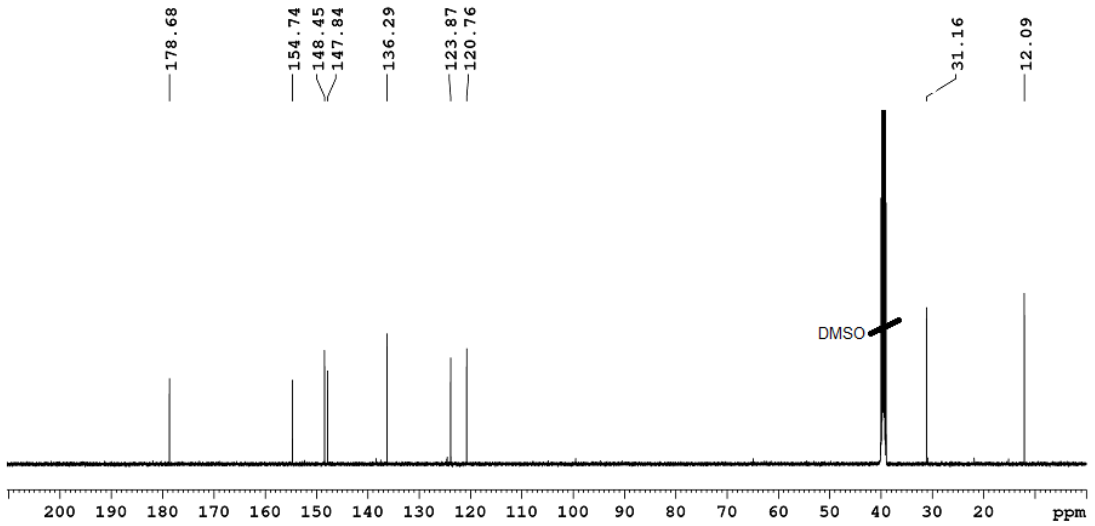
2.50
2.50
2.50
2.49
2.39
2.38
1.10
8.5
8.0
7.5
ppm
ppm
1.00
0.98
1.01
1.02
1.04
1.02
3.02
3.17
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm


178.68
154.74
148.45
147.84
136.29
123.87
120.76
31.16
12.09
DMSO
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190
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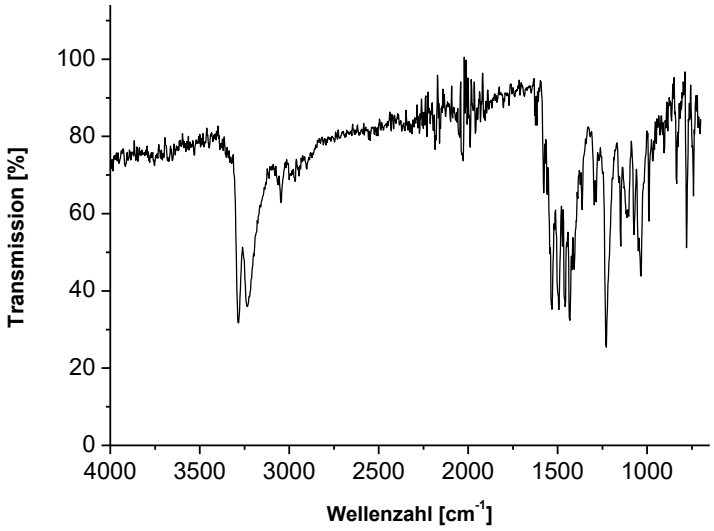
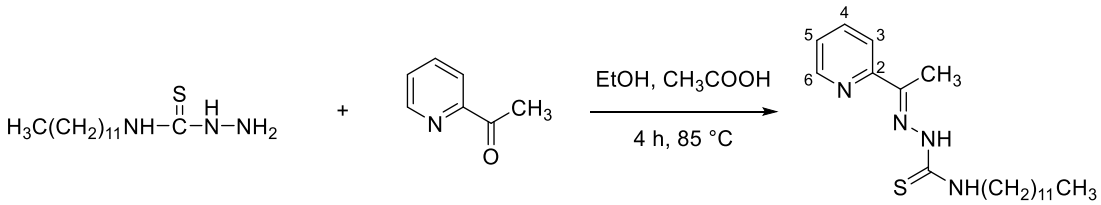
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm

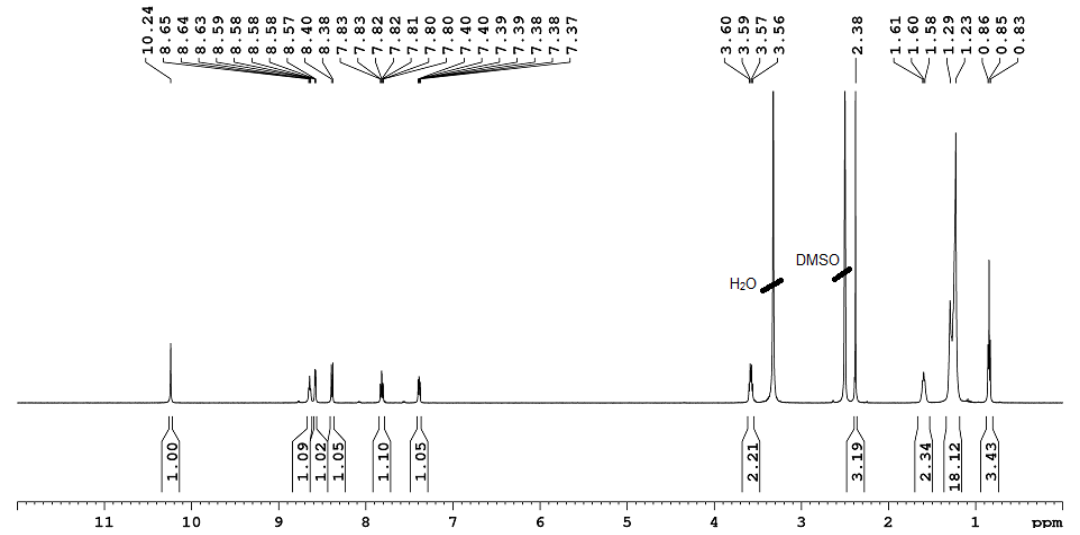

Transmission [%]
100
80
60
40
20
0
4000
3500
3000
2500
2000
1500
1000
Wellenzahl [cm-1]

Synthesis of *N*-dodecyl-2-(1-(pyridin-2-yl)ethyliden)hydrazin-1-carbothioamide $HL_{py}^{CH3,(CH2)11CH3}$ (22) [5, 6]



$C_{13}H_{29}N_3S$ 259.46 g/mol | C_7H_7NO 121.14 g/mol | $C_{20}H_{34}N_4S$ 362.58 g/mol

In a 100 mL round-bottom flask, *N*-dodecyl-2-(1-(pyridin-2-yl)ethyliden)hydrazin-1-carbothioamid (350 mg, 1.35 mmol) was dissolved in ethanol (15 mL) with heating to 50 °C. Then, 2-acetylpyridine (0.2 mL, 216 mg, 1.78 mmol) and glacial acetic acid (0.1 mL) were added and the yellow solution heated to reflux for 5 h. After cooling to room temperature, the solvent was removed under vacuum and the resulting material recrystallized from a mixture of ethanol and water (3:1 *v*/*v*). The resulting pale-yellow product was washed with diethyl ether (2×5 mL) and then dried under vacuum. Yield: 62% (303 mg, 0.84 mmol). **IR** (ATR): $\tilde{\nu}$ = 3330, 3211, 2916, 2851, 1532, 1498, 1467, 1458, 1434, 1265, 1243, 1220, 1199, 778 cm^{-1}; **^{1}H NMR** (500.13 MHz, DMSO-d_6): δ = 10.24 (s, 1H, C(CH_3)NN*H*), 8.64 (t, ^3J = 5.8 Hz, 1H, $C_{12}H_{25}N$*H*), 8.59-8.57 (m, 1H, H6), 8.39 (d, 1H, ^3J = 8.1 Hz, H3), 7.81 (dt, 1H, ^3J = 8.0 Hz, ^4J = 1.8 Hz, H4), 7.39 (ddd, 1H, ^3J = 7.5 Hz, ^3J = 4.9 Hz, ^4J = 1.4 Hz, H5), 3.58 (q, 2H, ^3J = 8.0 Hz, CH_2NH), 2.38 (s, 3H, C(CH_3)NNH), 1.61-1.58 (m, 2H, $CH_2CH_2(CH_2)_9CH_3$), 1.29-1.23 (m, 18H, (CH_2)$_9$$CH_3$), 0.85 (t, 3H, ^3J = 6.9 Hz, CH_2CH_3) ppm; **^{13}C NMR** (125.76 MHz, DMSO-d_6): δ =177.80 (*C*=S), 154.72 (C2), 148.47 (C6), 147.88 (*C*(CH_3)=N), 136.31 (C4), 123.88 (C5), 120.75 (C3), 43.73 (*C*H_2NH), 31.76 (*C*$H_2CH_2CH_3$), 29.04 (CH_2), 29.01 (CH_2), 28.98 (CH_2), 28.79 (CH_2), 28.70 (CH_2), 28.66 (CH_2), 26.82 (NH(CH_2)$_2$CH_2), 22.57 (*C*H_2CH_3), 14.43 (*C*H_3), 12.58 (C(*C*H_3)=N) ppm; **Elemental analysis** (%) calcd. for $C_{20}H_{34}N_4S$: C 66.25, H 9.45, N 15.45, S 8.84; found (%): C 66.04, H 9.65, N 15.07, S 8.76.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8.58
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8.40
8.38
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7.37
3.60
3.59
3.57
3.56
2.38
1.61
1.60
1.58
1.29
1.23
0.86
0.85
0.83
H2O
DMSO
1.00
1.09
1.02
1.05
1.10
1.05
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18.12
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11
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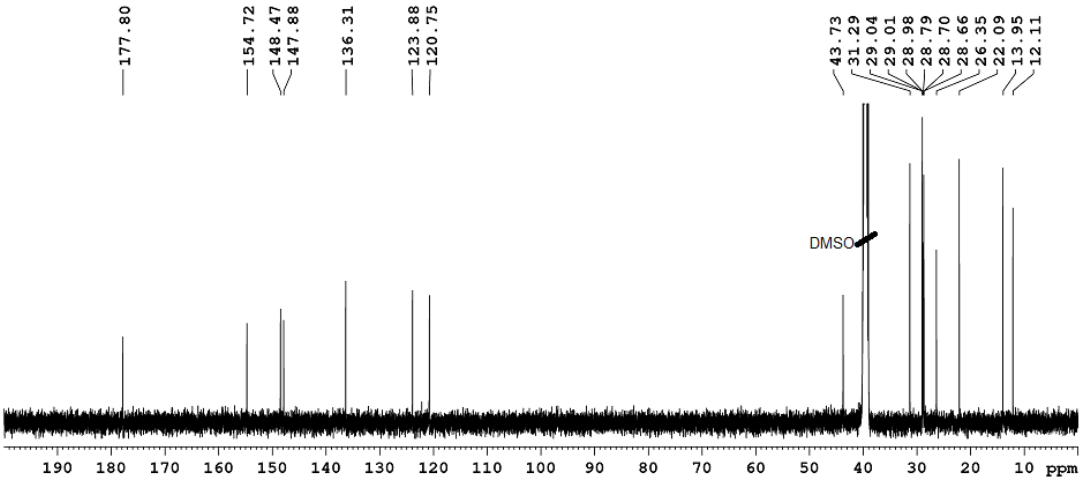
9
8
7
6
5
4
3
2
1
ppm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154.72
148.47
147.88
136.31
123.88
120.75
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31.29
29.04
29.01
28.98
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28.66
26.35
22.09
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12.11
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80
70
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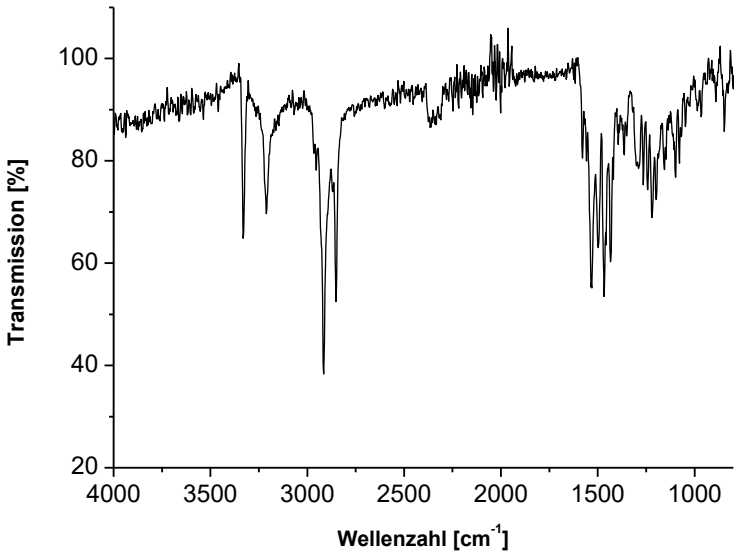
30
20
10
ppm


Transmission [%]
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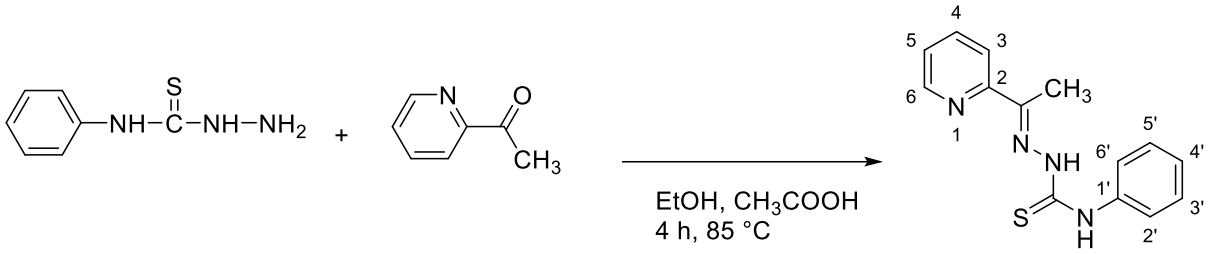
60
40
20
4000
3500
3000
2500
2000
1500
1000
Wellenzahl [cm-1]

Synthesis of *N*-phenyl-2-(1-(pyridin-2-yl)ethyliden)hydrazin-1-carbothioamide $HL_{py}^{CH3,Ph}$ (23) [5, 6]

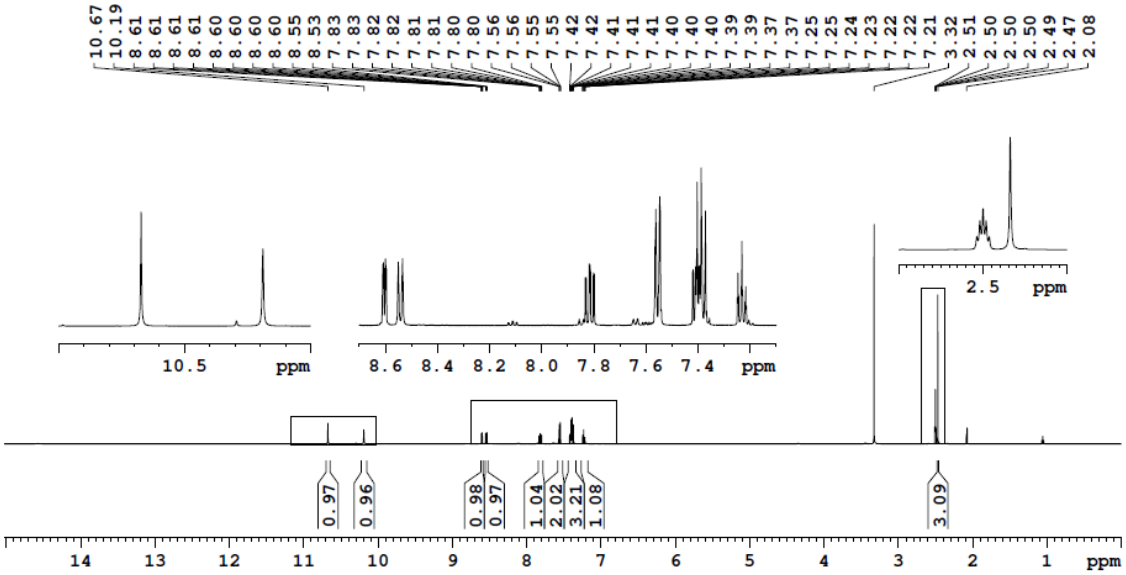


$C_7H_9N_3S$
167.23 g/mol

C_7H_7NO
121.14 g/mol

$C_{14}H_{14}N_4S$
270.35 g/mol

In a 100 mL round-bottom flask, *N*-phenylhydrazine carbothioamide (500 mg, 3.00 mmol) was dissolved in ethanol (15 mL). Then, glacial acetic acid (0.25 mL) and 2-acetylpyridine (0.35 mL, 324 mg, 3.12 mmol) were added and the solution heated to 85 °C for 4 h. After cooling to room temperature, the resulting pale-yellow precipitate was filtered off, washed with ethanol (2 mL) and dried under vacuum. After recrystallization from a mixture of acetonitrile and ethanol (2:1 *v*/*v*, 40 mL), the product was obtained as a yellow solid. Yield: 23% (186 mg, 0.69 mmol). **IR** (ATR): $\tilde{\boldsymbol{\nu}}$ = 3298, 3239, 3051, 1514 (C=N), 1495, 1484, 1466, 1458, 1436, 1419, 1395, 1361, 1299, 1263, 1186, 1156, 1146, 781 (C=S), 739 cm^{-1}; **^{1}H NMR** (500.13 MHz, DMSO-d_6): δ = 10.67 (s, 1H, C(CH_3)NN*H*), 10.19 (s, 1H, C_6H_5N*H*), 8.60 (ddd, 1H, ^3J = 4.0 Hz, ^4J = 1.8 Hz, ^5J = 0.9 Hz, H6), 8.54 (d, 1H, ^3J = 8.1 Hz, H3), 7.81 (ddd, 1H, ^3J = 8.1 Hz, ^3J = 7.6 Hz, ^4J = 1.8 Hz, H4), 7.56 (dd, 2H, ^3J = 8.4 Hz, ^4J = 1.2 Hz,H2´/H6´), 7.42-7.37 (m, 3H, H3´/H5´, H5), 7.25-7.21 (m, 1H, H4´), 2.08 (s, 3H, C*H*$_3$) ppm; **^{13}C NMR** (125.76 MHz, DMSO-d_6): δ = 177.26 (*C*=S), 154.51 (C2), 149.19 (C6), 148.48 (*C*(CH_3)=N), 139.14 (C1´), 136.37 (C4), 128.10 (C3´/C5´), 126.18 (C4´), 125.55 (C2´/C6´), 124.11 (C5), 121.24 (C3), 12.48 (*C*H_3) ppm; **Elemental analysis** (%) calcd. for $C_{14}H_{14}N_4S$: C 62.20, H 5.22, N 20.72, S 11.86; found (%): C 61.87, H 4.83, N 20.63, S 11.50.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7.23
7.22
7.22
7.21
3.32
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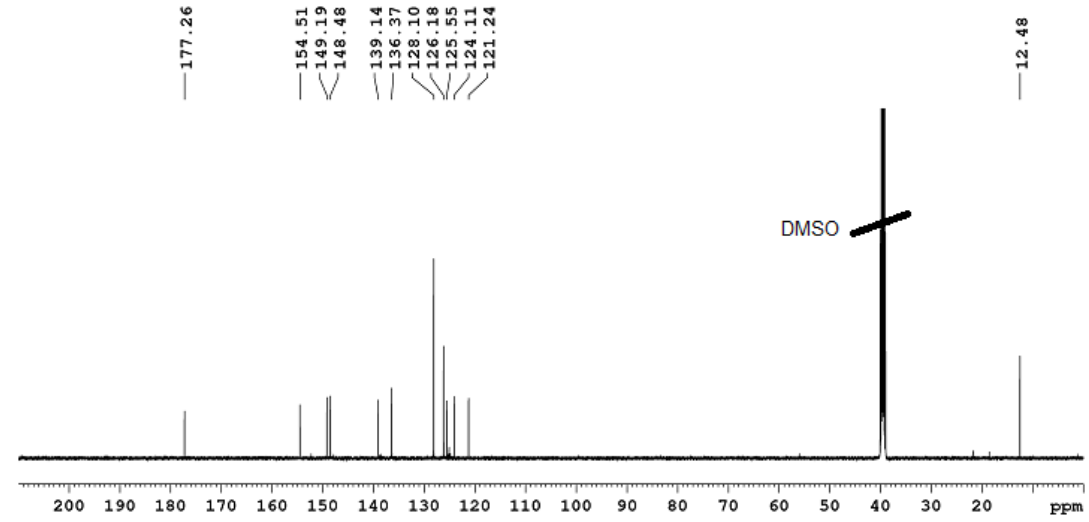
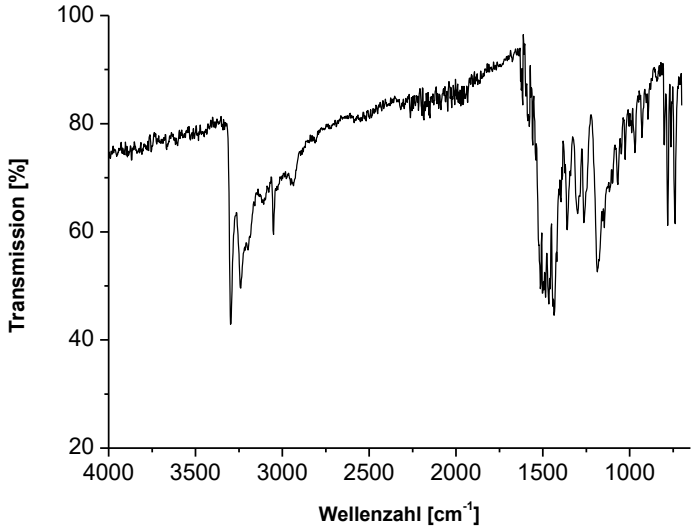
2.50
2.50
2.50
2.49
2.47
2.08
10.5 ppm
8.6 8.4 8.2 8.0 7.8 7.6 7.4 ppm
2.5 ppm
0.97
0.96
0.98
0.97
1.04
2.02
3.21
1.08
3.09
14 13 12 11 10 9 8 7 6 5 4 3 2 1 ppm


177.26
154.51
149.19
148.48
139.14
136.37
128.10
126.18
125.55
124.11
121.24
12.48
DMSO
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm


Transmission [%]
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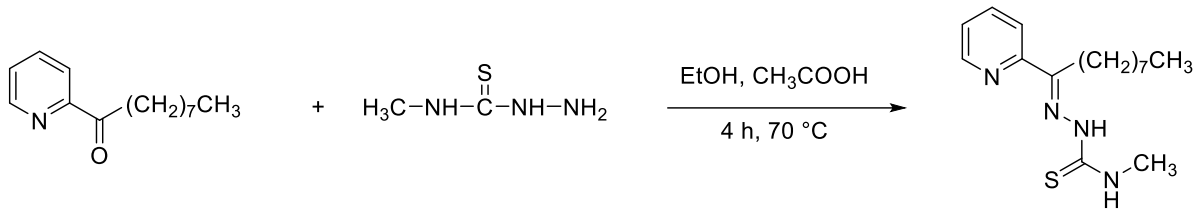
80
60
40
20
4000 3500 3000 2500 2000 1500 1000
Wellenzahl [cm-1]

Synthesis of *N*-methyl-2-(1-(pyridin-2-yl)nonyliden)hydrazin-1-carbothioamide $HL_{py}^{(CH2)7CH3,CH3}$ (24) [5, 6]

