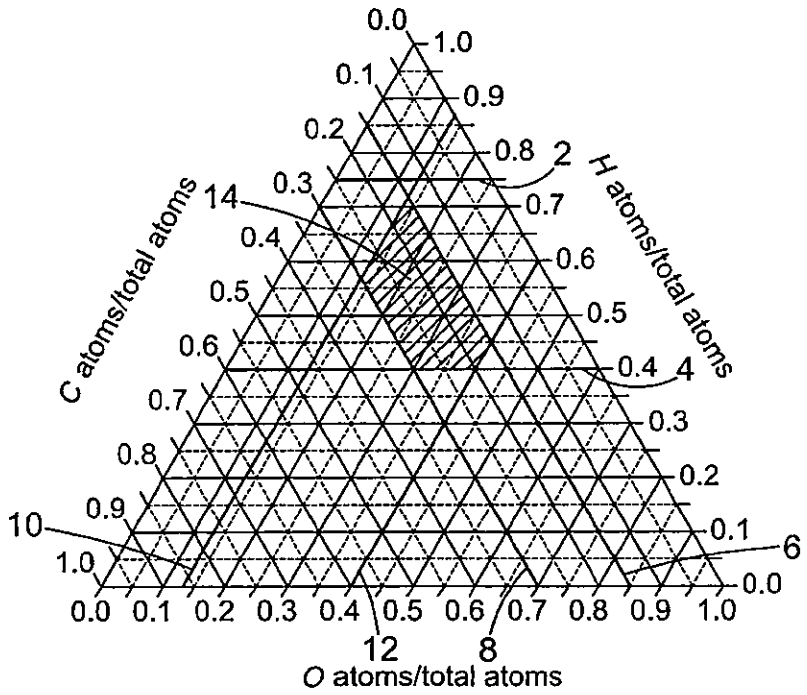
0.0
1.0
0.1
0.9
0.2
0.8
2
H atoms/total atoms
0.3
14
0.7
0.4
0.6
0.5
0.5
0.6
0.4
4
0.7
0.3
0.8
0.2
0.9
10
0.1
6
1.0
0.0
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
12
8
C atoms/total atoms
O atoms/total atoms

Fig. 1

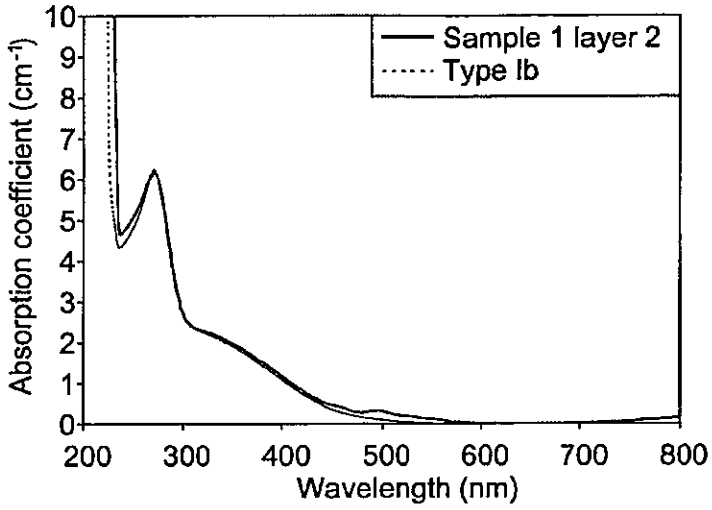
Sample 1 layer 2
Type Ib
Absorption coefficient (cm-1)
Wavelength (nm)
0
1
2
3
4
5
6
7
8
9
10
200
300
400
500
600
700
800

