Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

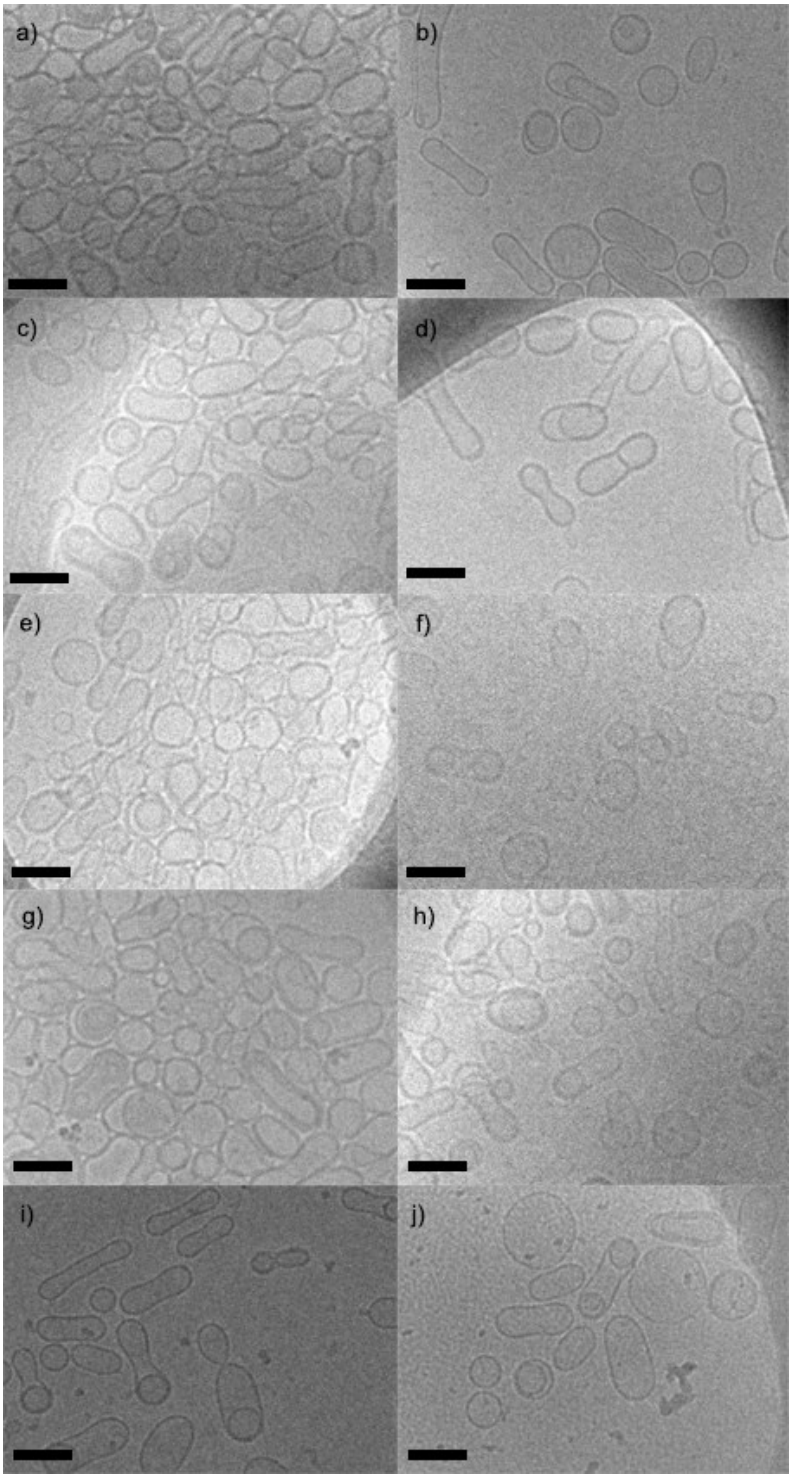


Figure S1. Cryo-TEM image of the liposome. a) Blank liposome before NIR irradiation; b) Blank liposome after NIR irradiation; c) Liposome 1 before NIR irradiation; d) Liposome 1 after NIR irradiation; e) Liposome 2 before NIR irradiation; f) Liposome 2 after NIR irradiation; g) Liposome 4 before UV irradiation; h) Liposome 4 after UV irradiation; i) Liposome 5 before UV irradiation; j) Liposome 5 after UV irradiation (bar = 100 nm).

