4a

FT-IR (KBr, cm-1): 3045, 2967, 1642, 1615, 1592, 1549, 1467, 1372, 1265, 1196 cm-1.

1H NMR (300 MHz, CDCl3): δ; 0.97 (12H, s), 2.15-2.26 (8H, m), 3.25 (6H, s), 5.26 (1H, s), 7.35-7.47 (3H, m), 7.58-7.69 (5H, m), 7.74 (2H, d, J = 8.5 Hz), 7.96-8.04 (2H, m), 8.12 (1H, d, J = 7.5 Hz) ppm. 13C NMR (75 MHz, CDCl3): δ; 196.71, 152.45, 150.11, 148.76, 146.78, 140.65, 140.43, 132.87, 130.45, 129.35, 123.20, 120, 11, 50.67, 32.67, 32.23, 31.90, 26.71ppm.

4b

FT-IR (KBr, cm-1): 3414, 2967, 1639, 1509, 1457, 1365, 1215 cm-1. 1H NMR (300 MHz, CDCl3): δ; 0.96 (6H, s), 1.05 (6H, s), 2.12-2.27 (8H, m), 3.87 (6H, s), 5.28 (1H, s), 6.75 (2H, s), 7.35 (2H, d, J = 7.9 Hz), 7.54-7.57 (3H, m), 7.96 (2H, dd, J = 1.95 Hz, J = 6.8 Hz), 8.13 (2H, d, J = 8.5 Hz) ppm. 13C NMR (75 MHz, CDCl3): δ; 196.67, 162.34, 152.47, 146.78, 140.90, 135.34, 133.46, 132.00, 129.78, 128.35, 123.11, 114.88, 56.74, 50.23, 32.24, 31.67, 29.8, 29.30 ppm.

4c

FT-IR (KBr, cm-1): 3233, 2959, 1635, 1543, 1454, 1364, 1273 cm-1. 1H NMR (300 MHz, CDCl3): δ; 1.02 (6H, s), 1.09 (6H, s), 2.12-2.57 (8H, m), 4.98 (1H, s), 7.42-7.47 (2H, m), 7.55-7.66 (5H, m), 7.96-7.99 (2H, m), 8.01-8.05 (2H, m), 8.15 (2H, d, J = 8.3 Hz) ppm. 13C NMR (75 MHz, CDCl3): δ; 196.35, 162.89, 151.23, 150.89, 140.58, 132.79, 129.34, 129.31, 129.27, 128.76, 124.12, 123.27, 123. 45, 119.34, 114.56, 111.88, 50.09, 32.51, 32.27, 29.74, 29.27 ppm.

4d

FT-IR (KBr, cm-1): 2959, 1657, 1589, 1362, 1120 cm-1. 1H NMR (300 MHz, CDCl3): δ; 1.05 (6H, s), 1.18 (6H, s), 2.15-2.34 (8H, m), 5.26 (1H, s), 6.91-7.02 (2H, m), 7.24-7.33 (2H, m), 7.39-7.46 (2H, m), 7.51-7.56 (1H, m), 7.57-7.65 (2H, m), 7.90-8.00 (4H, m) ppm. 13C NMR (75 MHz,

CDCl3): δ; 195.93, 159.81, 152.67, 141.94, 132.09, 130.58, 131.55, 129.93, 129.82, 129.46, 129.33, 129.21, 124.16, 123.29, 50.21, 32.44, 32.23, 31.23, 29.79 ppm.

4e

FT-IR (KBr, cm-1): 3432, 2955, 1656, 1528, 1363, 1262 cm-1. 1H NMR (300 MHz, CDCl3): δ; 0.97 (6H, s), 1.05 (6H, s), 2.14-2.28 (8H, m), 5.35 (1H, s), 7.27 (1H, s), 7.41-7.47 (3H, m), 7.56-7.63 (2H, m), 7.85 (1H, d, J=9.2 Hz), 7.97-8.05 (4H, m), 8.15 (1H, d, J=9.1 Hz) ppm. 13C NMR (75 MHz, CDCl3): δ; 195.89, 163.11, 152.73, 152.45, 150.33, 148.49, 148.38, 148.25, 146.32, 140.51, 135.33, 135.70, 132.09, 129.3.08, 129.00, 128.88, 123.25, 50.12, 32.95, 32.64, 32.35, 32.12ppm.

4f

FT-IR (KBr, cm-1): 2956, 1646, 1607, 1507, 1463, 1379, 1142 cm-1. 1H NMR (300 MHz, CDCl3): δ; 1.07 (6H, s), 1.17 (6H, s), 2.00-2.67 (8H, m), 4.72 (1H, s), 6.79 (2H, d, J = 8.5 Hz,), 7.01-7.08 (3H, m), 7.15-7.18 (1H, m), 7.45-7.48 (1H, m), 7.50-7.57 (3H, m), 7.82-7.88 (2H, m), 7.95-7.98 (1H, m) ppm. 13C NMR (75 MHz, CDCl3): δ; 200.90, 153.43, 151.98, 149.50, 145.57, 129.84, 129.11, 128.99, 128.15, 127.53, 125.12, 124.65, 124.38, 124.22, 122.88, 122.39, 118.37, 50.09, 41.67, 32.31, 31.89, 29.24, 28.43 ppm.

4g

FT-IR (KBr, cm-1): 2957, 1643, 1587, 1532, 1363, 1144 cm-1. 1H NMR (300 MHz, CDCl3): δ; 1.05 (6H, s), 1.15 (6H, s), 2.15-2.33 (8H, m), 5.33 (1H, s), 6.87 (1H, s), 7.14-7.28 (4H, m), 7.40 (1H, d, J = 8.8 Hz), 7.44 (1H, d, J = 8.7 Hz), 7.48- 7.54 (1H, m), 7.56-7.62 (2H, m), 7.92 (1H, d, J = 7.67 Hz), 7.94-8.02 (1H, m), 8.15 (1H, d, J = 8.5 Hz) ppm. 13C NMR (75 MHz, CDCl3): δ; 196.09, 146.75, 146.68, 140.72, 132.79, 131.10, 129.56, 129.43, 129.31, 129.17, 129.57, 124.24, 124.90, 123.73, 123.68, 123.20, 123.11, 50.23, 32.66, 32.57, 32.49, 32.23 ppm.

4h

FT-IR (KBr, cm-1): 3052, 2956, 1658, 1588, 1484, 1295, 1142 cm-1. 1H NMR (300 MHz, CDCl3): δ; 1.03 (6H, s), 1.17 (6H, s), 2.11-2.32 (8H, m), 5.29 (1H, s), 6.79 (2H, dd, J = 1.9 Hz, J = 6.8 Hz), 7.00 (1H, d, J = 8.2 Hz), 7.25 (3H, d, J = 8.5 Hz), 7.35-7.45 (2H, m), 7.47-7.57 (3H, m), 7.57-7.87 (1H, m), 7.77-7.87 (2H, m) ppm. 13C NMR (75 MHz, CDCl3): δ; 196.91, 162.44, 149.95, 145.57, 145.11, 143.32, 132.08, 131.46, 131.44, 131.29, 131.10, 130.34, 129.96, 129.89, 129.36, 50.23, 32.26, 31.67, 31.49, 29.721 ppm.

4i

FT-IR (KBr, cm-1): 2975, 1725, 1594, 1375, 1282, 1078 cm-1. 1H NMR (300 MHz, CDCl3): δ; 0.93 (6H, s), 1.29 (6H, s), 2.37-2.47 (8H, m), 5.51 (1H, s), 6.75 (1H, d, J = 8.5Hz), 7.03 (1H, d, J = 8.2Hz), 7.25 (2H, d, J = 8.3Hz), 7.29-7.43 (1H, m), 7.51-7.58 (4H, m), 7.73-7.76 (2H, m), 7.86 (2H, t, J = 7.8Hz) ppm. 13C NMR (75 MHz, CDCl3): δ; 189.45, 136.72 132.47, 130.69, 129. 79, 129.14, 128. 97, 128.87, 128.36, 128.21, 125.24, 122.35, 115.35, 114.63, 50.01, 30.75, 30.38, 28.94, 23.76, 23.00 ppm.

4k

FT-IR (KBr, cm-1): 3098, 2958, 1638, 1497, 1367 cm-1. 1H NMR (300 MHz, DMSO-dr): δ; 0.97 (6H, s), 1.06 (6H, s), 1.88-2.48 (8H, m), 4.93 (1H, s), 6.22-6.34 (3H, m), 7.13-7.37 (7H, m), 7.54-7.59 (5H, m), 7.92-8.05 (5H, m) ppm. 13C NMR (75 MHz, CDCl3): δ; 196.76, 163.24, 152.56, 152.24, 140.89, 131.34, 130.68, 130.46, 129.78, 129.65, 128.78, 128.23, 123.56, 114.67, 50.56, 32.56, 29.87, 29.45, 27.90 ppm.

4l

FT-IR (KBr, cm-1): 2954, 1716, 1535, 1403, 1304 cm-1. 1H NMR (300 MHz, CDCl3): δ; 1.05 (6H, s), 1.15 (6H, s), 2.20-2.76 (8H, m), 4.66 (1H, s), 6.35 (2H, s), 7.25-7.37 (2H, m), 7.43-7.51 (6H, m), 7.85-7.93 (6H, m) ppm. 13C NMR (75 MHz, CDCl3): δ; 203.81, 154.23, 152.36, 151.48, 137.40, 135.59, 134.65, 129.64, 129.21, 128.72, 128.53, 126.65, 125.36, 124.82, 124.34, 124.28, 124.00, 123.90, 118.23, 115.36, 114.29, 54.10, 33.22, 33.11, 32.75, 30.91 ppm.

4m

FT-IR (KBr, cm-1): 3064, 2966, 1643, 1365, 1303, 1138 cm-1. 1H NMR (300 MHz, CDCl3): δ; 0.96 (6H, s), 1.14 (6H, s), 2.21-2.46 (8H, m), 5.16 (1H, s), 6.71 (1H, d, J = 8.5Hz), 6.80-6.90 (3H, m), 7.03-7.06 (4H, m), 7.30-7.50 (3H, m), 7.56-7.58 (1H, m) ppm. 13C NMR (75 MHz, CDCl3): δ; 196.07, 148.13, 145.24, 140.70, 132.00, 129.73, 129.34, 129.17, 128.99, 127.05, 126.76, 126.26, 125.15, 124.17, 123.48, 50.20, 32.47, 32.15, 29.90, 29.37 ppm.

3,3,6,6-tetramethyl-9-(2-(butoxy) phenyl)-10-(4- (phenyldiazenyl)phenyl)-3,4,6,7,9, 10-hexahydroacridine-1,8 (2H, 5 H)-dione (6a)

FT–IR (KBr, cm¬¬–1): 3050 (Aromatic C–H stretching), 2978 (Aliphatic C–H stretching), 1662 (C=O stretching), 1605 (Aromatic C=C stretching), 1507 (N=N stretching), 1485 (Aromatic C=C stretching), 1368 (C–N stretching), 1210 (C–O stretching) cm-1. 1H NMR (DMSO–d6, 600MHz) δ 0.98–1.01(brs , 9H), 1.04– 1.07 (brs, 5H , Ha or Hf), 2.12 (s, 2H, Hb or Hc), 2.17–2.26 (brs, 2H), 2.30–2.39 (brs, 2H), 2.41–2.42 (brs, 2H), 4.53 (brs, 2H), 5.25 (s,1H), 7.40–7.43 (m, 3H), 7.53–7.58 (m, 2H), 7.59–7.61 (m, 3H), 7.86 (d, J = 0.6 J = 14.4Hz, 2H), 7.93–8.00 (m, 3H) ppm. 13C NMR (DMSO–d6, 150 Hz): δc: 29.40, 32.18, 32.58, 46.40, 50.60, 55.63, 122.46, 122.64, 123.06, 123.80, 124.29, 125.26, 126.31, 129.98, 130.20, 131.68, 132.22, 139.90, 140.21, 149.00, 150.33, 196.62 (C=O) ppm. Anal. calcd. for C74H76N6O6: C; 77.52 H, 6.67; N, 7.34. Found: C, 77.59; H, 6.69; N, 7.34.

