

SUPPLEMENTARY MATERIAL

Preparation of compound (1)

To a solution of *N,N,N',N',N''*-pentamethyl-1,4,7-triazaheptane (0.01 mol; 2g) in acetonitrile (50 mL) was added *n*-iodooctane (0.02 mol; 5.52g). The reaction mixture was heated under reflux for 32 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetone. White solid, mp: 156–158 °C, yield 43%.

¹H NMR (403 MHz, CDCl₃): δ 3.98-3.84 (m, 4H), 3.71-3.56 (m, 4H), 3.43 (s, 12H), 3.25-3.11 (m, 4H), 2.55 (s, 3H), 1.73-1.67 (m, 4H), 1.48-1.19 (m, 24H), 0.88 (t, 6H). ¹³C NMR (101 MHz, CDCl₃) δ 65.45, 61.18, 51.51, 50.93, 43.05, 31.49, 29.05, 28.90, 26.04, 22.81, 22.42, 22.19, 13.94. ESI-MS (*m/z*) 200 [C₂₅H₅₇N₃]²⁺

Preparation of compound (2)

To a solution of *N,N,N',N',N''*-pentamethyl-1,4,7-triazaheptane (0.02 mol; 3.75 g) in acetonitrile (50 mL) was added *n*-iodododecane (0.05 mol; 13 g). The reaction mixture was heated under reflux for 23 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetone. White solid, mp: 202–204 °C, yield 48%.

¹H NMR (403 MHz, CDCl₃): δ 3.98-3.85 (m, 4H), 3.70-3.56 (m, 4H), 3.43 (s, 12H), 3.25-3.12 (m, 4H), 2.55 (s, 3H), 1.84-1.67 (m, 4H), 1.48-1.18 (m, 32 H), 0.88 (t, 6H). ¹³C NMR (101 MHz, CDCl₃) 65.52, 61.25, 51.54, 50.95, 43.11, 31.71, 29.33, 29.30, 29.18, 29.13, 26.10, 22.86, 22.52, 14.00. Elemental analysis found (calc) %C 48.58 (49.08); %H 9.68 (9.23); %N 5.48 (5.92)

Preparation of compound (3)

To a solution of *N,N,N',N',N''*-pentamethyl-1,4,7-triazaheptane (0.02 mol; 3.75 g) in acetonitrile (50 mL) was added *n*-iodododecane (0.05 mol; 13 g). The reaction mixture was heated under reflux for 23 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetone. White solid, mp: 211–212 °C, yield 46%.

¹H NMR (403 MHz, CDCl₃): δ 3.99-3.86 (m, 4H), 3.68-3.55 (m, 4H), 3.43 (s, 12H), 3.24-3.12 (m, 4H), 2.55 (s, 3H), 1.83-1.68 (m, 4H), 1.48-1.18 (m, 40 H), 0.88 (t, 6H). ¹³C NMR (101 MHz, CDCl₃) 65.54, 61.27, 51.54, 50.95, 43.12, 26.12, 22.87, 14.01 ESI-MS (*m/z*) 255 [C₃₃H₇₃N₃]²⁺

Preparation of compound (4)

To a solution of *N,N,N',N',N''*-pentamethyl-1,4,7-triazaheptane (0.01 mol; 2 g) in acetonitrile (50 mL) was added *n*-iodotetradecane (0.03 mol; 9.22 g). The reaction mixture was heated under reflux for 4 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetone. White solid, mp: 209-210 °C, yield 85%.

¹H NMR (403 MHz, CDCl₃): δ 3.99-3.86 (m, 4H), 3.68-3.54 (m, 4H), 3.42 (s, 12H), 3.25-3.13 (m, 4H), 2.55 (s, 3H), 1.85-1.66 (m, 4H), 1.49-1.17 (m, 48 H), 0.88 (t, 6H). **¹³C NMR (101 MHz, CDCl₃):** 65.57, 61.31, 51.56, 50.97, 43.13, 26.14, 22.89, 14.00 **Elemental analysis found (calc)** %C 53.43 (54.01); %H 10.38 (10.04); %N 4.78 (5.11)

Preparation of compound (5)

To a solution of *N,N,N',N',N''*-pentamethyl-1,4,7-triazaheptane (0.01 mol; 2 g) in acetonitrile (50 mL) was added *n*-iodohexadecane (0.02 mol; 7.5 g). The reaction mixture was heated under reflux for 4 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp: 215-217 °C, yield 42%.

¹H NMR (403 MHz, CDCl₃): δ 3.98-3.86 (m, 4H), 3.68-3.55 (m, 4H), 3.42 (s, 12H), 3.24-3.13 (m, 4H), 2.56 (s, 3H), 1.83-1.68 (m, 4H), 1.49-1.17 (m, 56 H), 0.88 (t, 6H). **¹³C NMR (101 MHz, CDCl₃):** 65.57, 61.31, 51.55, 50.97, 43.15, 26.14, 22.89, 14.02. **Elemental analysis found (calc)** %C 55.37 (56.09); %H 10.12 (10.18); %N 4.45 (4.79)

Preparation of compound (6)

To a solution of *N,N,N',N',N''*-pentamethyl-1,4,7-triazaheptane (0.01 mol; 2 g) in acetonitrile (50 mL) was added *n*-iodooctadecane (0.02 mol; 8 g). The reaction mixture was heated under reflux for 2 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetone:acetonitrile (1:1). White solid, mp: 209–211 °C, yield 65%

¹H NMR (403 MHz, CDCl₃): δ 3.98-3.87 (m, 4H), 3.68-3.56 (m, 4H), 3.42 (s, 12H), 3.26-3.13 (m, 4H), 2.56 (s, 3H), 1.83-1.67 (m, 4H), 1.49-1.17 (m, 64 H), 0.88 (t, 6H). **¹³C NMR (101 MHz, CDCl₃):** δ 65.58, 61.32, 51.56, 50.97, 43.15, 31.81, 29.62, 29.56, 29.46, 29.37, 29.25, 26.15, 22.89, 22.58, 14.02. **Elemental analysis found (calc)** %C 58.09 (57.86); %H 10.99 (10.47); %N 4.24 (4.50)

Preparation of compound (7)

To a solution of *N,N,N',N',N''*-pentamethyl-1,4,7-triazaheptane (0.02 mol; 3.75 g) in acetonitrile (50 mL) was added *n*-bromodecane (0.04 mol; 8.3 mL). The reaction mixture was heated under reflux for 60 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 218-220 °C, yield 48%.

¹H NMR (403 MHz, CDCl₃): δ 4.00-3.91 (m, 4H), 3.65-3.55 (m, 4H), 3.43 (s, 12H), 3.21-3.13 (m, 4H), 2.53 (s, 3H), 1.79-1.66 (m, 4H), 1.44-1.18 (m, 32 H), 0.88 (t, 6H).

¹³C NMR (101 MHz, CDCl₃): δ 65.39, 61.92, 61.22, 51.21, 50.77, 48.52, 45.13, 43.09, 31.76, 29.36, 29.33, 29.23, 29.17, 26.23, 22.86, 22.58, 14.04. **Elemental analysis found (calc)** %C 56.61 (56.58); %H 10.62 (10.64); %N 6.82 (6.83)

Preparation of compound (8)

To a solution of *N,N,N',N',N''*-pentamethyl-1,4,7-triazaheptane (0.02 mol; 3.75 g) in acetonitrile (50 mL) was added *n*-bromododecane (0.04 mol; 9.3 mL). The reaction mixture was heated under reflux for 12 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 225-227 °C, yield 42%.

¹H NMR (403 MHz, TFA-d): δ 4.00-3.90 (m, 4H), 3.65-3.53 (m, 4H), 3.41 (s, 12H), 3.23-3.11 (m, 4H), 2.53 (s, 3H), 1.80-1.65 (m, 4H), 1.45-1.19 (m, 40 H), 0.88 (t, 6H). ¹³C NMR (101 MHz, TFA-d) δ 66.08, 62.06, 53.62, 52.30, 49.48, 43.57, 34.02, 32.04, 31.94, 31.79, 31.61, 31.32, 28.23, 24.66, 15.82. **Elemental analysis found (calc)** %C 58.22 (58.22); %H 11.12 (10.96); %N 6.21 (6.17)

Preparation of compound (9)

To a solution of *N,N,N',N',N''*-pentamethyl-1,4,7-triazaheptane (0.02 mol; 3.75 g) in acetonitrile (50 mL) was added *n*-bromotetradecane (0.04 mol; 12 mL). The reaction mixture was heated under reflux for 10 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 229-231 °C, yield 55%.

¹H NMR (403 MHz, CDCl₃): δ 4.03-3.92 (m, 4H), 3.68-3.54 (m, 4H), 3.42 (s, 12H), 3.23-3.12 (m, 4H), 2.54 (s, 3H), 1.81-1.65 (m, 4H), 1.46-1.19 (m, 48 H), 0.88 (t, 6H).

¹³C NMR (101 MHz, CDCl₃) δ 65.35, 61.54, 61.13, 51.15, 50.74, 48.29, 44.79, 43.05, 31.79, 29.56, 29.53, 29.49, 29.39, 29.31, 29.23, 26.20, 22.83, 22.56, 14.00. **Elemental analysis found (calc)** %C 59.65 (59.58); %H 11.14 (11.22); %N 5.71 (5.63)

Preparation of compound (10)

To a solution of *N,N,N',N',N''*-pentamethyl-1,4,7-triazaheptane (0.02 mol; 3.75 g) in acetonitrile (50 mL) was added *n*-bromoheksadecane (0.04 mol; 12.4 mL). The reaction mixture was heated under reflux for 8 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 223-225 °C, yield 49%.

¹H NMR (403 MHz, CDCl₃): δ 4.02-3.92 (m, 4H), 3.68-3.56 (m, 4H), 3.42 (s, 12H), 3.24-3.11 (m, 4H), 2.54 (s, 3H), 1.81-1.64 (m, 4H), 1.46-1.19 (m, 56 H), 0.88 (t, 6H). ¹³C NMR (101 MHz, CDCl₃) δ 65.39, 61.93, 61.23, 51.16, 50.81, 48.51, 45.12, 43.09, 31.82, 29.60, 29.56, 29.53, 29.42, 29.34, 29.26, 29.13, 26.22, 22.85, 22.59, 14.03. **Elemental analysis found (calc)** %C 62.28 (62.10); %H 10.71 (11.44); %N 5.30 (5.30)

Preparation of compound (11)

To a solution of *N,N,N',N',N''*-pentamethyl-1,4,7-triazaheptane (0.02 mol; 3.75 g) in acetonitrile (50 mL) was added *n*-bromooctadecane (0.04 mol; 13.4 mL). The reaction mixture was heated under reflux for 2 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetone: acetonitrile (1:2). White solid, mp 256-259 °C, yield 59%.

¹H NMR (403 MHz, CDCl₃): δ 4.02-3.92 (m, 4H), 3.67-3.55 (m, 4H), 3.42 (s, 12H), 3.22-3.12 (m, 4H), 2.53 (s, 3H), 1.79-1.65 (m, 4H), 1.45-1.19 (m, 64 H), 0.88 (t, 6H).

¹³C NMR (101 MHz, CDCl₃) δ 65.39, 61.22, 51.17, 50.79, 48.51, 43.10, 31.82, 29.61, 29.58, 29.57, 29.54, 29.43, 29.34, 29.26, 29.25, 26.23, 22.86, 22.59, 14.03. **Elemental analysis found (calc)** %C 63.71 (63.65); %H 11.83 (11.63); %N 4.91 (4.95)

Preparation of compound (12)

To a solution of 4-aza-1,7-heptane-bis(*N,N*-dimethyl-*N*-otadecylammonium) dibromide (0.005 mol; 4.27 g) in acetonitrile (20 mL) was added *n*-bromooctane (0.006 mol; 1.16 g) and sodium carbonate (0.006 mol; 0.64 g). The reaction mixture was heated under reflux for 28 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 67-68 °C, yield 55%.

¹H NMR (403 MHz, CDCl₃): δ 3.93 (m, 4H), 3.38 (m, 12H), 2.72 (t, 4H), 2.52 (m, 4H), 3.43 (m, 6H), 1.74 (m, 6H), 1.35 (m, 12H), 1.26 (m, 54H), 0.87 (t, 9H).

¹³C NMR (101 MHz, CDCl₃) δ 65.64, 64.73, 62.72, 61.87, 54.17, 51.08, 50.81, 49.73, 44.51, 31.87, 31.77, 31.60, 30.43, 29.67, 29.6, 29.59, , 29.48, 29.41, 29.32, , 29.10, 27.36, 26.30, 25.38, 22.84, 22.64, 20.14, 14.08. **ESI-MS** (*m/z*) 403 [C₅₄H₁₁₅N₃]²⁺, 347 [C₄₆H₉₈N₃]²⁺

Preparation of compound (13)

To a solution of 4-aza-1,7-heptane-bis(*N,N*-dimethyl-*N*-otadecylammonium) dibromide (0.005 mol; 4.27 g) in acetonitrile (20 mL) was added *n*-bromodecane (0.006 mol; 1.33 g) and sodium carbonate (0.006 mol; 0.64 g). The reaction mixture was heated under reflux for 24 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 65-66 °C, yield 60%.

¹H NMR (403 MHz, CDCl₃): δ 3.92 (m, 4H), 3.38 (m, 12H), 2.71 (t, 4H), 2.30 (m, 4H), 3.42 (m, 6H), 1.74 (m, 6H), 1.35 (m, 12H), 1.26 (m, 58H), 0.88 (t, 9H). ¹³C NMR (101 MHz, CDCl₃) δ 64.78, 62.60, 54.23, 51.13, 50.82, 49.70, 31.87, 29.67, 29.48, 29.14, 29.31, 29.24, 27.32, 26.30, 25.36, 22.84, 22.64, 20.05, 14.07. **ESI-MS** (*m/z*) 417 [C₅₆H₁₁₉N₃]²⁺, 347 [C₄₆H₉₈N₃]²⁺

Preparation of compound (14)

To a solution of 4-aza-1,7-heptane-bis(*N,N*-dimethyl-*N*-otadecylammonium) dibromide (0.005 mol; 4.27 g) in acetonitrile (20 mL) was added *n*-bromododecane (0.006 mol; 1.49 g) and sodium carbonate (0.006 mol; 0.64 g). The reaction mixture was heated under reflux for 22 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 62–63 °C, yield 72 %.

¹H NMR (403 MHz, CDCl₃): δ 3.93 (m, 4H), 3.39 (s, 12H), 2.77 (t, 4H), 2.22 (m, 4H), 3.45 (m, 6H), 1.74 (m, 6H), 1.35 (m, 12H), 1.26 (m, 62H), 0.88 (t, 9H). ¹³C NMR (101 MHz, CDCl₃) δ 64.85, 62.48, 54.28, 51.09, 50.79, 49.54, 31.87, 29.67, 29.61, 29.48, 29.41, 29.31, 29.24, 27.27, 26.28, 25.30, 22.83, 22.63, 19.89, 14.08.

Preparation of compound (15)

To a solution of 4-aza-1,7-heptane-bis(*N,N*-dimethyl-*N*-otadecylammonium) dibromide (0.005 mol; 4.27 g) in acetonitrile (20 mL) was added *n*-bromotetradecane (0.005 mol; 1.67 g) and sodium carbonate (0.006 mol; 0.64 g). The reaction mixture was heated under reflux for 20 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 60–61 °C, yield 75%.

¹H NMR (403 MHz, CDCl₃): δ 3.91 (m, 4H), 3.42 (s, 12H), 2.81 (t, 4H), 2.07 (m, 4H), 3.47 (m, 6H), 1.74 (m, 6H), 1.34 (m, 12H), 1.26 (m, 64H), 0.88 (t, 9H). ¹³C NMR (101 MHz, CDCl₃) δ 64.47, 63.00, 53.96, 51.06, 50.03, 31.87, 29.67, 29.61, 29.48, 29.40, 29.31, 29.24, 27.48, 26.30, 25.56, 22.84, 22.64, 20.54, 14.08. ESI-MS (*m/z*) 445 [C₆₀H₁₂₇N₃]²⁺, 347 [C₄₆H₉₈N₃]²⁺

Preparation of compound (16)

To a solution of 4-aza-1,7-heptane-bis(*N,N*-dimethyl-*N*-otadecylammonium) dibromide (0.006 mol; 5.12 g) in acetonitrile (20 mL) was added *n*-bromoheksadecane (0.005 mol; 2.19 g) and sodium carbonate (0.006 mol; 0.64 g). The reaction mixture was heated under reflux for 16 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 57–59 °C, yield 78%.

¹H NMR (403 MHz, CDCl₃): 3.91 (m, 4H), 3.41 (s, 12H), 2.78 (t, 4H), 2.04 (m, 4H), 3.41 (m, 6H), 1.73 (m, 6H), 1.34 (m, 12H), 1.25 (m, 66H), 0.88 (t, 9H) δ ¹³C NMR (101 MHz, CDCl₃) δ 64.39, 63.07, 53.92, 51.03, 50.08, 31.87, 29.66, 29.61, 29.46, 29.39, 29.31, 29.24, 27.49, 26.30, 25.58, 22.83, 22.63, 20.60, 14.07. ESI-MS (*m/z*) 459 [C₆₂H₁₃₅N₃]²⁺, 347 [C₄₆H₉₈N₃]²⁺

Preparation of compound (17)

To a solution of 4-aza-1,7-heptane-bis(*N,N*-dimethyl-*N*-dodecylammonium) diiodide (0.005 mol; 4 g) in acetonitrile (20 mL) was added *n*-iodododecane (0.015 mol; 4.45 g) and sodium carbonate (0.006 mol; 0.64 g). The reaction mixture was heated under reflux for 20 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 110-111 °C, yield 60%.

¹H NMR (403 MHz, CDCl₃): δ 4.031-3.902 (m, 4H), 3.57-3.47 (m, 4H), 3.87 (s, 12H), 2.67-2.64 (t, 4H), 2.47-2.44 (t, 2H), 1.40 (s, 6H), 1.26 (s, 50 H), 0.87 (t, 9H). ¹³C NMR (101 MHz, CDCl₃) δ 64.38, 63.55, 53.29, 51.12, 50.21, 31.76, 29.48, 27.60, 26.17, 25.49, 22.86, 22.55, 21.12, 13.99.

Preparation of compound (18)

To a solution of 4-aza-1,7-heptane-bis(*N,N*-dimethyl-*N*-hexadecylammonium) dibromide (0.005 mol; 4 g) in acetonitrile (20 mL) was added *n*-iodohexadecane (0.015 mol; 5.30 g) and sodium carbonate (0.006 mol; 0.64 g). The reaction mixture was heated under reflux for 22 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 65-67 °C, yield 65%.

¹H NMR (403 MHz, CDCl₃): δ 4.04-3.98 (m, 4H), 3.50-3.45 (m, 4H), 3.38 (s, 12H), 2.67 (s, 4H), 2.47-2.44 (t, 2H), 2.02 (s, 4H), 1.75 (s, 6H), 1.36 (s, 6 H), 1.25 (s, 36H), 0.88 (s, 9H) ¹³C NMR (101 MHz, CDCl₃) δ 64.42, 63.68, 53.21, 51.09, 50.31, 31.85, 29.63, 29.59, 29.55, 27.65, 26.22, 25.38, 22.89, 22.61, 21.17. ESI-MS (*m/z*) 347 [C₄₆H₉₉N₃]²⁺, 440 [C₂₈H₆₂N₃]⁺

Preparation of compound (19)

To a solution of 3,3'-Iminobis(*N,N*-dimethylpropylamine) (0.021 mol; 4 g) in acetonitrile (10 mL) was added *n*-iodododecane (0.042 mol; 18.7 g) and sodium carbonate (0.021 mol; 2.23 g). The reaction mixture was heated under reflux for 28 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 174-176 °C, yield 85%.

¹H NMR (403 MHz, CDCl₃): δ 3.59-3.44 (m, 4H), 3.42-3.36 (m, 8H), 3.19 (s, 12H), 2.52 (m, 4H), 1.87 (m, 4H), 1.46 (m, 8H), 1.35 (s, 12 H), 0.91 (t, 6H), ¹³C NMR (101 MHz, CDCl₃) δ 66.10, 60.89, 50.36, 45.52, 31.50-29.91, 22.50, 19.96. 12.43

Preparation of compound (20)

To a solution of 3,3'-Iminobis(*N,N*-dimethylpropylamine) (0.021 mol; 4 g) in acetonitrile (10 mL) was added *n*-iodohexadecane (0.042 mol; 14.9 g) and sodium carbonate (0.021 mol; 2.23 g). The reaction mixture was heated under reflux for 12 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 149-150 °C, yield 82%.