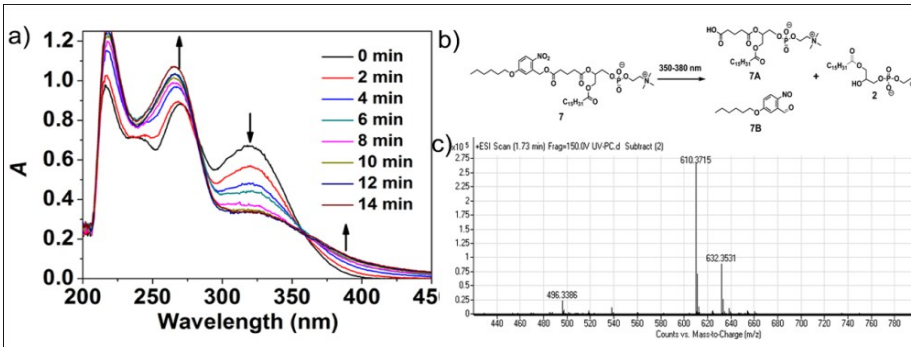


Figure S2. a) UV-vis absorption of liposome 6 exposed to UV light (50 mW/cm²); b)Photolysis route of Liposome 6 upon UV irradiation (50 mW/cm²); c) ESI-MS data of photolyzed product from NB-PC.

S3. Synthesis Data

Compound 3

In a sealed tube, **Compound 1** (454 mg, 1 mmol), LPC (494 mg, 1 mmol), DCC (230 mg, 1.1 mmol), and DMAP (134 mg, 1.1 mmol) were dispersed in 20 mL anhydrous chloroform under N_2, along with 5.0 g crushed glass. After 6 h of sonication, Dowex 50W×8 residue was added and the mixture was sonicated for 30 min before filtration through a fritted filter. After filtration and concentration, the crude product was purified by column chromatography through a silica gel using chloroform/methanol/water (100:30:2) to yield 371 mg (0.4 mmol, 40% yield) of **Compound 3** as a yellow solid. ^{1}H-NMR (MeOD, 400 MHz): δ = 0.92 (s, CH_3, 6H), 1.31 (m, CH_2, 24H), 1.42 (m, CH_2, 4H), 1.87-1.89 (m, CH_2, 6H), 2.28 (m, CH_3CH_2, 2H),3.26 (m, NCH_3, 9H),3.69-3.70 (m, OCH_2, 2H), 4.03-4.04 (m, COOCH_2, 4H), 4.16-4.17 (m, OCH_2, 4H), 5.38-5.39 (m, ArCH_2O, 2H), 6.36 (m, ArH, 1H), 6.93 (m, ArH, 1H), 7.61 (m,

Ar*H*, 1H). ESI MS calculated for $C_{44}H_{71}BrNO_{13}P$, 931.38, 933.38; found 934.42 ($M+H^+$), 854.51 ($M-Br^-+2H^+$).

Compound 5

1.67 g (10 mmol) 5-hydroxy-2-nitrobenzylaldehyde, 1.65 g (10 mmol) 1-bromohexane, and 10 g K_2CO_3 were dissolved in 40 mL DMF, and heated at 90°C for 6 h. The solution was poured in water and extracted with ethyl acetate (60 mL), after which the organic phase was dried with Na_2SO_4 and the crude product was purified by column chromatography with hexane as the eluent; 2.4 g yellow solid was obtained, yielding 96%. ^{1}H NMR ($CDCl_3$, 400 MHz): δ = 0.91-0.92 (t, *J* = 4.0 Hz, C*H*$_3$, 3H), 1.35-1.37 (m, C*H*$_2$, 4H), 1.46-1.49 (m, C*H*$_2$, 2H), 1.80-1.87 (m, C*H*$_2$, 2H), 4.09-4.12 (t, *J* = 6.0 Hz, C*H*$_2$, 2H), 7.15-7.17 (dd, *J* = 4.0 Hz, *J* = 8.0 Hz, Ar*H*, 1H), 7.30-7.31 (d, Ar*H*, *J* = 4.0 Hz, 1H), 8.14-8.16 (d, *J* = 8.0 Hz, Ar*H*, 1H), 10.48 (s, C*H*O); ESI MS: calculated for $C_{13}H_{17}NO_4$ 251.28, found, 250.11 ($M-H^+$).