3,3,6,6-tetramethyl-9-(2-(pentoxy) phenyl)-10-(4- (phenyldiazenyl)phenyl)-3,4,6,7,9, 10-hexahydroacridine-1,8 (2H, 5 H)-dione (6b)

FT– IR (KBr, cm-1): 3076 (Aromatic C–H stretching), 2958 (Aliphatic C–H stretching), 1635 (C=O stretching), 1580 (Aromatic C=C stretching), 1529 (N= N stretching), 1496 (Aromatic C=C stretching), 1368 (C–N stretching), 1256 (C–O stretching) cm-1. 1H NMR (DMSO– d6, 600 MHz): δ 00–1.06 (m, 5H), 1.22–1.28 (m, 10H), 1.76 (brs, 1H), 2.11 (brs, 5H), 2.42–2.53 (m, 2H), 3.50 (brs, 2H), 5.54 (s, 1H),7.22 (s, 1H), 7.43 (d, J = 15.0, Hz, 2H), 7.59 (d, J = 13.2Hz, 4H), 7.88–7.95 (d, J = 12.6 Hz, 6H) ppm. Anal. calcd. for C75H78N6O6: C; 77.59 H, 6.75; N, 7.32. Found: C, 77.69; H, 6.78; N, 7.25.

3,3,6,6-tetramethyl-9-(2-(hexoxy) phenyl)-10-(4- (phenyldiazenyl)phenyl)-3,4,6,7,9, 10-hexahydroacridine-1,8 (2H, 5 H)-dione (6c)

FT– IR (KBr, cm-1): 3706 (Aromatic C–H stretching), 2956 (Aliphatic C–H stretching), 1623 (C=O stretching), 1576 (Aromatic C=C stretching), 1522 (N=N stretching), 1467 (Aromatic C=C stretching), 1362 (C–N Stretching), 1250 (C–O stretching) cm-1. 1H NMR (DMSO–d6, 300MHz): δ 1.04 (brs,16H), 2.09–2.25 (m, 8H), 3.45 (s, 2H), 5.63 (s,1H), 7.12 (t, J = 7.2Hz, 1H), 7.19 (d, J = 5.4Hz, 2H), 7.36 (d, J =7.50Hz, 1H), 7.42 (d, J = 8.7Hz, 3H), 7.56 (d, J = 7.8Hz, 6H) ppm.

13C NMR (DMSO–d6, 75 MHz) δ 22.08, 28.64, 32.52, 40.74, 47.38, 50.61, 55,65, 122.01, 122.37, 122.82, 123.43, 124.37, 129.59 (two peaks), 129.85, 130.18, 138.19, 140.00, 143.27, 148.01, 152.50, 196.74 (C=O). Anal. calcd. for C76H80N6O6: C; 77.68 H, 6.82; N, 7.12. Found: C, 77.79; H, 6.87; N, 7.16.

(8a)

FT–IR (KBr–cm-1): 3045 (Aromatic C–H stretching), 2957 (Aliphatic C–H stretching), 1636 (C=O stretching), 1580 (Aromatic C=C stretching), 1528 (N=N stretching), 1409 (Aromatic C=C stretching), 1368 (C–N stretching), 1257 (C–O stretching) cm-1. 1H NMR (DMSO–d6, 600 MHz): δ 0.97–0.98 (brs, 6H), 1.02–1.05(brs, 8H),1.87 (s, 3H), 2.04–2.12 (brs, 3H), 2.52–2.52 (brs, 2H), 3.60 (brs, 5H), 5.63 (s,1H), 7.43 (d, J =18.0 Hz, 3H), 7.48–7.53 (m, 1H), 7.55–7.59 (m, 3H), 7.86–7.90 (m, 3H), 7.93 (s, 2H) ppm. 13C NMR (DMSO–d6, 150 MHz): δ 31.51, 32.50, 32.72, 42.56, 48.03, 50.65, 55.65, (two peaks), 113.87, 115.24, 122.17, 122.35, 122.82, 124.37, 125.61, 129.62, 129.88, 130.06, 131.56, 143.32 (two peaks), 147.98 ,152.50, 159.27,

196.72 (C=O) ppm. Anal. calcd. for C76H80N6O8: C; 75.79 H, 6.71; N, 6.98. Found: C, 75.72; H, 6.69; N, 6.97.

(8b)

FT–IR (KBr, cm-1): 3108 (Aromatic C–H stretching), 2955 (Aliphatic C=C stretching), 1627 (C=O Stretching), 1576 (Aromatic C=C Stretching), 1530 (N=N stretching), 1464 (Aromatic C=C stretching), 1363 (C–N stretching), 1257 (C–O stretching) cm-1. 1H NMR (DMSO– d6,300 MHz) 0.93–1.15 (brs, 15H), 2.41 (s, 2H), 2.50 (brs, 6H), 3.62 (s, 2H, OCH2), 3.69 (s, 3H, OCH3), 5.65 (s, 1H), 6.54–6.92 (m,5H), 7.43 (d, J = 8.4Hz, 1H), 7.46–7.49 (m,1H), 7.51–7.56 (m, 3H), 7.67–7.89 (m, 2H) ppm. 13C NMR (DMSO–d6, 150MHz) δ 26.42, 28.31, 39.77, 32.43, 40.60 (two peaks), 50.55, 55.87 (two peaks), 123.16, 123.40, 124.30, 125.57, 129.51, 129.75, 129.94, 131.46, 137.79, 141.30, 143.26, 145.19, 145.52, 147.46, 148.03, 150.13, 195.76 (C=O) ppm. Anal. calcd. for C77H82N6O8: C; 75.83 H, 6.73; N, 6.88. Found: C, 75.84; H, 6.78; N, 6.89.

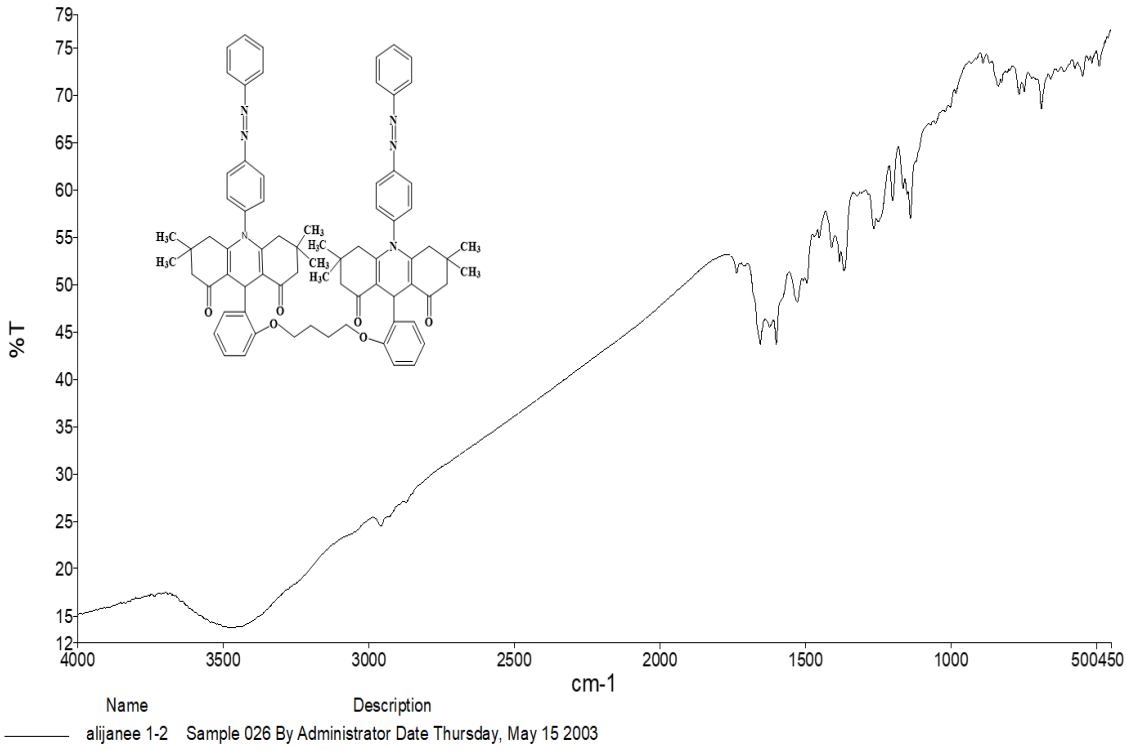
(8c)

FT–IR (KBr, cm-1): 3107 (Aromatic C–H Stretching), 2955 (Aliphatic C–H stretching), 1625, (C=O stretching), 1579 (C=C stretching), 1522 (N=N Stretching), 1467 (Aromatic C=C stretching), 1363 (C–N stretching), 1221 (C–O stretching) cm-1. 1H NMR (DMSO–d6, 300 MHz): δ 0.97–1.04 (s, 16H), 2.01–2.31 (m, 8H), 3.69 (s, 2H), 3.76 (s, 3H), 5.65 (s, 1H), 6.62–6.71 (m, 4H), 6.76 (d, J = 8.1 Hz, 2H), 6.87 (d, J = 8.7Hz, 1H), 7.43 (d, J = 8.7Hz, 1H), 7.51–7.59 (m, 2H), 7.62 (t, J = 6.0Hz, 2H) ppm. 13C NMR (DMSO–d6, 75 MHz) δ 28.35, 28.77, 32.48, 42.58, 47.80, 50.62, 55.90 (two peaks), 122.33, 122.82, 123.17, 123.39, 124.35, 129.56 (two peaks), 129.83, 130.01, 143.32, 145.19, 147.46, 147.99, 150.16, 152.39, 152.49, 196.56 (C=O) ppm. Anal. calcd. for C78H84N6O8: C; 75.90; H, 6.81; N, 6.80. Found: 75.95; H, 6.86; N, 6.81.

