Supplementary Information for:

Competition and promotion of different mesophases in series of novel unsymmetrical discotic dimers via subtle modification of spacers and peripheral side chains

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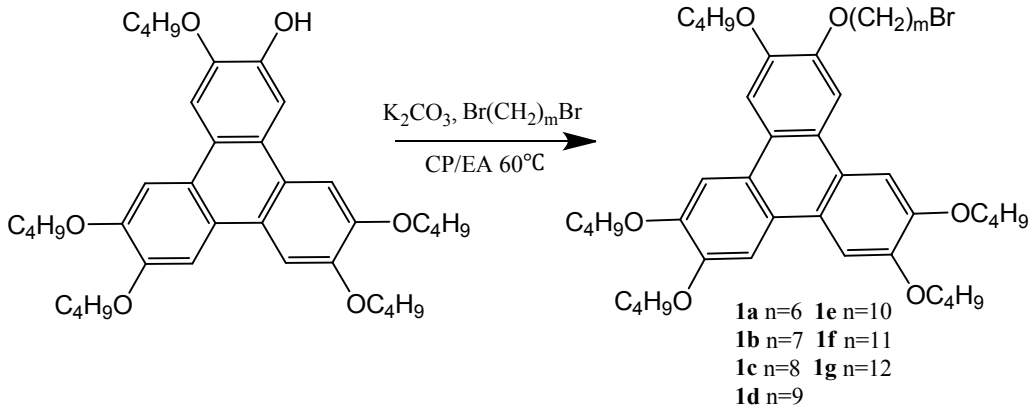
1. Synthesis and characterization



2-(6'-Bromohexyloxy)-3,6,7,10,11-Pentabutoxytriphenylene (1a)

1.36g (49.98mmol) 1,6-dibromohexane and 0.5g (7.41mmol) **HAT4** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography. (silica gel eluent CH_2Cl_2/PE=1:1). Recrystallization from ethanol yields 0.3g (47%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1255 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.6 (14H, m,$OCH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_2CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).

2-(7'-Bromoheptyloxy)-3,6,7,10,11-Pentabutoxytriphenylene (1b)

1.44g (49.98mmol) 1,7-dibromoheptane and 0.5g (7.41mmol) **HAT4** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography. (silica gel eluent CH_2Cl_2/PE=1:1). Recrystallization from ethanol yields 0.3g (46%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1254 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.6 (16H, m,$OCH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_3CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).

2-(8'-Bromooctyloxy)-3,6,7,10,11-Pentabutoxytriphenylene (1c)

1.52g (49.98mmol) 1,8-dibromooctane and 0.5g(7.41mmol) **HAT4** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography. (silica gel eluent CH_2Cl_2/PE=1:1). Recrystallization from ethanol yields 0.3g (45.5%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1256 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.5 (18H, m,$OCH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_4CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).

2-(9'-Bromononyloxy)-3,6,7,10,11-Pentabutoxytriphenylene (1d)

1.6g (49.98mmol) 1,9-dibromononane and 0.5g(7.41mmol) **HAT4** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography. (silica gel eluent

CH_2Cl_2/PE=1:1). Recrystallization from ethanol yields 0.4g (60%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1255 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.5 (20H, m,$OCH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_5CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).

2-(10'-Bromodecyloxy)-3,6,7,10,11-Pentabutoxytriphenylene (1e)

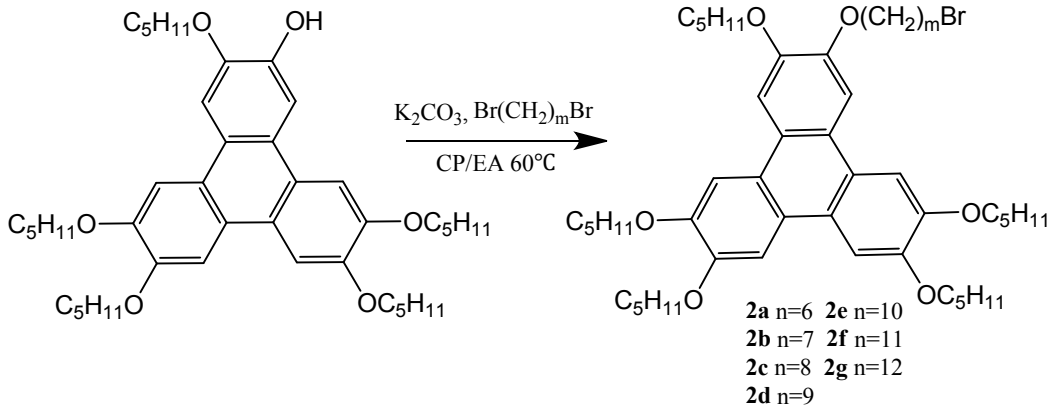
1.67g (49.98mmol) 1,10-dibromodecane and 0.5g(7.41mmol) **HAT4** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography.(silica gel eluent CH_2Cl_2/PE=1:1). Recrystallization from ethanol yields 0.4g (58.8%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1253 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.5 (22H, m,$OCH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_6CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).

2-(11'-Bromoundecyloxy)-3,6,7,10,11-Pentabutoxytriphenylene (1f)

1.75g (49.98mmol) 1,11-dibromoundecane and 0.5g (7.41mmol) **HAT4** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography. (silica gel eluent CH_2Cl_2/PE=1:1). Recrystallization from ethanol yields 0.35g (51%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1255 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.5 (24H, m,$OCH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_7CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).

2-(12'-Bromododecyloxy)-3,6,7,10,11-Pentabutoxytriphenylene (1g)

1.83g (49.98mmol) 1,12-dibromododecane and 0.5g (7.41mmol) **HAT4** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography.(silica gel eluent CH_2Cl_2/PE=1:1). Recrystallization from ethanol yields 0.4g (57%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1252 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.5 (26H, m,$OCH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_8CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).



2-(6'-Bromohexyloxy)-3,6,7,10,11-Pentapentyloxytriphenylene (2a)

1.22g (49.98mmol) 1,6-dibromohexane and 0.5g(7.41mmol) **HAT5** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography.(silica gel eluent CH_2Cl_2/PE=1;1). Recrystallization from ethanol yields 0.3g (48%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1255 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.5 (24H, m, $OCH_2CH_2(CH_2)_2$+$OCH_2CH_2(CH_2)_2CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).

2-(7'-Bromoheptyloxy)-3,6,7,10,11-Pentapentyloxytriphenylene (2b)

1.29g (49.98mmol) 1,7-dibromoheptane and 0.5g(7.41mmol) **HAT5** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography.(silica gel eluent CH_2Cl_2/PE=1;1). Recrystallization from ethanol yields 0.28g (44%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1255 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.5 (26H, m, $OCH_2CH_2(CH_2)_2$+$OCH_2CH_2(CH_2)_3CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).

2-(8'-Bromooctyloxy)-3,6,7,10,11-Pentapentyloxytriphenylene (2c)

1.36g (49.98mmol) 1,8-dibromooctane and 0.5g(7.41mmol) **HAT5** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography. (silica gel eluent CH_2Cl_2/PE=1;1). Recrystallization from ethanol yields 0.3g (47%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1255 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.5 (28H, m, $OCH_2CH_2(CH_2)_2$+$OCH_2CH_2(CH_2)_4CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).

2-(9'-Bromononyloxy)-3,6,7,10,11-Pentapentyloxytriphenylene (2d)

1.43g (49.98mmol) 1,9-dibromononane and 0.5g (7.41mmol) **HAT5** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography. (silica gel eluent CH_2Cl_2/PE=1;1). Recrystallization from ethanol yields 0.3g (46%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1254 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.5 (30H, m, $OCH_2CH_2(CH_2)_2$+$OCH_2CH_2(CH_2)_5CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).

2-(10'-Bromodecyloxy)-3,6,7,10,11-Pentapentyloxytriphenylene (2e)

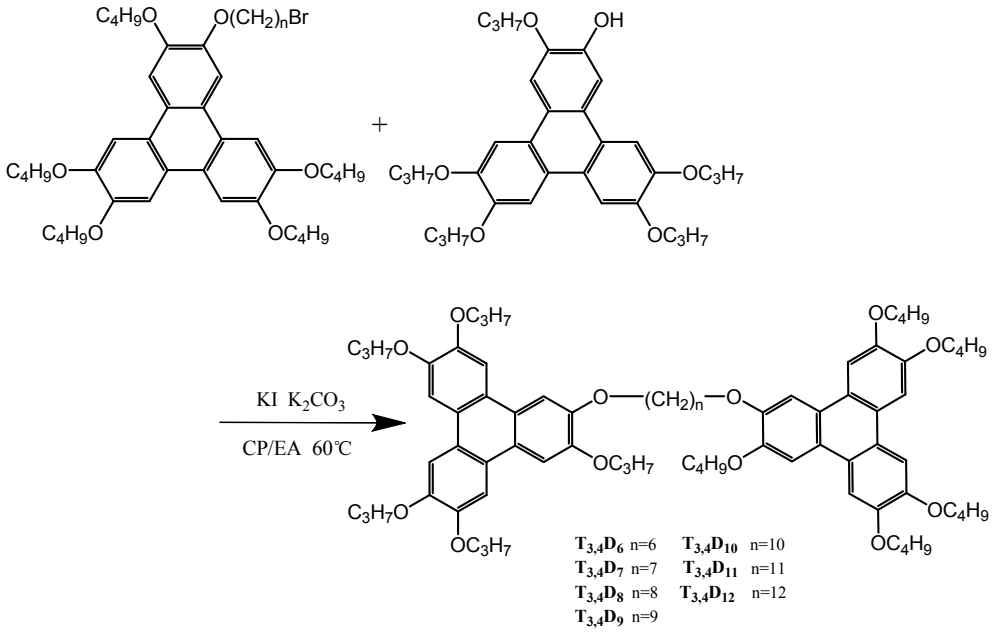
1.5g (49.98mmol) 1,10-dibromodecane and 0.5g (7.41mmol) **HAT5** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography. (silica gel eluent CH_2Cl_2/PE=1;1). Recrystallization from ethanol yields 0.3g (45%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1255 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.5 (32H, m, $OCH_2CH_2(CH_2)_2$+$OCH_2CH_2(CH_2)_6CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).

2-(11'-Bromoundecyloxy)-3,6,7,10,11-Pentapentyloxytriphenylene (2f)

1.57g (49.98mmol) 1,11-dibromoundecane and 0.5g (7.41mmol) **HAT5** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography. (silica gel eluent CH_2Cl_2/PE=1;1). Recrystallization from ethanol yields 0.32g (47%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1255 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.5 (34H, m, $OCH_2CH_2(CH_2)_2$+$OCH_2CH_2(CH_2)_7CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).

2-(12'-Bromododecyloxy)-3,6,7,10,11-Pentapentyloxytriphenylene (2g)

1.64g (49.98mmol) 1,12-dibromododecane and 0.5g (7.41mmol) **HAT5** are dissolved in 12ml acetone and stirred for 15h after addition of 0.6g (43.31mmol) potassium carbonate. After filtering and washing with dichloromethane the mixture is subjected to chromatography. (silica gel eluent CH_2Cl_2/PE=1;1). Recrystallization from ethanol yields 0.35g (51%) pure product as a white soild. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); IR (KBr): ν_{max}/cm^{-1} 1255 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (6H, s, ArH), 4.4-4.2 (12H, t, OCH_2), 3.5 (2H, t, CH_2Br), 2.1-1.90 (14H, m, OCH_2CH_2+CH_2CH_2Br), 1.7-1.5 (36H, m, $OCH_2CH_2(CH_2)_2$+$OCH_2CH_2(CH_2)_8CH_2CH_2Br$), 1.2-1.0 (15H, t, CH_3).



1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-6-(3,6,7,10,11-pentabutoxytriphenylen-2-yloxy)-hexane ($T_{3,4}D_6$)

0.35g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **1a** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.16g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent: CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.24 (30.2%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 75.7; H 8.58. $C_{77}H_{104}O_{12}$ requires: C, 75.8; H, 8.59%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (14H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_2CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3)，HRMS (ESI): calc.m/z 1220.7522

($C_{77}H_{104}O_{12}$), found m/z 1220.7518 $(M)^+$

1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-7-(3,6,7,10,11-pentabutoxytriphenylen-2-yloxy)-heptane ($T_{3,4}D_7$)

0.34g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **1b** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.14g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent: CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.25g (31.6%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 75.8; H 8.66. $C_{78}H_{106}O_{12}$ requires: C, 75.9; H, 8.65%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (16H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_3CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3), HRMS (ESI): calc.m/z 1234.7679 ($C_{78}H_{106}O_{12}$), found m/z 1234.7679 $(M)^+$

1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-8-(3,6,7,10,11-pentabutoxytriphenylen-2-yloxy)-octane ($T_{3,4}D_8$)

0.33g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **1c** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.12g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent:CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.25 (31.8%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 75.96; H 8.72. $C_{79}H_{108}O_{12}$ requires: C, 75.98; H, 8.71%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (18H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_4CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3)，HRMS (ESI): calc.m/z 1248.7834 ($C_{79}H_{108}O_{12}$), found m/z 1248.7835 $(M)^+$

1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-9-(3,6,7,10,11-pentabutoxytriphenylen-2-yloxy)-nonane ($T_{3,4}D_9$)

0.327g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **1d** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.1g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent: CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.25g (32%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 75.9; H 8.76. $C_{80}H_{110}O_{12}$ requires: C, 76.1; H, 8.78%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (20H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_5CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3)，HRMS (ESI): calc.m/z 1262.7990 ($C_{80}H_{110}O_{12}$), found m/z 1262.7992 $(M)^+$

1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-10-(3,6,7,10,11-pentabutoxytriphenylen-2-yloxy)-decane ($T_{3,4}D_{10}$)

0.32g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **1e** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.08g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent: CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.26 (34%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 76.1; H 8.84. $C_{81}H_{112}O_{12}$ requires: C, 76.2; H, 8.84%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (22H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_6CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3)，HRMS (ESI): calc.m/z 1276.8145

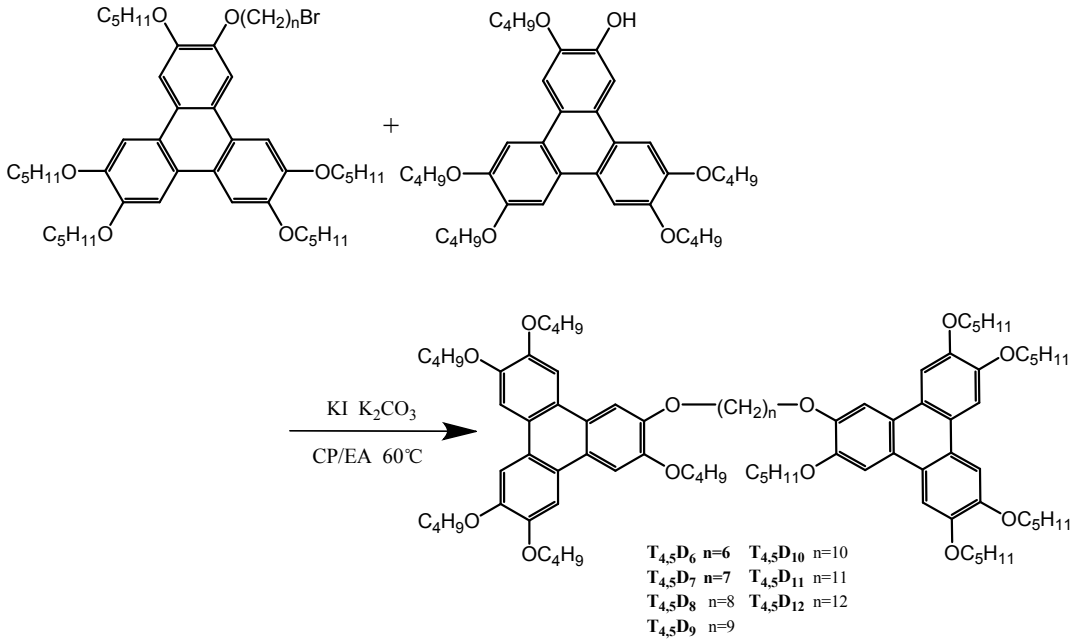
($C_{81}H_{112}O_{12}$), found m/z 1276.8148 $(M)^+$

1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-11-(3,6,7,10,11-pentabutoxytriphenylen-2-yloxy)-undecane ($T_{3,4}D_{11}$)

0.316g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **1f** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.07g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent:CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.26 (33.7%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 76.1; H 8.87. $C_{82}H_{114}O_{12}$ requires: C, 76.3; H, 8.9%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (24H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_7CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3)，HRMS (ESI): calc.m/z 1290.8304 ($C_{82}H_{114}O_{12}$), found m/z 1290.8305 $(M)^+$

1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-12-(3,6,7,10,11-pentabutoxytriphenylen-2-yloxy)-dodecane ($T_{3,4}D_{12}$)

0.31g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **1g** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.05g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent: CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.25 (32.6%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 76.3; H 8.94. $C_{83}H_{116}O_{12}$ requires: C, 76.4; H, 8.96%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (26H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_8CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3)，HRMS (ESI): calc.m/z 1304.8461 ($C_{83}H_{116}O_{12}$), found m/z 1304.8461 $(M)^+$



1-(3,6,7,10,11-pentabutoxytriphenylene-2-yloxy)-6-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-hexane ($T_{4,5}D_6$)

0.358g (2.22mmol) **HAT4** and 0.5g (2.24mmol) **2a** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.07g (28.94mmol) potassium carbonate

and potassium iodide (50mg). Filtering and chromatography (eluent:CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.31g (38%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 76.75; H 9.17. $C_{87}H_{124}O_{12}$ requires: C, 76.78; H, 9.18%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (34H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_2CH_2CH_2O$+$OCH_2CH_2(CH_2)_2$), 1.2-1.0 (30H, t, CH_3), HRMS (ESI): calc.m/z 1360.9088 ($C_{87}H_{124}O_{12}$), found m/z 1360.9087 $(M)^+$

1-(3,6,7,10,11-pentabutoxytriphenylene-2-yloxy)-7-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-heptane ($T_{4,5}D_7$)

0.35g (2.22mmol) **HAT4** and 0.5g (2.24mmol) **2b** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.05g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent:CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.36g (45%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 76.84; H 9.22 $C_{88}H_{126}O_{12}$ requires: C, 76.87; H, 9.24%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (36H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_3CH_2CH_2O$+$OCH_2CH_2(CH_2)_2$), 1.2-1.0 (30H, t, CH_3), HRMS (ESI): calc.m/z 1374.9247 ($C_{88}H_{126}O_{12}$), found m/z 1374.9244 $(M)^+$

1-(3,6,7,10,11-pentabutoxytriphenylene-2-yloxy)-8-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-octane ($T_{4,5}D_8$)

0.35g (2.22mmol) **HAT4** and 0.5g (2.24mmol) **2c** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.03g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent:CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.36g (45%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 76.94; H 9.27. $C_{89}H_{128}O_{12}$ requires: C, 76.96; H, 9.29%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (38H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_4CH_2CH_2O$+$OCH_2CH_2(CH_2)_2$), 1.2-1.0 (30H, t, CH_3), HRMS (ESI): calc.m/z 1388.9403 ($C_{89}H_{128}O_{12}$), found m/z 1388.9400 $(M)^+$

1-(3,6,7,10,11-pentabutoxytriphenylene-2-yloxy)-9-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-nonane ($T_{4,5}D_9$)

0.34g (2.22mmol) **HAT4** and 0.5g (2.24mmol) **2d** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.01g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent:CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.36g (45%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 76.8; H 9.3. $C_{90}H_{130}O_{12}$ requires: C, 77.1; H, 9.34%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (40H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_5CH_2CH_2O$+$OCH_2CH_2(CH_2)_2$), 1.2-1.0 (30H, t, CH_3), HRMS (ESI): calc.m/z 1402.9562 ($C_{90}H_{130}O_{12}$), found m/z 1402.9557 $(M)^+$

1-(3,6,7,10,11-pentabutoxytriphenylene-2-yloxy)-10-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-decane ($T_{4,5}D_{10}$)

0.34g (2.22mmol) **HAT4** and 0.5g (2.24mmol) **2e** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 0.998g (28.94mmol) potassium carbonate

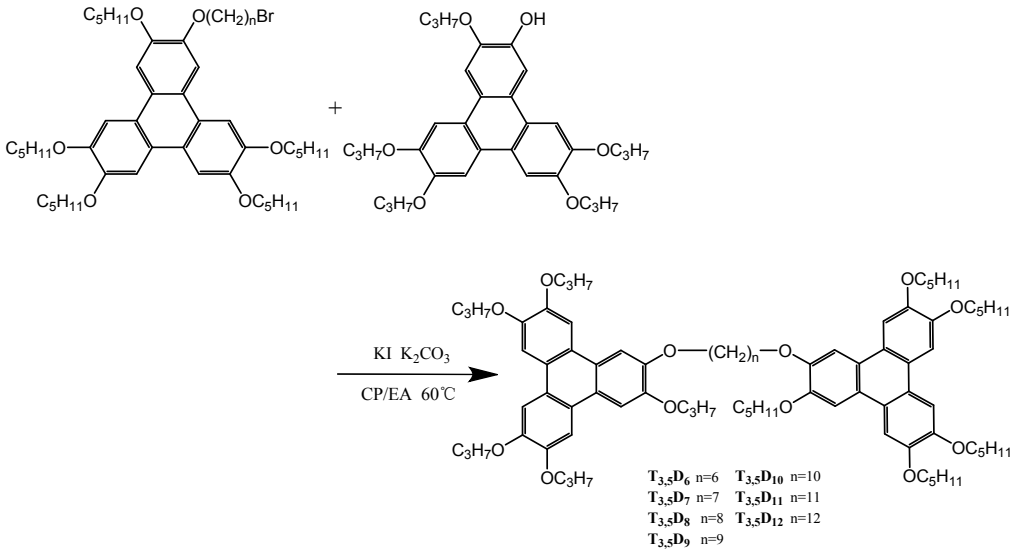
and potassium iodide (50mg). Filtering and chromatography (eluent:CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.36g (45%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 77.05; H 9.32. $C_{91}H_{132}O_{12}$ requires: C, 77.14; H, 9.39%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (42H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_6CH_2CH_2O$+$OCH_2CH_2(CH_2)_2$), 1.2-1.0 (30H, t, CH_3), HRMS (ESI): calc.m/z 1416.9713 ($C_{91}H_{132}O_{12}$), found m/z 1416.9713 $(M)^+$

1-(3,6,7,10,11-pentabutoxytriphenylene-2-yloxy)-11-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-undecane ($T_{4,5}D_{11}$)

0.33g (2.22mmol) **HAT4** and 0.5g (2.24mmol) **2f** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 0.98g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent:CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.35g (45%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 77.13; H 9.35. $C_{92}H_{134}O_{12}$ requires: C, 77.22; H, 9.44%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (44H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_7CH_2CH_2O$+$OCH_2CH_2(CH_2)_2$), 1.2-1.0 (30H, t, CH_3), HRMS (ESI): calc.m/z 1430.9877 ($C_{92}H_{134}O_{12}$), found m/z 1430.9870 $(M)^+$

1-(3,6,7,10,11-pentabutoxytriphenylene-2-yloxy)-12-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-dodecane ($T_{4,5}D_{12}$)

0.33g (2.22mmol) **HAT4** and 0.5g (2.24mmol) **2g** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 0.97g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent:CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.35g (45%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (found: C 77.1; H 9.43. $C_{93}H_{136}O_{12}$ requires: C, 77.3; H, 9.49%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (46H, m, $OCH_2CH_2CH_2$+ $OCH_2CH_2(CH_2)_8CH_2CH_2O$+$OCH_2CH_2(CH_2)_2$), 1.2-1.0 (30H, t, CH_3), HRMS (ESI): calc.m/z 1445.0021 ($C_{93}H_{136}O_{12}$), found m/z 1445.0027 $(M)^+$



1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-6-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-hexane ($T_{3,5}D_6$)

0.32g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **2a** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.07g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent: CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.25g (32%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); Found: C, 76.17; H, 8.94. $C_{82}H_{114}O_{12}$ requires: C, 76.24; H, 8.90%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (24H, m, $OCH_2CH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_2CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3)，HRMS (ESI): calc.m/z 1290.8307 ($C_{82}H_{114}O_{12}$), found m/z 1290.8305 $(M)^+$

1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-7-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-heptane ($T_{3,5}D_7$)

0.31g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **2b** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.05g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent: CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.3g (39%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (Found: C, 76.26; H, 9.02. $C_{83}H_{116}O_{12}$ requires: C, 76.34; H, 8.95%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (26H, m, $OCH_2CH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_3CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3)，HRMS (ESI): calc.m/z 1304.8462 ($C_{83}H_{116}O_{12}$), found m/z 1304.8461 $(M)^+$

1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-8-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-octane ($T_{3,5}D_8$)

0.31g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **2c** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.03g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent: CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.3g (39%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (Found: C, 76.38; H, 8.95. $C_{84}H_{118}O_{12}$ requires: C, 76.44; H, 9.01%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (28H, m, $OCH_2CH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_4CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3), HRMS (ESI): calc.m/z 1318.8608 ($C_{84}H_{118}O_{12}$), found m/z 1318.8618 $(M)^+$

1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-9-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-nonane ($T_{3,5}D_9$)

0.3g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **2d** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 1.01g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent: CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.3g (40%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (Found: C, 76.57; H, 9.0. $C_{85}H_{120}O_{12}$ requires: C, 76.54; H, 9.07%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (30H, m, $OCH_2CH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_5CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3), HRMS (ESI): calc.m/z 1332.8750 ($C_{85}H_{120}O_{12}$), found m/z 1332.8774 $(M)^+$

1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-10-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-decane ($T_{3,5}D_{10}$)

0.3g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **2e** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 0.998g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent: CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.26g (35%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (Found: C, 76.52; H, 9.09. C86H122O12 requires: C, 76.63; H, 9.12%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (32H, m, $OCH_2CH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_6CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3), HRMS (ESI): calc.m/z 1346.8938 ($C_{86}H_{122}O_{12}$), found m/z 1346.8931 $(M)^+$

1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-11-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-undecane ($T_{3,5}D_{11}$)

0.29g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **2f** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 0.98g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent: CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.26g (35%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (Found: C, 76.55; H, 9.15. $C_{87}H_{124}O_{12}$ requires: C, 76.73; H, 9.18%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (34H, m, $OCH_2CH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_7CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3), HRMS (ESI): calc.m/z 1360.9083 ($C_{87}H_{124}O_{12}$), found m/z 1360.9087 $(M)^+$

1-(3,6,7,10,11-pentapropoxytriphenylene-2-yloxy)-12-(3,6,7,10,11-pentapentyloxytriphenylen-2-yloxy)-dodecane ($T_{3,5}D_{12}$)