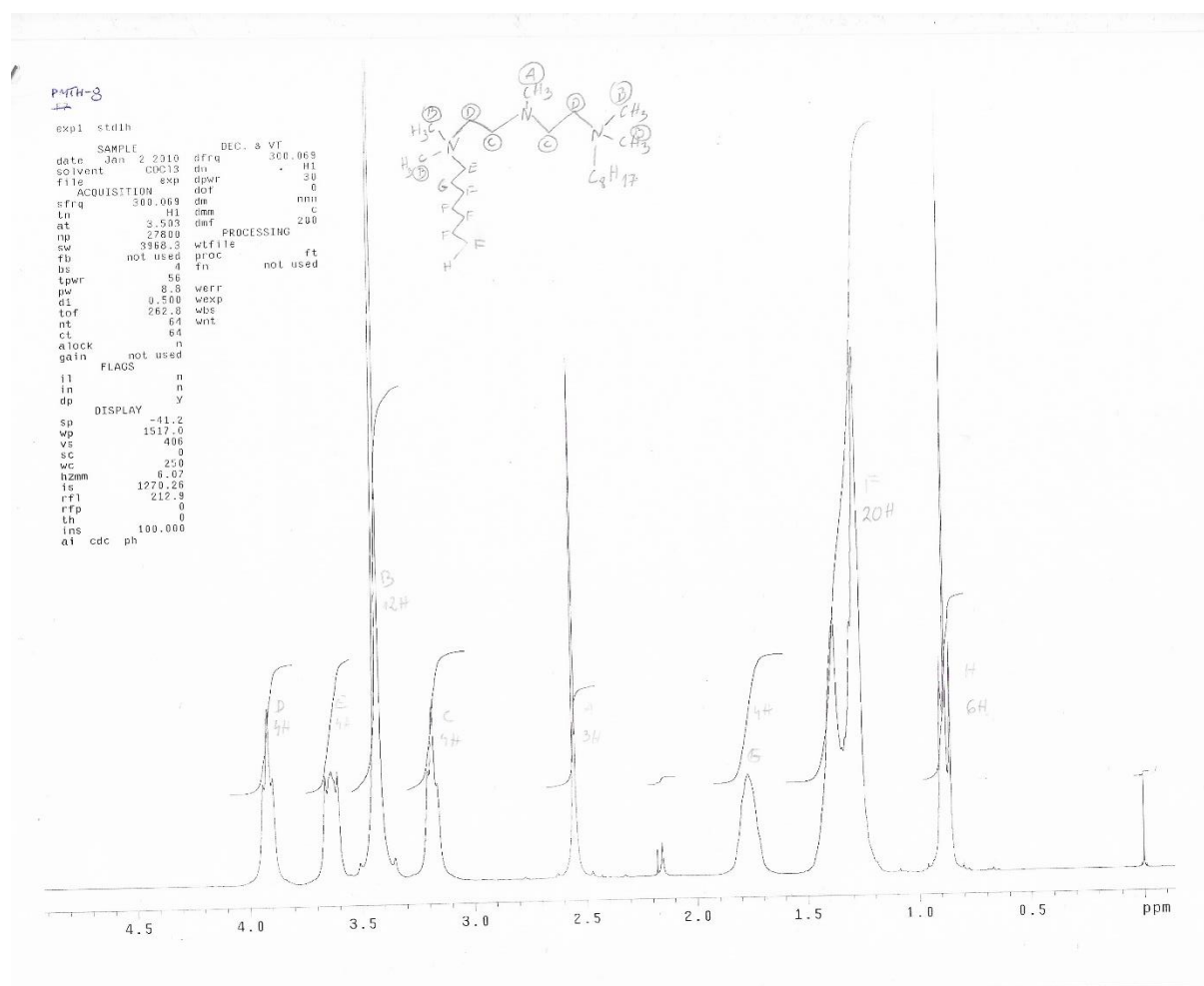
¹H NMR (403 MHz, CDCl₃): δ 3.57-3.49 (m, 4H), 3.46-3.35 (m, 8H), 3.19 (s, 12H), 2.54 (m, 4H), 1.87 (m, 4H), 1.46 (m, 8H), 1.35 (s, 28 H), 0.92 (t, 6H). ¹³C NMR (101 MHz, CDCl₃) δ 66.11, 60.89, 50.37, 45.52, 31.57-29.01, 22.51, 19.98. 12.14 ESI-MS (*m/z*) 323 [C₄₂H₉₉N₃]²⁺

Preparation of compound (21)

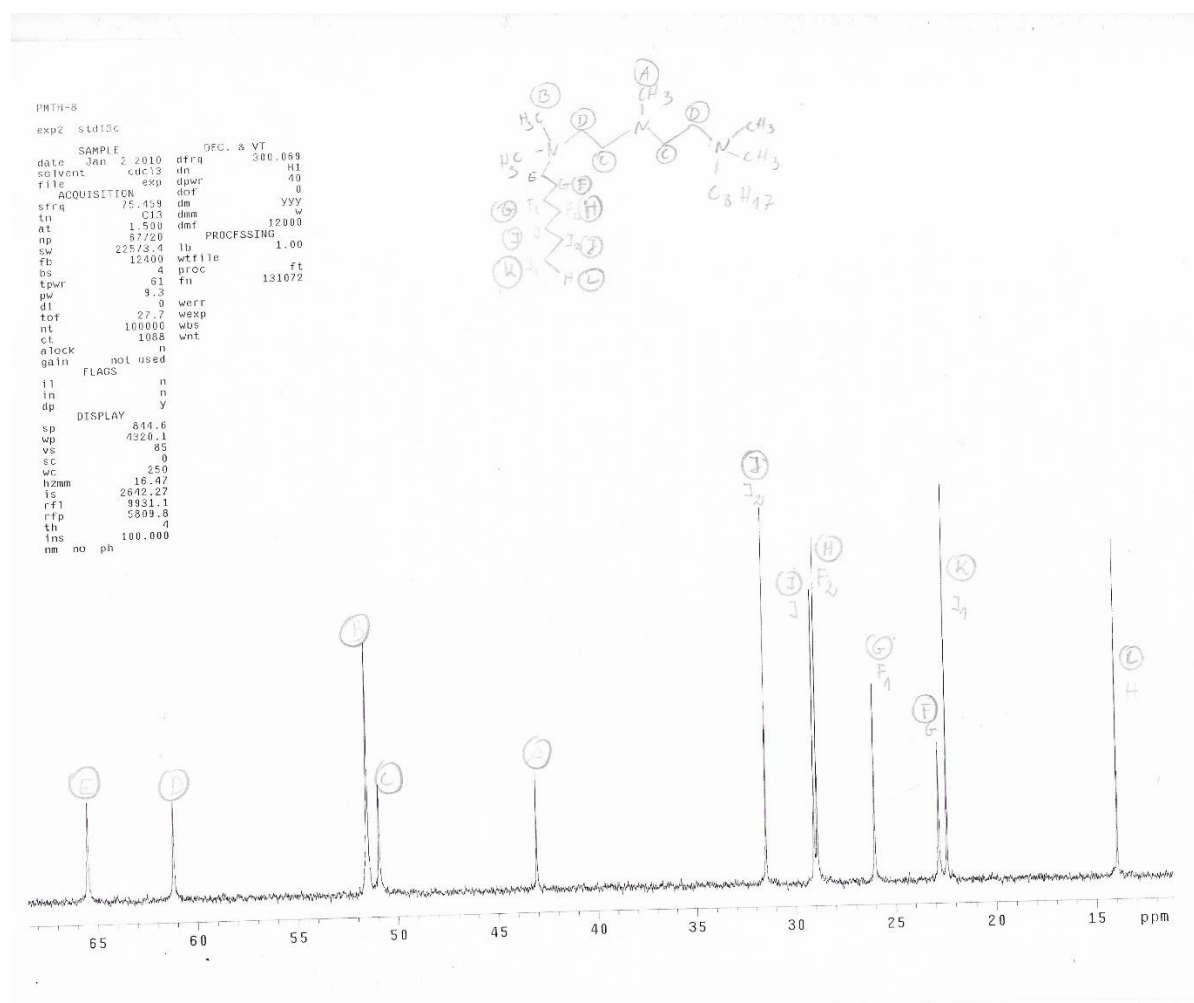
To a solution of 3,3'-Iminobis(*N,N*-dimethylpropylamine) (0.021 mol; 4 g) in acetonitrile (10 mL) was added *n*-iodooctadecane (0.042 mol; 15,96 g) and sodium carbonate (0.021 mol; 2.23 g). The reaction mixture was heated under reflux for 7 hours. The solvent was evaporated under reduced pressure and the residue was dried over P₄O₁₀ and then crystallized from acetonitrile. White solid, mp 127-128 °C, yield 80%.

¹H-NMR (403 MHz, TFA-*d*): δ 3.57-3.55 (m, 4H), 3.46-3.42 (m, 8H), 3.19 (s, 12H), 2.54 (m, 4H), 1.87 (m, 4H), 1.46 (m, 8H), 1.35 (s, 28 H), 0.92 (t, 6H). ¹³C NMR (101 MHz, TFA-*d*) δ 66.08, 60.89, 50.89, 45.53, 31.59-25.71, 22.13, 19.94. 12.46 ESI-MS (*m/z*) 347 [C₄₆H₉₉N₃]²⁺, 440 [C₂₈H₆₂N₃]

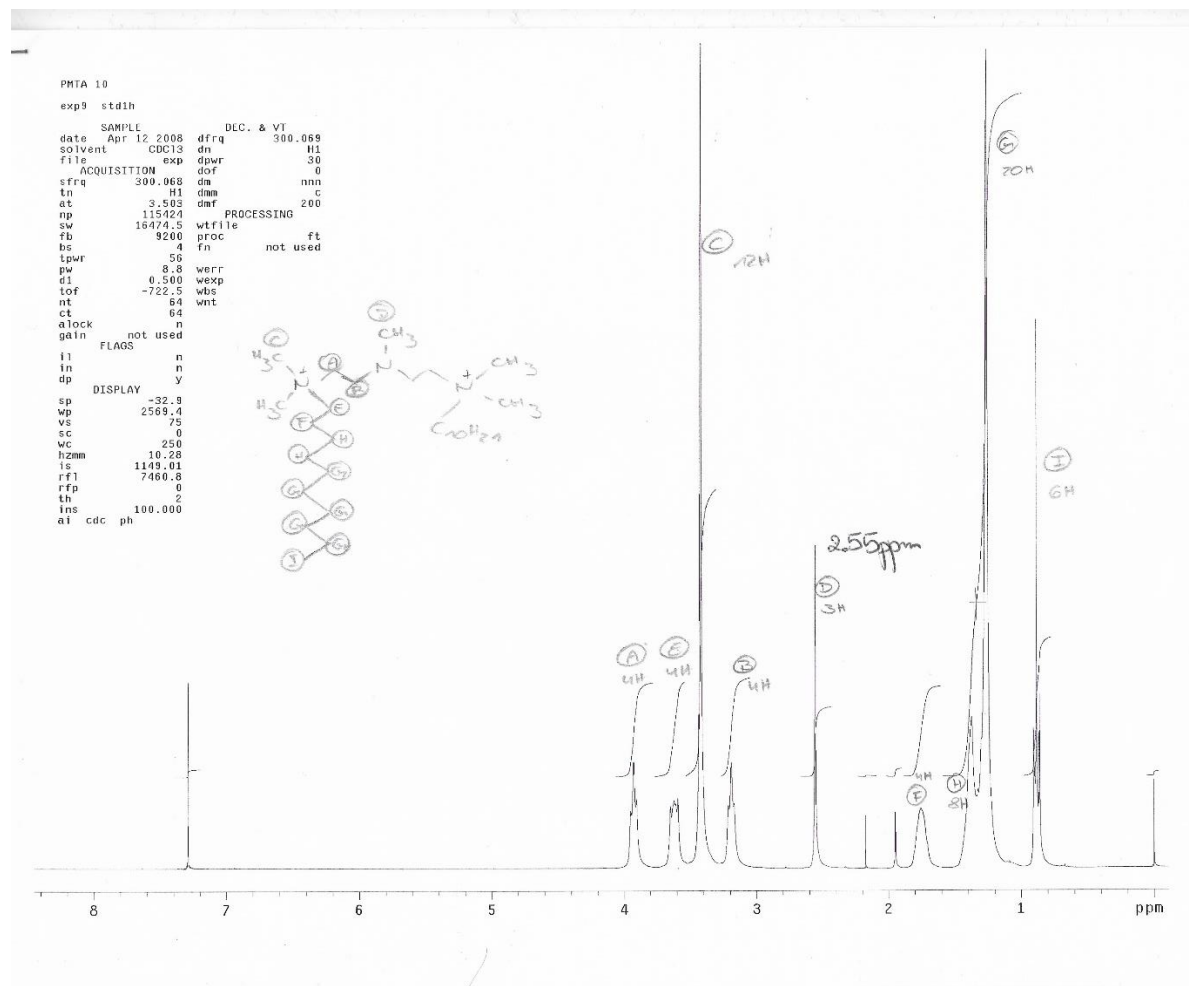
Compound 1 ¹H NMR



Compound 1 ¹³C NMR



Compound 2 ¹H NMR

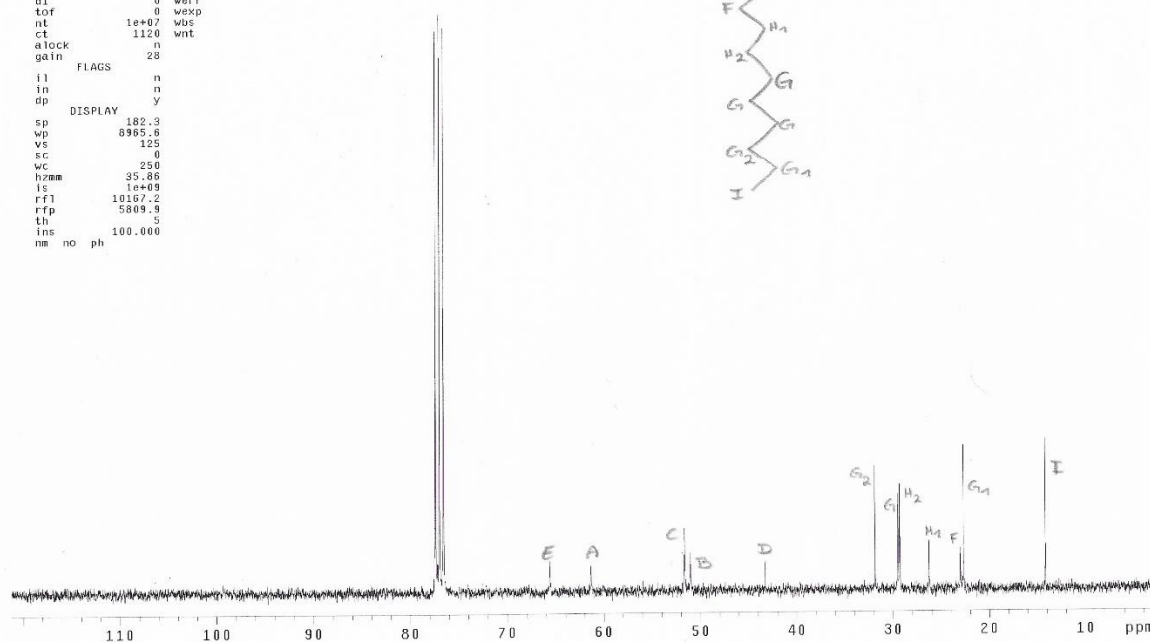
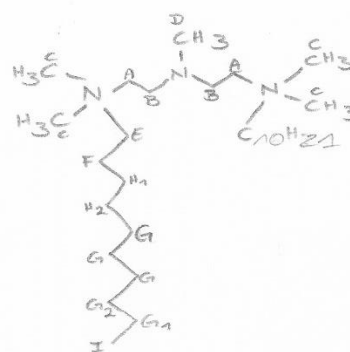


Compound 2 ¹³C NMR

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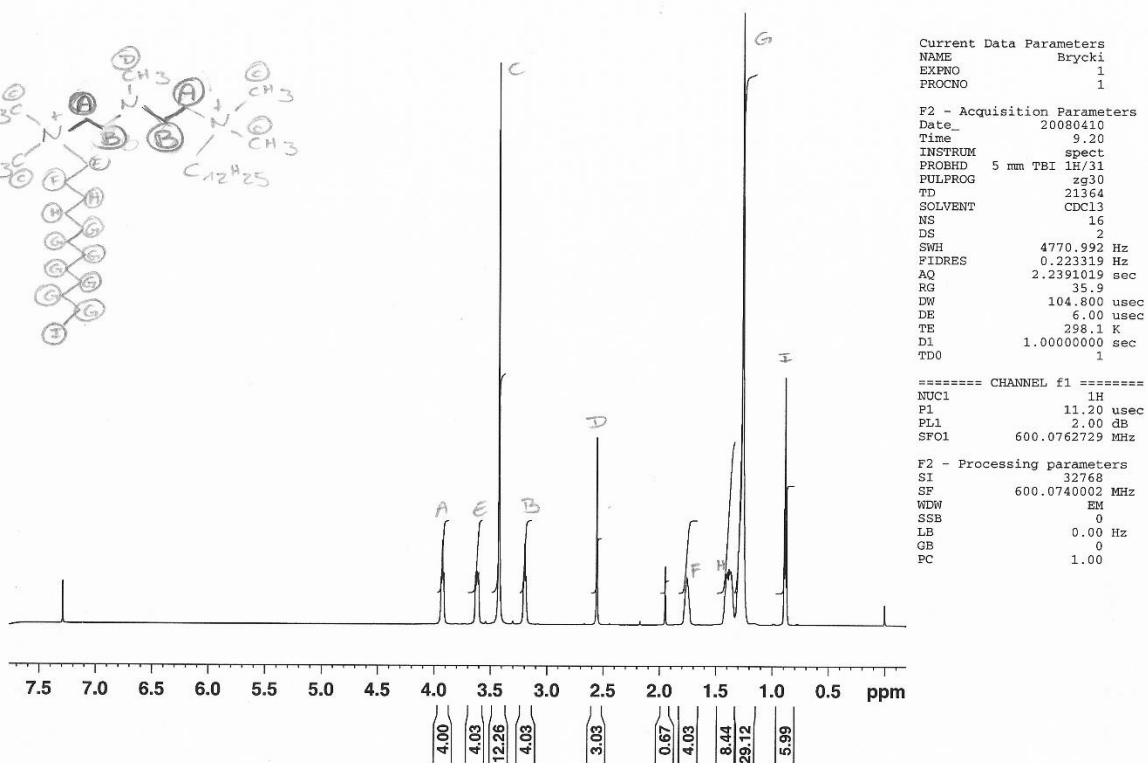
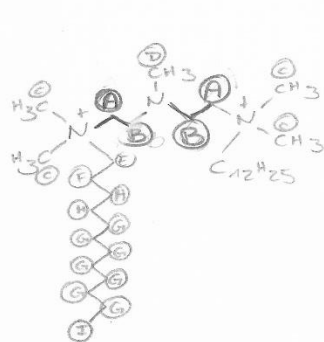
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Fb 12000	vtfile
bs 1	proc
tpwr 55	fn
pw 6.0	ft 131072
d1 0	werr
tof 0	wexp
nt 1e+07	was
ct 1120	wnt
alock n	
gain 28	

il	n
in	n
dp	Y
DISPLAY	
sp	182.3
mp	8965.6
vs	125
sc	0
vc	250
hzmm	35.86
ls	1e+09
rf1	10167.2
rpf	5809.9
th	5
ins	100.000
nm	no ph



Compound 3 ¹H NMR

M. Popiela_PMTA 12-2



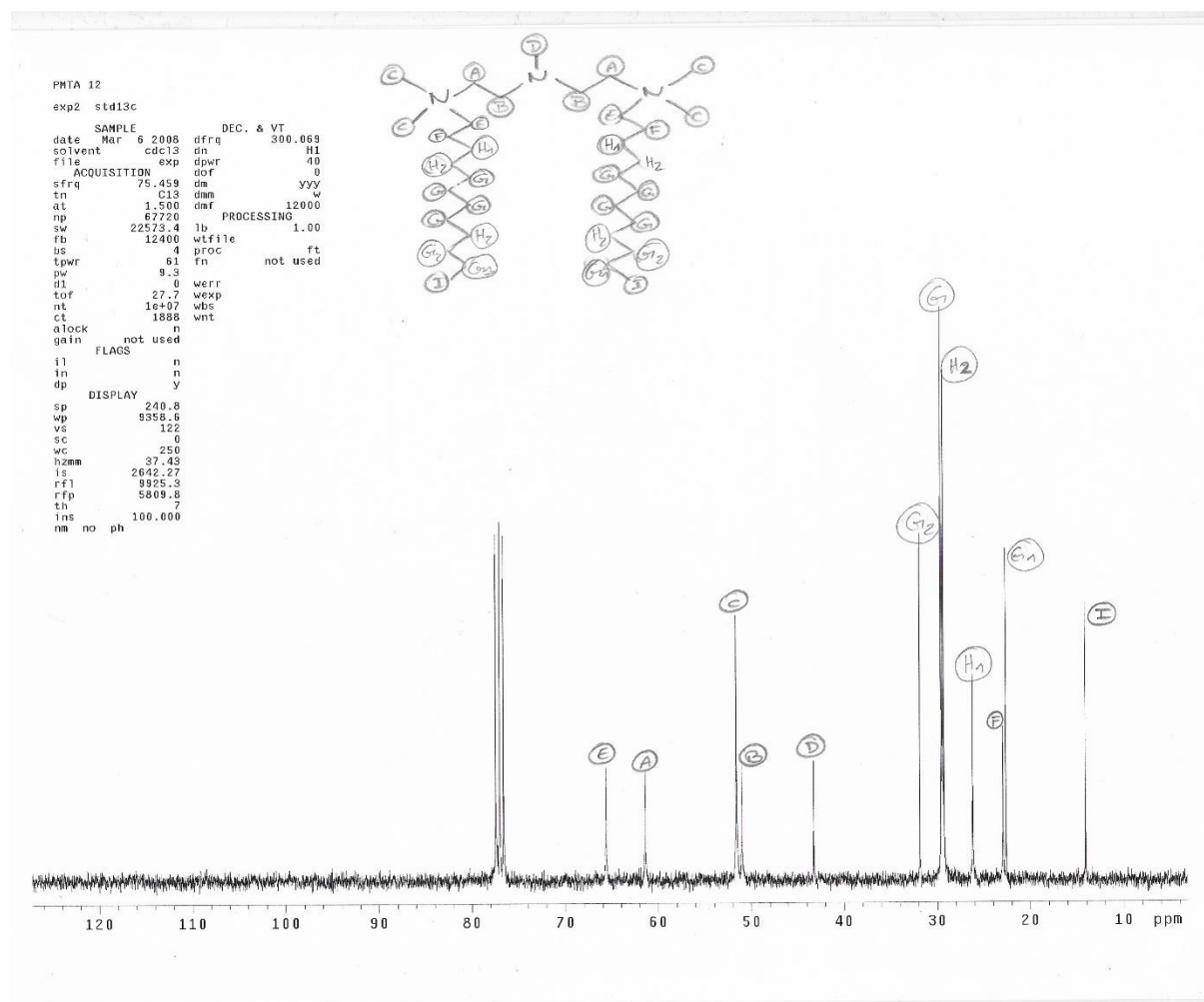
Current Data Parameters
 NAME Brycki
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20080410
 Time 9.20
 INSTRUM spect
 PROBHD 5 mm TBI 1H/31
 PULPROG zg30
 TD 21364
 SOLVENT CDCl3
 NS 16
 DS 2
 SWH 4770.992 Hz
 FIDRES 0.223319 Hz
 AQ 2.2391019 sec
 RG 35.9
 DW 104.800 usec
 DE 6.00 usec
 TE 298.1 K
 D1 1.0000000 sec
 TD0 1