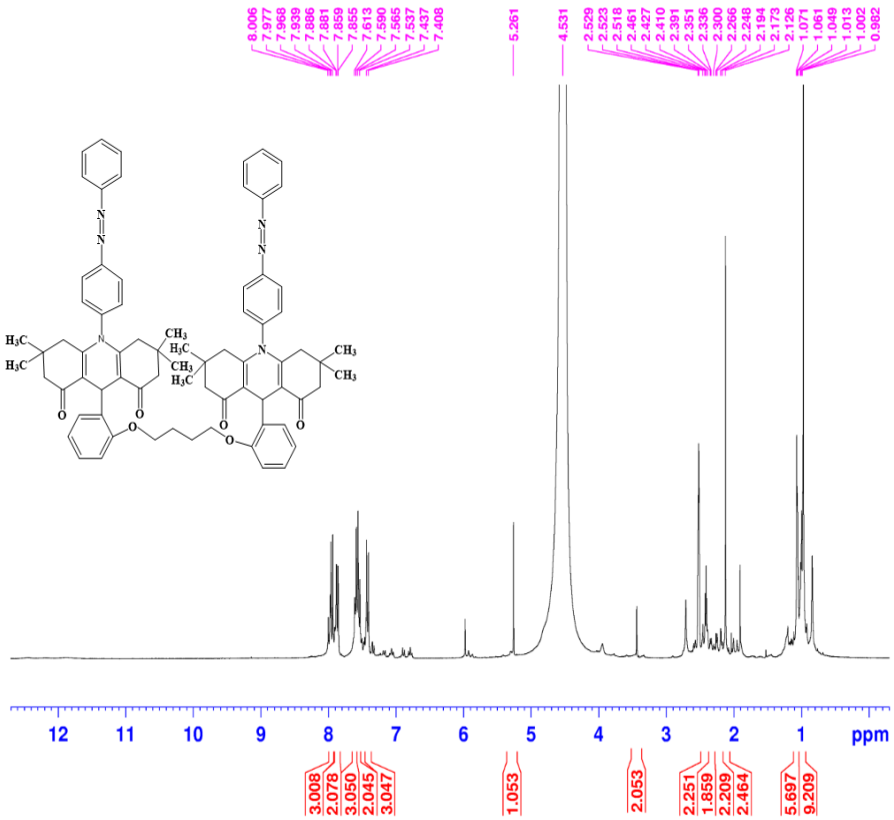
(10)

FT–IR (K BR, Cm): 2956 (Aliphatic C–H stretching), 1716, 1662, 1600, 1576, 1503, 1459, 1266, 1223, 1194 cm-1. 1H NMR (DMSO–d6, 300MHz): δ 0.92–1.01 (brs, 18H), 1.24–1.29 (brs, 18H), 1.93–2.14 (brs, 8H), 2.24–2.29 (brs, 8H), 2.46–2.58 (brs, 8H), 3.74 (s, 6H), 3.76 (s, 3H), 5.27 (s, 3H), 6.56 (d, J = 1.9 H-z J = 8.5Hz, 2H), 6.65 (d, J = 7.8Hz, 2H), 6.72 (d, J = 3.4Hz, 2H), 6.82 (brs, 3H), 7.00 – 7.06 (m, 3H) ,7.14 (d, J = 8.3Hz, 3H), 7.22–7.26 (m, 2H), 7.37–7.45 (m, 3H), 7.52–7.60 (m, 8H), 7.67, (d, J = 8.2Hz, 3H), 7.85–7.89 (m, 3H), 7.93 (d, J = 7.8Hz, 2H) ppm. 13C NMR (DMSO–d6, 75 MHz): δ 28.43, 29.24, 32.26 (two peaks)), 50.15, 64.50, 114.69, 115.22, 115.47, 120.75, 122.39, 122.77, 122.85, 123.66, 124.41, 129.69, 129.78, 129.84, 135.90, 145.43,

147.36, 152.51, 163.00, 196.25 ppm. Anal. calcd. for C111H108N12O12: C; 73.95; H, 6.01; N, 9.30. Found: 73.98; H, 6.04; N, 9.33.



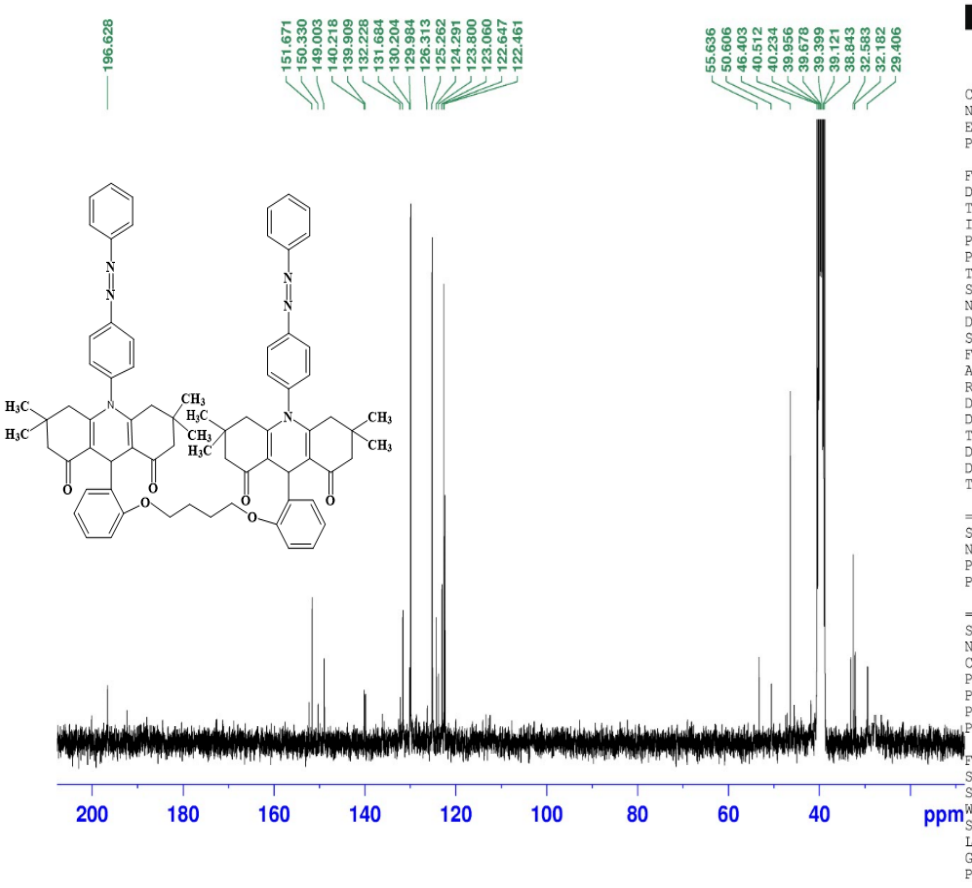
Alijani- code number 1-rep 1



BRUKER

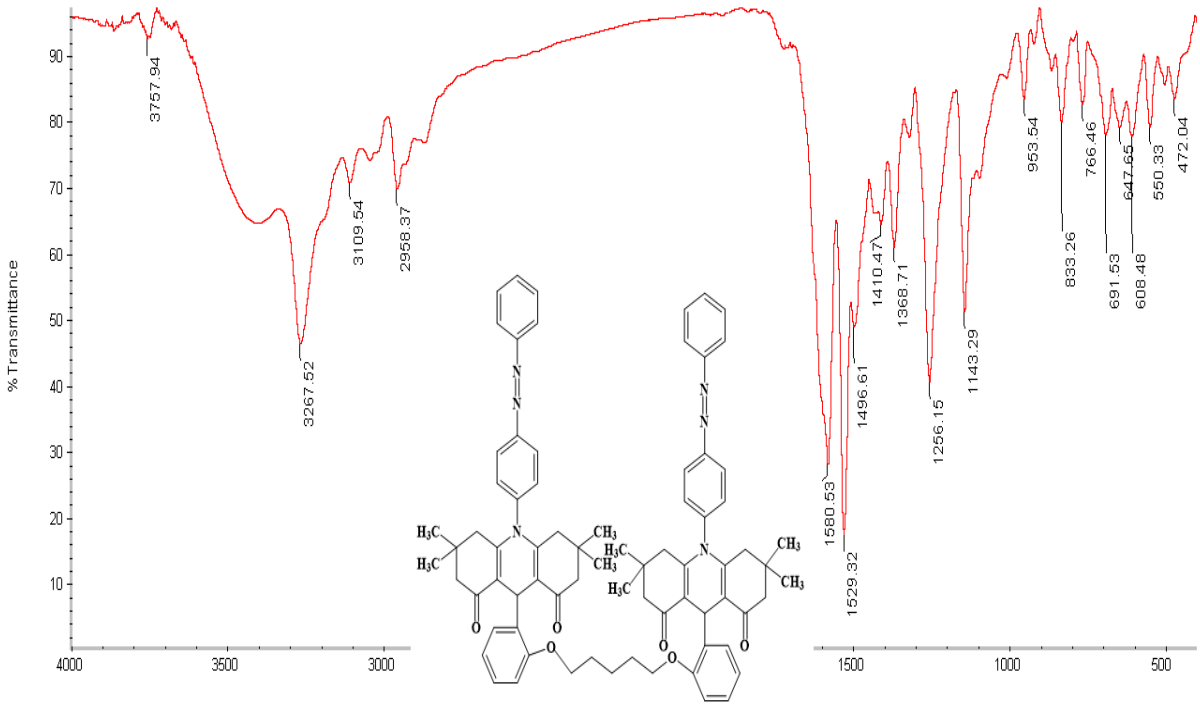
```
Current Data Parameters
NAME                  Aban
EXPNO                  299
PROCNO                   1

F2 - Acquisition Parameters
Date_           20191108
Time               18.22
INSTRUM            spect
PROBHD    5 mm PABBO BB-
PULPROG             zg30
TD                 65536
SOLVENT             DMSO
NS                    64
DS                     2
SWH             6009.615 Hz
FIDRES          0.091699 Hz
AQ              5.4525952 sec
RG                 33.22
DW                83.200 usec
DE                 6.50 usec
TE                296.7 K
D1             1.00000000 sec
TD0                    1

======== CHANNEL f1 ========
SFO1         300.8118576 MHz
NUC1                   1H
P1                 15.00 usec
PLW1          6.40000010 W

F2 - Processing parameters
SI                 65536
SF           300.8100000 MHz
WDW                   EM
SSB       0
LB                 0.30 Hz
GB        0
PC                 1.00
```