Fig. 2

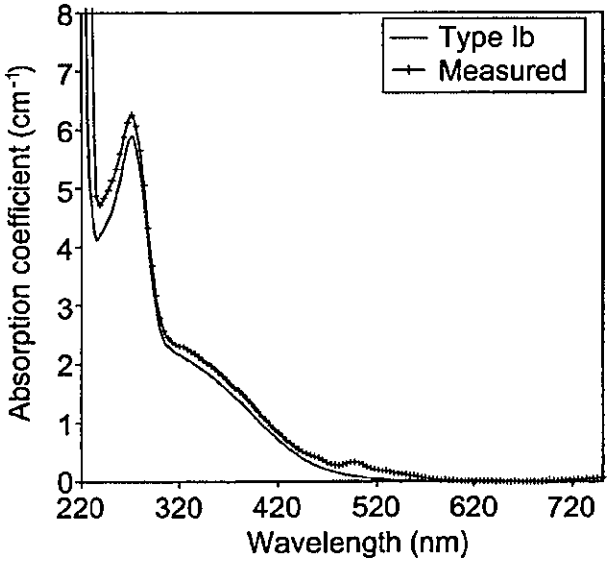
Type Ib
Measured
Absorption coefficient (cm-1)
Wavelength (nm)
0
1
2
3
4
5
6
7
8
220
320
420
520
620
720

Fig. 3

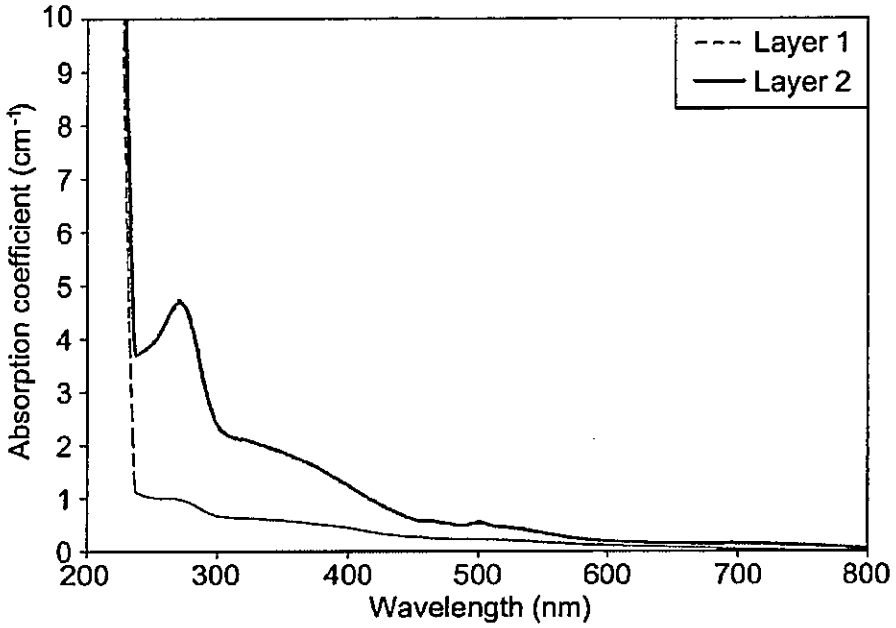
Layer 1
Layer 2
Absorption coefficient (cm-1)
Wavelength (nm)
0
1
2
3
4
5
6
7
8
9
10
200
300
400
500
600
700
800

Fig. 4

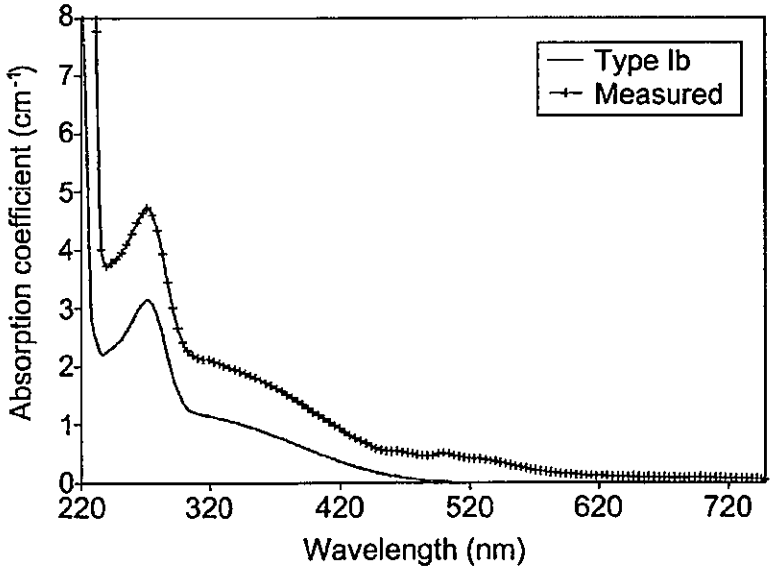
Type Ib
Measured
Absorption coefficient (cm-1)
Wavelength (nm)
0
1
2
3
4
5
6
7
8
220
320
420
520
620
720