0.29g (2.22mmol) **HAT3** and 0.5g (2.24mmol) **2g** are dissolved in 15ml acetone under nitrogen. The mixture is refluxed for twenty hours after addition of 0.97g (28.94mmol) potassium carbonate and potassium iodide (50mg). Filtering and chromatography (eluent: CH_2Cl_2:PE=1:1) and subsequent recrystallization from acetone yields 0.26g (35%) of the dimer as a white solid. TLC R_f: 0.6 (dichloromethane-light petroleum 1:1); (Found: C, 76.54; H, 9.10. $C_{88}H_{126}O_{12}$ requires: C, 76.82; H, 9.23%); IR (KBr): ν_{max}/cm^{-1} 1263 (C-O-C); δ_H (300MHZ, $CDCl_3$) 8-7.8 (12H, s, ArH), 4.4-4.2 (24H, t, OCH_2), 2.1-1.90 (24H, m, OCH_2CH_2), 1.7-1.35 (36H, m, $OCH_2CH_2CH_2CH_2$+$OCH_2CH_2(CH_2)_8CH_2CH_2O$), 1.2-1.0 (30H, t, CH_3), HRMS (ESI): calc.m/z 1374.9247 ($C_{88}H_{126}O_{12}$), found m/z 1374.9244 $(M)^+$