Compound 6

2.0 g **Compound 5** (8 mmol) was dissolved in 30 mL THF, and 0.38 g $NaBH_4$ (10 mmol) was added to one portion to the solution, after which solution was stirred at 25°C for 1 h and quenched with 1 M HCl. The organic phase was separated and dried with Na_2SO_4, and recrystallized from hexane. The yellow crystal was obtained with a quantitative yield. ^{1}H NMR ($CDCl_3$, 400 MHz): δ = 0.93-0.94 (t, *J* = 4.0 Hz, C*H*$_3$, 3H), 1.33-1.37 (m, C*H*$_2$, 4H), 1.45-1.49 (m, C*H*$_2$, 2H), 1.78-1.84 (m, C*H*$_2$, 2H), 2.67 (s, CH_2O*H*, 1H), 4.05-4.08 (t, *J* = 6.0 Hz, ArOC*H*$_2$, 2H), 4.98 (s, ArC*H*$_2$OH, 2H), 6.86-6.89 (dd, *J* = 4.0 Hz, *J* = 8.0 Hz, Ar*H*, 1H), 7.19-7.20 (d, Ar*H*, *J* = 4.0 Hz, 1H),

8.15-8.18 (d, J = 8.0 Hz, ArH, 1H); ESI MS: calcd for $C_{13}H_{19}NO_4$ 253.29, found, 254.14 ($M\text{-}H^+$), 276.12 ($M+Na^+$).

Compound 7

1.0 g **Compound 6** (4 mmol) and 5.7 g glutaric anhydride (4 mmol) were dissolved in 20 mL pyridine and heated at 50°C for 6 h. The solution was removed by rotated evaporation, and the residue was dissolved in ethyl ether (30 mL) and washed with 1 M HCl (20 mL). Organic phase was dried with Na_2SO_4, and the crude product was purified by column chromatography with ethyl acetate as the eluent; 1.1 g yellow solid was obtained, yielding 74%. ^{1}H NMR ($CDCl_3$, 400 MHz): δ = 0.93-0.94 (t, J = 4.0 Hz, CH_3, 3H), 1.35-1.37 (m, CH_2, 4H), 1.45-1.47 (m, CH_2, 2H), 1.82-1.84 (m, CH_2, 2H), 2.01-2.04 (m, CH_2, 2H), 2.67 (s, $CH_2O$$H$, 1H), 2.46-2.57 (m, C$H_2$, 4H), 4.04-4.07 (t, J = 6.0 Hz, ArOCH_2, 2H), 5.54 (s, ArCH_2OH, 2H), 6.88-6.91 (dd, J = 4.0 Hz, J = 8.0 Hz, ArH, 1H), 7.01-7.02 (d, ArH, J = 4.0 Hz, 1H), 8.16-8.18 (d, J = 8.0 Hz, ArH, 1H); ESI MS: calculated for $C_{18}H_{25}NO_7$ 367.39, found, 366.16 ($M\text{-}H^+$).