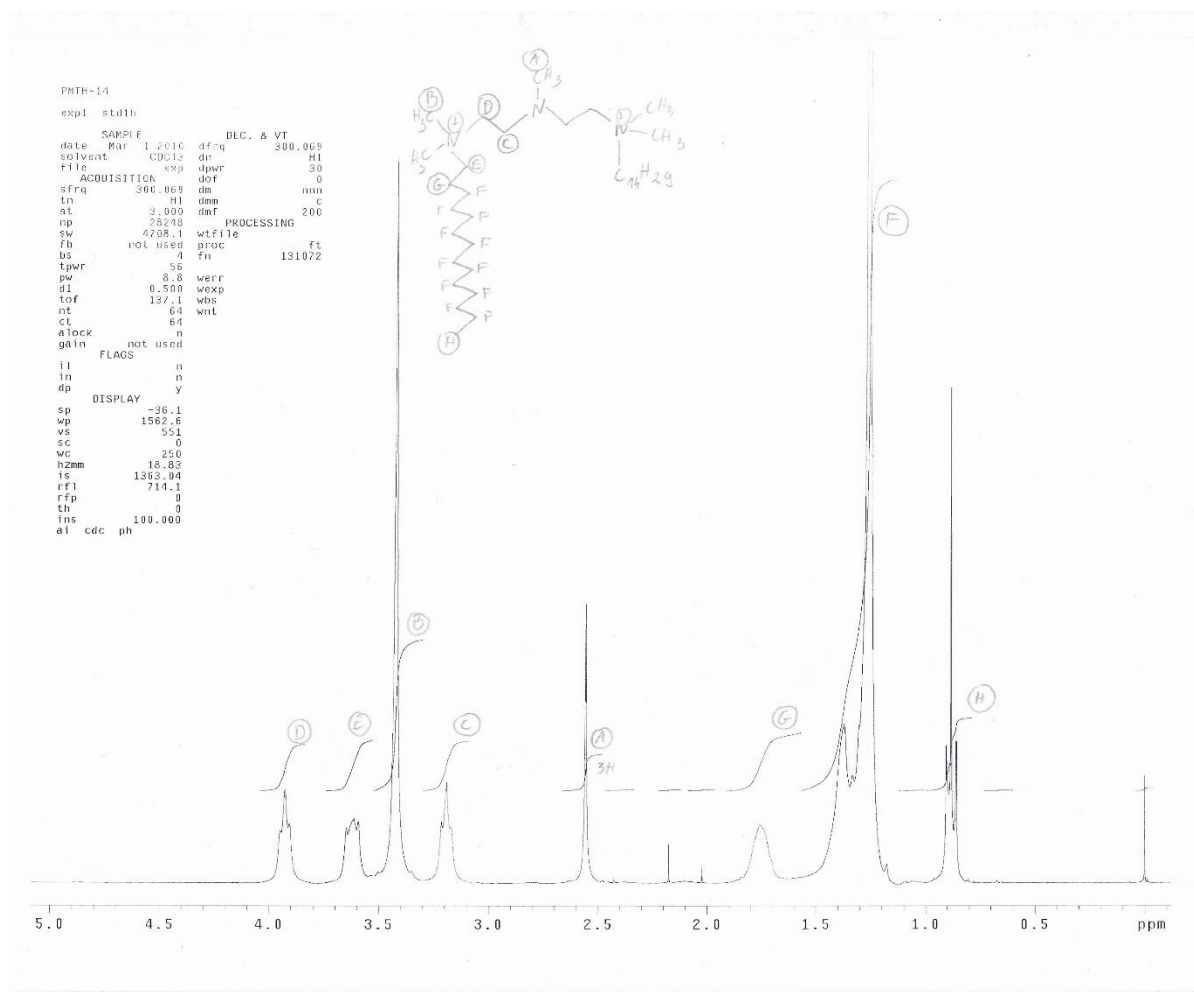
===== CHANNEL f1 =====
 NUC1 1H
 P1 11.20 usec
 PL1 2.00 dB
 SFO1 600.0762729 MHz

F2 - Processing parameters
 SI 32768
 SF 600.0740002 MHz
 WDW EM
 SSB 0
 LB 0.00 Hz
 GB 0
 PC 1.00

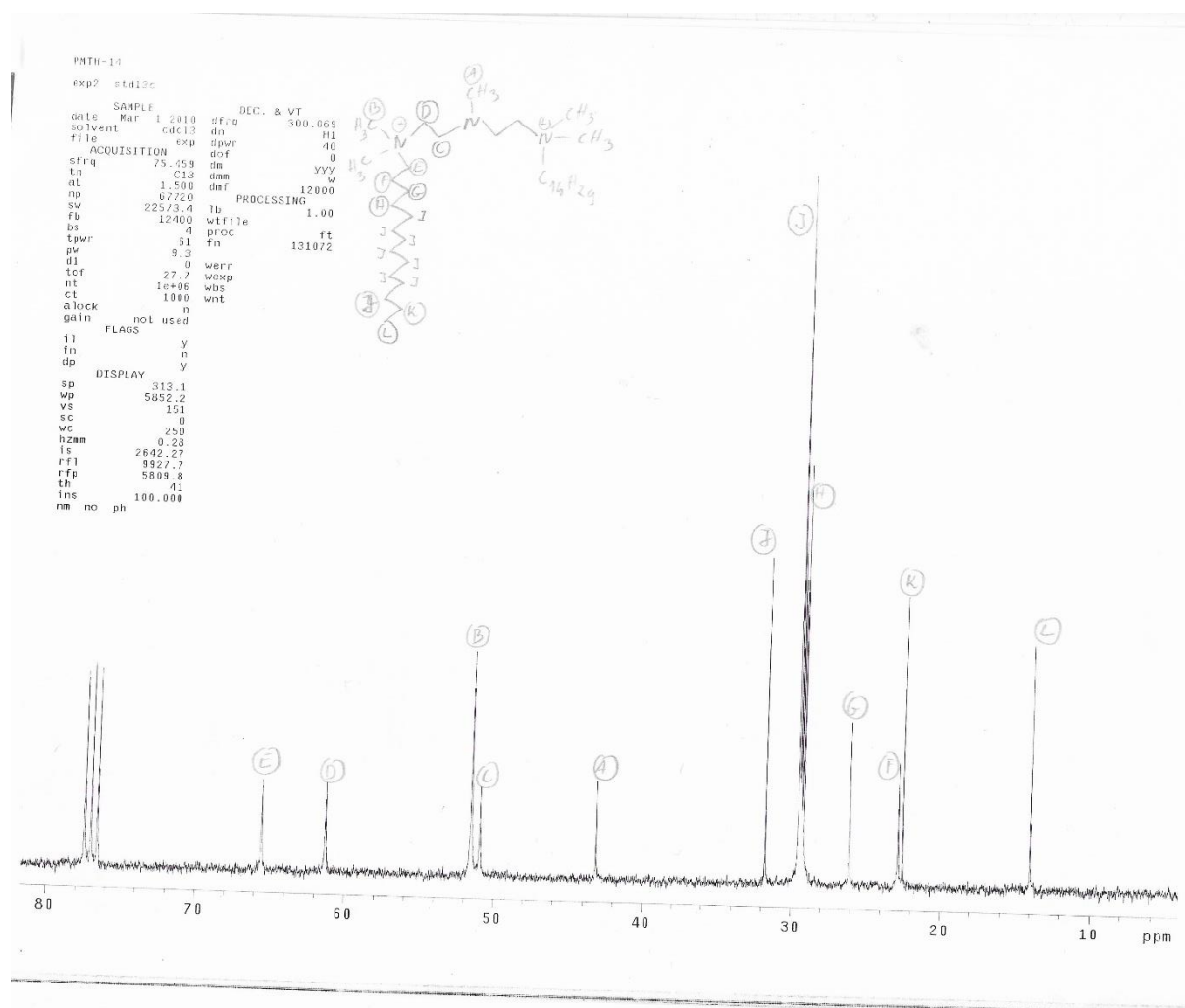
Compound 3 ¹³C NMR



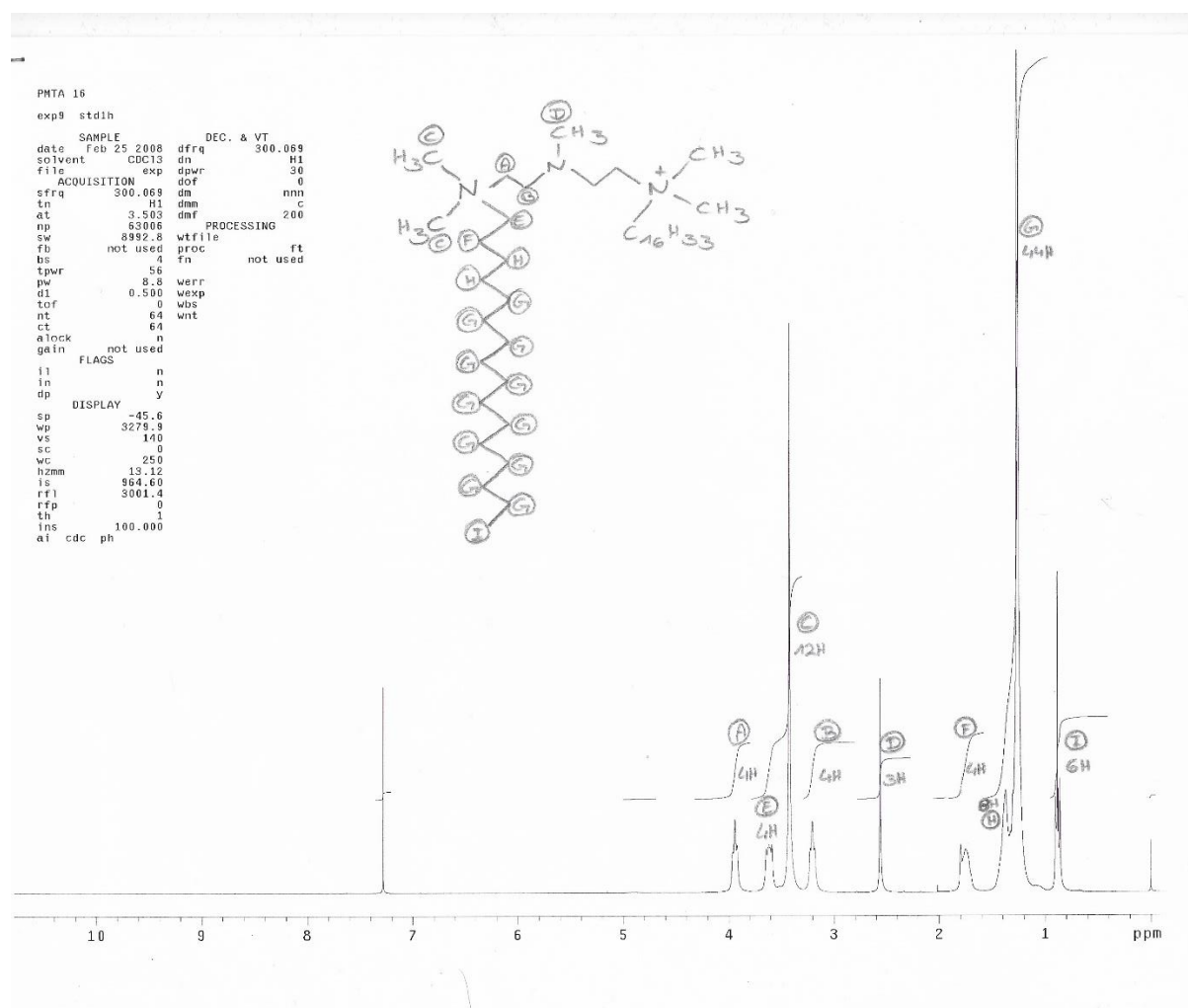
Compound 4 ¹H NMR



Compound 4 ¹³C NMR



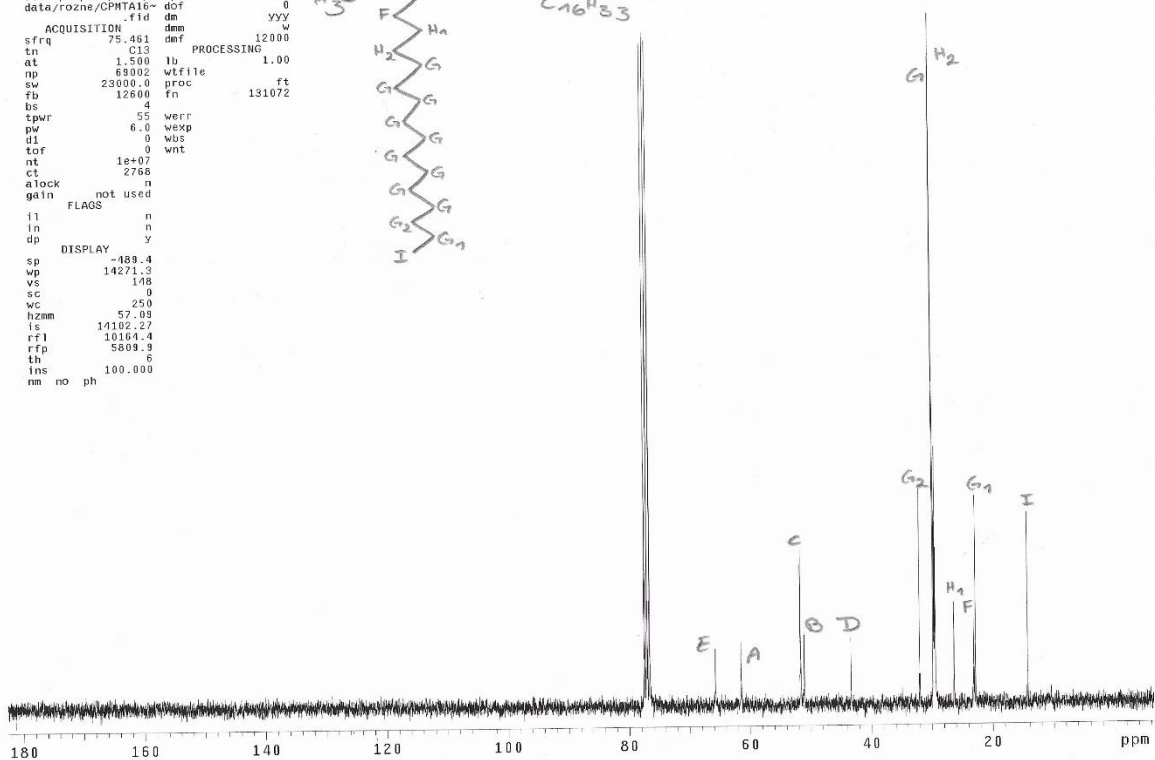
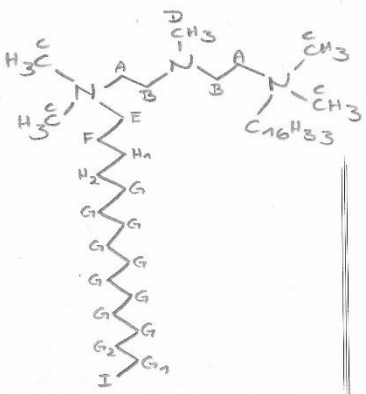
Compound 5 ¹H NMR



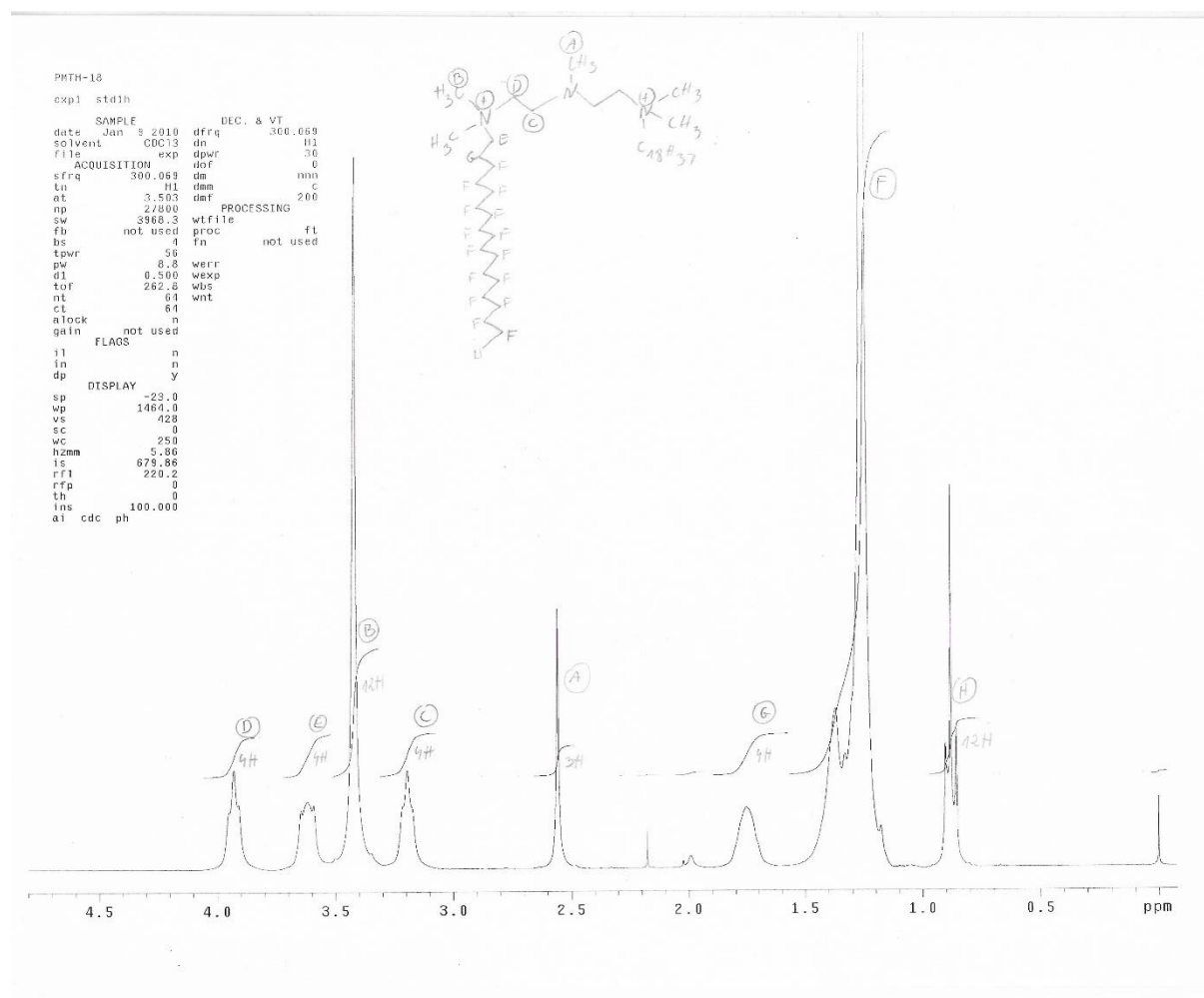
Compound 5 ¹³C NMR

```

PMTA 16
exp3 std13c
SAMPLE
date Feb 28 2008 dfrq DEC. & VT 300.076
solvent cdc13 dn H1
file /export/home/~ dpwr 41
data/rozne/CPMTA16- dof 0
fid dn yyy
ACQUISITION dnm w
sfrq 75.461 dmf 12000
tn C13 PROCESSING
at 1.500 lb 1.00
np 63002 wfile
sw 23000.0 proc ft
fb 12800 fn 131072
bs 4
tpwr 55 werr
pw 6.0 wexp
di 0 wbs
tof 0 wnt
nt 1e+07
ct 2768
alock n
gain not used
FLAGS
il n
in n
dp y
DISPLAY
sp -489.4
wp 14271.3
vs 140
sc 9
wc 250
hzmm 57.09
is 14102.27
rf1 10164.4
rfp 5809.9
th 6
ins 100.000
nm no ph
    
```



