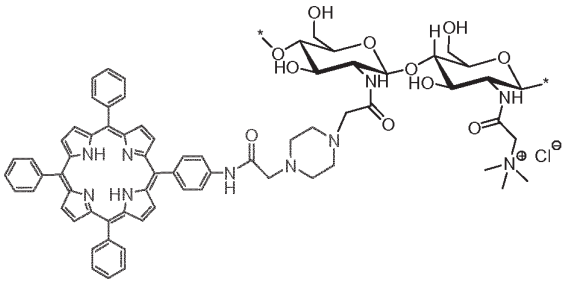
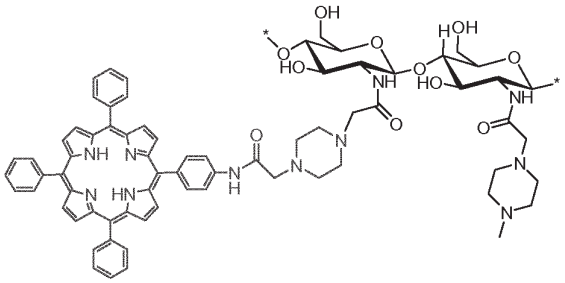
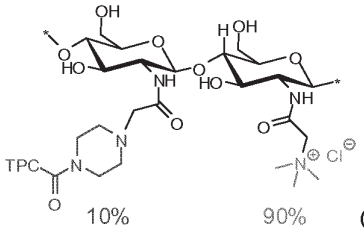
Figure 1



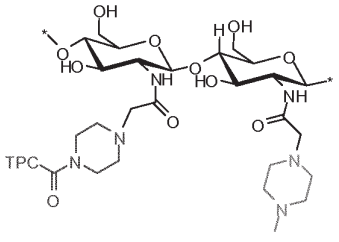
Compound 16A, 16B - 10%, 90%
Compound 17A, 17B - 25%, 75%



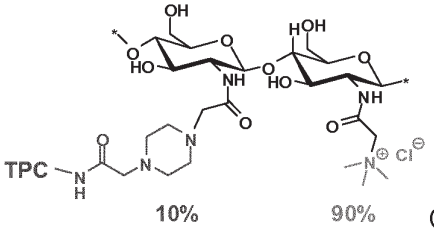
Compound 18A, 18B - 10%, 90%
Compound 19A, 19B - 25%, 75%



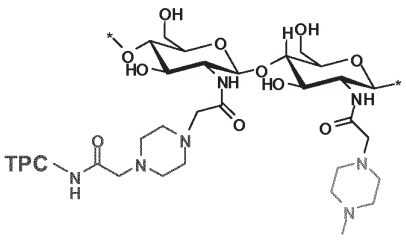
10% 90% Compound 37



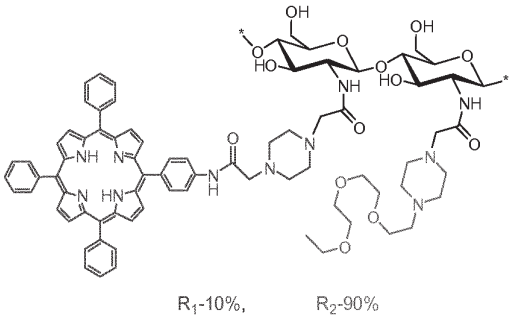
10% 90% Compound 38



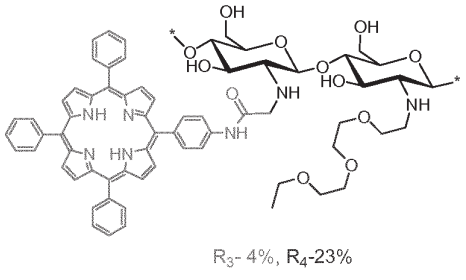
10% 90% Compound 32



Compound 33



Compound 54



Compound 57

Figure 2
Scheme 1

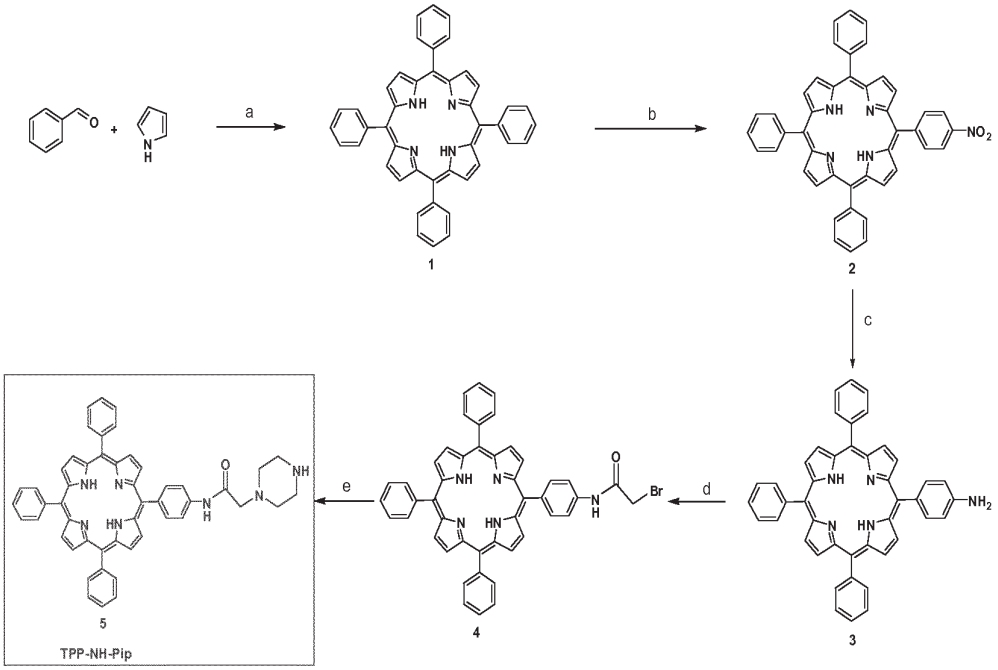


Figure 3
Scheme 2

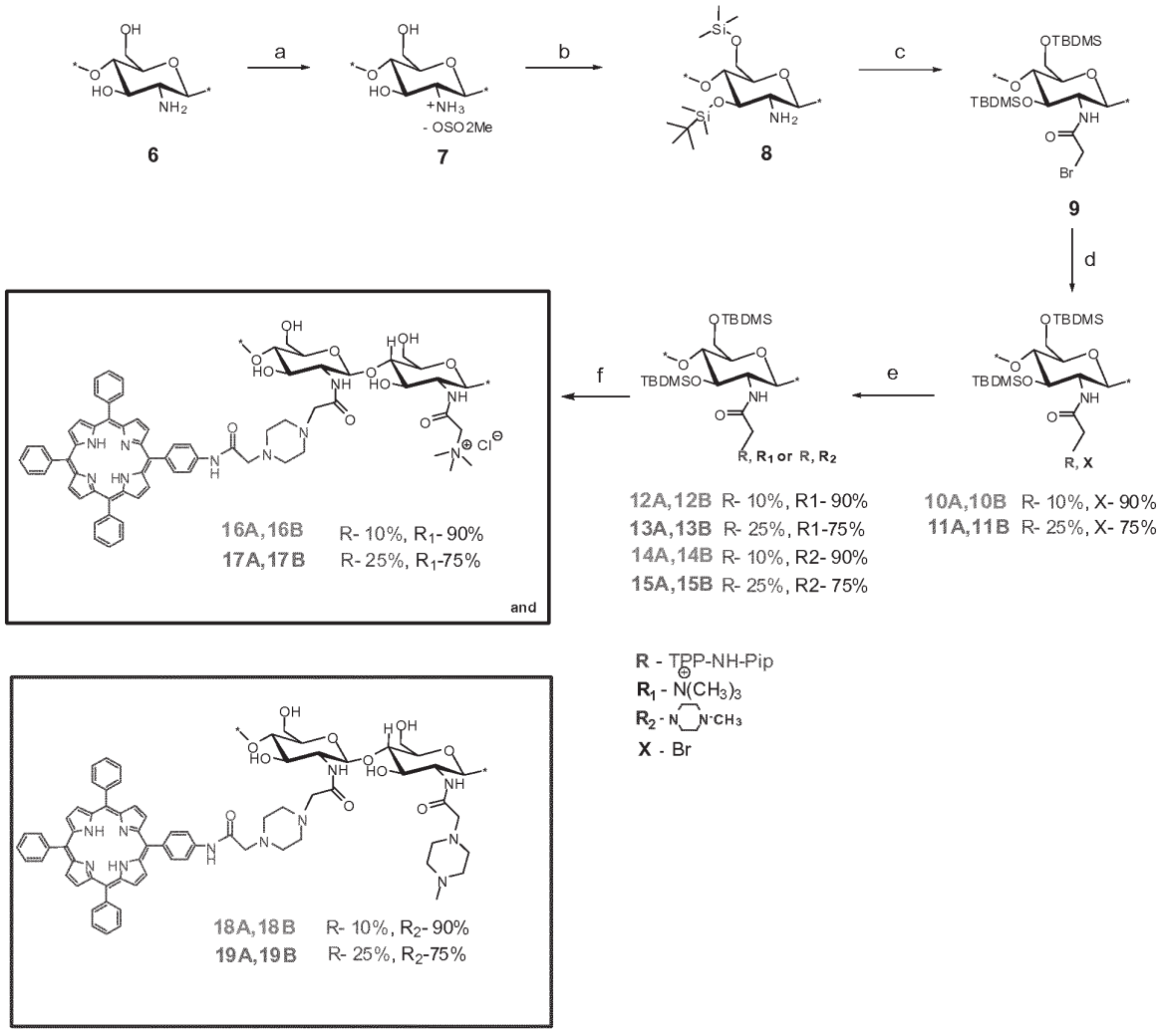


Figure 4

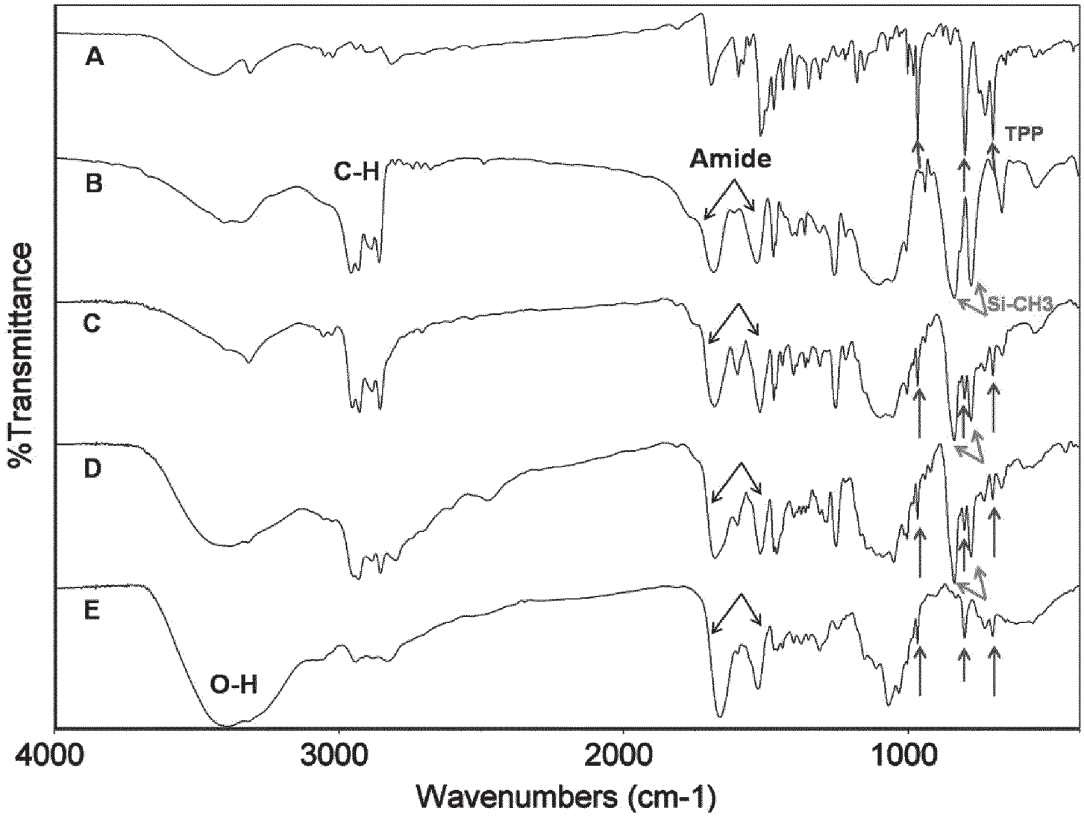

A
B
C
D
E
C-H
Amide
TPP
Si-CH3
O-H
%Transmittance
4000
3000
2000
1000
Wavenumbers (cm-1)