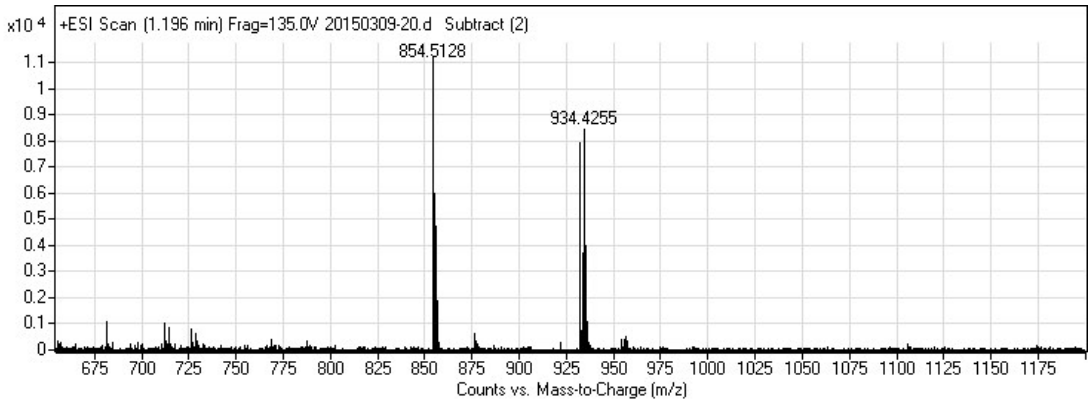
Compound 8

In a sealed tube, **Compound 7** (368 mg, 1 mmol), LPC (494 mg, 1 mmol), DCC (230 mg, 1.1 mmol), and DMAP (134 mg, 1.1 mmol) were dispersed in 20 mL anhydrous chloroform under N_2, along with 5.0 g crushed glass. After 6 h of sonication, Dowex 50W×8 residue was added and the mixture was sonicated for 30 min before filtration through a fritted filter. After filtration and concentration, the crude product was purified by column chromatography through a silica gel using chloroform/methanol/water (100:30:2) to yield 443 mg (0.4 mmol, 51% yield) of

compound **8** as yellow solid. ^{1}H-NMR (d^6-DMSO, 400 MHz): δ = 0.86-0.88 (s, CH_3, 6H), 1.20-1.31 (m, CH_2, 34H), 1.42-1.48 (m, CH_2, 4H), 1.73-1.88 (m, CH_2, 4H), 2.26-2.37 (m, CH_2CO, 6H), 3.13 (s, NCH_3, 9H), 3.50-3.52 (m, CH_2O, 2H), 3.71-3.75 (m, CH_2O, 2H), 4.25-4.33 (m, C*H*O, 1H), 5.43 (s, ArCH_2, 2H), 6.88-6.91 (dd, Ar*H*, 1H, J_1 = 2.0 Hz, J_1 = 8.0 Hz), 7.01-7.02 (d, Ar*H*, 1H, J = 2.0 Hz), 8.17-8.19 (d, Ar*H*, 1H, J = 8.0 Hz). ESI MS calculated for $C_{42}H_{73}N_2O_{13}P$, 844.4850; found 845.4883 ($M+H^+$), 867.4671 ($M+Na^+$).

S4. MS and NMR data

Compound 3



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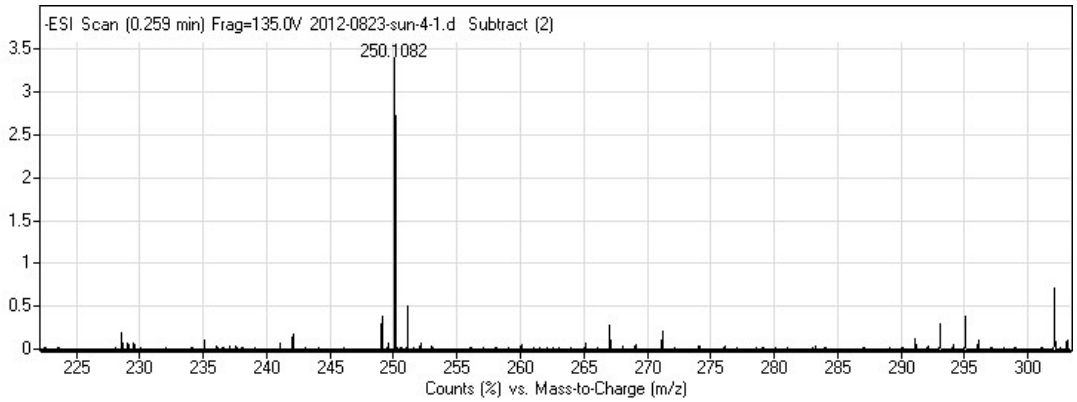