2 [1]H-NMR and HRMS spectra

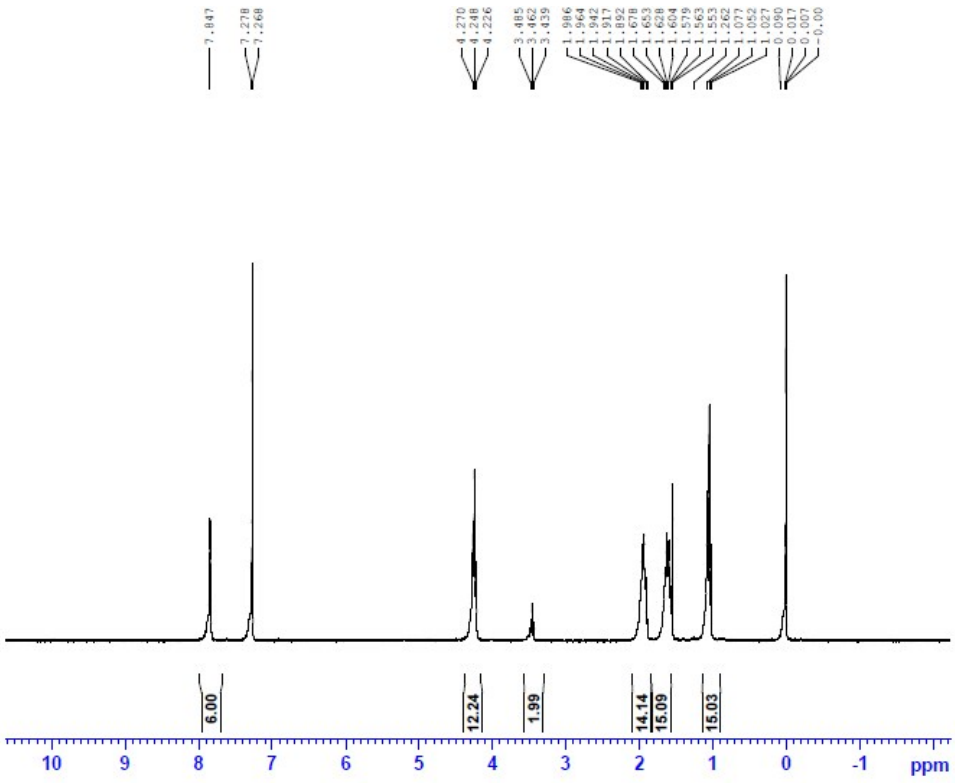


Fig.S1 [1]HNMR spectra of 1a

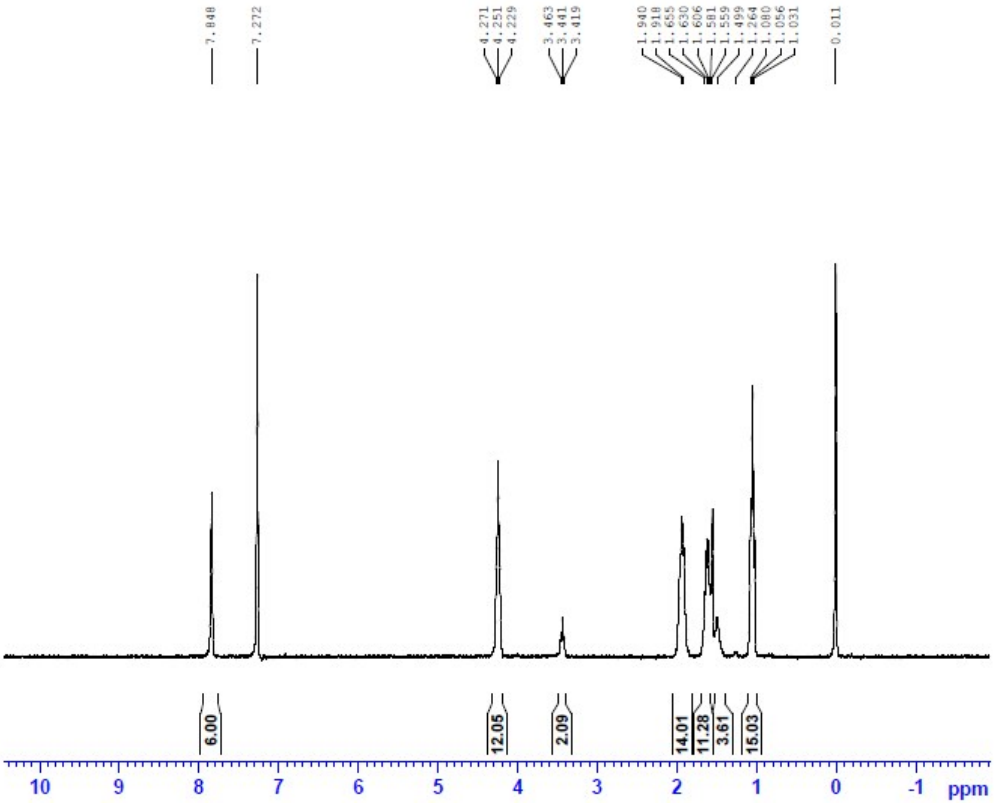


Fig.S2 [1]HNMR spectra of 1b

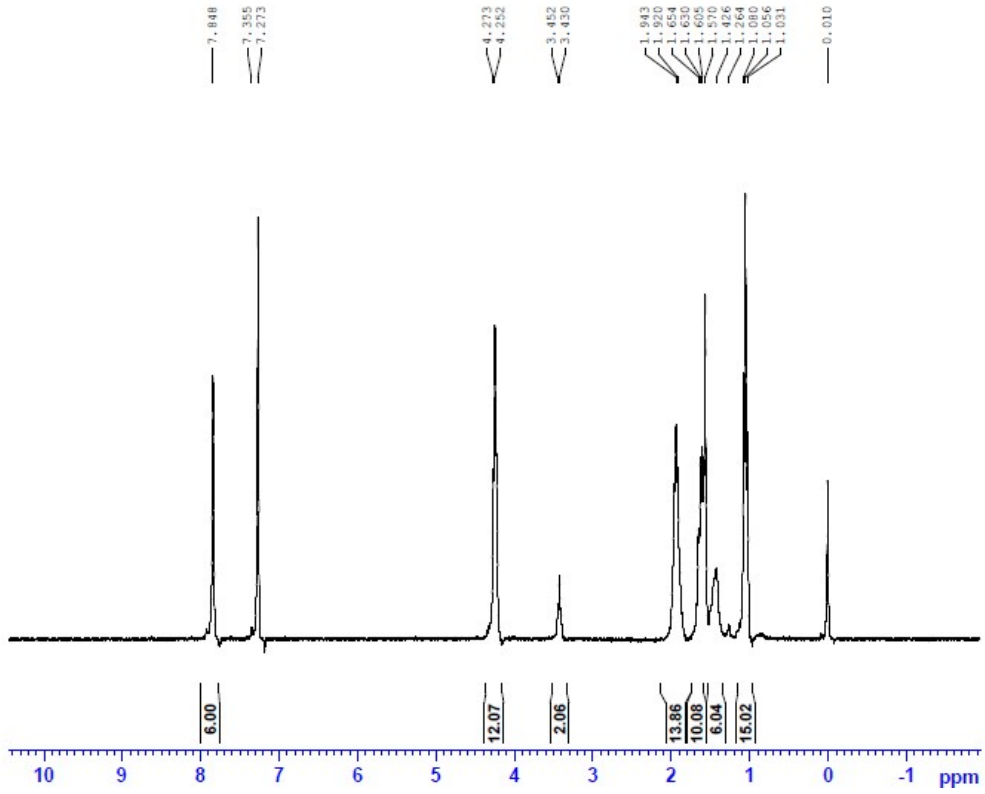


Fig.S3 [1]HNMR spectra of 1c

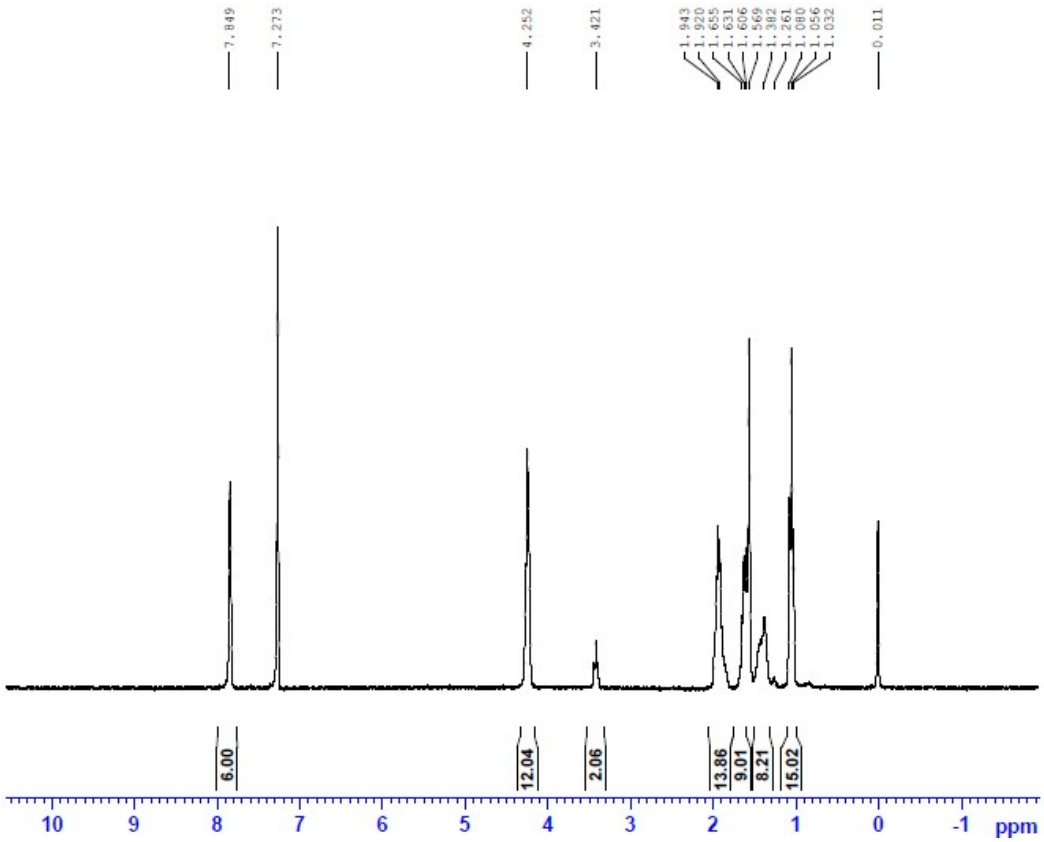


Fig.S4 [1]HNMR spectra of 1d

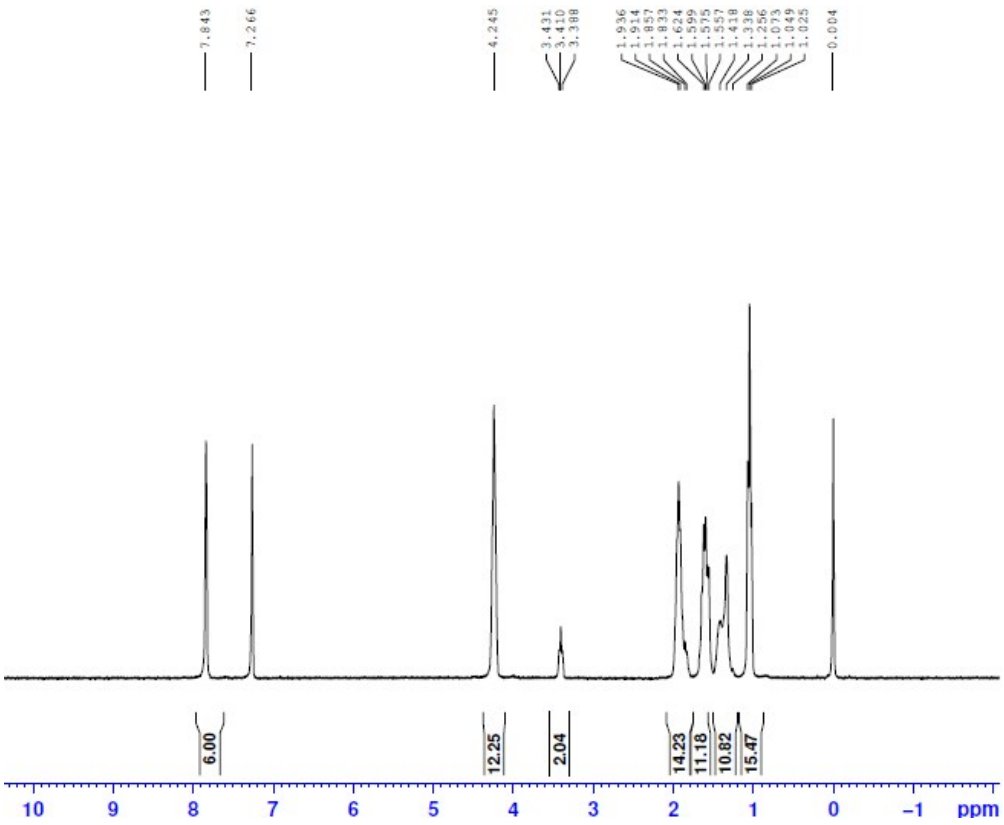


Fig.S5 [1]HNMR spectra of 1e

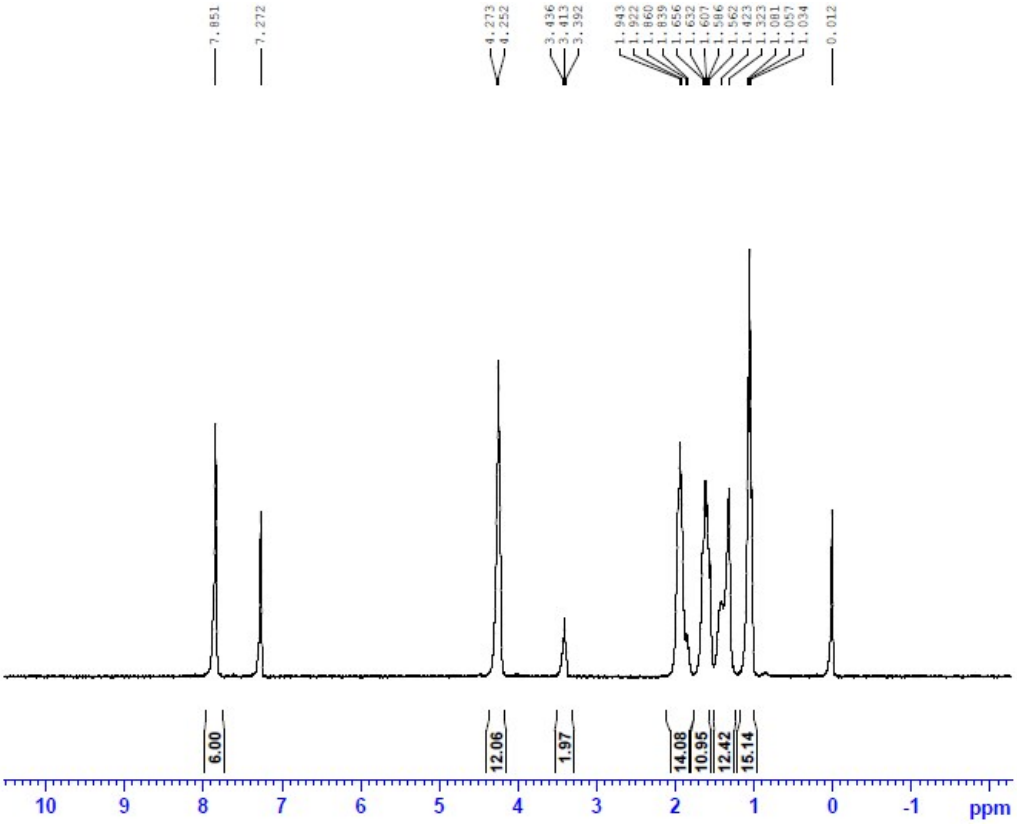


Fig.S6 [1]HNMR spectra of 1f

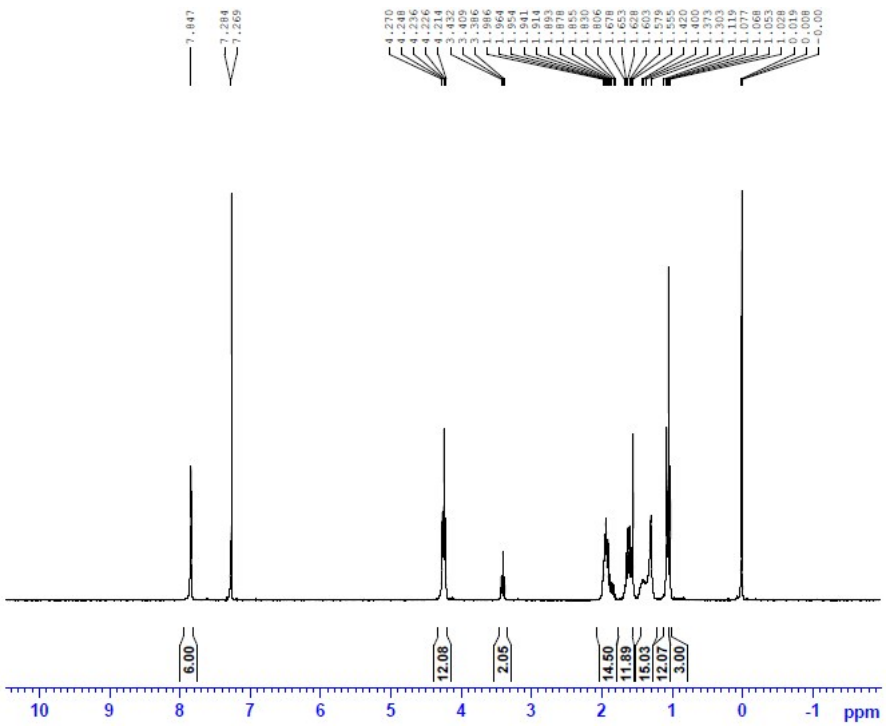


Fig.S7 ^{1}HNMR spectra of 1g

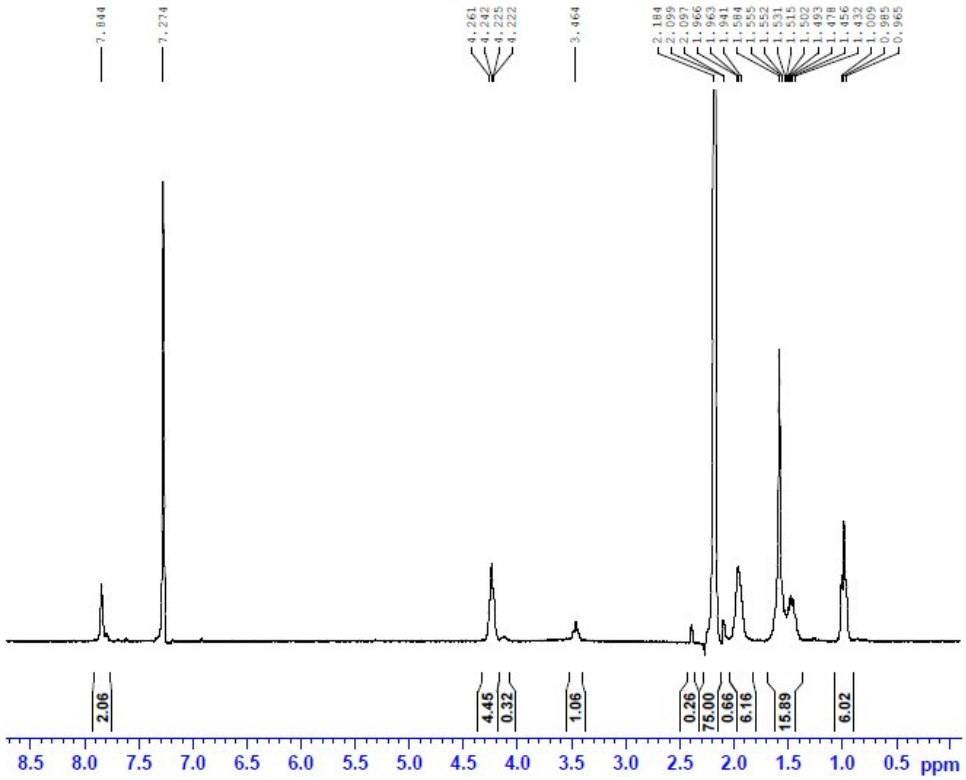


Fig.S8 ^{1}HNMR spectra of 2a

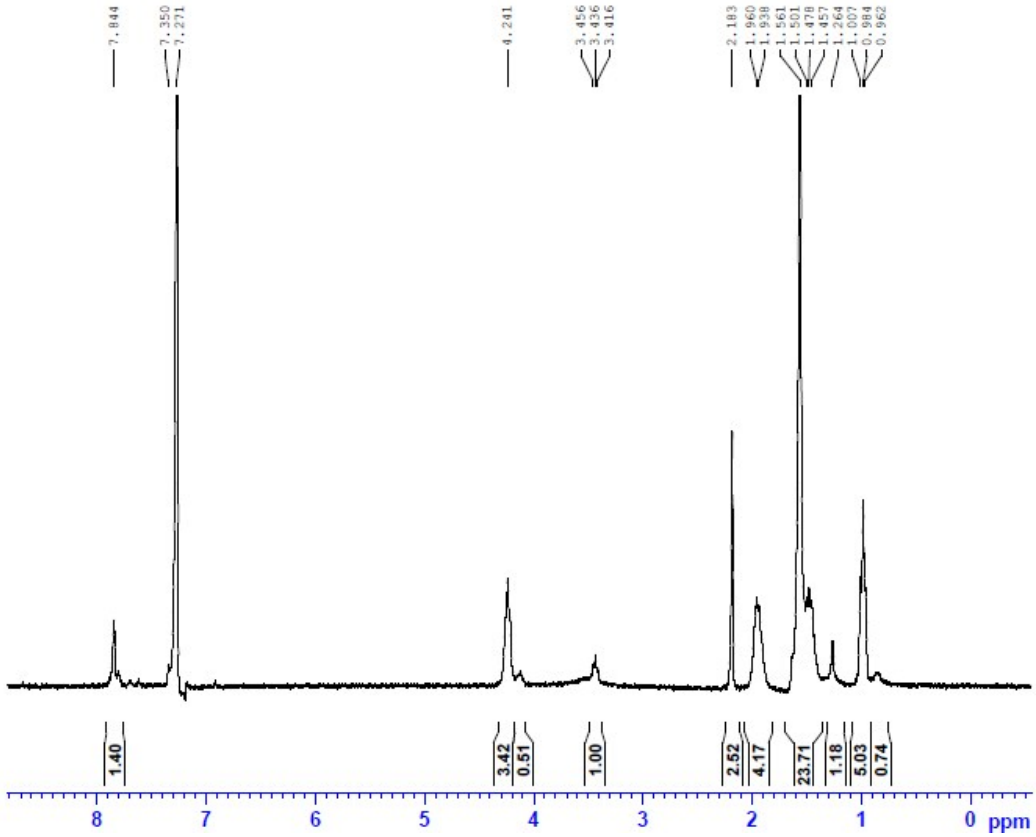


Fig.S9 [1]HNMR spectra of 2b

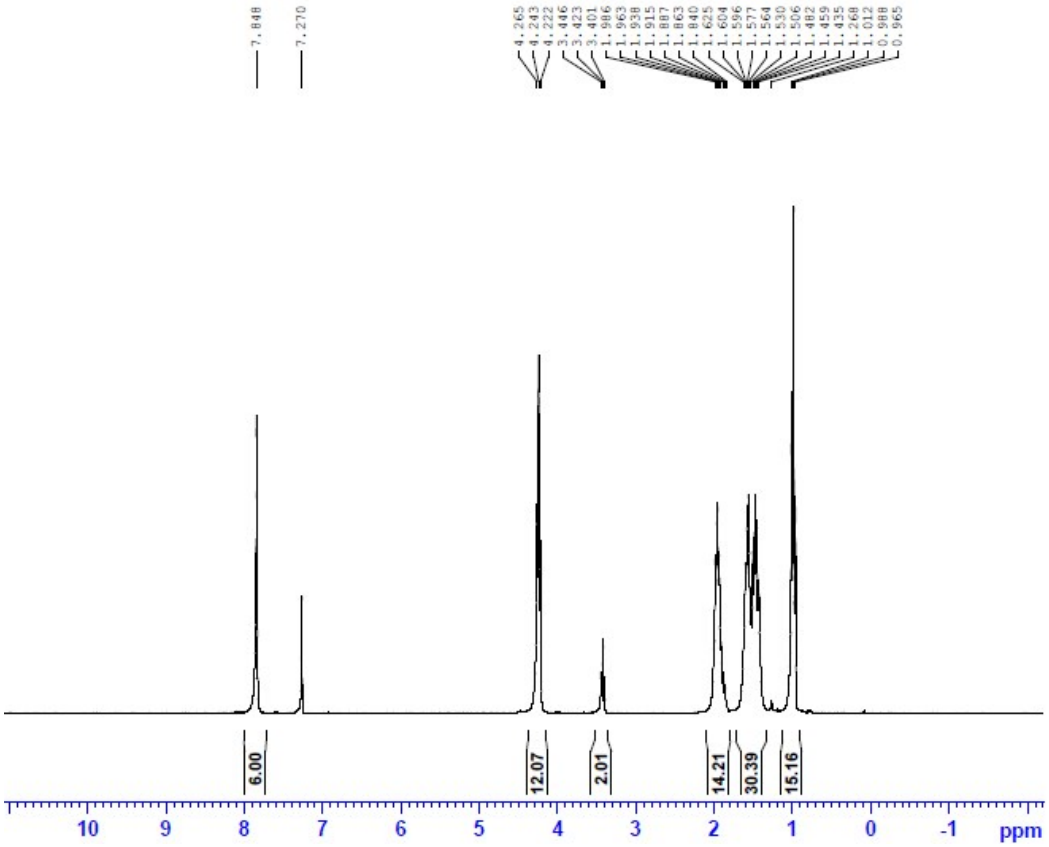


Fig.S10 [1]HNMR spectra of 2c

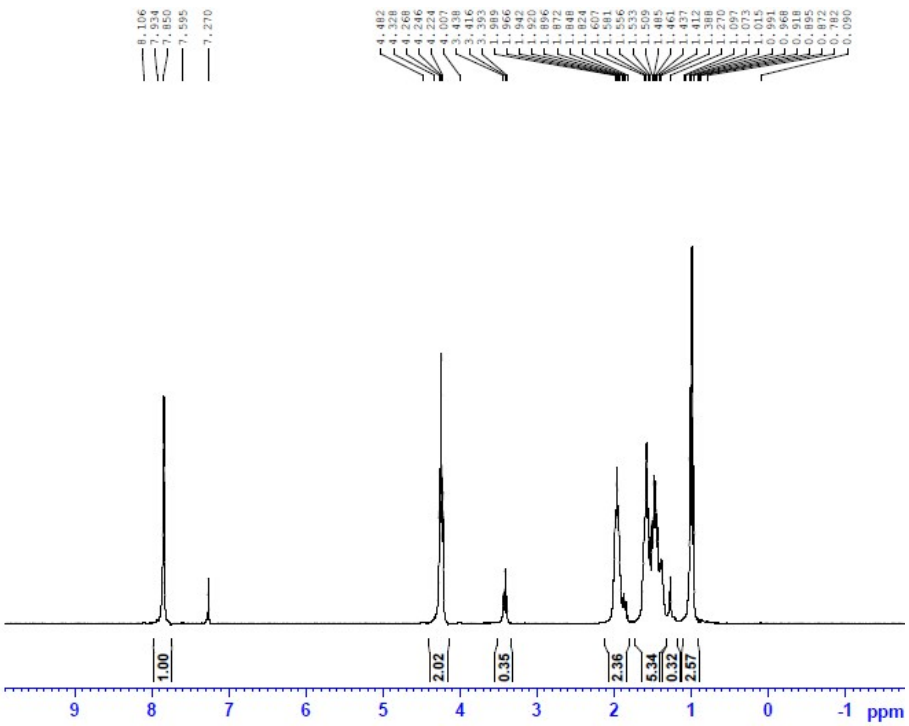


Fig.S11 [1]HNMR spectra of 2d

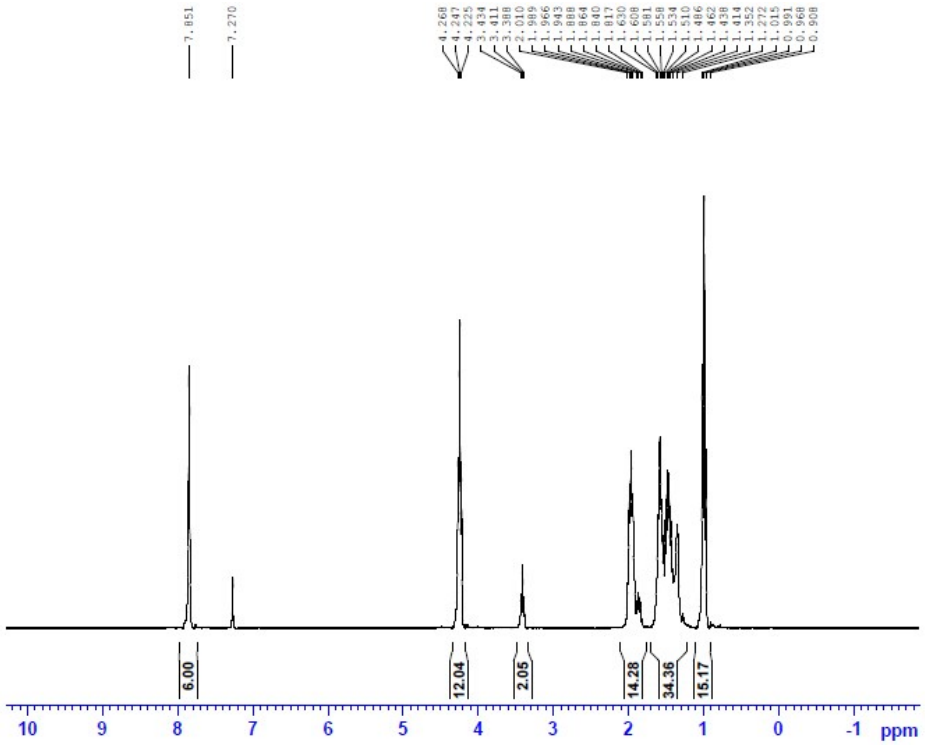


Fig.S12 [1]HNMR spectra of 2e

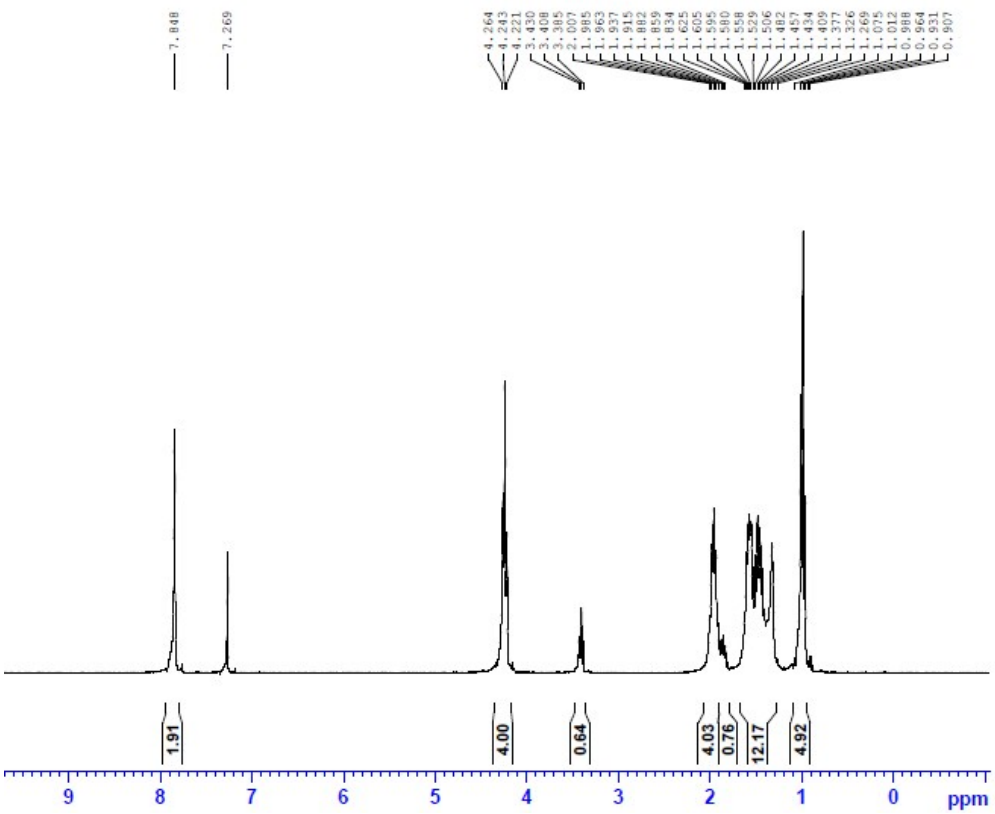


Fig.S13 [1]HNMR spectra of 2f

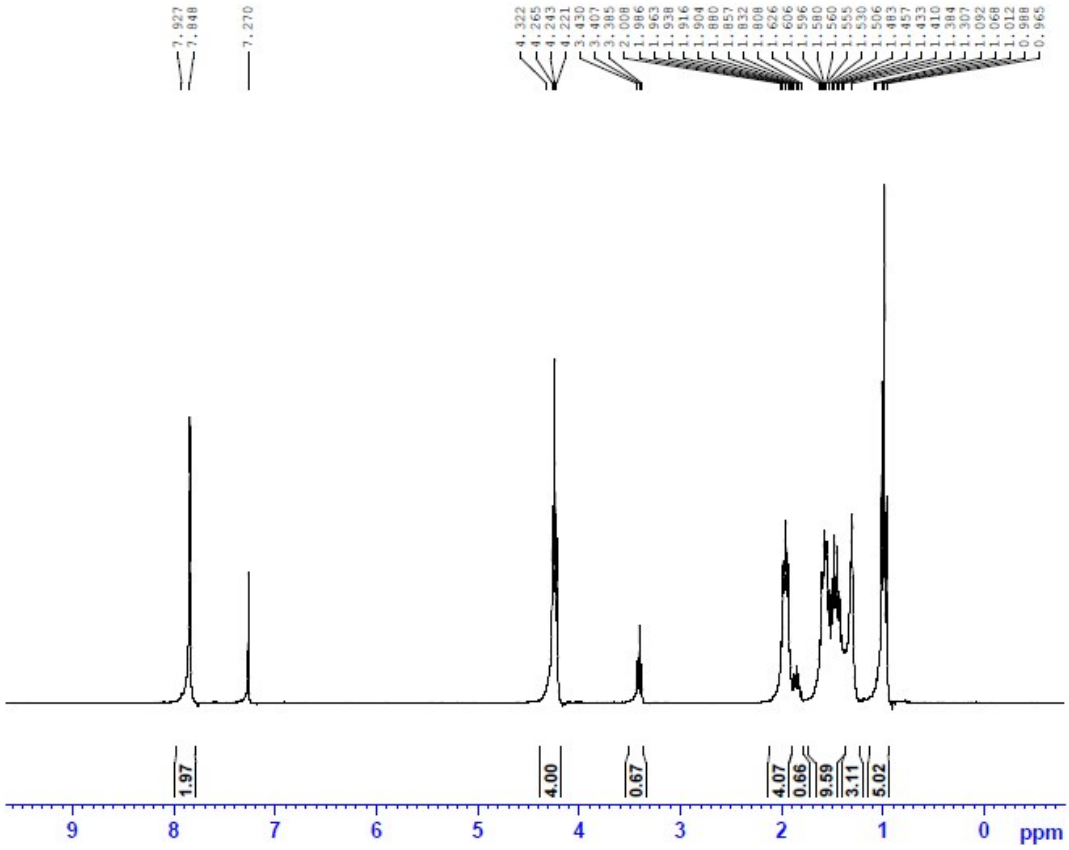


Fig.S14 [1]HNMR spectra of 2g

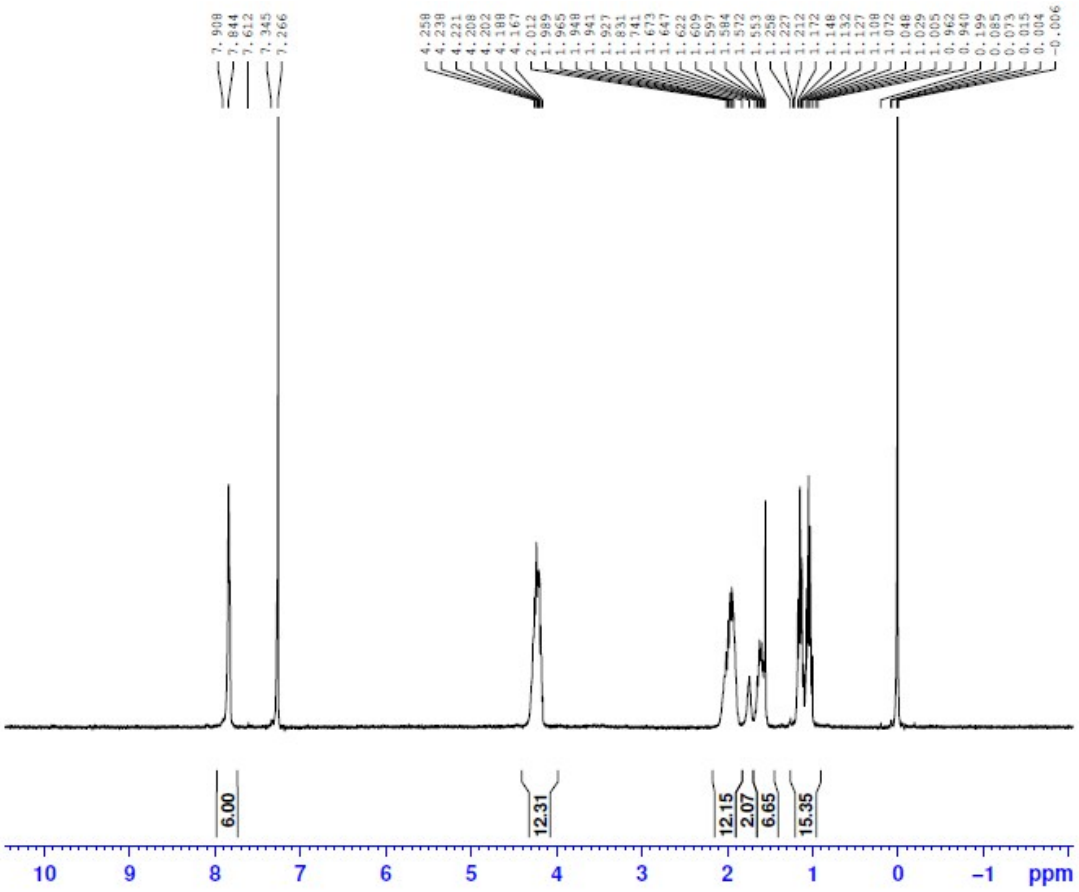


Fig.S15 ^{1}HNMR spectra of $T_{3,4}D_6$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
346	$C_{77}H_{104}O_{12}$	[M]+	1220.7518	1220.7522	-0.3277

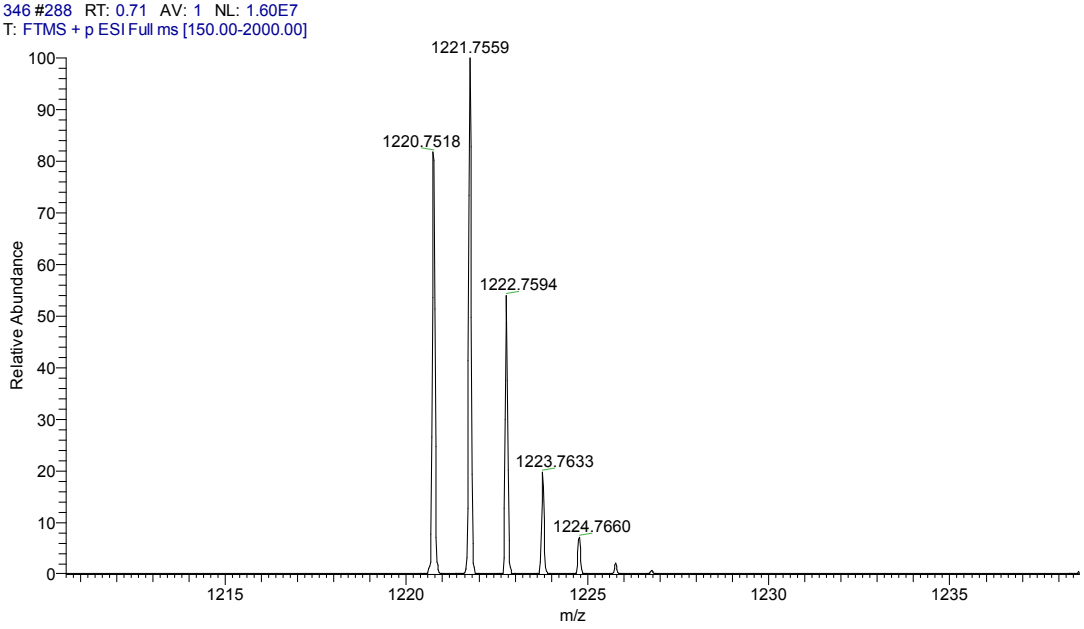


Fig.S16 HRMS spectra of $T_{3,4}D_6$

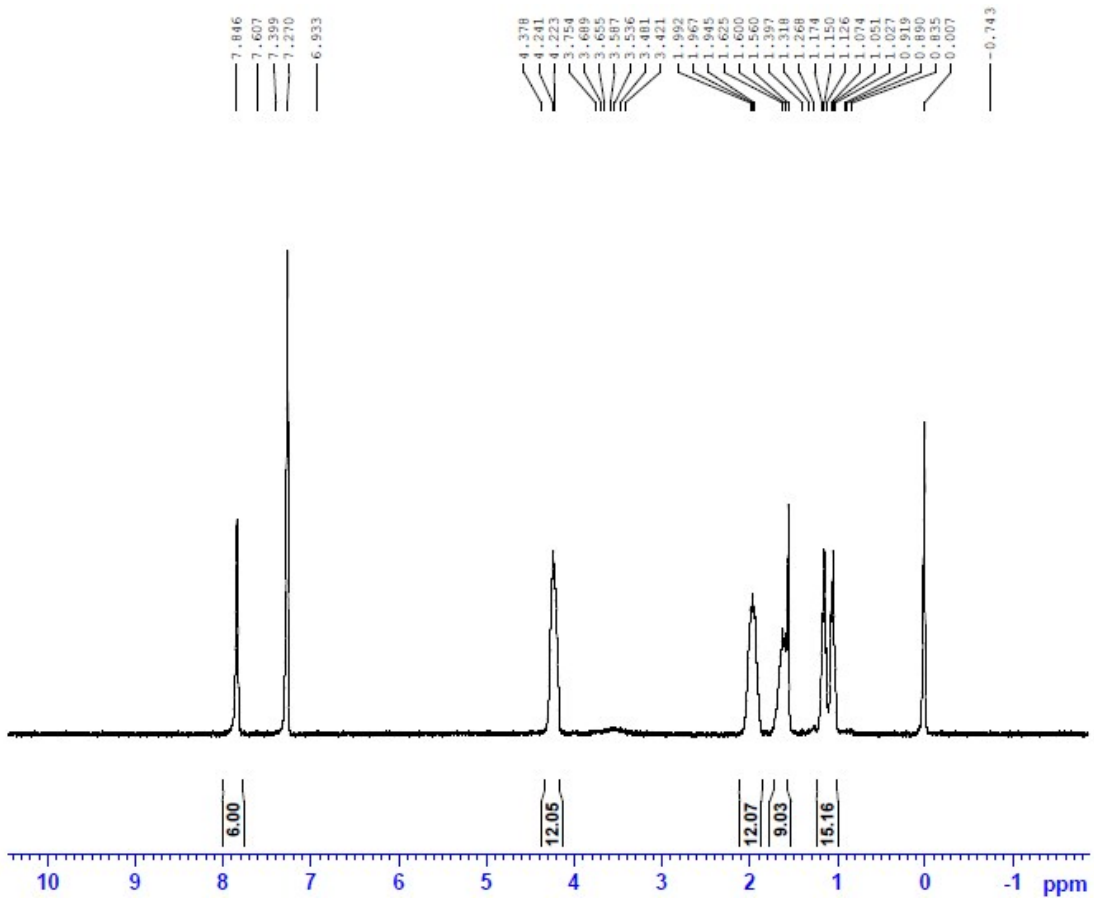


Fig.S17 ^{1}HNMR spectra of $T_{3,4}D_7$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
347	$C_{78}H_{106}O_{12}$	[M]+	1234.7679	1234.7679	0.0000

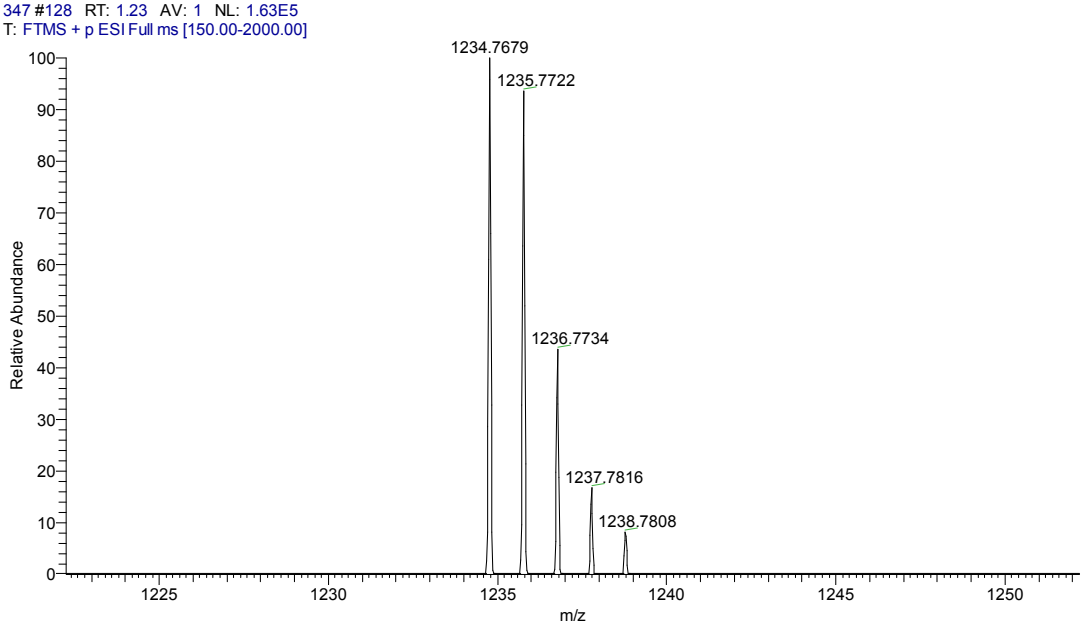


Fig.S18 HRMS spectra of $T_{3,4}D_7$

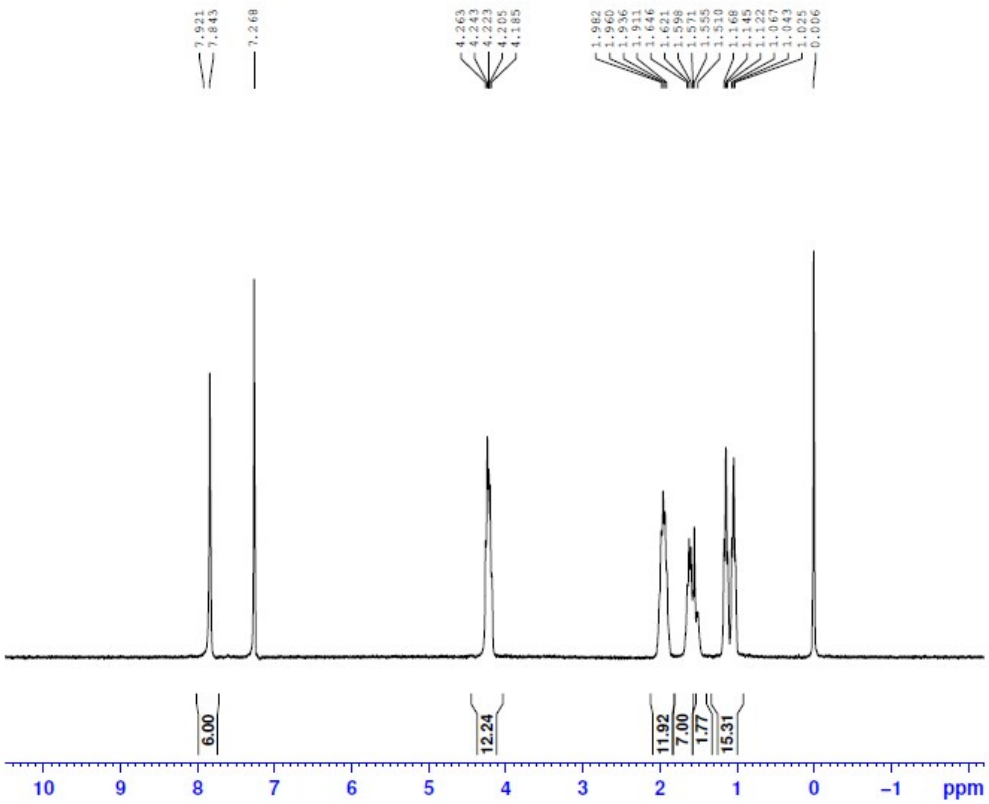


Fig.S19 ^{1}HNMR spectra of $T_{3,4}D_8$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
348	$C_{79}H_{108}O_{12}$	[M]+	1248.7835	1248.7834	0.0801

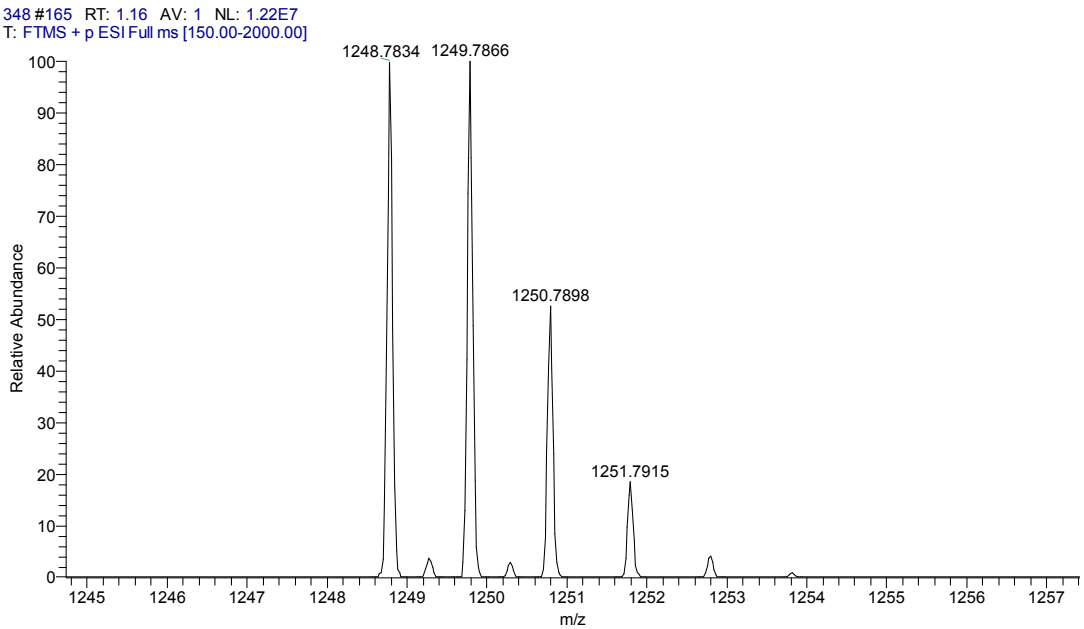


Fig.S20 HRMS spectra of $T_{3,4}D_8$

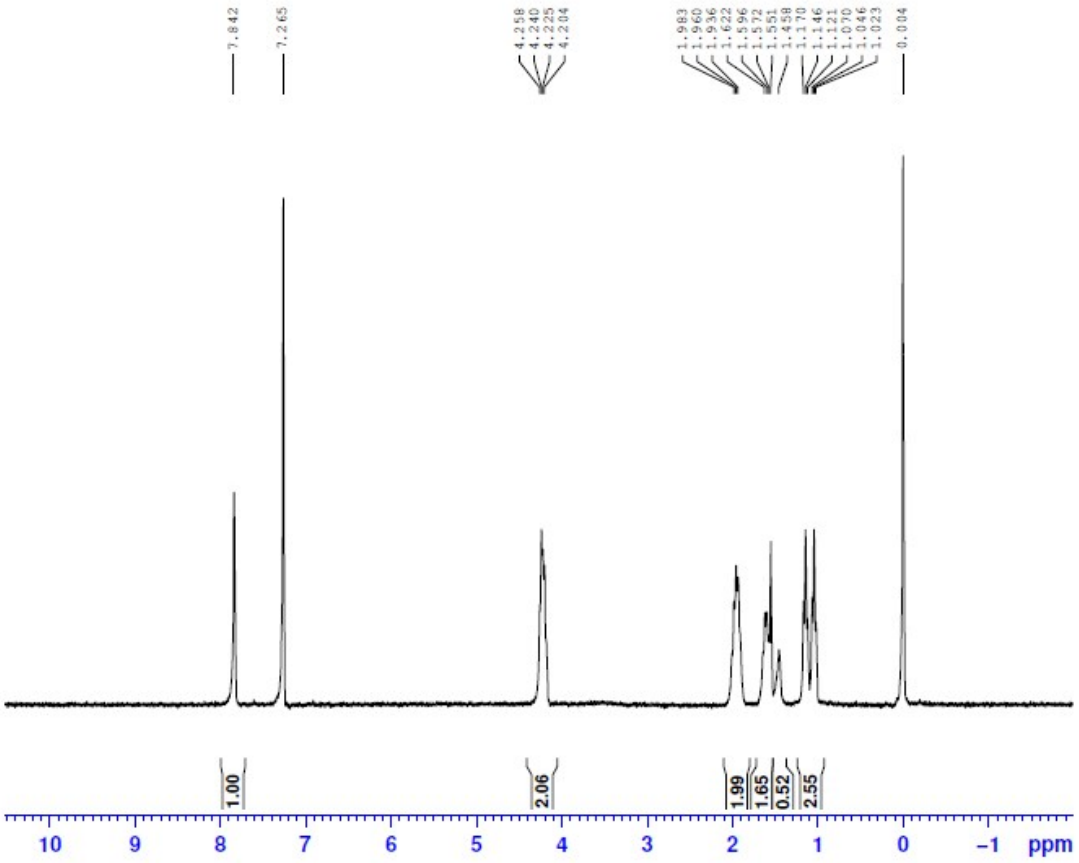


Fig.S21 ^{1}HNMR spectra of $T_{3,4}D_9$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
349	$C_{80}H_{110}O_{12}$	[M]+	1262.7992	1262.7990	0.1584