Figure 5

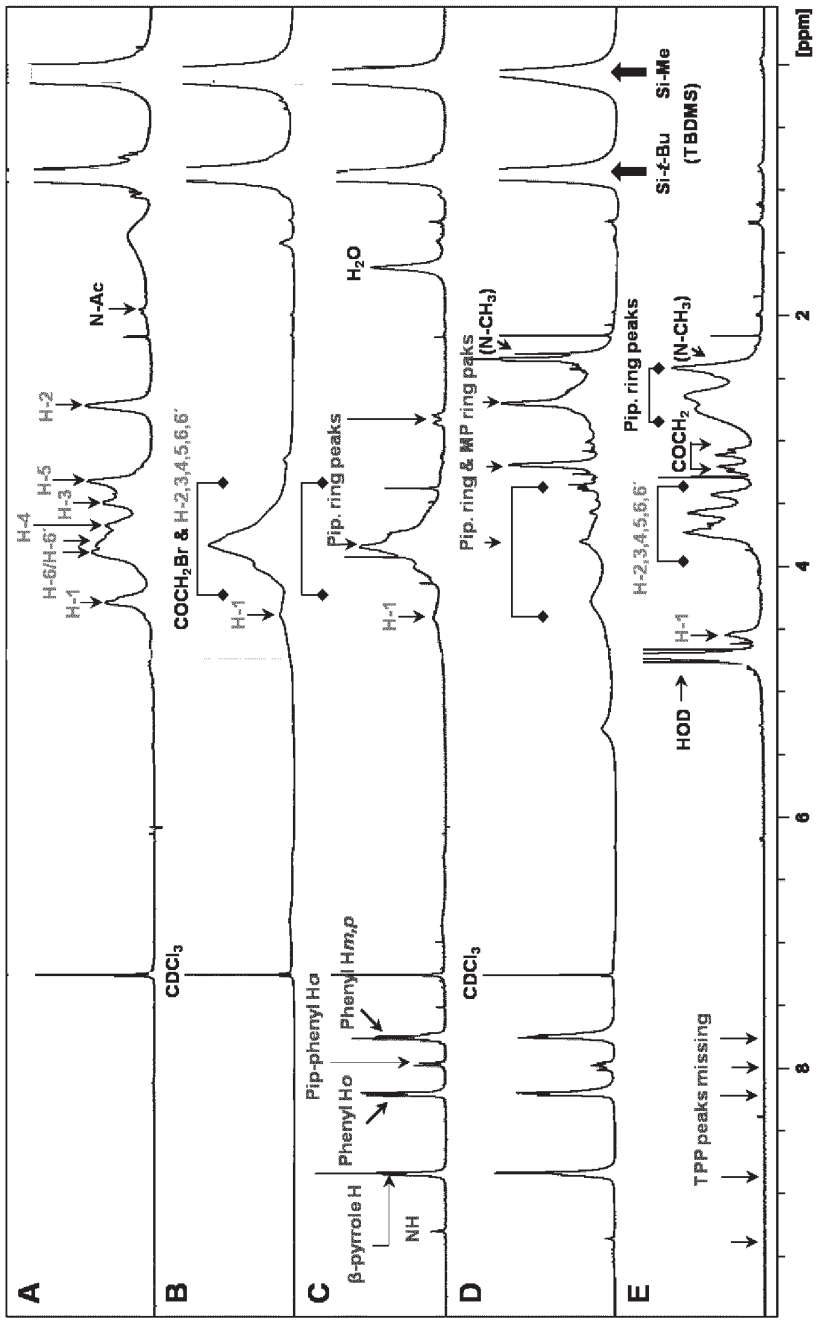

A
B
C
D
E
H-4
H-6/H-6'
H-1
H-3
H-5
H-2
N-Ac
CDCl3
COCH2Br & H-2,3,4,5,6,6'
H-1
Pip-phenyl Hσ
Phenyl Hm,p
Phenyl Ho
β-pyrrole H
NH
Pip. ring peaks
H2O
H-1
CDCl3
Pip. ring & MP ring paks
(N-CH3)
Pip. ring peaks
(N-CH3)
COCH2
H-2,3,4,5,6,6'
H-1
HOD
TPP peaks missing
Si-t-Bu
Si-Me
(TBDMS)
8
6
4
2
[ppm]

Figure 6

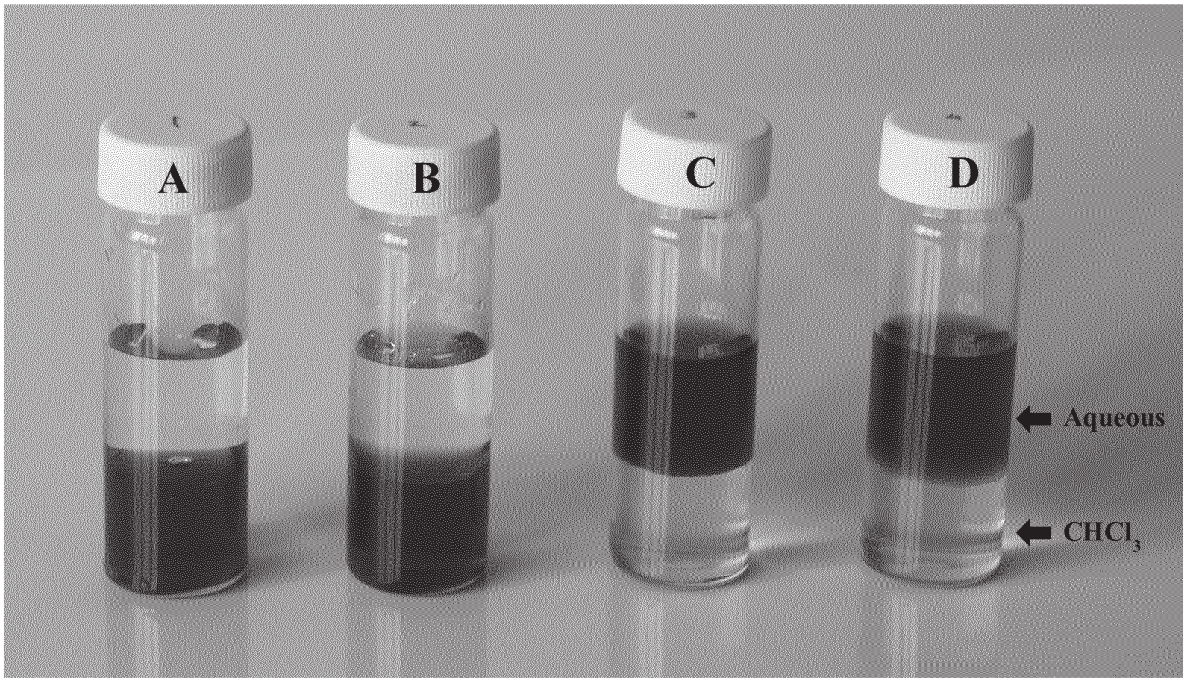


Figure 7

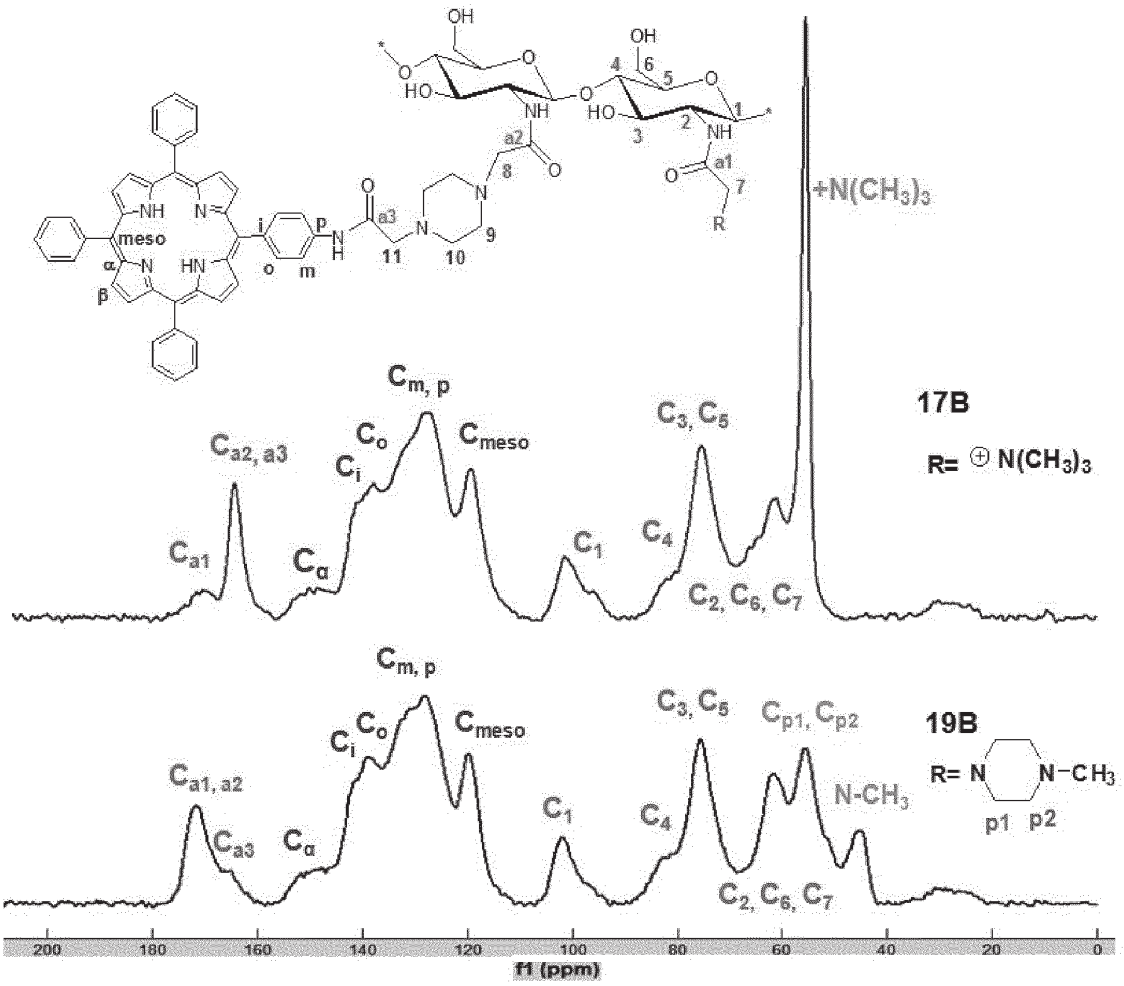

+N(CH3)3
17B
R= ⊕ N(CH3)3
Cm, p
Co
Ci
Cmeso
Ca2, a3
Ca1
Cα
C1
C4
C3, C5
C2, C6, C7
19B
R= N N−CH3
p1 p2
Cp1, Cp2
N-CH3
Ca1, a2
Ca3
200 180 160 140 120 100 80 60 40 20 0
f1 (ppm)