Compound 6 ¹H NMR

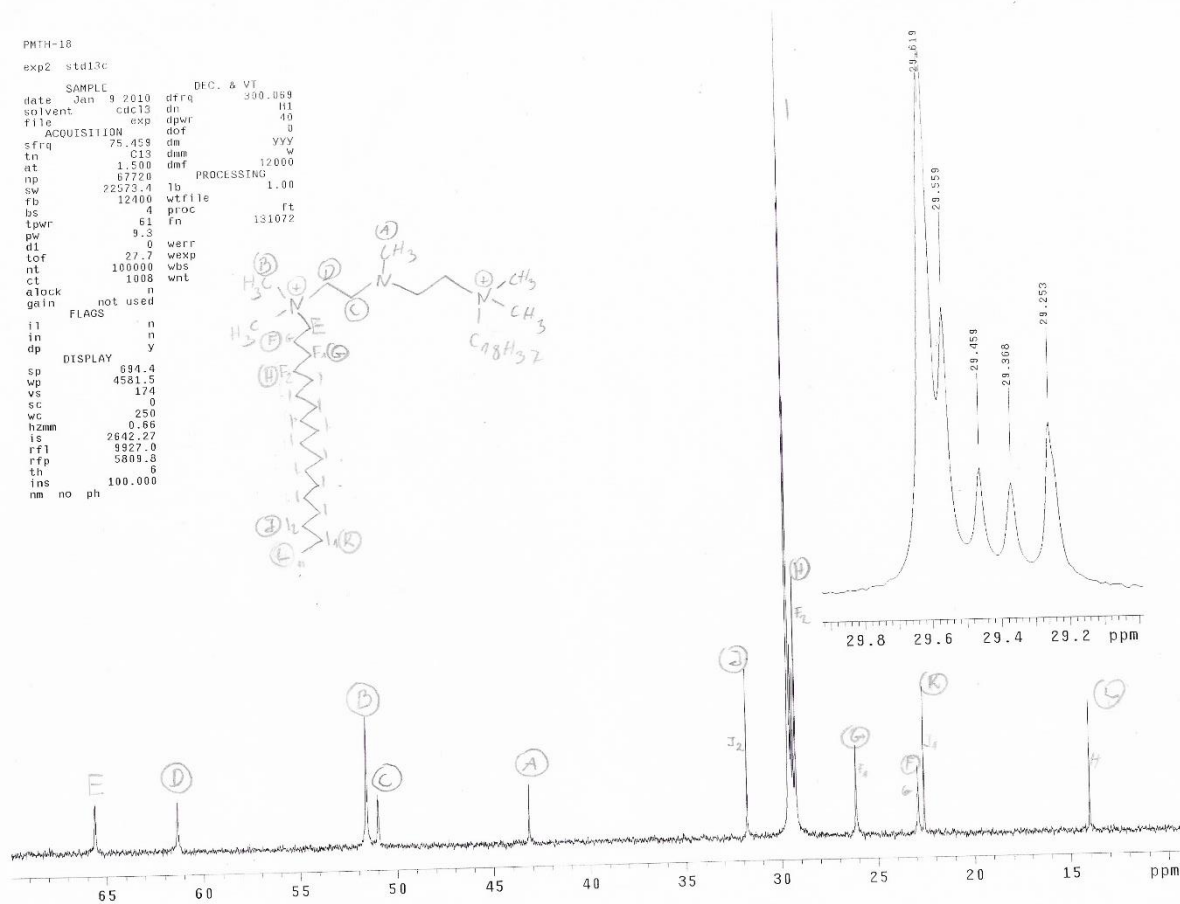
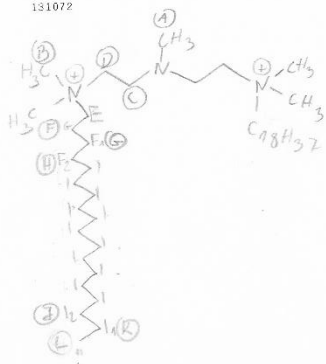


Compound 6 ¹³C NMR

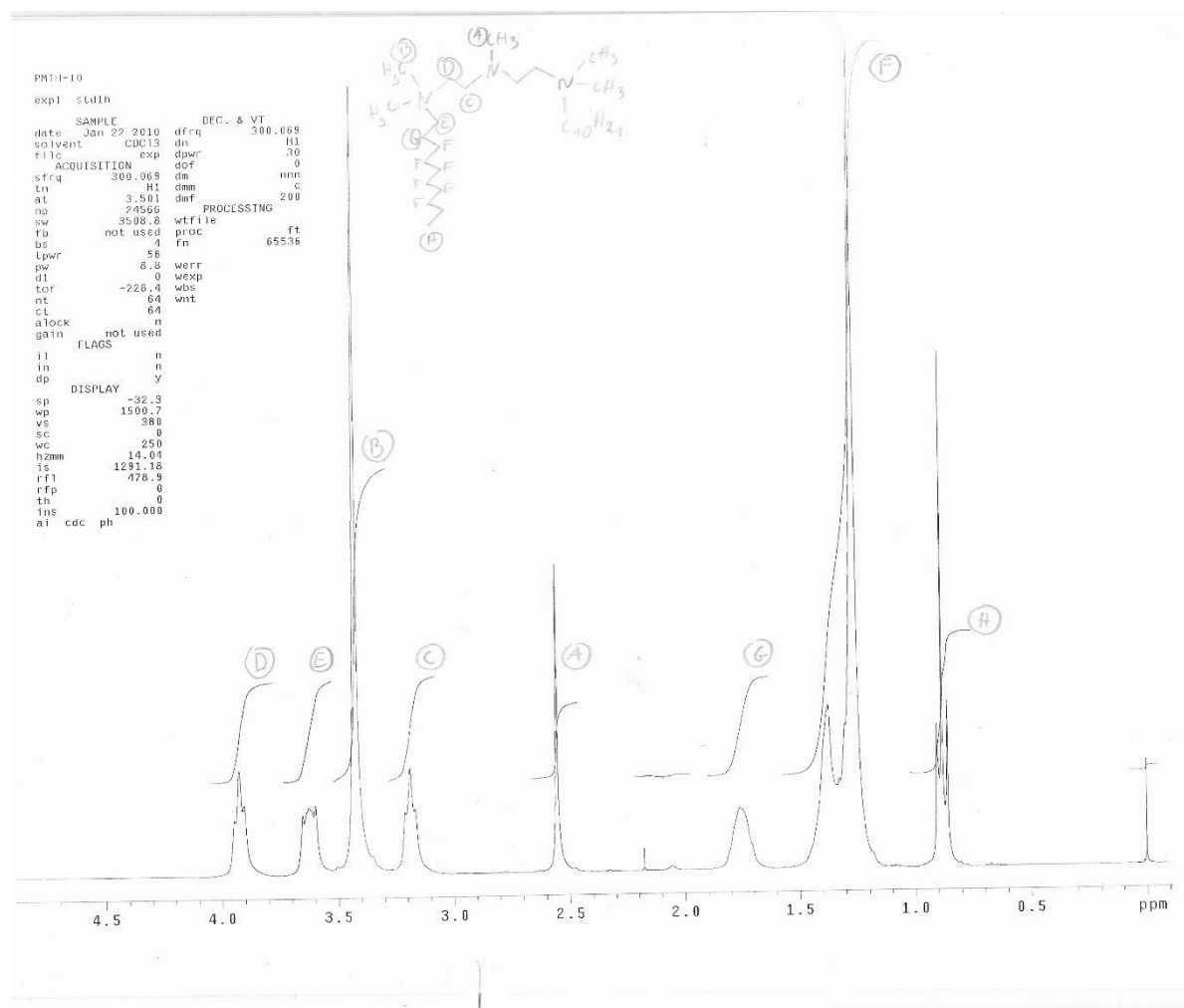
PMTH-18

exp2 std13c

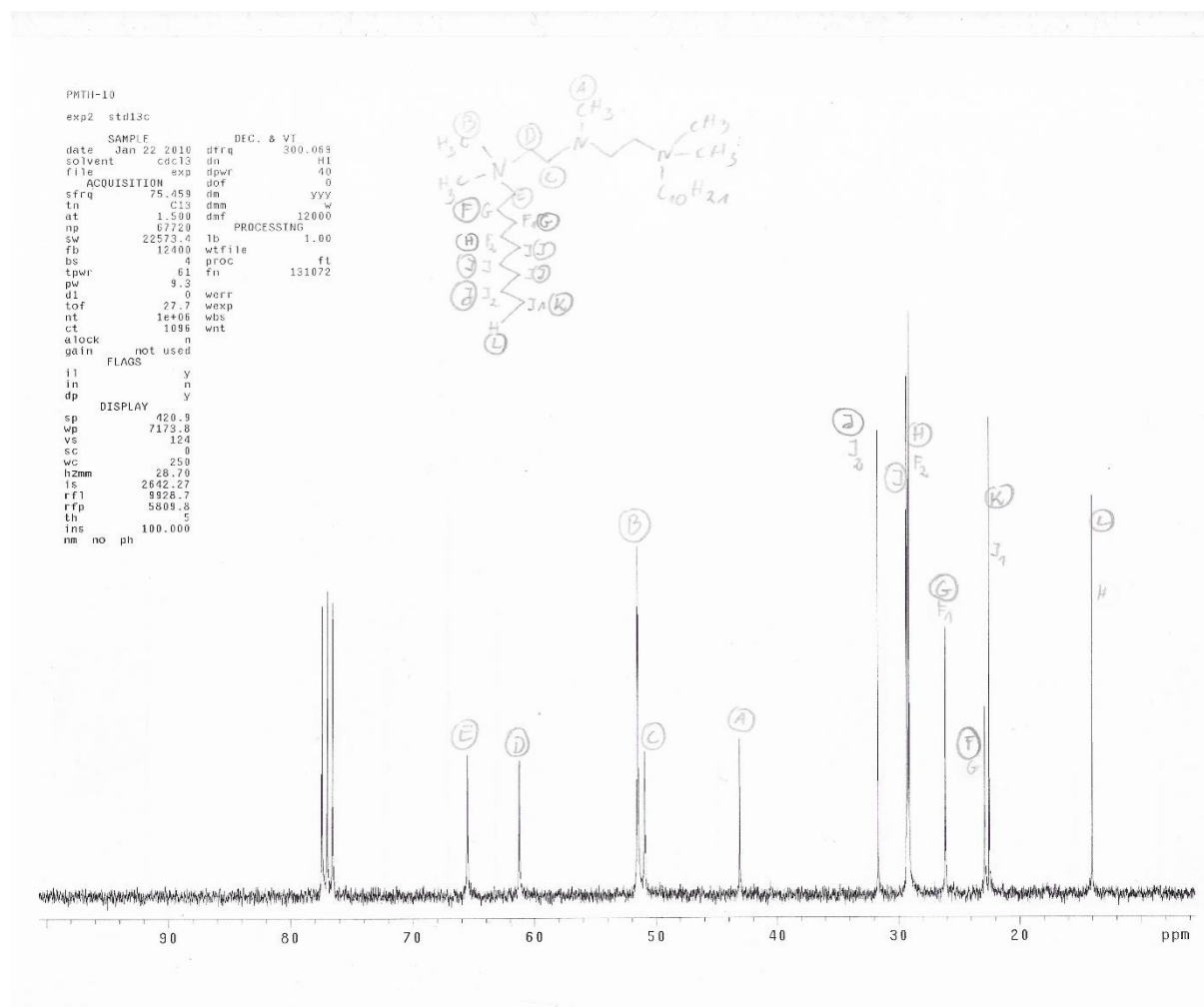
SAMPLED DEC. & VI
 date Jan 9 2010 dfrq 300.059
 solvent cdcl3 dn H1
 file ACQUISITION exp dpwr 40
 sfrq 75.458 dm YYY
 tn C13 dnm V
 at 1.500 dmf 12000
 np 67720 PROCESsing 1.00
 sw 22573.4 lb wtfile
 fb 12400 proc ft
 bs 4 fn 131072
 tpwr 61
 pw 9.3
 dl 0 werr
 lof 27.7 wexp
 nt 100000 wbs
 ct 1000 wnt
 a lock not used
 gain not used
 FLAGS n
 in n
 dp y
 DISPLAY 694.4
 sp 4581.5
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 is 2642.27
 rfi 9927.0
 rfp 5809.8
 th 6
 ins 100.000
 nm no ph