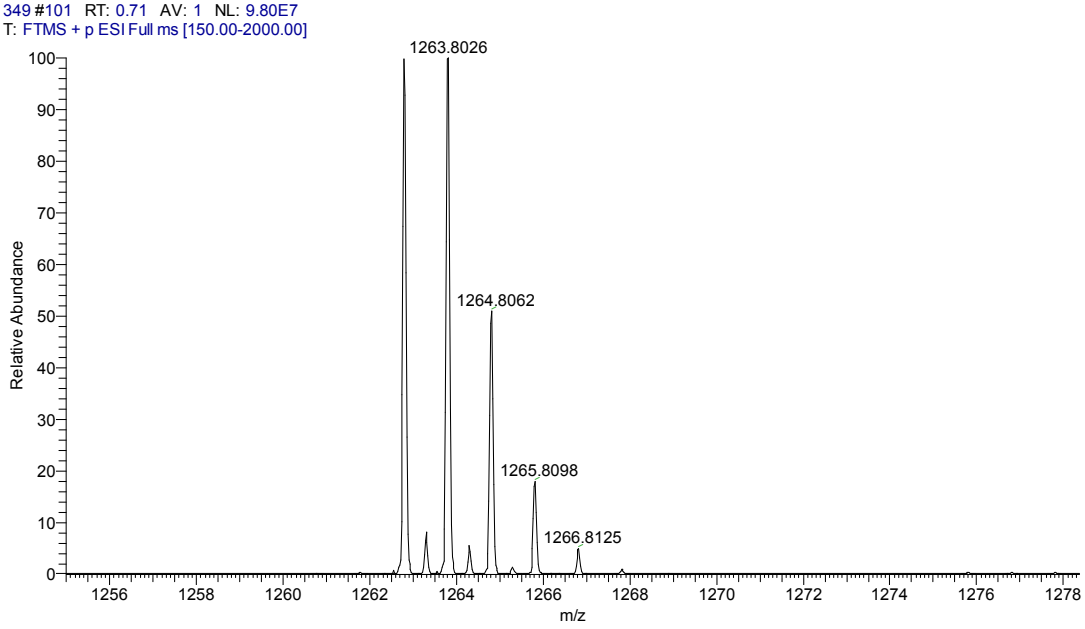


Fig.S22 HRMS spectra of $T_{3,4}D_9$

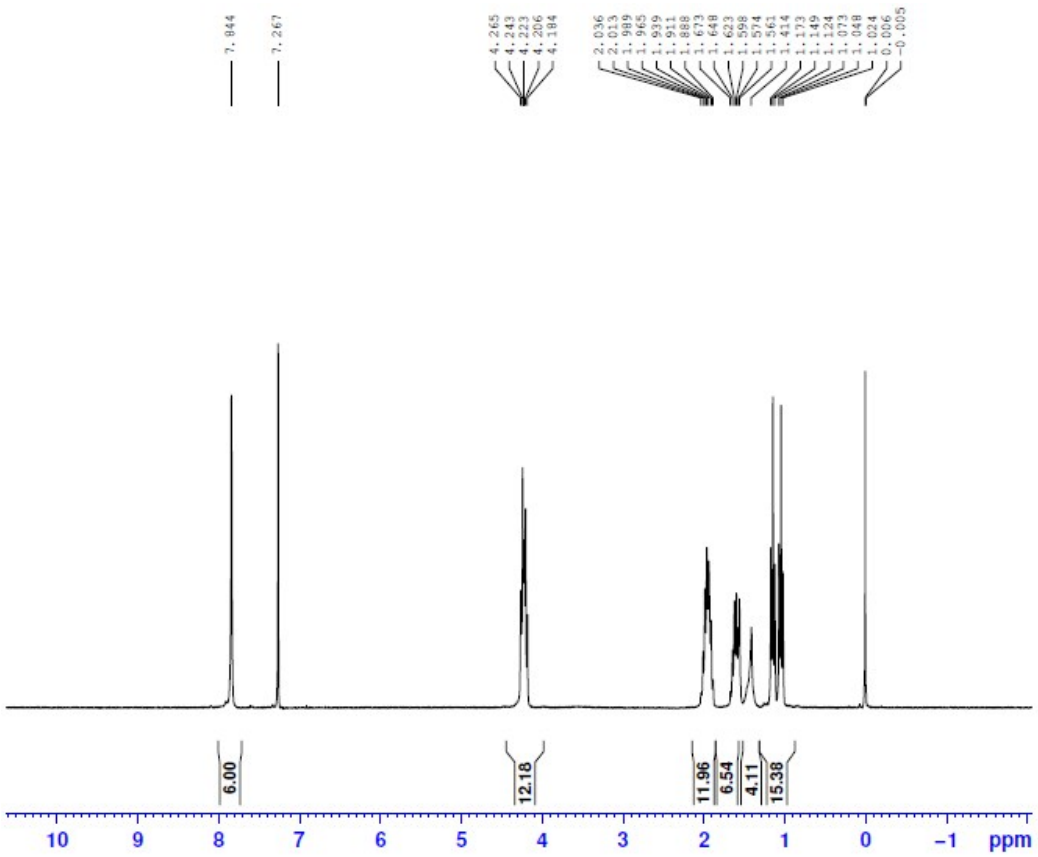


Fig.S23 ^{1}HNMR spectra of $T_{3,4}D_{10}$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
3410	$C_{81}H_{112}O_{12}$	[M]+	1276.8148	1276.8145	0.2350

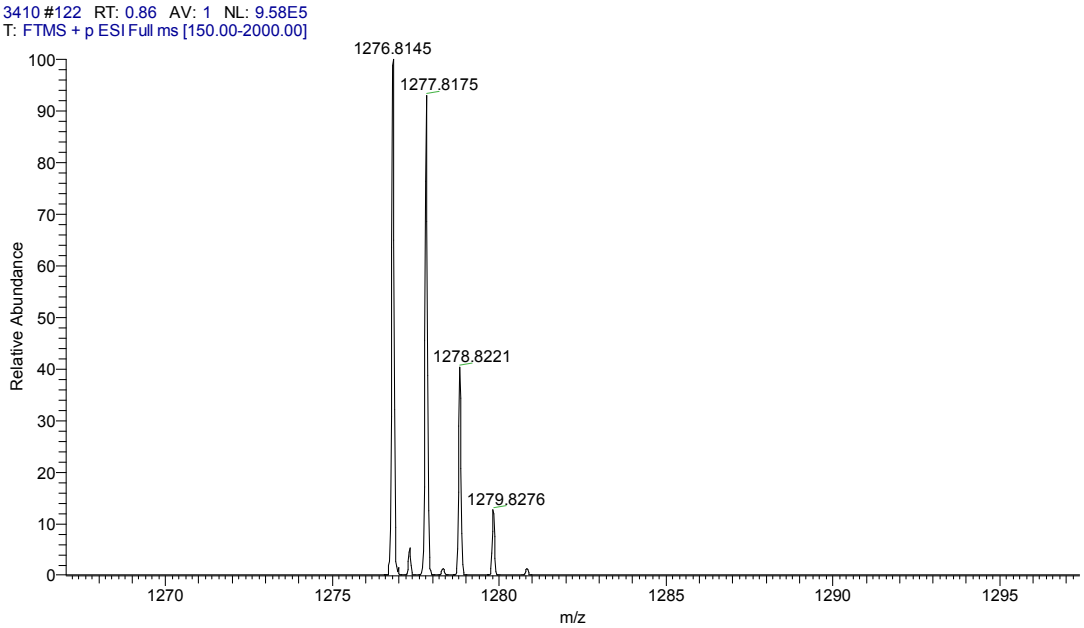


Fig.S24 HRMS spectra of $T_{3,4}D_{10}$

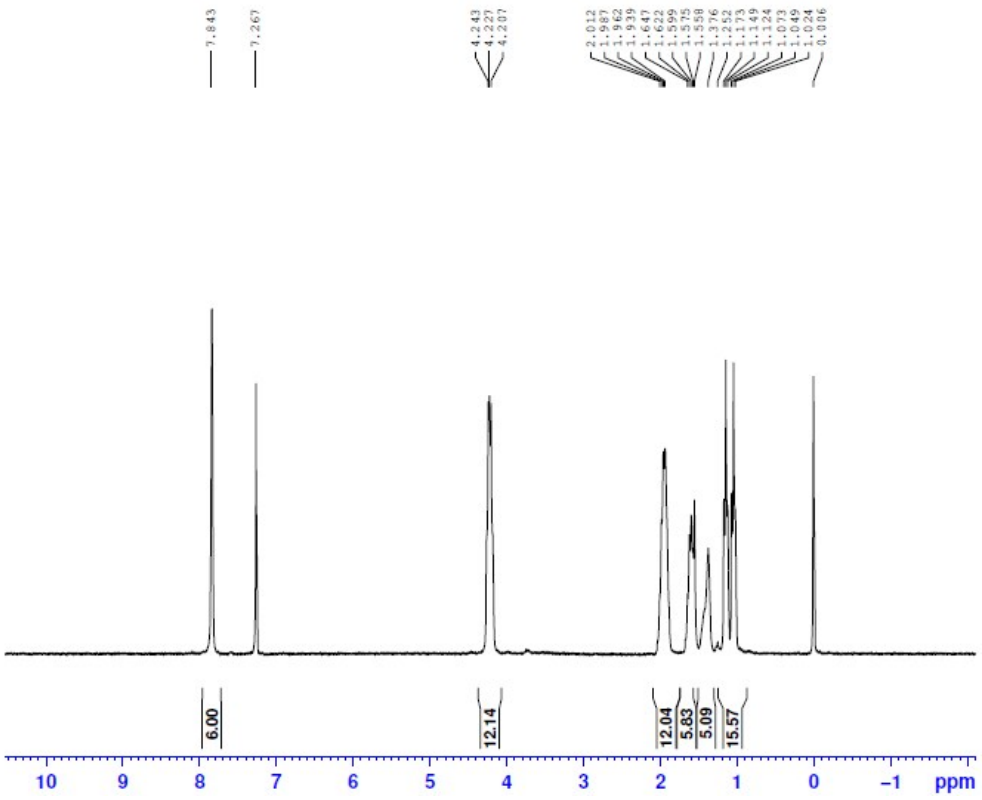


Fig.S25 ^{1}HNMR spectra of $T_{3,4}D_{11}$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
3411	$C_{82}H_{114}O_{12}$	[M]+	1290.8305	1290.8304	0.0775

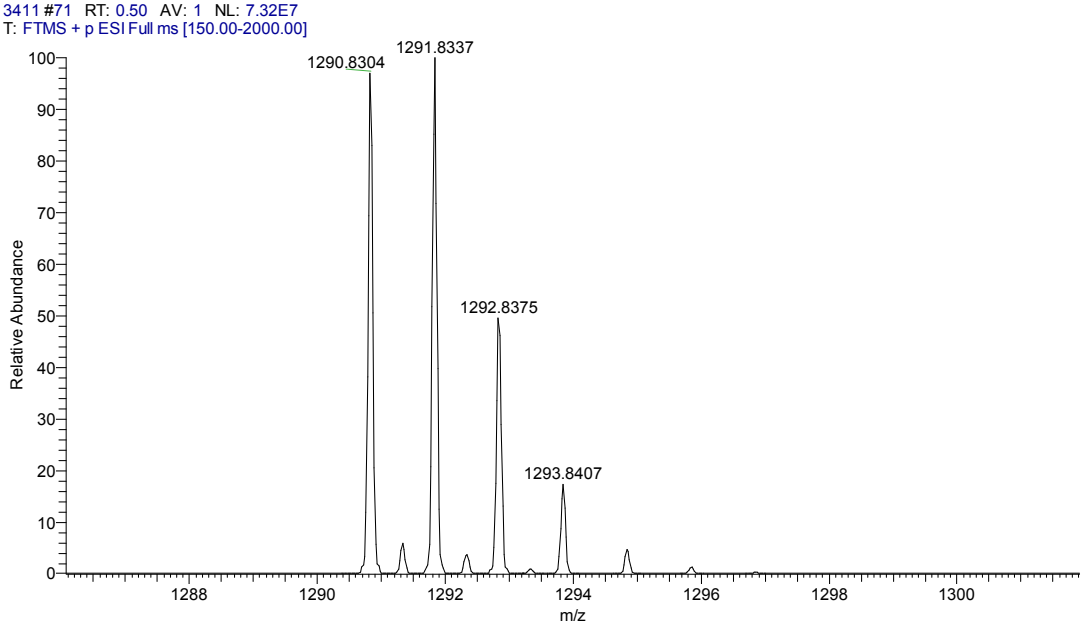


Fig.S26 HRMS spectra of $T_{3,4}D_{11}$

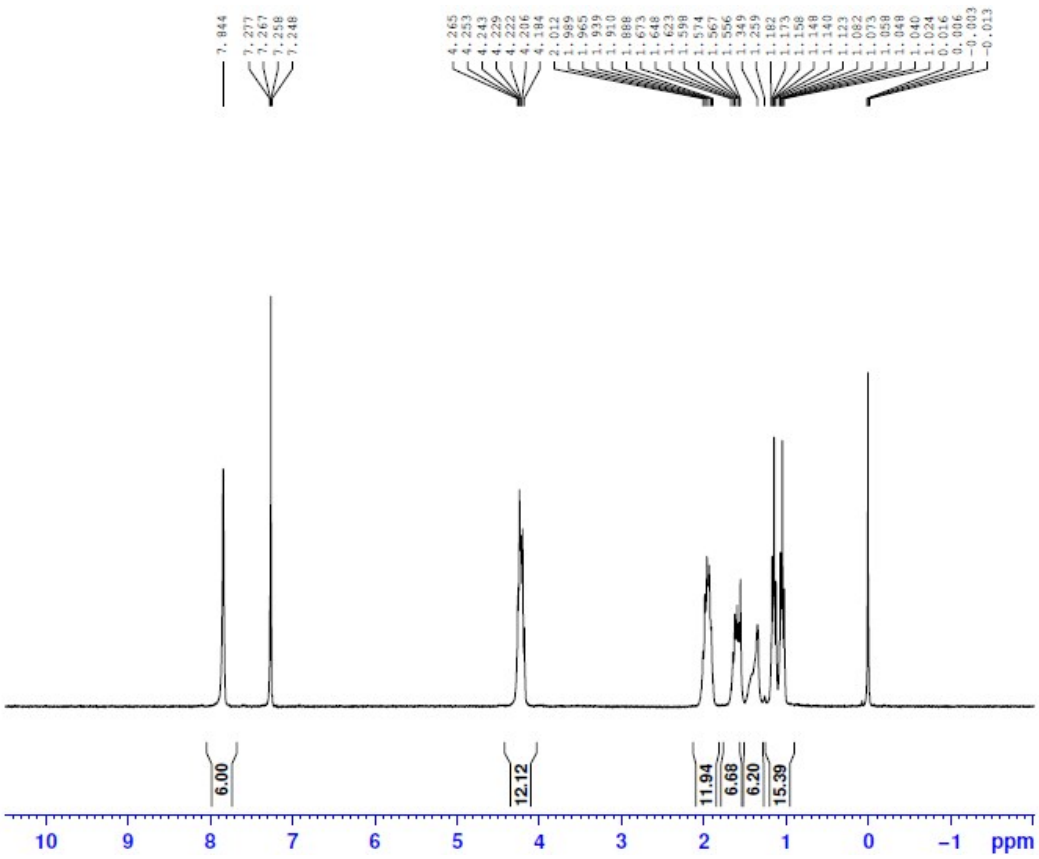


Fig.S27 ^{1}HNMR spectra of $T_{3,4}D_{12}$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
3412	$C_{83}H_{116}O_{12}$	[M]+	1304.8461	1304.8461	0.0000

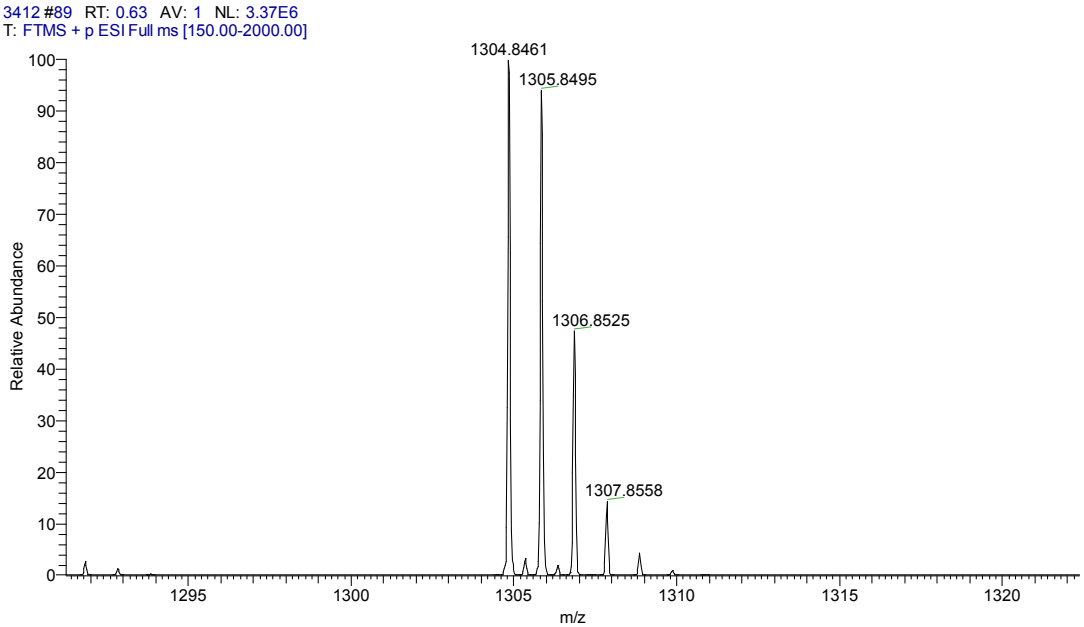


Fig.S28 HRMS spectra of $T_{3,4}D_{12}$

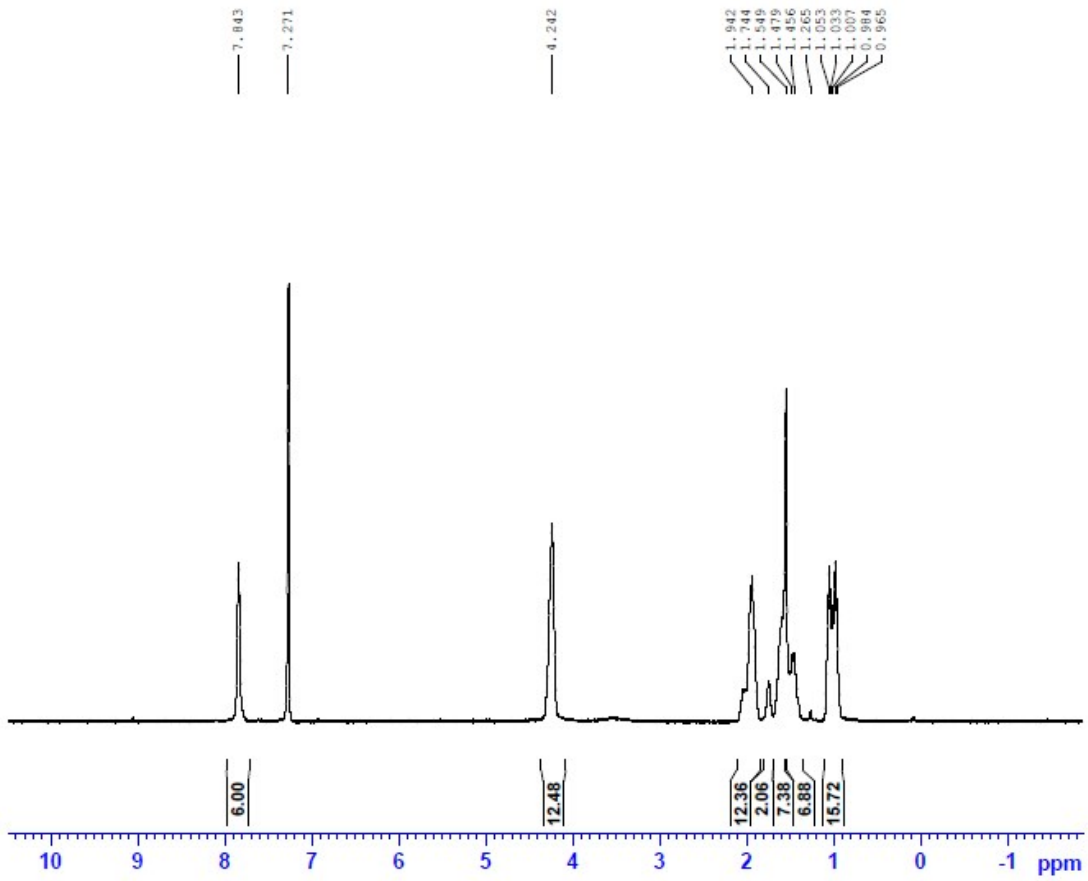


Fig.S29 ^{1}HNMR spectra of $T_{4,5}D_6$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
456	$C_{87}H_{124}O_{12}$	[M]+	1360.9087	1360.9088	-0.0735

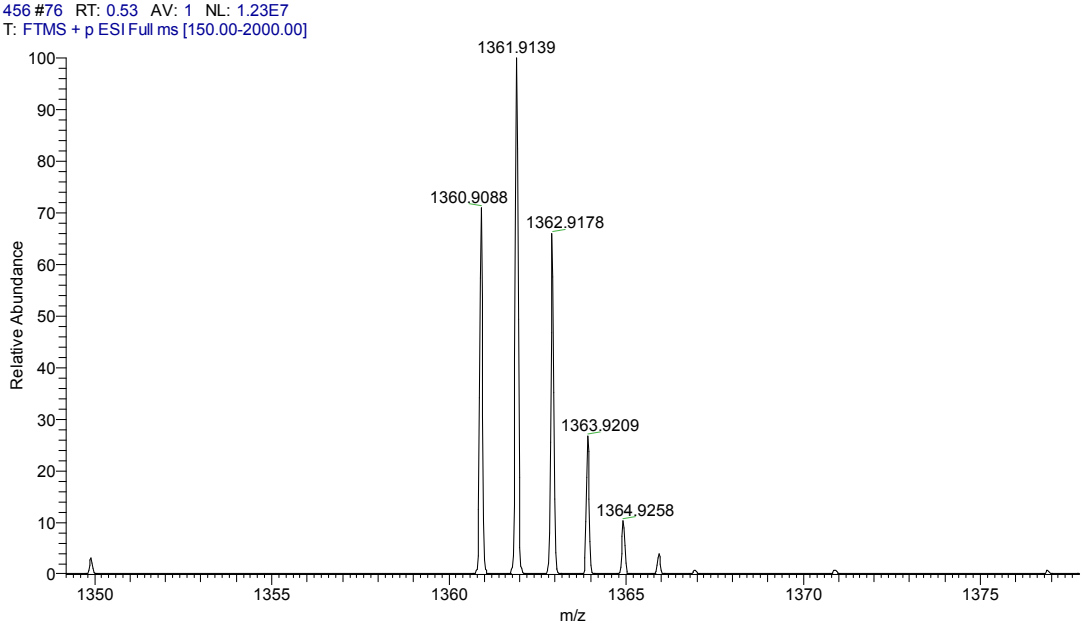


Fig.S30 HRMS spectra of $T_{4,5}D_6$

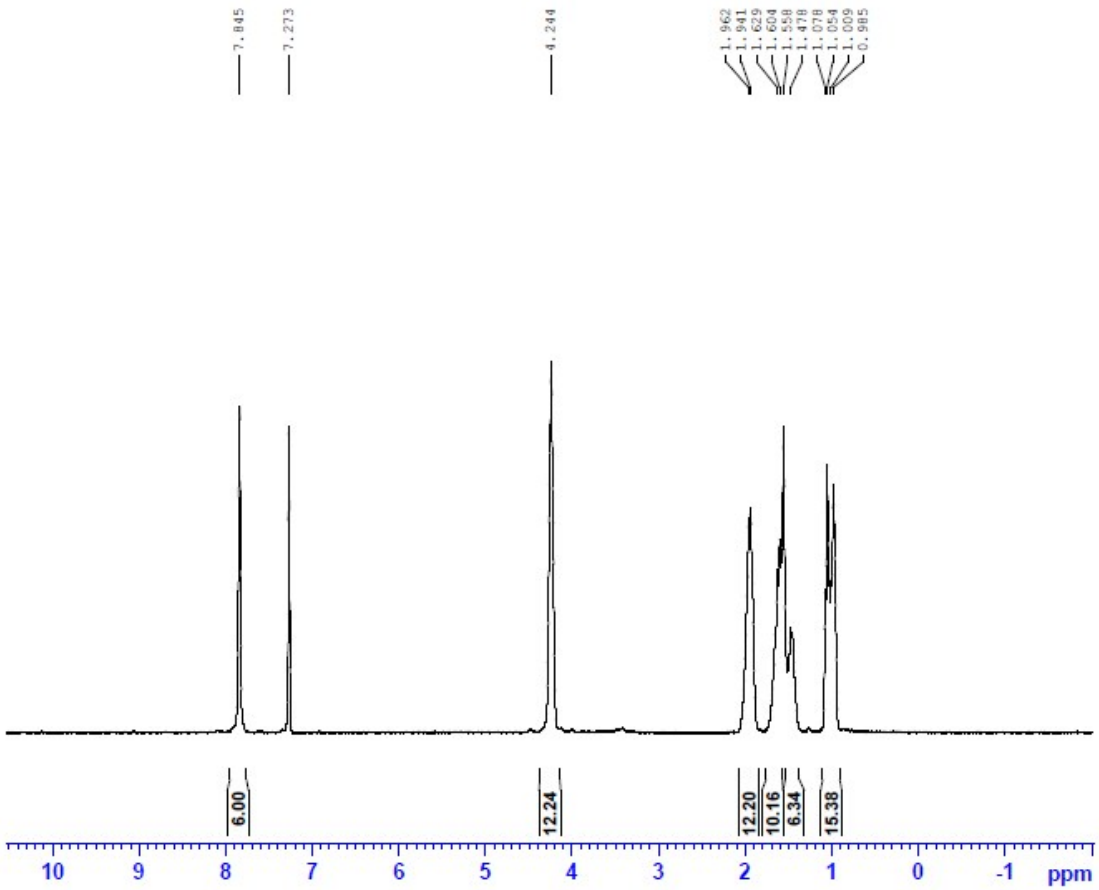


Fig.S31 ^{1}HNMR spectra of $T_{4,5}D_7$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
457	$C_{88}H_{126}O_{12}$	[M]+	1374.9244	1374.9247	-0.2182