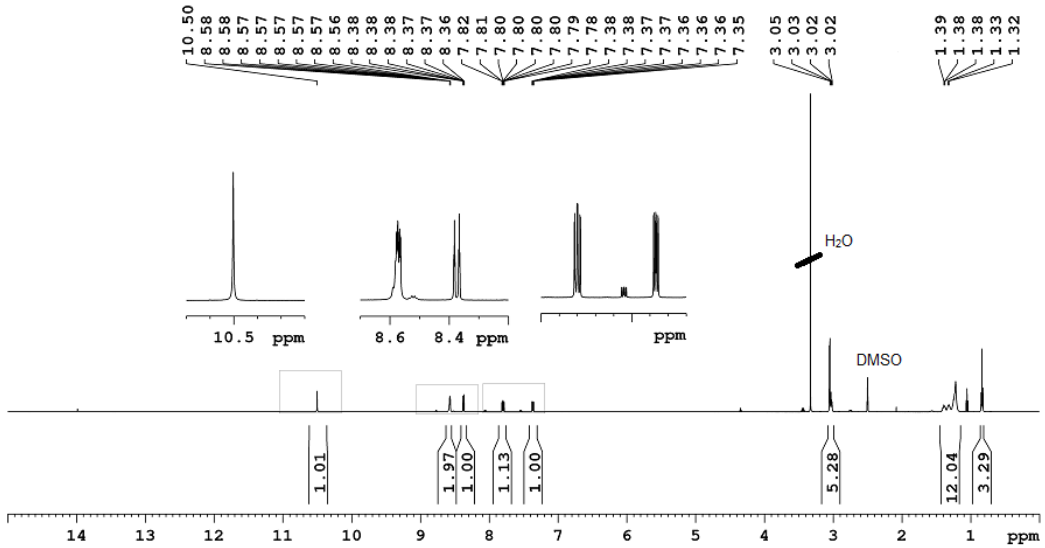


$C_{14}H_{21}NO$
219.33 g/mol

$C_2H_7N_3S$
105.16 g/mol

$C_{16}H_{26}N_4S$
306.47 g/mol

In a 100 mL round-bottom flask, *N*-methylhydrazine carbothioamide (193 mg, 1.84 mmol) was dissolved in ethanol (10 mL). Then, a mixture of glacial acetic acid (0.12 mL) und 1-(pyridin-2-yl)nonan-1-one (424 mg, 1.93 mmol) in ethanol (1 mL) were added and the mixture heated to 85 °C for 5 h. After cooling to room temperature, the resulting pale-yellow solid was filtered off, washed with ethanol (2×5 mL), and dried under vacuum. Yield: 51% (424 mg, 1.38 mmol). **IR** (ATR): $\tilde{\boldsymbol{\nu}}$ = 3375, 3319 (NH), 2922, 2851, 1543 (C=N), 1536, 1502, 1463, 1431, 1414, 1375, 1336, 1286, 1232, 1204, 1161, 1128, 1107, 1051, 787 (C=S), 737 cm^{-1}; **^{1}H NMR** (500.13 MHz, DMSO-d_6): δ = 10.50 (s, 1H, C(CH_2)NN*H*)), 8.58-8.56 (m, 2H, H6, CH_3N*H*), 8.37 (dt, 1H, ^3J = 8.1 Hz, ^4J = 1.0 Hz, H3), 7.80 (ddd, 1H, ^3J = 8.1 Hz, ^3J = 7.4 Hz, ^4J = 1.8 Hz, H4), 7.37 (ddd, 1H, ^3J = 7.4 Hz, ^3J = 4.8 Hz, ^4J = 1.2 Hz, H5), 3.06-3.02 (m, 5H, C(CH_2)=N, CH_3NH), 1.39-1.22 (m, 12H, (CH_2)$_6$), 0.82 (t, 3H, ^3J = 6.9 Hz, CH_2CH_3) ppm; **^{13}C NMR** (125.76 MHz, DMSO-d_6): δ = 179.16 (*C*=S), 154.99 (C2), 152.24 (C6), 148.95 (*C*(CH_2)=N), 136.79 (C4), 124.21 (C5), 121.57 (C3), 31.71 (*C*$H_2CH_2CH_3$), 31.63 (*C*H_3NH), 29.45 (*C*H_2), 29.29 (*C*H_2), 29.07 (*C*H_2), 26.20 (C(*C*H_2)=N), 24.78 (*C*H_2CH_2C=N), 22.54 (*C*H_2CH_3), 14.41 (*C*H_3) ppm; **Elemental analysis** (%) calcd. for $C_{16}H_{26}N_4S$: C 62.71, H 8.55, N 18.28, S 10.46; found (%): C 62.90, H 8.79, N 17.18, S 10.49.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8.38
8.38
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8.36
7.82
7.81
7.80
7.80
7.80
7.80
7.79
7.78
7.38
7.38
7.37
7.37
7.36
7.36
7.36
7.35
3.05
3.03
3.02
3.02
1.39
1.38
1.38
1.33
1.32
H2O
DMSO
10.5 ppm
8.6 8.4 ppm
ppm
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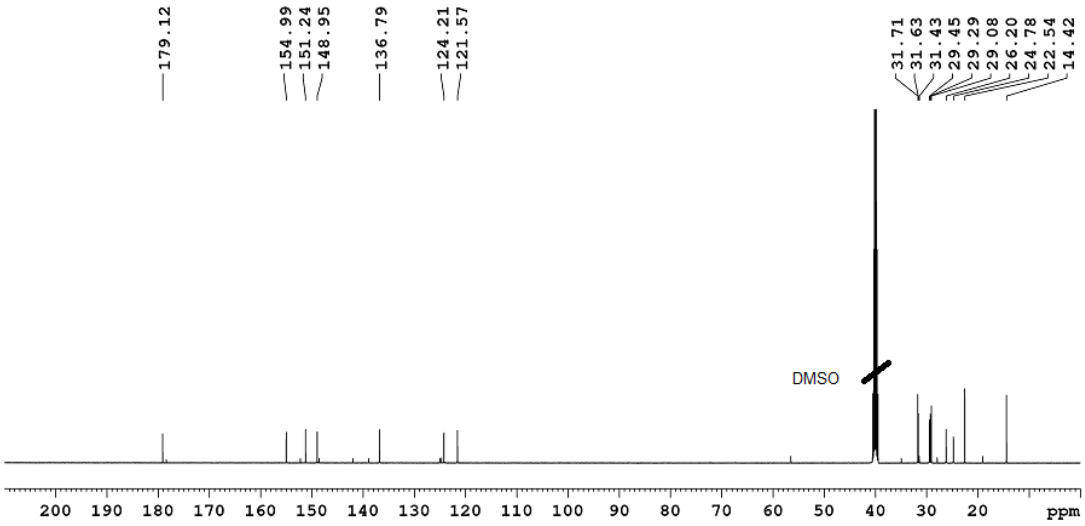
1.13
1.00
5.28
12.04
3.29
14 13 12 11 10 9 8 7 6 5 4 3 2 1 ppm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151.24
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124.21
121.57
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26.20
24.78
22.54
14.42
DMSO
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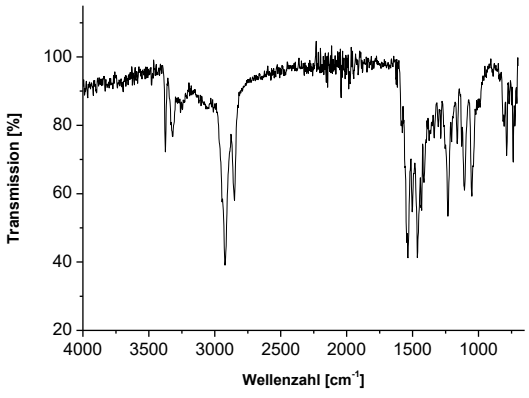
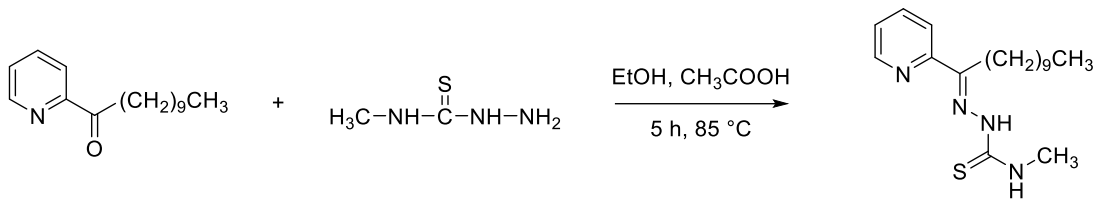
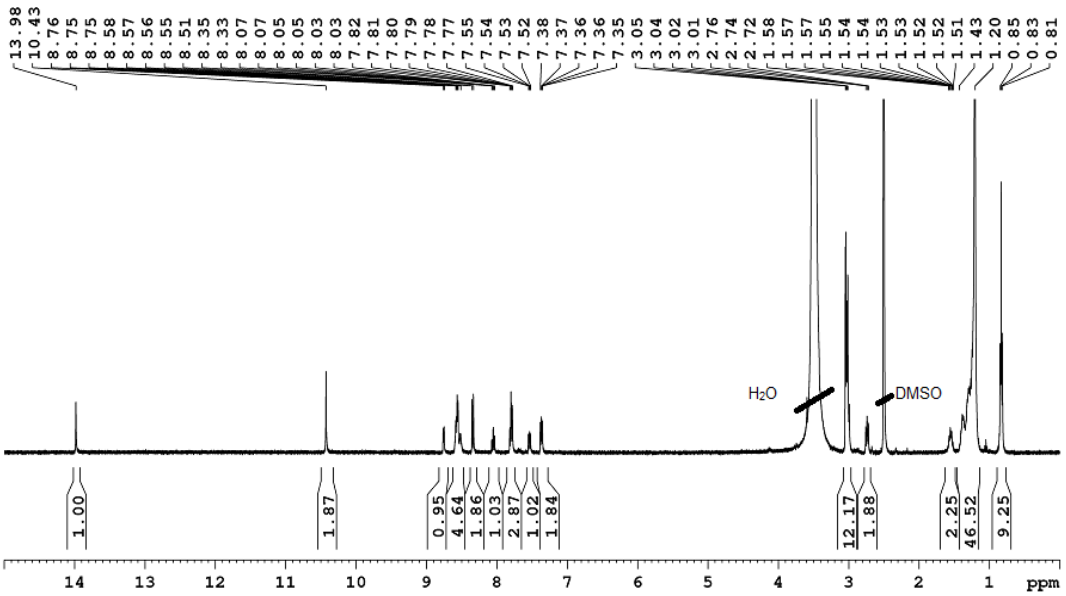

Transmission [%]
100
80
60
40
20
4000 3500 3000 2500 2000 1500 1000
Wellenzahl [cm-1]

Synthesis of *N*-methyl-2-(1-pyridin-2-yl)undecyliden)hydrazin-1-carbothiamide $HL_{py}^{(CH2)9CH3,CH3}$ (25) [5, 6]



$C_{16}H_{25}NO$ 247.38 g/mol | $C_2H_7N_3S$ 105.16 g/mol | $C_{18}H_{30}N_4S$ 334.53 g/mol

In a 100 mL round-bottom flask, *N*-methylhydrazine carbothioamide (194.1 mg, 1.85 mmol) was dissolved in ethanol (10 mL) and then, a mixture of glacial acetic acid (0.12 mL) und 1-(pyridin-2-yl)undecan-1-one (471 mg, 1.90 mmol) in ethanol (1 mL) added. The yellow mixture was heated to 85 °C for 5 h. After cooling to +4 °C for 3 d, the resulting pale-yellow solid was filtered off, washed with ice-cold ethanol (2×2 mL), and dried under vacuum. Yield: 84% (521.2 mg, 1.56 mmol). **IR** (ATR): $\tilde{\nu}$ = 3360, 3132, 2954, 2917, 2848, 1535 (C=N), 1469, 1436, 1400, 1374, 1287, 1236, 1221, 1106, 1043, 781 (C=S), 719 cm^{-1}; **^{1}H NMR** (400.40 MHz, DMSO-d_6): δ = 13.98 (s, 1H, C(CH_2)NN*H*), 10.43 (s, 2H, CH_3N*H*), 8.76-8.74 (m, 1H, H6), 8.58-8.51 (m, 5H, H3), 8.34 (d, 2H, ^3J = 8.0 Hz, H3), 8.05 (dt, 2H, ^3J = 7.8 Hz, ^4J = 1.6 Hz, H4), 7.81-7.77 (m, 3H, H4), 7.53 (m, 1H, H5), 7.38-7.35 (m, 2H, H5), 3.05-3.01 (m, 12H, C*H*$_3$NH, C(C*H*$_2$)=N), 2.75-2.71(m, 2H, C*H*$_2$), 1.58-1.51 (m, 2H, C*H*$_2$), 1.42-1.20 (m, 47H, C*H*$_2$), 0.84 (t, 9H, C*H*$_3$) ppm; The compound is present as a mixture of several isomers. Thus, a complete assignment and integration was not possible for all signals; **^{13}C NMR** (100.68 MHz, DMSO-d_6): δ = 178.73 (*C*=S), 154.59 (C2), 151.06 (C6), 148.65 (*C*(CH_2)=N), 136.60 (C4), 123.99 (C5), 121.27 (C3), 31.40 (*C*$H_2$$CH_2$$CH_3$), 31.32 (*C*$H_3$NH), 29.04 (*C*$H_2$), 28.95 (*C*$H_2$), 28.80 (*C*$H_2$), 25.82 (C(*C*$H_2$$CH_2$)=N), 24.46 (C(*C*$H_2$)=N), 22.22 (*C*$H_2$$CH_3$), 14.10 (*C*$H_3$); **Elemental analysis** (%) calcd for $C_{18}H_{30}N_4S$: C 64.63, H 9.04, N 16.75, S 9.59; found (%): C 65.12, H 9.27, N 16.09, S 9.01.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1.57
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1.55
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1.52
1.52
1.51
1.43
1.20
0.85
0.83
0.81
H2O
DMSO
1.00
1.87
0.95
4.64
1.86
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9.25
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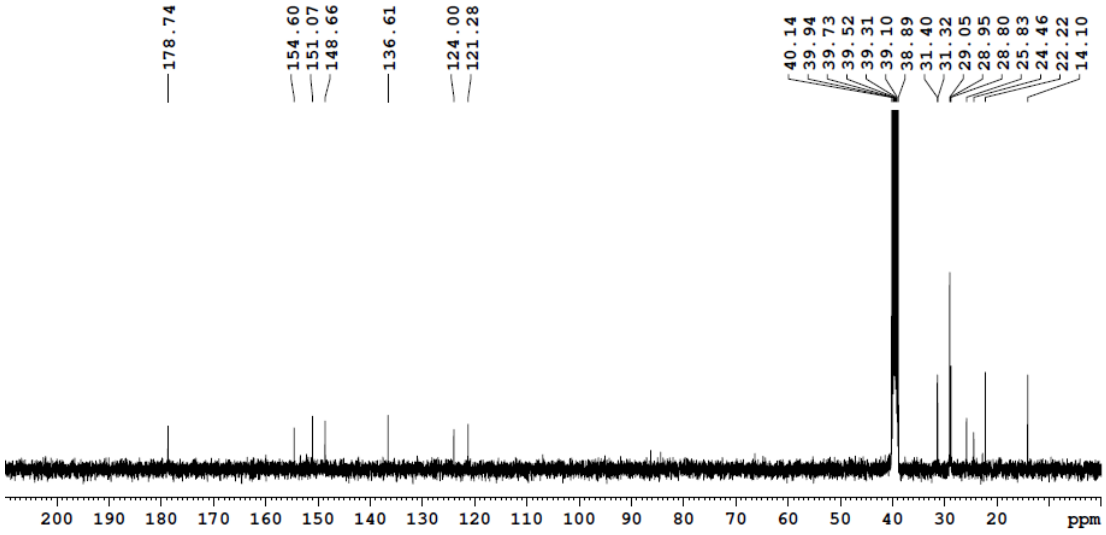
178.74
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39.73
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24.46
22.22
14.10
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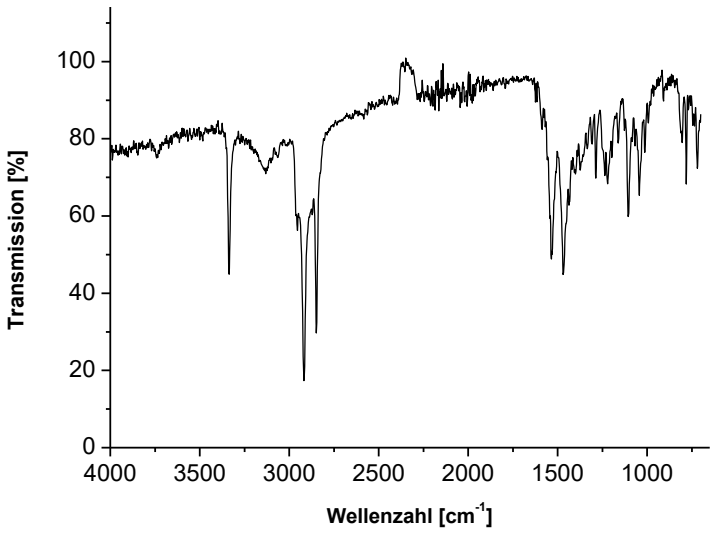
Transmission [%]
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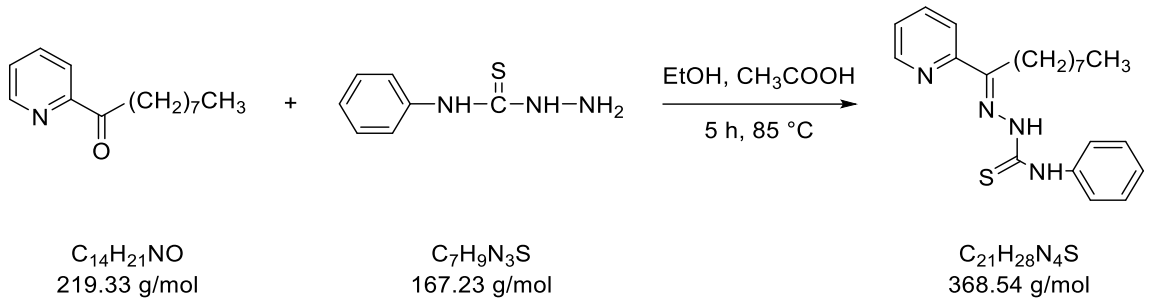
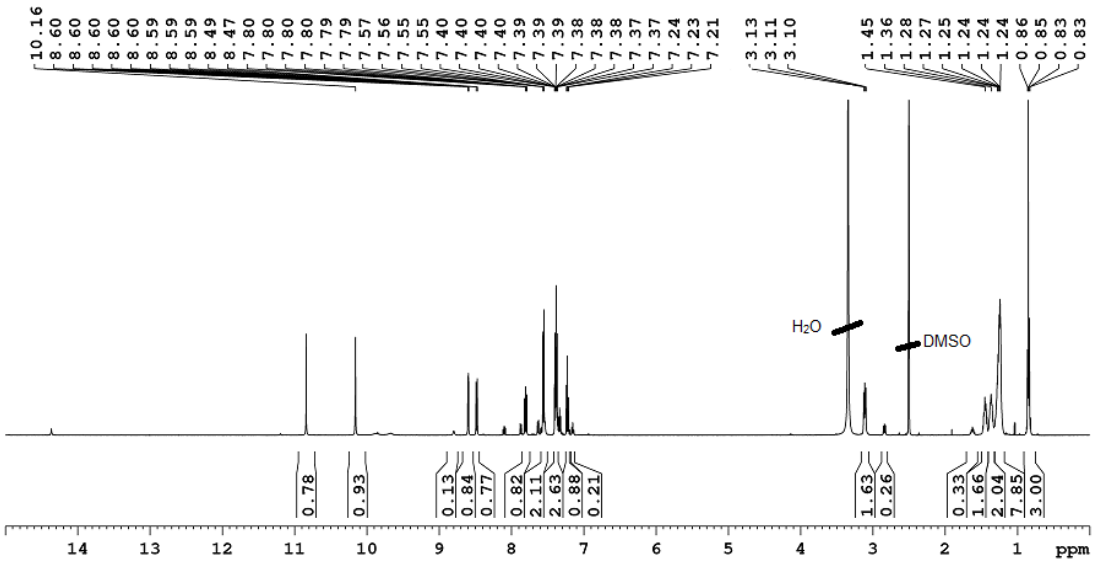
20
0
4000 3500 3000 2500 2000 1500 1000
Wellenzahl [cm-1]

Synthesis of *N*-phenyl-2-(1-(pyridin-2-yl)nonyliden)hydrazin-1-carbothioamide $HL_{py}^{(CH2)7CH3,Ph}$ (26) [5, 6]



$C_{14}H_{21}NO$ 219.33 g/mol | $C_7H_9N_3S$ 167.23 g/mol | $C_{21}H_{28}N_4S$ 368.54 g/mol

N-Phenylhydrazine carbothioamide (250 mg, 1.25 mmol) was dissolved in ethanol (9 mL) and then, glacial acetic acid (0.12 mL) and 1-(pyridin-2-yl)nonan-1-one (351 mg, 1.6 mmol) added and the clear solution heated to 85 °C for 5 h. After cooling to +4 °C for 3 d, resulting yellow precipitate was filtered off, washed with ethanol (2 mL) and dried under vacuum. Yield: 44% (244.5 mg, 0.66 mmol). **IR** (ATR): $\tilde{\boldsymbol{\nu}}$ = 3100, 2925, 2858, 1597, 1547 (C=N), 1537, 1507, 1497, 1475, 1457, 1438, 1417, 1371, 1345, 1251, 1182, 1156, 1129, 1092, 1070, 750 (C=S) cm^{-1}; **^{1}H NMR** (500.13 MHz, DMDO-d_6): δ = 10.84 (s, 1H, C(CH_2)NN*H*), 10.16 (s, 1H, C_6H_5N*H*), 8.60 (ddd, 1H, ^3J = 4.8 Hz, ^4J = 1.8 Hz, ^5J = 1.0 Hz, H6), 8.48 (d, 1H, ^3J = 8.0 Hz, H3), 7.81 (ddd, 1H, ^3J = 8.1 Hz, ^3J = 7.7 Hz, ^4J = 1.8 Hz, H4), 7.57 (dd, 2H, ^3J = 8.2 Hz, ^4J = 1.2 Hz, H2´/H6´), 7.40–7.33 (m, 3H, H3´/H5´, H5), 7.24-7.21 (m, 1H, H4´), 3.11 (t, 2H, ^3J = 7.6 Hz, C(CH_2)=N), 1.45 (quin, 2H, ^3J = 7.5 Hz, C(C$H_2$$CH_2$)=N), 1.36–1.24 (m, 2H, C(C$H_2$$CH_2$)=N), 1.29–1.24 (m, 8H, CH_2), 0.84 (m, 3H, CH_3) ppm; **^{13}C NMR** (125.76 MHz, DMDO-d_6): δ = 177.23 (*C*=S), 154.28 (C2), 151.97 (C6), 148.51 (*C*(CH_2)=N)), 139.15 (C1´), 136.46 (C4), 128.11 (C3´/C5´), 126.14 (C4´), 125.53 (C2´/C6´), 124.96 (C5), 121.59 (C3), 31.26 (*C*$H_2$$CH_2$$CH_3$), 29.05 (*C*$H_2$), 28.83 (*C*$H_2$), 28.63 (*C*$H_2$), 25.87 (C($CH_2$*C*$H_2$)=N), 24.66 (C(*C*$H_2$$CH_2$)=N), 22.09 (*C*$H_2$$CH_3$), 13.97 (*C*$H_3$) ppm; **Elemental analysis** (%) calcd for $C_{21}H_{28}N_4S$: C 68.44, H 7.66, N 15.20, S 8.70; found (%): C 68.47, H 7.94, N 14.96, S 8.92.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8.60
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8.60
8.59
8.59
8.59
8.49
8.47
7.80
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7.80
7.80
7.79
7.79
7.57
7.56
7.55
7.55
7.40
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7.40
7.40
7.39
7.39
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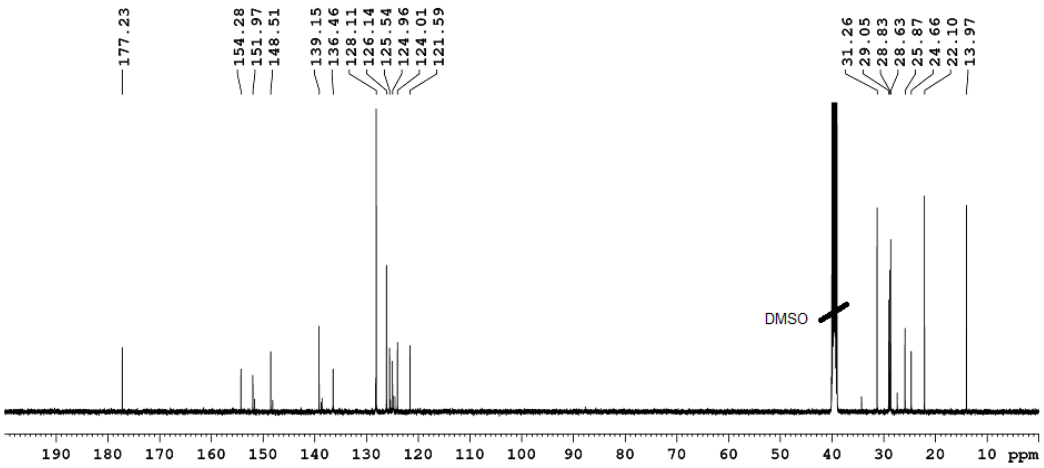
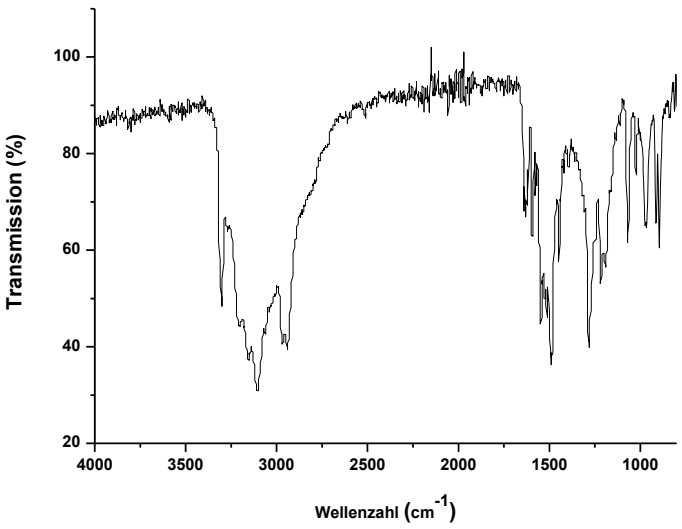
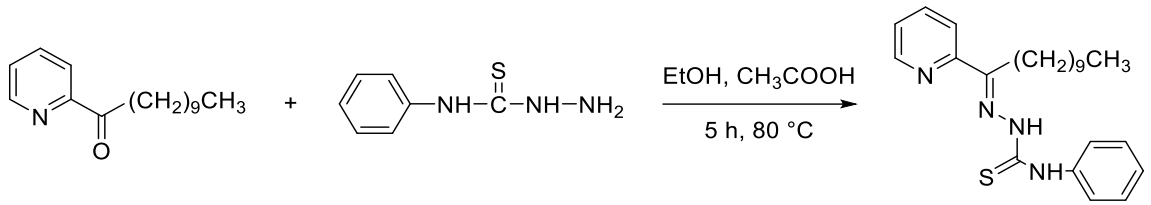
7.38
7.38
7.38
7.37
7.37
7.24
7.23
7.21
3.13
3.11
3.10
1.45
1.36
1.28
1.27
1.25
1.24
1.24
1.24
0.86
0.85
0.83
0.83
H2O
DMSO
0.78
0.93
0.13
0.84
0.77
0.82
2.11
2.63
0.88
0.21
1.63
0.26
0.33
1.66
2.04
7.85
3.00
14 13 12 11 10 9 8 7 6 5 4 3 2 1 ppm


177.23
154.28
151.97
148.51
139.15
136.46
128.11
126.14
125.54
124.96
124.01
121.59
31.26
29.05
28.83
28.63
25.87
24.66
22.10
13.97
DMSO
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

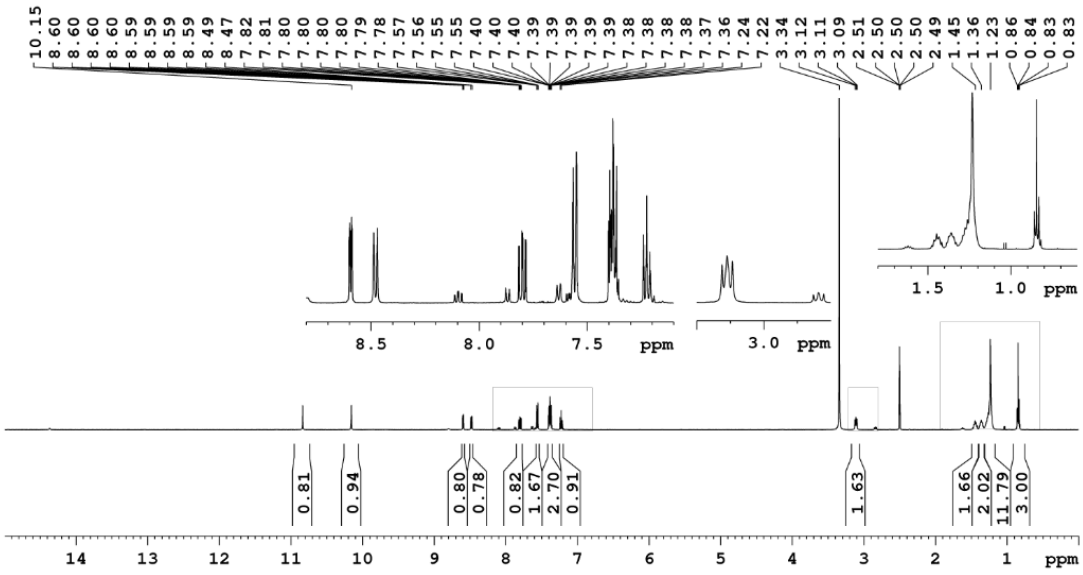

Transmission (%)
100
80
60
40
20
4000 3500 3000 2500 2000 1500 1000
Wellenzahl (cm-1)

Synthesis of *N*-phenyl-2-(1-(2-pyridyl)undecyliden)hydrazin-1-carbothioamide $HL_{py}^{(CH2)9CH3,Ph}$ (27) [5, 6]



$C_{16}H_{25}NO$ 247.38 g/mol | $C_7H_9N_3S$ 167.23 g/mol | $C_{23}H_{32}N_4S$ 396.60 g/mol

