

(19) (KR)  
(12) (B1)

(51) 。 Int. Cl. <sup>6</sup>  
C07C 323/18

(45) 2001 11 22  
(11) 10 - 0301239  
(24) 2001 06 22

(21) 10 - 1994 - 0013597 (65) 1995 - 0000661  
(22) 1994 06 16 (43) 1995 01 03

(30) 93 - 170853 1993 06 18 (JP)

(73) 가 가 가  
가  
1 11 2

(72) 가 1039  
가 가 1039  
2291

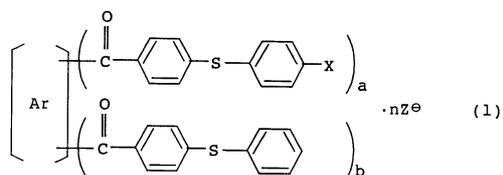
(74)

:

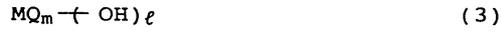
(54)

가 , 가 , 가 ,

(1) (onium salt)



Ar 1 가 4 가 , X 가 , a  
1 ~ 4 , b 0 1 ~ 3 , a + b 1 ~ 4, n 1 ~ 4 , Z  
(3)



M , Q , m 3 ~ 6 ,  
0 1 , m + 4 ~ 6 .

[ ]

[ ]

가 (onium salt),  
(照射) (energy ray)

(resist)

가

3,794,576

가 , 가 15 μ (發泡)

가 (one - pack type composition)

가 가

4,273,688 [JP - B - 52 - 14278 JP - B - 52 14277, 4, 161, 478  
].

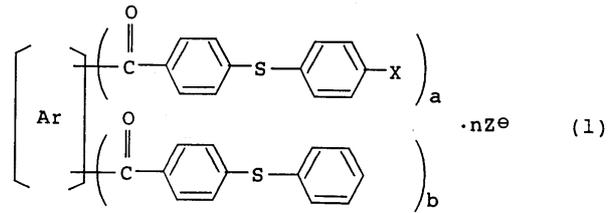
4,374,066

가 가  
(group) 가

가

y) ( , 가 ) (compatibilit 가

(1) (I) :

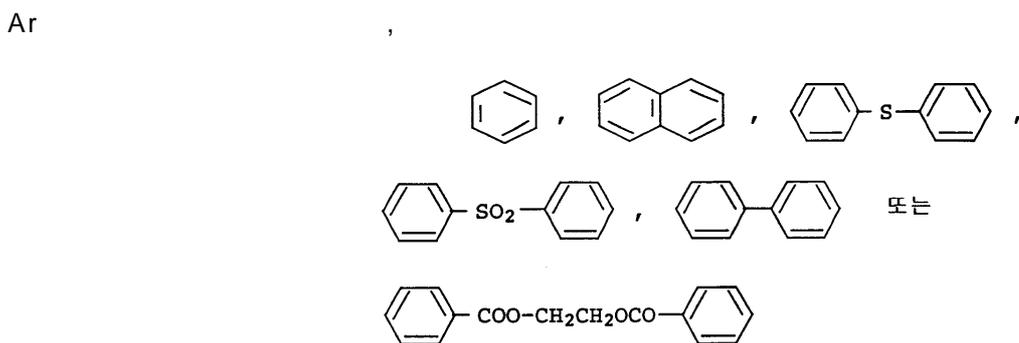


[ Ar 1 가 4 가 , X 가 , a 1  
 ~4 , b 0 1 ~ 3 , a + b 1 ~ 4, n 1 ~ 4 , Z (3)



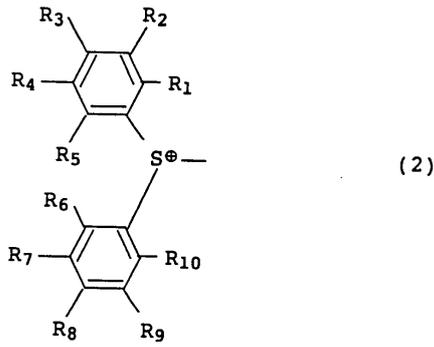
0 1 M , m+ [ 4~6 ] , Q , m 3 ~ 6 , [

(2) (1) :

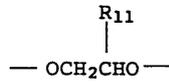


[ (C<sub>1</sub> - C<sub>5</sub>) , (C<sub>1</sub> - C<sub>5</sub>) , (C<sub>1</sub> - C<sub>5</sub>) 가 ,  
 ] ;