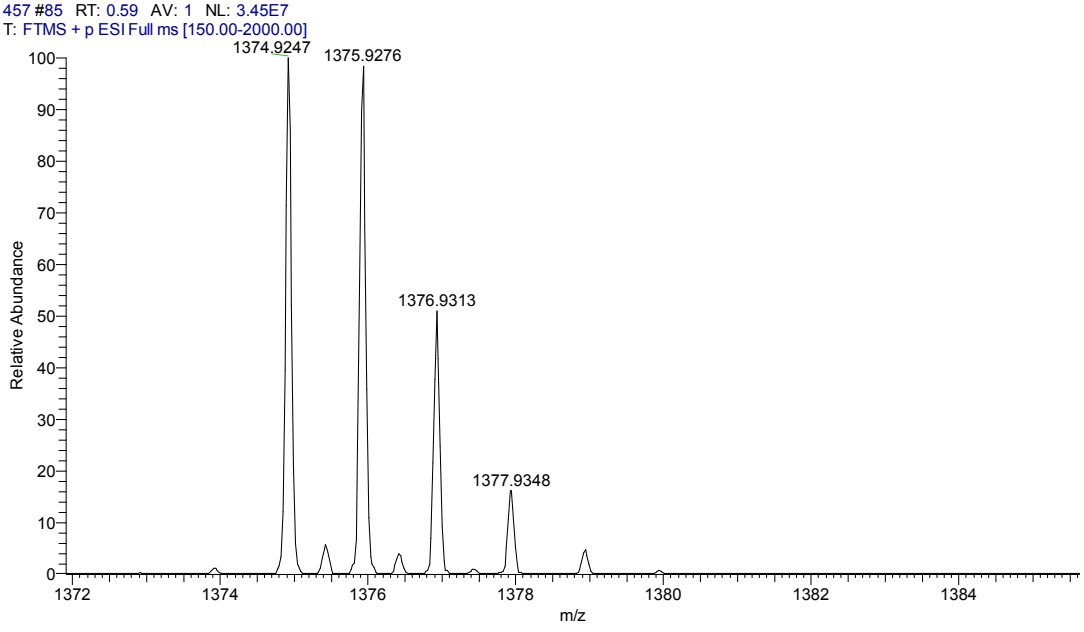


Fig.S32 HRMS spectra of $T_{4,5}D_7$

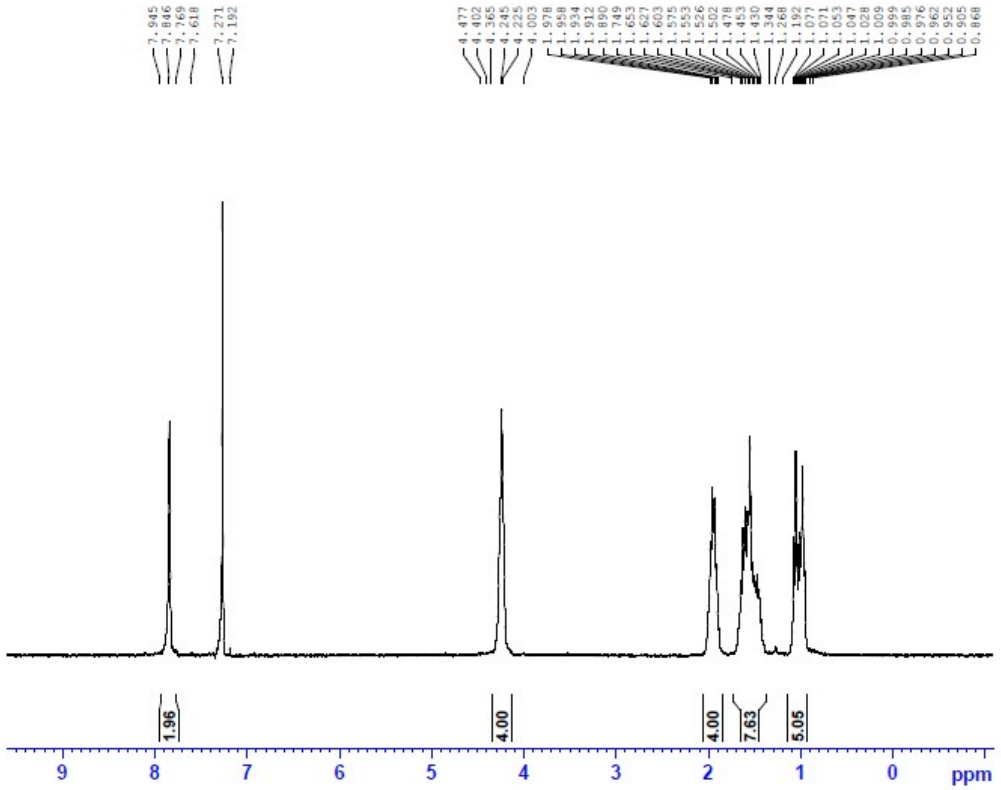


Fig.S33 ^{1}HNMR spectra of $T_{4,5}D_8$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
458	$C_{89}H_{128}O_{12}$	[M]+	1388.9400	1388.9403	-0.2160

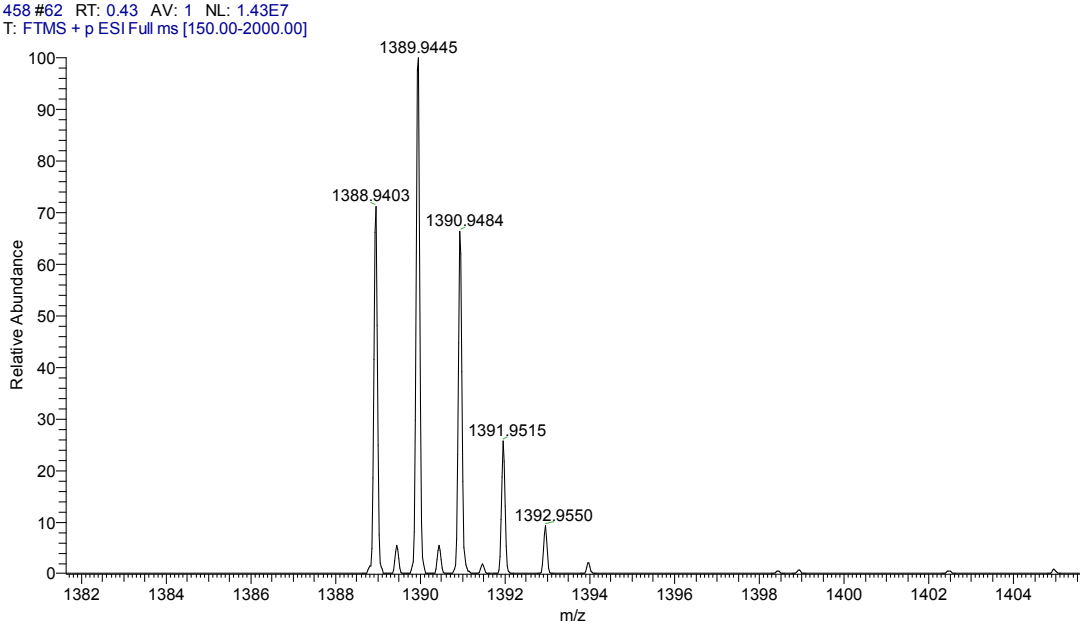


Fig.S34 HRMS spectra of $T_{4,5}D_8$

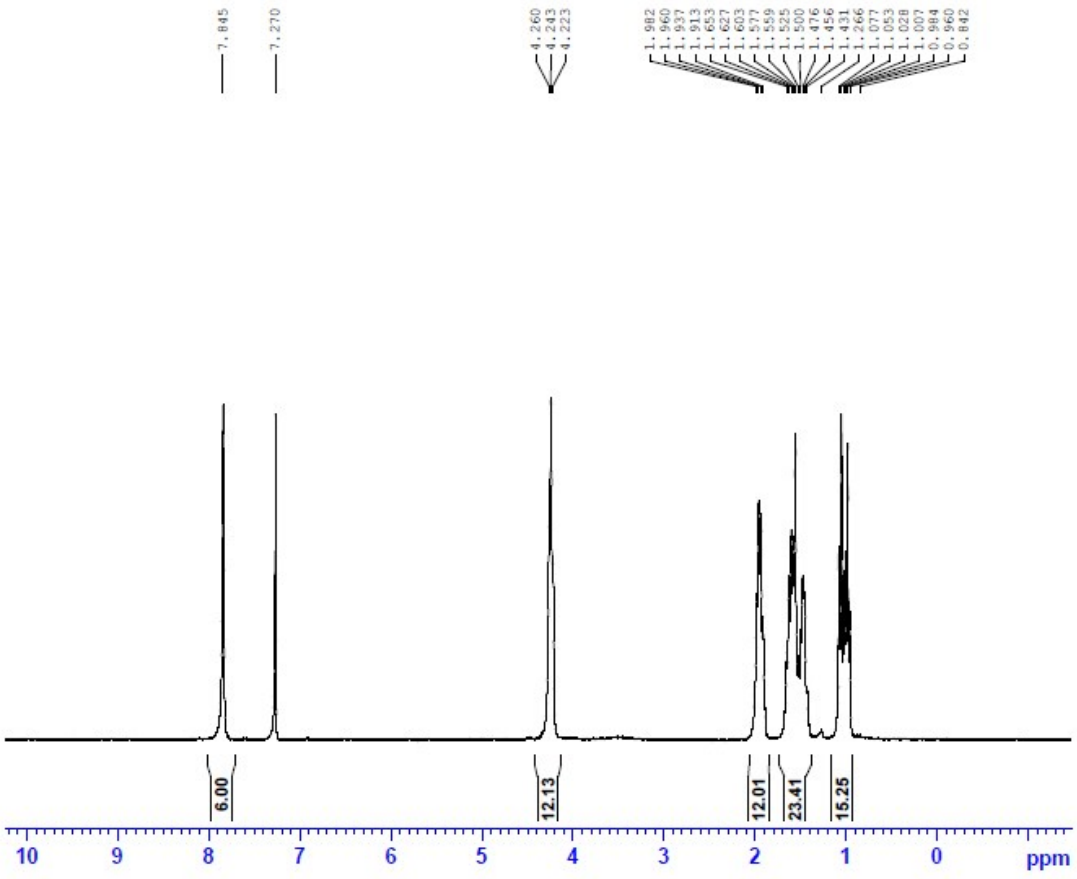


Fig.S35 ^{1}HNMR spectra of $T_{4,5}D_9$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
459	$C_{90}H_{130}O_{12}$	[M]+	1402.9557	1402.9562	-0.3564

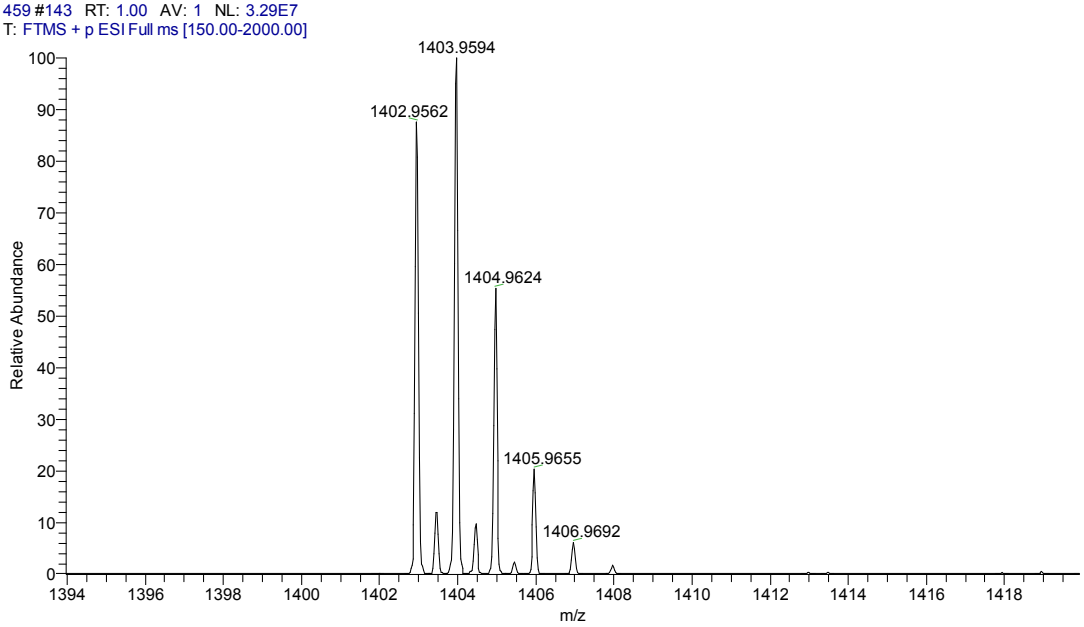


Fig.S36 HRMS spectra of $T_{4,5}D_9$

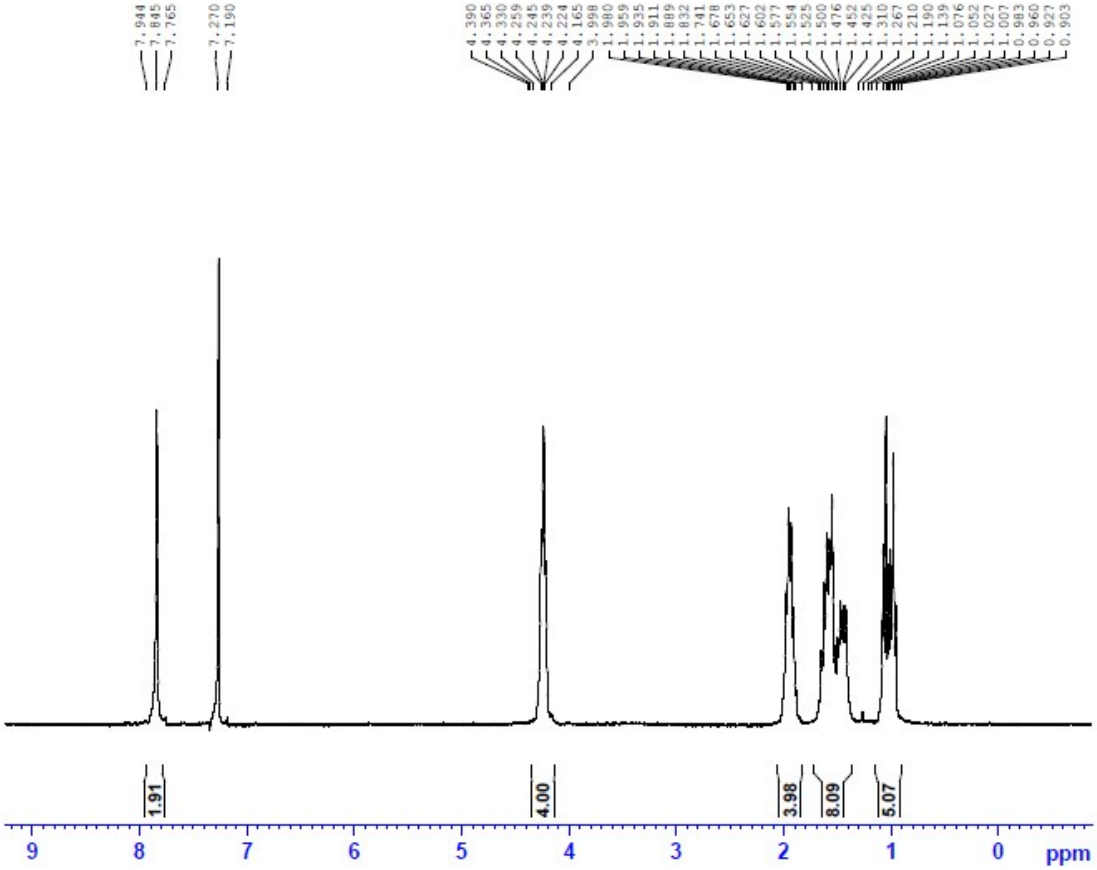


Fig.S37 ^{1}HNMR spectra of $T_{4,5}D_{10}$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
4510	$C_{91}H_{132}O_{12}$	[M]+	1416.9713	1416.9713	0.0000

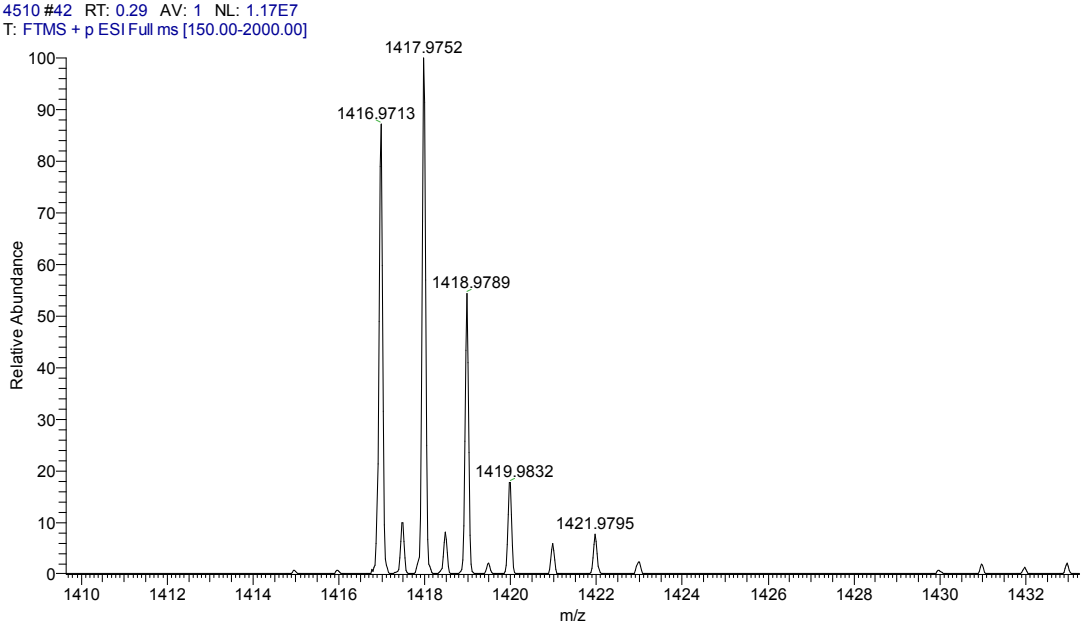


Fig.S38 HRMS spectra of $T_{4,5}D_{10}$

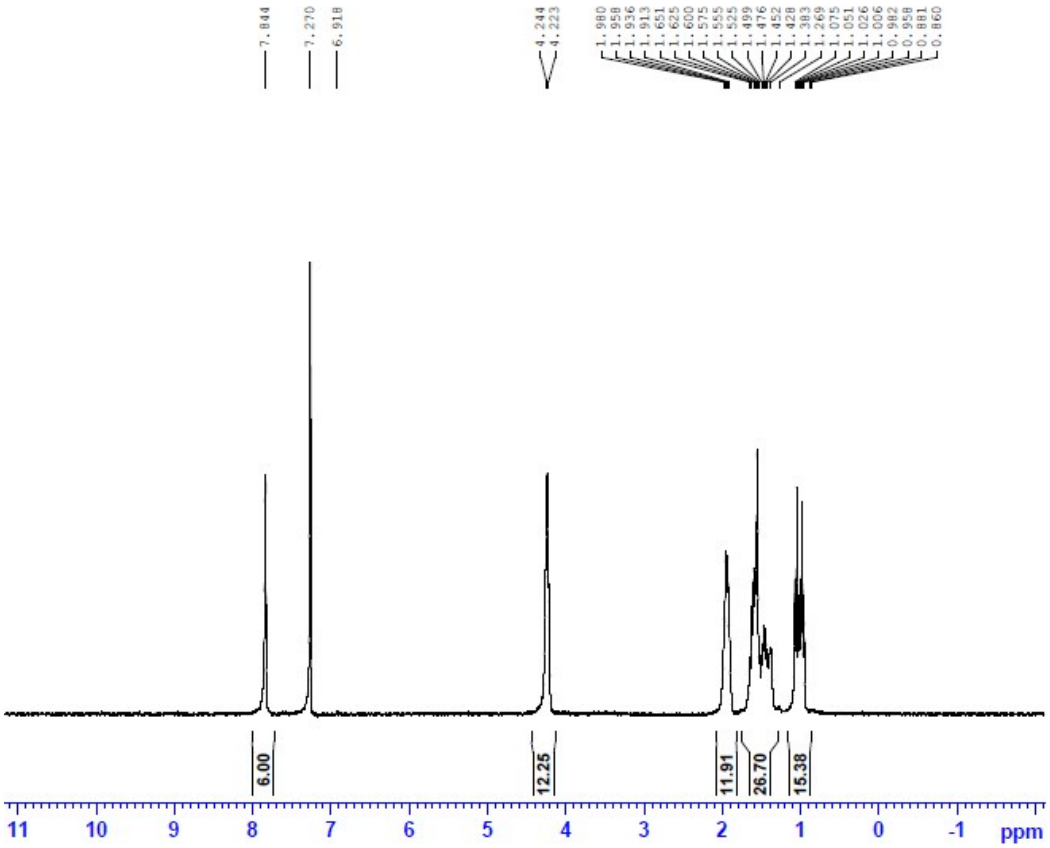


Fig. S39 ^{1}HNMR spectra of $T_{4,5}D_{11}$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
4511	$C_{92}H_{134}O_{12}$	[M]+	1430.9870	1430.9877	-0.4892

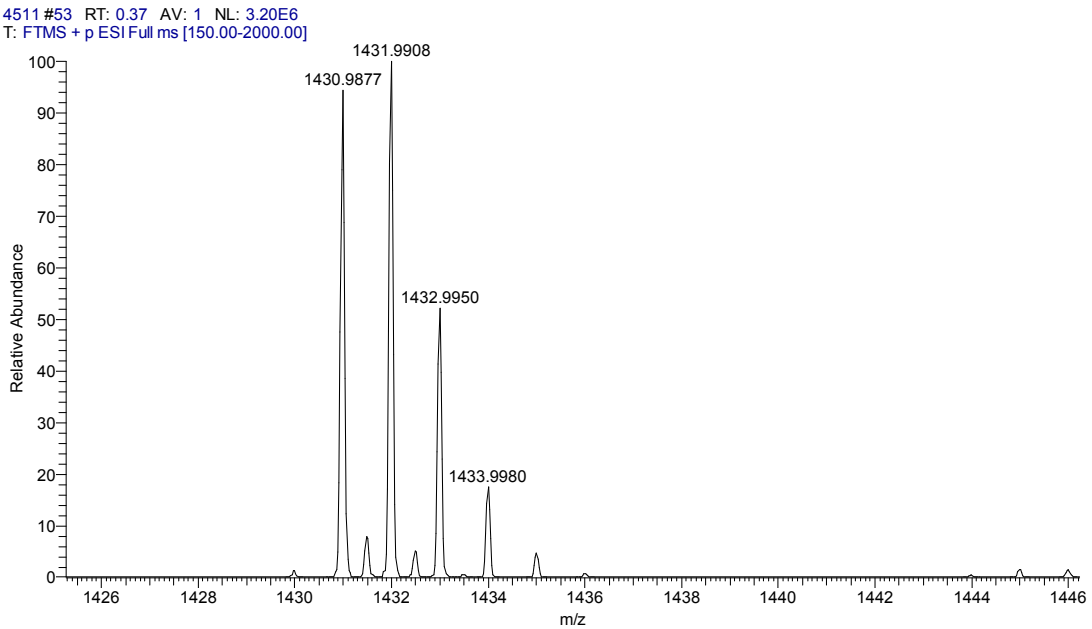


Fig.S40 HRMS spectra of $T_{4,5}D_{11}$

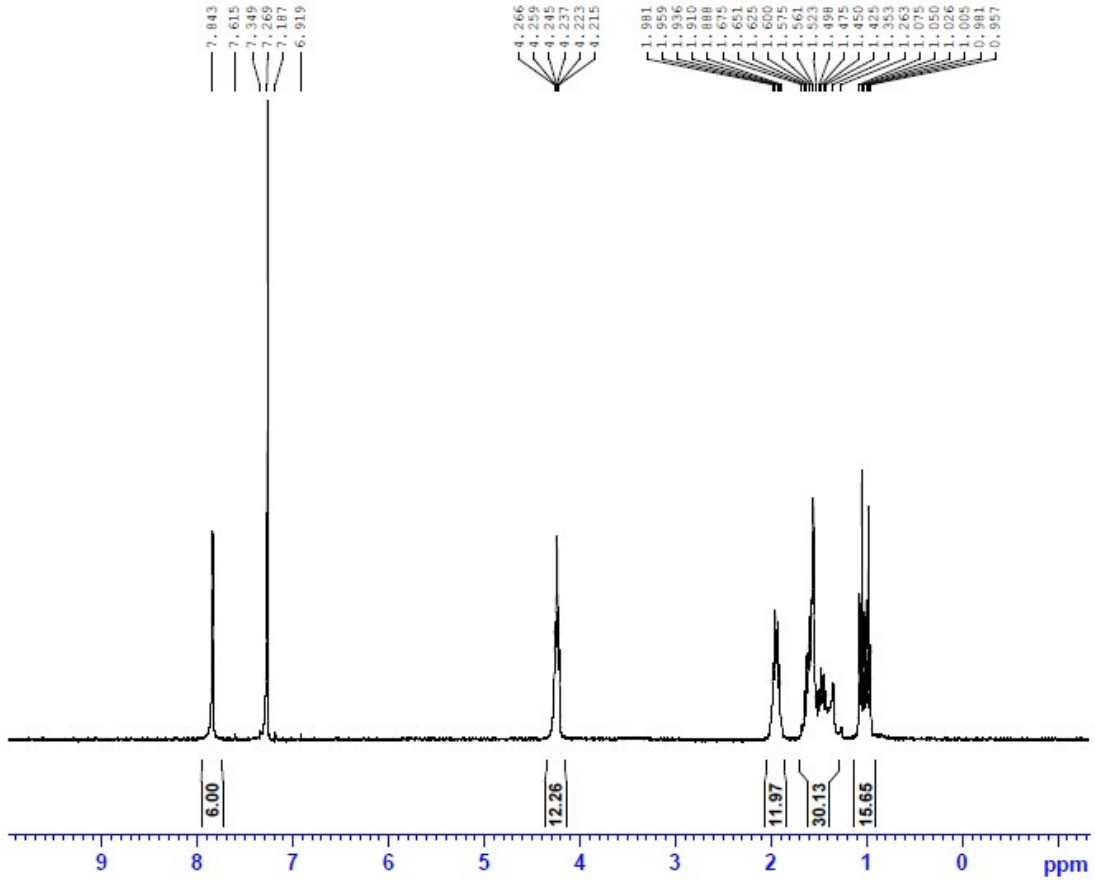


Fig.S41 ^{1}HNMR spectra of $T_{4,5}D_{12}$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
4512	$C_{93}H_{136}O_{12}$	[M]+	1445.0027	1445.0021	0.4152