Fig. 5

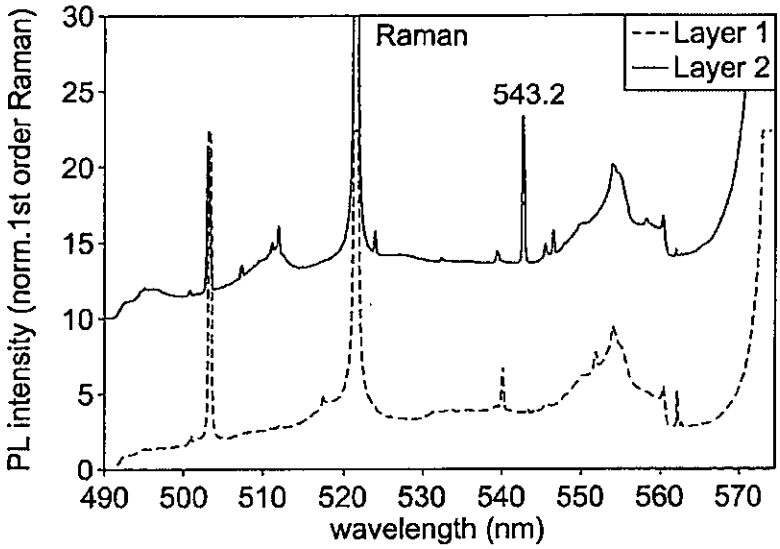
Raman
543.2
Layer 1
Layer 2
PL intensity (norm.1st order Raman)
wavelength (nm)
0
5
10
15
20
25
30
490
500
510
520
530
540
550
560
570

Fig. 6

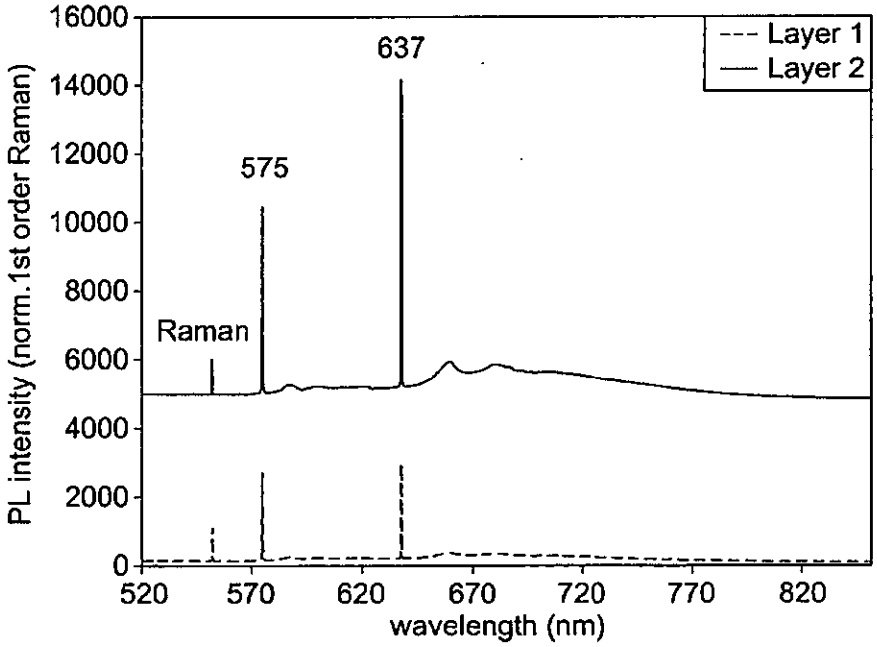
637
575
Raman
Layer 1
Layer 2
PL intensity (norm.1st order Raman)
wavelength (nm)
0
2000
4000
6000
8000
10000
12000
14000
16000
520
570
620
670
720
770
820