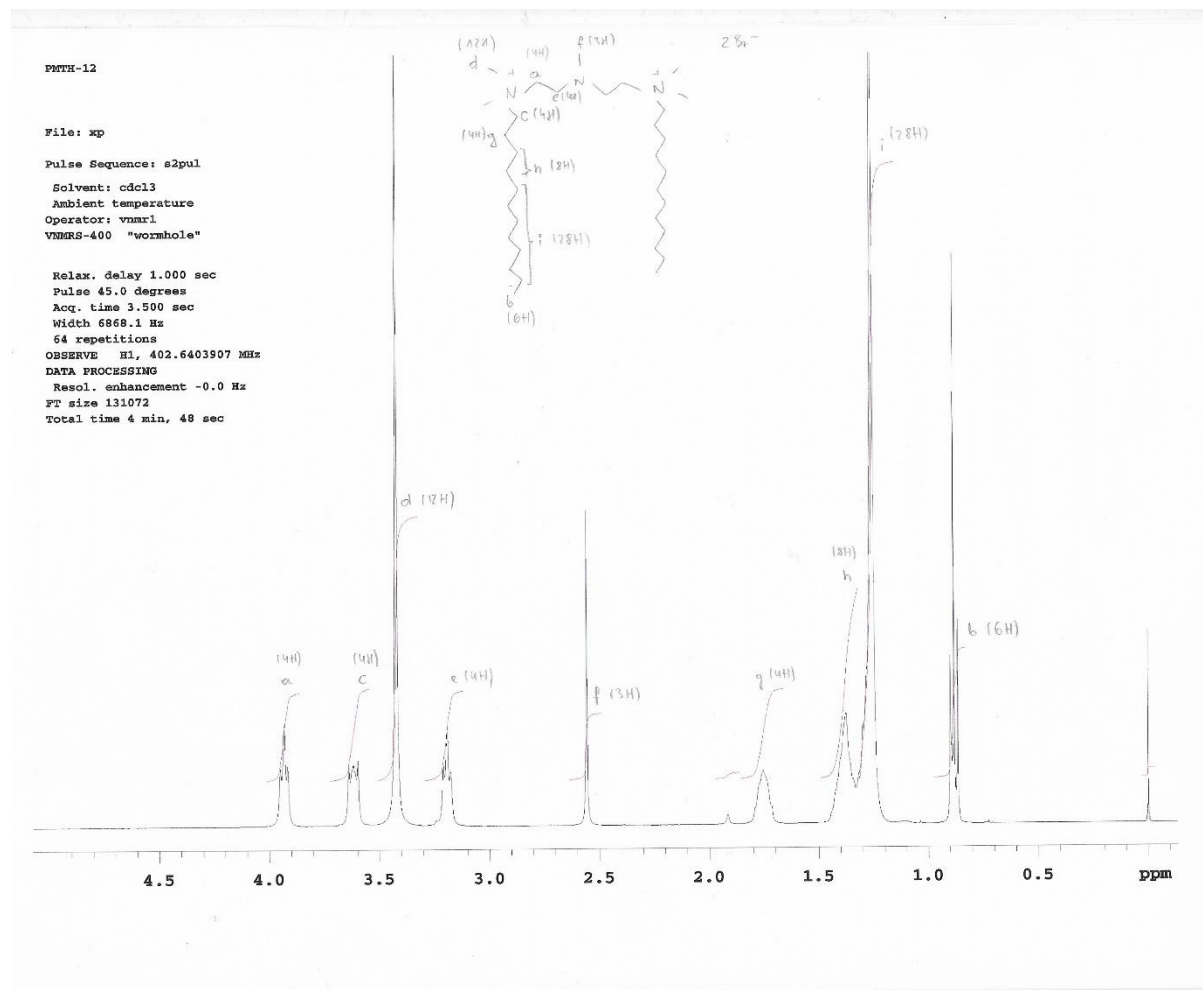
Compound 7 ¹H NMR



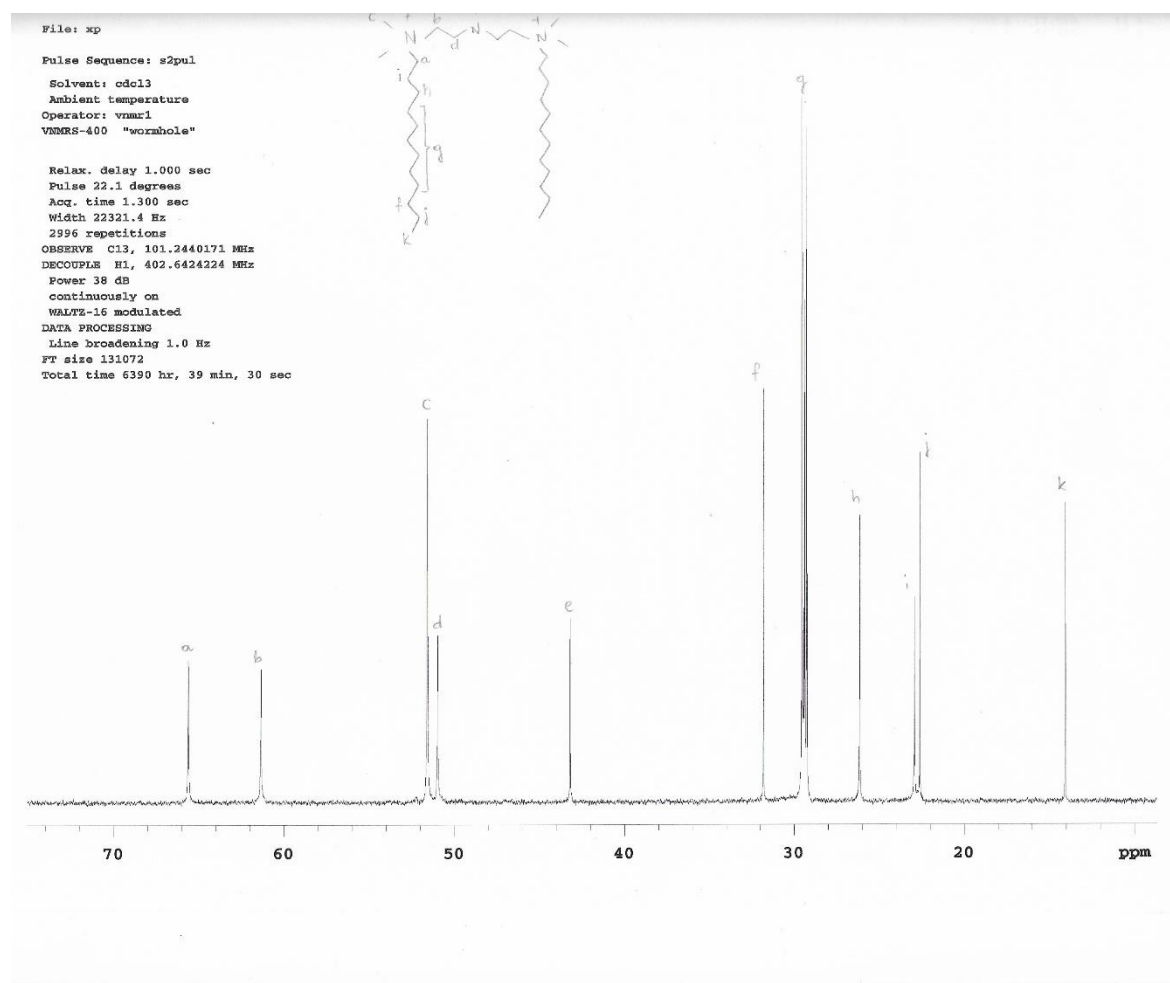
Compound 7 ¹³C NMR



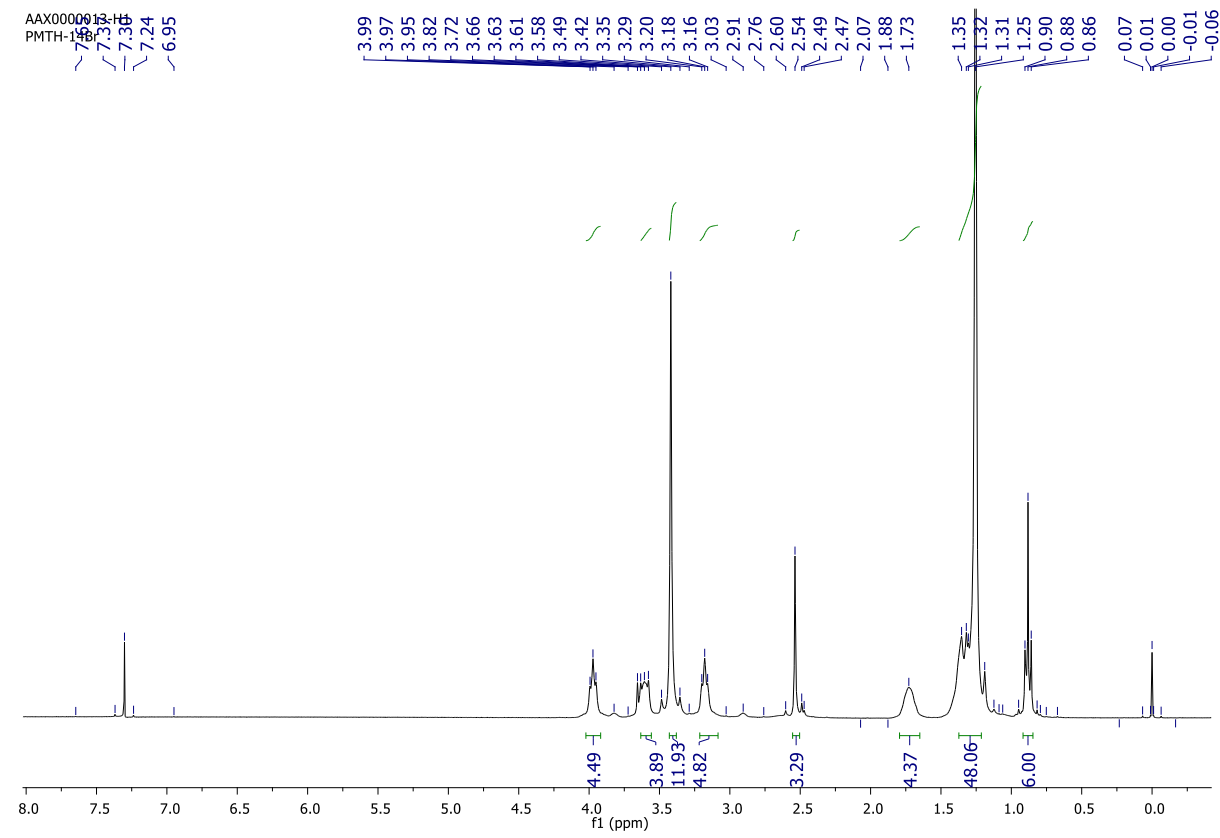
Compound 8 ¹H NMR



Compound 8 ¹³C NMR



Compound 9 ¹H NMR



Compound 9 ¹³C NMR

AAX000013-C13
PMTH-14Br

77.39
77.17
76.97
76.54

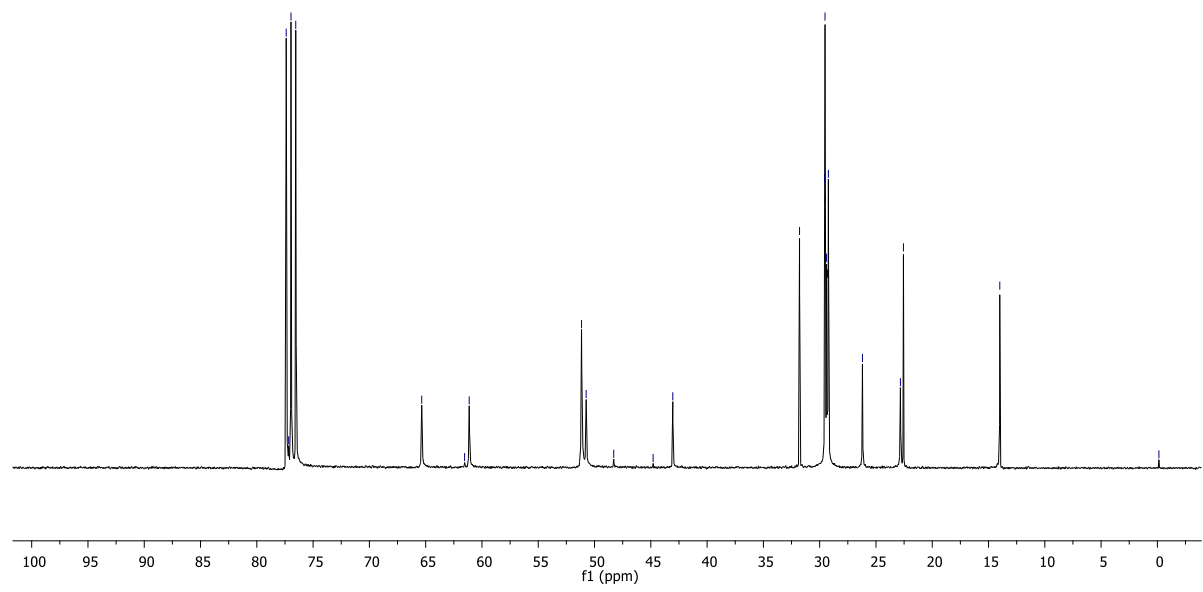
65.35
61.54
61.13

51.15
50.74
48.29
44.79
43.05

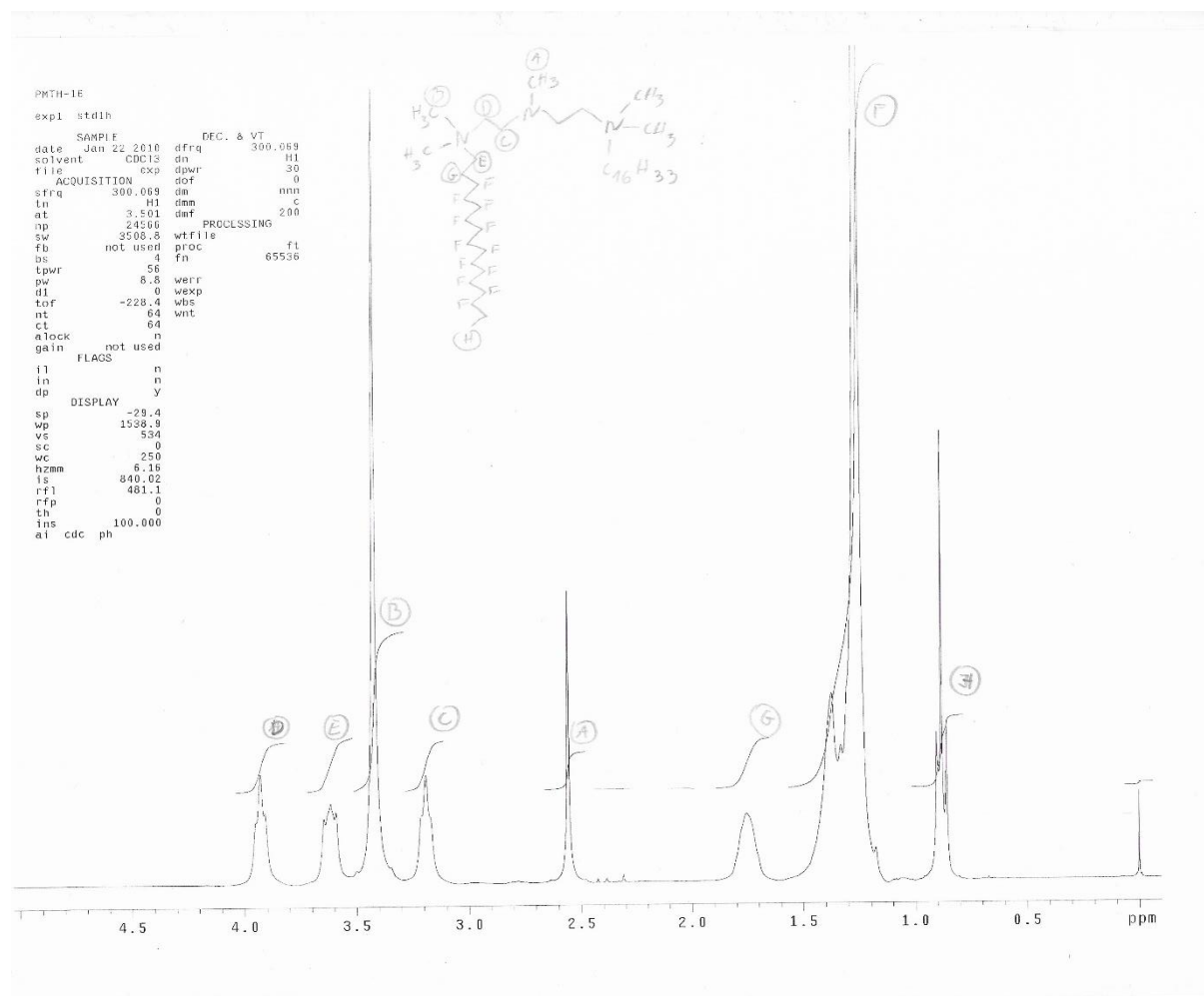
31.79
29.56
29.53
29.49
29.39
29.31
29.23
26.20
22.83
22.56

14.00

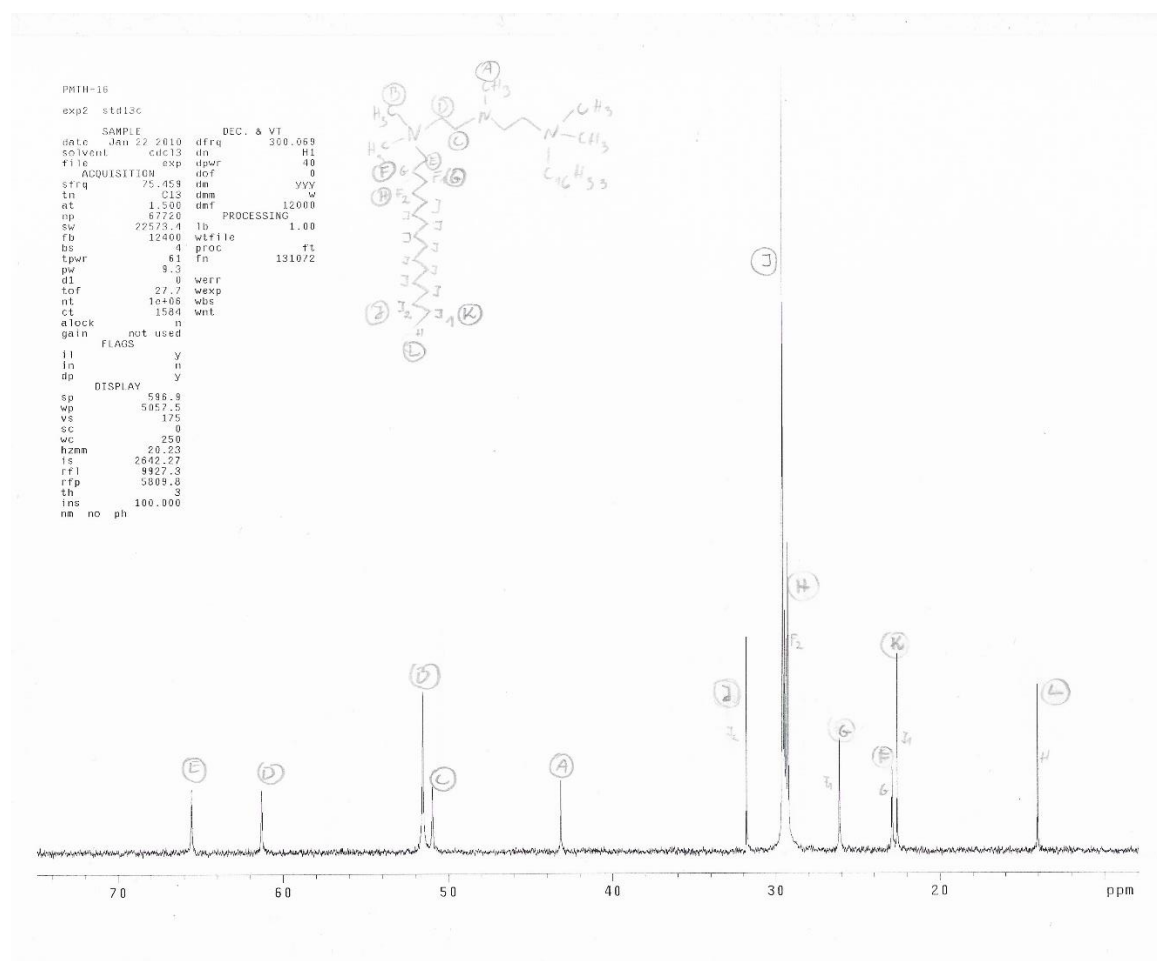
-0.14



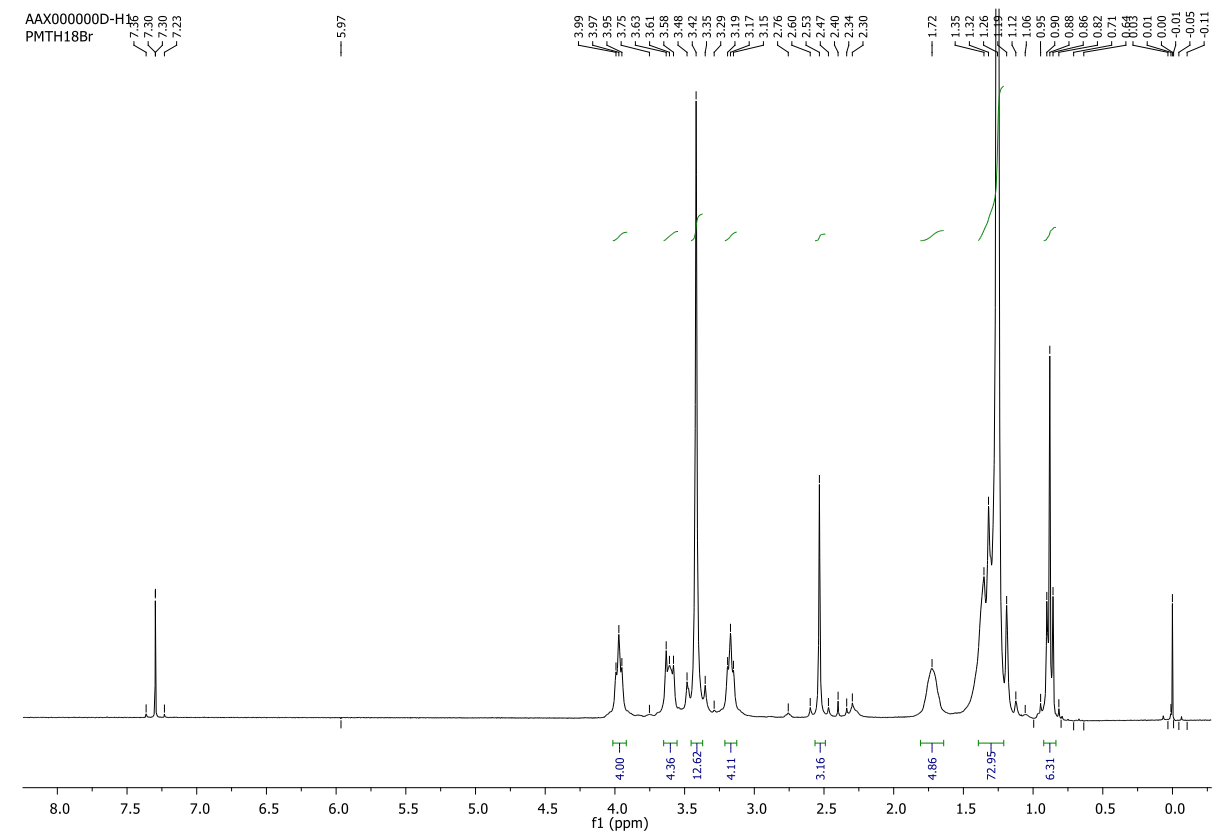
Compound 10 ¹H NMR



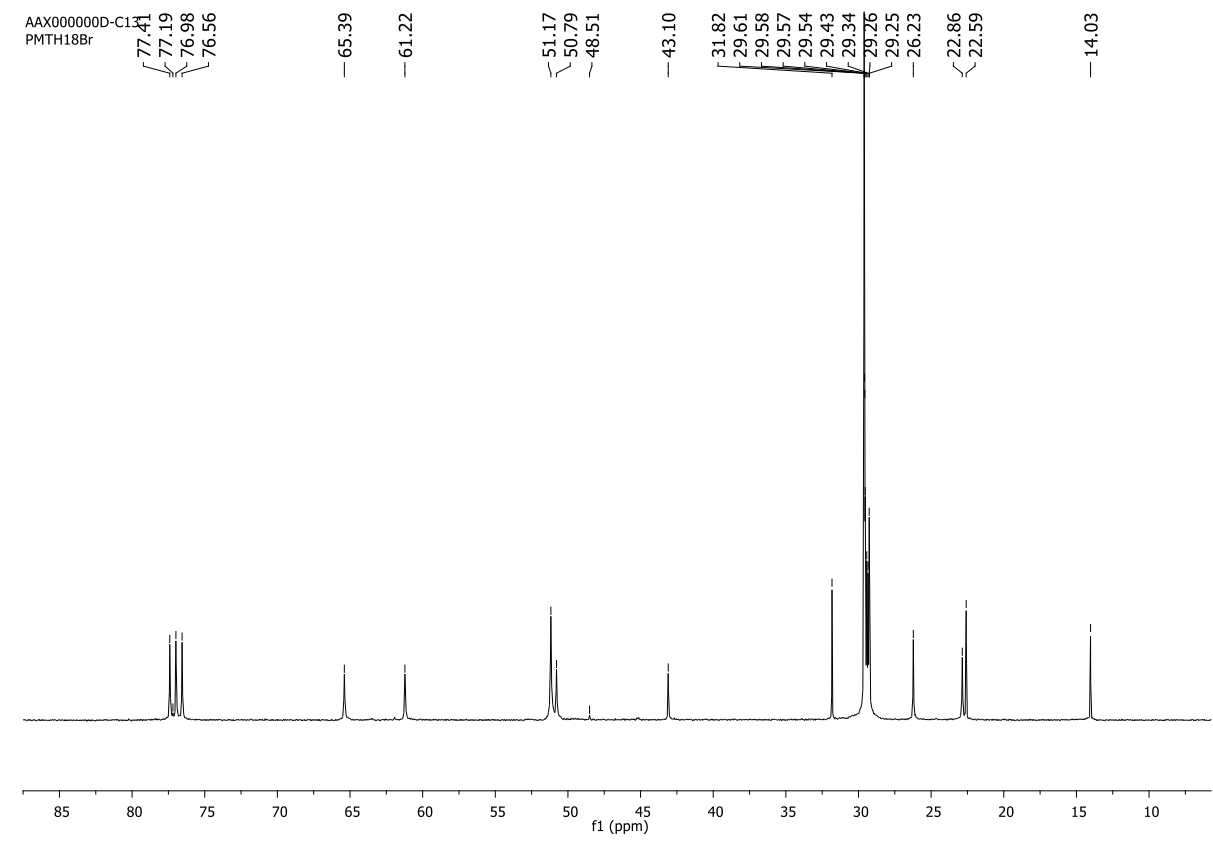
Compound 10 ¹³C NMR



Compound 11 ¹H NMR



Compound 11 ¹³C NMR



Compound 12 ¹H NMR

TMW-18-8-18-Br *zohierine*

File: xp

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: vmmx1

VNMR-400 "wormhole"

Relax. delay 0.500 sec

Pulse 45.0 degrees

Acq. time 3.500 sec

Width 6068.0 Hz

64 repetitions

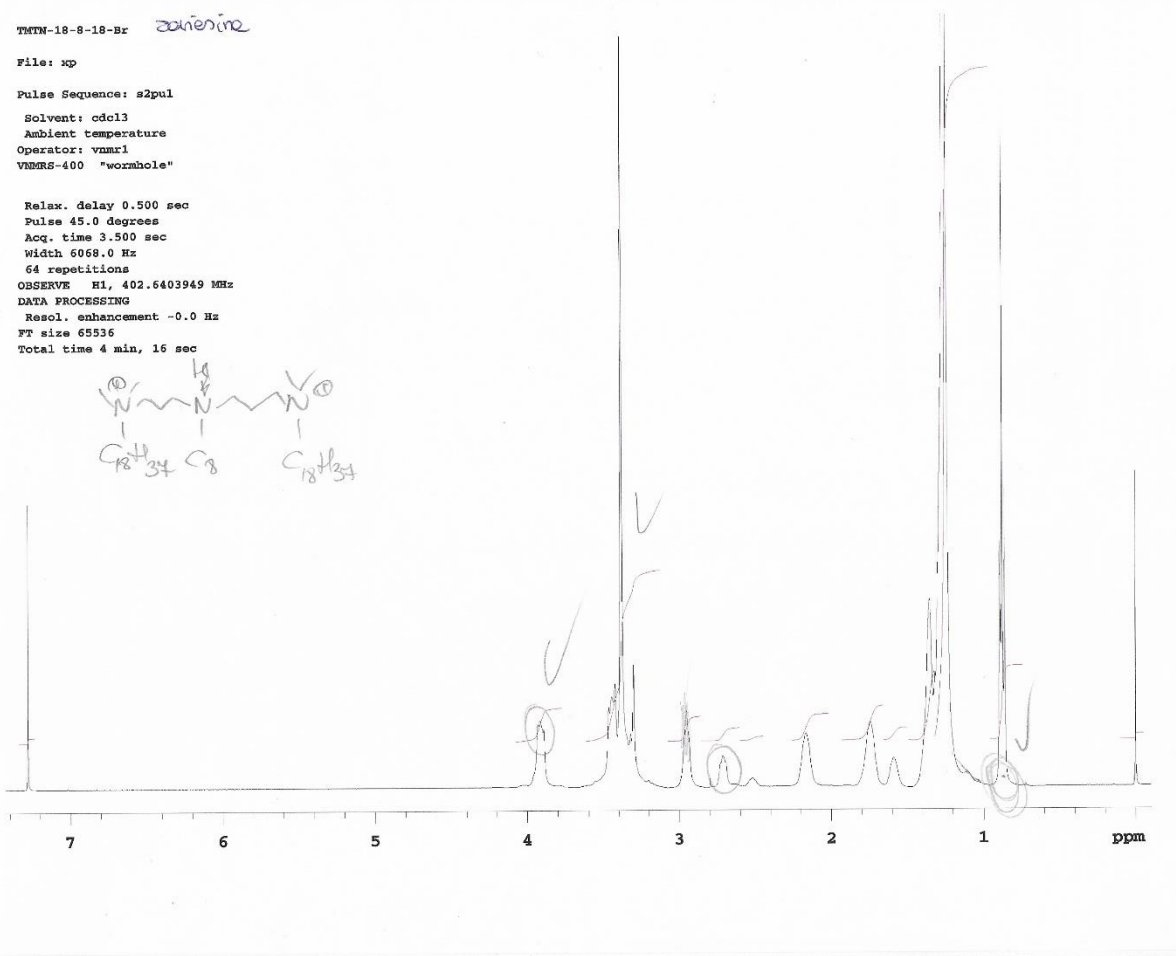
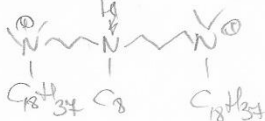
OBSERVE H1, 402.6403949 MHz