Figure 8

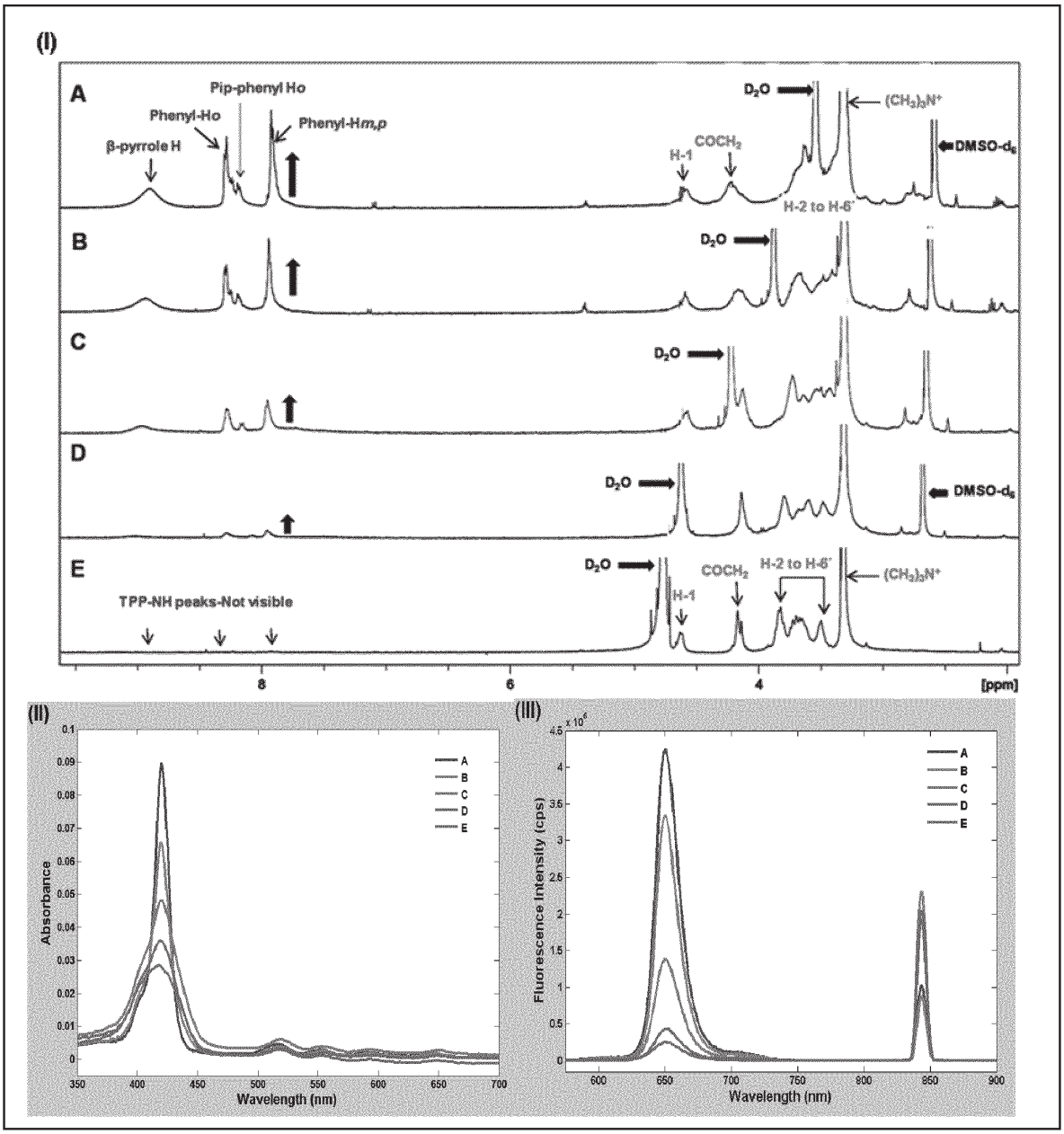

(I)
A
Pip-phenyl Ho
Phenyl-Ho
Phenyl-Hm,p
β-pyrrole H
D2O
(CH3)3N+
COCH2
H-1
DMSO-d6
H-2 to H-6'
B
C
D
E
TPP-NH peaks-Not visible
8
6
4
[ppm]
(II)
Absorbance
Wavelength (nm)
(III)
x 10^6
Fluorescence Intensity (cps)
Wavelength (nm)

Figure 9

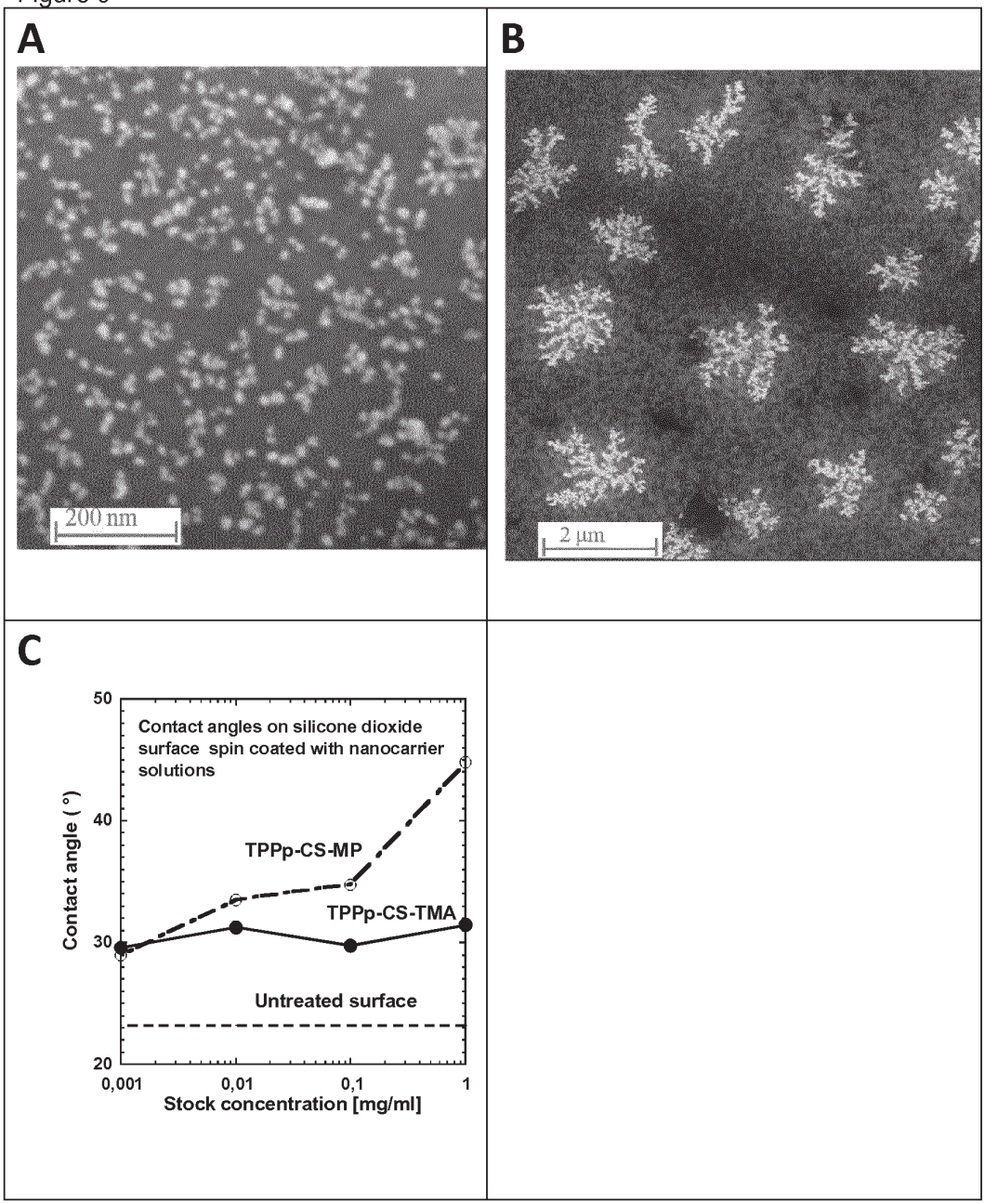

A
200 nm
B
2 µm
C
Contact angles on silicone dioxide surface spin coated with nanocarrier solutions
TPPp-CS-MP
TPPp-CS-TMA
Untreated surface
Contact angle (°)
50
40
30
20
0,001
0,01
0,1
1
Stock concentration [mg/ml]