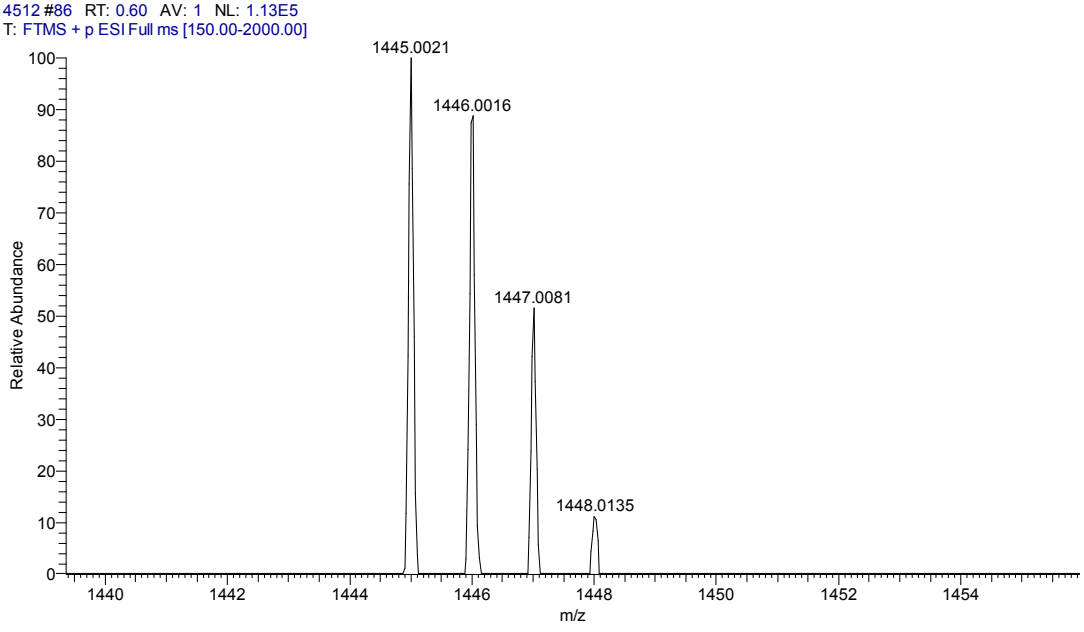


Fig.S42 HRMS spectra of $T_{4,5}D_{12}$

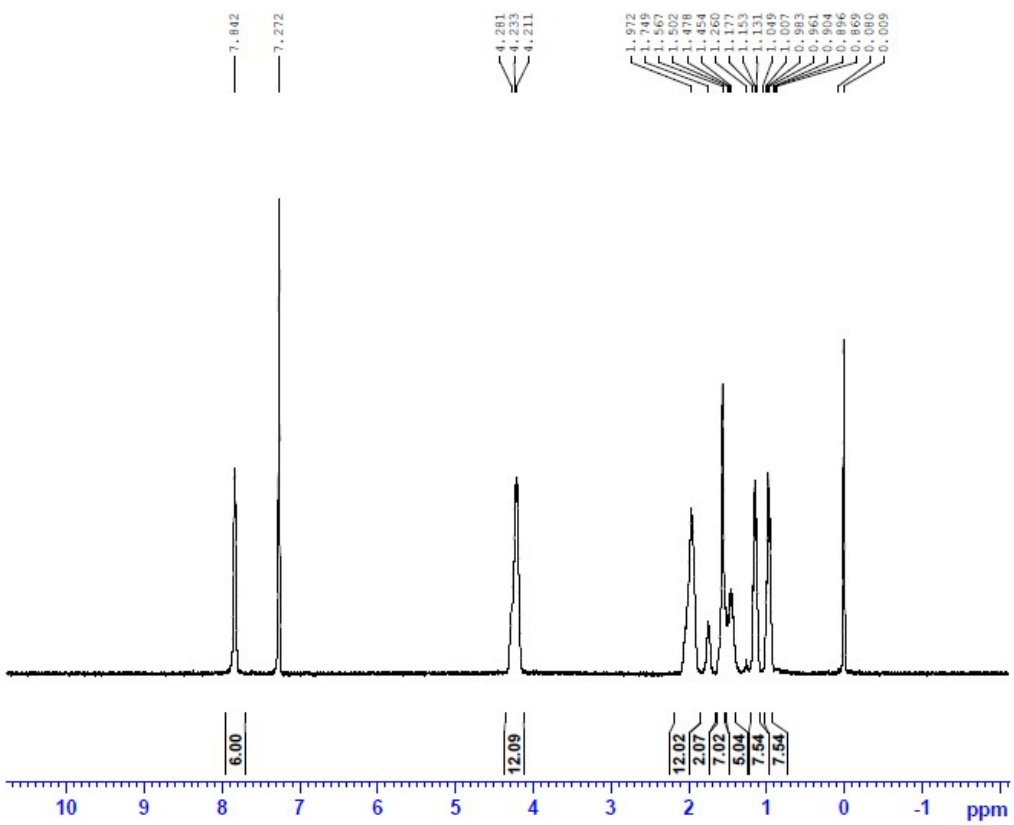


Fig.S43 ^{1}HNMR spectra of $T_{3,5}D_6$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
356	$C_{82}H_{114}O_{12}$	[M]+	1290.8305	1290.8307	-0.1549

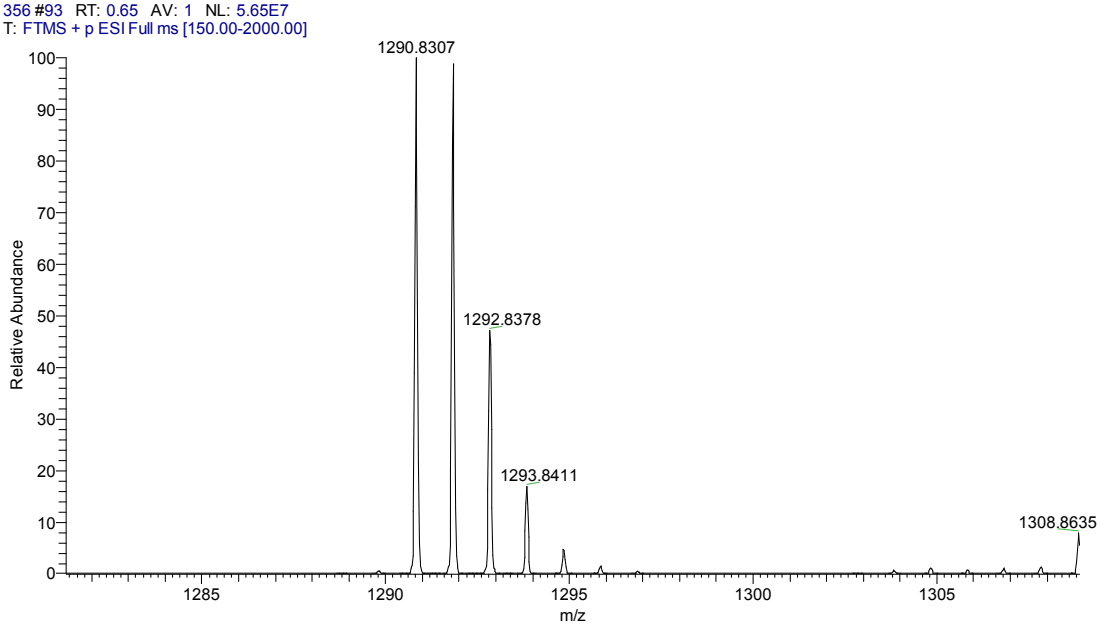


Fig.S44 HRMS spectra of $T_{3,5}D_6$

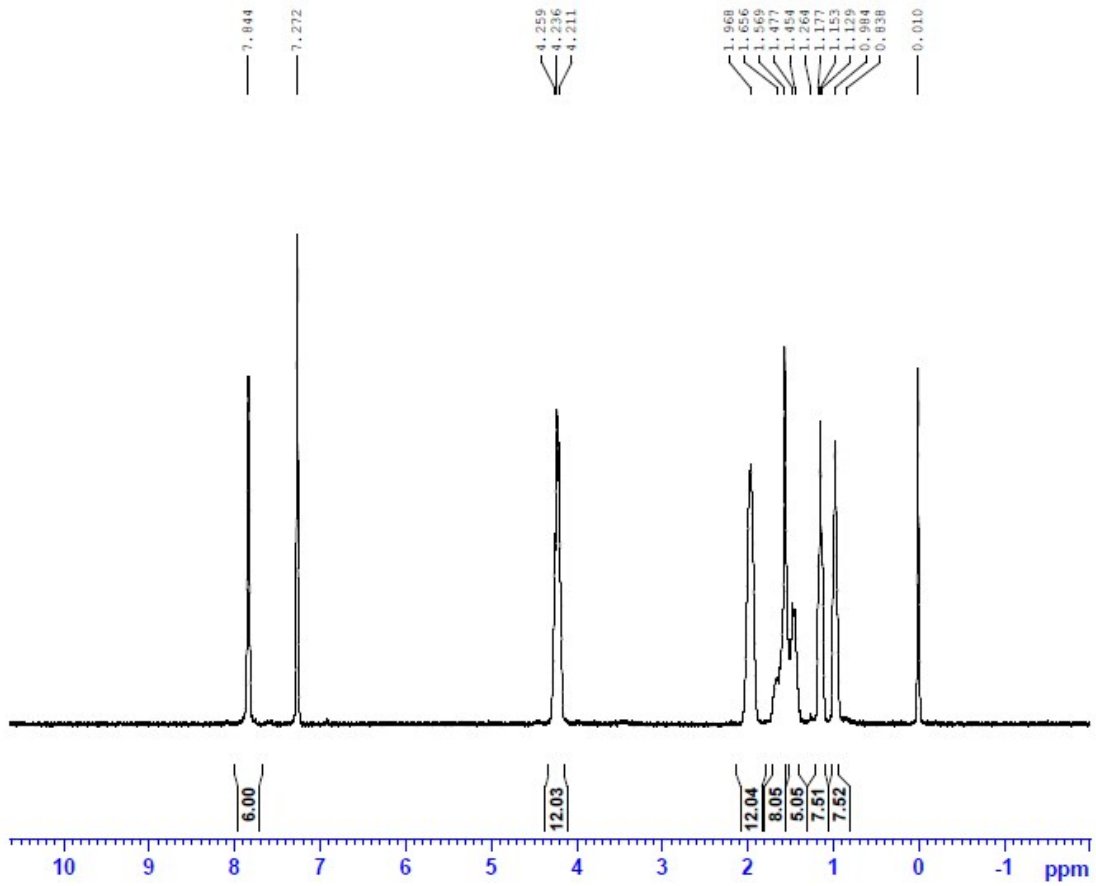


Fig.S45 ^{1}HNMR spectra of $T_{3,5}D_7$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
357	$C_{83}H_{116}O_{12}$	[M]+	1304.8461	1304.8462	-0.0766

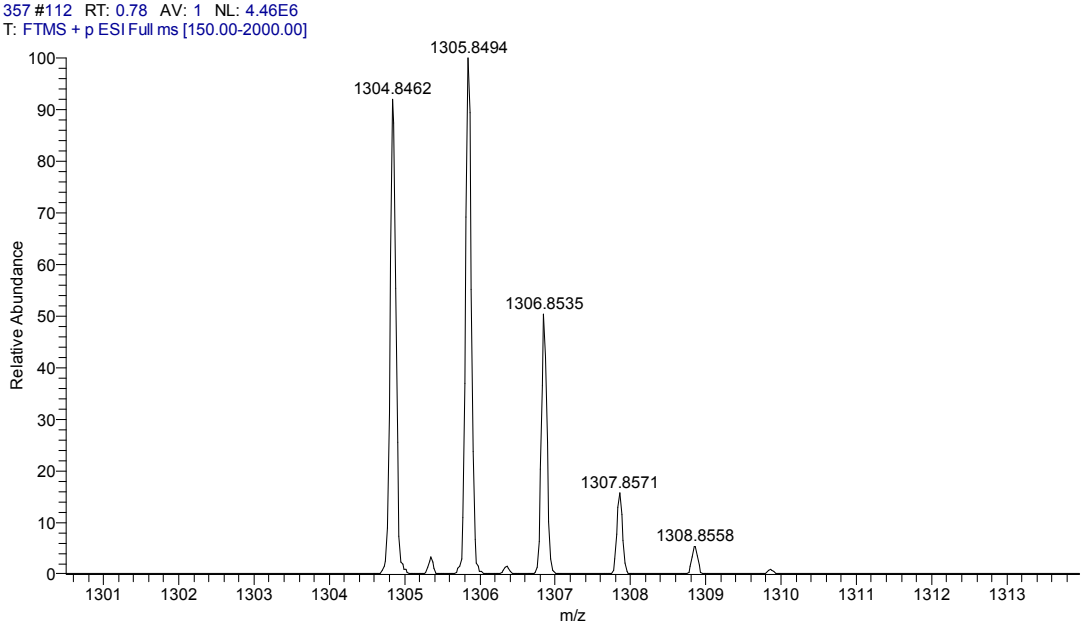


Fig.S46 HRMS spectra of $T_{3,5}D_7$

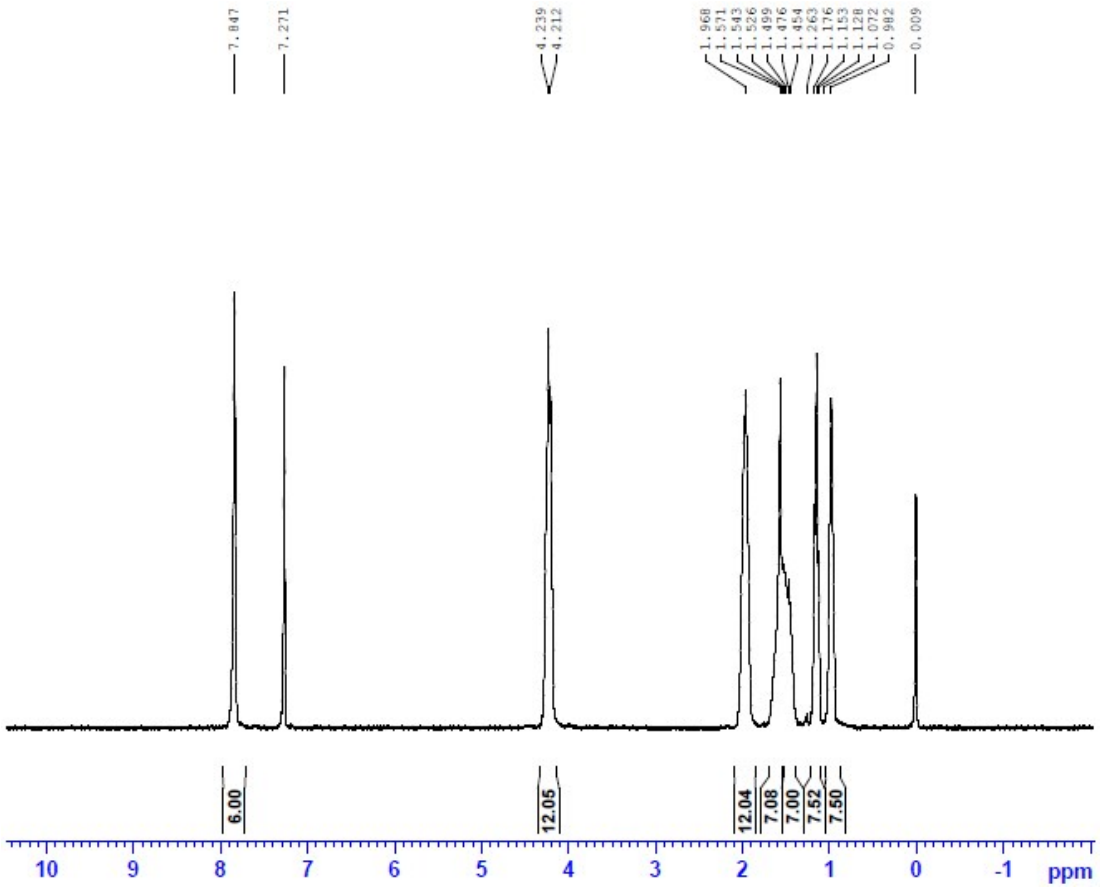


Fig.S47 ^{1}HNMR spectra of $T_{3,5}D_8$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
358	$C_{84}H_{118}O_{12}$	[M]+	1318.8618	1318.8608	0.7582

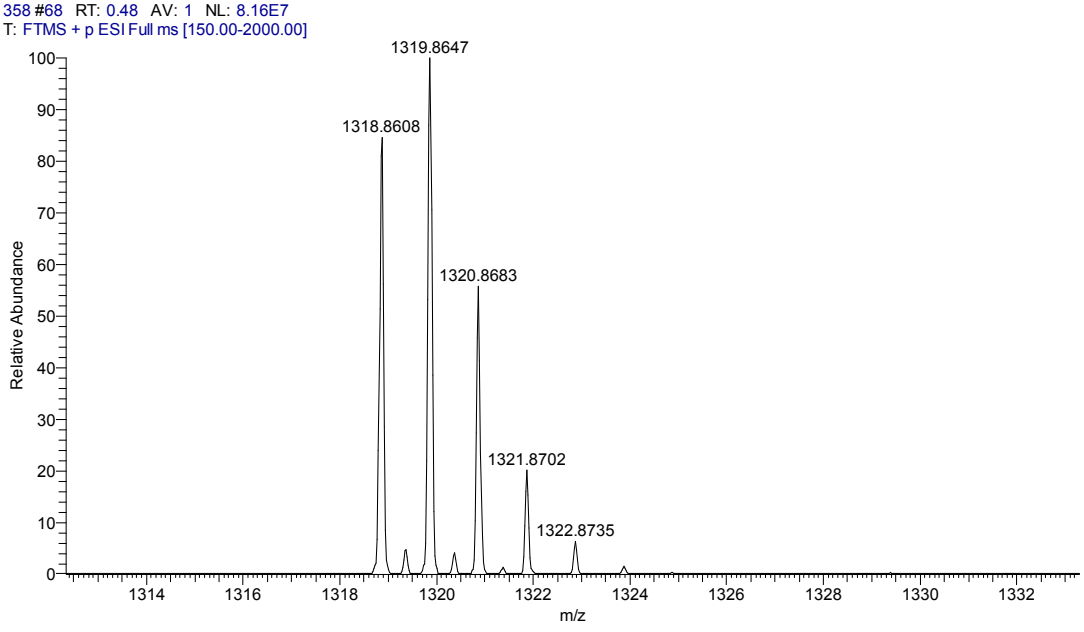


Fig.S48 HRMS spectra of $T_{3,5}D_8$

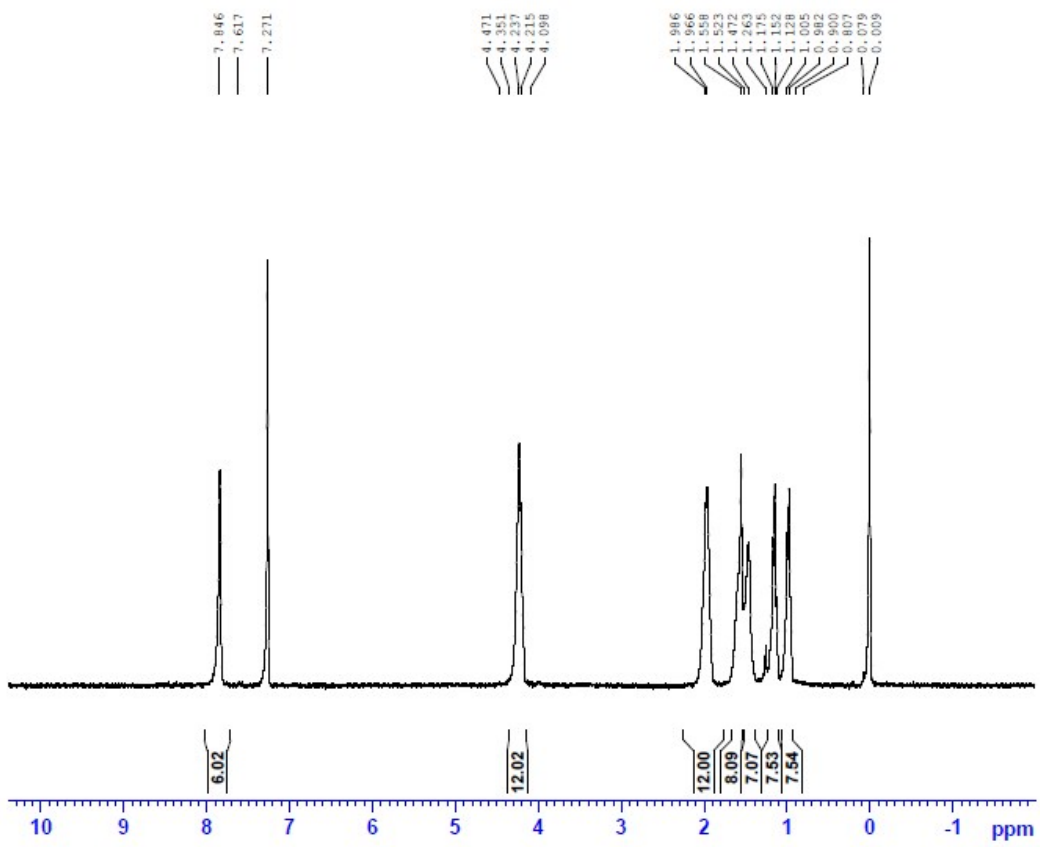


Fig.S49 ^{1}HNMR spectra of $T_{3,5}D_9$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
359	$C_{85}H_{120}O_{12}$	[M]+	1332.8774	1332.8750	1.8006

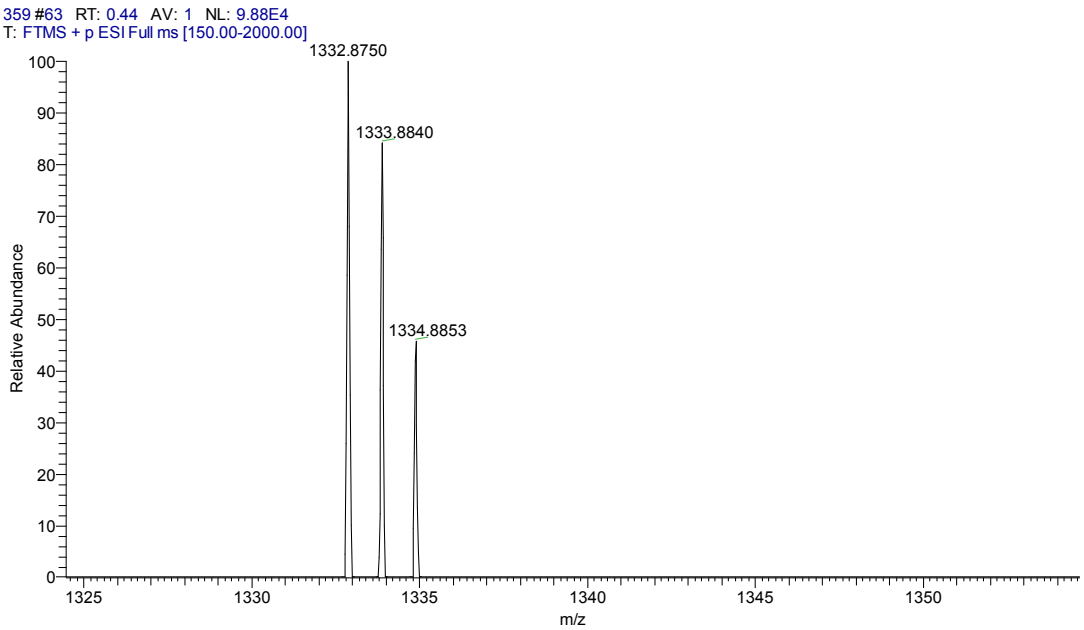


Fig.S50 HRMS spectra of $T_{3,5}D_9$

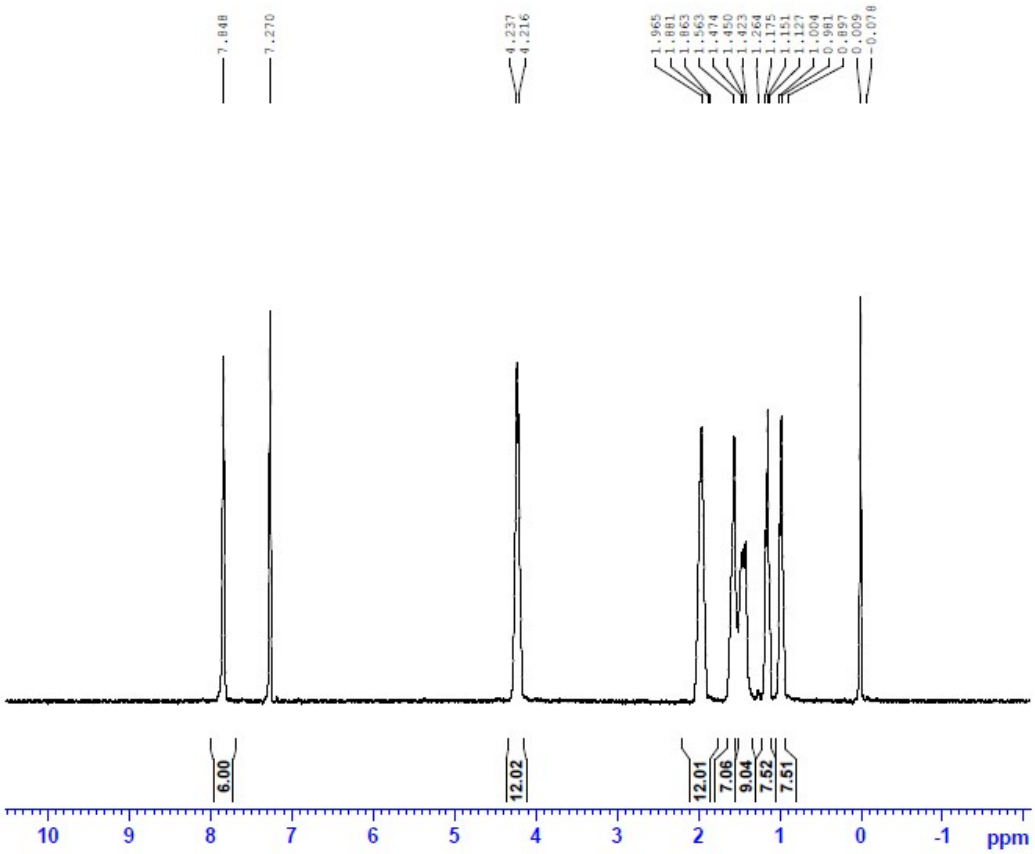


Fig.S51 ^{1}HNMR spectra of $T_{3,5}D_{10}$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
3510	$C_{86}H_{122}O_{12}$	[M]+	1346.8931	1346.8938	-0.5197