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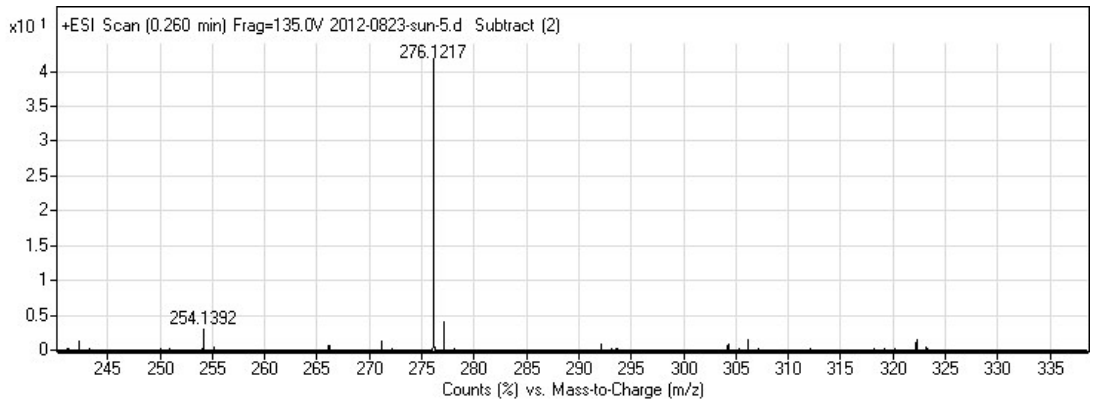

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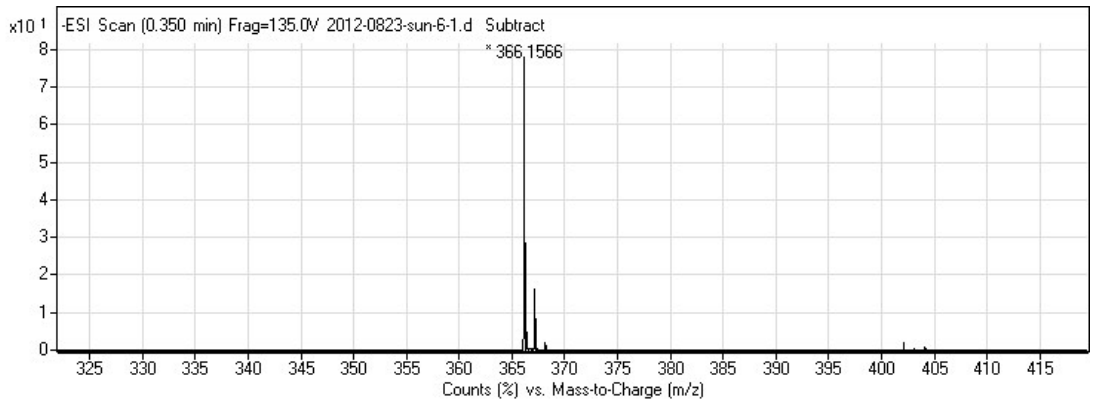

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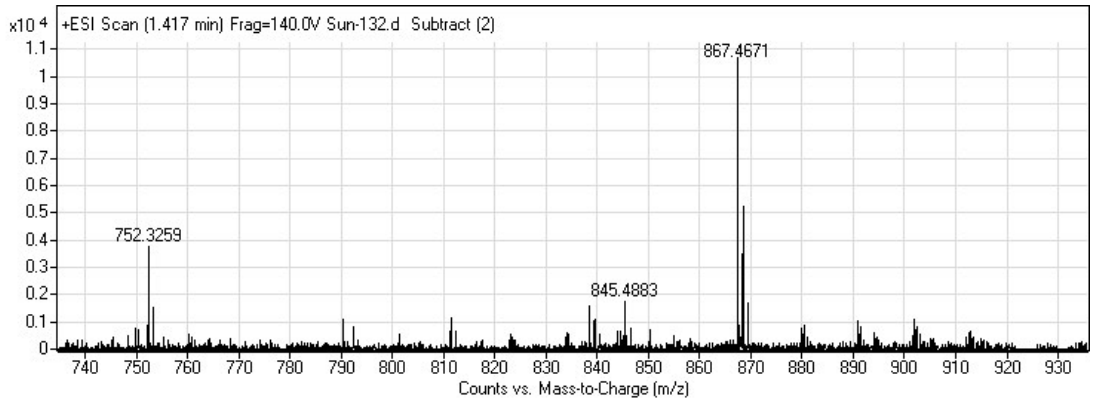