Figure 10
Scheme 3

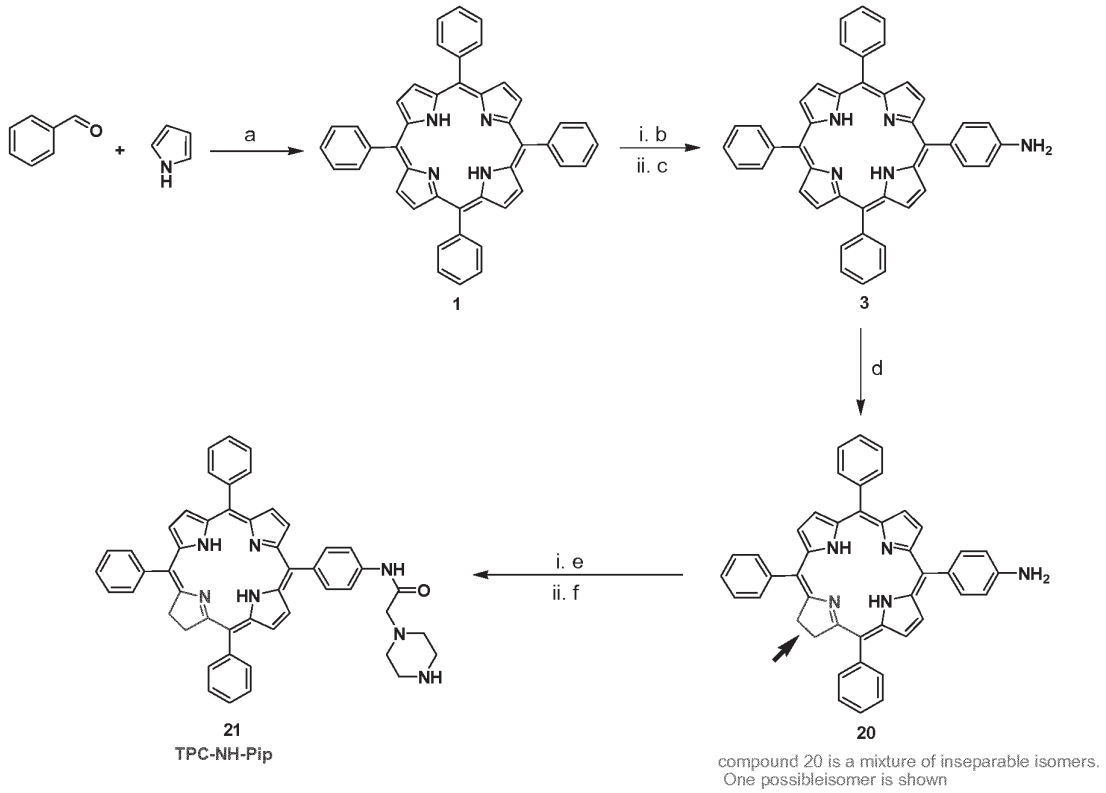


Figure 11
Scheme 4

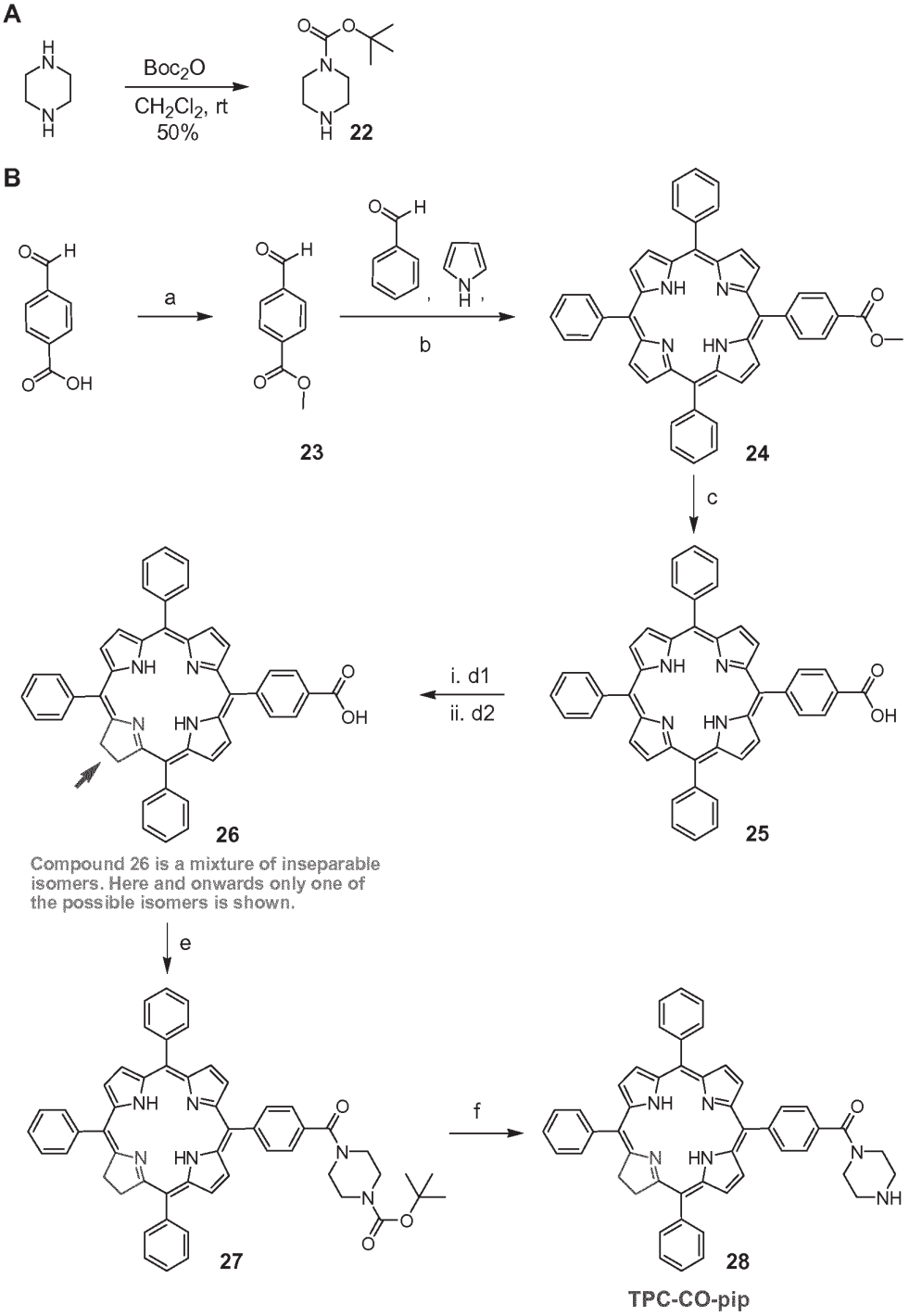


Figure 12
Scheme 5

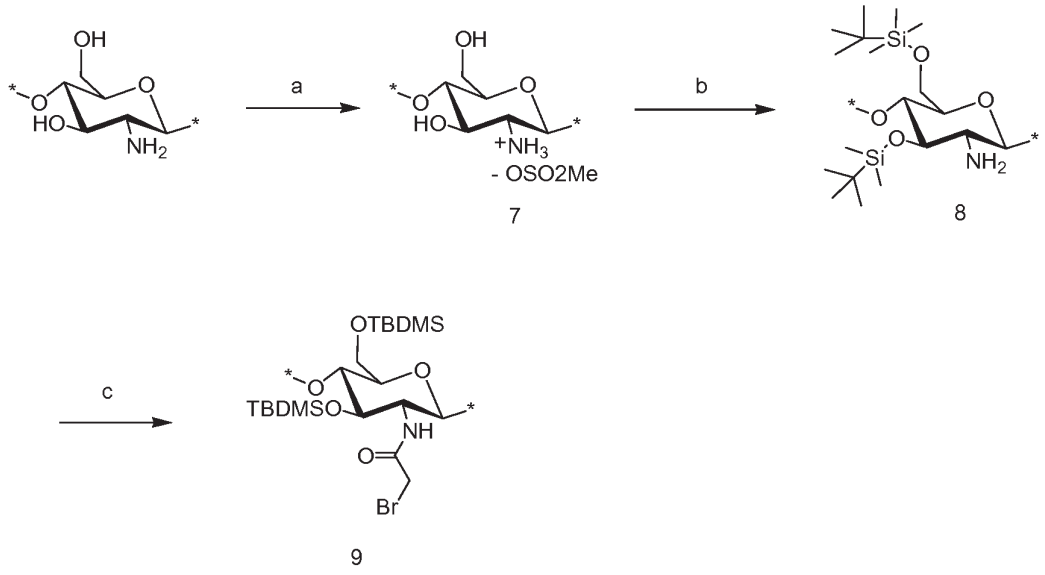
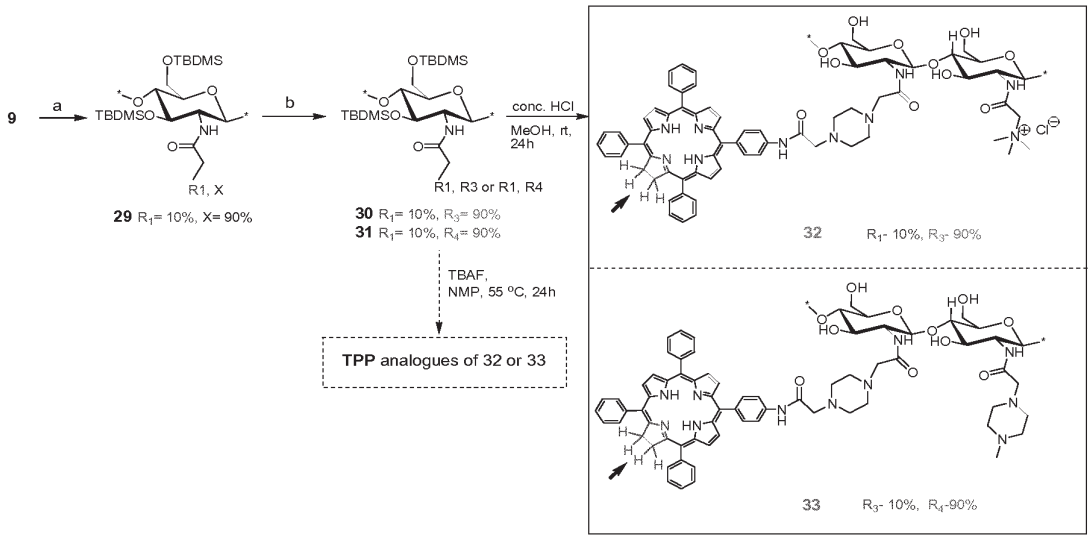
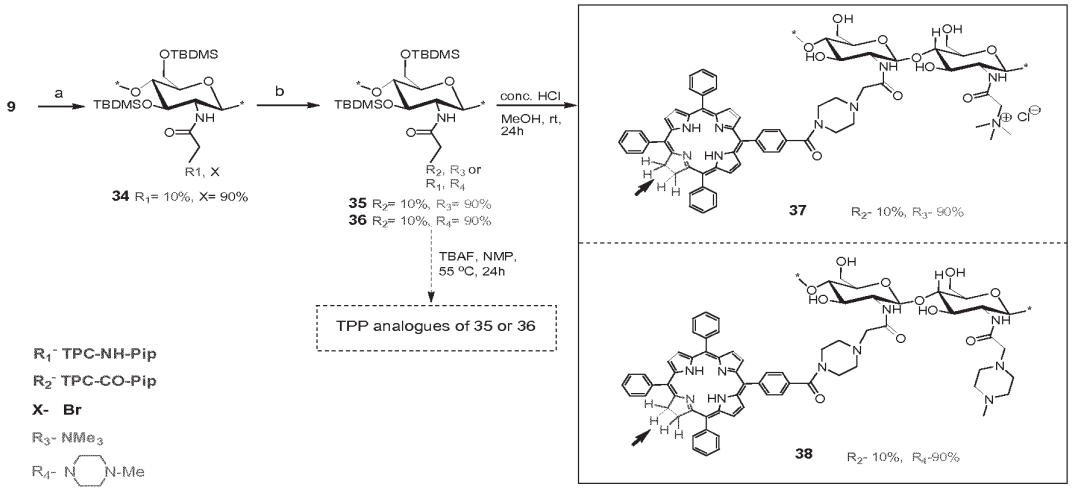


Figure 13
Scheme 6A



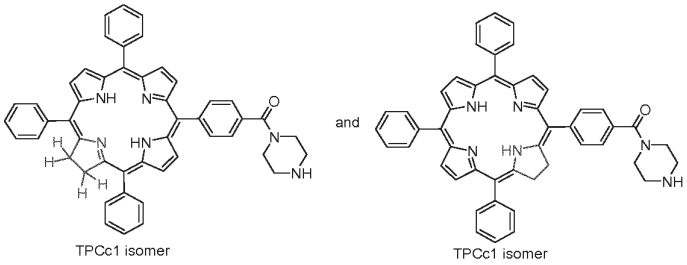
compound **32** & **33** are derivatives of the TPCa1 and TPCa2 isomers. Only structure of theTPCa1 isomer is shown in the stucture drawing

Scheme 6B



compound **37** & **38** are derivatives of the TPCc1 and TPCc2 isomers. Only structure of theTPCc1 isomer is shown in the stucture drawing

Figure 14



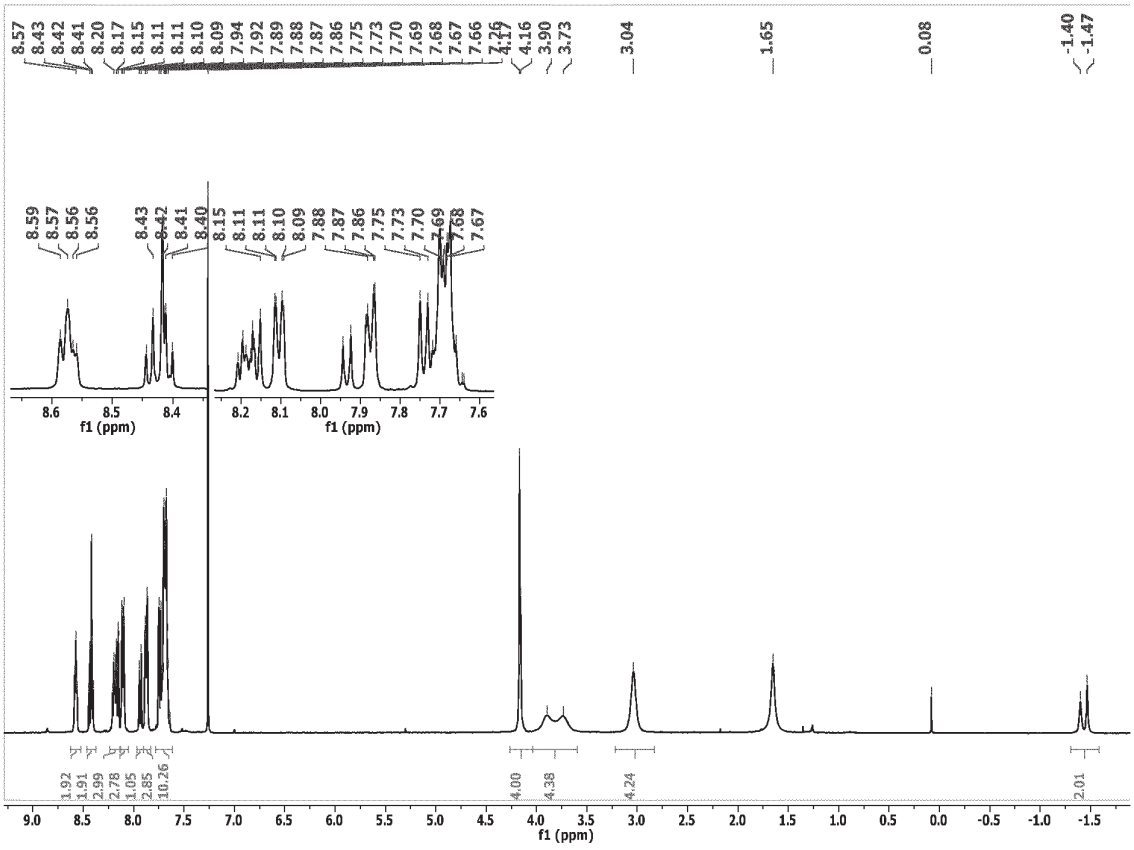
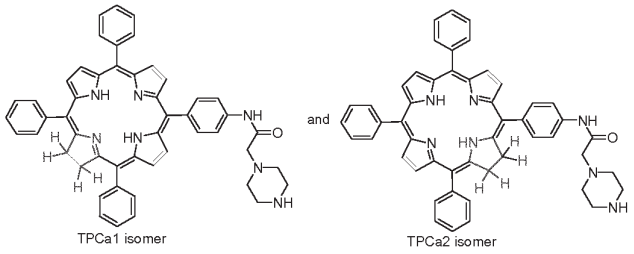