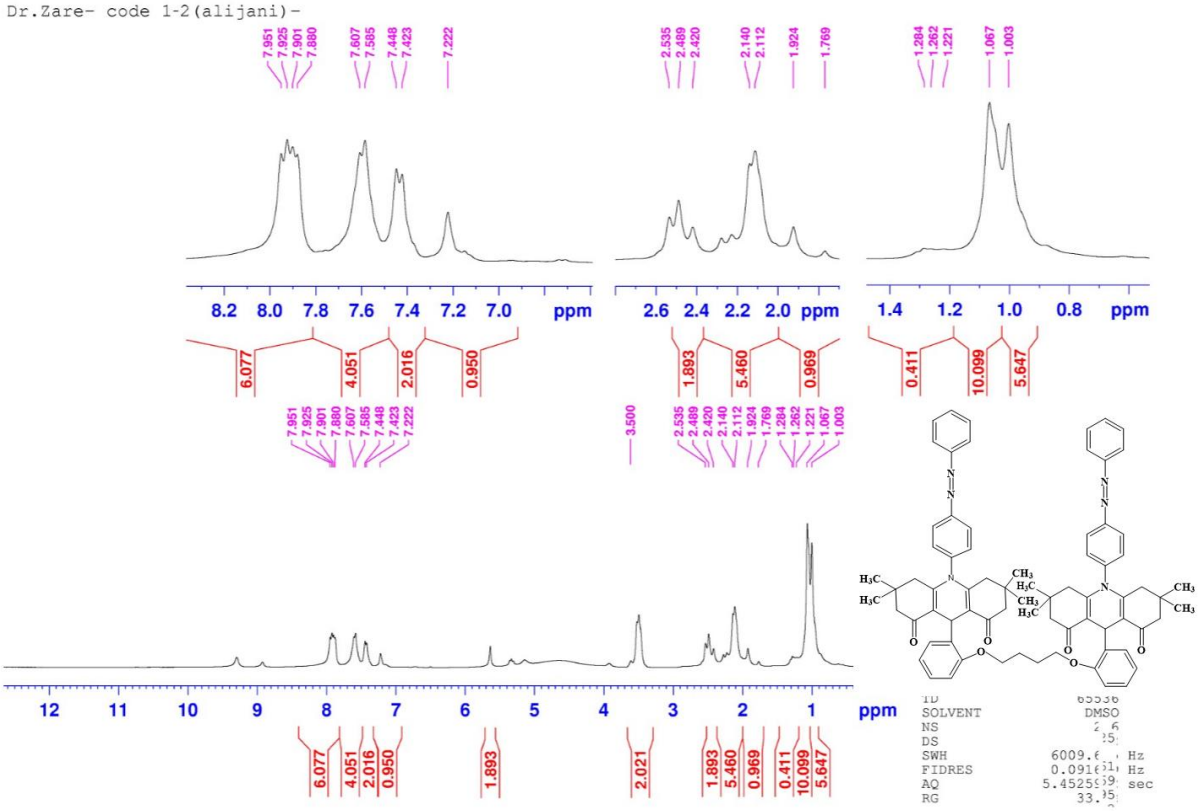
C13-Dr.Zare- code 1(alijani)-

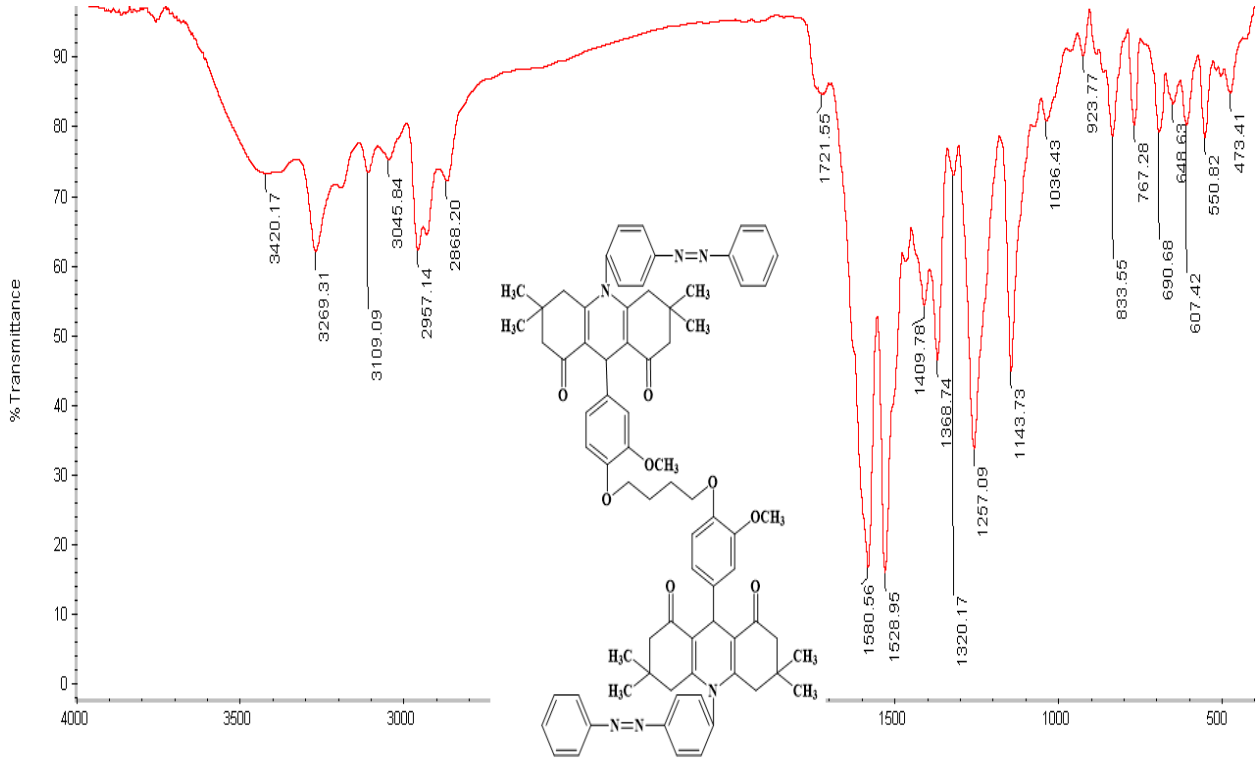


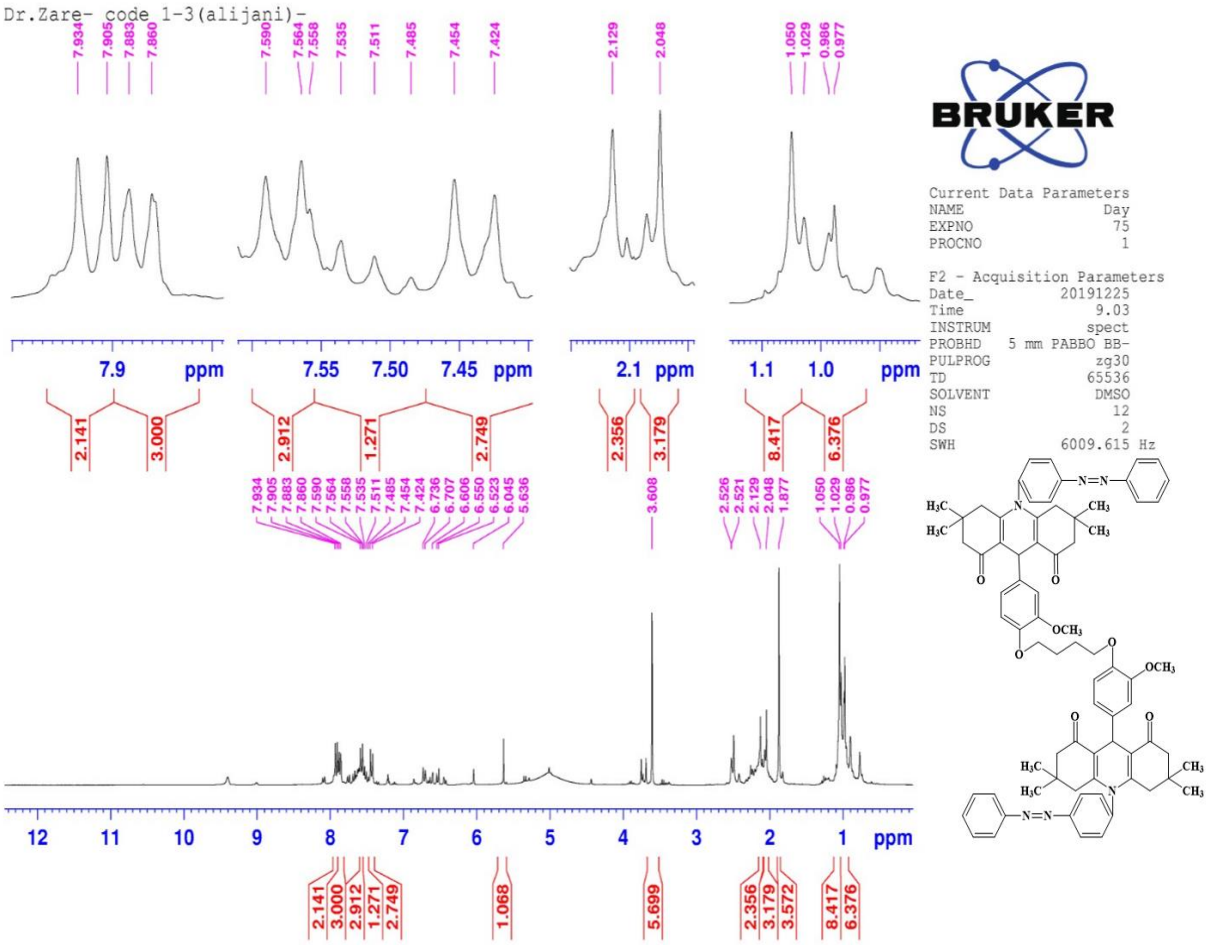
BRUKER

```
Current Data Parameters
NAME                  Aban
EXPNO                  318
PROCNO                   1

F2 - Acquisition Parameters
Date_           20191109
Time               12.56
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                65536
SOLVENT             DMSO
NS                   2048
DS                      4
SWH            18115.941 Hz
FIDRES          0.276427 Hz
AQ              1.8087935 sec
RG                    202
DW                27.600 usec
DE                 6.50 usec
TE                297.6 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1           75.6462982 MHz
NUC1                  13C
P1                 10.00 usec
PLW1          30.00000000 W

======== CHANNEL f2 ========
SFO2          300.8112032 MHz
NUC2                   1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2           6.40000010 W
PLW12          0.17778000 W
PLW13          0.14399999 W

F2 - Processing parameters
SI                  32768
SF            75.6387350 MHz
WDW                    EM
SSB       0
LB                 1.00 Hz
GB        0
PC                 1.40
```


% Transmittance
3757.94
3267.52
3109.54
2958.37
1580.53
1529.32
1496.61
1410.47
1368.71
1256.15
1143.29
953.54
833.26
766.46
691.53
647.65
608.48
550.33
472.04
4000
3500
3000
1500
1000
500


Dr.Zare- code 1-2(alijani)-
7.951
7.925
7.901
7.880
7.607
7.585
7.448
7.423
7.222
2.535
2.489
2.420
2.140
2.112
1.924
1.769
1.284
1.262
1.221
1.067
1.003
8.2 8.0 7.8 7.6 7.4 7.2 7.0 ppm
2.6 2.4 2.2 2.0 ppm
1.4 1.2 1.0 0.8 ppm
6.077
4.051
2.016
0.950
1.893
5.460
0.969
0.411
10.099
5.647
3.500
12 11 10 9 8 7 6 5 4 3 2 1 ppm
2.021
SOLVENT DMSO
NS
DS
SWH
FIDRES
AQ
RG
Hz
Hz
sec


% Transmittance
3420.17
3269.31
3109.09
3045.84
2957.14
2868.20
1721.55
1580.56
1528.95
1409.78
1368.74
1320.17
1257.09
1143.73
1036.43
923.77
833.55
767.28
690.68
648.63
607.42
550.82
473.41
4000
3500
3000
1500
1000
500
0
10
20
30
40
50
60
70
80
90
N=N
CH3
H3C
OCH3
O
N