Fig. 7

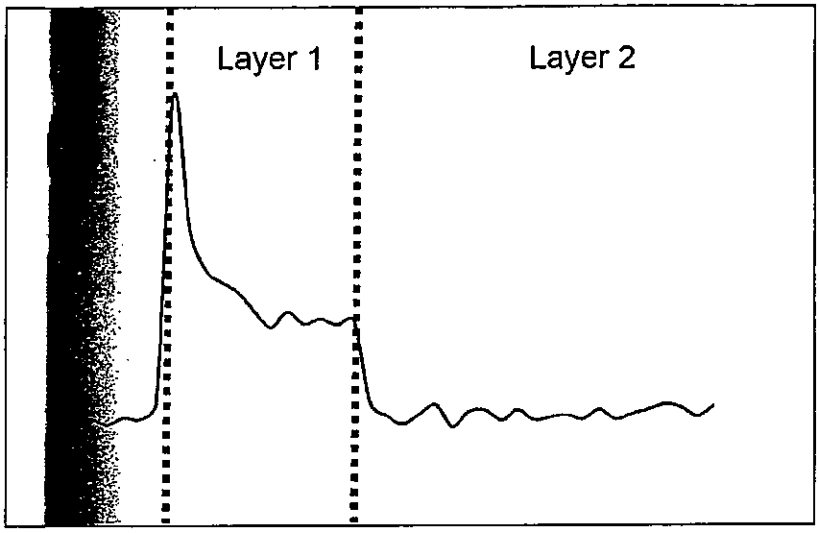
Layer 1
Layer 2

Fig. 8

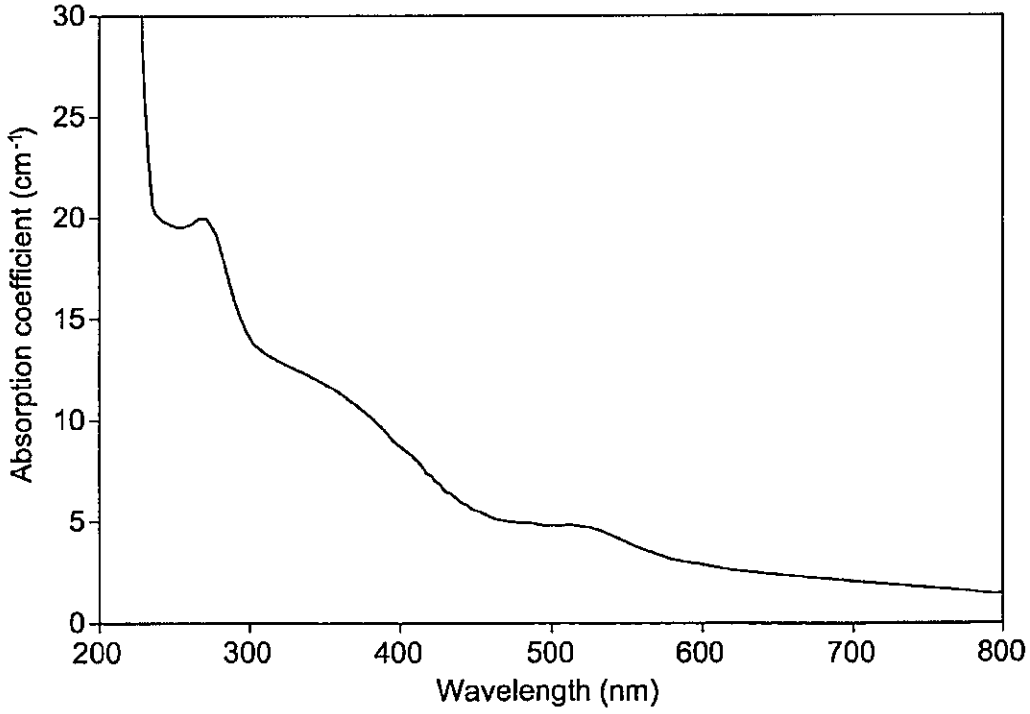
Absorption coefficient (cm-1)
30
25
20
15
10
5
0
200
300
400
500
600
700
800
Wavelength (nm)