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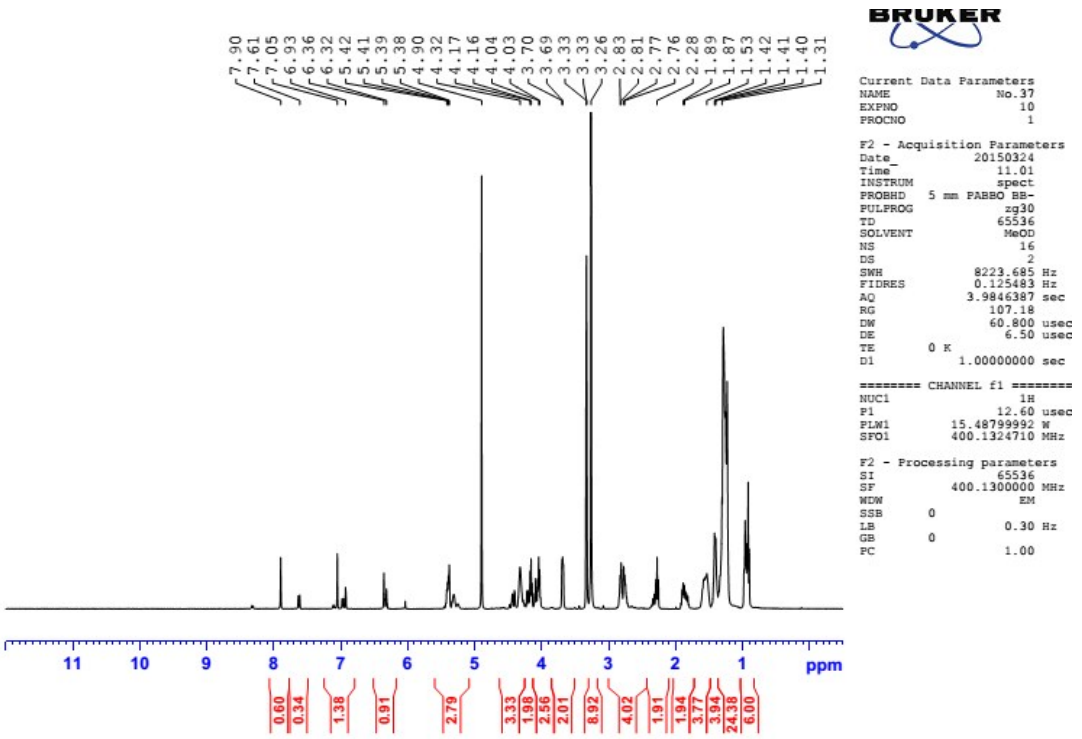

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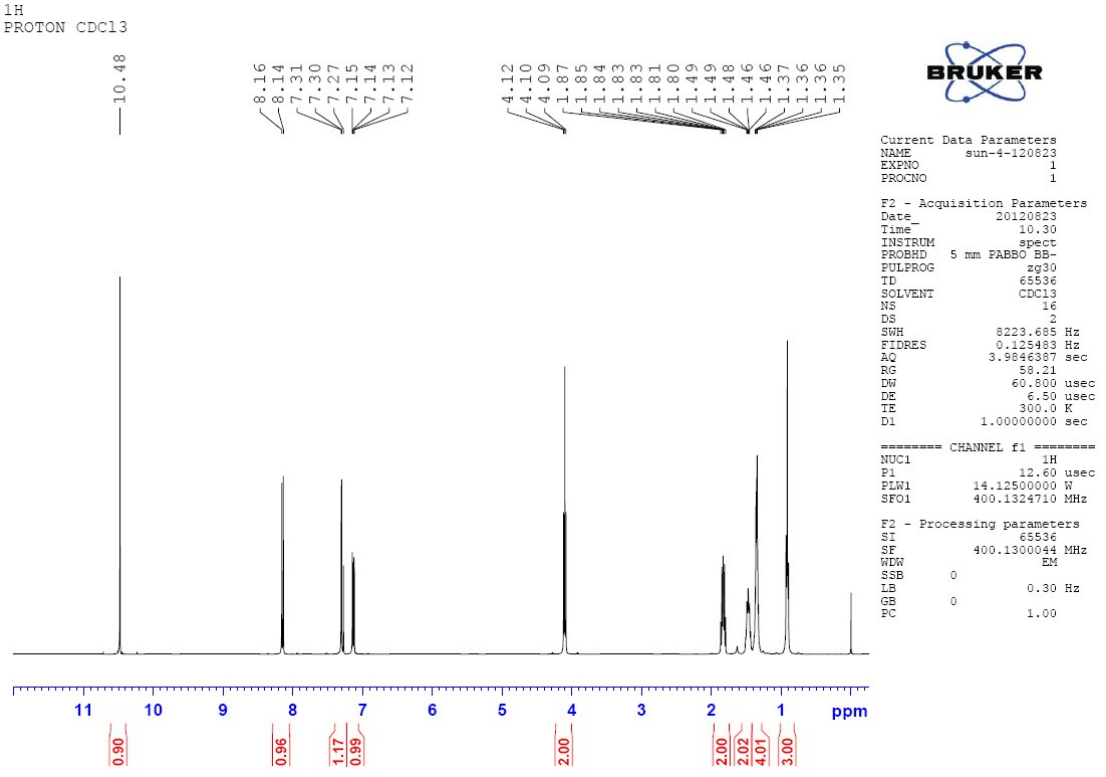