가 (2) ,



[ R<sub>1</sub> - R<sub>10</sub> , , , , C<sub>1</sub> - C<sub>25</sub> , C<sub>6</sub> - C<sub>18</sub> ,  
 가 , C<sub>1</sub> - C<sub>25</sub> , 가 C<sub>3</sub> - C<sub>25</sub> ]



( R<sub>11</sub> )];  
 a 1~4 ; b 0 1~3 ; a+b 1~4 ; n 1~4 ; z (3)



( M , Q , m 3~6 , x  
 0 1 , m+ [ 4~6 ] .

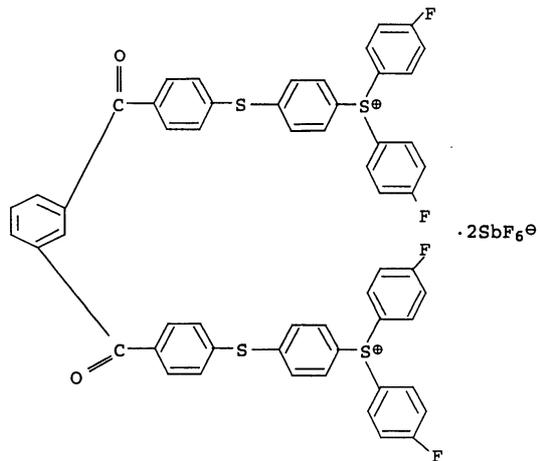
(3) (2) Ar  , R<sub>1</sub> - R<sub>10</sub> , (C<sub>1</sub> - C<sub>5</sub>)  
 , M

(4) (3) R<sub>1</sub> - R<sub>5</sub> 가 R<sub>1</sub> - R<sub>5</sub> , R<sub>6</sub> - R<sub>10</sub>  
 가 R<sub>6</sub> - R<sub>10</sub>

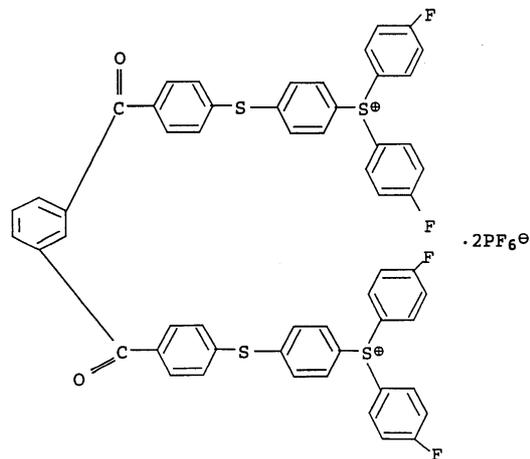
(5) (2) Ar  , R<sub>3</sub> R<sub>8</sub> , R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub> - R<sub>7</sub>, R<sub>9</sub> R<sub>10</sub>  
 , a 2, b 0, n 2, M , m 6, x 0 .

(6) (5) 가

(7)



(8)



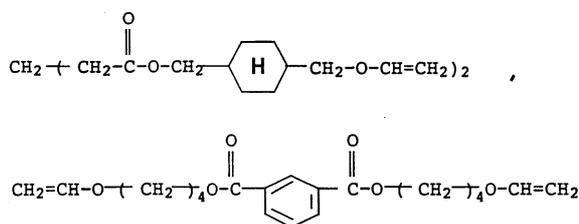
(9) (1)~(8)

(10) (1)~(8)

(11) , (10)

(12) (11) (脂環式)

(13) (11) - 1,4 -



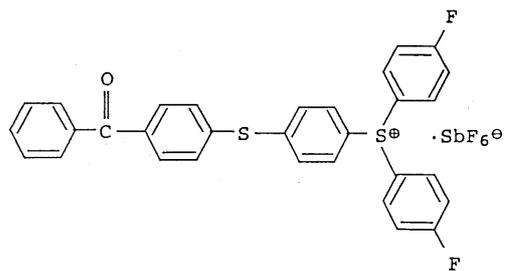




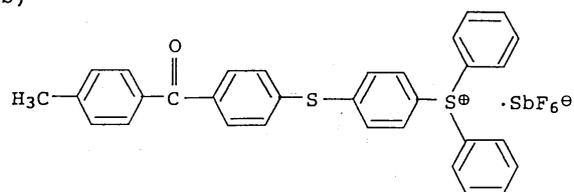


(1)