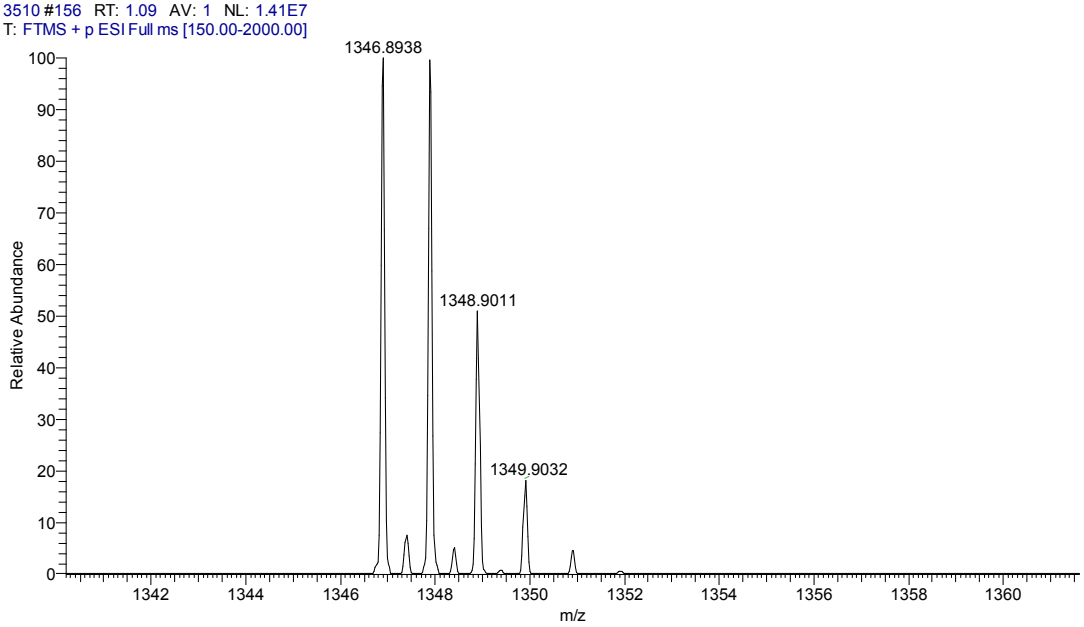


Fig.S52 HRMS spectra of $T_{3,5}D_{10}$

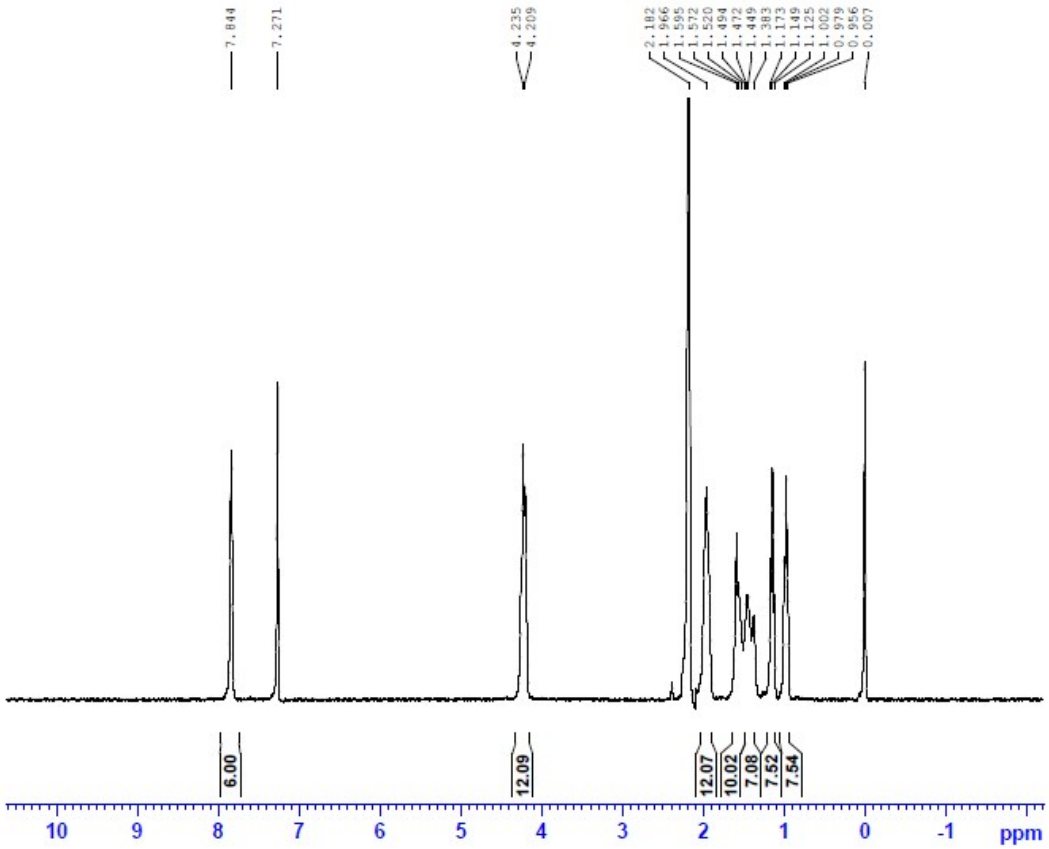


Fig.S53 ^{1}HNMR spectra of $T_{3,5}D_{11}$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
3511	$C_{87}H_{124}O_{12}$	[M]+	1360.9087	1360.9083	0.2939

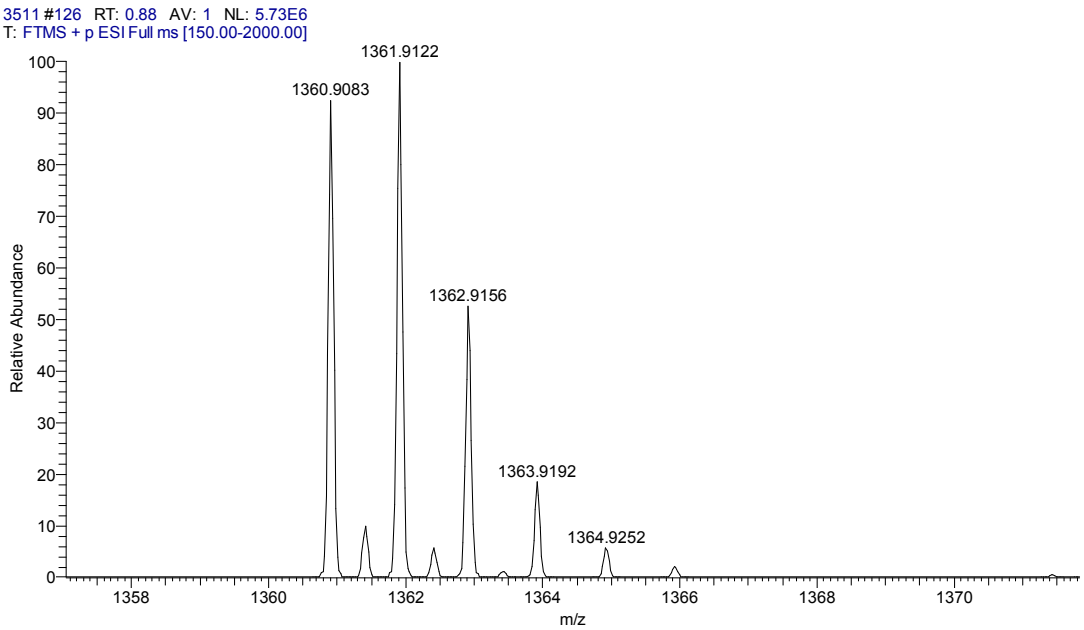


Fig.S54 HRMS spectra of $T_{3,5}D_{11}$

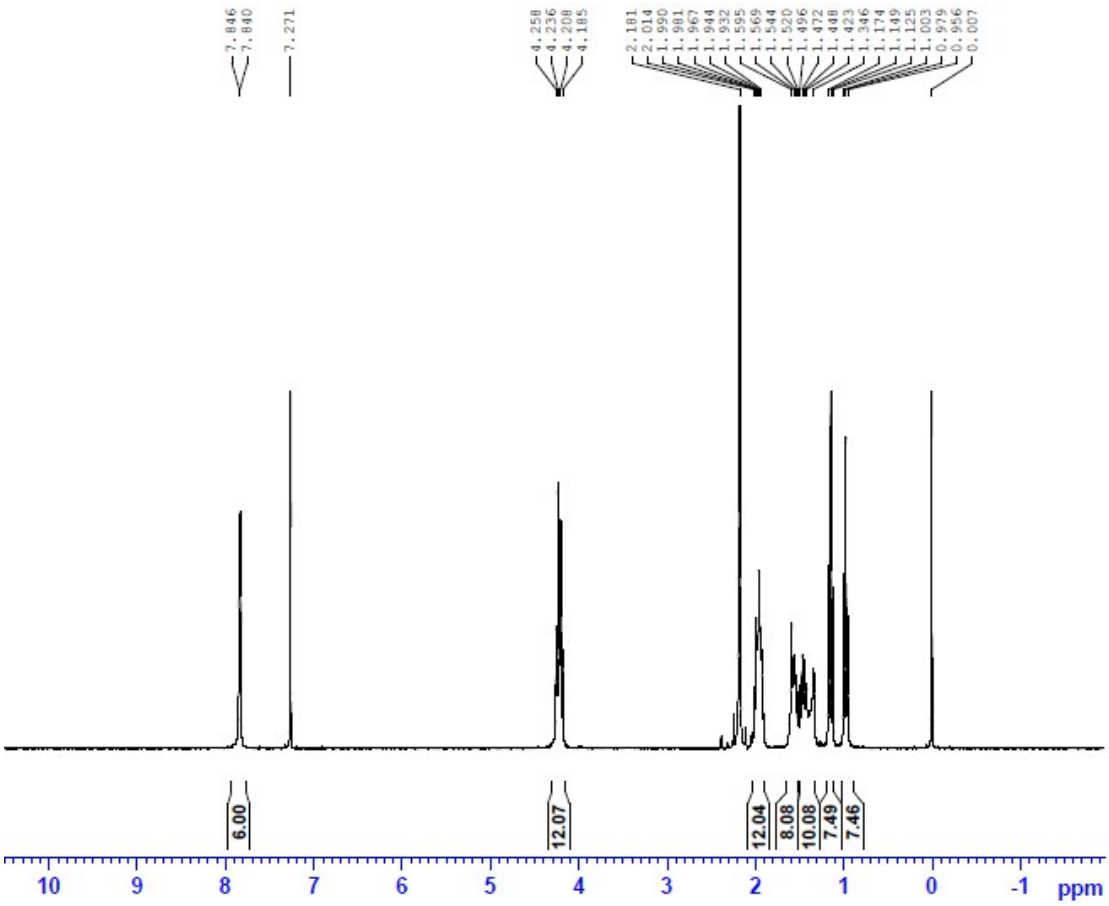


Fig.S55 ^{1}HNMR spectra of $T_{3,5}D_{12}$

Sample No.	Formula (M)	Ion Formula	Measured m/z	Calc m/z	Diff (ppm)
3512	$C_{88}H_{126}O_{12}$	[M]+	1374.9244	1374.9247	-0.2182

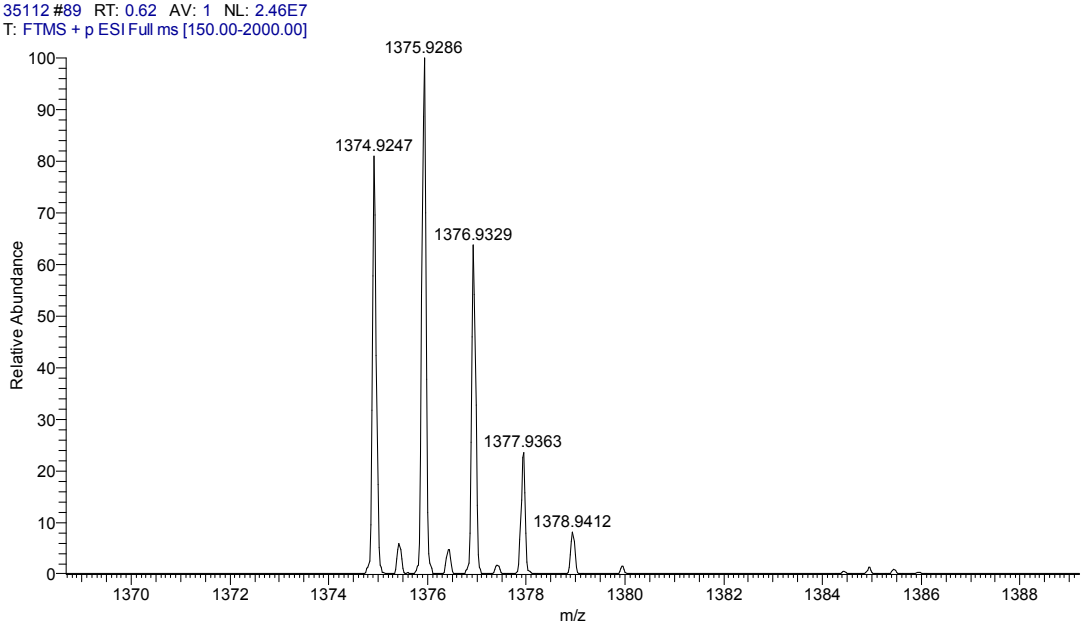


Fig.S56 HRMS spectra of $T_{3,5}D_{12}$

Mesomorphism

1. POM and DSC

Mesomorphism of $T_{3,4}D_6$

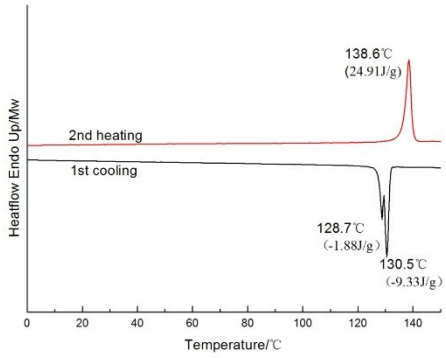


Fig.S57 DSC trace of compound $T_{3,4}D_6$ run at 10°Cmin^{-1} under N^2.

Mesomorphism of $T_{3,4}D_7$

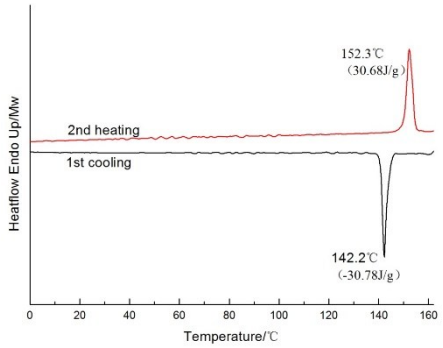


Fig.S58 DSC trace of compound $T_{3,4}D_7$ run at 10°Cmin^{-1} under N^2.

Mesomorphism of $T_{3,4}D_8$

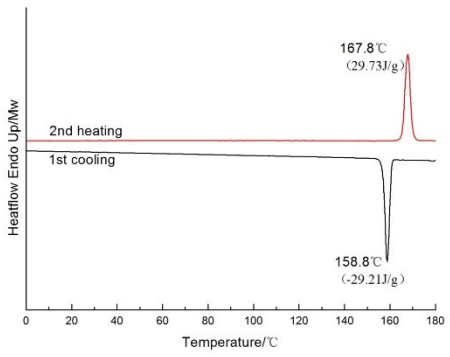


Fig.S59 Mosaic texture observed by POM with of compound $T_{3,4}D_8$ sandwiched between clean glass slides on cooling from isotropic phase at 30°C(left); DSC trace of compound $T_{3,4}D_8$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{3,4}D_9$

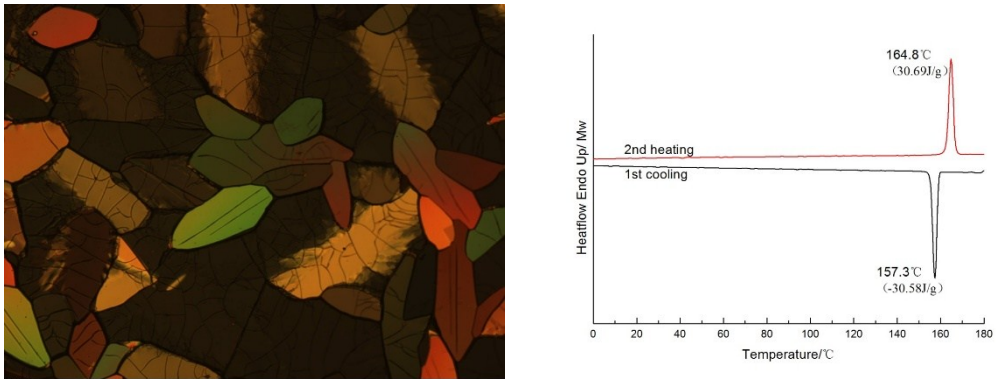


Fig.S60 Mosaic texture observed by POM with of compound $T_{3,4}D_9$ sandwiched between clean glass slides on cooling from isotropic phase at 30°C(left); DSC trace of compound $T_{3,4}D_9$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{3,4}D_{10}$

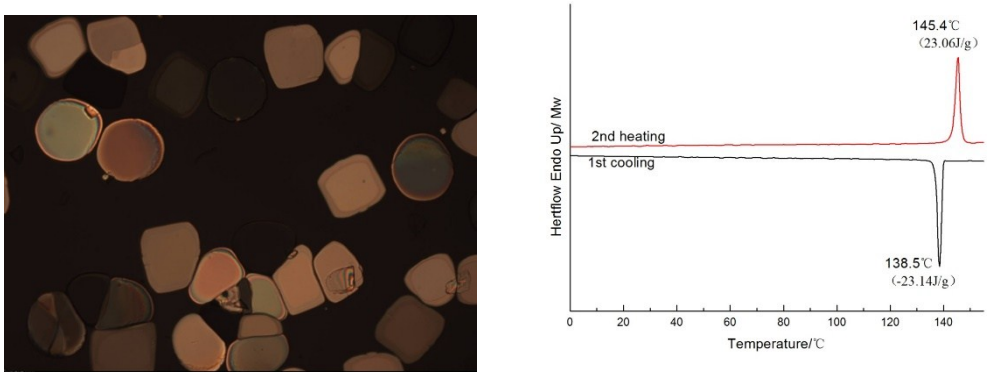


Fig.S61 Mosaic texture observed by POM with of compound $T_{3,4}D_{10}$ sandwiched between clean glass slides on cooling from isotropic phase at 146°C(left); DSC trace of compound $T_{3,4}D_{10}$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{3,4}D_{11}$

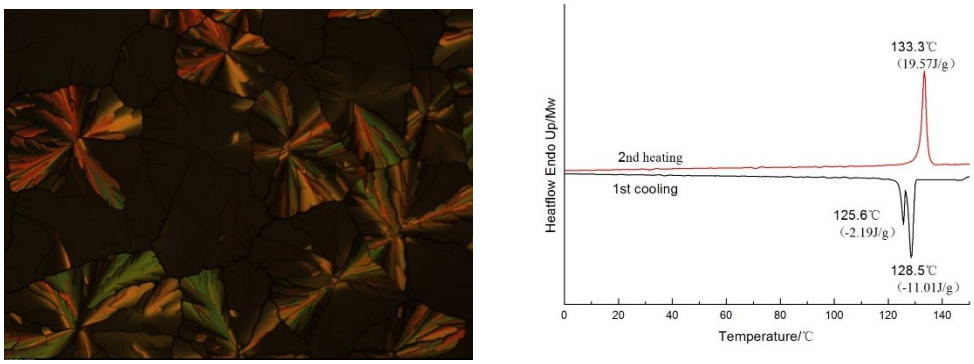


Fig.S62 Fan-shaped texture observed by POM with of compound $T_{3,4}D_{11}$ sandwiched between clean glass slides on cooling from isotropic phase at 25°C(left); DSC trace of compound $T_{3,4}D_{11}$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{3,4}D_{12}$

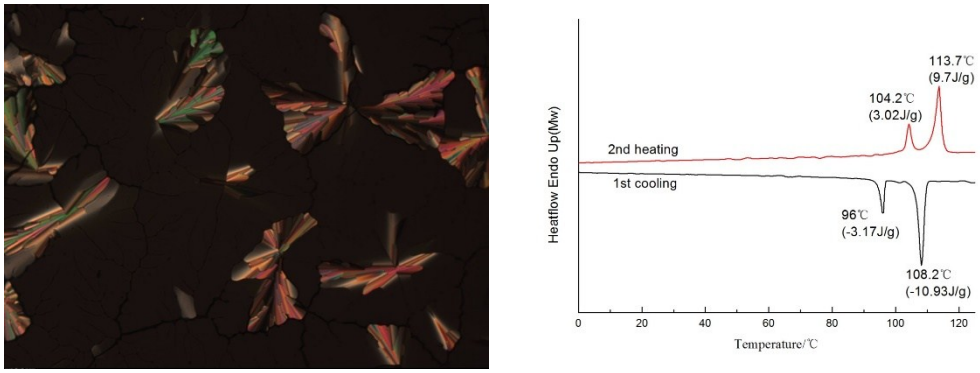


Fig.S63 Fan-shaped texture observed by POM with of compound $T_{3,4}D_{12}$ sandwiched between clean glass slides on cooling from isotropic phase at 30°C(left); DSC trace of compound $T_{3,4}D_{12}$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{4,5}D_6$

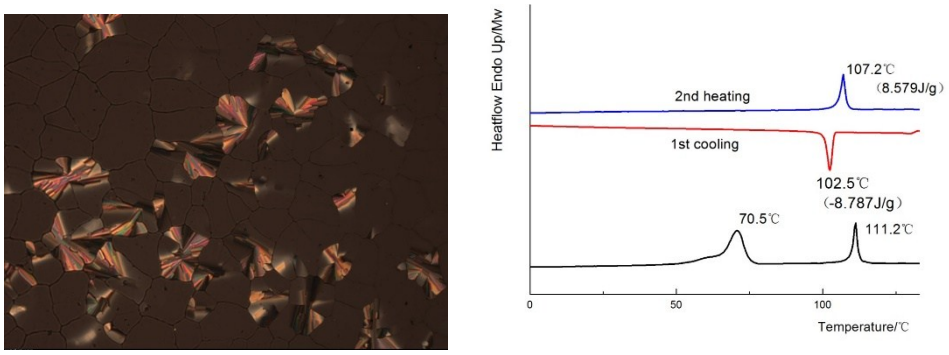


Fig.S64 Fan-shaped texture observed by POM of compound $T_{4,5}D_6$ sandwiched between clean glass slides on cooling from isotropic phase at 100°C(left); DSC trace of compound $T_{4,5}D_6$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{4,5}D_7$

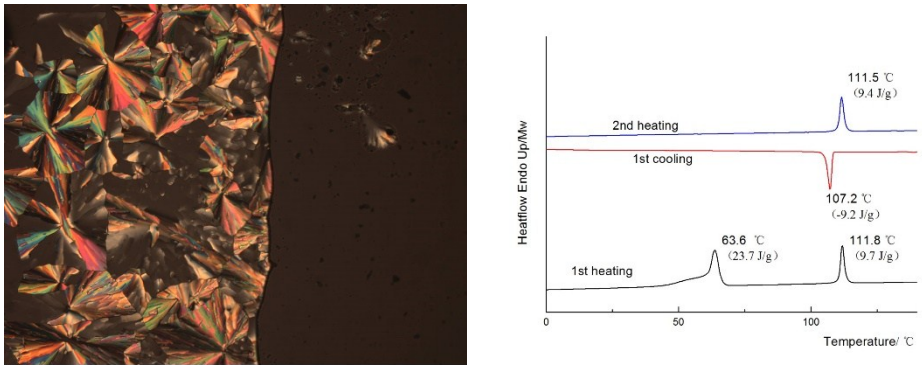


Fig.S65 Fan-shaped texture observed by POM of compound $T_{4,5}D_7$ sandwiched between clean glass slides on cooling from isotropic phase at 90°C(left); DSC trace of compound $T_{4,5}D_7$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{4,5}D_8$

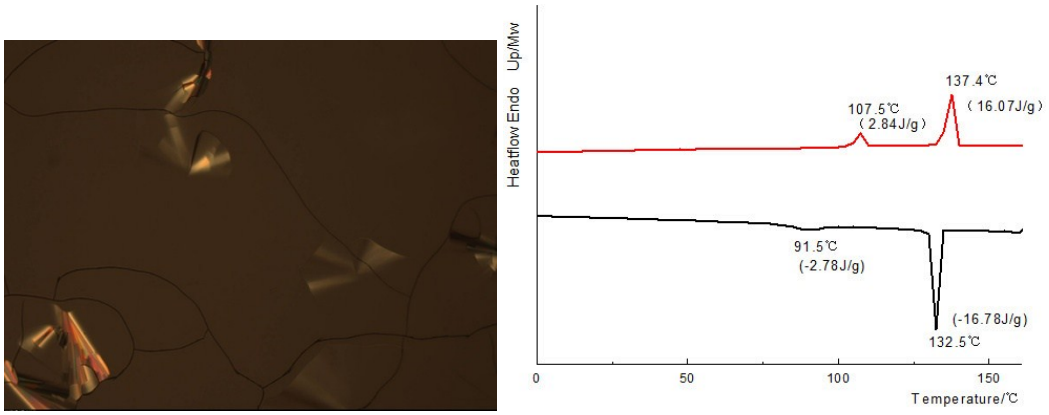


Fig.S66 Fan-shaped texture observed by POM of compound $T_{4,5}D_8$ sandwiched between clean glass slides on cooling from isotropic phase at 30°C(left); DSC trace of compound $T_{4,5}D_8$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{4,5}D_9$

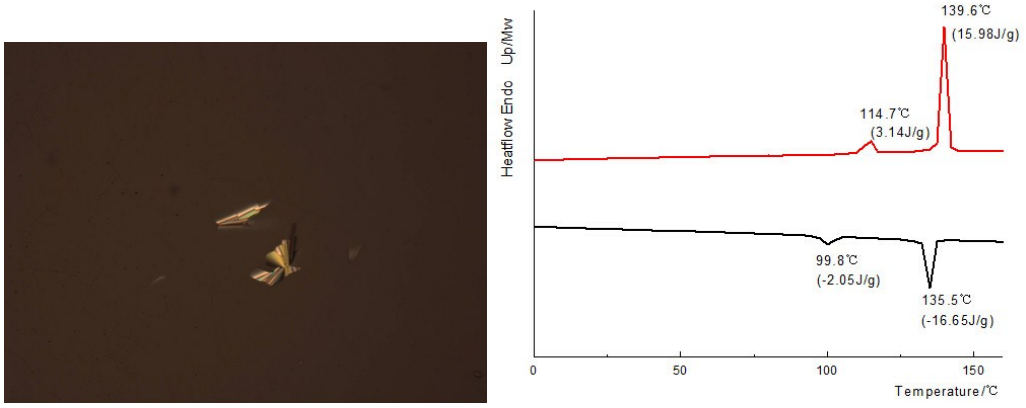


Fig.S67 Fan-shaped texture observed by POM of compound $T_{4,5}D_9$ sandwiched between clean glass slides on cooling from isotropic phase at 110°C(left); DSC trace of compound $T_{4,5}D_9$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{4,5}D_{10}$

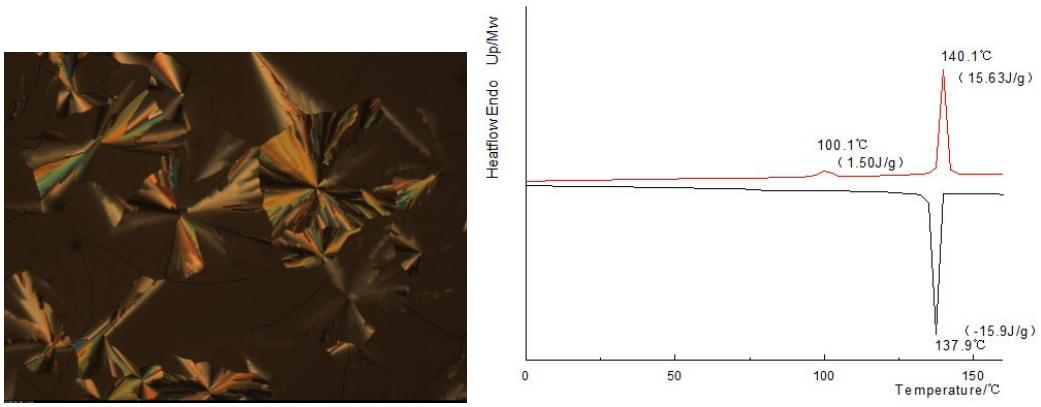


Fig.S68 Fan-shaped texture observed by POM of compound $T_{4,5}D_{10}$ sandwiched between clean glass slides on cooling from isotropic phase at 25°C(left); DSC trace of compound $T_{4,5}D_{10}$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{4,5}D_{11}$

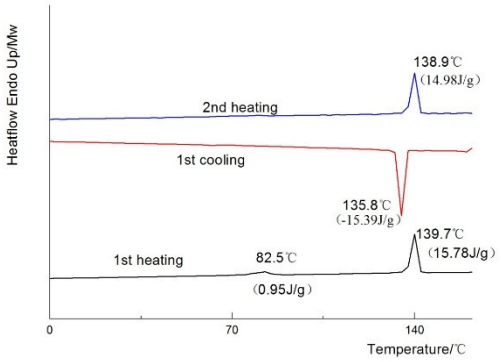
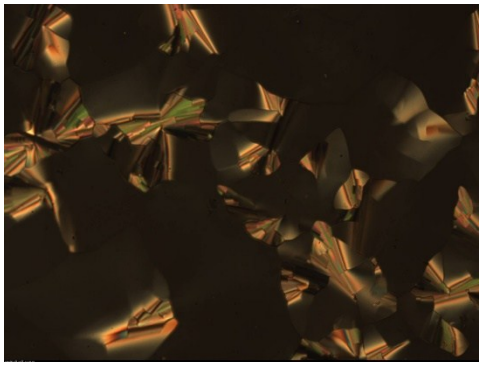


Fig.S69 DSC trace of compound $T_{4,5}D_{11}$ run at 10°Cmin^{-1} under N^2.