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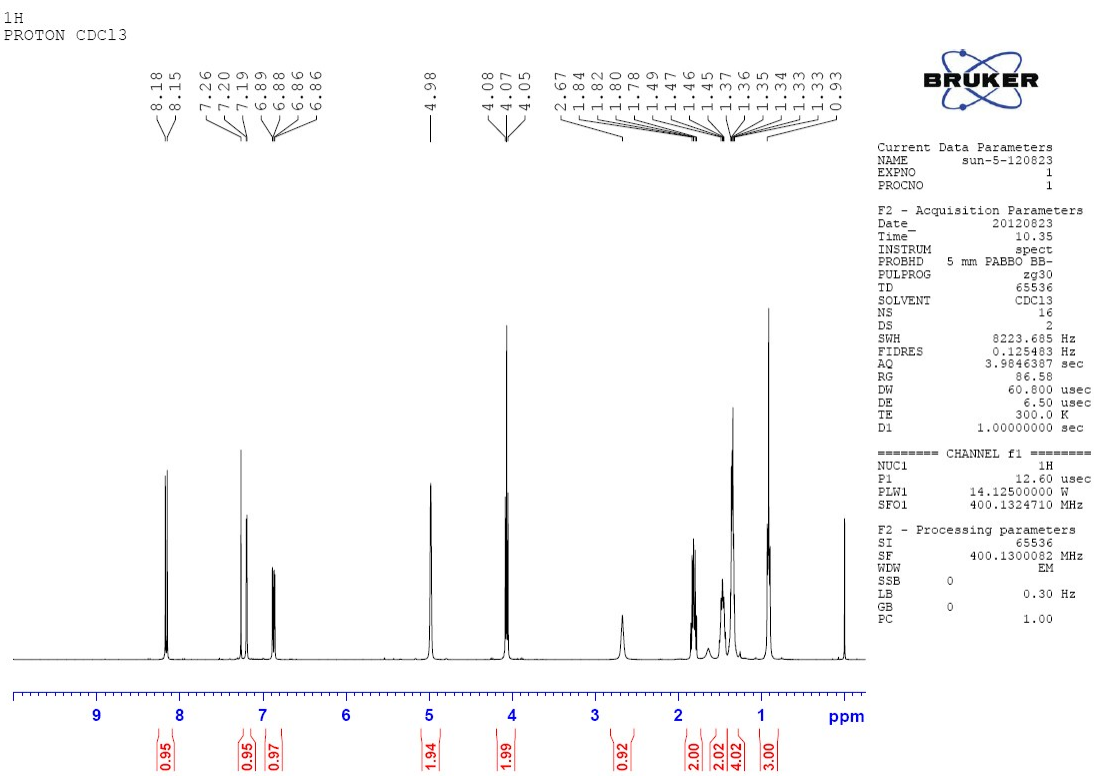