Fig. 9

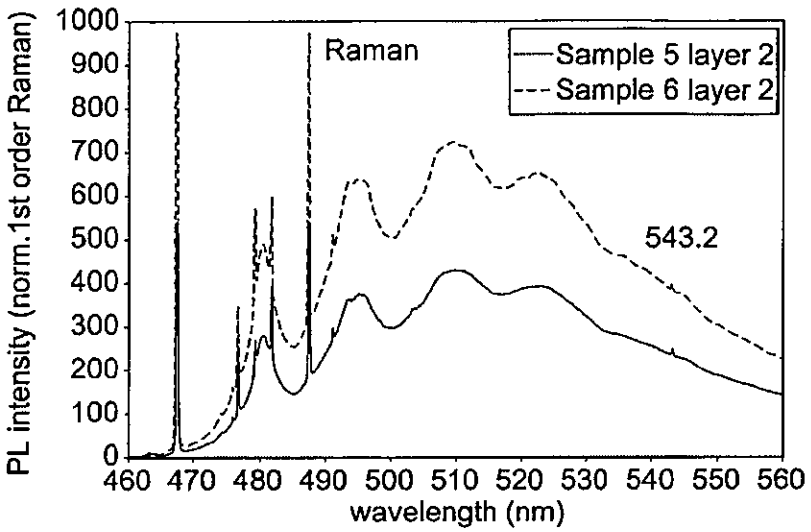
PL intensity (norm.1st order Raman)
1000
900
800
700
600
500
400
300
200
100
0
460 470 480 490 500 510 520 530 540 550 560
wavelength (nm)
Raman
Sample 5 layer 2
Sample 6 layer 2
543.2

Fig. 10

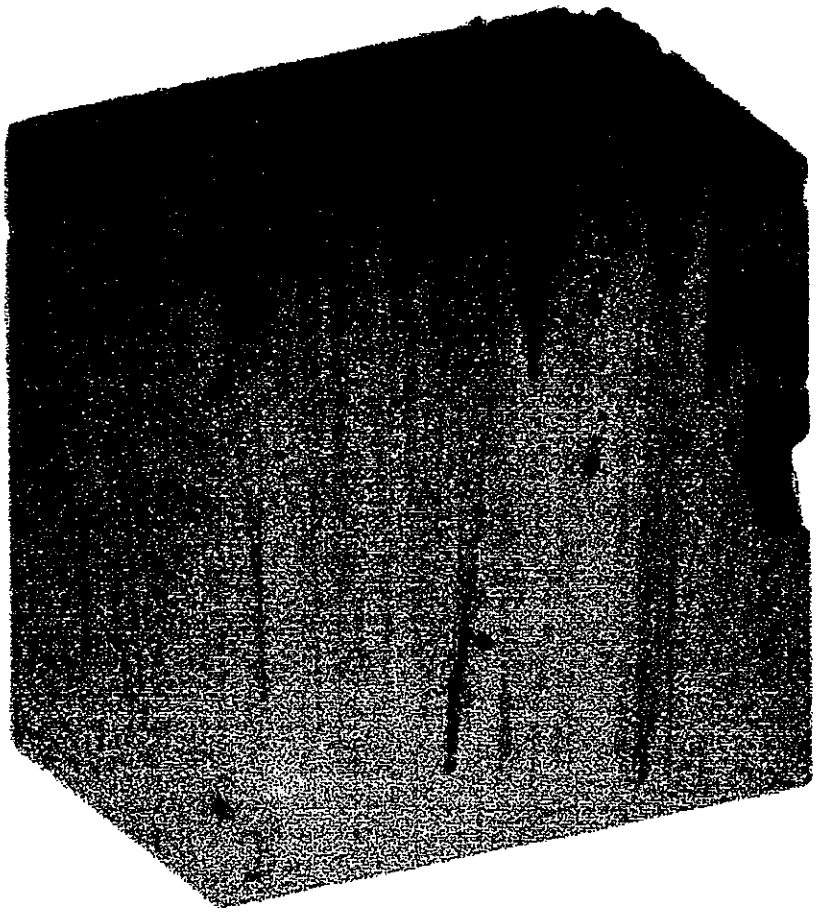

Fig. 11