N-Phenylhydrazine carbothioamide (410.1 mg, 2.45 mmol) was dissolved in ethanol (30 mL) and then, a mixture of glacial acetic acid (0.25 mL) and 1-(pyridin-2-yl)undecan-1-one (676.62 mg, 2.74 mmol) in ethanol (5 mL) added. The resulting yellow solution was heated to 80 °C for 5 h, the solvent then partially removed under vacuum and the remaining solution cooled to +4 °C for 2 d. The yellow solid which had precipitated was recrystallized from ethanol (20 mL), washed with ice-cold ethanol (2×2 mL) and dried under vacuum. Yield: 66% (645 mg, 1.63 mmol). **IR** (ATR): $\tilde{\nu}$ = 3334 (NH), 2955, 2917, 2850, 1519 (C=N), 1468, 1451, 1420, 1372, 1458, 1181, 1100, 782 (C=S), 720 cm^{-1}; **^{1}H NMR** (500.13 MHz, DMSO-d_6): δ = 10.83 (s, H, C(CH_2)NN*H*), 10.15 (s, 1H, C_6H_5N*H*), 8.59 (ddd, 1H, ^3J = 4.9 Hz, ^4J = 1.8 HZ, ^5J = 1.0 Hz, H6), 8.48 (d, 1H, ^3J = 8.1 Hz, 1H, H3), 7.80 (ddd, 1H, ^3J = 8.1 Hz, ^3J = 7.4 Hz, ^4J = 1.8 Hz, H4), 7.55 (dd, 2H, ^3J = 8.2 Hz, ^4J = 1.4 Hz, H2´/H6´), 7.40–7.36 (m, 3H, H3´/H5´, H5), 7.22 (m, 1H, H4´), 3.11 (t, 2H, ^3J = 7.6 Hz, C(CH_2)=N), 1.45 (quin, 2H, ^3J = 7.9 Hz, C(C$H_2$$CH_2$)=N), 1.35 (quin, 2H, ^3J = 7.3 Hz, C(C$H_2$$CH_2$$CH_2$)=N), 1.23 (m, 12H, (C$H_2$)$_6$$CH_3$), 0.84 (t, 3H, ^3J = 6.9 Hz, CH_3) ppm; **^{13}C NMR** (125.76 MHz, DMSO-d_6): δ = 177.22 (*C*=S), 154.29 (C2), 151.99 (C6), 148.47 (*C*(CH_2)=N), 139.15 (C1´), 136.44 (C4), 128.19 (C3´/C5´), 126.13 (C4´), 124.93 (C2´/C6´), 123.99 (C5), 121.58 (C3), 31.29 (*C*$H_2$$CH_2$$CH_3$), 29.03 (*C*$H_2$), 28.97 (*C*$H_2$), 28.87 (*C*$H_2$), 28.71 (*C*$H_2$), 28.69 (*C*$H_2$), 25.87 (*C*$H_2$), 24.65 (C(*C*$H_2$$CH_2$)=N), 22.10 (*C*$H_2$$CH_3$), 13.97 (*C*$H_3$) ppm; **Elemental analysis** (%) calcd. for $C_{23}H_{32}N_4S$: C 69.66, H 8.13, N 14.13, S 8.09; found (%): C 70.73, H 8.59, N 13.59, S 7.34.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3.09
2.51
2.50
2.50
2.50
2.49
1.45
1.36
1.23
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0.84
0.83
0.83
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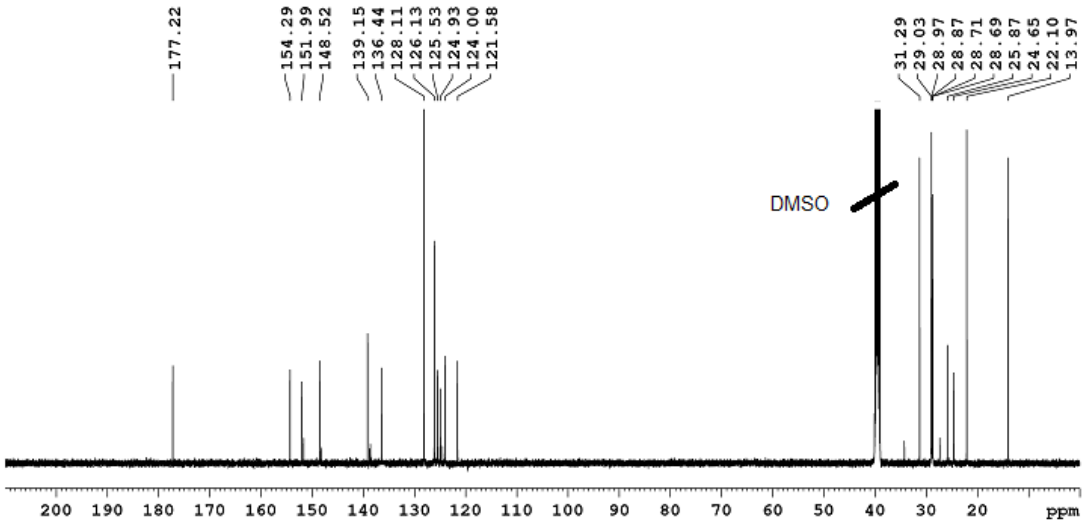
8.0
7.5
ppm
3.0
ppm
1.5
1.0
ppm
0.81
0.94
0.80
0.78
0.82
1.67
2.70
0.91
1.63
1.66
2.02
11.79
3.00
14
13
12
11
10
9
8
7
6
5
4
3
2
1
ppm


177.22
154.29
151.99
148.52
139.15
136.44
128.11
126.13
125.53
124.93
124.00
121.58
31.29
29.03
28.97
28.87
28.71
28.69
25.87
24.65
22.10
13.97
DMSO
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170
160
150
140
130
120
110
100
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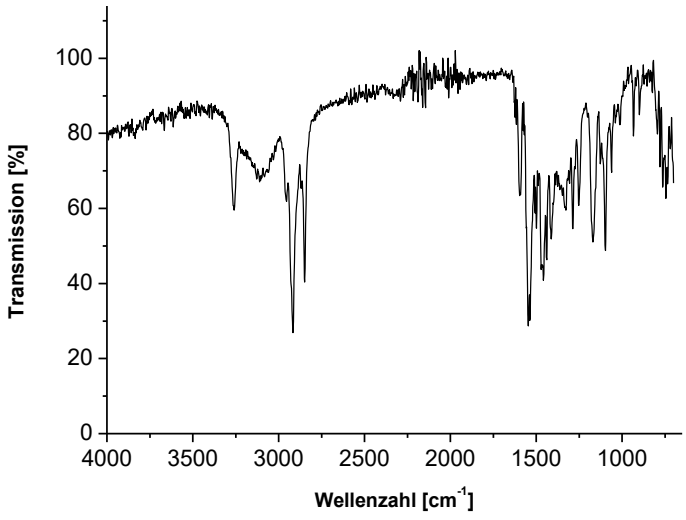
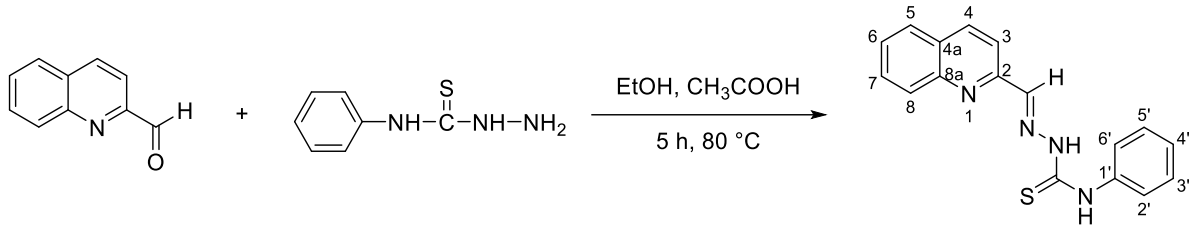
80
70
60
50
40
30
20
ppm


Transmission [%]
100
80
60
40
20
0
4000
3500
3000
2500
2000
1500
1000
Wellenzahl [cm-1]

Synthesis of *N*-phenyl-2-(quinolin-2-ylmethylen)hydrazin-1-carbothioamide $HL_{quin}^{H,Ph}$ (30) [5, 6]

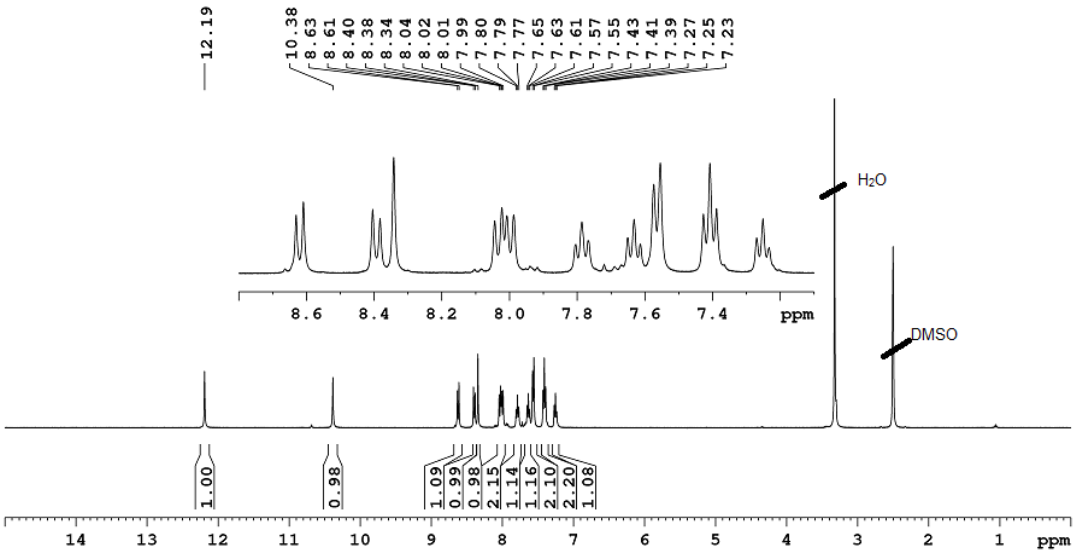


$C_{10}H_7NO$ 157.17 g/mol

$C_7H_9N_3S$ 167.23 g/mol

$C_{17}H_{14}N_4S$ 306.39 g/mol

N-Phenylhydrazine carbothioamide (503.2 mg, 3.00 mmol) and quinoline-2-carbaldehyde (497.3 mg, 3.16 mmol) were dissolved in ethanol (50 mL). Then, glacial acetic acid (0.5 mL) was added and the yellow solution heated to 80 °C for 5 h. The solvent was partially removed under vacuum and the remaining solution stored at + 4 °C for 3 d. The pale-yellow solid which had precipitated was filtered off, washed with ice-cold ethanol (2×10 mL), and dried under vacuum. Yield: 47% (428.4 mg, 1.40 mmol). **IR** (ATR): $\tilde{\nu}$ = 1740, 1543, 1521, 1365, 1234, 1215, 1183, 1098, 827, 756 (C=S) cm^{-1}; **^{1}HNMR** (400.40 MHz, DMSO-d_6): δ = 12.19 (s, 1H, CHNN*H*), 10.82 (s, 1H, C_6H_5N*H*), 8.62 (d, 1H, ^3J = 8.4 Hz, H3), 8.39 (d, 1H, ^3J = 8.4 Hz, H4), 8.34 (s, 1H, C*H*N), 8.11-7.99 (m, 2H, H5, H8), 7.79 (t, 1H, ^3J = 7.3 Hz, H7), 7.61 (t, 1H, ^3J = 7.3 Hz, H6), 7.56 (d, 2H, ^3J = 7.8 Hz, H2´/H6´), 7.43 (t, 2H, ^3J = 7.8 Hz, 2H, H3´/H5´), 7.25 (t, ^3J = 7.3 Hz, 1H, H4´) ppm; **^{13}C NMR** (100.68 MHz, DMSO-d_6): δ = 176.58 (*C*=S), 153.78 (C2), 147.37 (C8a), 143.08 (*C*H=N), 138.96 (C1´), 136.24 (C4), 129.96 (C7), 128.82 (C8), 128.14 (C3´/C5´), 127.93 (C5), 127.91 (C6), 127.24 (C2´/C6´), 126.33 (C4´), 125.68 (C4a), 118.45 (C3) ppm; **Elemental analysis** (%) calcd. for $C_{17}H_{14}N_4S$: C 66.64, H 4.61, N 18.29, S 10.47; found (%): C 66.05, H 4.57, N 18.65, S 10.60.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8.61
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8.38
8.34
8.04
8.02
8.01
7.99
7.80
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7.63
7.61
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7.55
7.43
7.41
7.39
7.27
7.25
7.23
H2O
DMSO
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1.09
0.99
0.98
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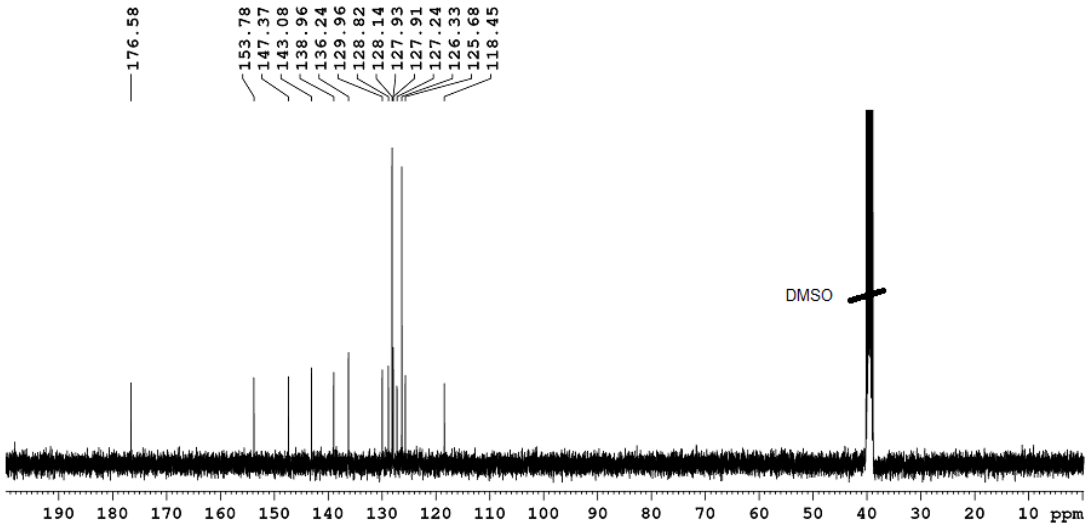
1.14
1.16
2.10
2.20
1.08
ppm


176.58
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136.24
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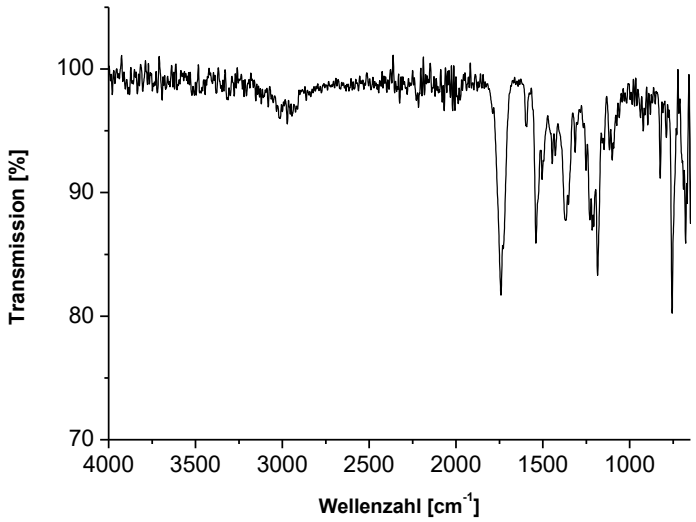
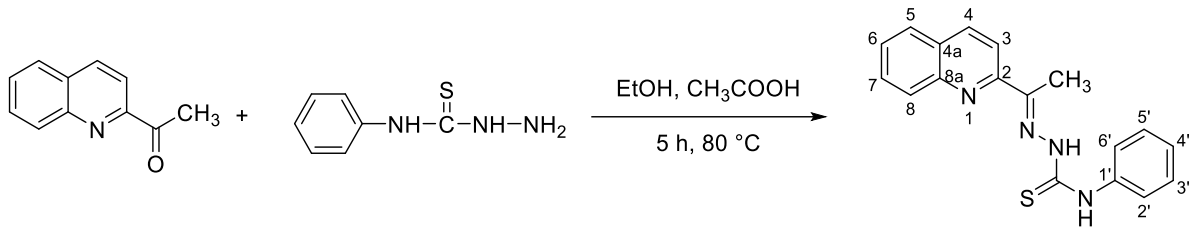
128.82
128.14
127.93
127.91
127.24
126.33
125.68
118.45
DMSO
ppm


Transmission [%]
Wellenzahl [cm-1]

Synthesis of *N*-phenyl-2-(quinolin-2-ylethylen)hydrazin-1-carbothioamide $HL_{quin}^{CH3,Ph}$ (31) [5, 6]

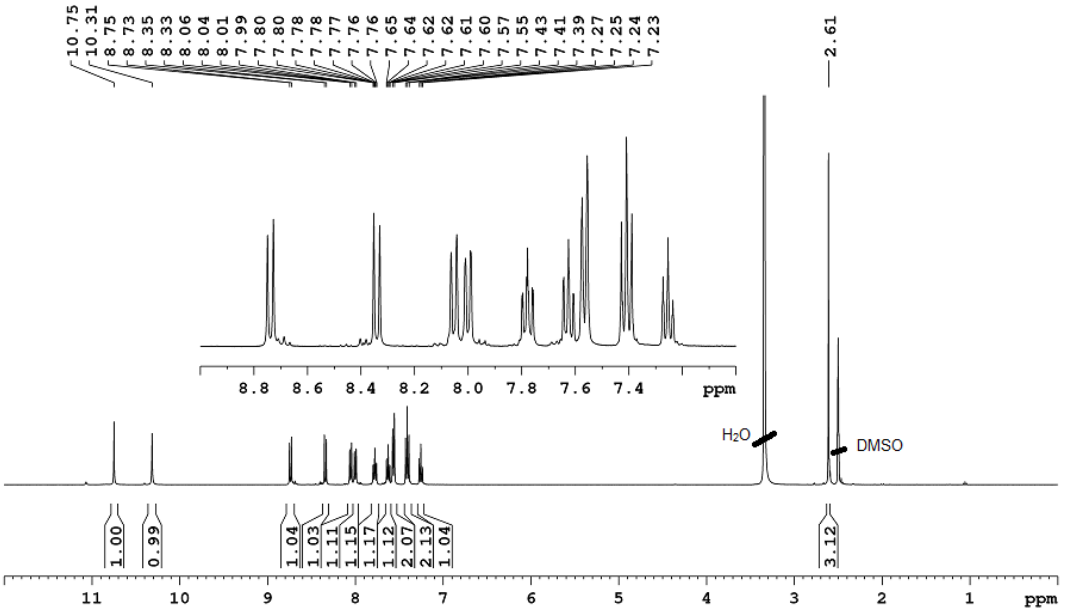


$C_{11}H_9NO$
171.20 g/mol

$C_7H_9N_3S$
167.23 g/mol

$C_{18}H_{16}N_4S$
320.41 g/mol

In a 100 mL round-bottom flask, *N*-phenylhydrazine carbothioamide (234.6 mg, 1.40 mmol) and 1-(quinolin-2-yl)ethan-1-one (236.3 mg, 1.38 mmol) were dissolved in ethanol (30 mL), glacial acetic acid added (0.25 mL) and the yellow solution heated to 85 °C for 6 h. After cooling to +4 °C for 1 h, resulting yellow precipitate was filtered off, washed with ice-cold ethanol (2×10 mL), and dried under vacuum. Yield: 46% (209 mg, 0.65 mmol). **IR** (ATR): $\tilde{\boldsymbol{\nu}}$ = 3159, 1521, 1493, 1448, 1257, 1183, 1127, 1082, 942, 829, 750, 705 cm^{-1}; **^{1}H NMR** (400.40 MHz, DMSO-d_6): δ = 10.75 (s, 1H, C(CH_3)NN*H*), 10.31 (s, 1H, C_6H_5N*H*), 8.73 (d, 1H, ^3J = 8.8 Hz, H3), 8.34 (d, 1H, ^3J = 8.7 Hz, H4), 8.03 (d, 1H, ^3J = 8.4 Hz, H8), 8.00 (d, 1H, ^3J = 7.8 Hz, H5), 7.78 (ddd, 1H, ^3J = 8.4 Hz, ^3J = 6.9 Hz, ^4J = 1.4 Hz, H7), 7.62 (ddd, 1H, ^3J = 8.1 Hz, ^3J = 6.8 Hz, ^4J = 1.4 Hz, H6), 7.56 (d, 2H, ^3J = 7.6 Hz, H2´/H6´), 7.41 (t, 2H, ^3J = 7.8 Hz, H3´/H5´), 7.25 (t, 1H, ^3J = 7.4 Hz, H4´), 2.61 (s, 3H, CH_3) ppm; **^{13}C NMR** (100.68 MHz, DMSO-d_6): δ = 177.43 (*C*=S), 154.75 (C2), 149.14 (C8a), 146.74 (*C*(CH_3)=N), 138.19 (C1´), 135.92 (C4), 129.74 (C7), 129.15 (C8), 128.16 (C3´/C5´), 127.86 (C5), 127.76 (C6), 127.13 (C2´/C6´), 126.44 (C4´), 125.70 (C4a), 119.19 (C3), 12.24 (*C*H_3) ppm; **Elemental analysis** (%) calcd. for $C_{18}H_{16}N_4S$: C 67.47, H 5.03, N 17.49, S 10.01; found (%): C 67.30, H 4.92, N 17.98, S 9.74.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10.31
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8.73
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8.33
8.06
8.04
8.01
7.99
7.80
7.80
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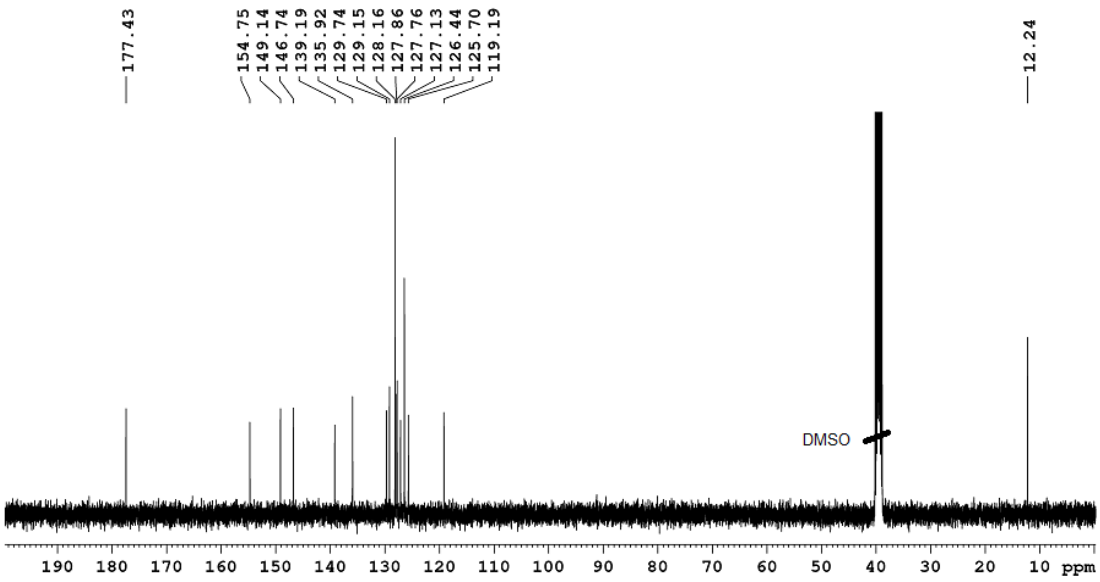
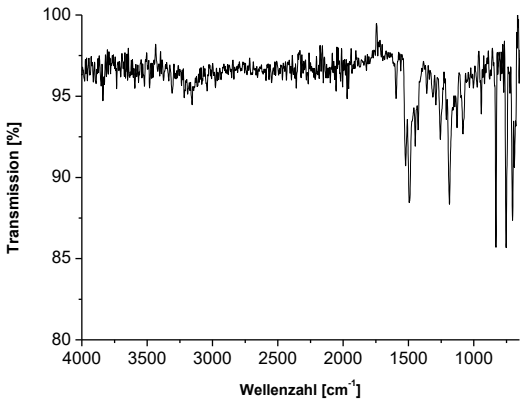
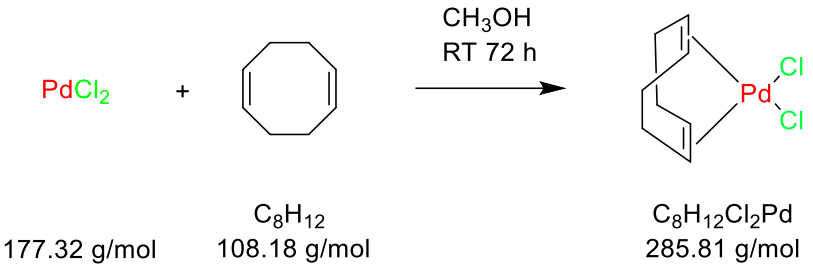
7.61
7.60
7.57
7.55
7.43
7.41
7.39
7.27
7.25
7.24
7.23
2.61
8.8 8.6 8.4 8.2 8.0 7.8 7.6 7.4 ppm
H2O
DMSO
1.00
0.99
1.04
1.03
1.11
1.15
1.17
1.12
2.07
2.13
1.04
3.12
11 10 9 8 7 6 5 4 3 2 1 ppm

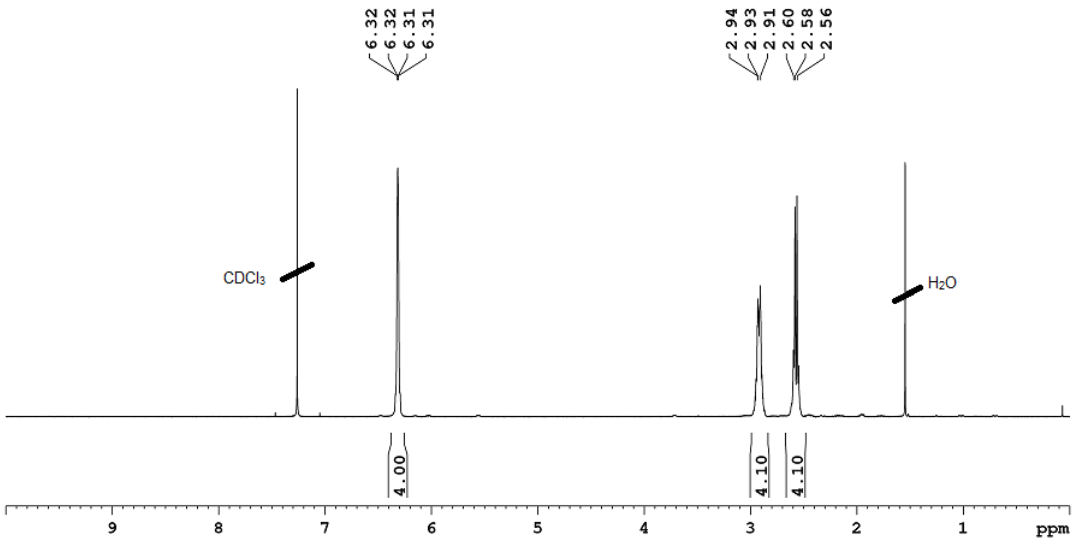

177.43
154.75
149.14
146.74
139.19
135.92
129.74
129.15
128.16
127.86
127.76
127.13
126.44
125.70
119.19
12.24
DMSO
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

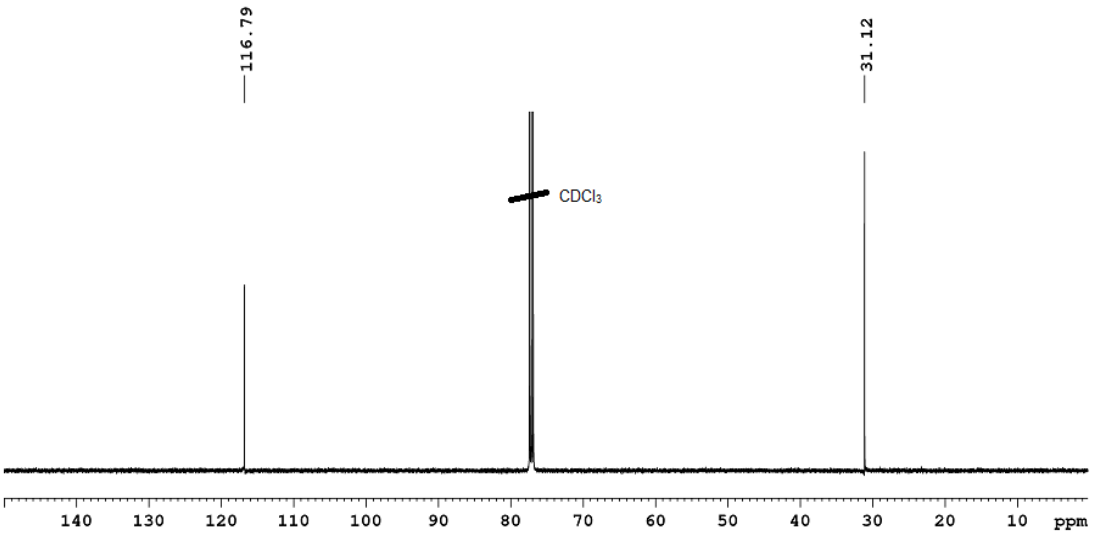

100
95
90
85
80
Transmission [%]
4000 3500 3000 2500 2000 1500 1000
Wellenzahl [cm-1]

Synthesis of [$PdCl_2$(cod)] (32) [7]



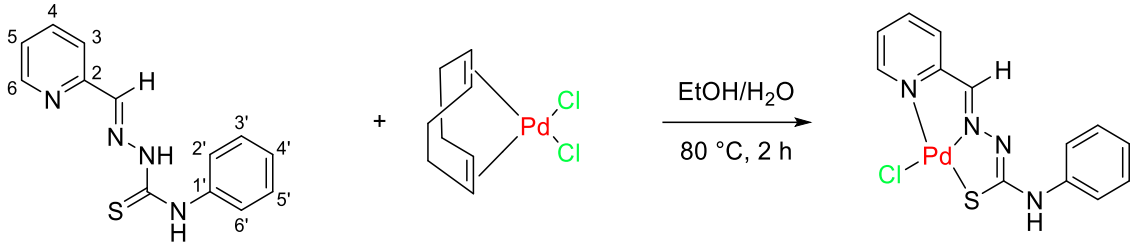
Palladium(II) chloride (1679 mg, 9.47 mmol) was suspended in methanol (30 mL) and then 1,5-cyclooctadien (4.6 mL, 4.05 g, 37.35 mmol) added. The reaction mixture was stirred at room temperature for 72 h, during which a yellow precipitate formed, which was filtered off, washed with methanol (2×10 mL) und diethyl ether (2×5 mL) and dried under vacuum. **Yield**: 82% (2.22 g, 7.77 mmol). **^{1}H NMR** (500.13 MHz, $CDCl_3$): δ = 6.32–6.31 (m, 4H, C*H*), 2.94–2.91 (m, 4H, CH_2), 2.60–2.56 (m, 4H, CH_2) ppm; **^{13}C NMR** (125.67 MHz, $CDCl_3$): δ = 116.79 (*C*H_2), 31.12 (*C*H) ppm; **Elemental analysis** (%): Calcd. for $C_8H_{12}N_4PdCl_2$: C 33.66, H 4.24; found (%): C 33.58, H 4.44.