Figure 15


and
TPCa1 isomer
TPCa2 isomer

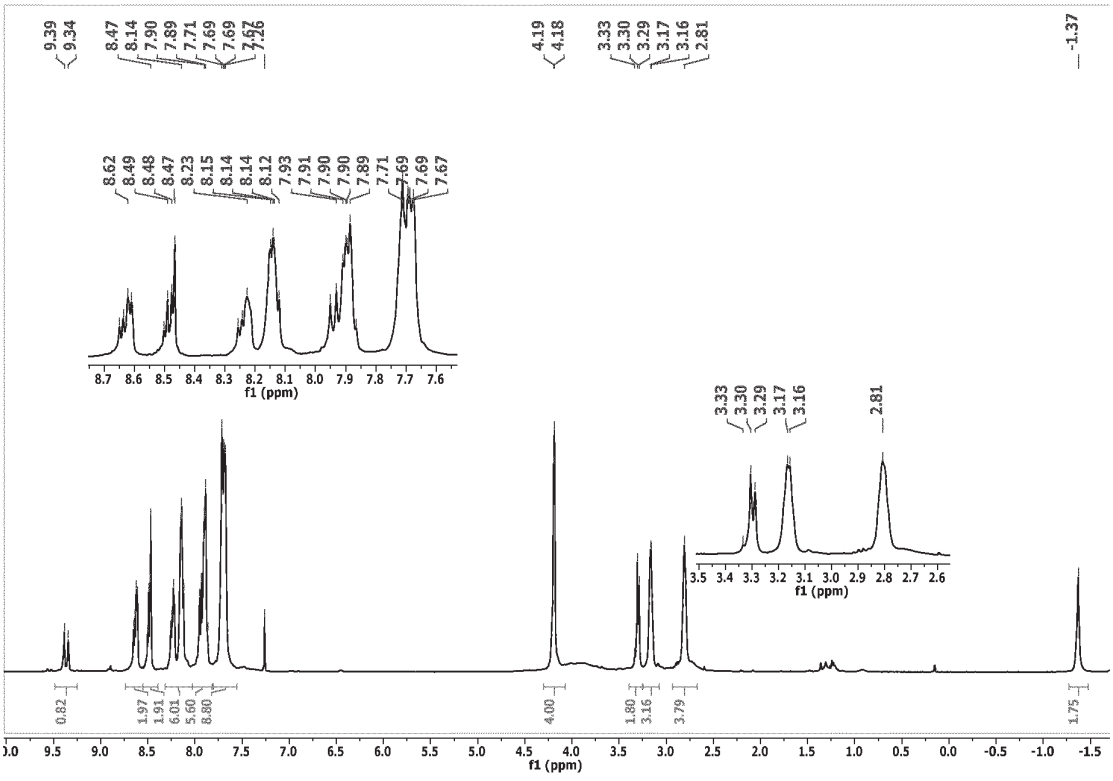

9.39
9.34
8.47
8.14
7.90
7.89
7.71
7.69
7.69
7.67
7.26
4.19
4.18
3.33
3.30
3.29
3.17
3.16
2.81
-1.37
8.62
8.49
8.48
8.47
8.23
8.15
8.14
8.14
8.12
7.93
7.91
7.90
7.90
7.89
7.71
7.69
7.69
7.67
f1 (ppm)
f1 (ppm)
0.82
1.97
1.91
6.01
5.60
8.80
4.00
1.80
3.16
3.79
1.75
f1 (ppm)

Figure 16

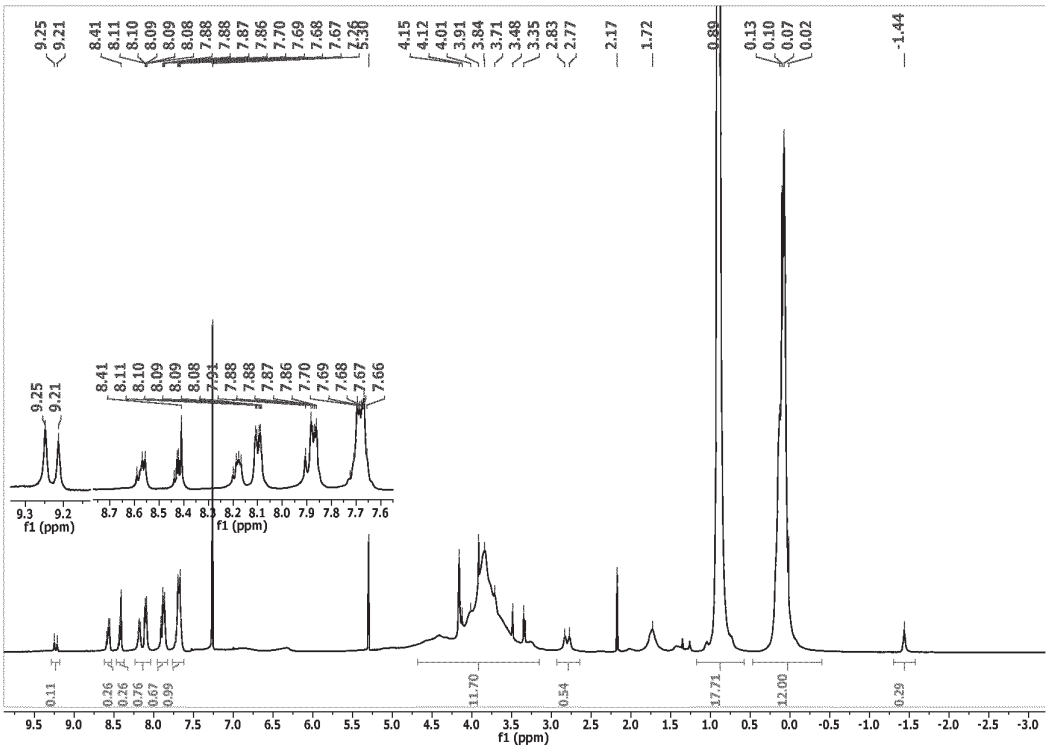

9.25
9.21
8.41
8.11
8.10
8.09
8.09
8.08
7.88
7.88
7.87
7.86
7.70
7.69
7.68
7.67
7.26
5.30
4.15
4.12
4.01
3.91
3.84
3.71
3.48
3.35
2.83
2.77
2.17
1.72
0.89
0.13
0.10
0.07
0.02
-1.44
f1 (ppm)
0.11
0.26
0.26
0.76
0.67
0.99
11.70
0.54
37.71
12.00
0.29

Figure 17

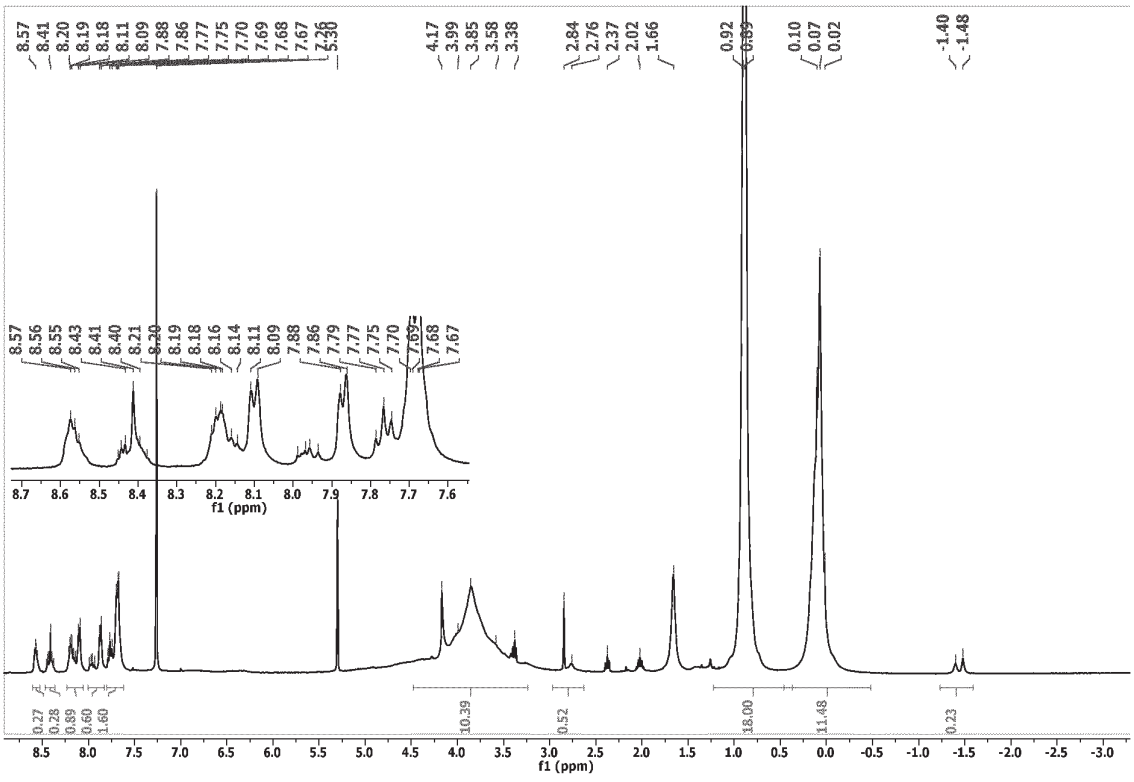

8.57
8.41
8.20
8.19
8.18
8.11
8.09
7.88
7.86
7.77
7.75
7.70
7.69
7.68
7.67
5.30
4.17
3.99
3.85
3.58
3.38
2.84
2.76
2.37
2.02
1.66
0.92
0.89
0.10
0.07
0.02
-1.40
-1.48
f1 (ppm)
0.27
0.28
0.89
0.60
1.60
10.39
0.52
18.00
11.48
0.23