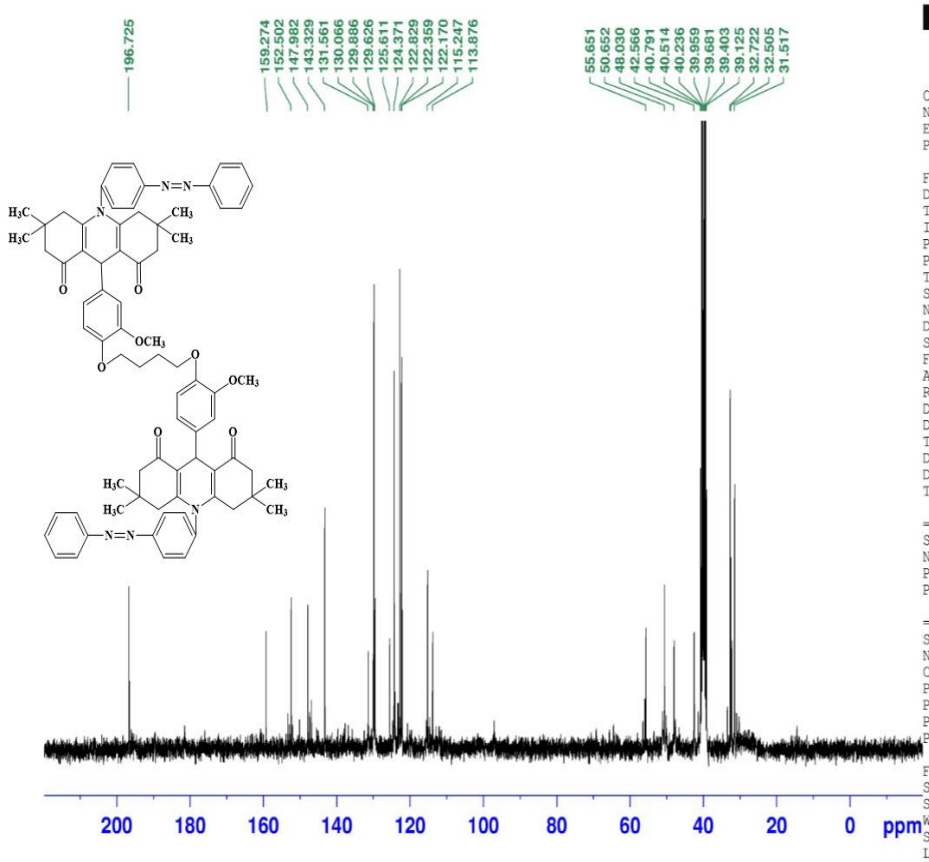


BRUKER

Current Data Parameters
NAME Day
EXPNO 75
PROCNO 1

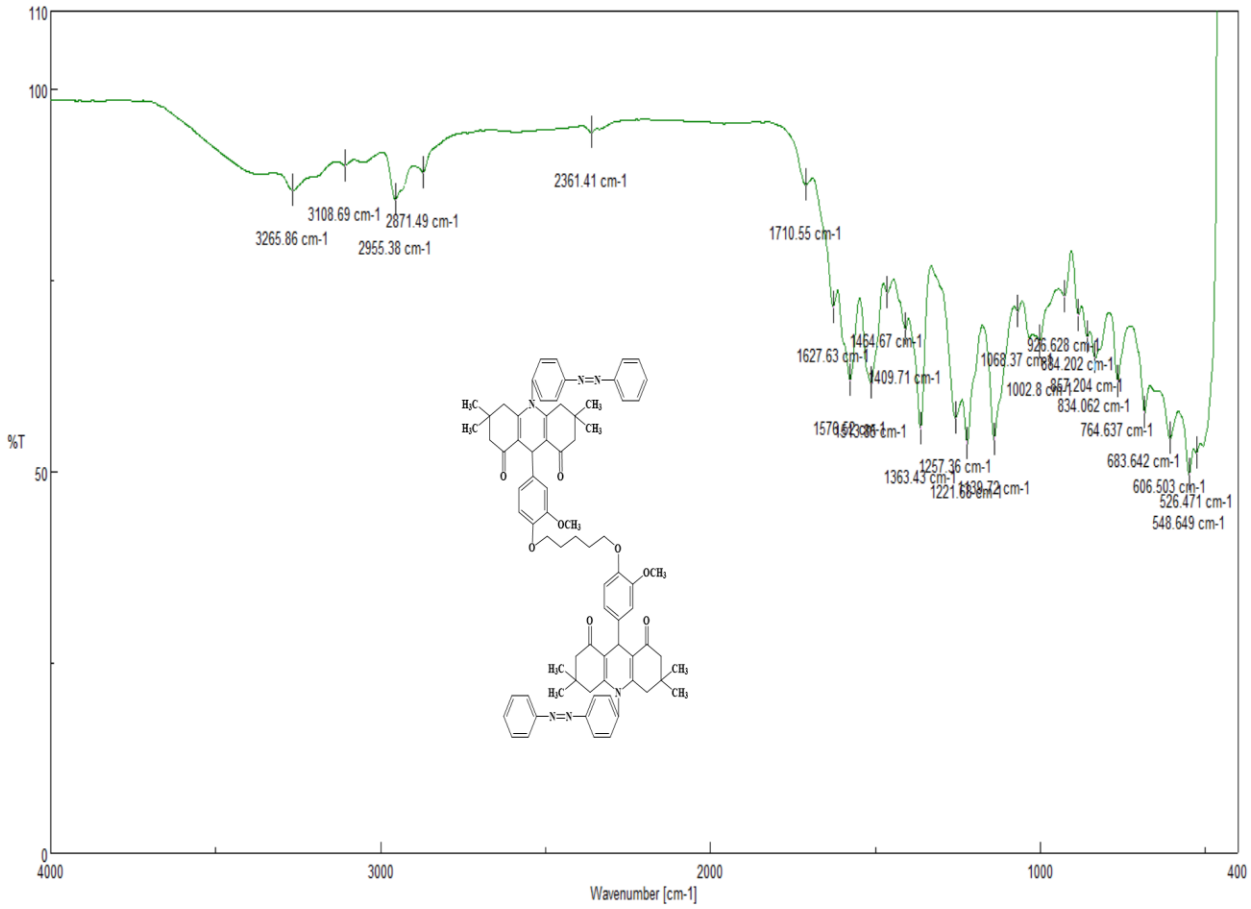
F2 - Acquisition Parameters
Date_ 20191225
Time 9.03
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT DMSO
NS 12
DS 2
SWH 6009.615 Hz

C13-Dr.Zare- code 1-3(alijani)-

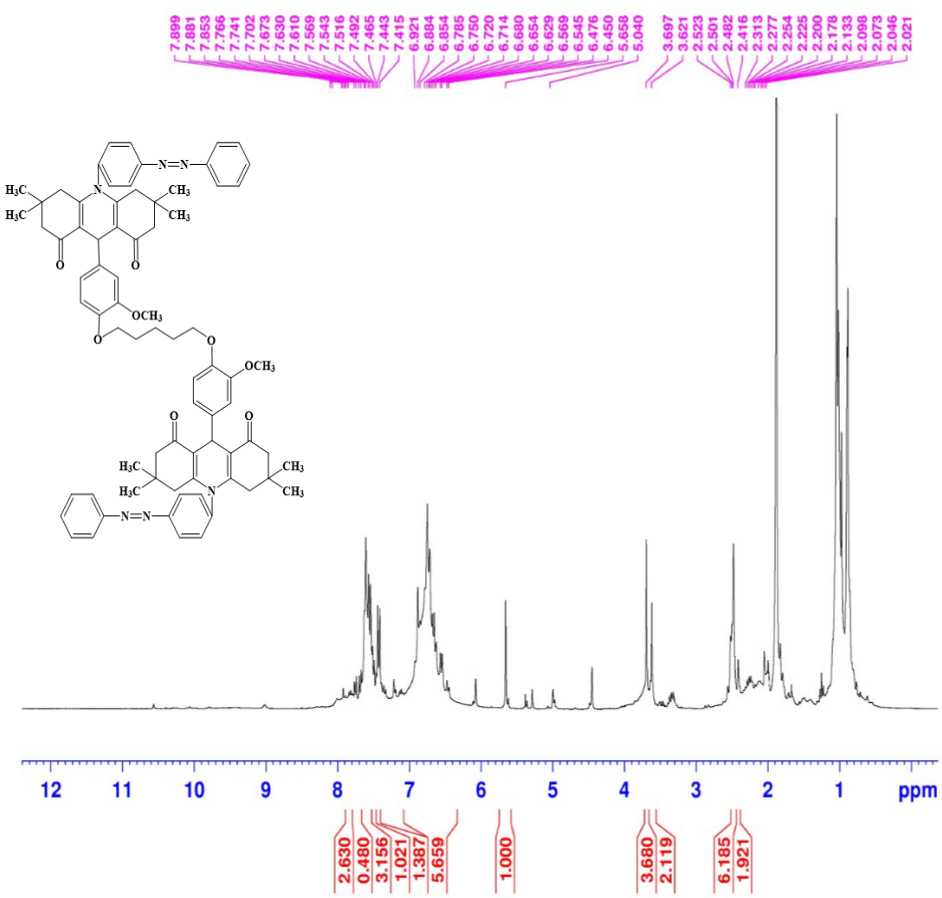


BRUKER

```
Current Data Parameters
NAME                  Day
EXPNO                  76
PROCNO                  1

F2 - Acquisition Parameters
Date_            20191225
Time                 9.37
INSTRUM             spect
PROBHD   5 mm PABBO BB-
PULPROG            zgpg30
TD                  65536
SOLVENT              DMSO
NS                     512
DS                       4
SWH            18115.941 Hz
FIDRES          0.276427 Hz
AQ              1.8087935 sec
RG                     202
DW                27.600 usec
DE                 6.50 usec
TE                297.8 K
D1             2.00000000 sec
D11            0.03000000 sec
TD0                     1

======== CHANNEL f1 ========
SFO1          75.6462982 MHz
NUC1                  13C
P1                 10.00 usec
PLW1        30.00000000 W

======== CHANNEL f2 ========
SFO2         300.8112032 MHz
NUC2                  1H
CPDPRG[2          waltz16
PCPD2              90.00 usec
PLW2          6.40000010 W
PLW12         0.17778000 W
PLW13         0.14399999 W

F2 - Processing parameters
SI                  32768
SF            75.6387350 MHz
WDW                    EM
SSB       0
LB                  1.00 Hz
GB        0
PC                  1.40
```


110
100
50
0
%T
4000
3000
2000
1000
400
Wavenumber [cm-1]
3265.86 cm-1
3108.69 cm-1
2955.38 cm-1
2871.49 cm-1
2361.41 cm-1
1710.55 cm-1
1627.63 cm-1
1454.67 cm-1
1409.71 cm-1
1363.43 cm-1
1257.36 cm-1
1068.37 cm-1
1002.8 cm-1
926.628 cm-1
884.202 cm-1
957.204 cm-1
834.062 cm-1
764.637 cm-1
683.642 cm-1
606.503 cm-1
526.471 cm-1
548.649 cm-1