116.79
31.12
CDCl3
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

Spectral data for metal semithiocarbazone complexes

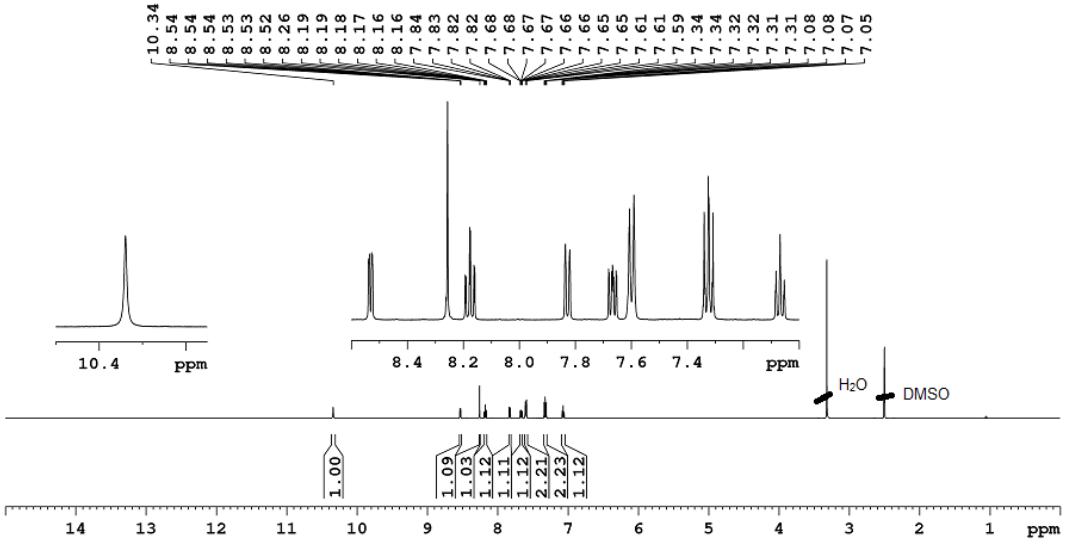
[PdCl($L_{py}^{H,Ph}$)] (34) [6, 11, 12]



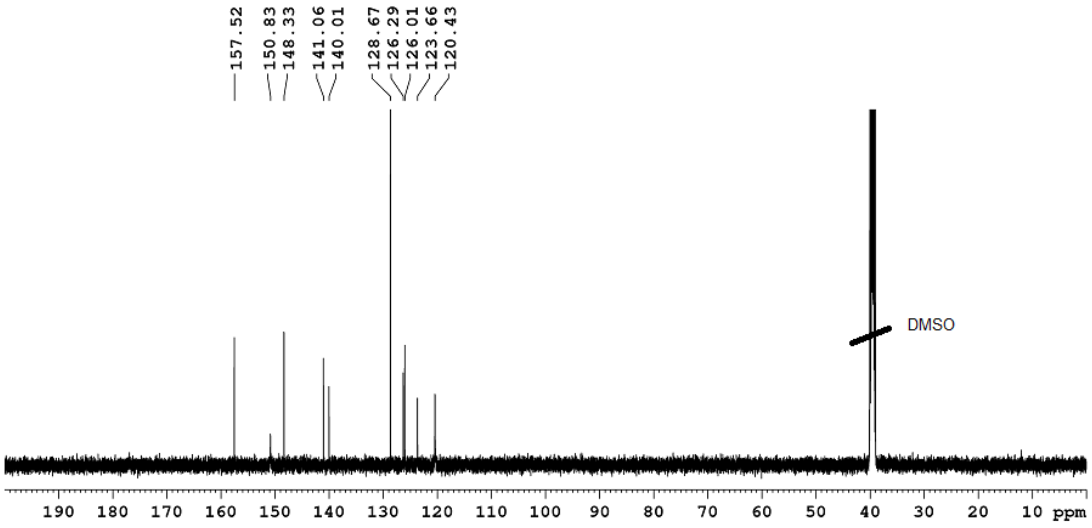
$C_{13}H_{12}N_4S$
256.33 g/mol

$C_8H_{12}Cl_2Pd$
285.81 g/mol

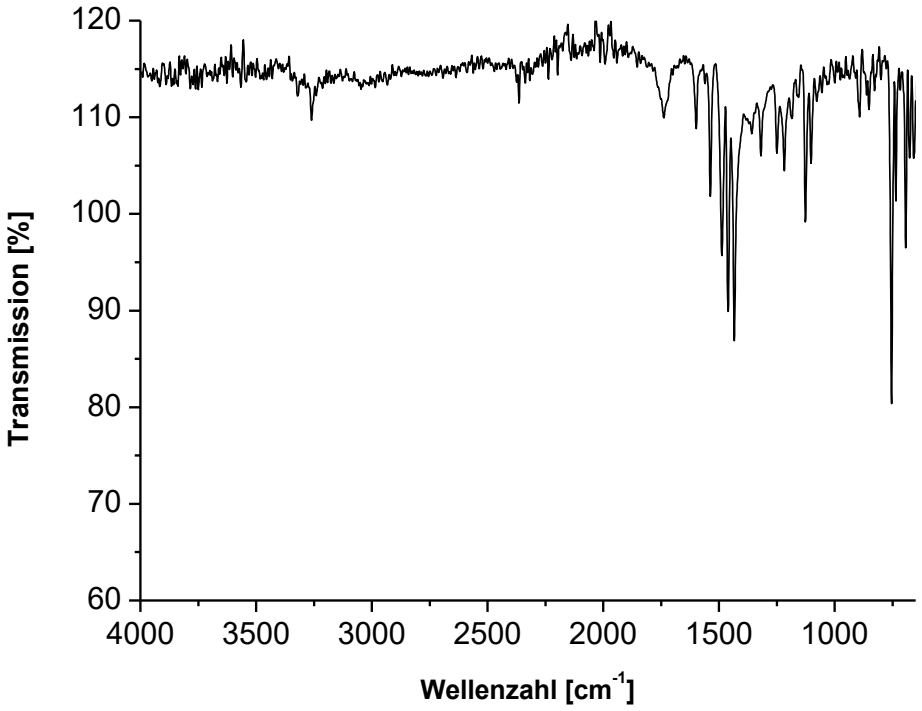
$C_{13}H_{11}N_4PdSCl$
397.19 g/mol



^{1}HNMR (500.13 MHz, DMSO-d_6)

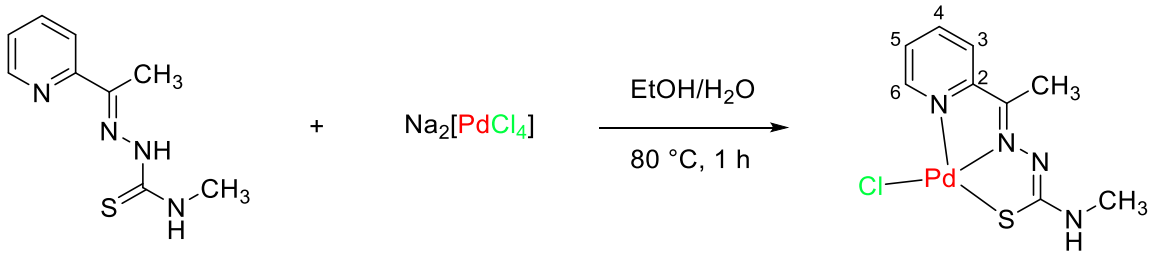


^{13}C NMR (125.76 MHz, DMSO-d_6)


120
110
100
90
80
70
60
Transmission [%]
4000
3500
3000
2500
2000
1500
1000
Wellenzahl [cm-1]

IR (ATR)

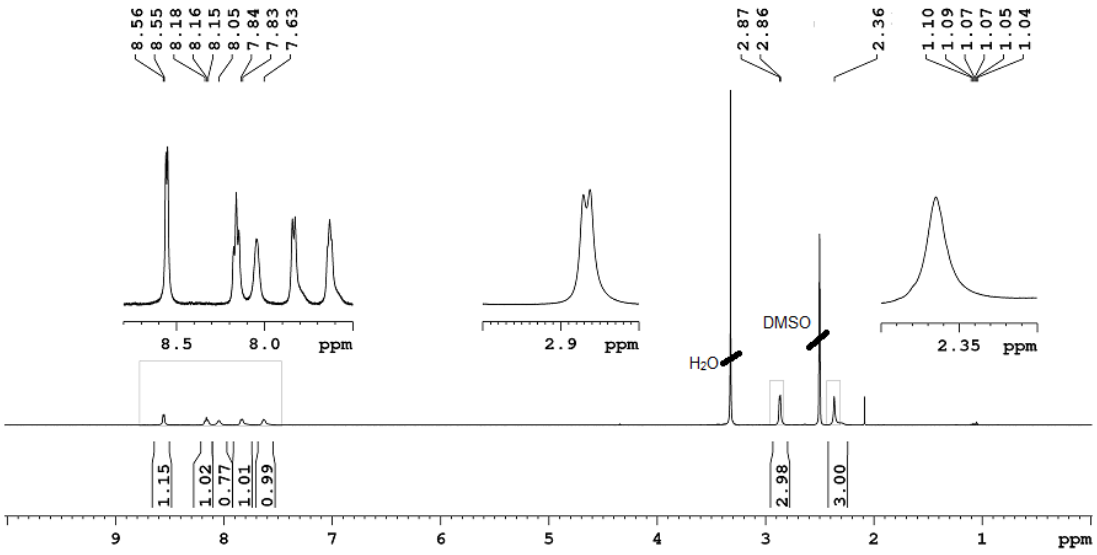
[PdCl($L_{py}^{CH3,CH3}$)] (35) [6, 11, 12]



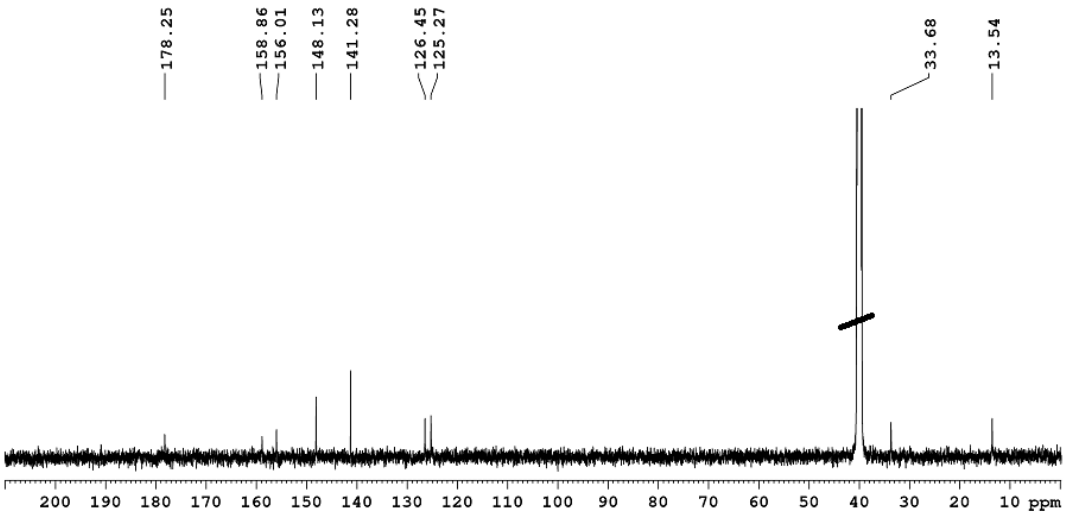
$C_9H_{11}N_4S$
208.29 g/mol

294.21 g/mol

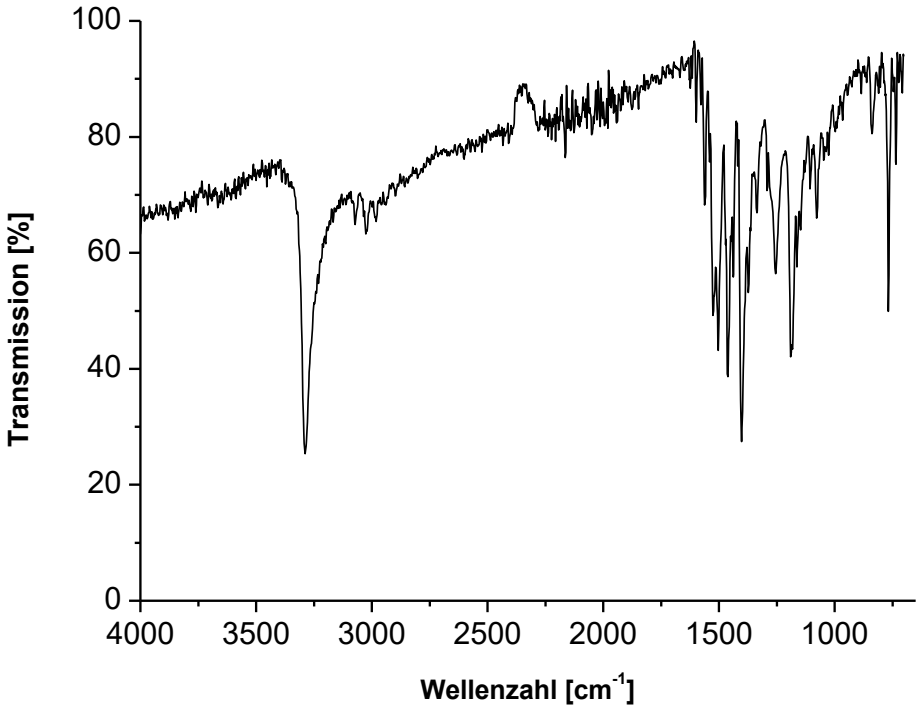
$C_9H_{11}N_4SPdCl$
349.15 g/mol



^{1}H NMR (500.13 MHz, DMSO-d_6)



^{13}C NMR (125.76 MHz, DMSO-d_6)


100
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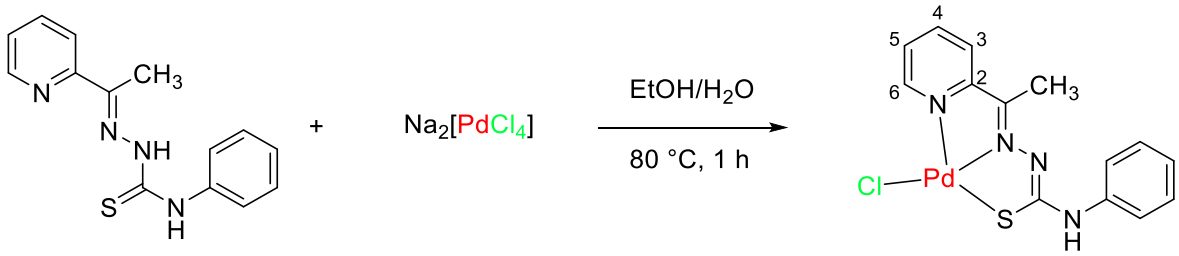
20
0
Transmission [%]
4000
3500
3000
2500
2000
1500
1000
Wellenzahl [cm-1]

IR (ATR)

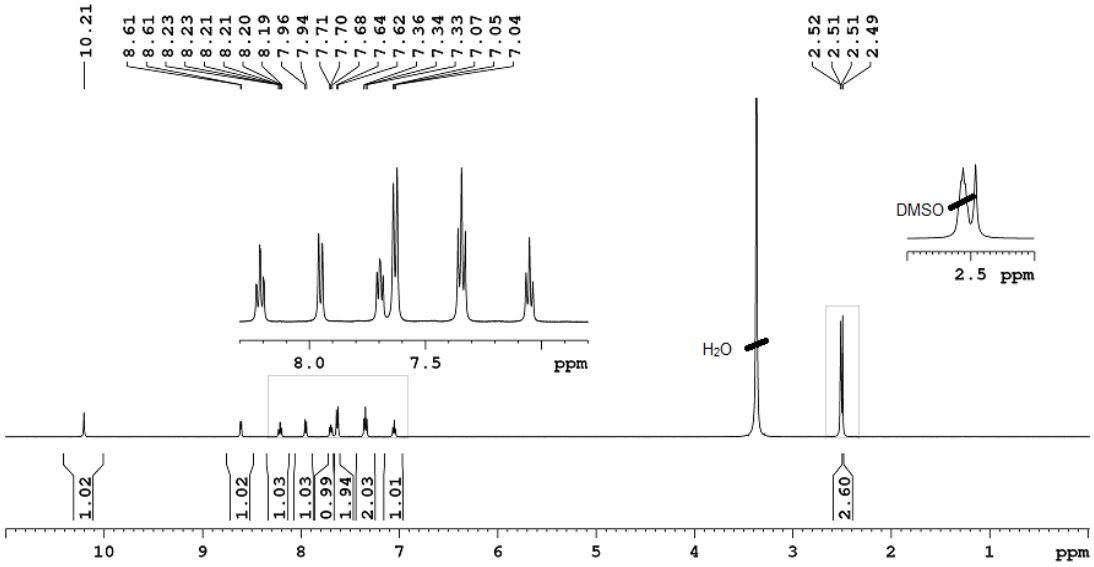
[PdCl($L_{py}^{CH3,Ph}$)] (36) [6, 11, 12]



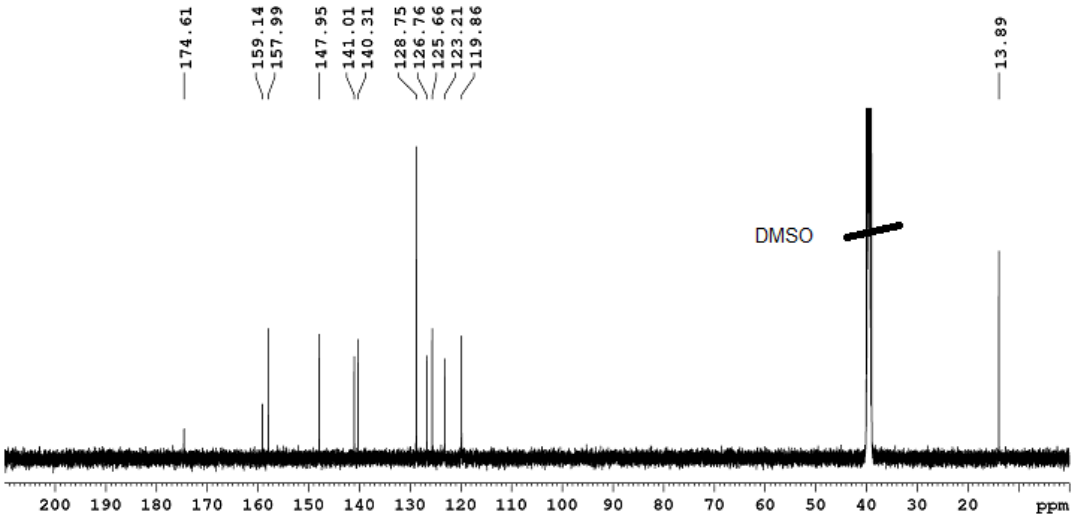
$C_{14}H_{14}N_4S$
270.35 g/mol

294.21 g/mol

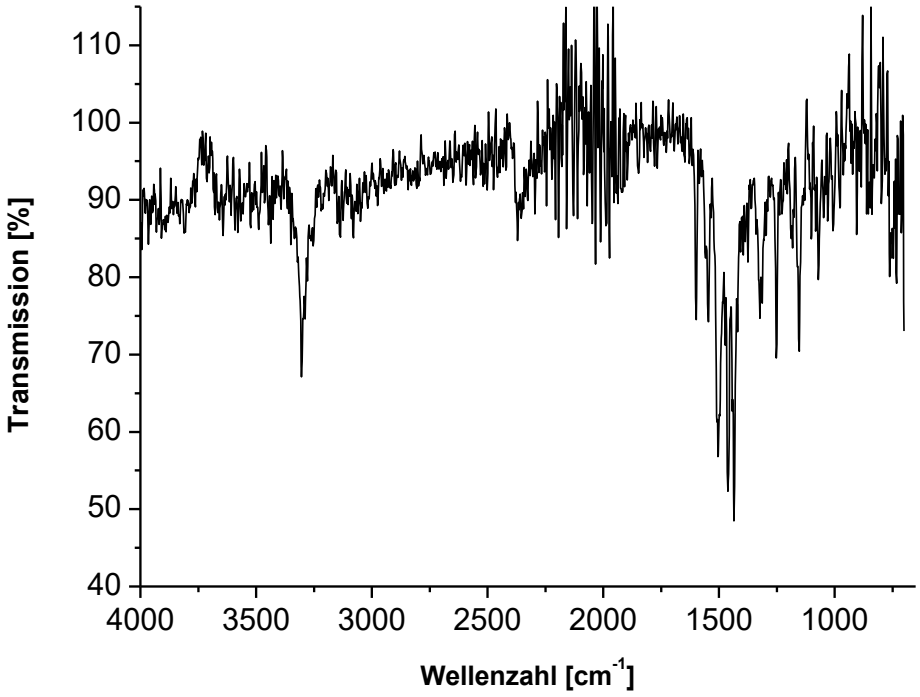
$C_{14}H_{13}N_4SPdCl$
411.22 g/mol



^{1}H NMR (500.13 MHz, DMSO-d_6)

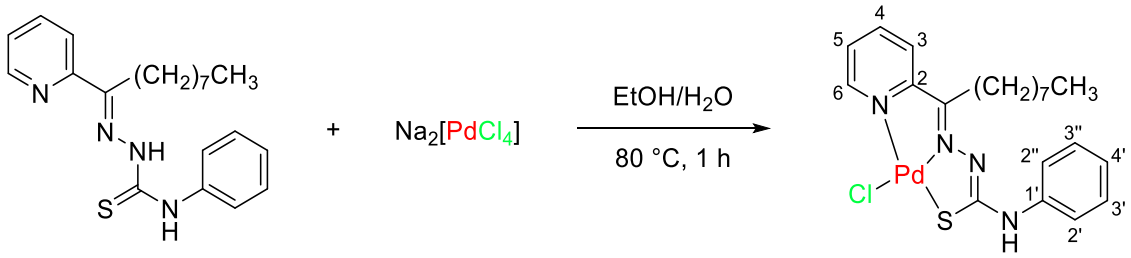


^{13}C NMR (125.76 MHz, DMSO-d_6)


Transmission [%]
110
100
90
80
70
60
50
40
4000
3500
3000
2500
2000
1500
1000
Wellenzahl [cm-1]

IR (ATR)

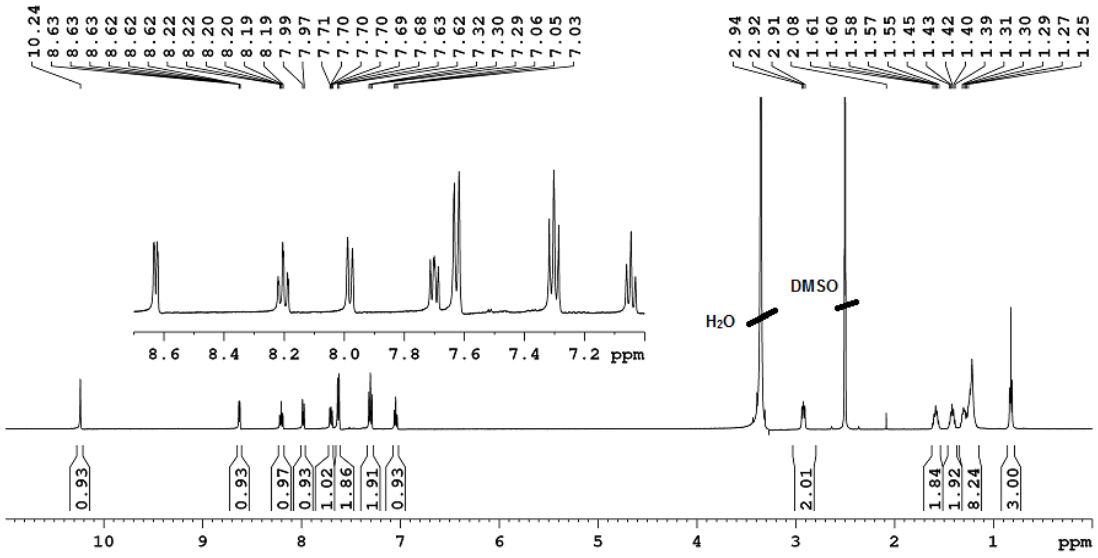
[PdCl($L_{py}^{(CH2)7CH3,Ph}$)] (37) [6, 8, 9]