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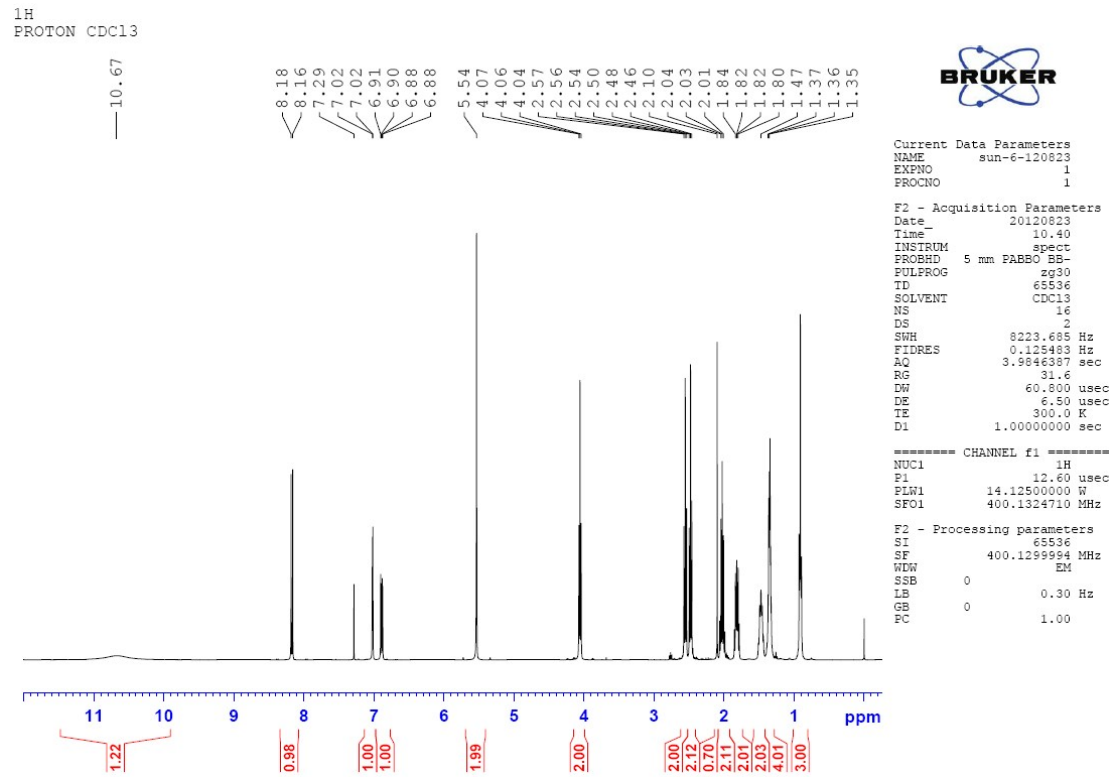

Compound 8

1H
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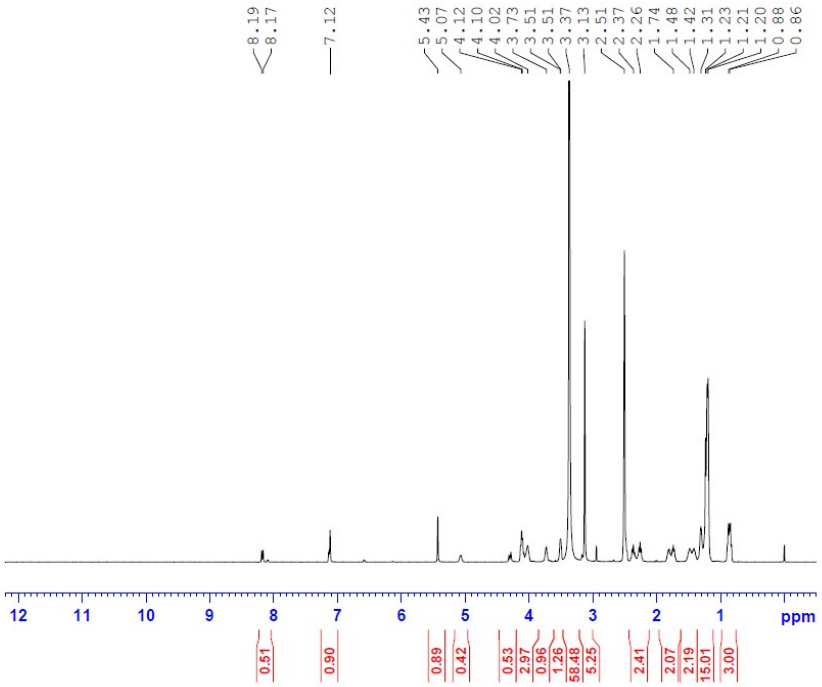

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