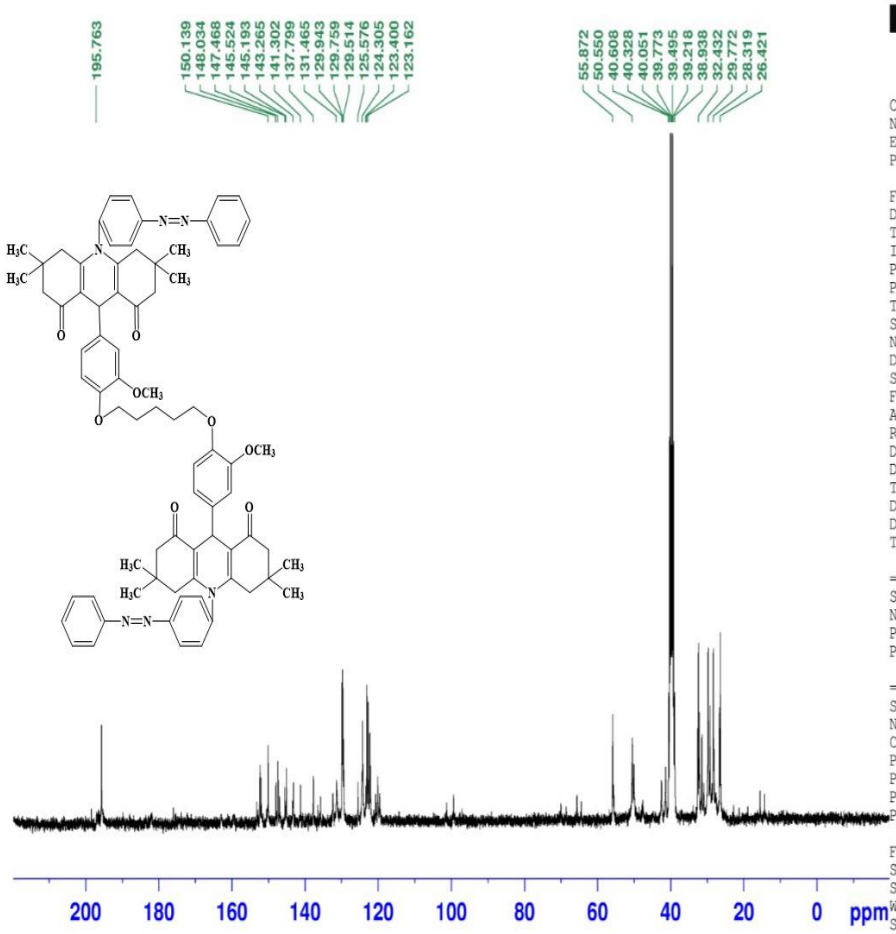
Dr.Zare- code 1-4(alijani)-



BRUKER

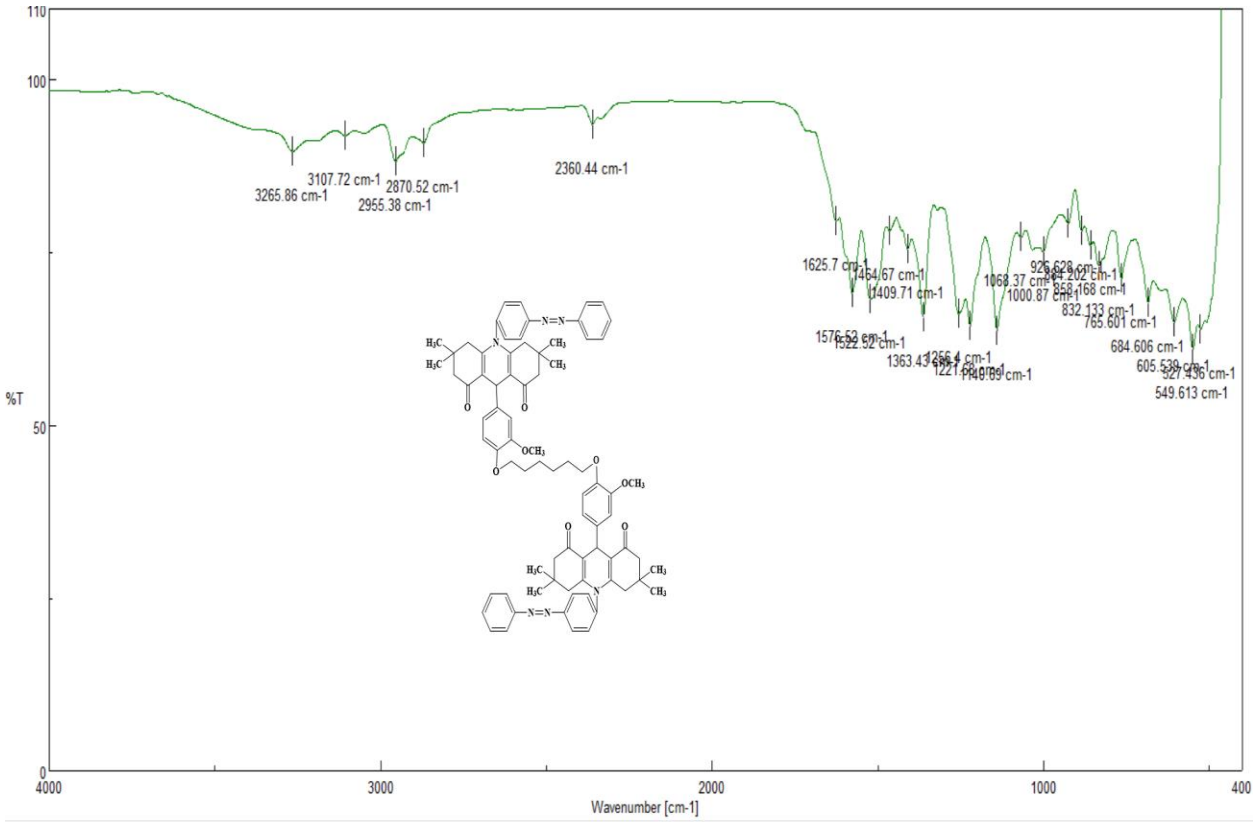
```
Current Data Parameters
NAME                  Bahman
EXPNO                    121
PROCNO                     1

F2 - Acquisition Parameters
Date_              20200128
Time                  14.32
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT                DMSO
NS                        10
DS                         2
SWH                6009.615 Hz
FIDRES            0.091699 Hz
AQ                5.4525952 sec
RG                    33.22
DW                   83.200 usec
DE                    6.50 usec
TE                   297.3 K
D1               1.00000000 sec
TDO                        1

======== CHANNEL f1 ========
SFO1           300.8118576 MHz
NUC1                     1H
P1                    15.00 usec
PLW1           6.40000010 W

F2 - Processing parameters
SI                    65536
SF               300.8100000 MHz
WDW                      EM
SSB       0
LB                    0.30 Hz
GB        0
PC                    1.00
```

C13-Dr.Zare- code 1-4(alijani)-

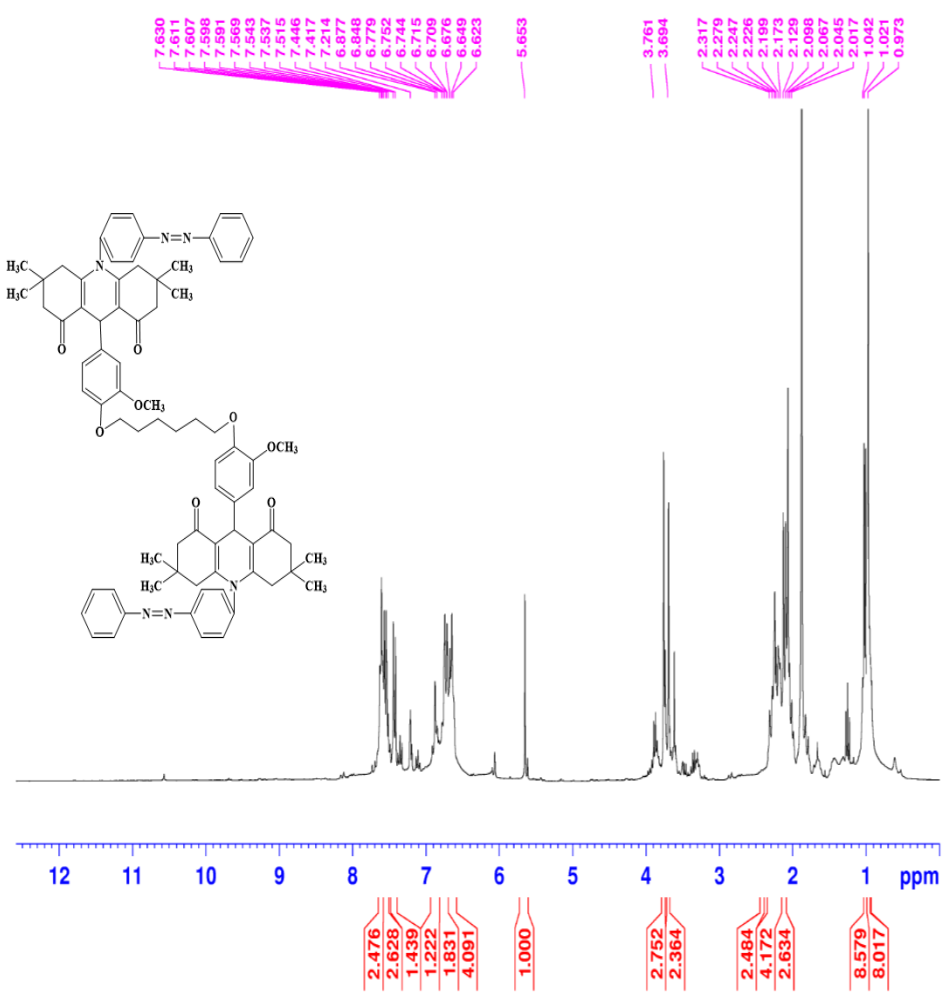


BRUKER

```
Current Data Parameters
NAME                  Bahman
EXPNO                    122
PROCNO                     1

F2 - Acquisition Parameters
Date_              20200128
Time                  12.58
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG               zgpg30
TD                     65536
SOLVENT                DMSO
NS                       941
DS                         4
SWH               18115.941 Hz
FIDRES             0.276427 Hz
AQ                 1.8087935 sec
RG                       202
DW                    27.600 usec
DE                     6.50 usec
TE                    298.6 K
D1                 2.00000000 sec
D11                0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1              75.6462982 MHz
NUC1                     13C
P1                    10.00 usec
PLW1              30.00000000 W

======== CHANNEL f2 ========
SFO2             300.8112032 MHz
NUC2                      1H
CPDPRG[2              waltz16
PCPD2                 90.00 usec
PLW2               6.40000010 W
PLW12              0.17778000 W
PLW13              0.14399999 W

F2 - Processing parameters
SI                        32768
SF                75.6387350 MHz
WDW                          EM
SSB          0
LB                     1.00 Hz
GB           0
PC                     1.40
```


110
100
50
0
%T
4000
3000
2000
1000
400
Wavenumber [cm-1]
3265.86 cm-1
3107.72 cm-1
2955.38 cm-1
2870.52 cm-1
2360.44 cm-1
1625.7 cm-1
1464.67 cm-1
1409.71 cm-1
1576.52 cm-1
1522.52 cm-1
1363.43 cm-1
1356.4 cm-1
1221.99 cm-1
1068.37 cm-1
1000.87 cm-1
926.626 cm-1
904.202 cm-1
858.168 cm-1
832.133 cm-1
765.601 cm-1
684.606 cm-1
605.539 cm-1
549.613 cm-1

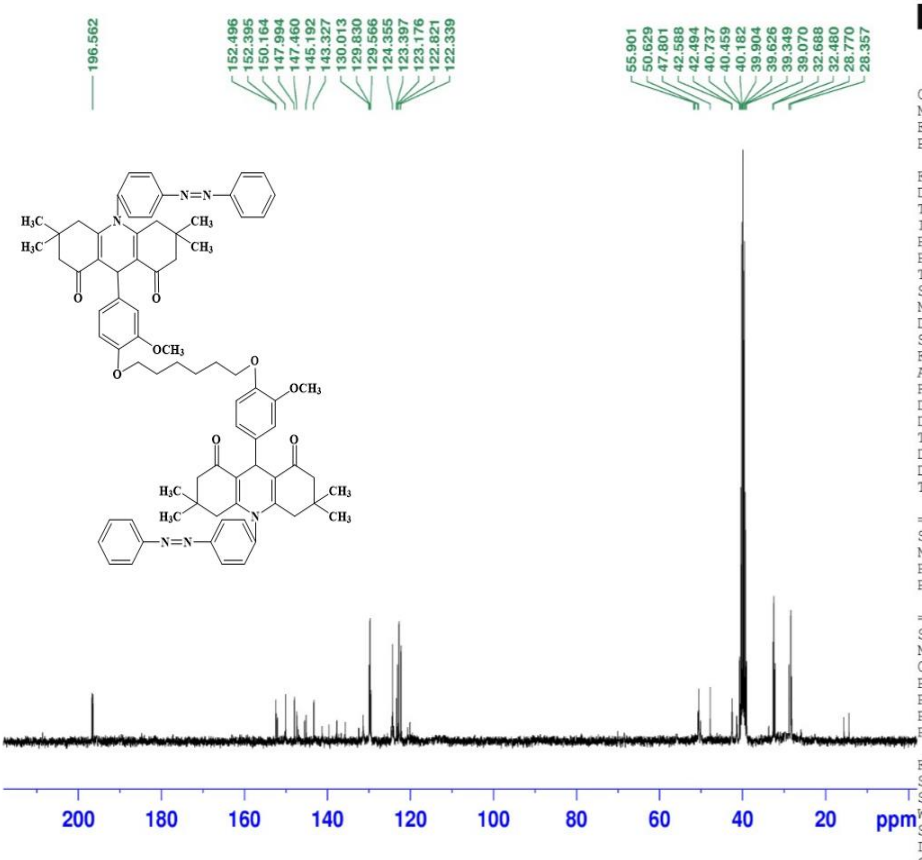
Dr.Zare- code 1-5(alijani)-



BRUKER

```
Current Data Parameters
NAME                  Bahman
EXPNO                    124
PROCNO                     1

F2 - Acquisition Parameters
Date_               20200128
Time                   14.40
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT                DMSO
NS                         8
DS                         2
SWH                 6009.615 Hz
FIDRES              0.091699 Hz
AQ                5.4525952 sec
RG                     33.22
DW                    83.200 usec
DE                     6.50 usec
TE                    297.4 K
D1                1.00000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            300.8118576 MHz
NUC1                       1H
P1                     15.00 usec
PLW1             6.40000010 W

F2 - Processing parameters
SI                    65536
SF              300.8100000 MHz
WDW                       EM
SSB       0
LB                     0.30 Hz
GB        0
PC                     1.00
```