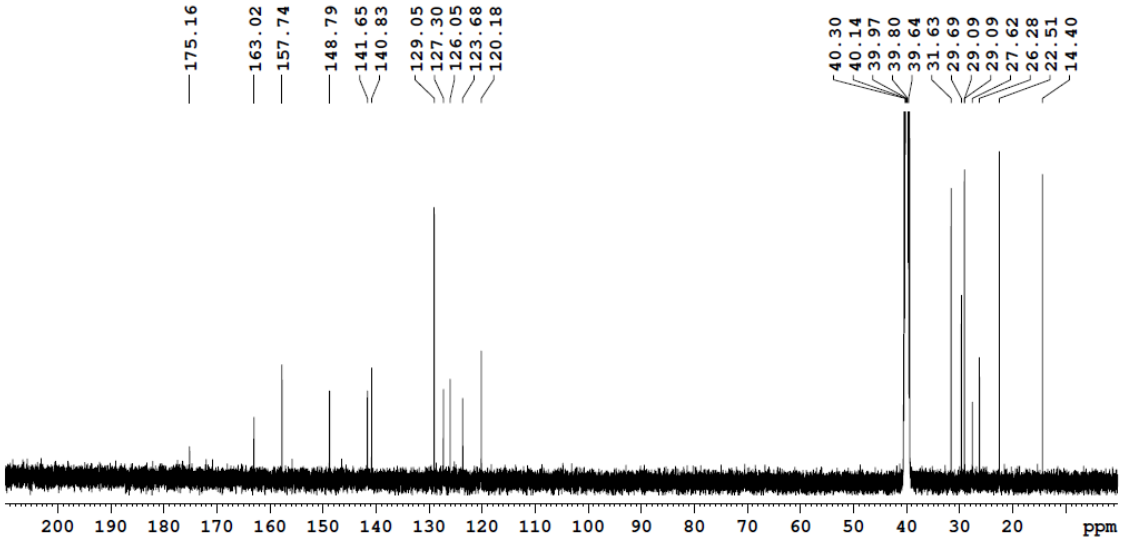
$C_{21}H_{28}N_4S$
368.54 g/mol

294.21 g/mol

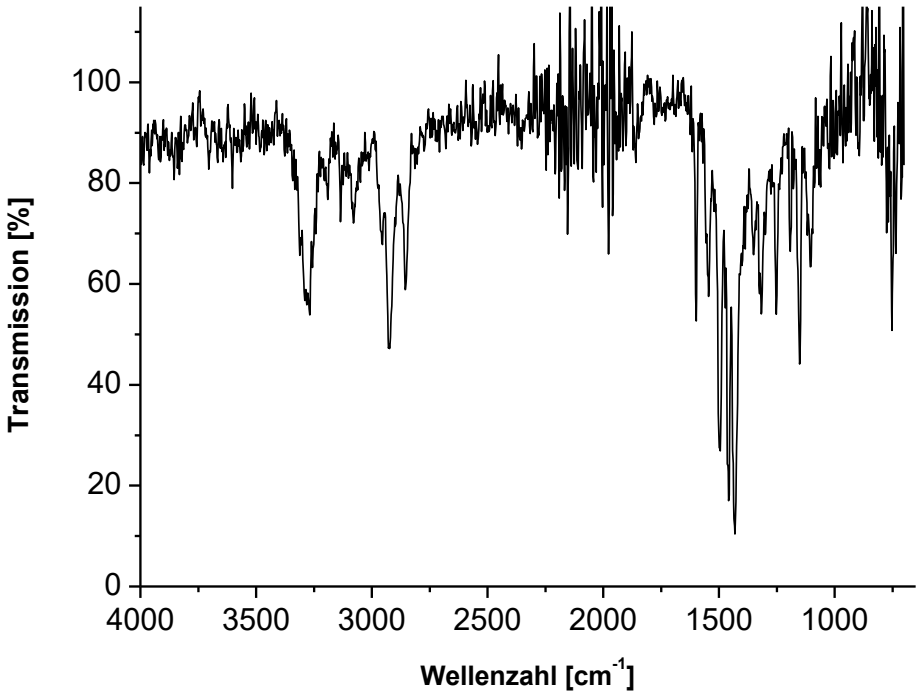
$C_{21}H_{27}N_4SPdCl$
509.41 g/mol



^{1}H NMR (500.13 MHz, DMSO-d_6)



^{13}C NMR (125.76 MHz, DMSO-d_6)


Transmission [%]
100
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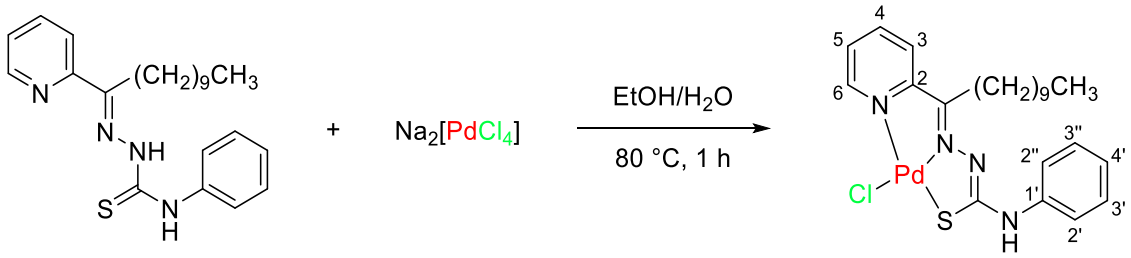
4000
3500
3000
2500
2000
1500
1000
Wellenzahl [cm-1]

IR (ATR)

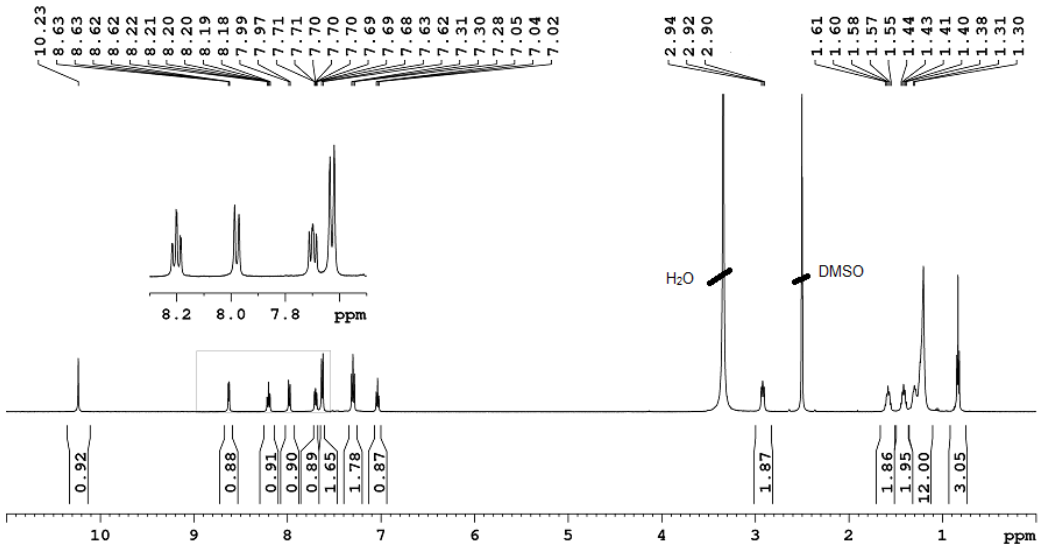
[PdCl($L_{py}^{(CH2)9CH3,Ph}$)] (38) [6, 8, 9]



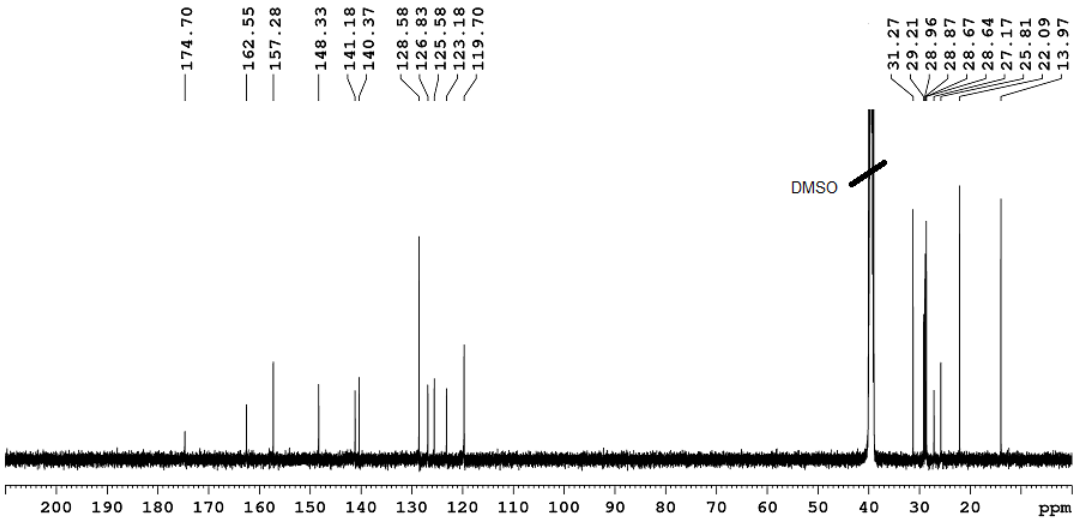
$C_{23}H_{32}N_4S$
396.60 g/mol

294.21 g/mol

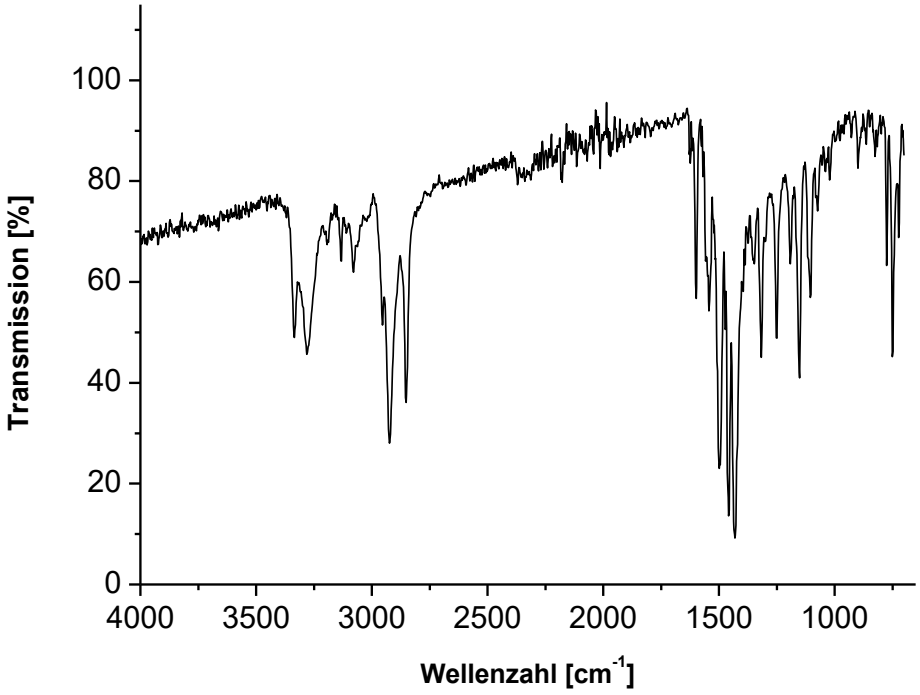
$C_{23}H_{31}N_4SPdCl$
509.41 g/mol



^{1}H NMR (500.13 MHz, DMSO-d_6)



^{13}C NMR (125.76 MHz, DMSO-d_6)


Transmission [%]
100
80
60
40
20
0
4000
3500
3000
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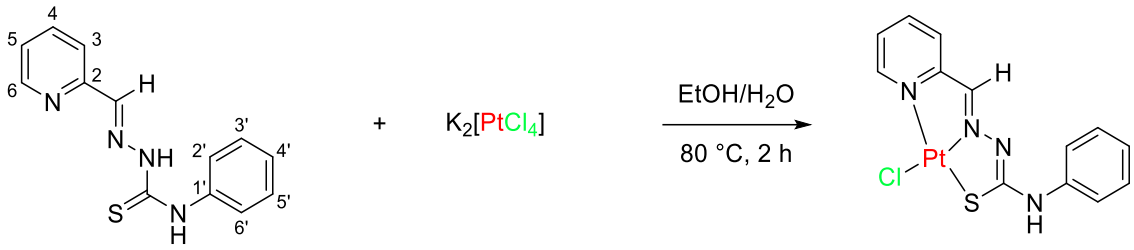
2000
1500
1000
Wellenzahl [cm-1]

IR (ATR)

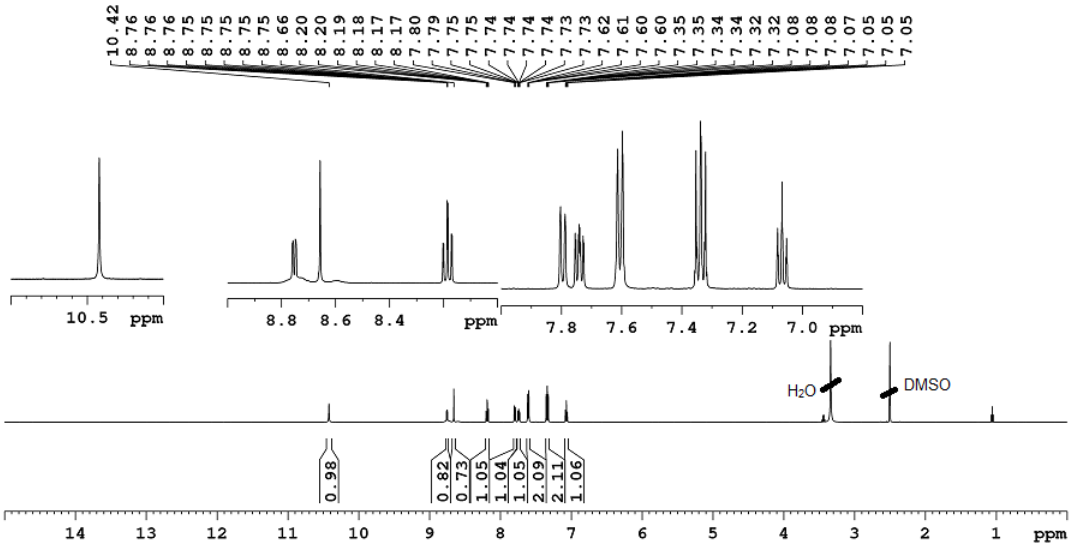
[PtCl(L$_{py}^{H,Ph}$)] (39) [6, 8, 9]



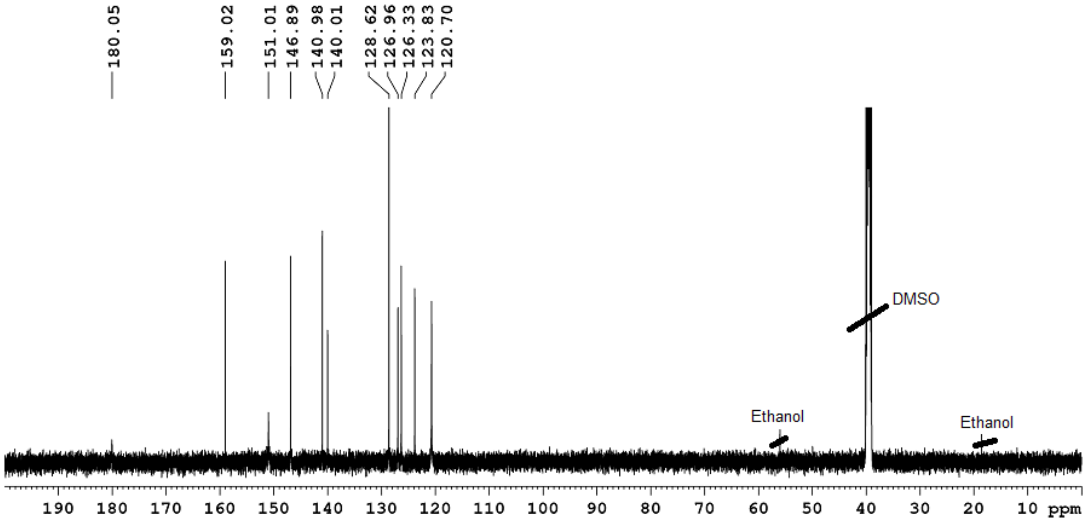
$C_{13}H_{12}N_4S$
256.33 g/mol

415.06 g/mol

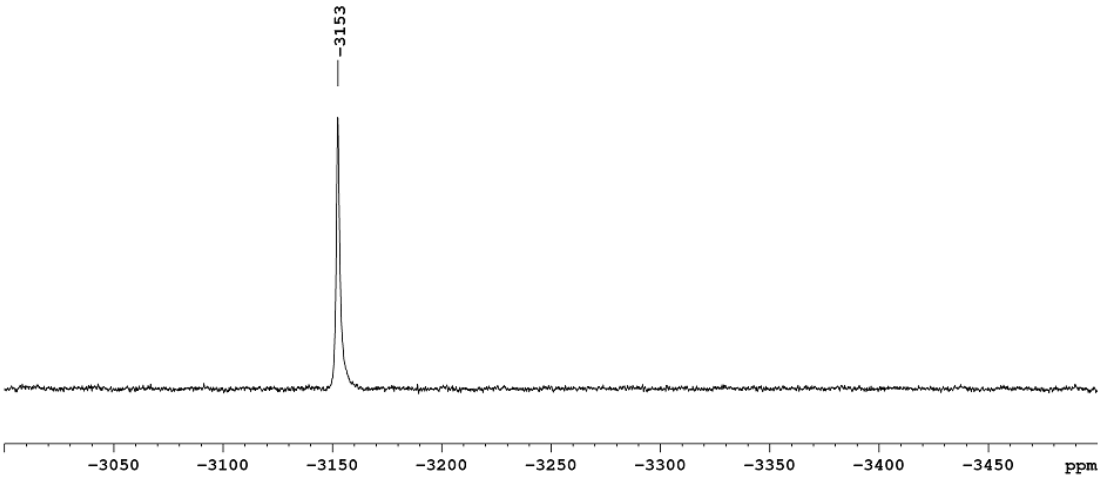
$C_{13}H_{11}N_4PtSCl$
485.85 g/mol



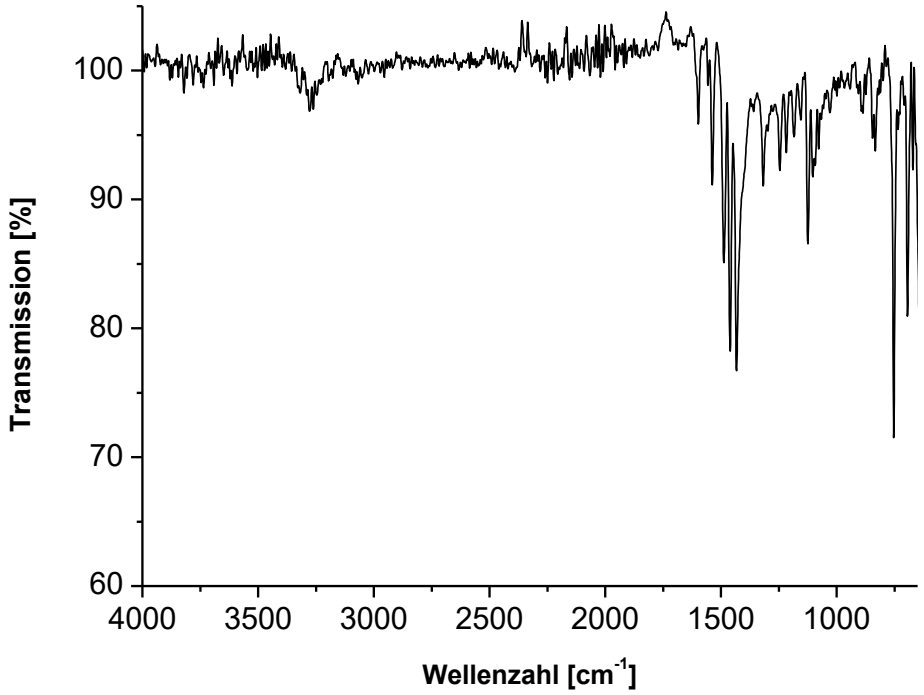
[1]HNMR (500.13 MHz, DMSO-d_6)



[13]C NMR (125.76 MHz, DMSO-d_6)

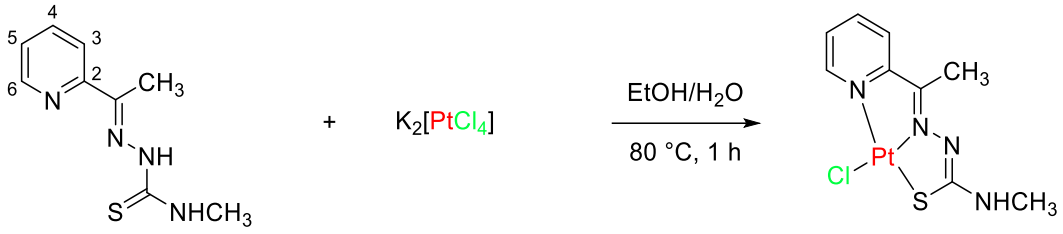


^{195}Pt NMR (107.51 MHz, DMSO-d_6)



IR (ATR)

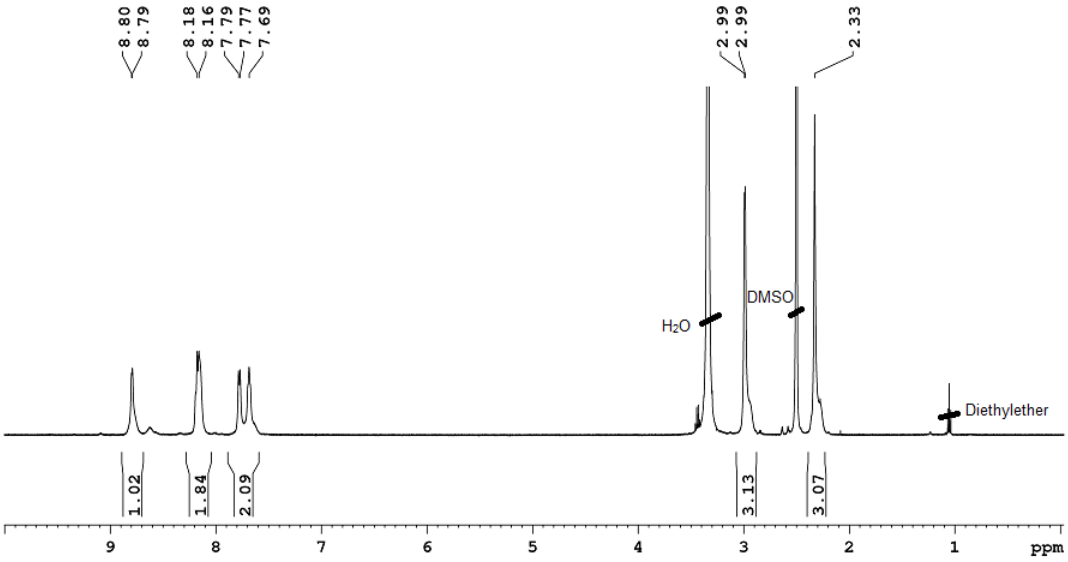
[PtCl(L$_{py}^{CH3,Ph}$)] (40) [6, 8, 9]



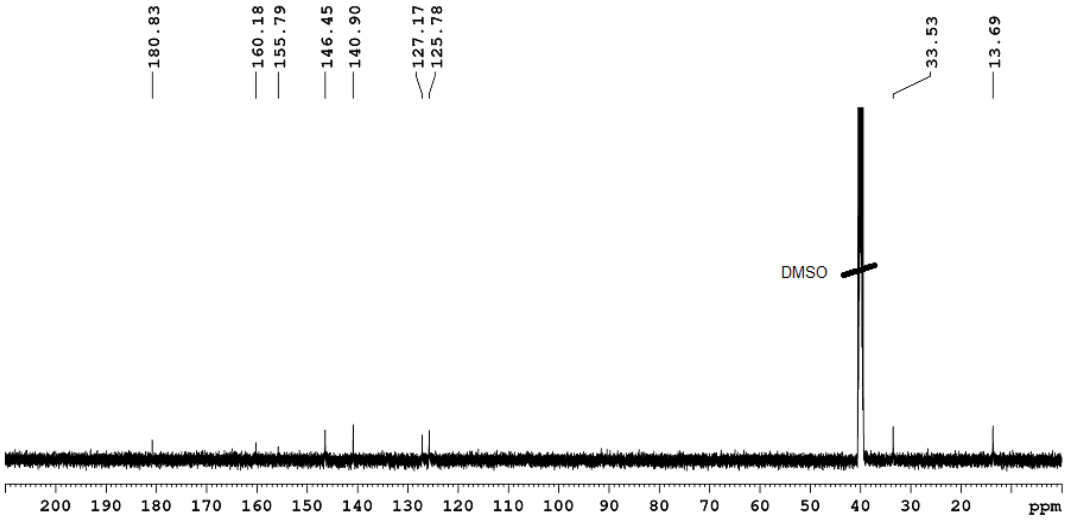
$C_9H_{12}N_4S$
208.29 g/mol

415.06 g/mol

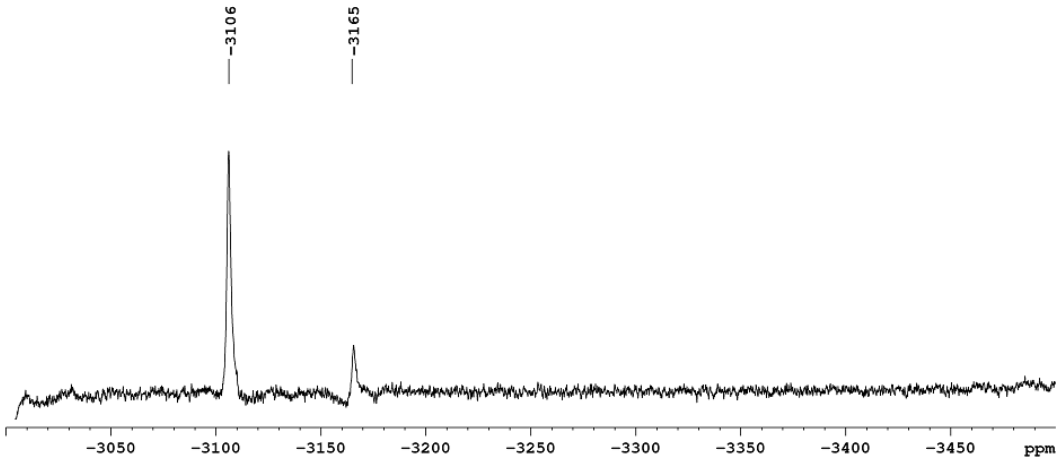
$C_9H_{11}N_4PtSCl$
437.81 g/mol



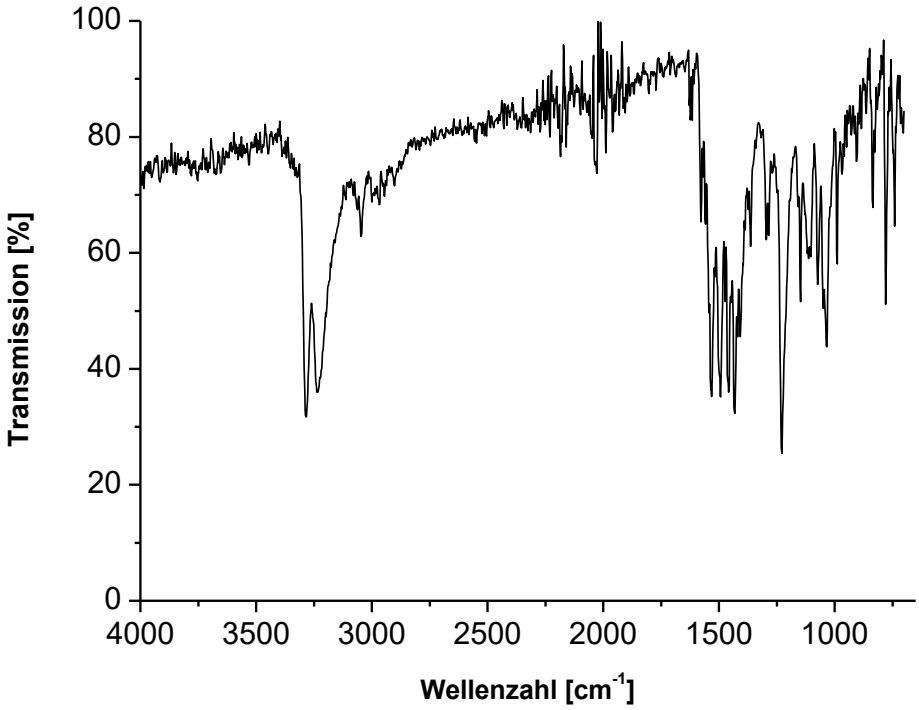
^{1}H NMR (500.13 MHz, DMSO-d_6)



^{13}C NMR (125.76 MHz, DMSO-d_6)

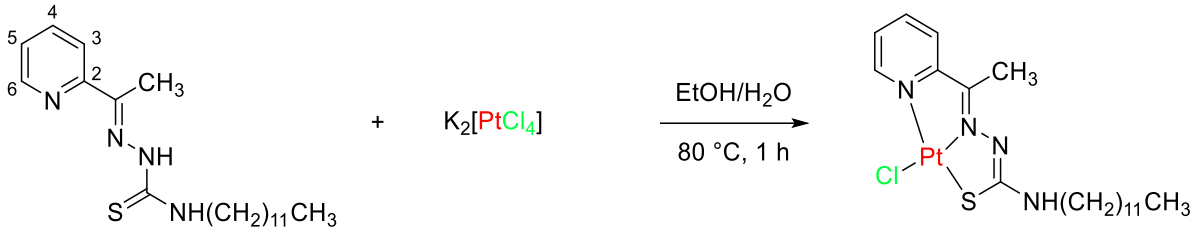


^{195}Pt NMR (107.51 MHz, DMSO-d_6)