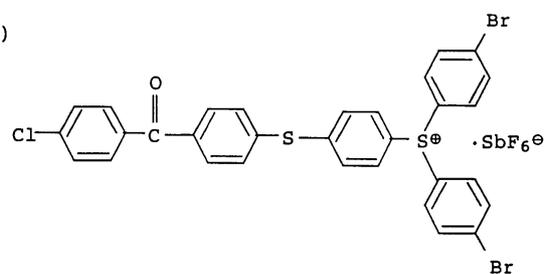
(a)



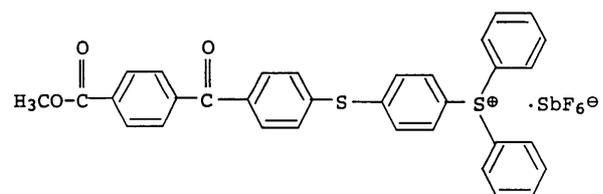
(b)



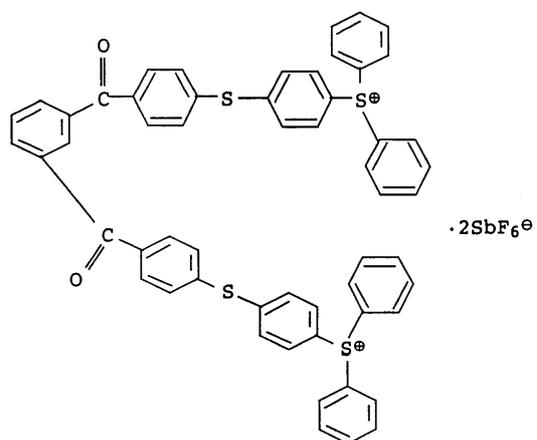
(c)



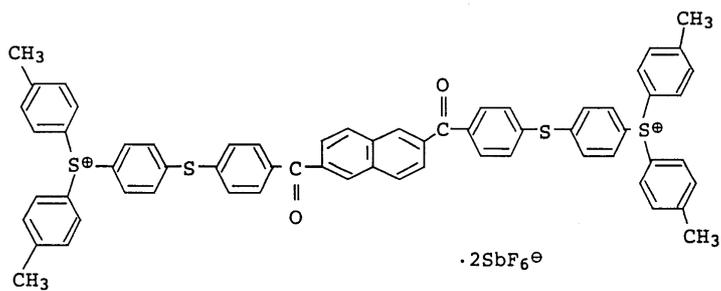
(d)



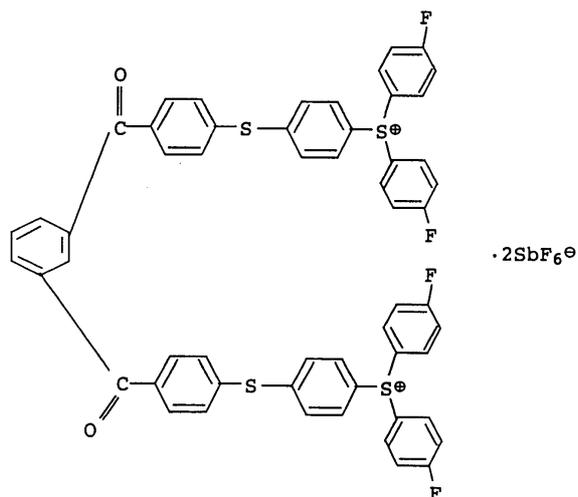
(e)



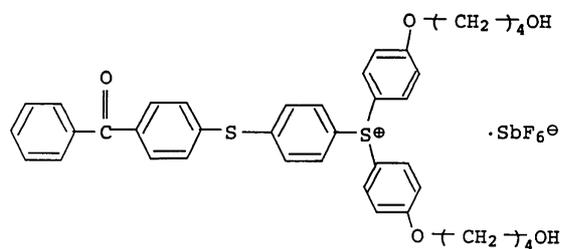
(f)