DATA PROCESSING

Resol. enhancement -0.0 Hz

FT size 65536

Total time 4 min, 16 sec



Compound 12 ¹³C NMR

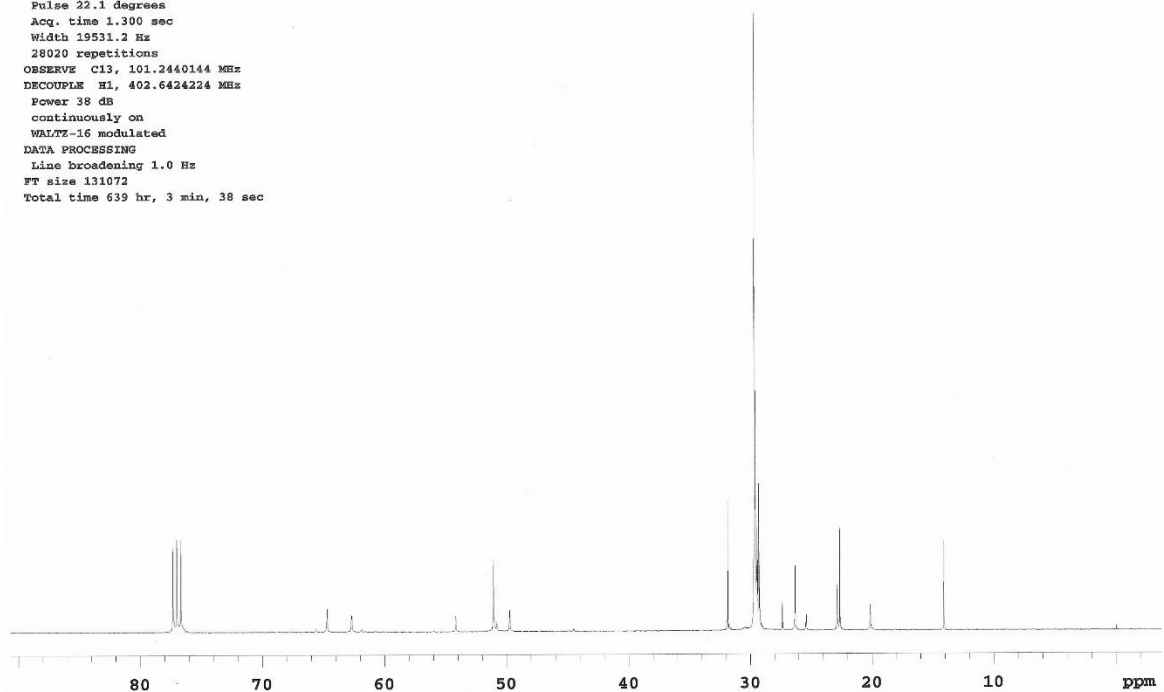
TMN-18-8-18-Br *Zwiehne*

File: xp

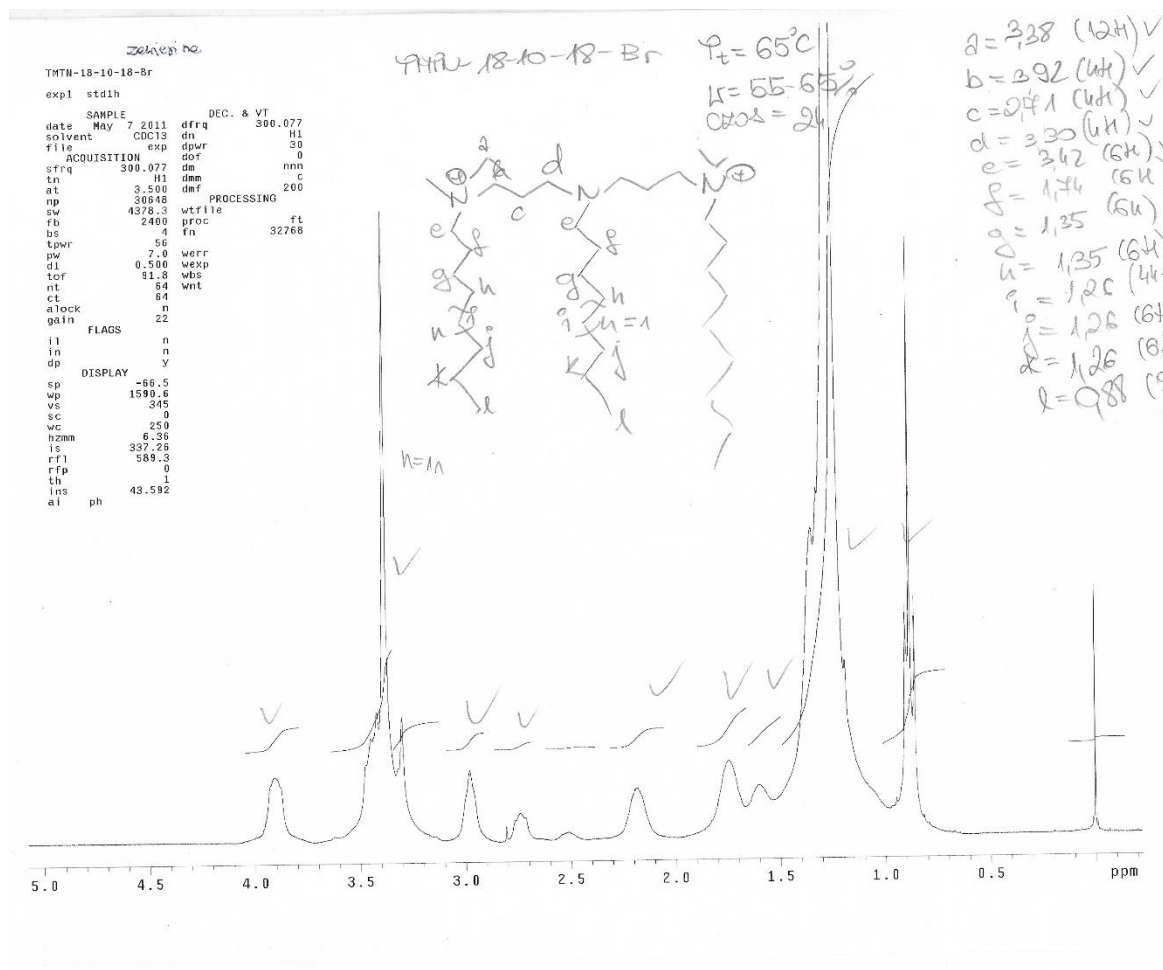
Pulse Sequence: s2pul

Solvent: cdcl3
Ambient temperature
Operator: vnmr1
VNMRS-400 "wormhole"

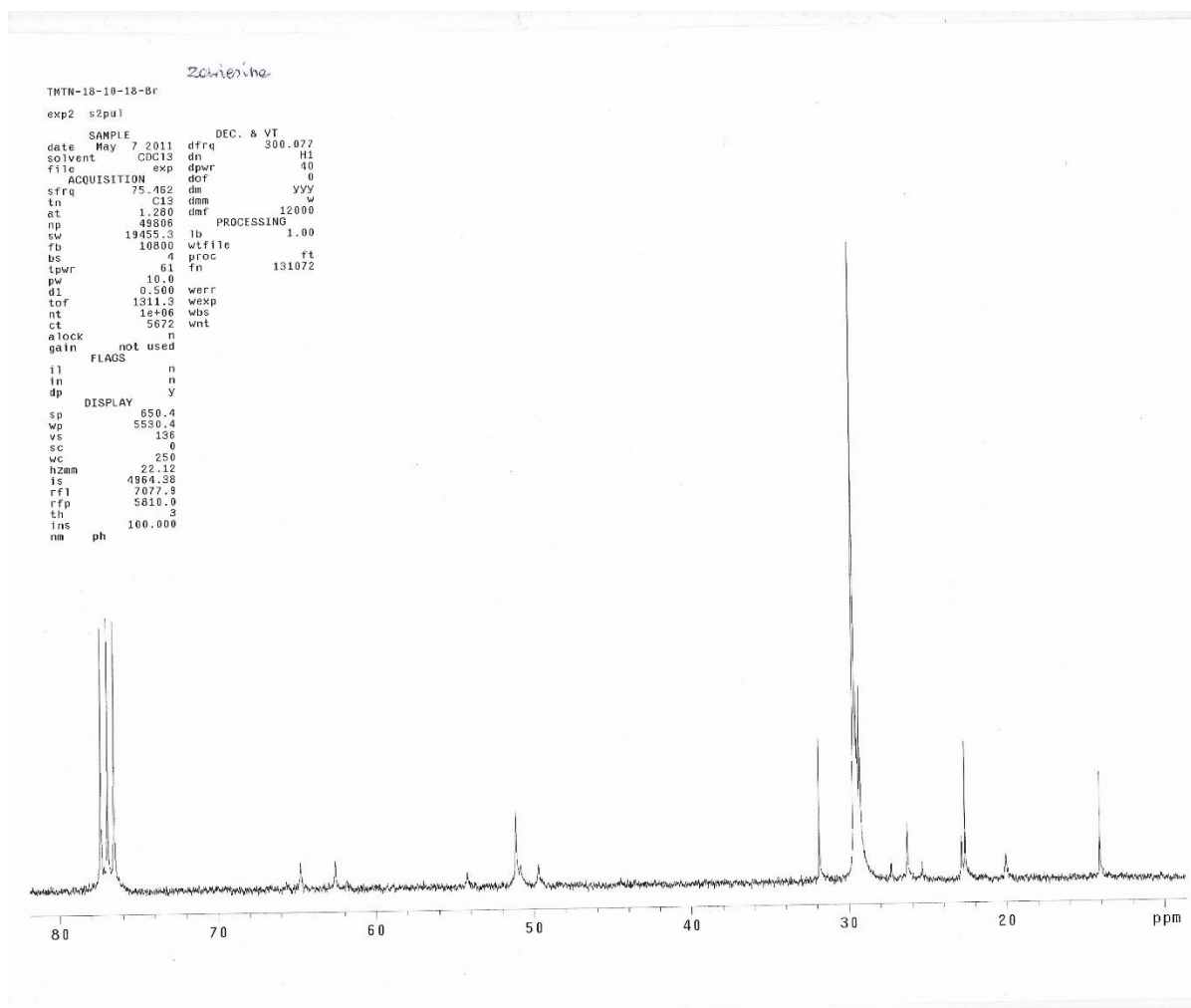
Relax. delay 1.000 sec
Pulse 22.1 degrees
Acq. time 1.300 sec
Width 19531.2 Hz
28020 repetitions
OBSERVE C13, 101.2440144 MHz
DECOUPLE H1, 402.6424224 MHz
Power 38 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 131072
Total time 639 hr, 3 min, 38 sec