IR (ATR)

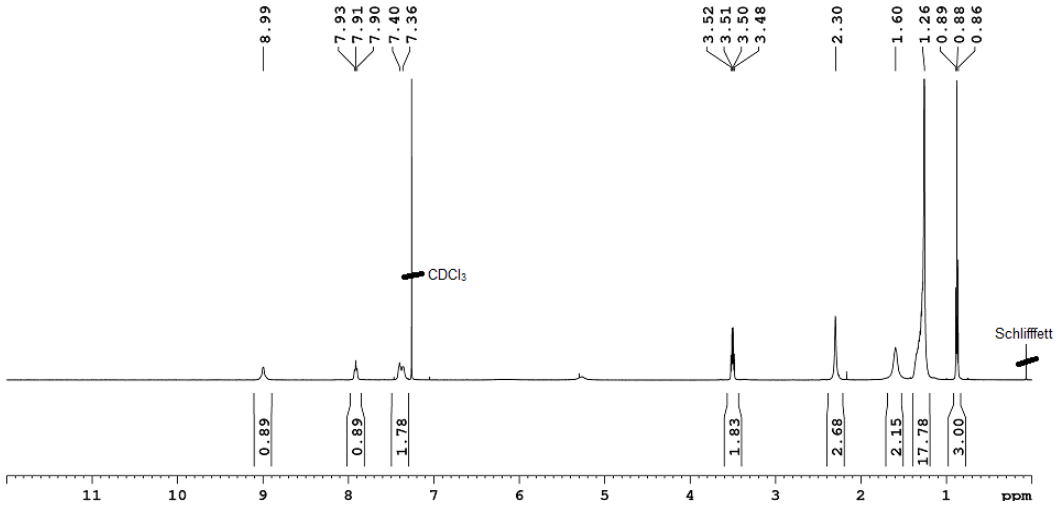
[PtCl($L_{py}^{CH3,(CH2)11CH3}$)] (41) [6, 8, 9]



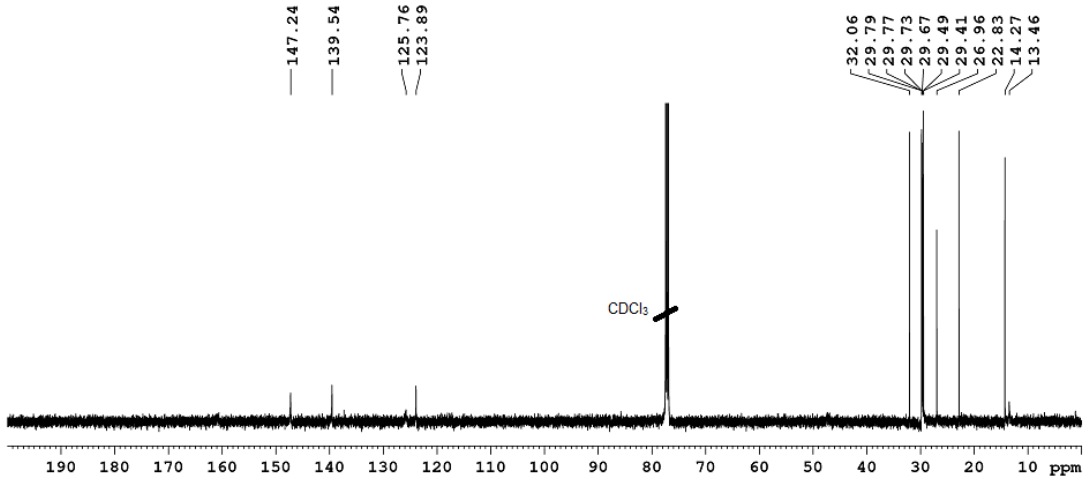
$C_{20}H_{34}N_4S$
362.58 g/mol

415.06 g/mol

$C_{20}H_{33}N_4PtSCl$
592.11 g/mol

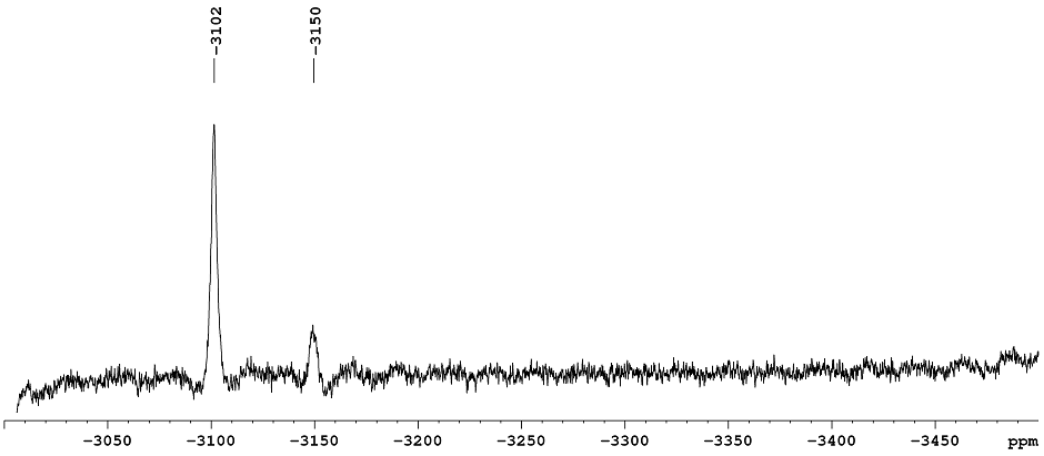


^{1}H NMR (500.13 MHz, $CDCl_3$)

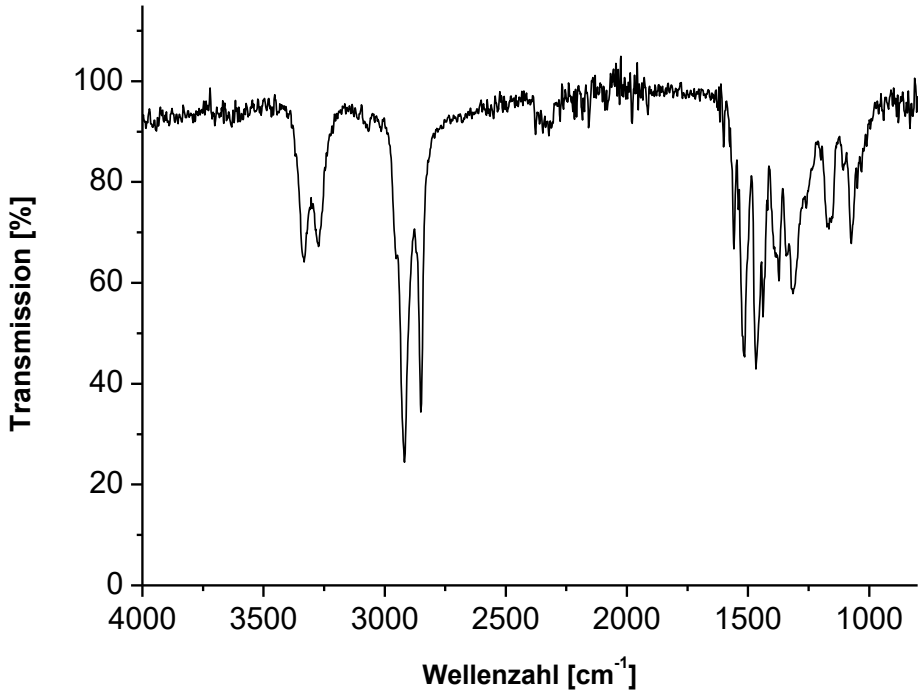


^{13}C NMR (125 MHz, $CDCl_3$, ppm)

Due to low signal intensity, the peaks of *C*=S and py-C2 were not identified.

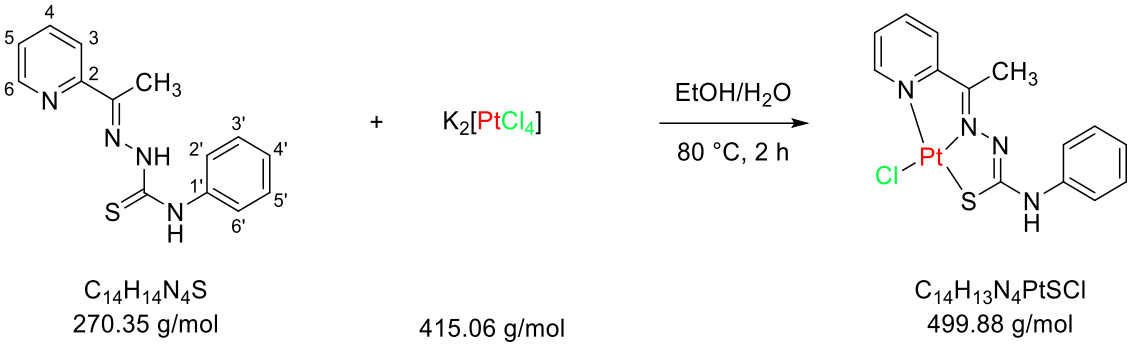


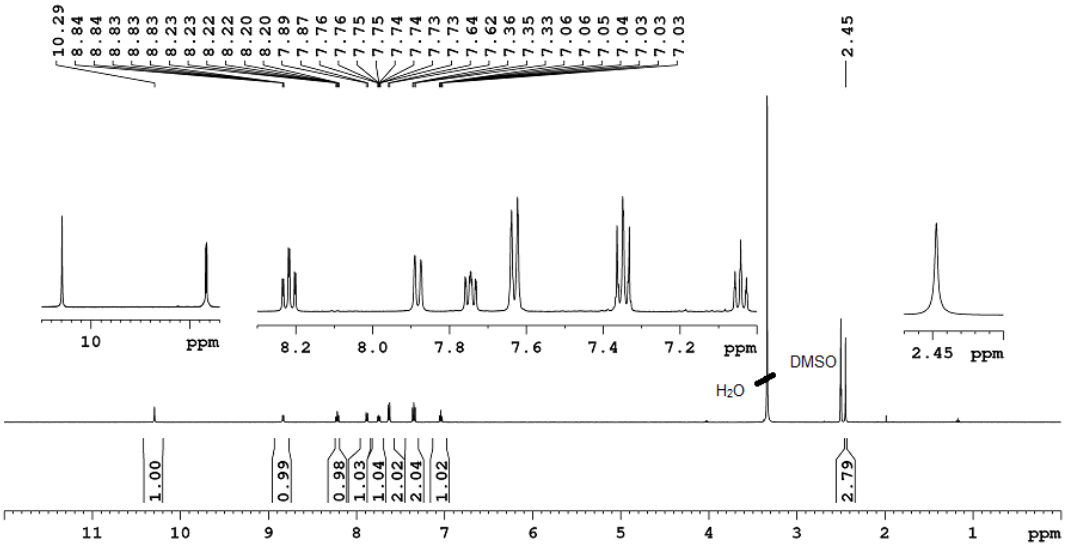
^{195}Pt NMR (107.5 MHz, $CDCl_3$)



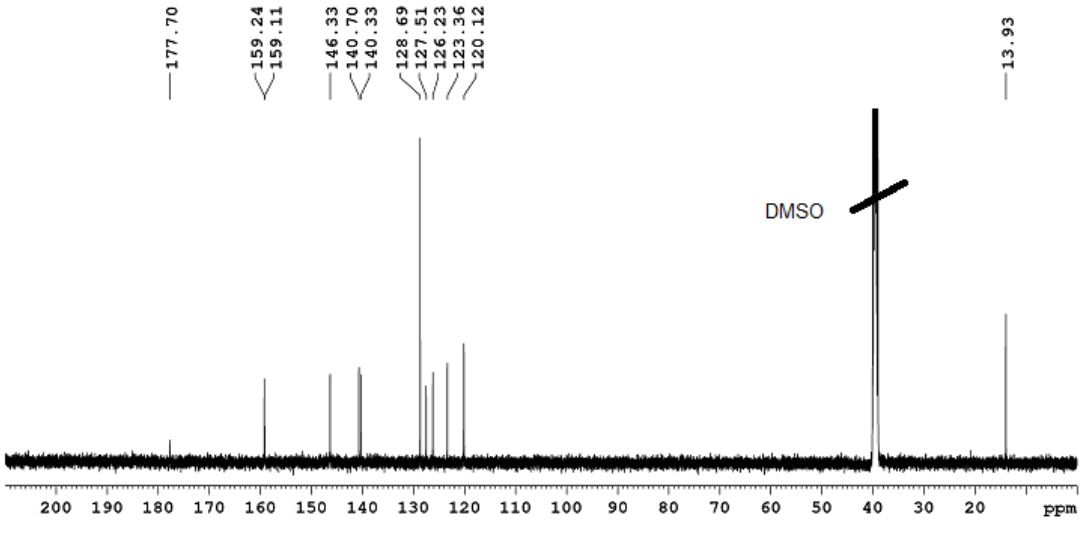
IR (ATR)

[PtCl(L$_{py}^{CH3,Ph}$)] (42) [6, 8, 9]

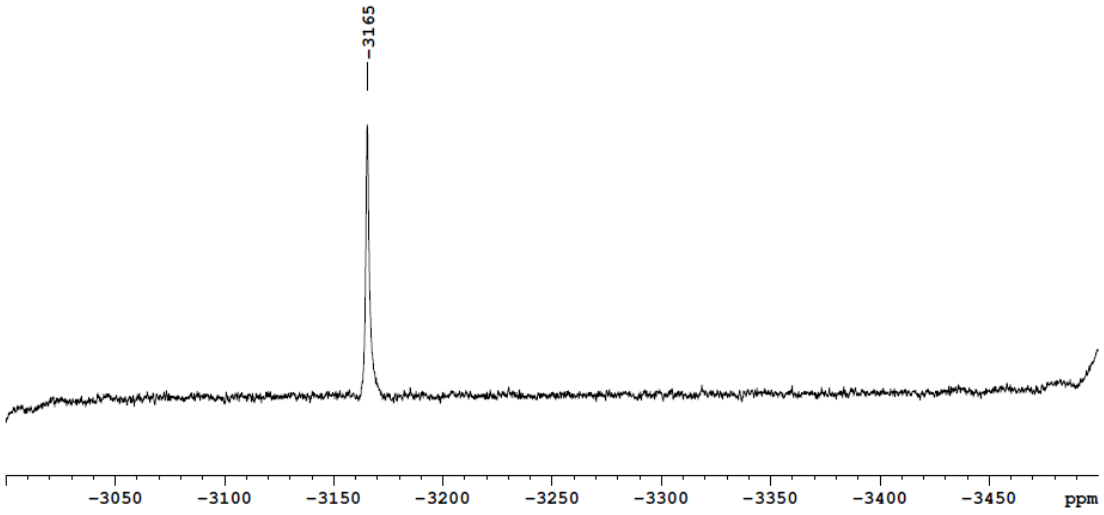




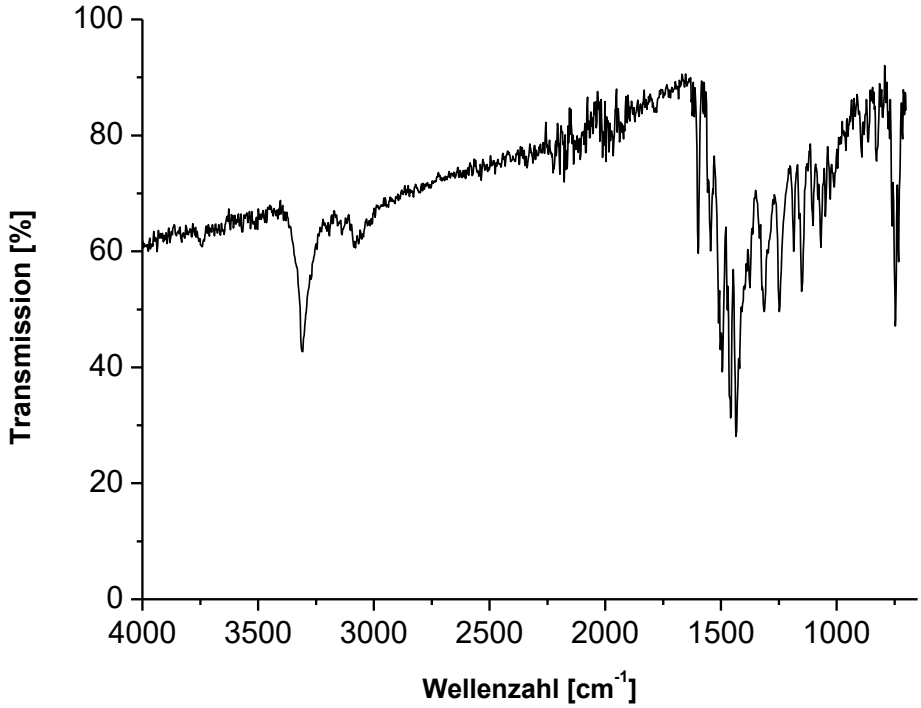
^{1}H NMR (500.13 MHz, DMSO-d_6)



7 **^{13}C NMR** (125.76 MHz, DMSO-d_6)

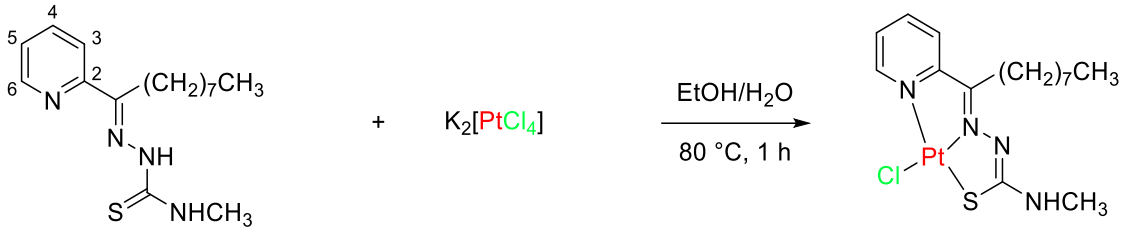


^{195}Pt NMR (107.51 MHz, DMSO-d_6)



IR (ATR)

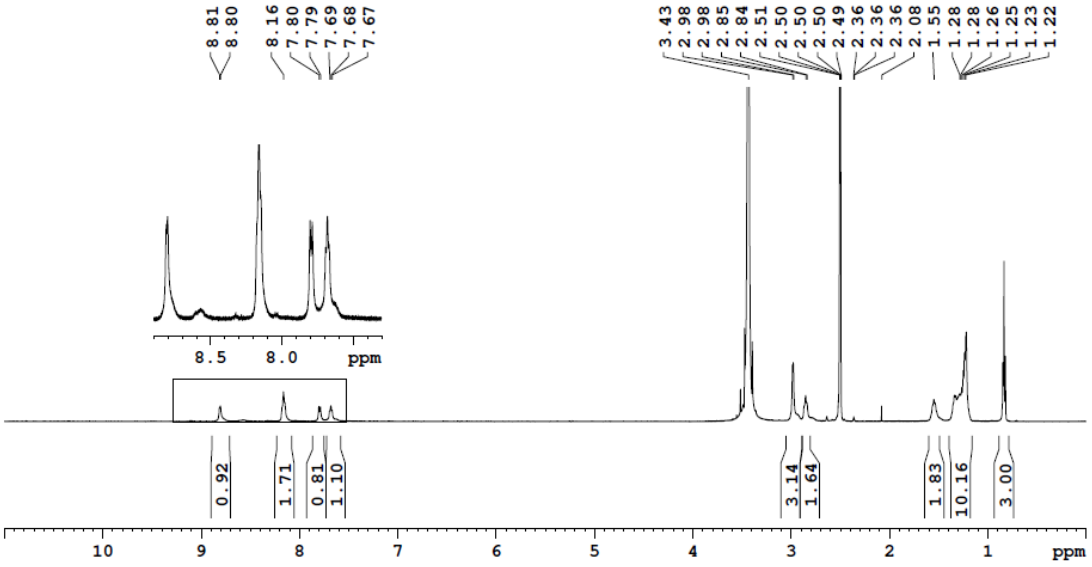
[PtCl($L_{py}^{(CH2)7CH3,CH3}$)] (43) [6, 8, 9]



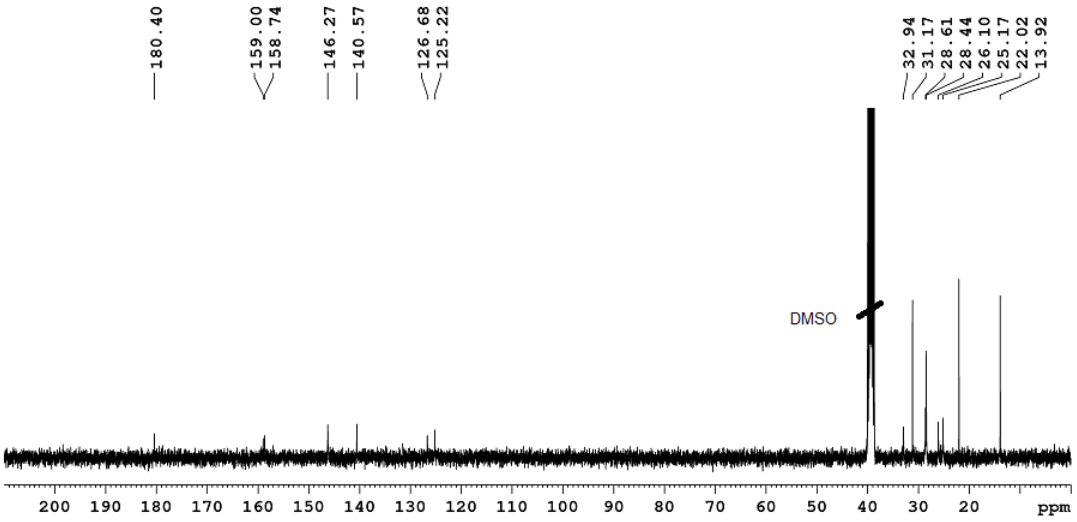
$C_{16}H_{26}N_4S$
306.47 g/mol

415.06 g/mol

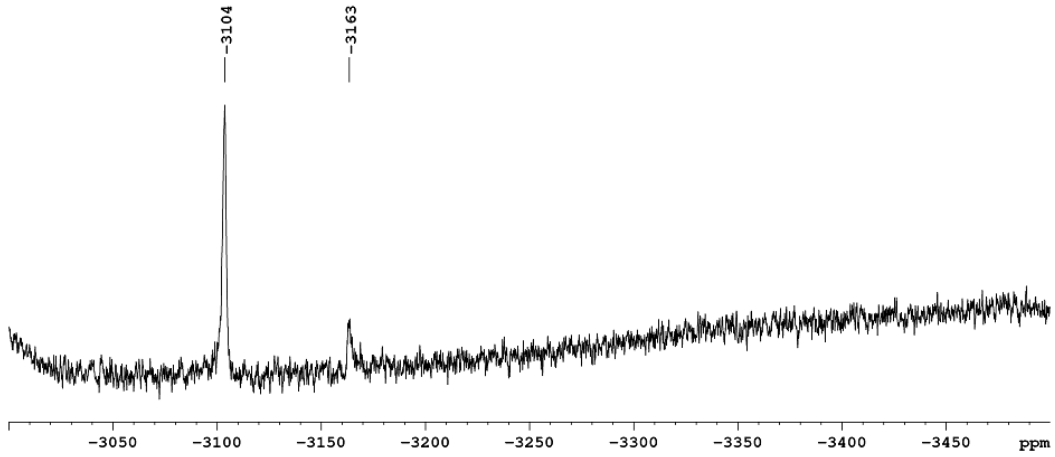
$C_{16}H_{25}N_4PtSCl$
536.00 g/mol



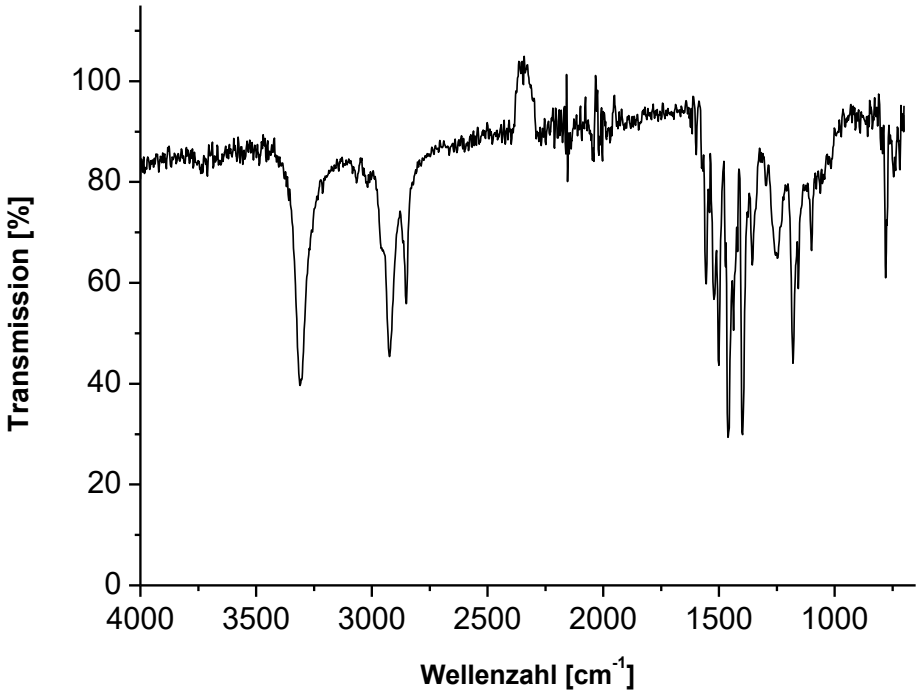
^{1}H NMR (500.13 MHz, DMSO-d_6)



^{13}C NMR (125.76 MHz, DMSO-d_6)

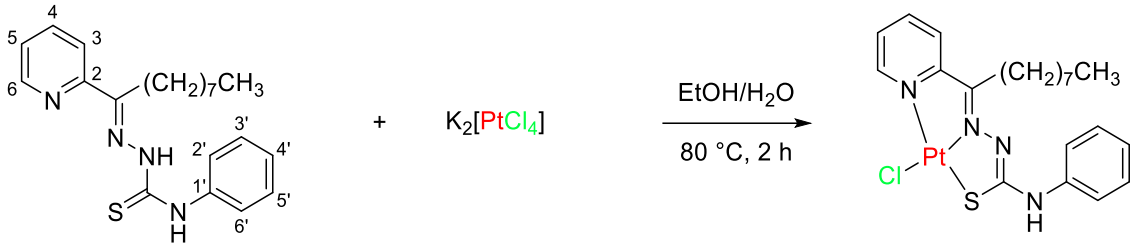


^{195}Pt NMR (107.51 MHz, DMSO-d_6)



IR (ATR)

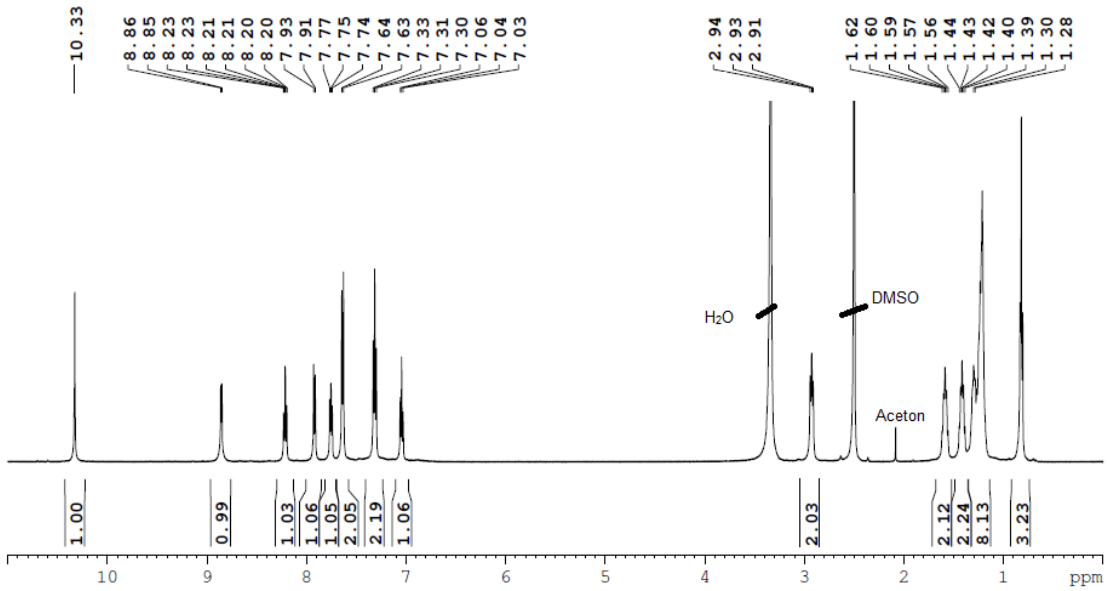
[PtCl(L$_{py}^{(CH2)7CH3,Ph}$)] (44) [6, 8, 9]