Mesomorphism of $T_{4,5}D_{12}$



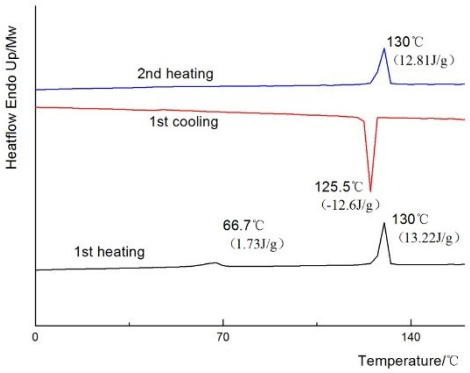
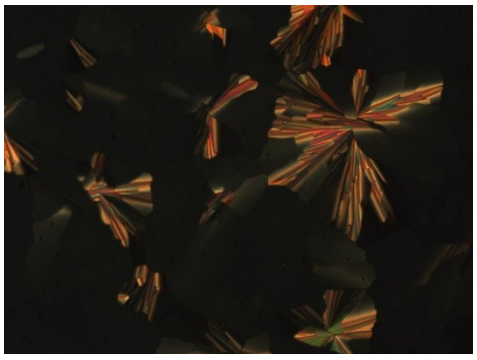


Fig.S70 Fan-shaped texture observed by POM of compound $T_{4,5}D_{12}$ sandwiched between clean glass slides on cooling from isotropic phase at 30°C(left); DSC trace of compound $T_{4,5}D_{12}$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{3,5}D_6$



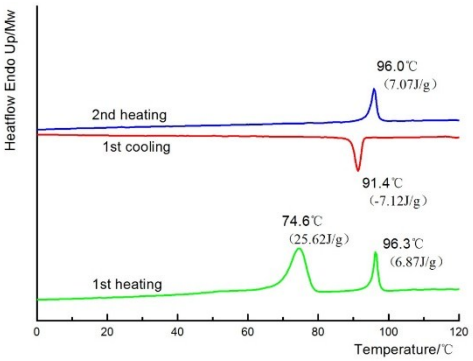


Fig.S71 Fan-shaped texture observed by POM of compound $T_{3,5}D_6$ sandwiched between clean glass slides on cooling from isotropic phase at 40°C(left); DSC trace of compound $T_{3,5}D_6$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{3,5}D_7$

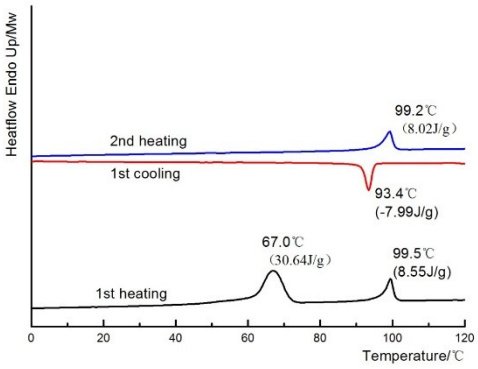
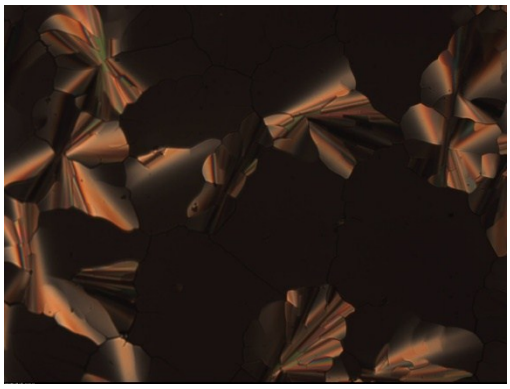


Fig.S72 DSC trace of compound $T_{3,5}D_7$ run at 10°Cmin^{-1} under N^2.

Mesomorphism of $T_{3,5}D_8$



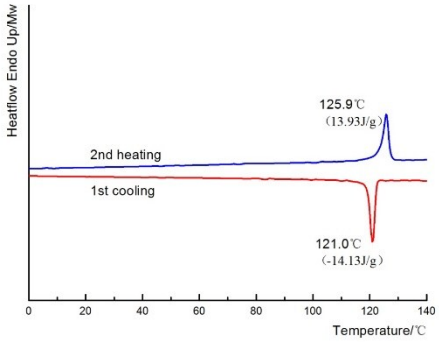
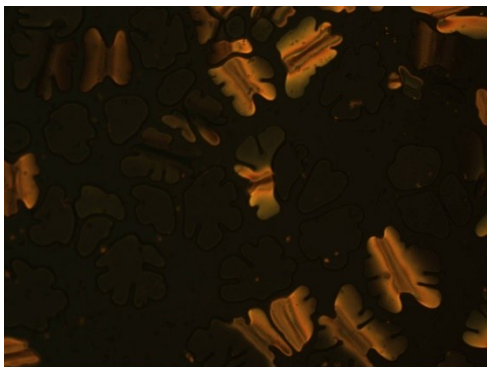


Fig.S73 Fan-shaped texture observed by POM of compound $T_{3,5}D_8$ sandwiched between clean glass slides on cooling from isotropic phase at 40°C(left); DSC trace of compound $T_{3,5}D_8$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{3,5}D_9$



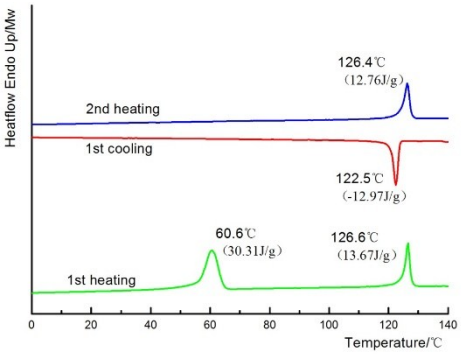
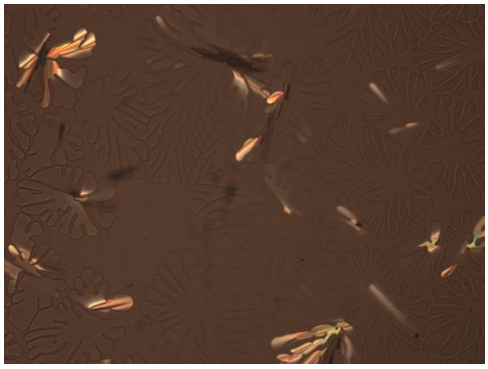


Fig.S74 Dendritic texture observed by POM of compound $T_{3,5}D_9$ sandwiched between clean glass slides on cooling from isotropic phase at 128°C(left); DSC trace of compound $T_{3,5}D_9$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{3,5}D_{10}$



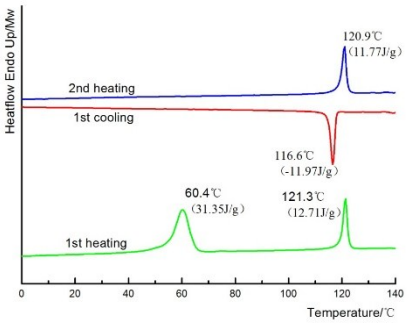
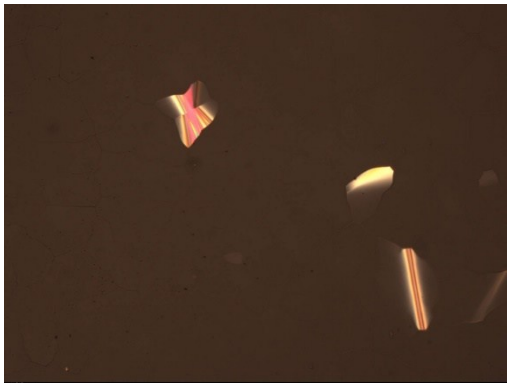


Fig.S75 Dendritic texture observed by POM of compound $T_{3,5}D_{10}$ sandwiched between clean glass slides on cooling from isotropic phase at 122°C(left); DSC trace of compound $T_{3,5}D_{10}$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{3,5}D_{11}$



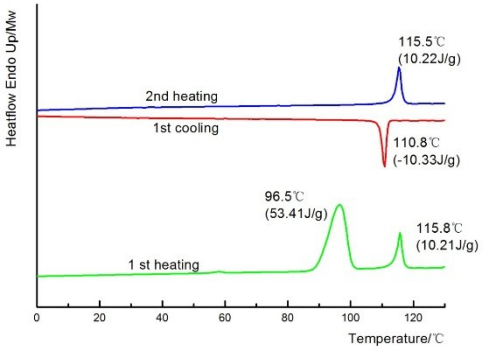
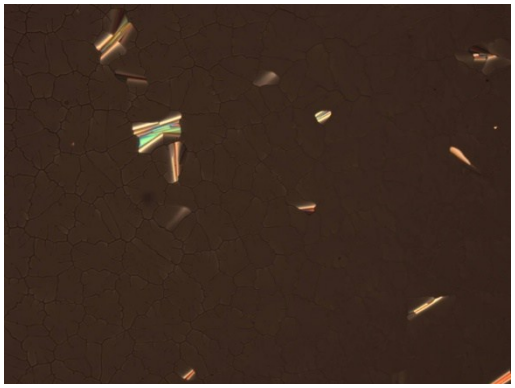


Fig.S76 Dendritic texture observed by POM of compound $T_{3,5}D_{11}$ sandwiched between clean glass slides on cooling from isotropic phase at 35°C(left); DSC trace of compound $T_{3,5}D_{11}$ run at 10°Cmin^{-1} under N^2(right).

Mesomorphism of $T_{3,5}D_{12}$



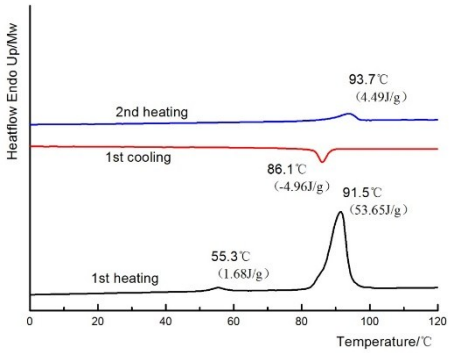


Fig.S77 Dendritic texture observed by POM of compound $T_{3,5}D_{12}$ sandwiched between clean glass slides on cooling from isotropic phase at 36°C(left); DSC trace of compound $T_{3,5}D_{12}$ run at 10°Cmin^{-1} under N^2(right).

2. 1D WAXD

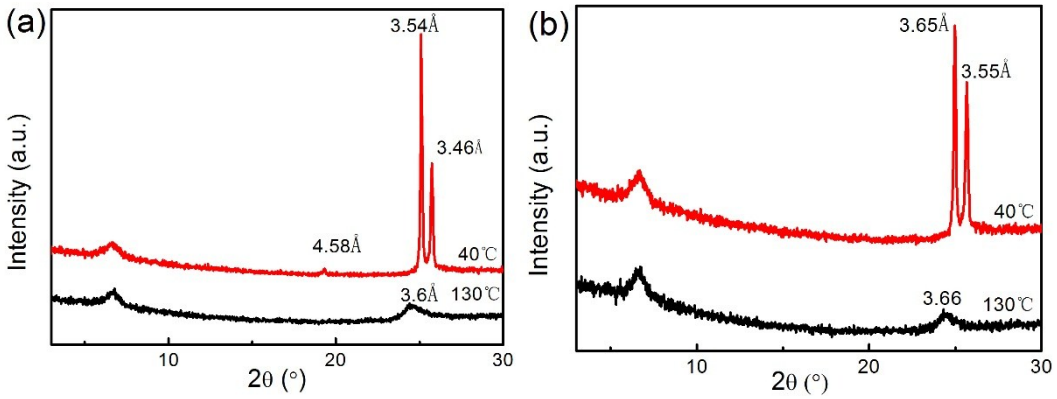


Fig.S78 (a) 1D WAXD of $T_{3,4}D_{11}$ at 130°C and 40°C during the first cooling runs; (b) 1D WAXD of $T_{3,4}D_6$ at 130°C and 40°C during the first cooling runs.

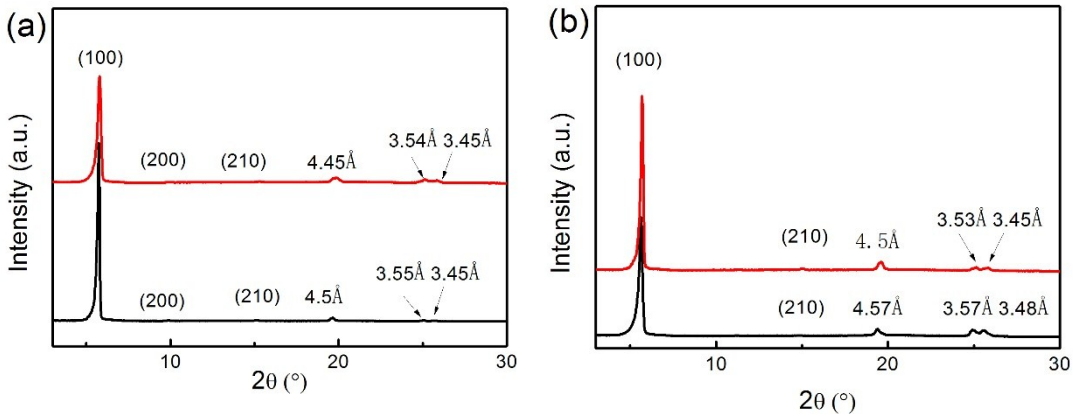


Fig.S79 (a) 1D WAXD of $T_{3,4}D_7$ at 90°C (red line) and $T_{3,4}D_8$ at 95°C (black line) during the first heating runs; (b) 1D WAXD of $T_{3,4}D_9$ at 95°C (red line) and $T_{3,4}D_{10}$ at 90°C (black line) during the first heating runs.

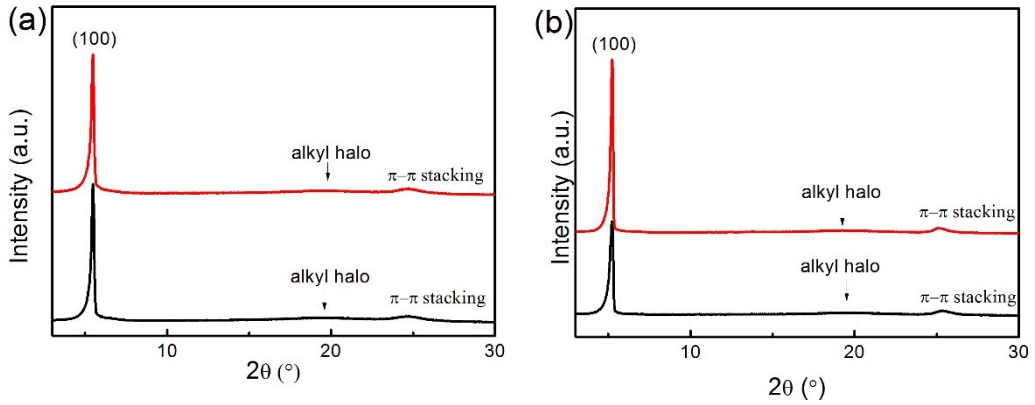


Fig.S80 (a) 1D WAXD of $T_{4,5}D_6$ at 90°C (red line) and $T_{4,5}D_7$ at 100°C (black line) during the first heating runs; (b) 1D WAXD of $T_{4,5}D_{11}$ at 90°C (red line) and $T_{4,5}D_{12}$ at 80°C (black line) during the first heating runs.

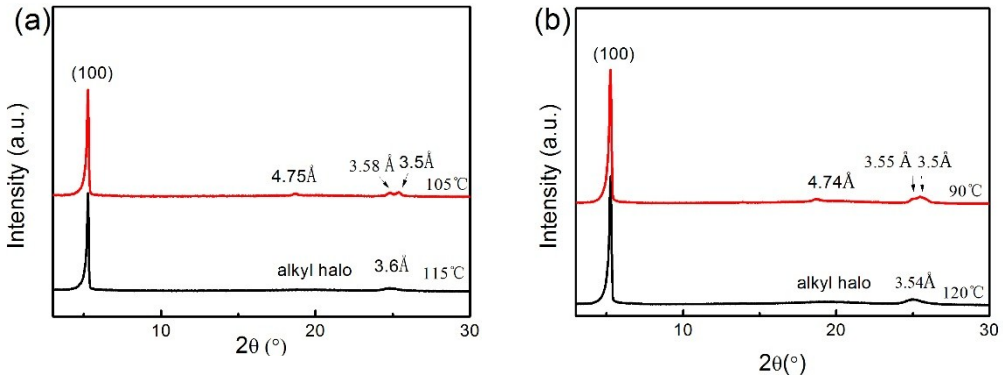


Fig.S81 (a) 1D WAXD of $T_{4,5}D_8$ at 105°C and 115°C during the first heating runs; (b) 1D WAXD of $T_{4,5}D_{10}$ at 90°C and 120°C during the first heating runs.

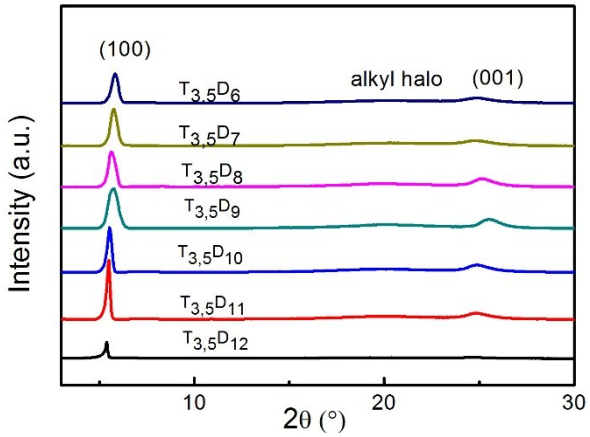


Fig.S82 1D WAXD of $T_{3,5}D_m$ (m=6-12) at 90°C during the first heating runs.

3. 2D WAXD

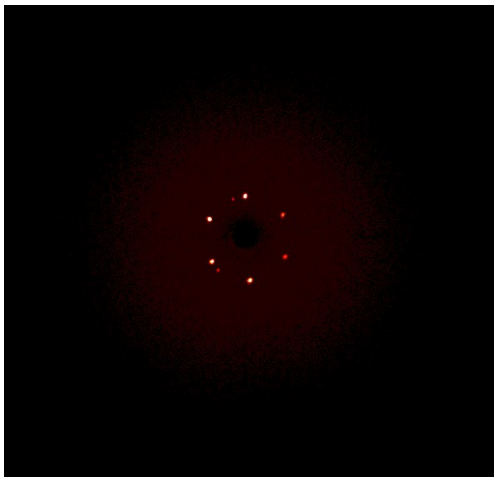


Fig.S83 2D WAXD of $T_{3,5}D_6$ at 25°C

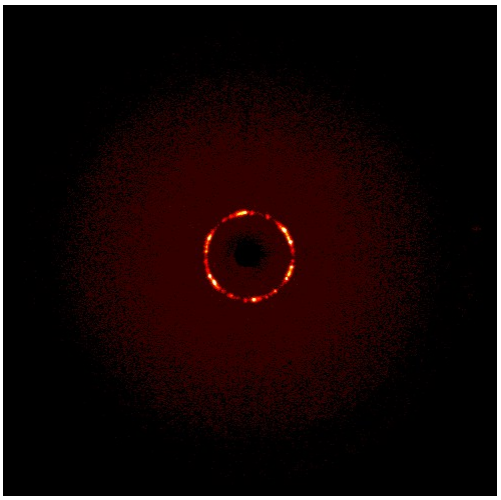


Fig.S84 2D WAXD of $T_{3,5}D_7$ at 25°C (polydomain)

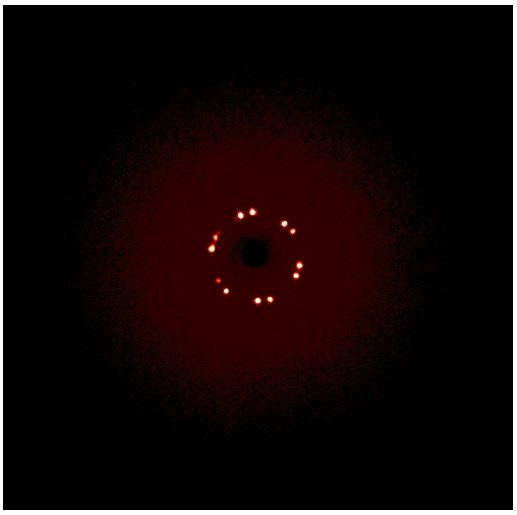


Fig.S85 2D WAXD of $T_{3,5}D_8$ at 25°C

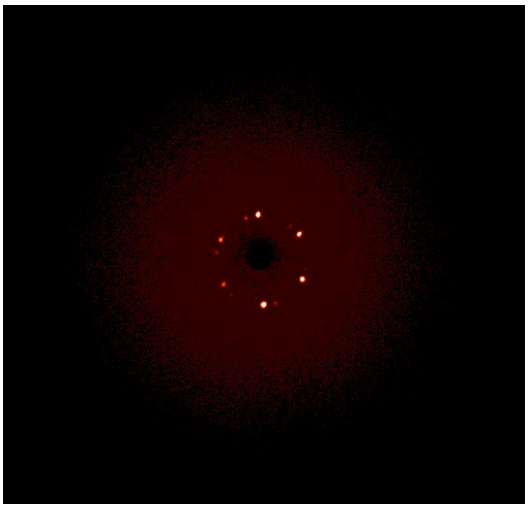


Fig.S86 2D WAXD of $T_{3,5}D_9$ at 25°C

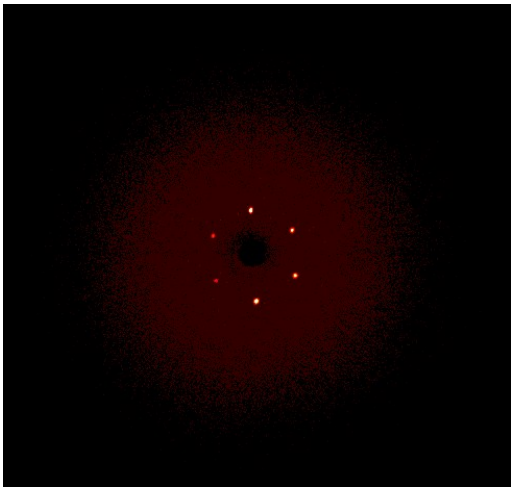


Fig.S87 2D WAXD of $T_{3,5}D_{10}$ at 25°C

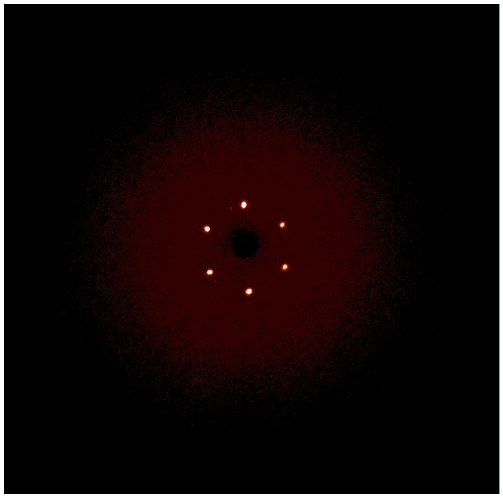


Fig.S88 2D WAXD of $T_{3,5}D_{11}$ at 25°C

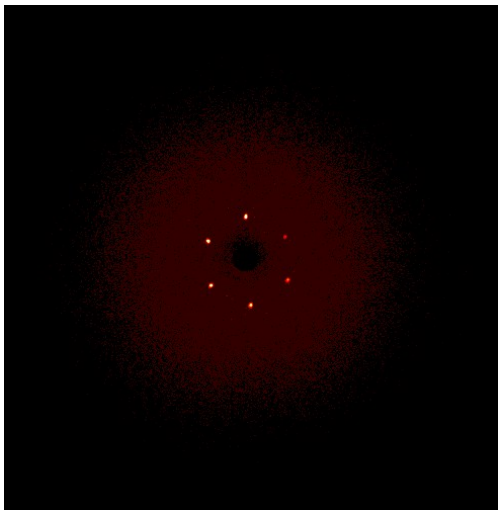


Fig.S89 2D WAXD of $T_{3,5}D_{12}$ at 25°C

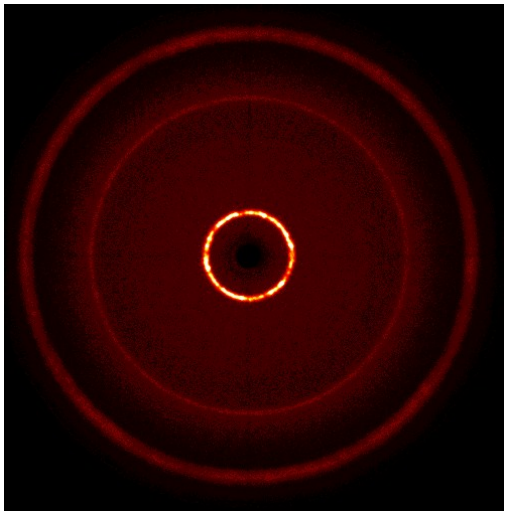


Fig.S90 2D WAXD of $T_{3,4}D_7$ at 25°C