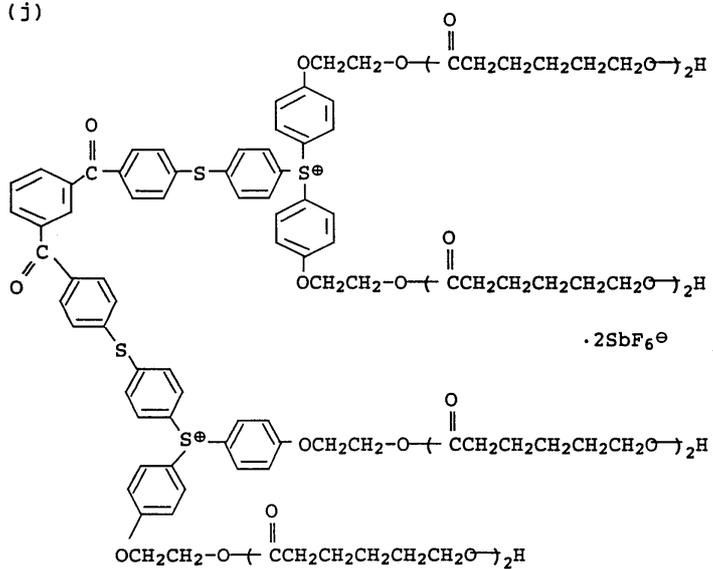
(g)

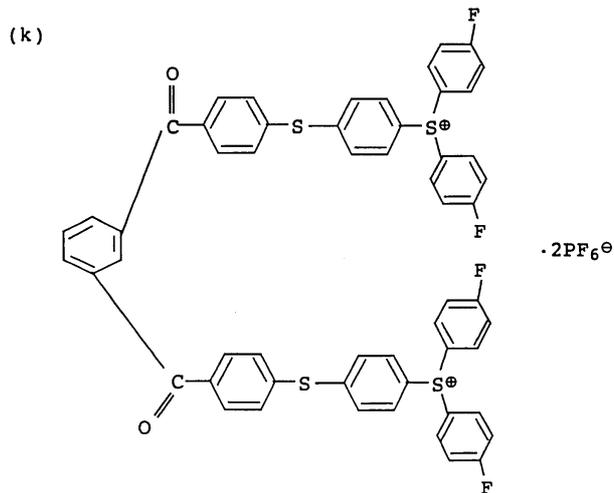


(h)



(j)



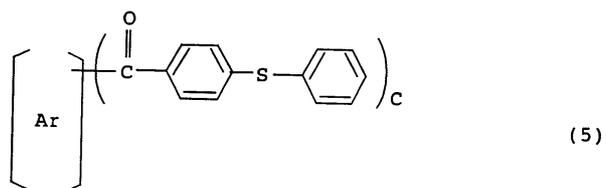


(1) (2)

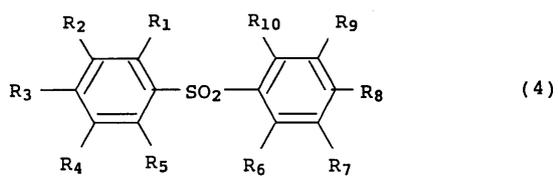
(1) :

(5)

(4)



( Ar C )



( R<sub>1</sub> - R<sub>10</sub> )

(2) :

(1)

(5)

(4)

0

15  
가



( B , M, Q, m )

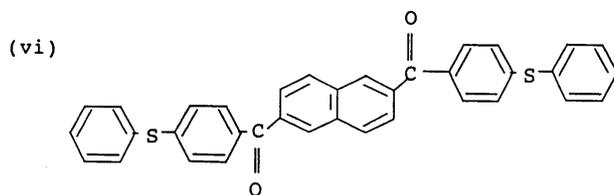
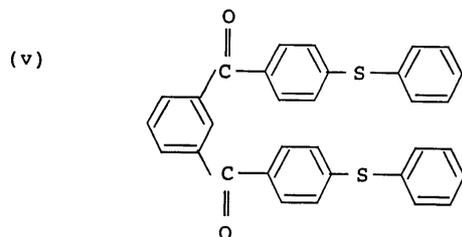
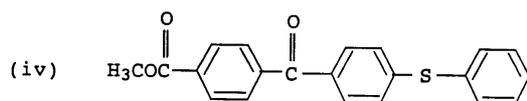
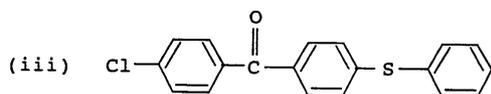
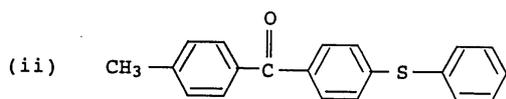
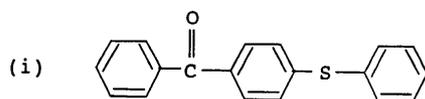
(5)