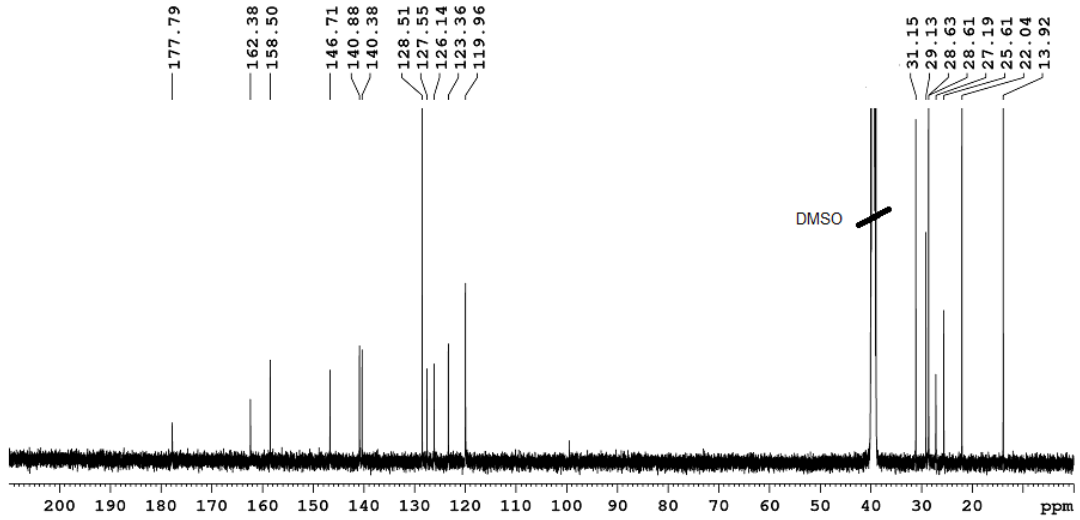
$C_{21}H_{28}N_4S$
368.54 g/mol

415.06 g/mol

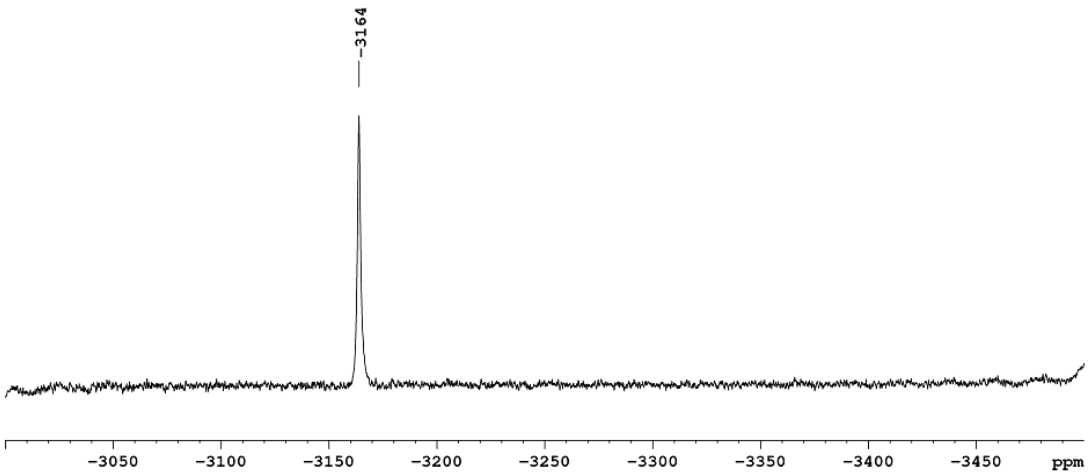
$C_{21}H_{27}N_4PtSCl$
598.07 g/mol



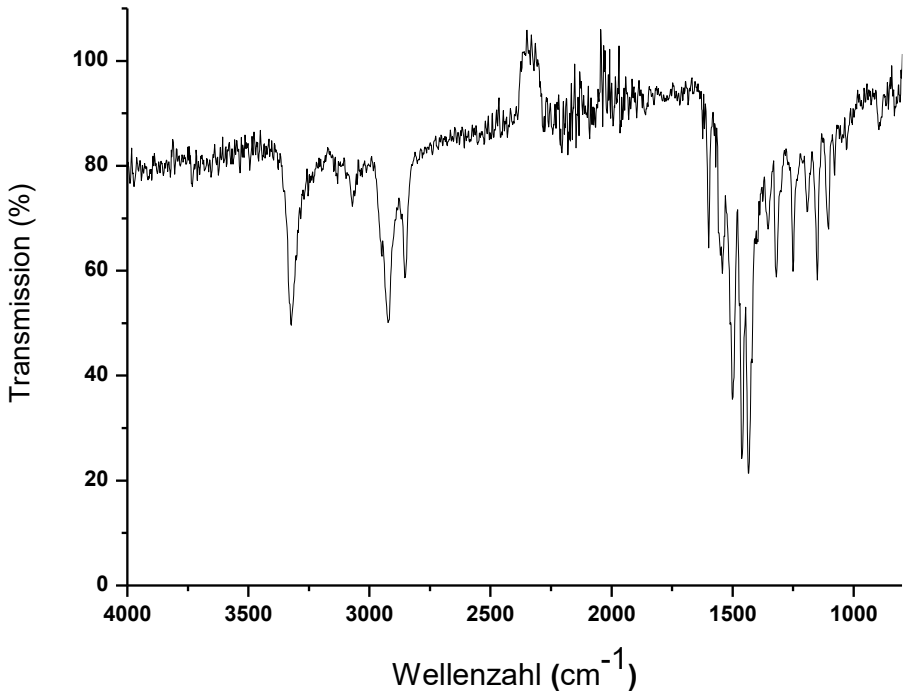
^{1}H NMR (500.13 MHz, DMSO-d_6)



^{13}C NMR (125.76 MHz, DMSO-d_6)

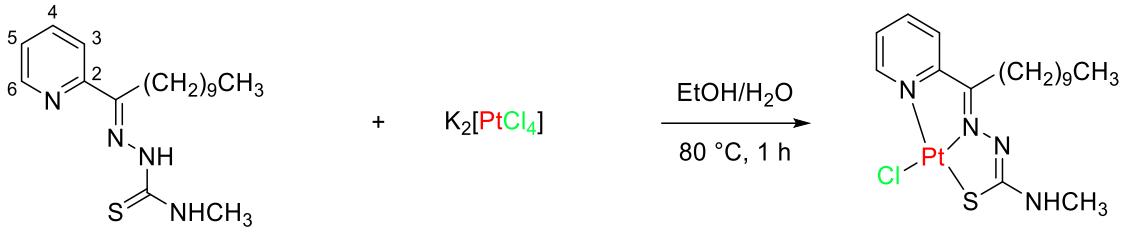


^{195}Pt NMR (107.51 MHz, DMSO-d_6)



IR (ATR)

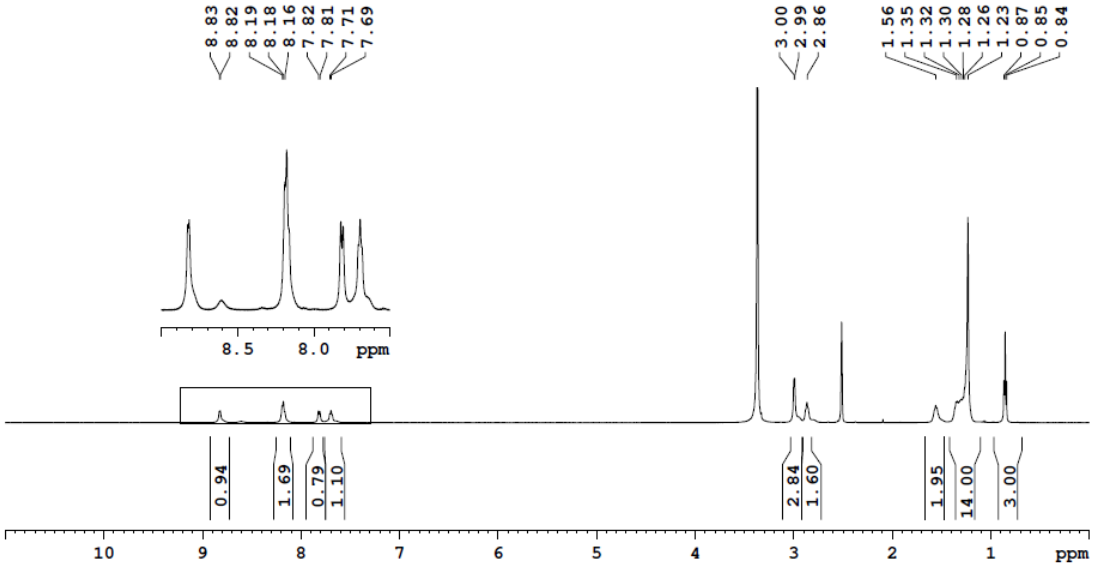
[PtCl($L_{py}^{(CH2)9CH3,CH3}$)] (45) [6, 8, 9]



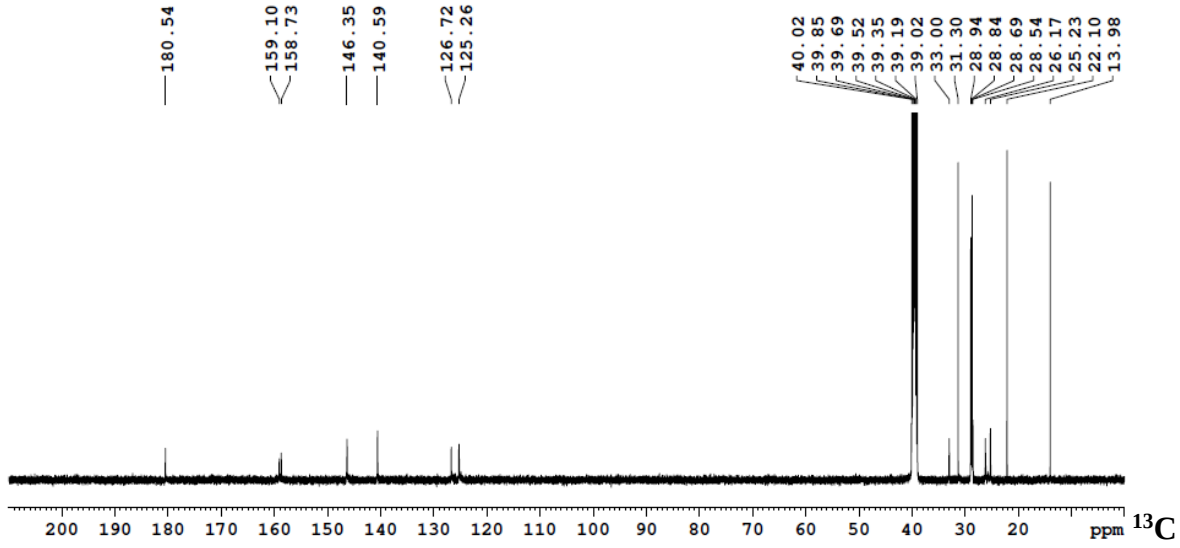
$C_{18}H_{30}N_4S$
334.53 g/mol

415.06 g/mol

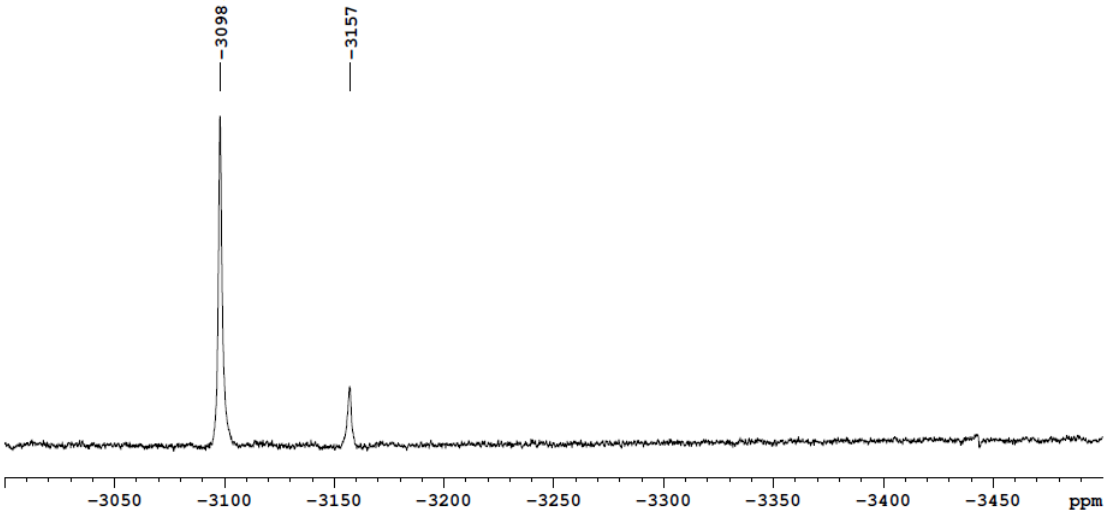
$C_{18}H_{29}N_4PtSCl$
564.05 g/mol



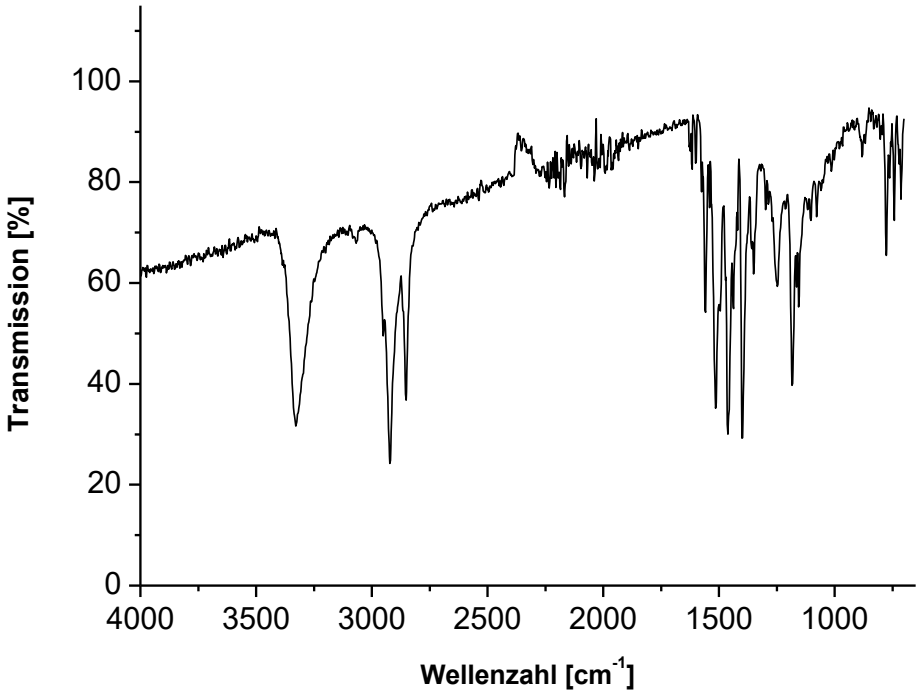
^{1}H NMR (500.13 MHz, DMSO-d_6)



^{13}C NMR (125.76 MHz, DMSO-d_6)

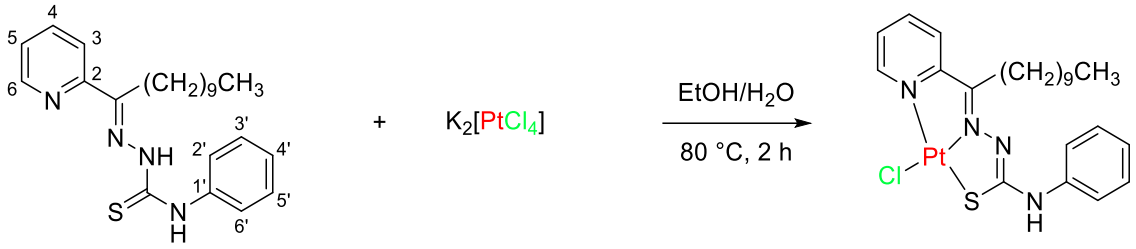


^{195}Pt NMR (107.51 MHz, DMSO-d_6)



IR (ATR)

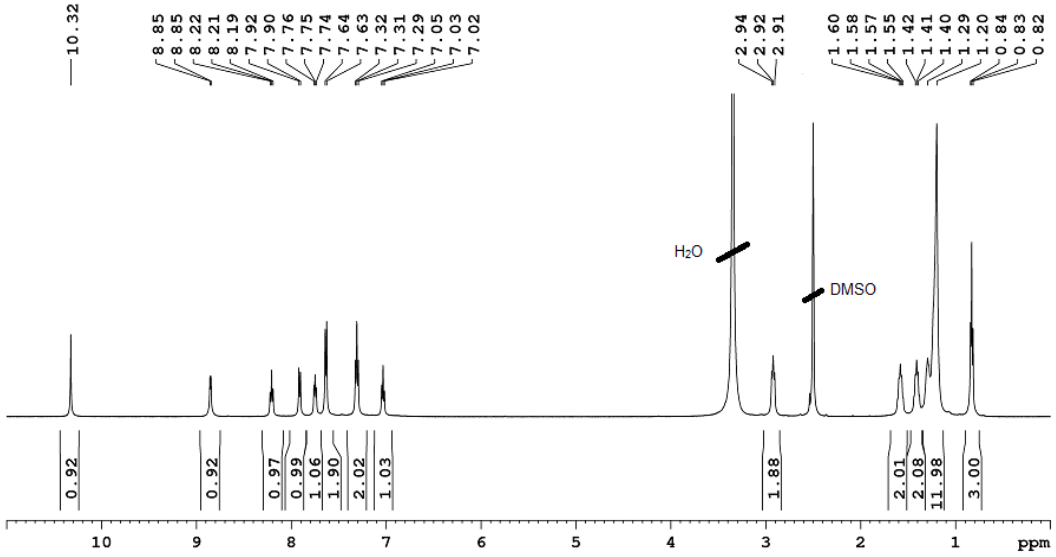
[PtCl(L$_{py}^{(CH2)9CH3,Ph}$)] (46) [6, 8, 9]



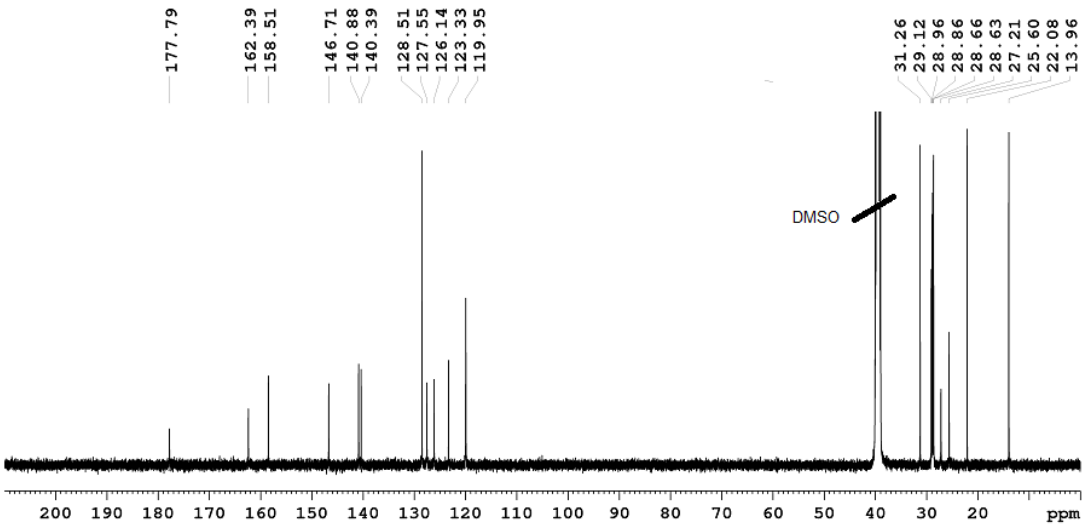
$C_{23}H_{32}N_4S$
396.60 g/mol

415.06 g/mol

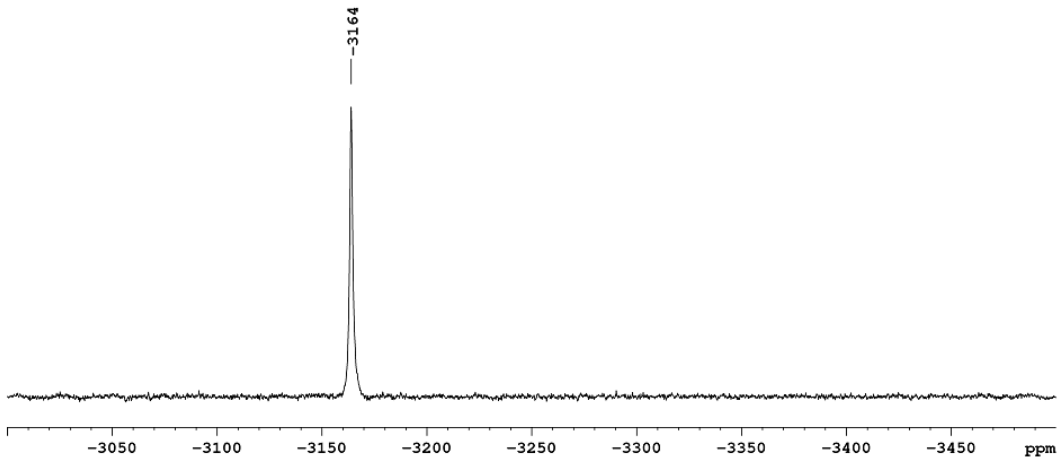
$C_{23}H_{31}N_4PtSCl$
626.12 g/mol



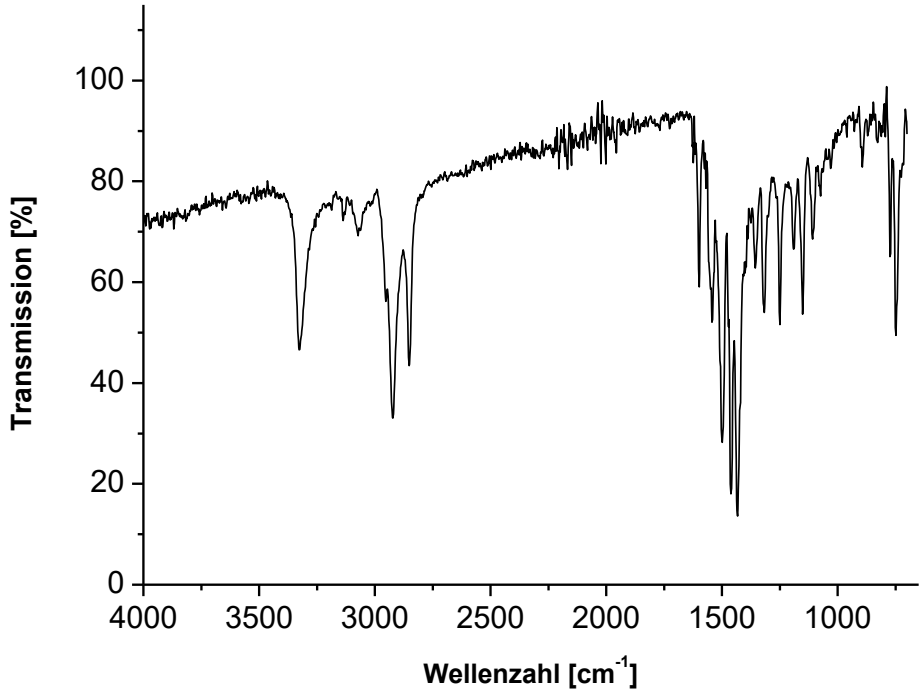
^{1}H NMR (500.13 MHz, DMSO-*d*$_6$)



^{13}C NMR (125.76 MHz, DMSO-*d*$_6$)

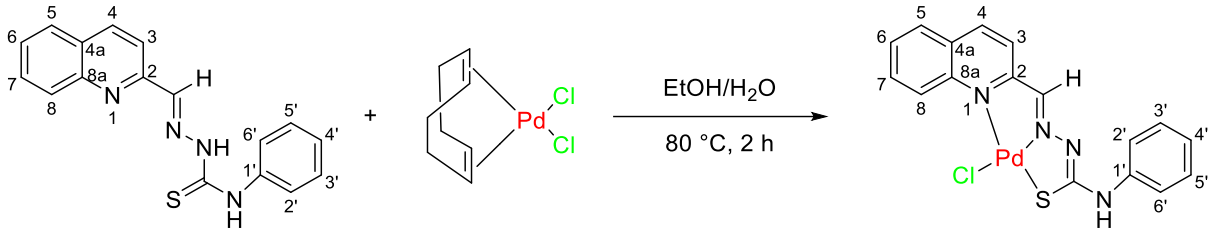


^{195}Pt NMR (107.51 MHz, DMSO-d_6)



IR (ATR)

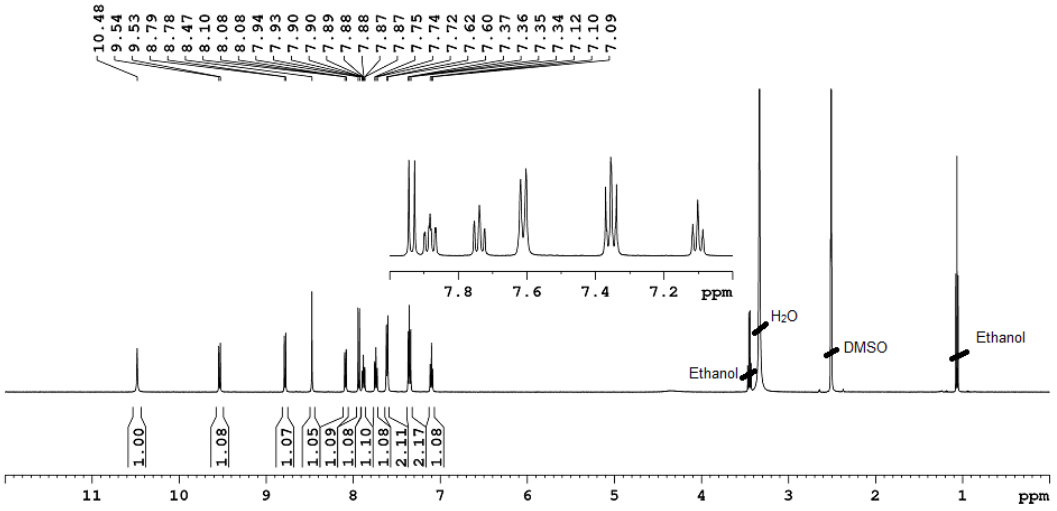
[PdCl($L_{quin}^{H,Ph}$)] (47) [6, 8, 9]