C13-Dr.Zare- code 1-5(alijani)-



BRUKER

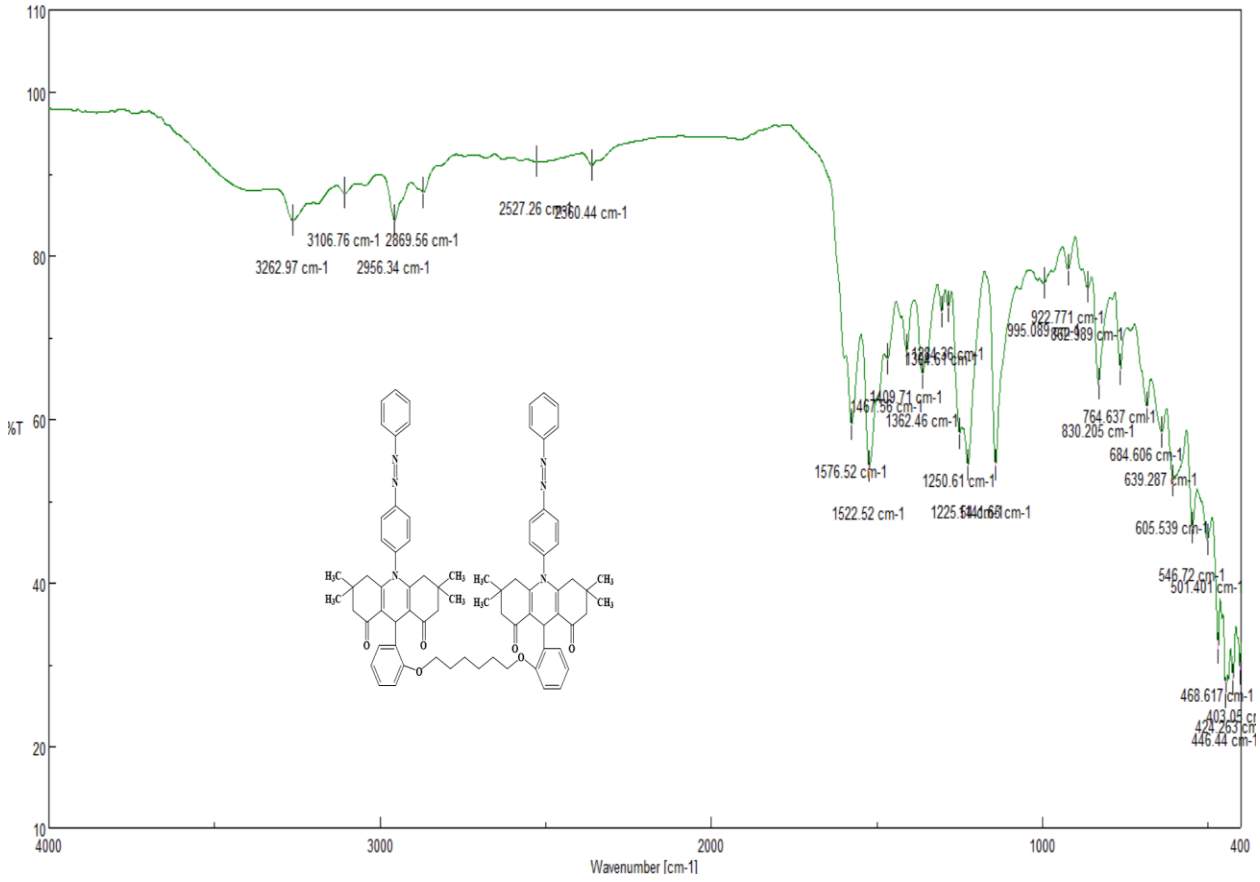
Current Data Parameters
NAME Bahman
EXPNO 125
PROCNO 1

F2 - Acquisition Parameters
Date_ 20200128
Time 14.53
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT DMSO
NS 200
DS 4
SWH 18115.941 Hz
FIDRES 0.276427 Hz
AQ 1.8087935 sec
RG 202
DW 27.600 usec
DE 6.50 usec
TE 298.2 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

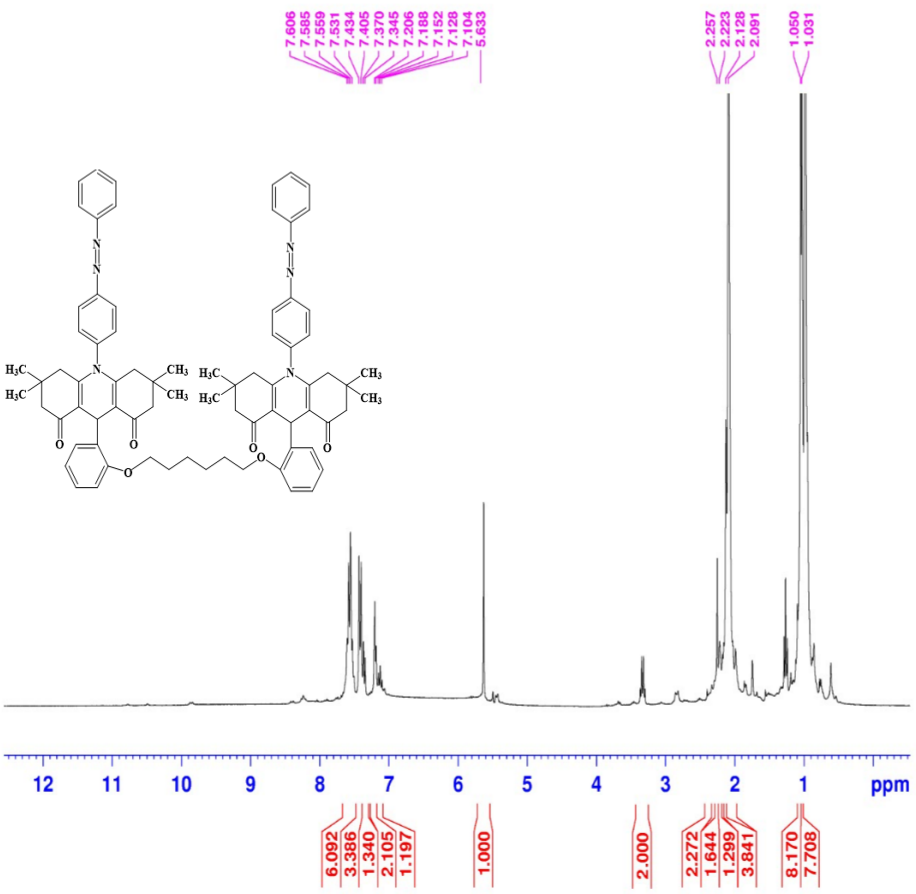
======== CHANNEL f1 ========
SFO1 75.6462982 MHz
NUC1 13C
P1 10.00 usec
PLW1 30.00000000 W

======== CHANNEL f2 ========
SFO2 300.8112032 MHz
NUC2 1H
CPDPRG[2 waltz16
PCPD2 90.00 usec
PLW2 6.40000010 W
PLW12 0.17778000 W
PLW13 0.14399999 W

F2 - Processing parameters
SI 32768
SF 75.6387350 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40


%T
Wavenumber [cm-1]
3262.97 cm-1
3106.76 cm-1
2956.34 cm-1
2869.56 cm-1
2527.26 cm-1
2360.44 cm-1
1576.52 cm-1
1522.52 cm-1
1467.58 cm-1
1409.71 cm-1
1362.46 cm-1
1250.61 cm-1
995.089 cm-1
922.771 cm-1
830.205 cm-1
764.637 cm-1
684.606 cm-1
639.287 cm-1
605.539 cm-1
546.72 cm-1
468.617 cm-1
446.44 cm-1