Figure 18

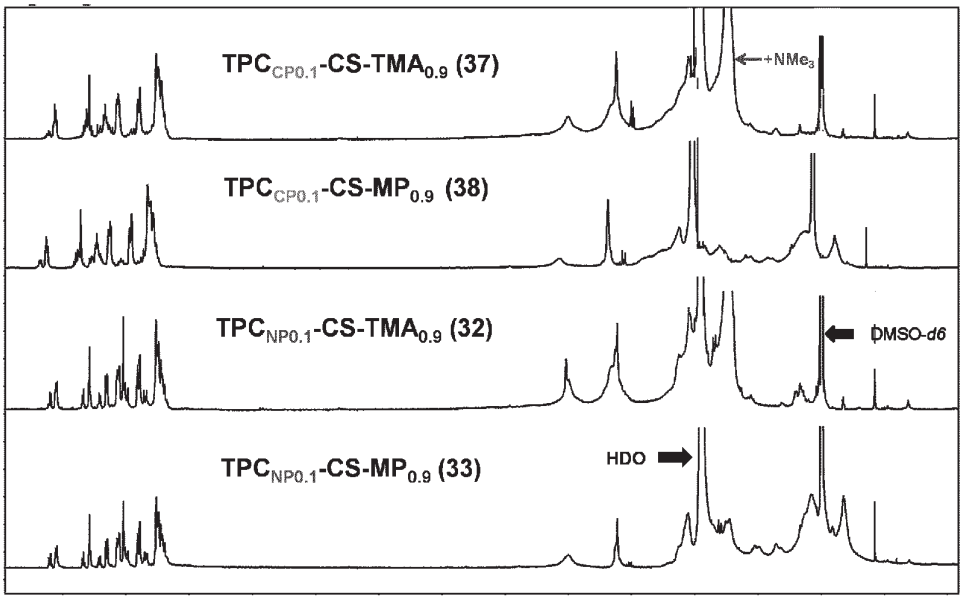
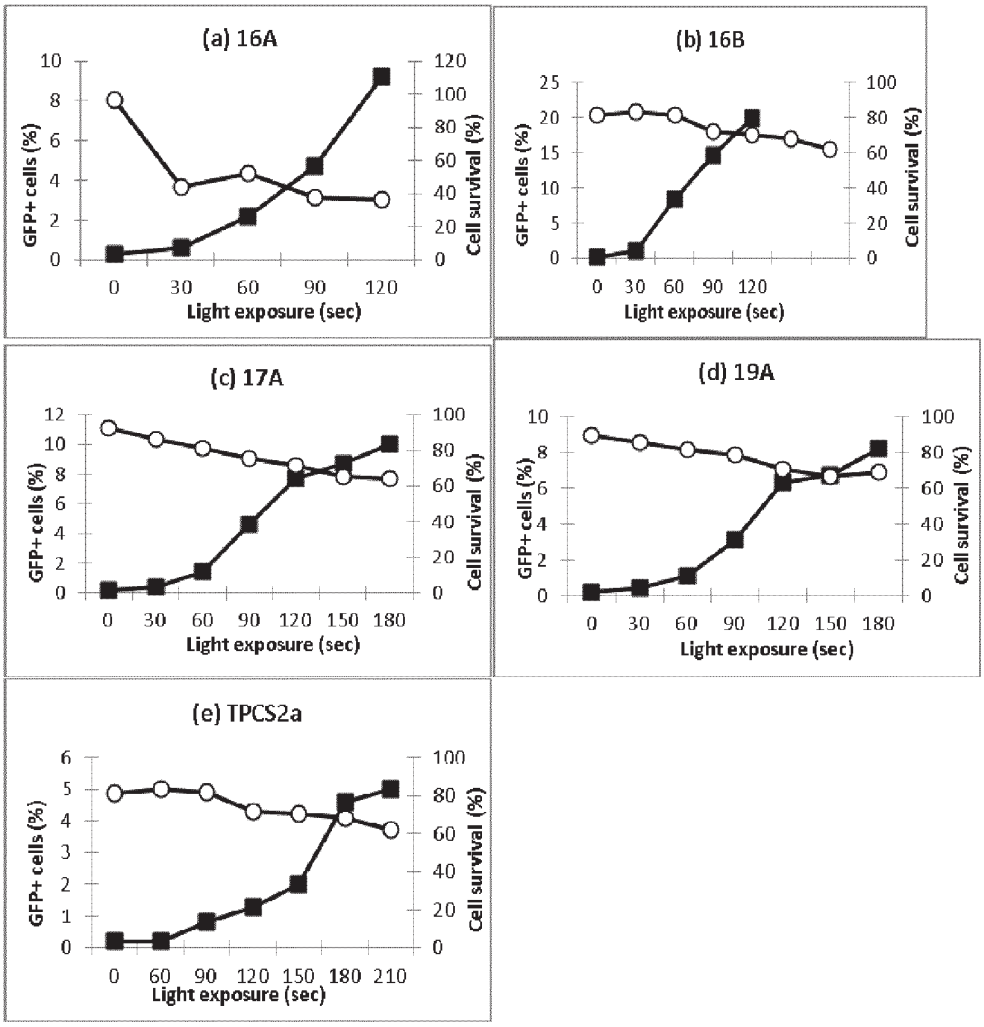
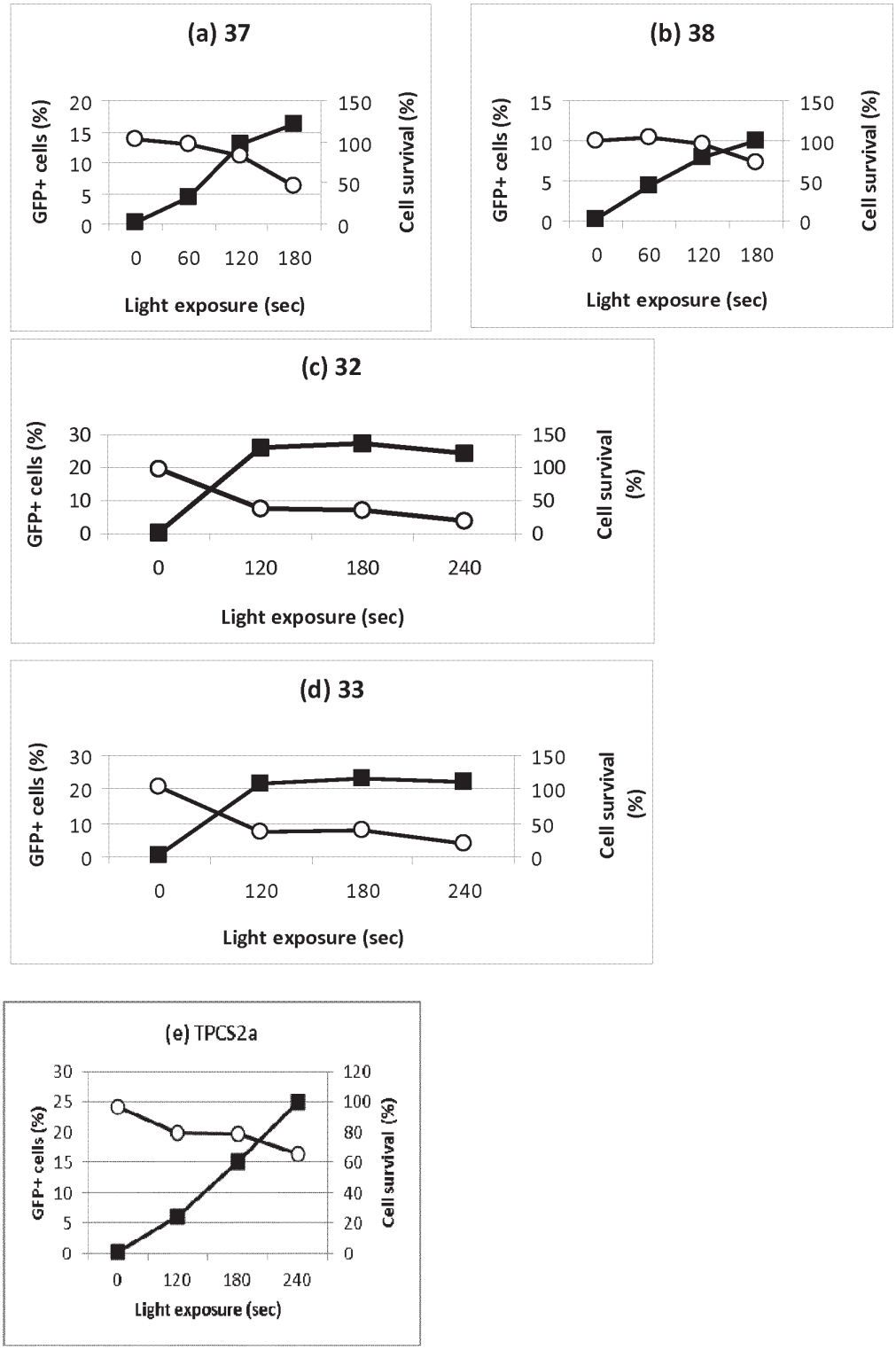

TPC$_{CP0.1}$-CS-TMA$_{0.9}$ (37)
+NMe$_3$
TPC$_{CP0.1}$-CS-MP$_{0.9}$ (38)
TPC$_{NP0.1}$-CS-TMA$_{0.9}$ (32)
DMSO-*d6*
TPC$_{NP0.1}$-CS-MP$_{0.9}$ (33)
HDO

Figure 19



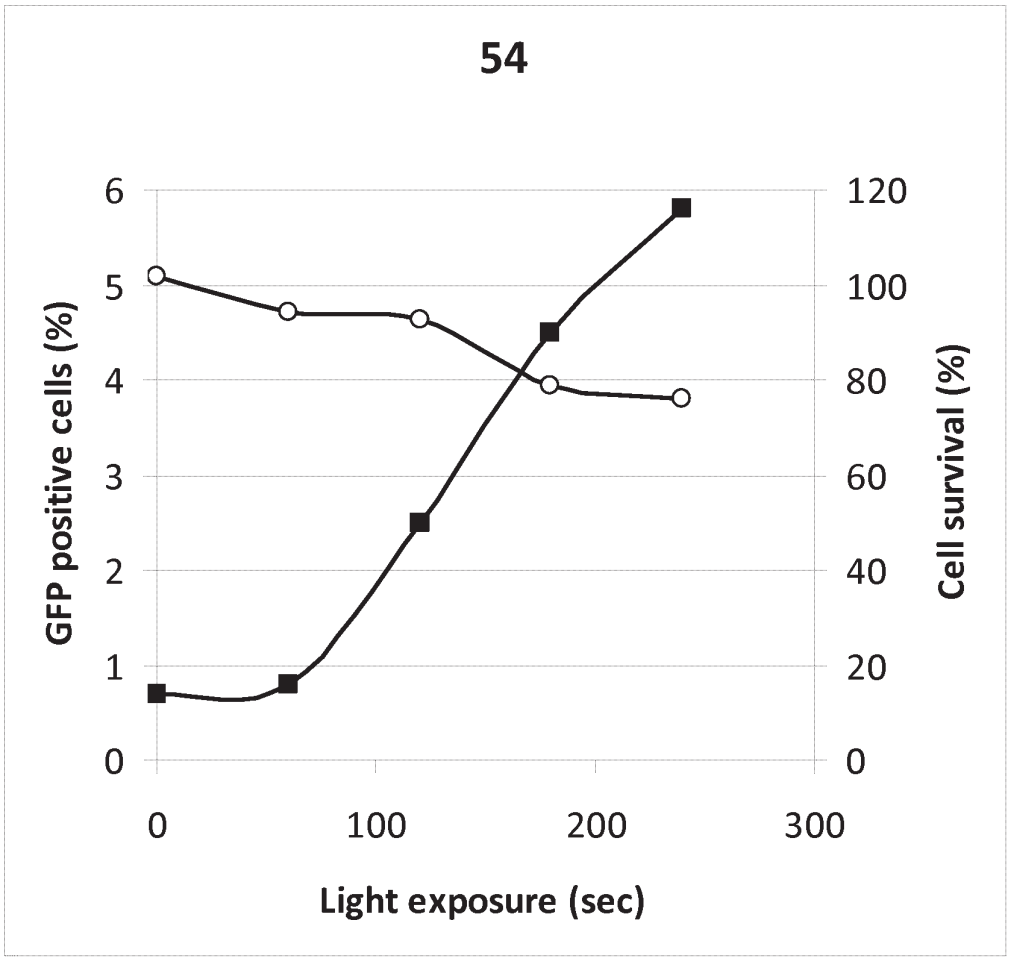
■ GFP+ cells. ○ Cell survival.

Figure 20



■ GFP+ cells. ○ Cell survival.