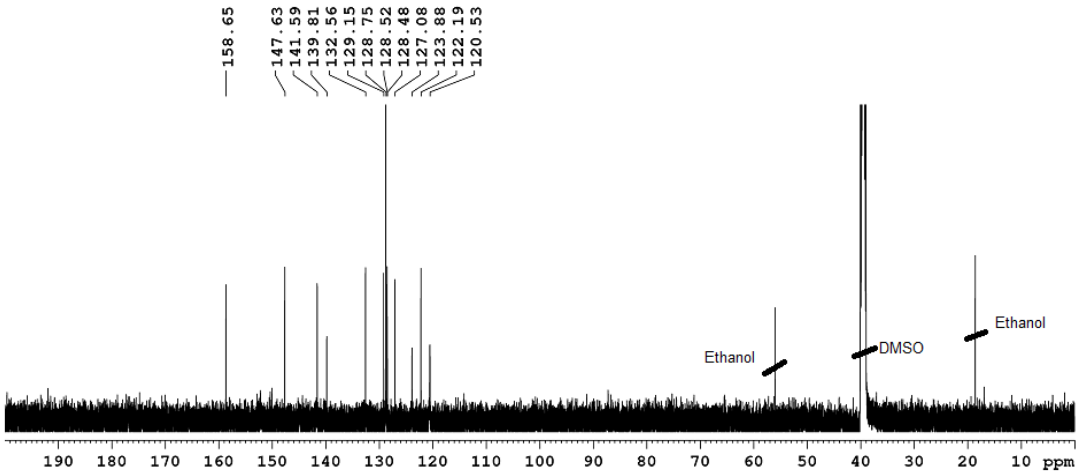
$C_{17}H_{14}N_4S$
306.39 g/mol

$C_8H_{12}Cl_2Pd$
285.81 g/mol

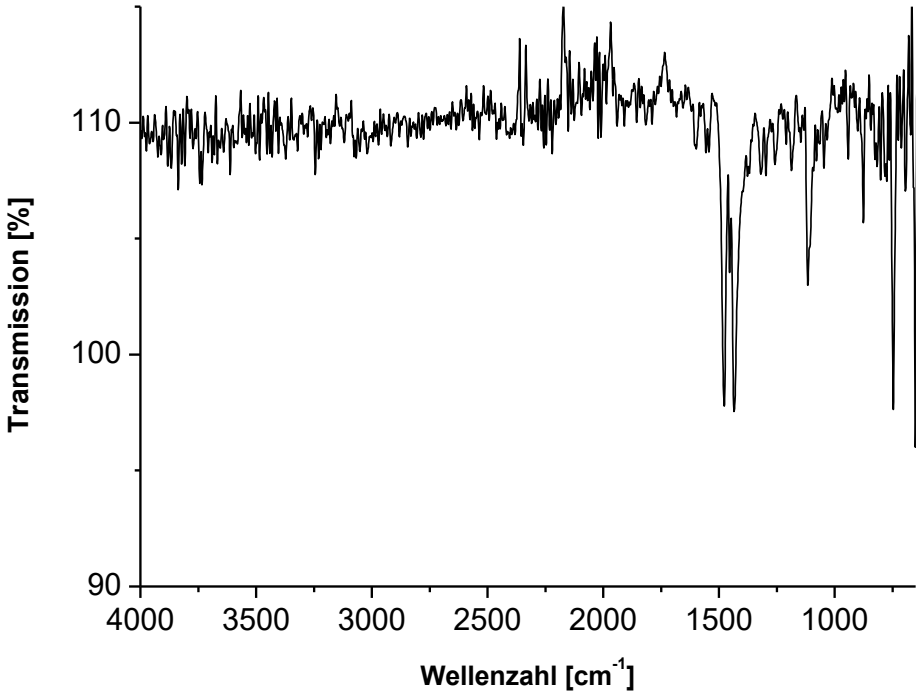
$C_{17}H_{13}N_4PdSCl$
447.25 g/mol



^{1}H NMR (500.13 MHz, DMSO-d_6)

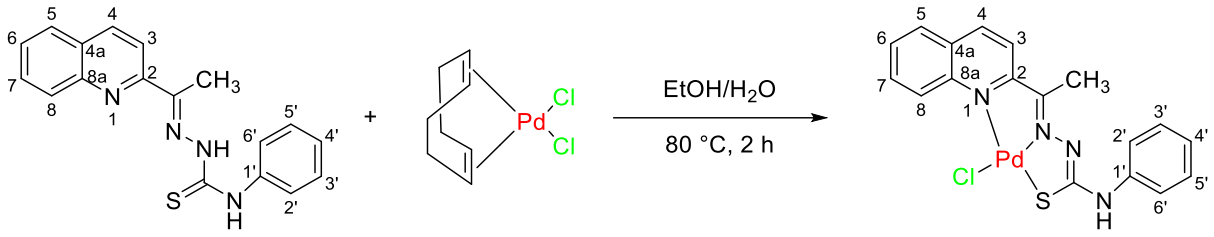


^{13}C NMR (125.76 MHz, DMSO-d_6)


Transmission [%]
110
100
90
4000
3500
3000
2500
2000
1500
1000
Wellenzahl [cm-1]

IR (ATR)

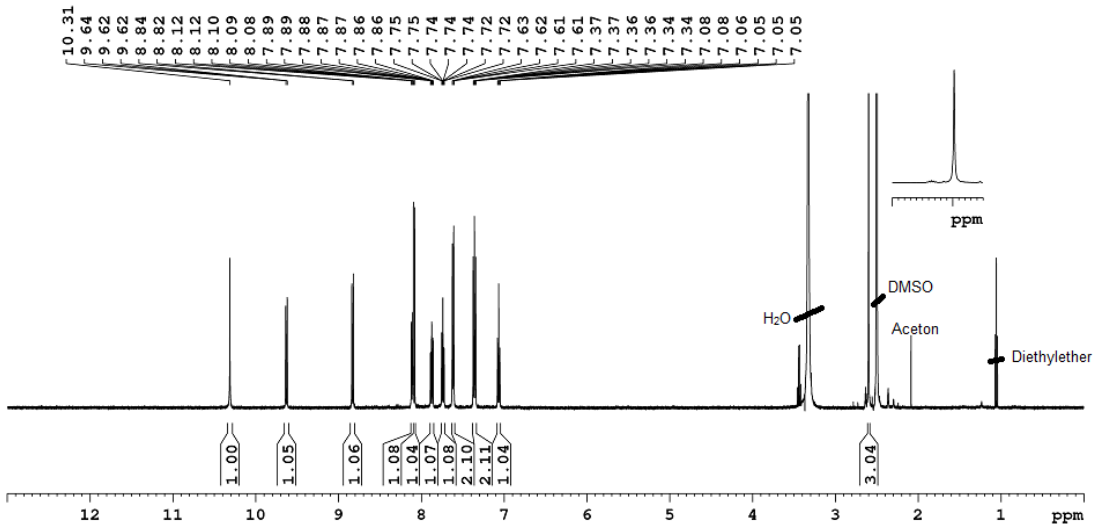
[PdCl($L_{quin}^{CH3,Ph}$)] (48) [6, 8, 9]



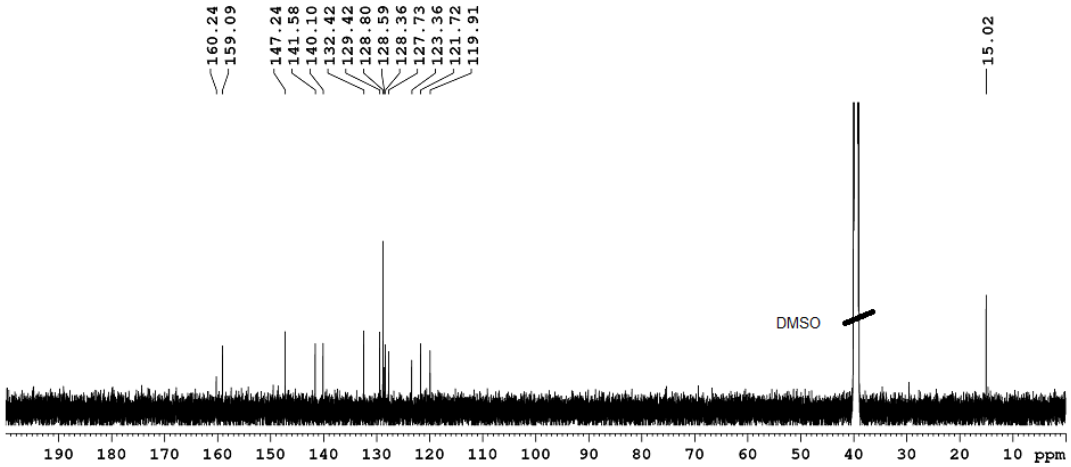
$C_{18}H_{16}N_4S$
320.41 g/mol

$C_8H_{12}Cl_2Pd$
285.81 g/mol

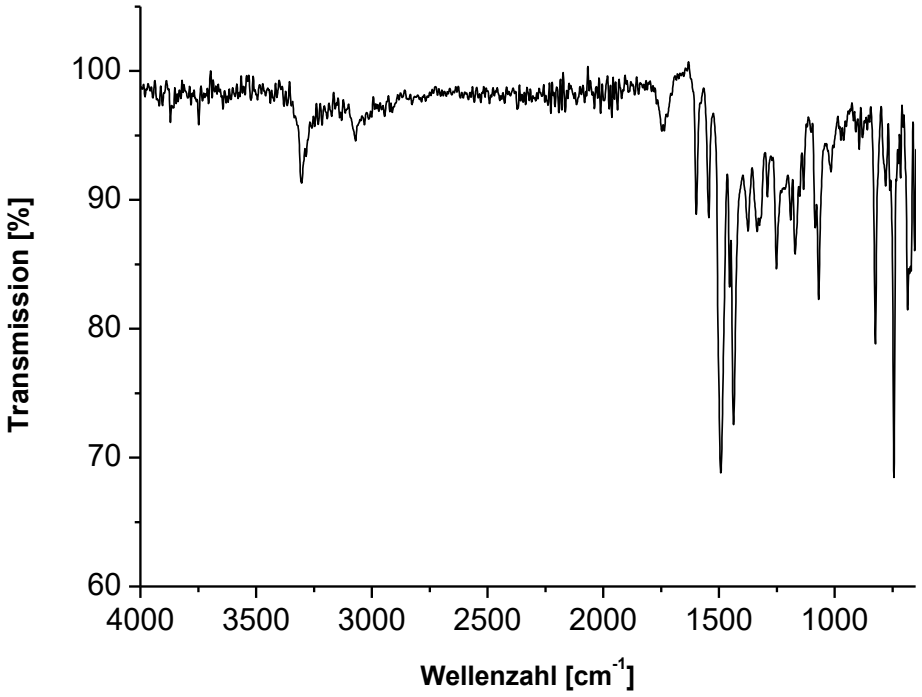
$C_{18}H_{15}N_4PdSCl$
461.28 g/mol



^{1}H NMR (500.13 MHz, DMSO-d_6)

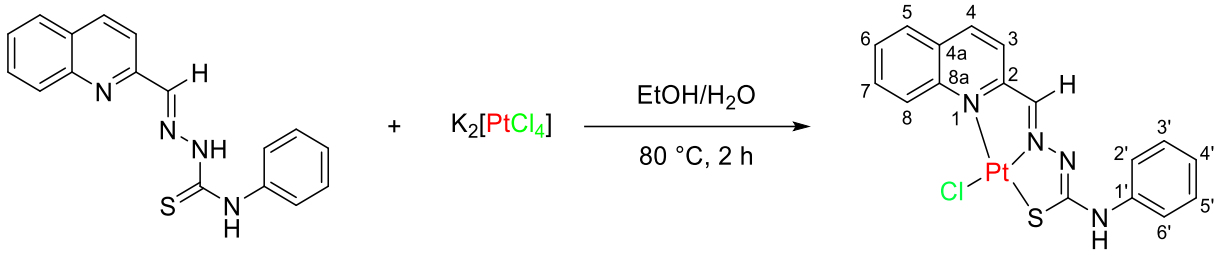


^{13}C NMR (125.76 MHz, DMSO-d_6)


Transmission [%]
100
90
80
70
60
4000
3500
3000
2500
2000
1500
1000
Wellenzahl [cm-1]

IR (ATR)

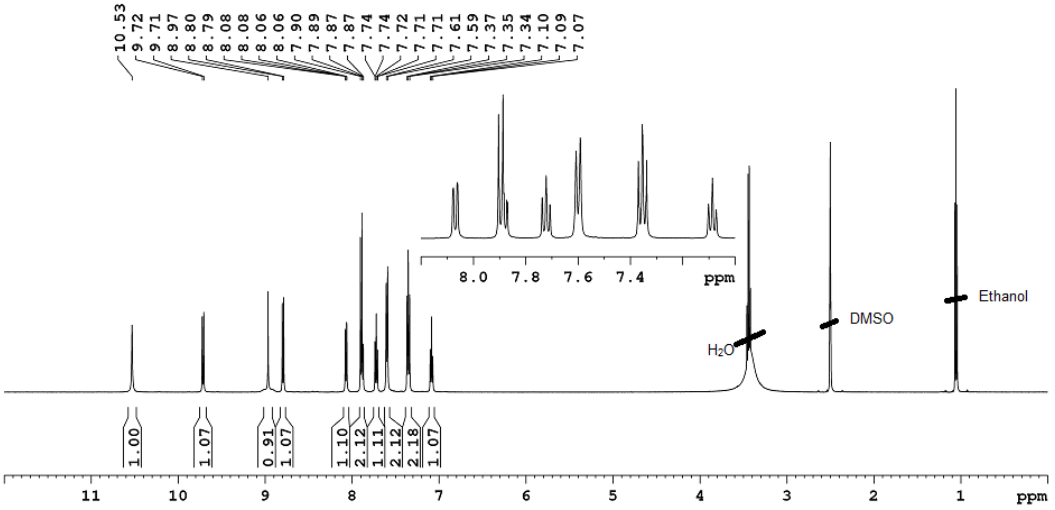
[PtCl(L$_{quin}^{H,Ph}$)] (49) [6, 8, 9]



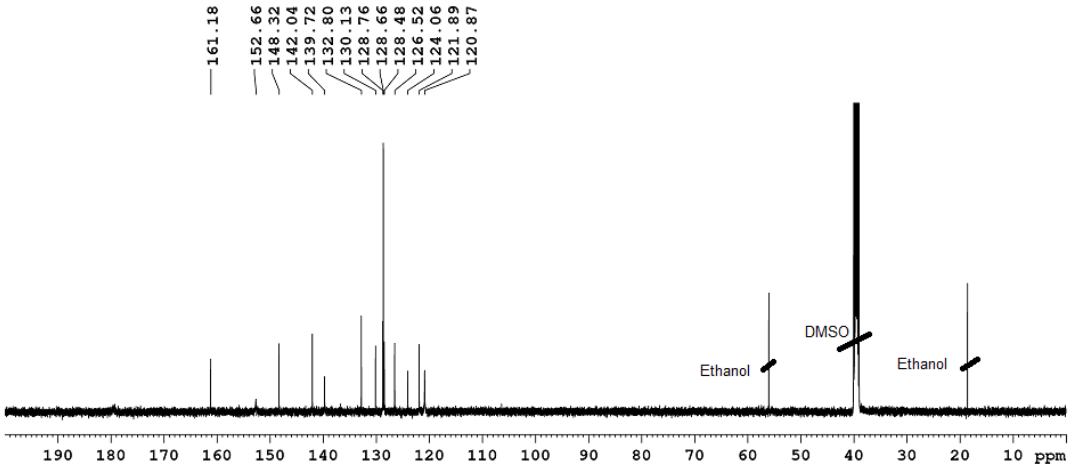
$C_{17}H_{14}N_4S$
306.39 g/mol

415.08 g/mol

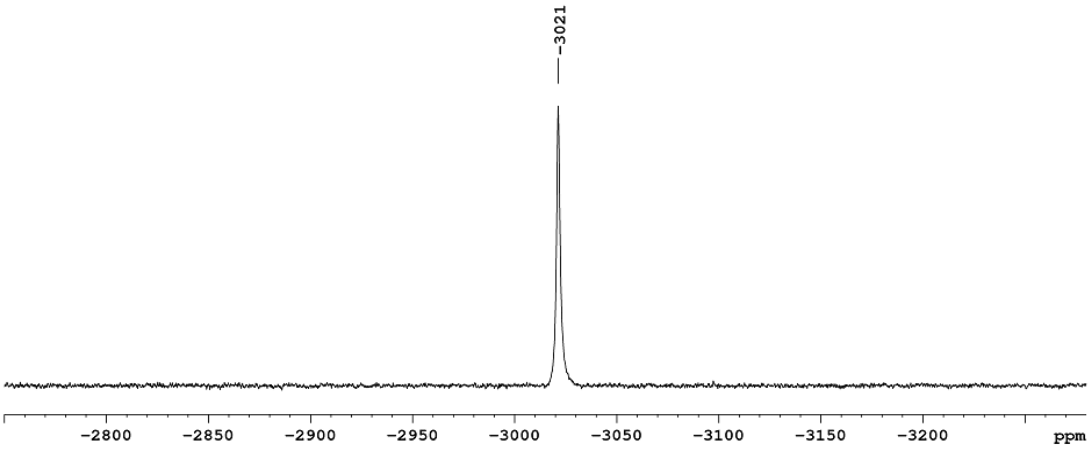
$C_{17}H_{13}N_4PtSCl$
535.91 g/mol



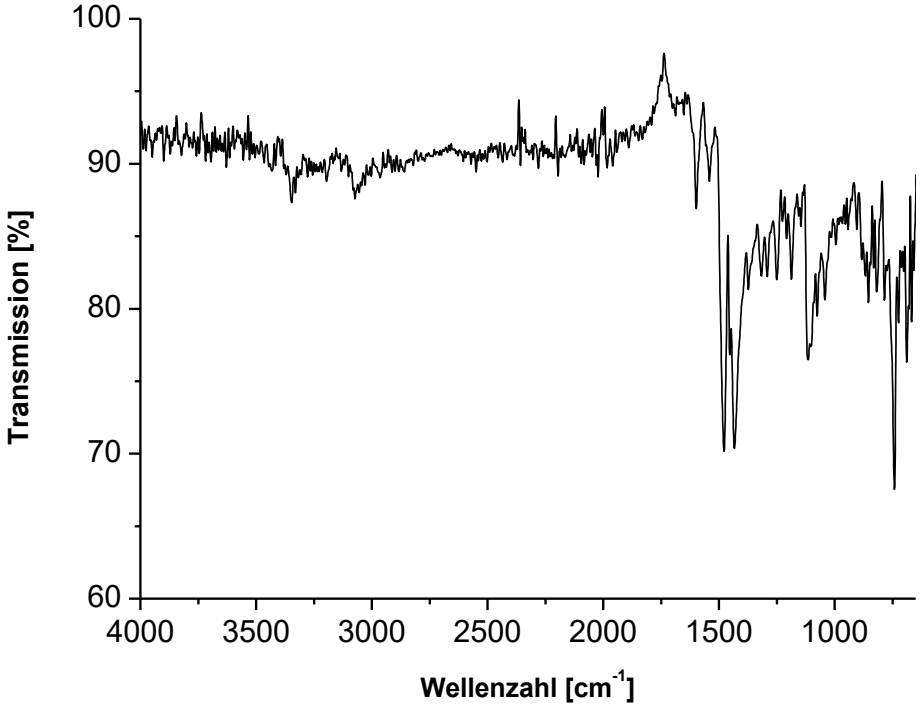
^{1}H NMR (500.13 MHz, DMSO-d_6)



^{13}C NMR (125.76 MHz, DMSO-d_6)

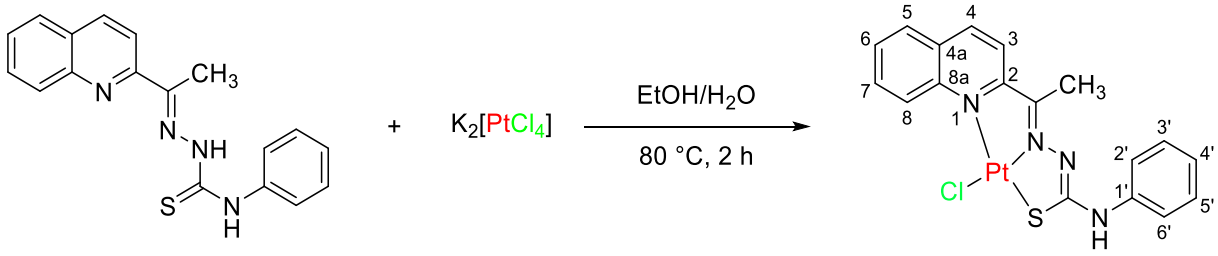


^{195}Pt NMR (107.51 MHz, DMSO-d_6)



IR (ATR)

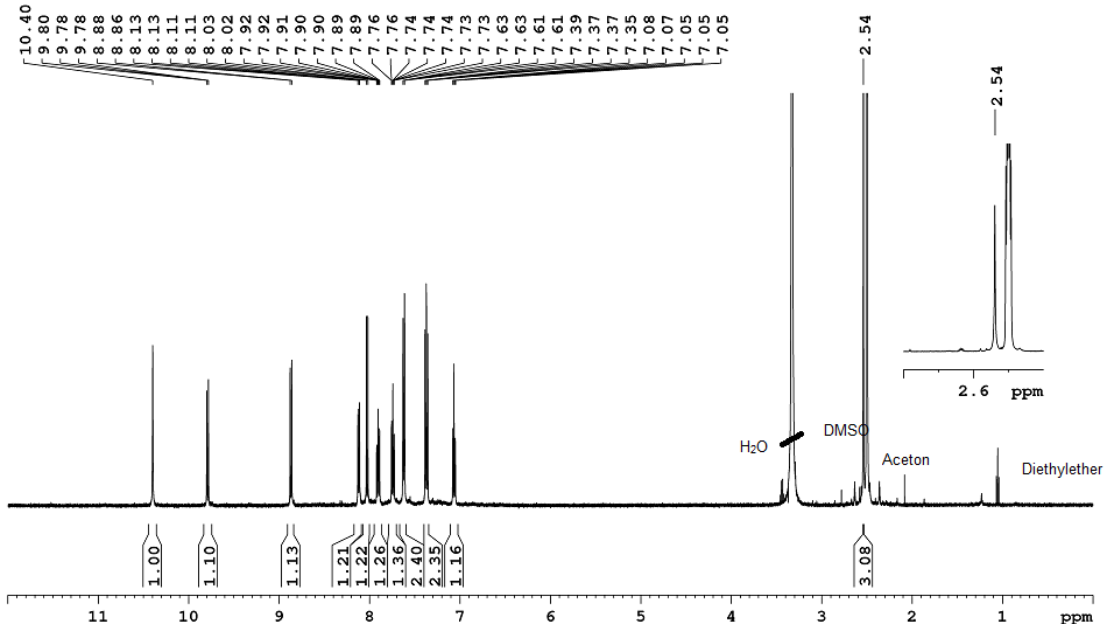
[PtCl(L$_{quin}^{CH3,Ph}$)] (50) [6, 8, 9]



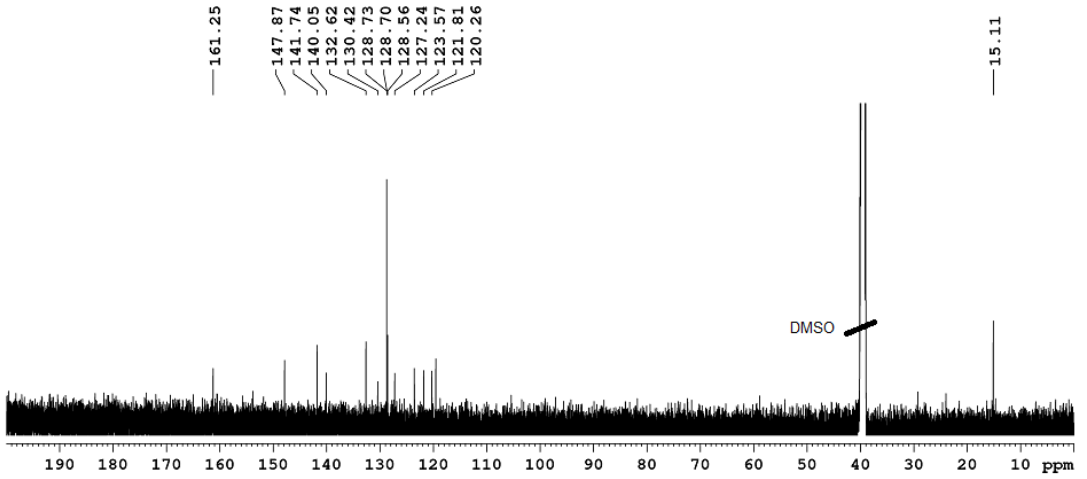
$C_{18}H_{16}N_4S$
320.41 g/mol

415.08 g/mol

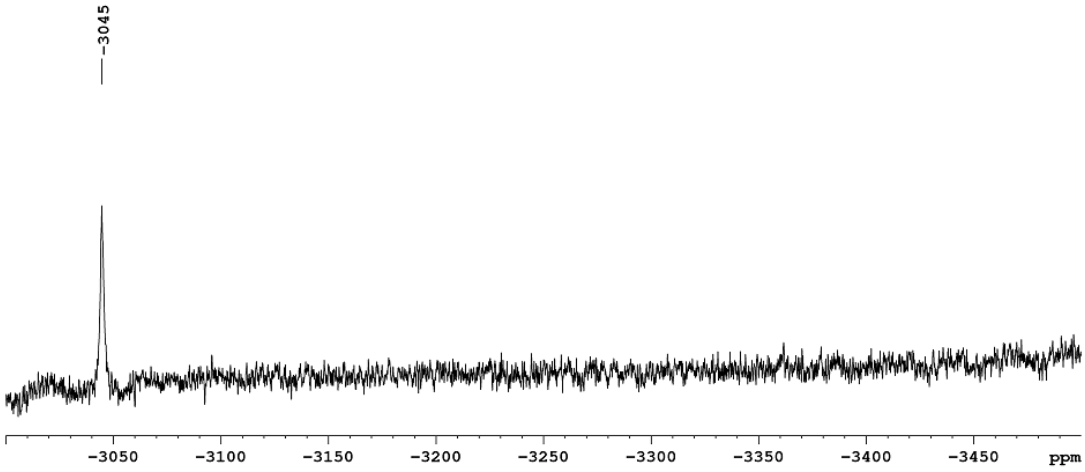
$C_{18}H_{13}N_5PtSCl$
549.94 g/mol



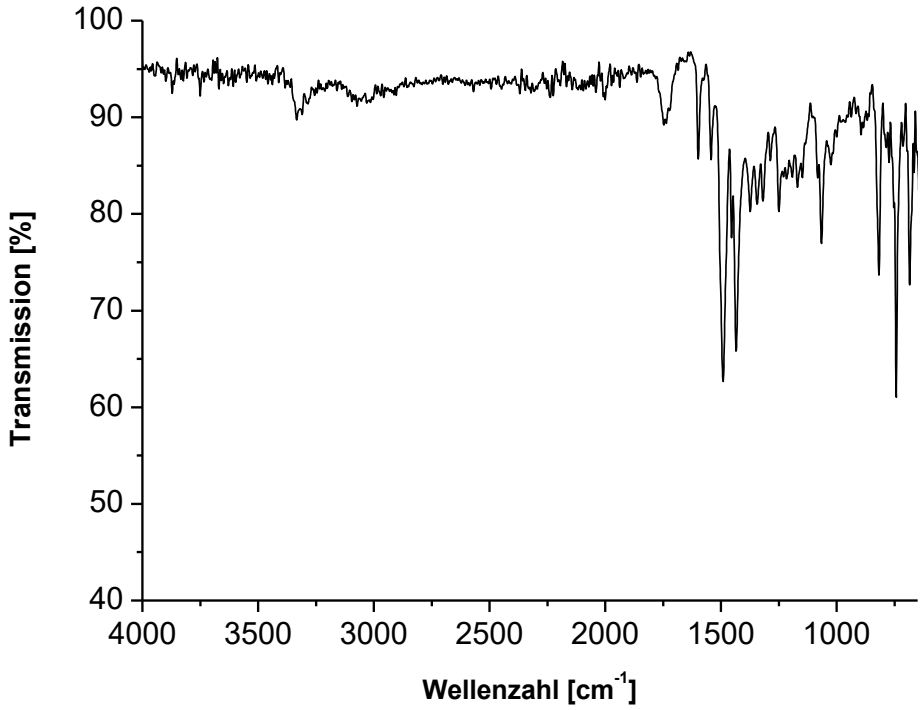
^{1}H NMR (500.13 MHz, DMSO-d_6)



^{13}C NMR (125.76 MHz, DMSO-d_6)



^{195}Pt NMR (107.51 MHz, DMSO-d_6)



IR (ATR)

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