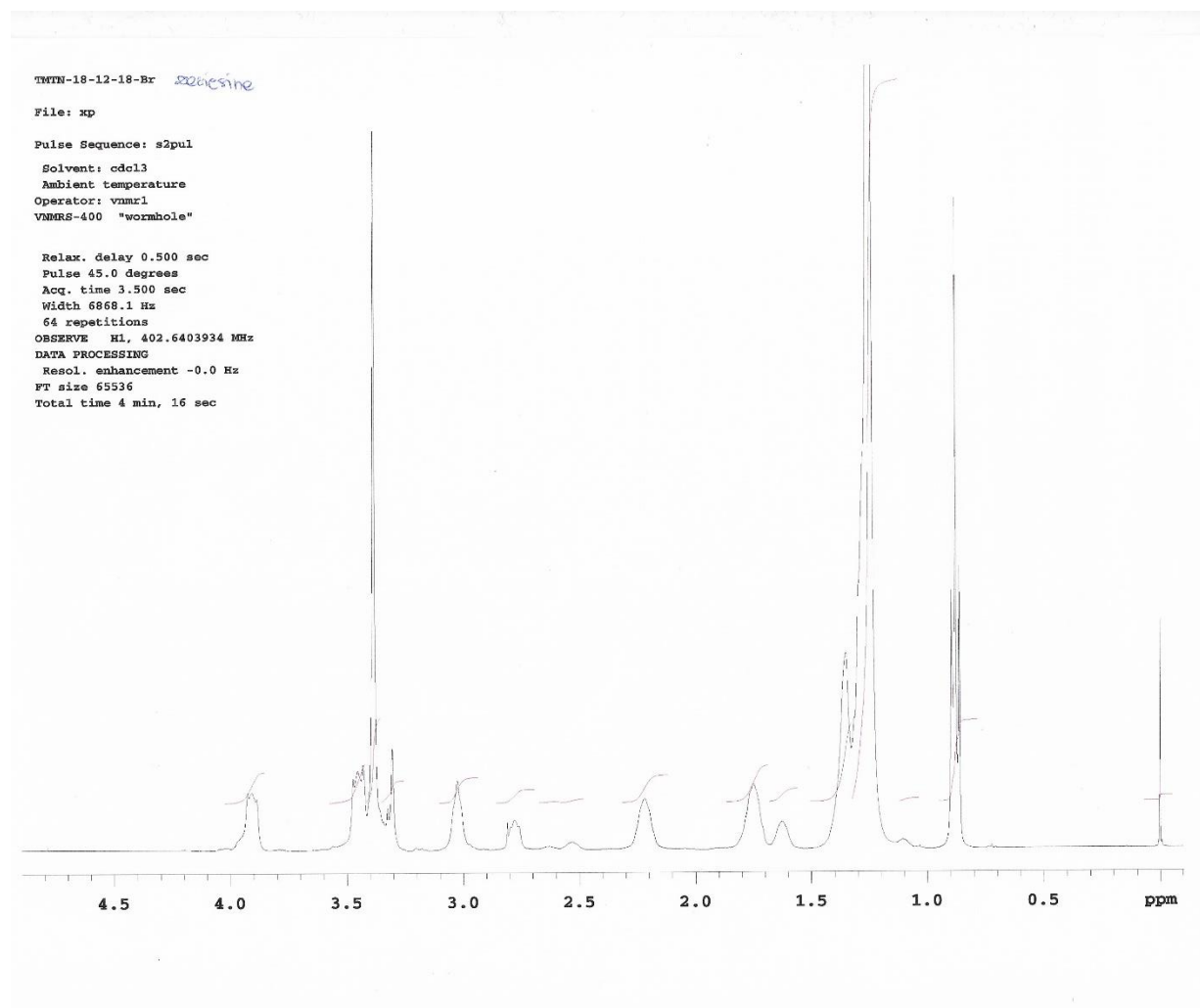
Compound 13 ¹H NMR



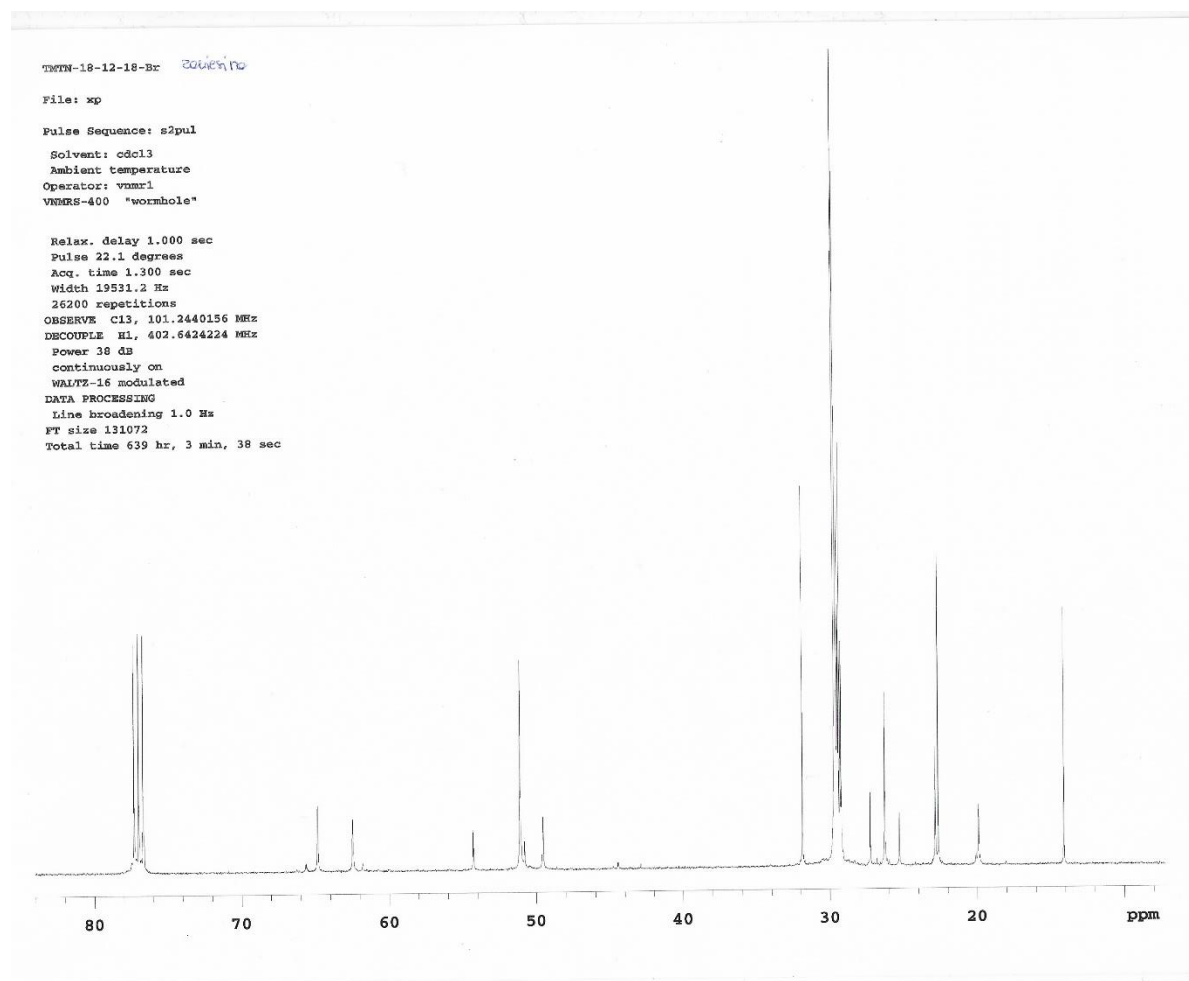
Compound 13 ¹³C NMR



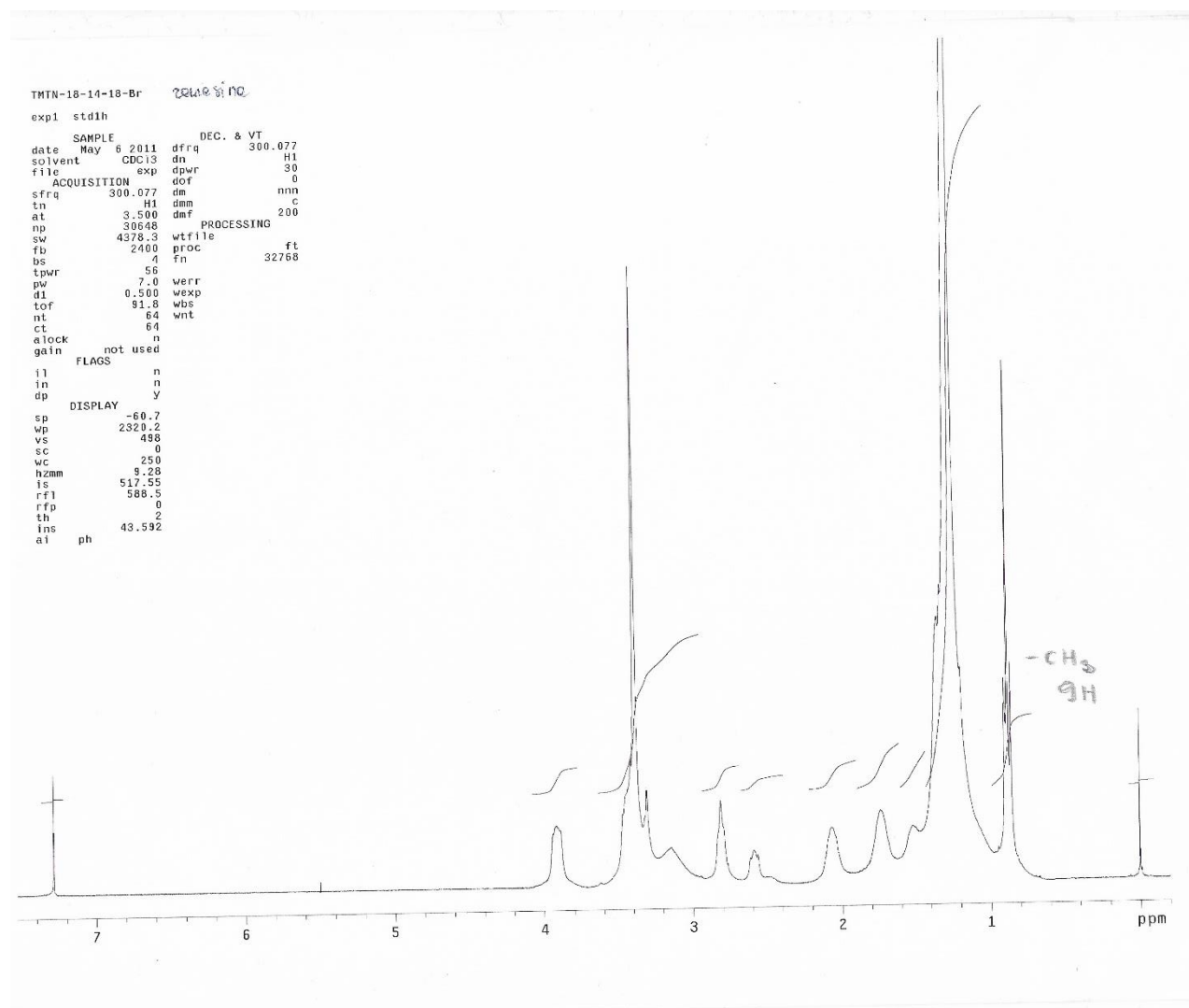
Compound 14 ¹H NMR



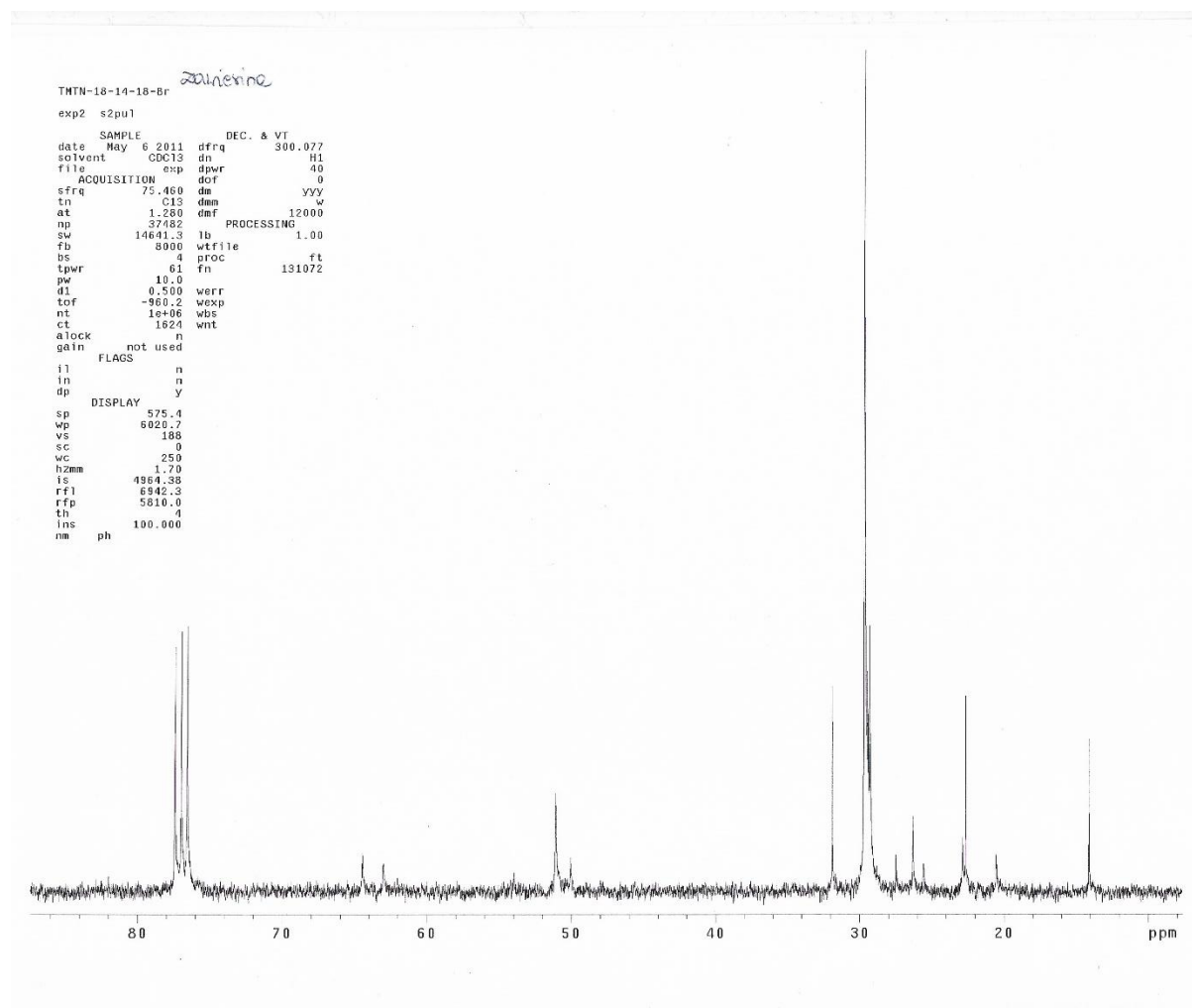
Compound 14 ¹³C NMR



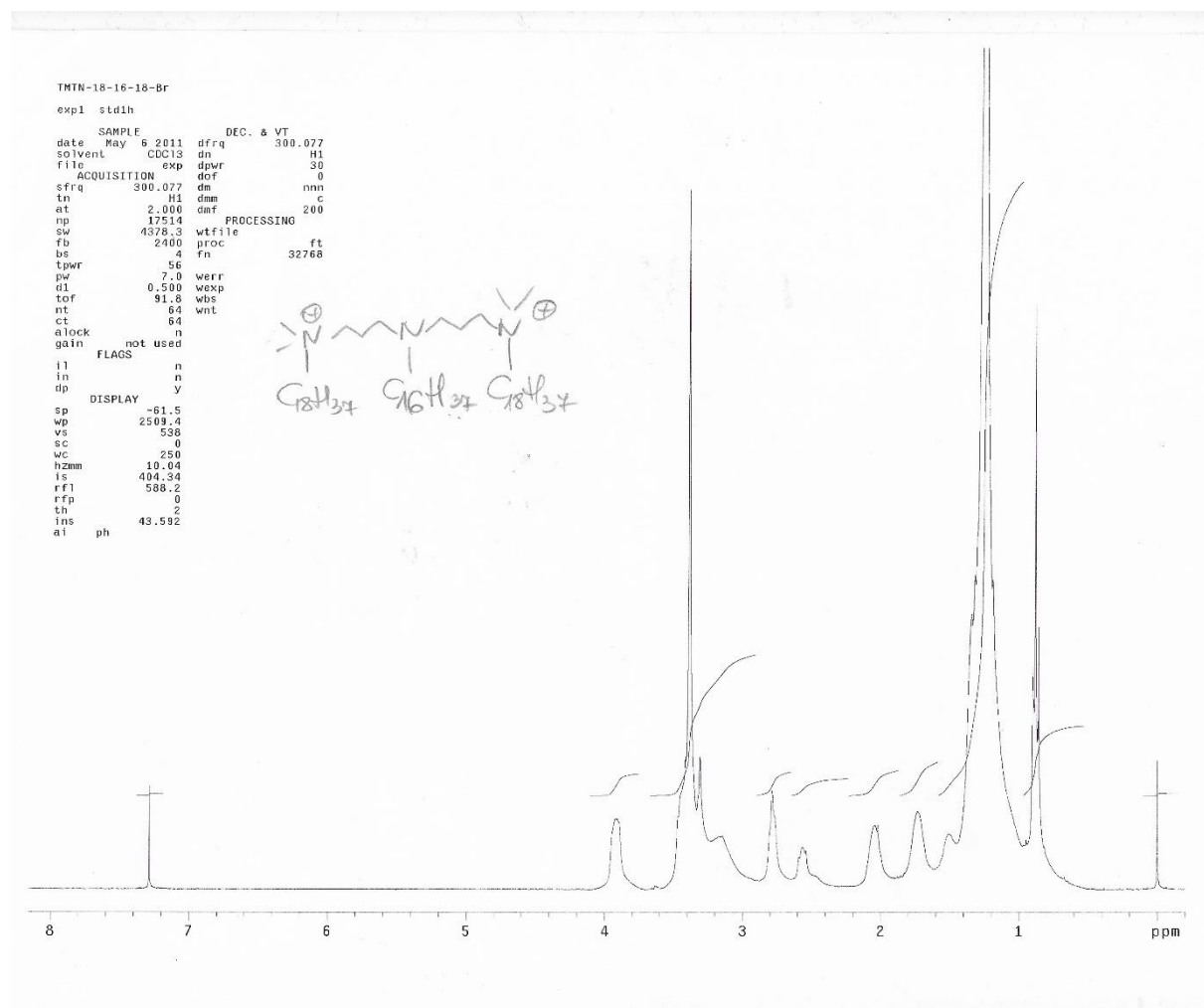
Compound 15 ¹H NMR



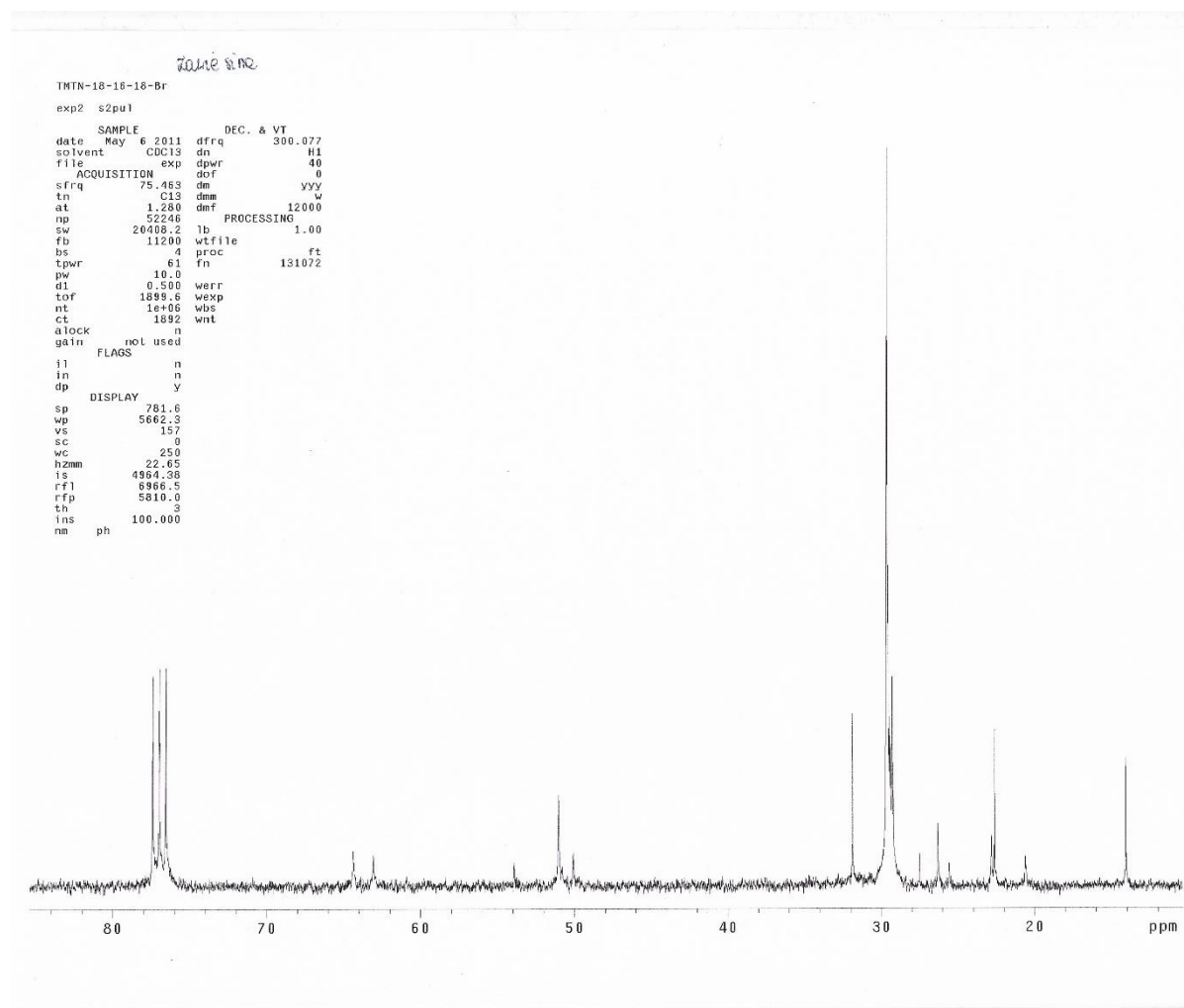
Compound 15 ¹³C NMR



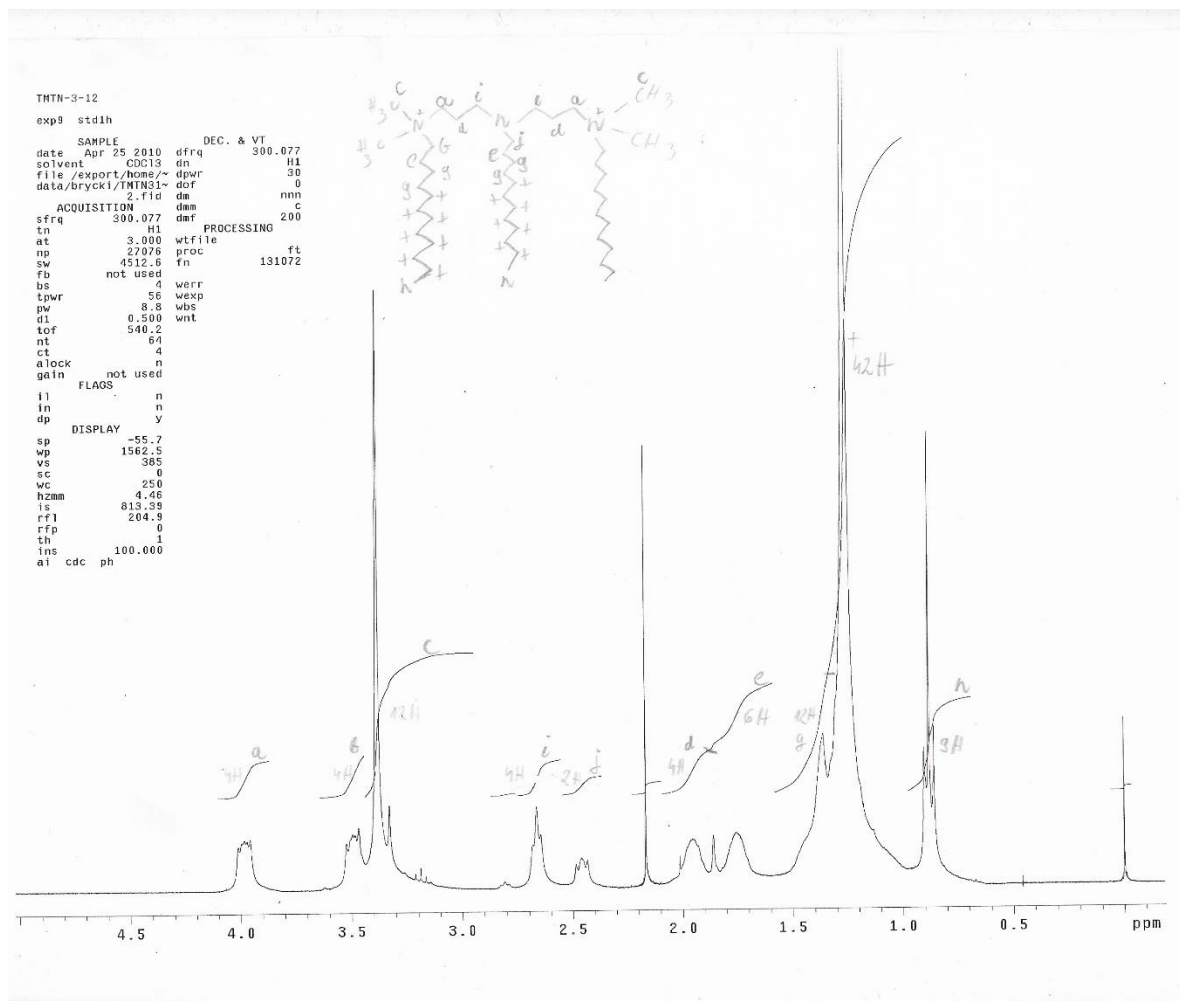
Compound 16 ¹H NMR



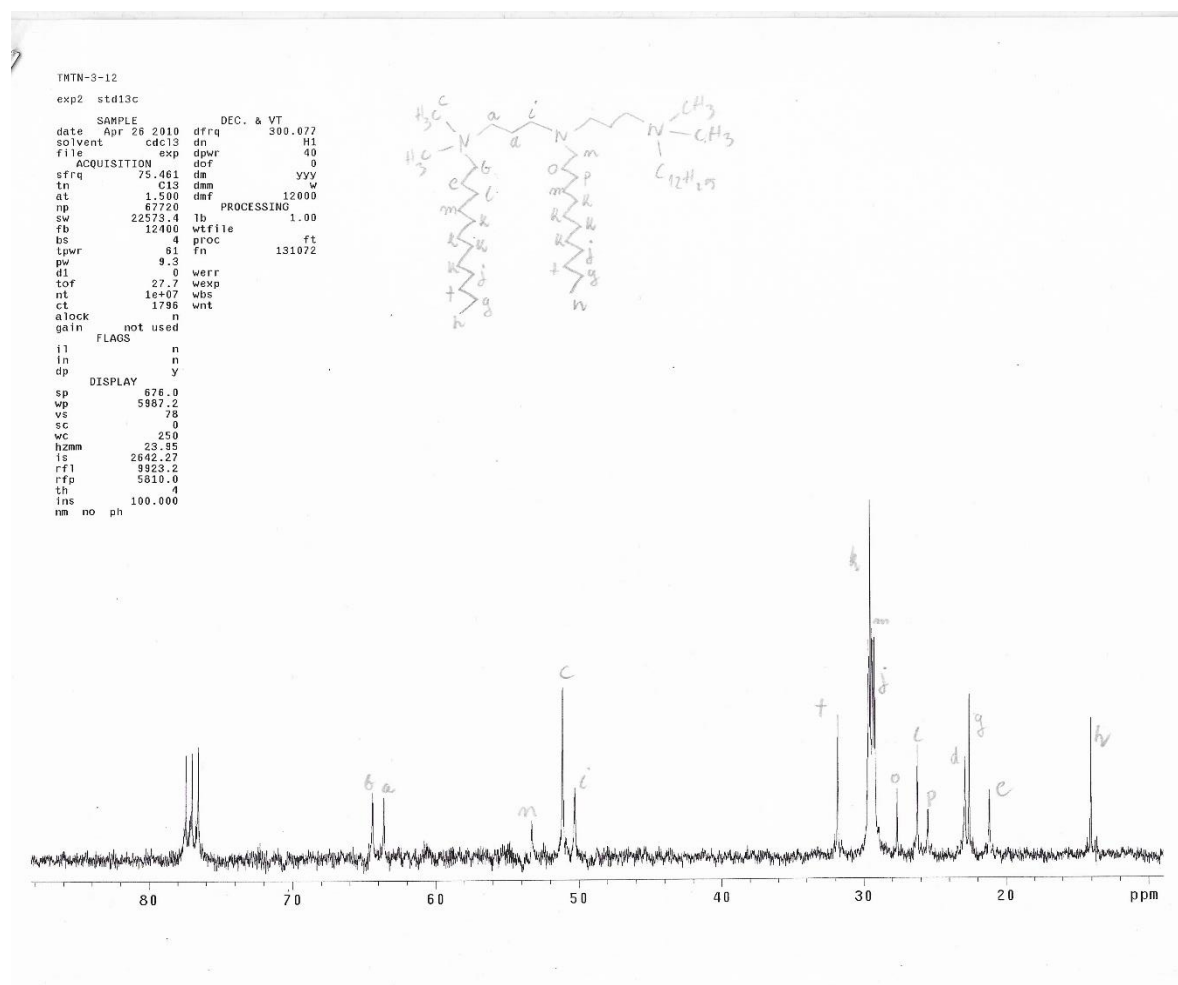
Compound 16 ¹³C NMR