Figure 21



■ GFP positive cells. ○ Cell survival

Figure 22

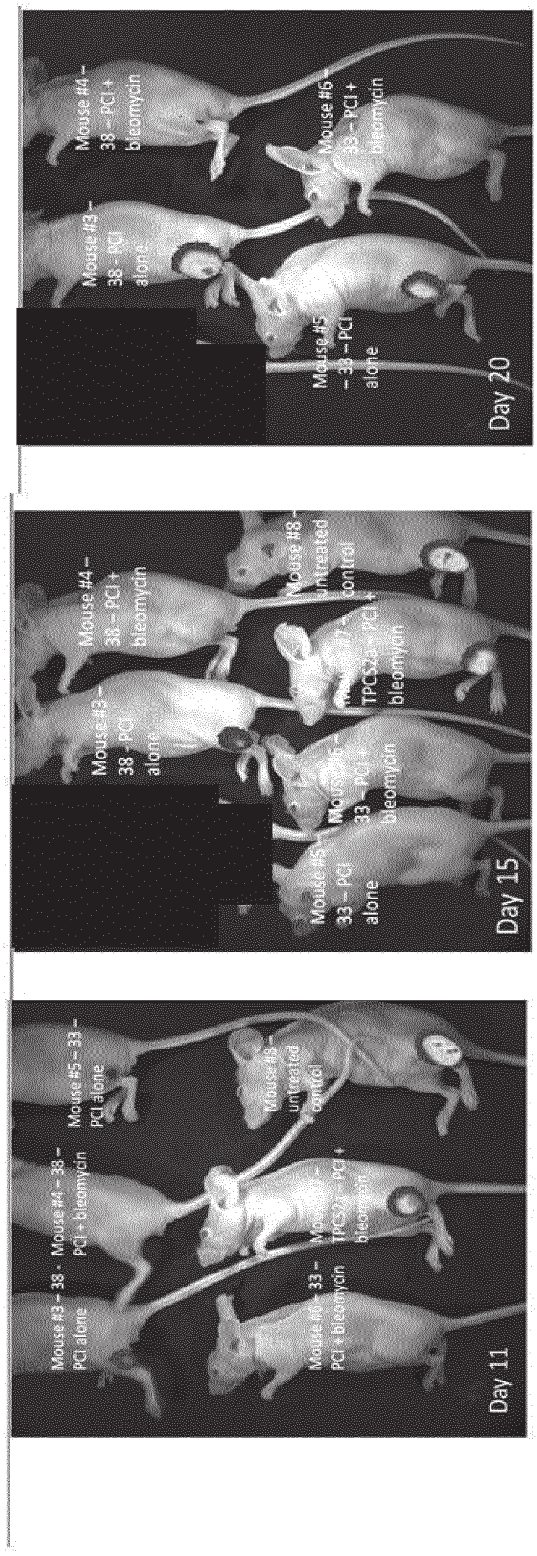
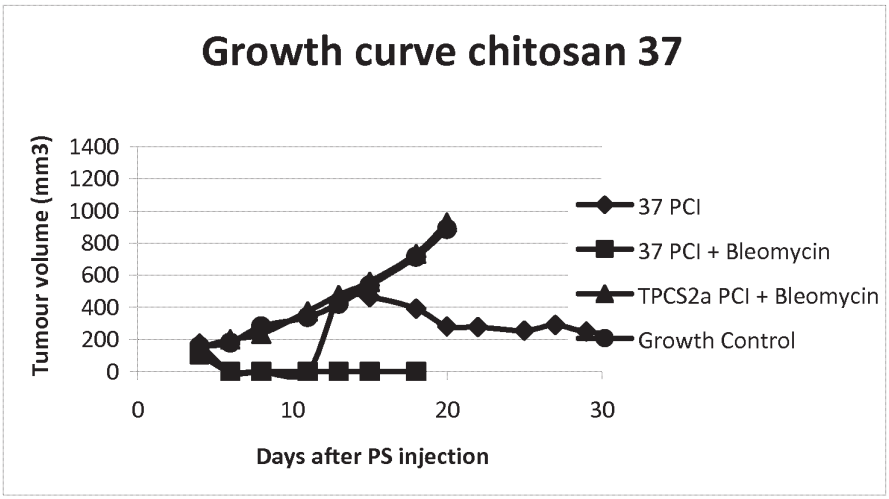
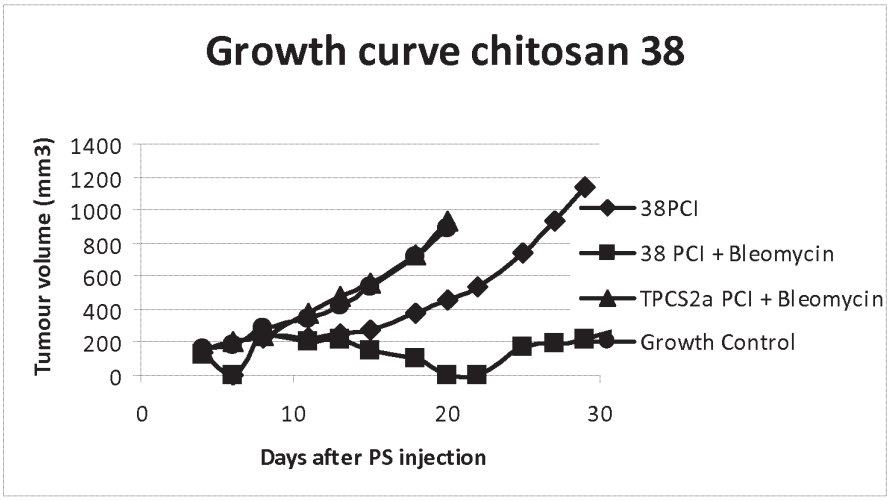

Mouse #3 – 38 – PCI alone
Mouse #4 – 38 – PCI + bleomycin
Mouse #5 – 33 – PCI alone
Mouse #8 – untreated control
Day 11
Mouse #3 – 38 – PCI alone
Mouse #4 – 38 – PCI + bleomycin
Mouse #2 – 38 – PCI alone
Mouse #8 – untreated control
Mouse #5 – 33 – PCI alone
Day 15
Mouse #3 – 38 – PCI alone
Mouse #4 – 38 – PCI + bleomycin
Mouse #5 – 38 – PCI alone
Mouse #6 – 38 – PCI + bleomycin
Day 20

Figure 23


Growth curve chitosan 37
Tumour volume (mm3)
1400
1200
1000
800
600
400
200
0
0
10
20
30
Days after PS injection
37 PCI
37 PCI + Bleomycin
TPCS2a PCI + Bleomycin
Growth Control


Growth curve chitosan 38
Tumour volume (mm3)
1400
1200
1000
800
600
400
200
0
0
10
20
30
Days after PS injection
38PCI
38 PCI + Bleomycin
TPCS2a PCI + Bleomycin
Growth Control

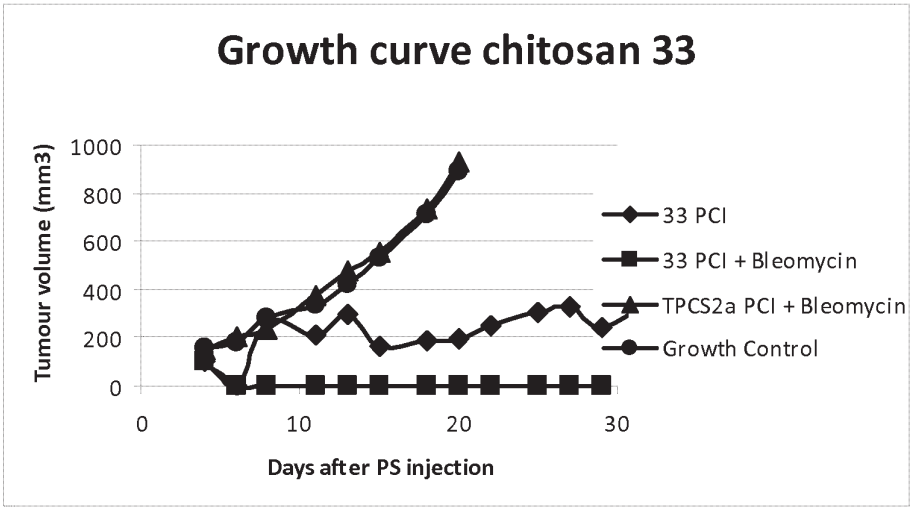

Growth curve chitosan 33
Tumour volume (mm3)
1000
800
600
400
200
0
0
10
20
30
Days after PS injection
33 PCI
33 PCI + Bleomycin
TPCS2a PCI + Bleomycin
Growth Control

Figure 24

Scheme 7

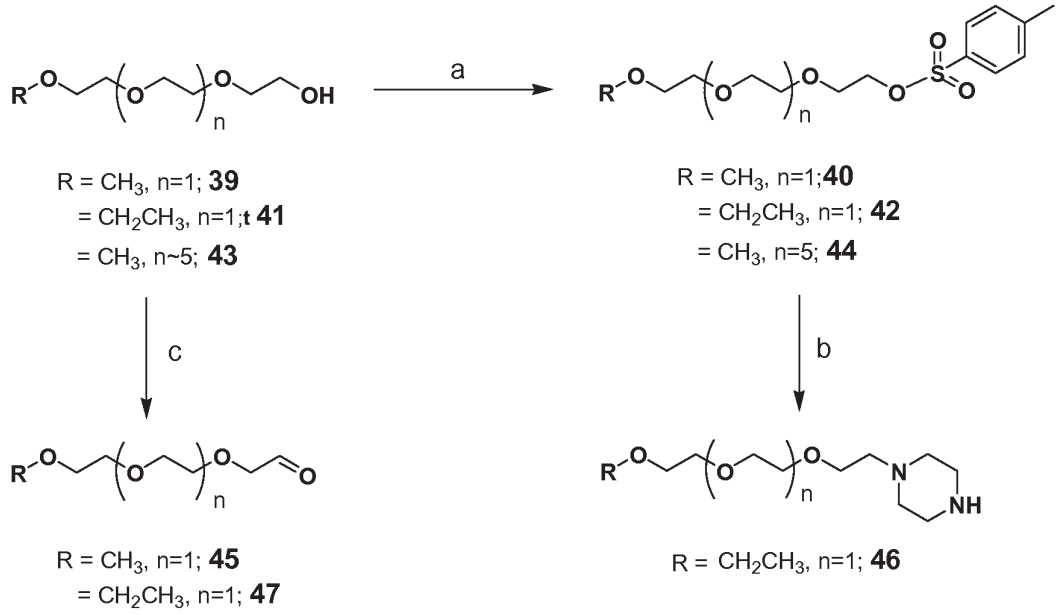


Figure 25

Scheme 8

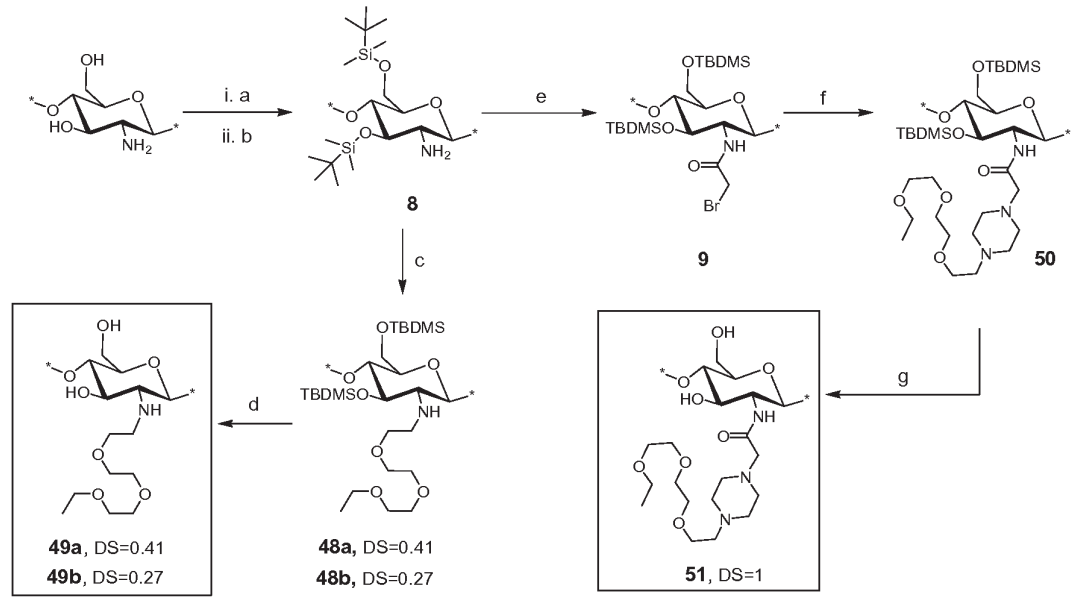
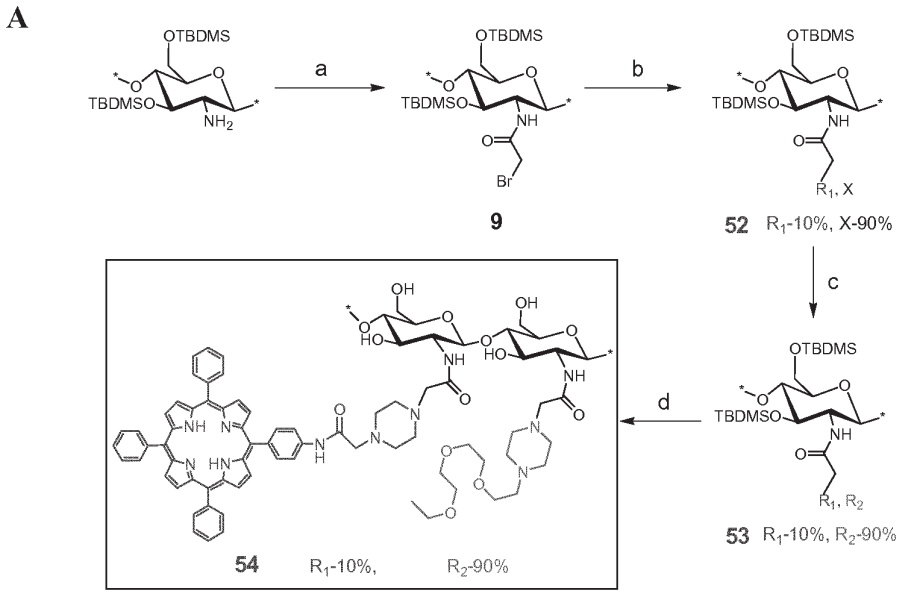
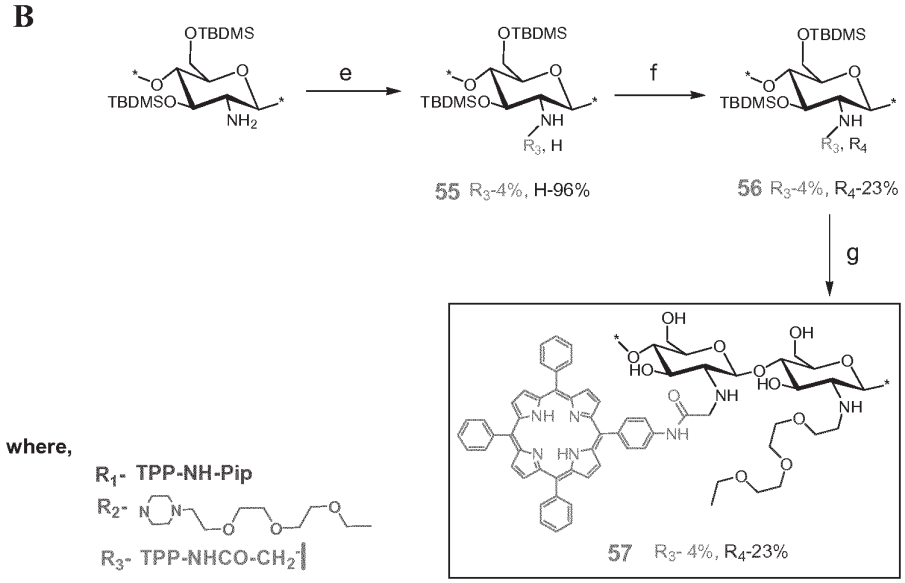