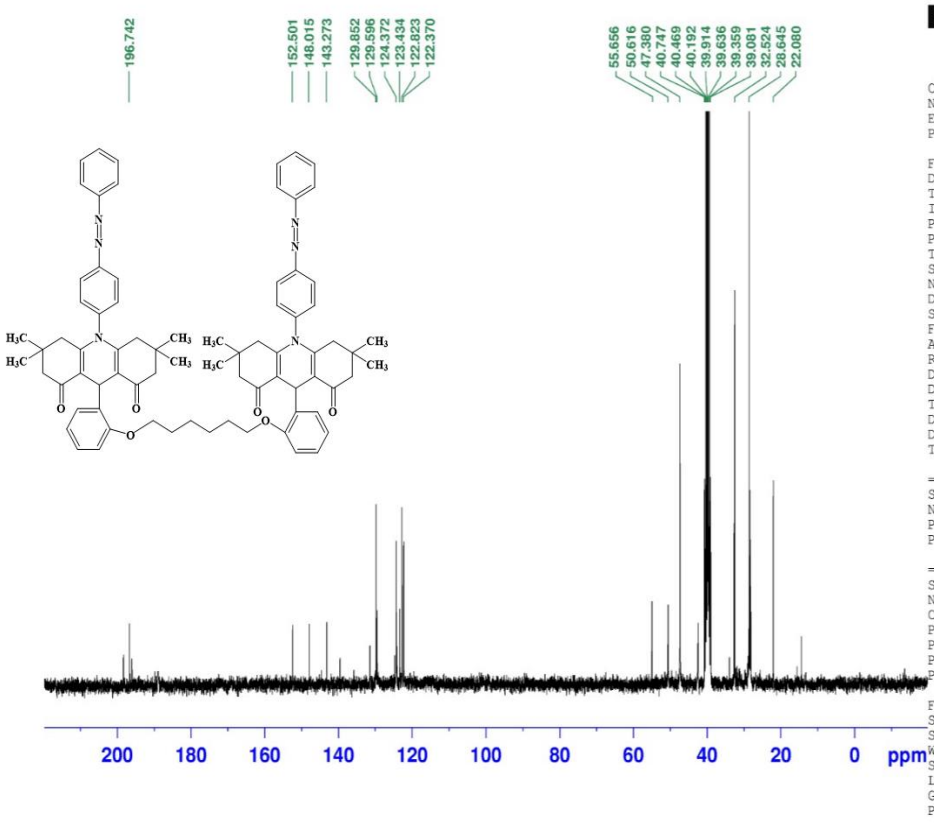
Dr.Zare- code 1-6(alijani)-



BRUKER

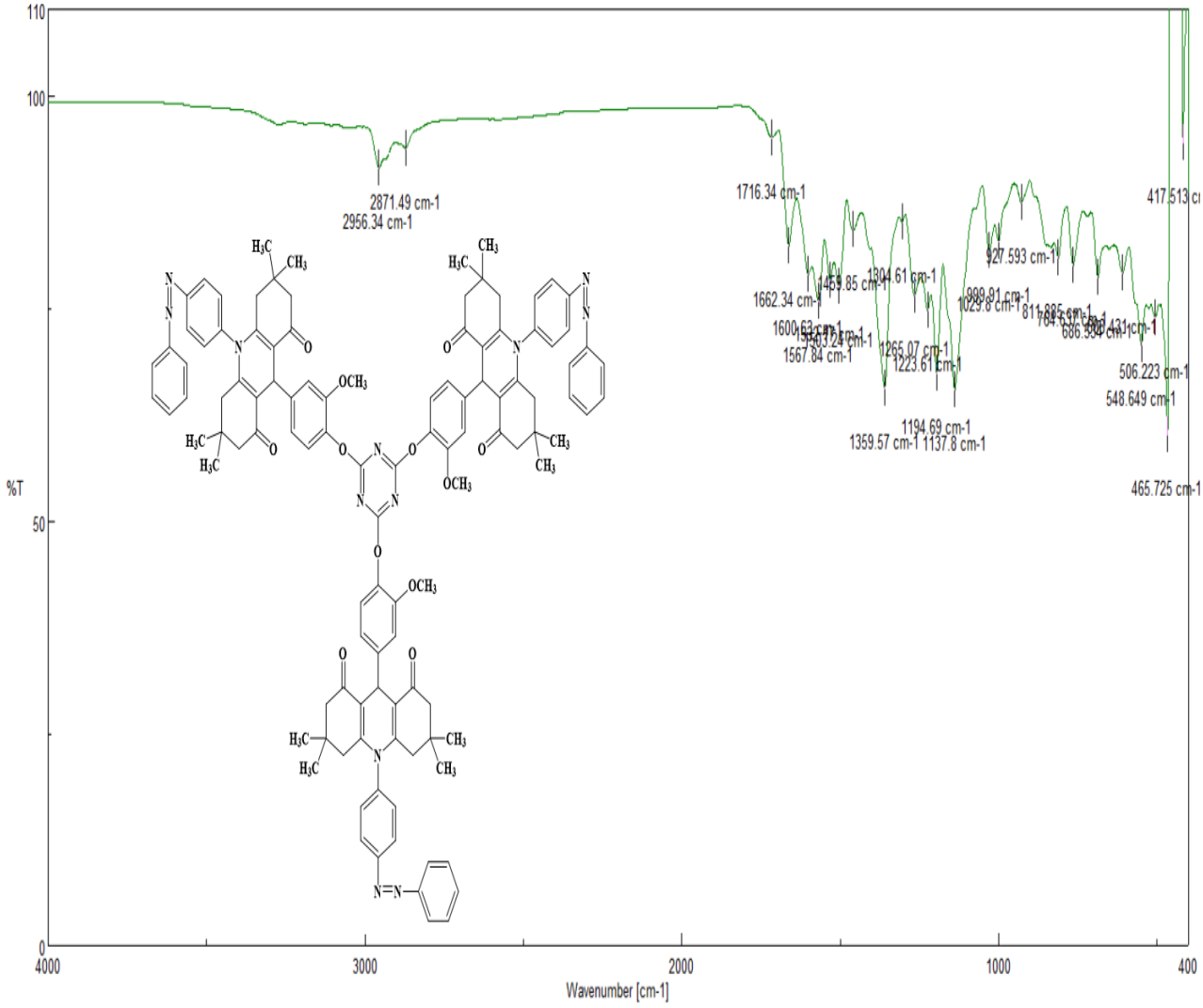
```
Current Data Parameters
NAME                 Bahman
EXPNO                   123
PROCNO                    1

F2 - Acquisition Parameters
Date_               20200128
Time                   15.05
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zg30
TD                    65536
SOLVENT                DMSO
NS                       10
DS                        2
SWH                6009.615 Hz
FIDRES            0.091699 Hz
AQ                 5.4525952 sec
RG                     33.22
DW                    83.200 usec
DE                     6.50 usec
TE                    297.6 K
D1                1.00000000 sec
TD0                       1

======== CHANNEL f1 ========
SFO1           300.8118576 MHz
NUC1                     1H
P1                    15.00 usec
PLW1           6.40000010 W

F2 - Processing parameters
SI                    65536
SF               300.8100000 MHz
WDW                      EM
SSB          0
LB                     0.30 Hz
GB           0
PC                     1.00
```

C13-Dr.Zare- code 1-6(alijani)-

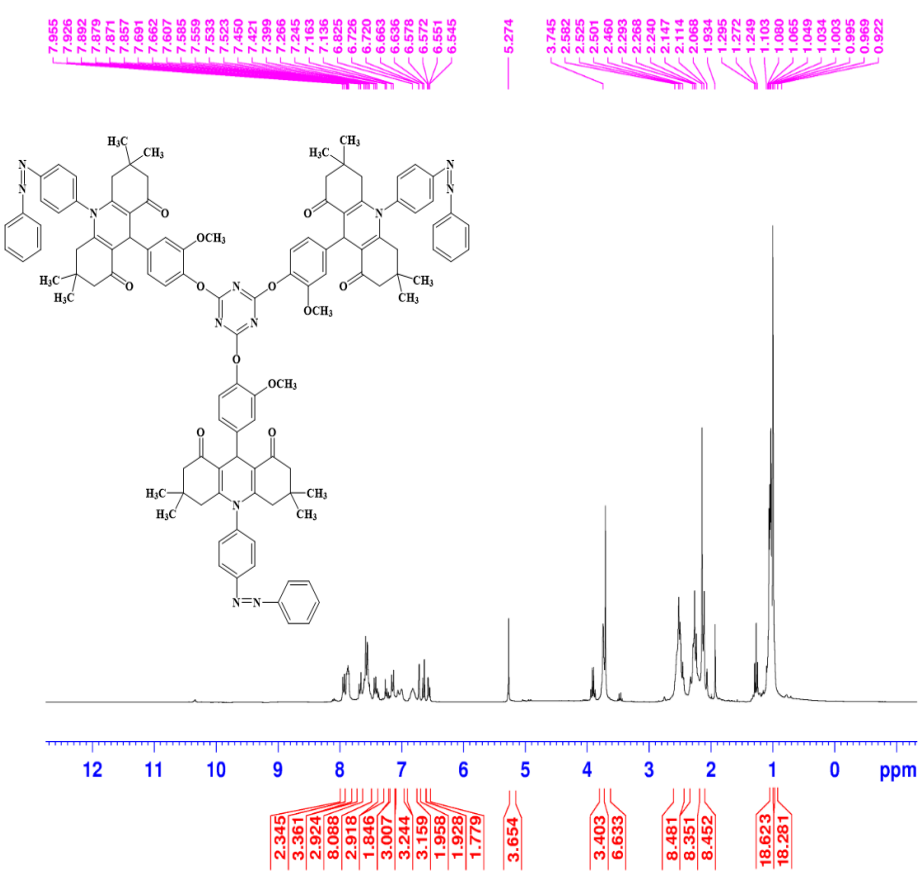


BRUKER

```
Current Data Parameters
NAME                  Bahman
EXPNO                    126
PROCNO                     1

F2 - Acquisition Parameters
Date_              20200128
Time                  15.16
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG              zgpg30
TD                    65536
SOLVENT                DMSO
NS                       160
DS                         4
SWH               18115.941 Hz
FIDRES             0.276427 Hz
AQ                 1.8087935 sec
RG                       202
DW                    27.600 usec
DE                     6.50 usec
TE                    298.4 K
D1                 2.00000000 sec
D11                0.03000000 sec
TD0                        1

======== CHANNEL f1 ========
SFO1            75.6462982 MHz
NUC1                    13C
P1                    10.00 usec
PLW1           30.00000000 W

======== CHANNEL f2 ========
SFO2           300.8112032 MHz
NUC2                    1H
CPDPRG[2             waltz16
PCPD2                 90.00 usec
PLW2            6.40000010 W
PLW12           0.17778000 W
PLW13           0.14399999 W

F2 - Processing parameters
SI                     32768
SF              75.6387350 MHz
WDW                       EM
SSB          0
LB                     1.00 Hz
GB           0
PC                     1.40
```


110
100
50
0
%T
4000
3000
2000
1000
400
Wavenumber [cm-1]
2871.49 cm-1
2956.34 cm-1
1716.34 cm-1
1662.34 cm-1
1567.84 cm-1
1359.57 cm-1
1194.69 cm-1
1137.8 cm-1
1265.07 cm-1
1223.61 cm-1
1029.8 cm-1
999.81 cm-1
927.593 cm-1
811.885 cm-1
686.994 cm-1
548.649 cm-1
506.223 cm-1
465.725 cm-1
417.513 cm-1
OCH3
CH3
H3C
O
N
N=N

Dr.Zare- code 1-7(alijani)-



BRUKER

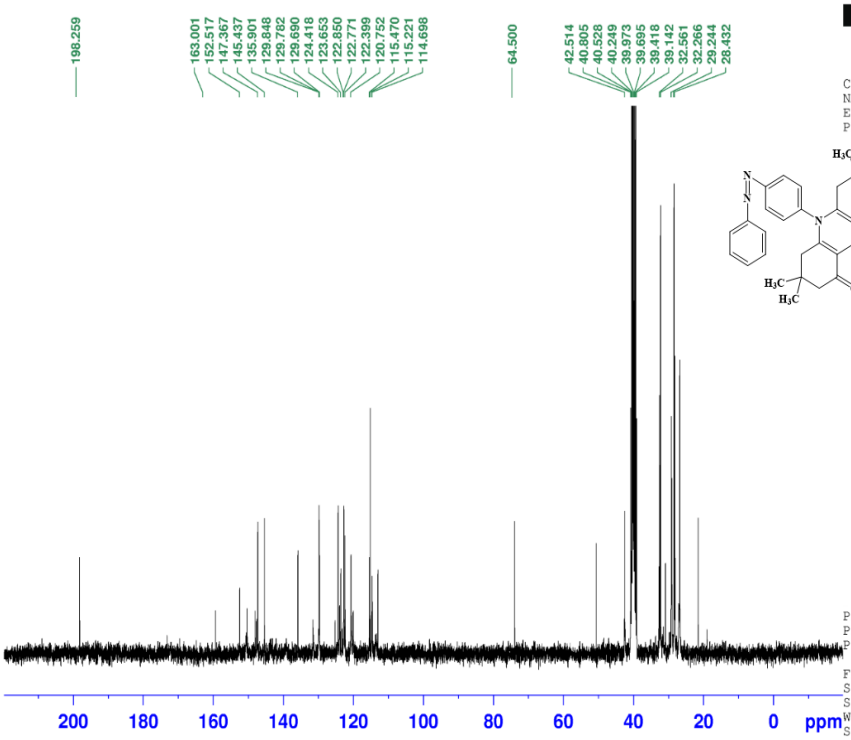
Current Data Parameters
NAME Tir
EXPNO 61
PROCNO 1

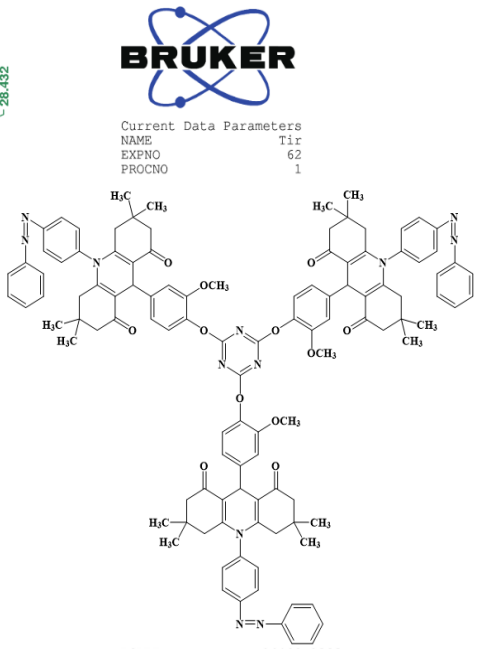
F2 - Acquisition Parameters
Date_ 20200627
Time 14.01
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT DMSO
NS 16
DS 2
SWH 6009.615 Hz
FIDRES 0.091699 Hz
AQ 5.4525952 sec
RG 33.22
DW 83.200 usec
DE 6.50 usec
TE 297.9 K
D1 1.00000000 sec
TD0 1

======== CHANNEL f1 ========
SFO1 300.8118576 MHz
NUC1 1H
P1 15.00 usec
PLW1 6.40000010 W

F2 - Processing parameters
SI 65536
SF 300.8100000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

C13-Dr.Zare- code 1-7(alijani)-





Current Data Parameters
NAME Tir
EXPNO 62
PROCNO 1

PLW2 6.40000010 W
PLW12 0.17778000 W
PLW13 0.14399999 W

F2 - Processing parameters
SI 32768
SF 75.6387350 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40