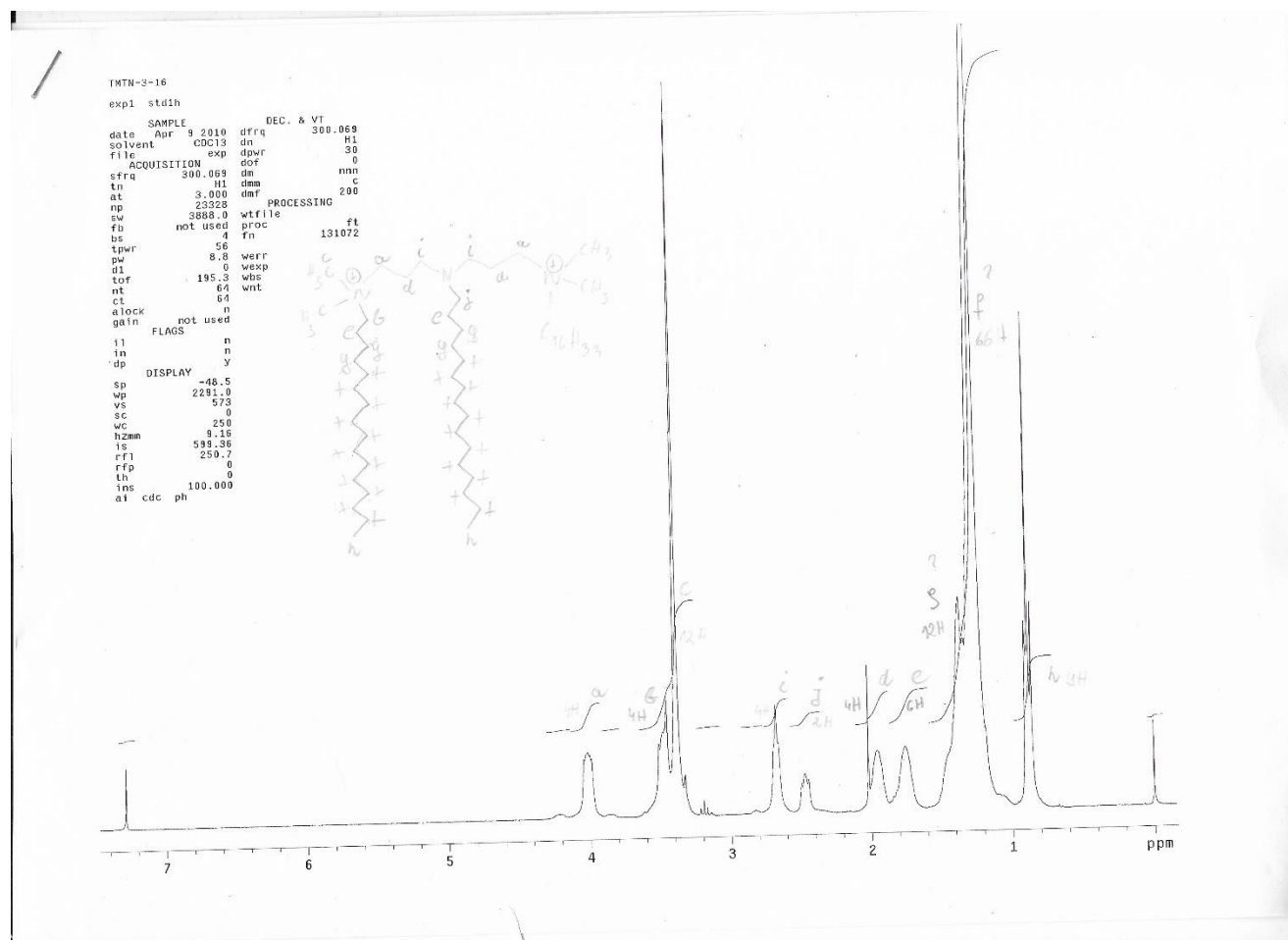
Compound 17 ¹H NMR



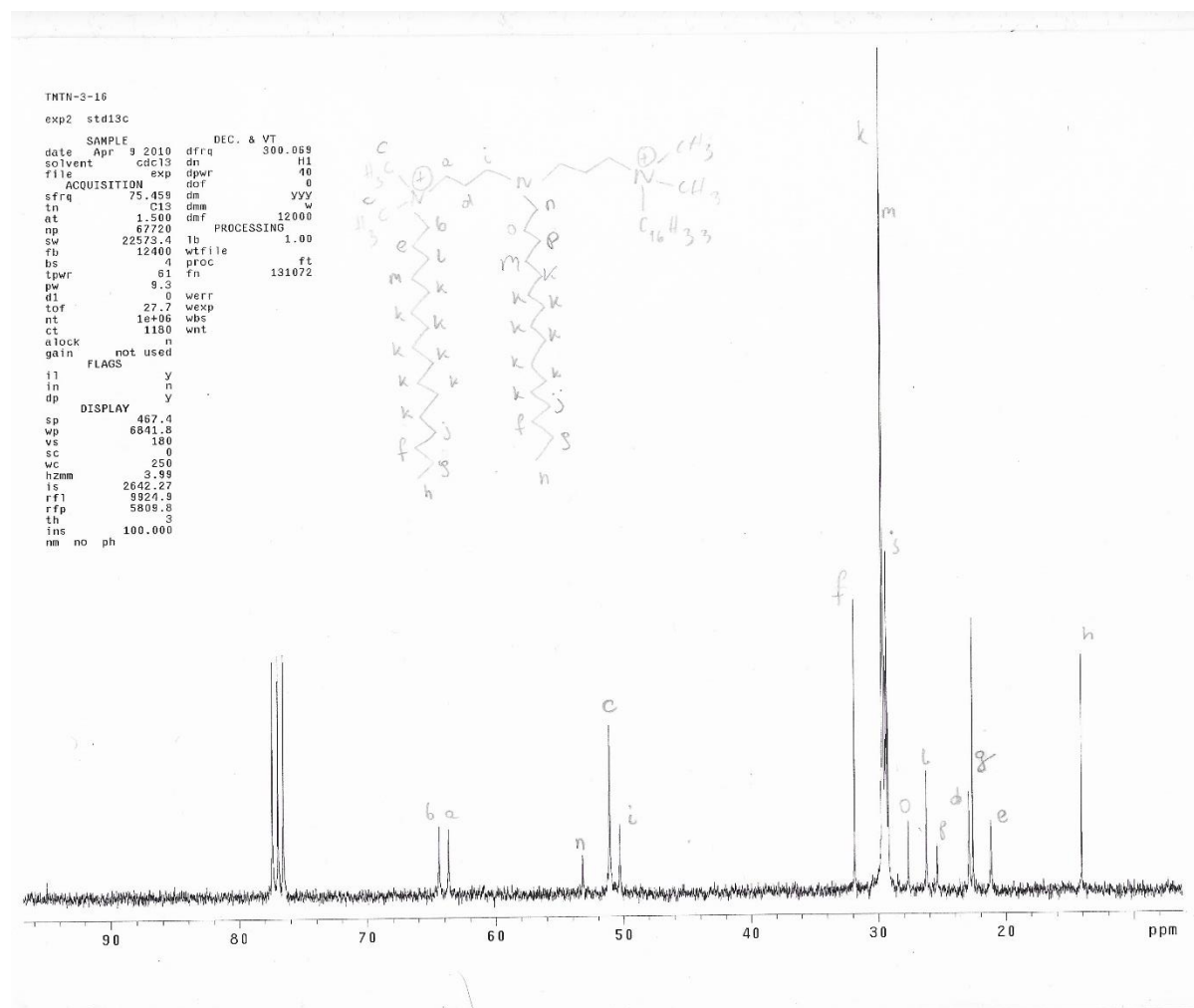
Compound 17 ¹³C NMR



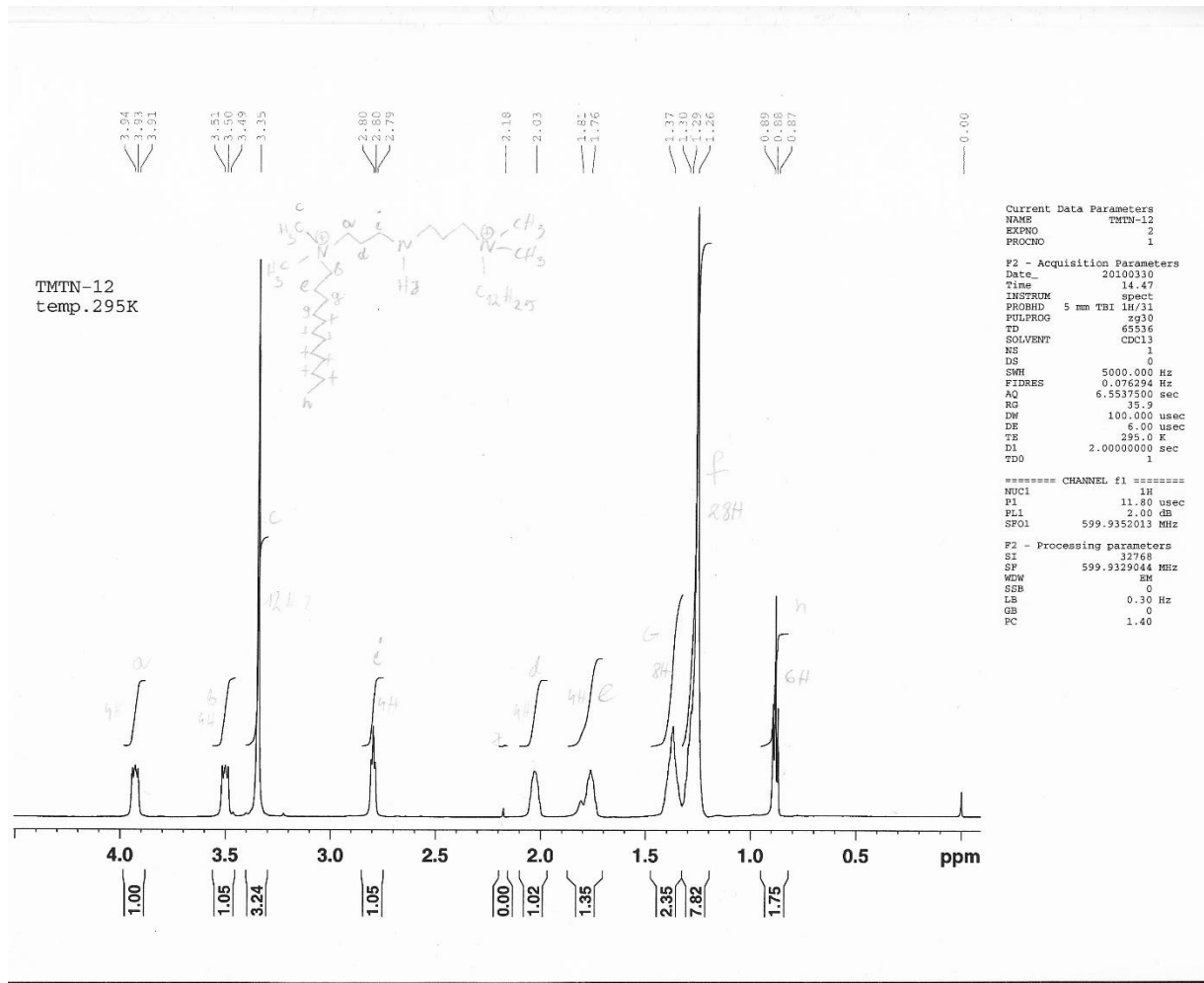
Compound 18 ¹H NMR



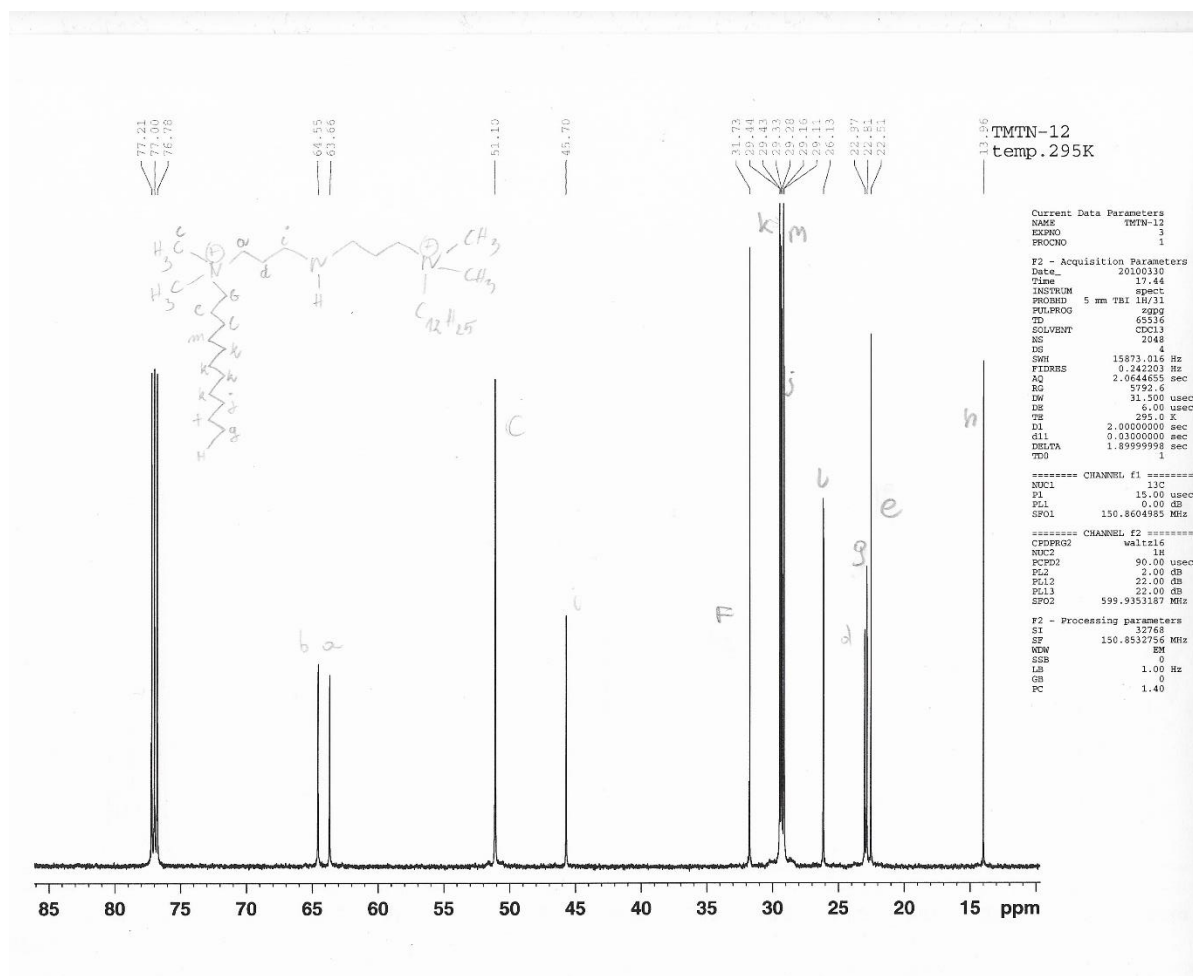
Compound 18 ¹³C NMR



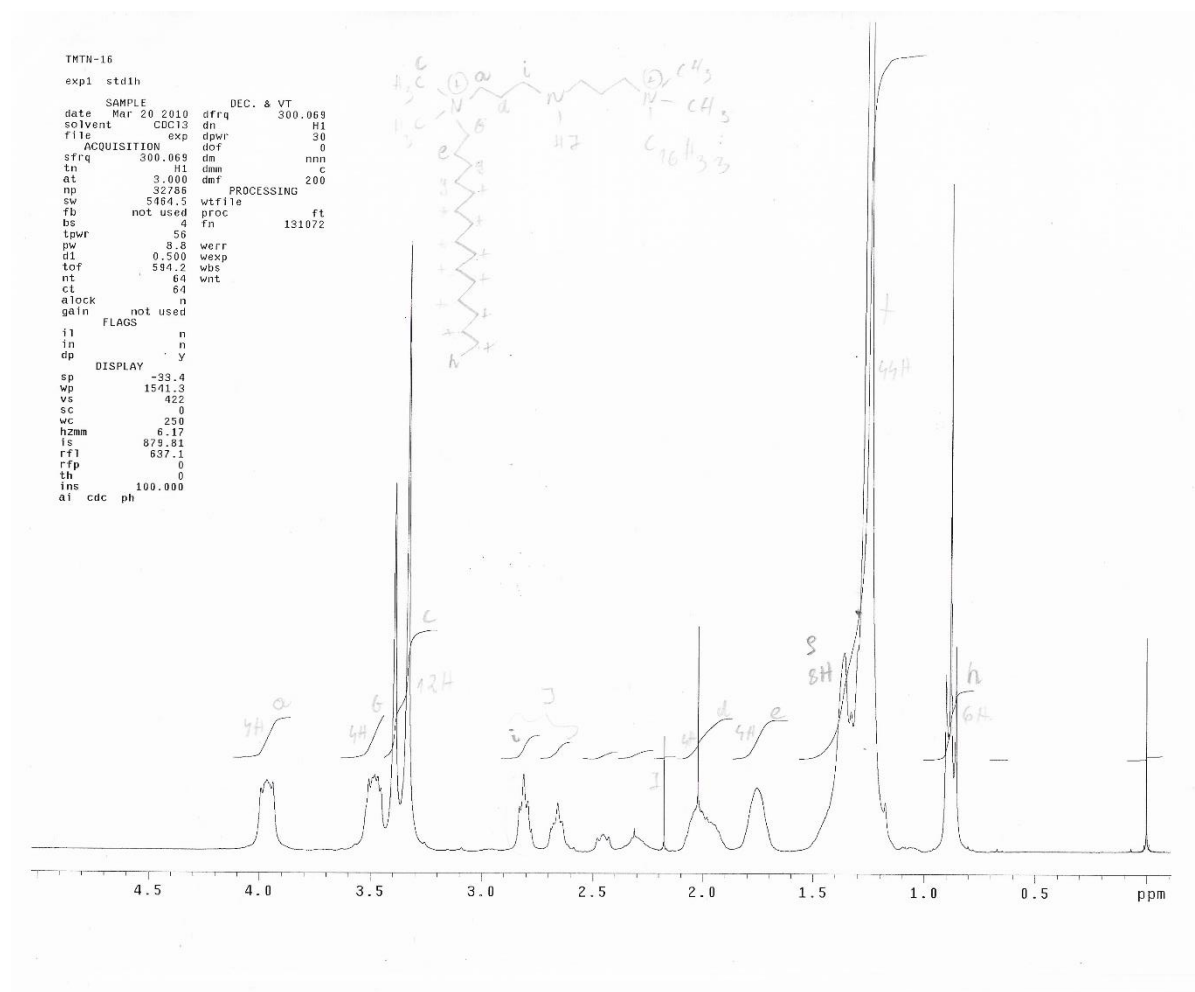
Compound 19 ¹H NMR



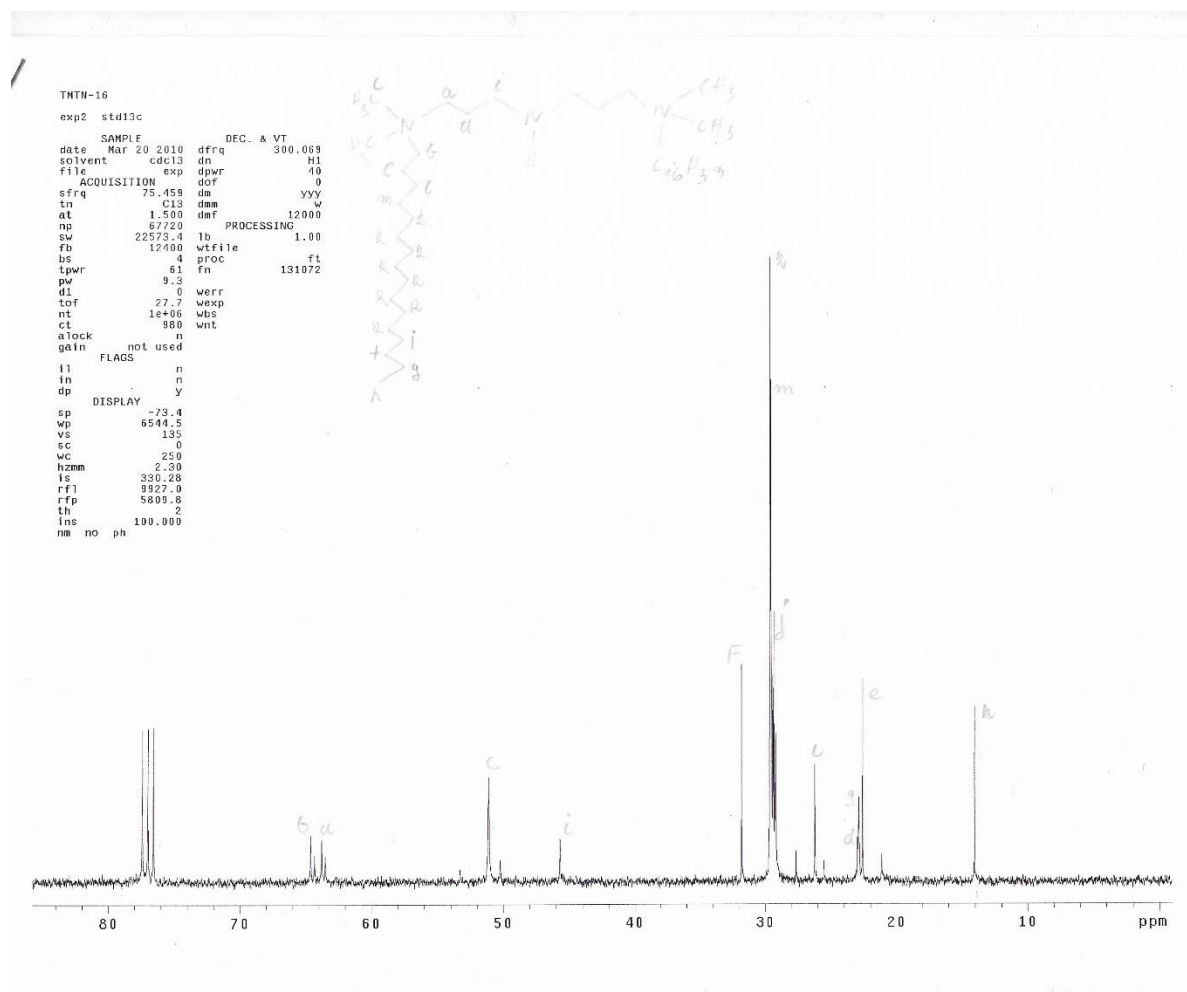
Compound 19 ¹³C NMR



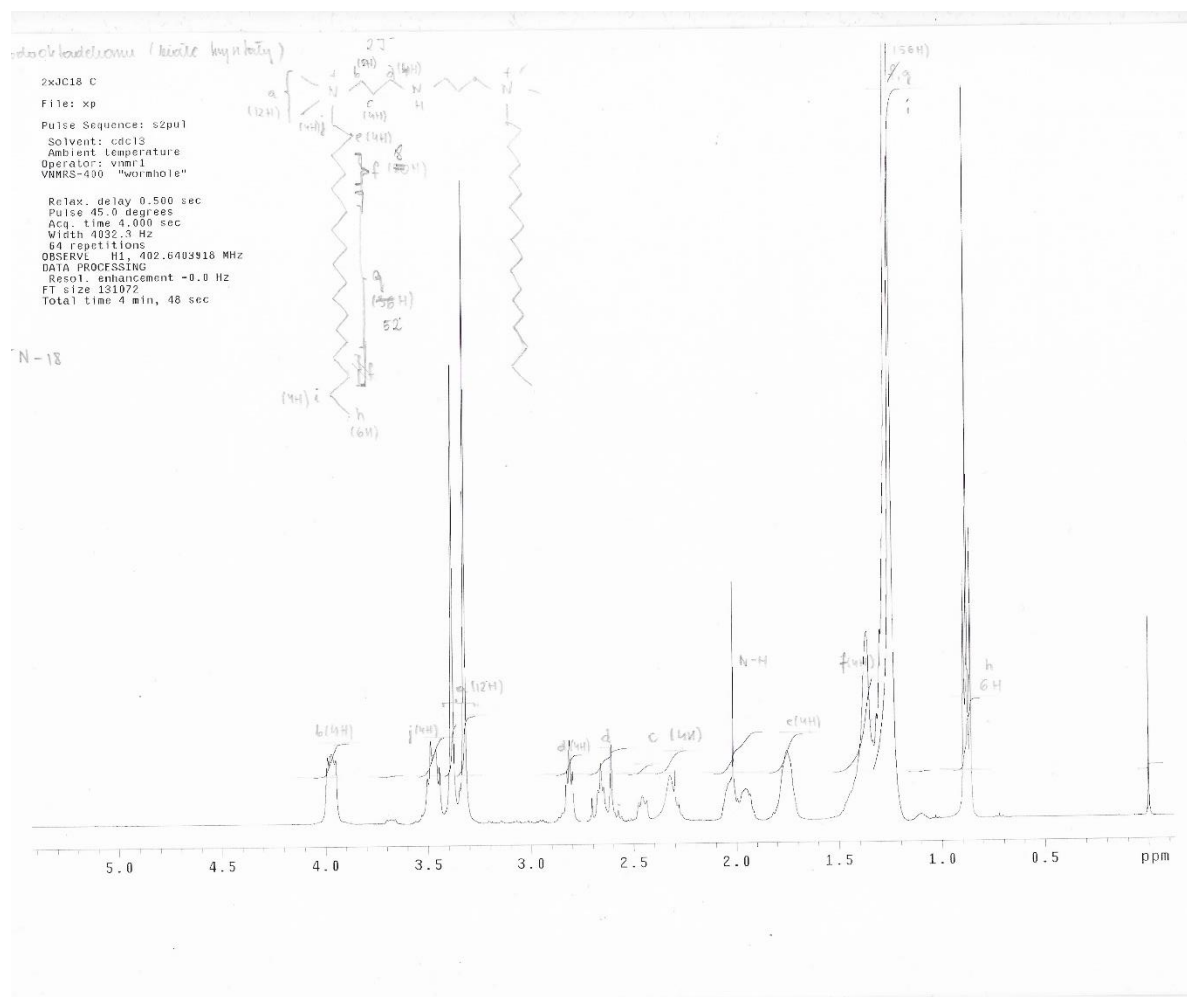
Compound 20 ¹H NMR



Compound 20 ¹³C NMR



Compound 21 ¹H NMR



Compound 21 ¹³C NMR