Figure 26

Scheme 9





where,

R_1- TPP-NH-Pip

R_2-

R_3- TPP-NHCO-CH_2-

R_4-

X - Br

Figure 27

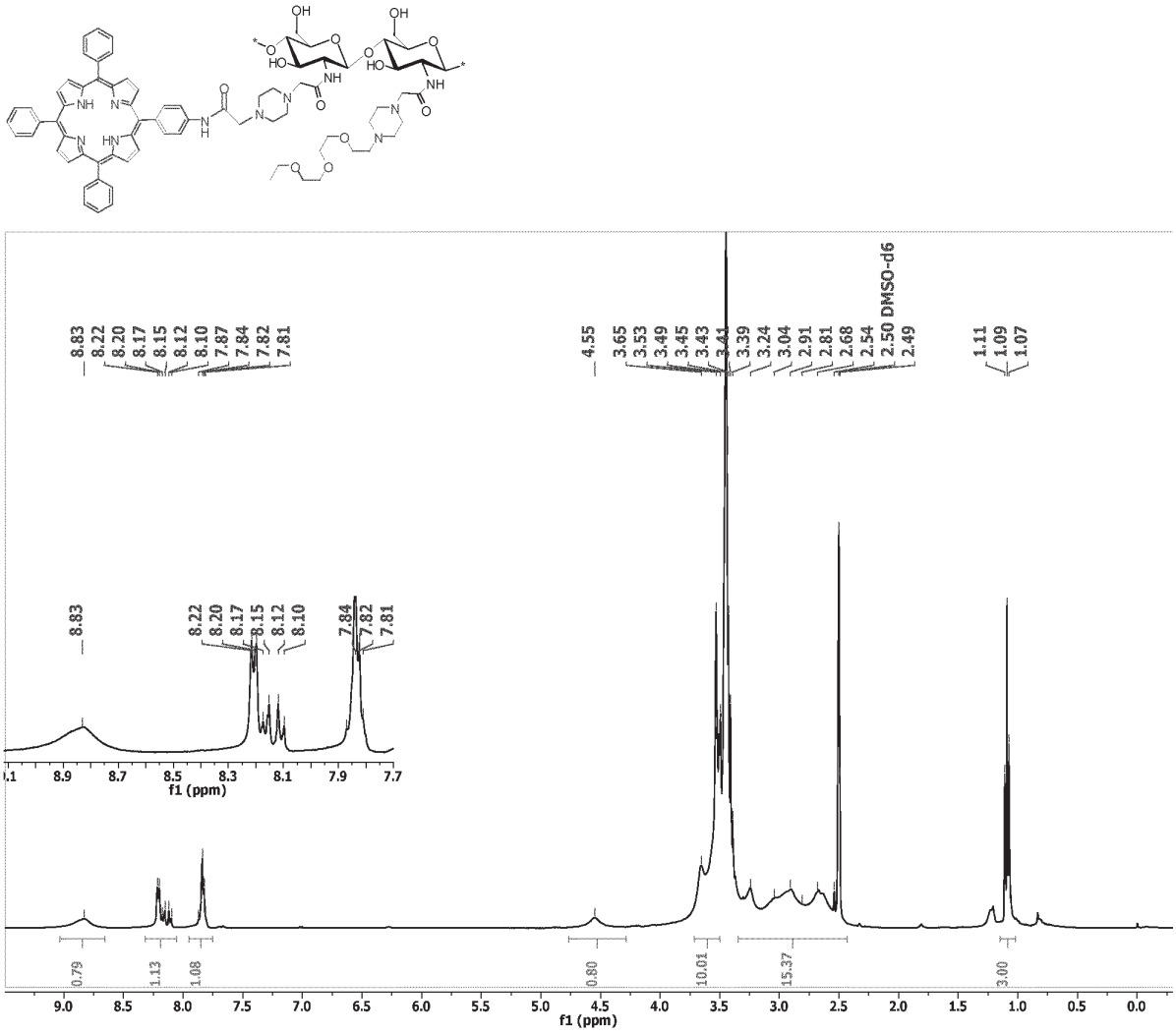
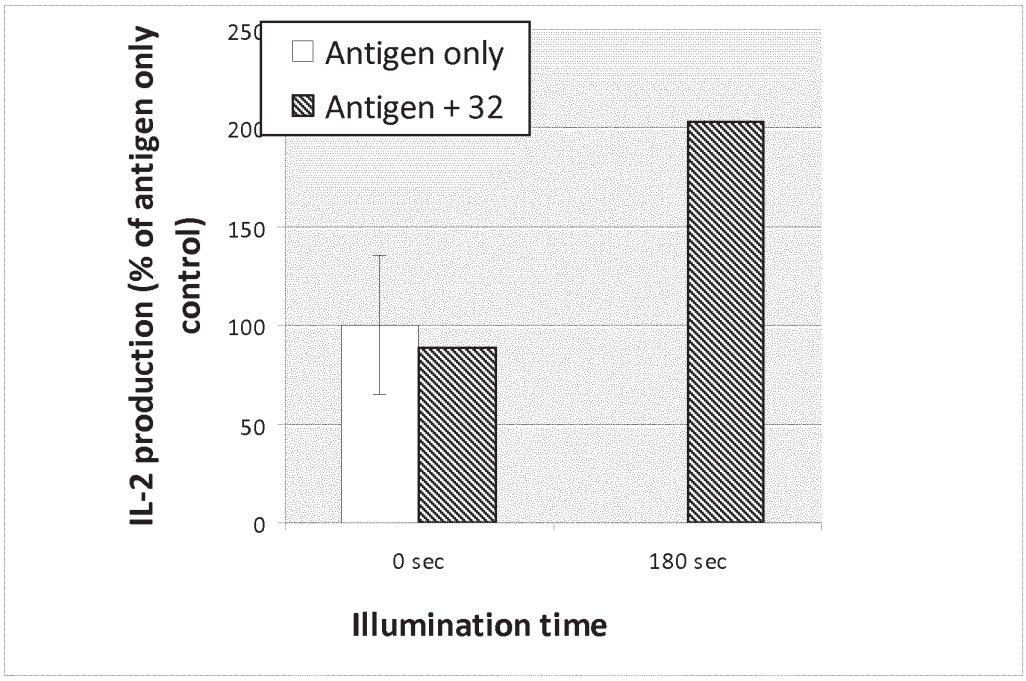
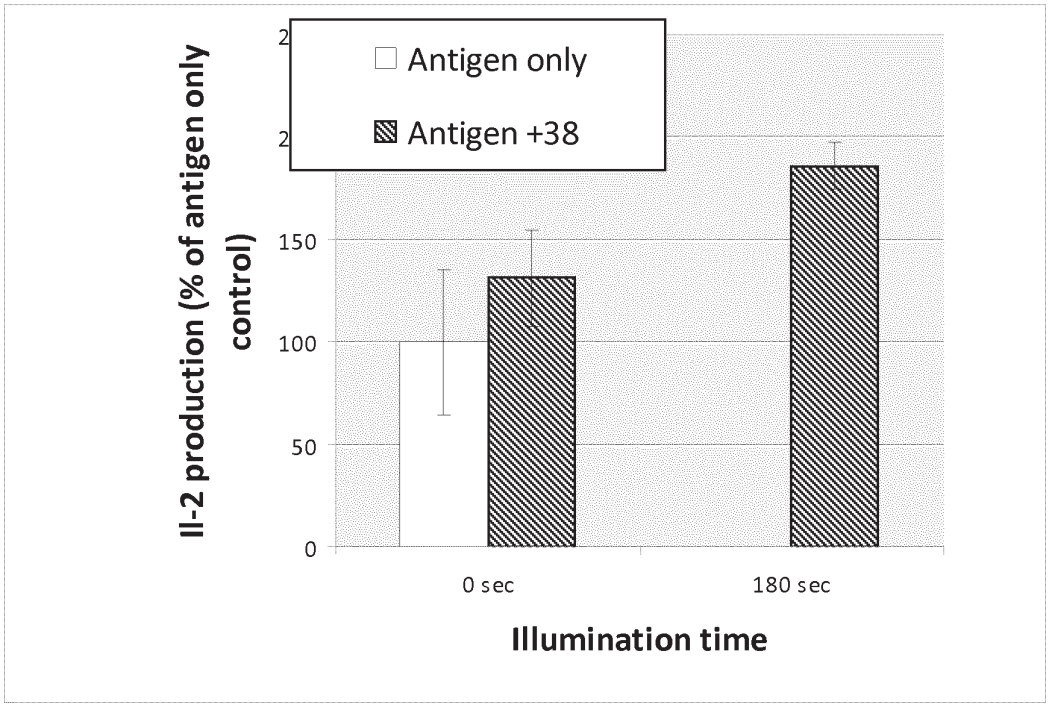

8.83
8.22
8.20
8.17
8.15
8.12
8.10
7.87
7.84
7.82
7.81
4.55
3.65
3.53
3.49
3.45
3.43
3.41
3.39
3.24
3.04
2.91
2.81
2.68
2.54
2.50 DMSO-d6
2.49
1.11
1.09
1.07
f1 (ppm)
0.79
1.13
1.08
0.80
10.01
15.37
3.00

Figure 28 A


Antigen only
Antigen + 32
IL-2 production (% of antigen only control)
250
200
150
100
50
0
0 sec
180 sec
Illumination time

B


Antigen only
Antigen +38
Il-2 production (% of antigen only control)
150
100
50
0
0 sec
180 sec
Illumination time