1

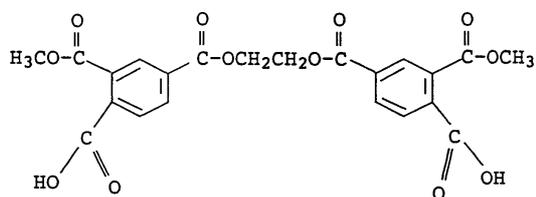
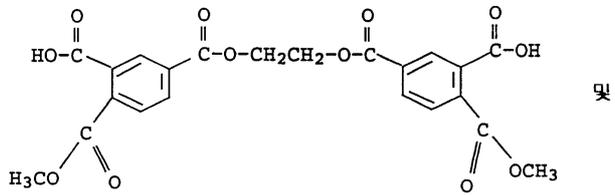
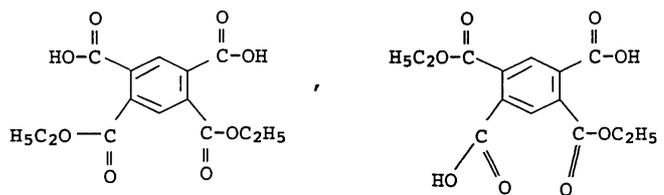
(4)

0.25 ~ 1.2 , 1.0 ~ 1.1

(5)







(2)

(2) C<sub>1</sub> - C<sub>25</sub>

(2)

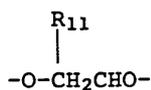
R<sub>1</sub> - R<sub>10</sub>

가

가 C<sub>3</sub> - C<sub>25</sub>

(1)

가

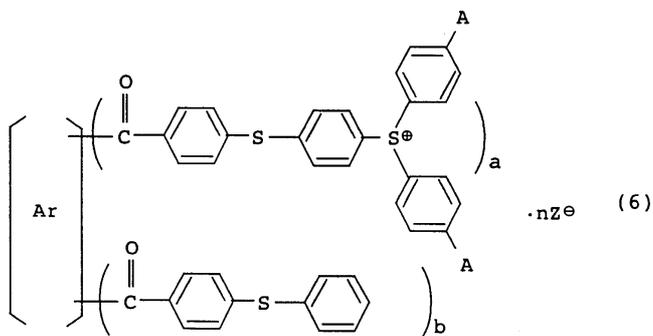


(1)

(6)

( : )

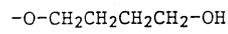
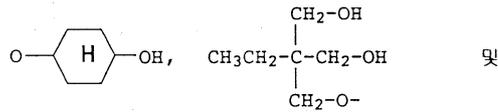
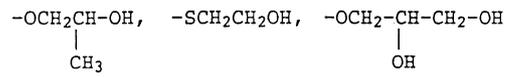
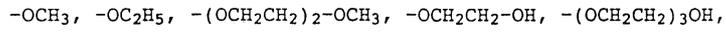
150



( A , Ar, a, b, n Z )

, 1,4 -

(2)



( : - 가 ) ( : , 가 ) (2)

가 , 가 (polyhydric phenol)  
 A, F S  
 ( : , ) 가  
 ( : - )

(2,3 - ) 3,4 - -3,4 - , - (3,4 -  
 ) , 2 - (3,4 - -5,5 - -3,4 - ) - m -  
 ) EHPE - 3150 (Daicel 71 ) )

가 (polyhydric alcohol) 가  
 1,4 - , 1,6 -  
 가

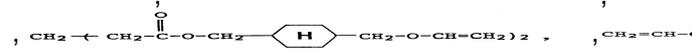
가 ( : ) 가

가 , , 가

-1,4-

, 1,4-  
( : Allied - Signal

VECTomer 2010)



가

100  
0.01 ~ 20

0.1 ~ 10

(1)

( : , , )

(kneading)

0.1

가

2000 ~ 7000

(電磁波 : electromagnetic wave)

X ,  
0.1 ~ 10

가

0.1 ~  
가

( ) [ , A , ( ) ( )  
 ( ) 2- ( ) , 1,6- ( ) , 1,9-  
 ( ) ( )  
 ] ( ) 1-  
 (photo - radical)

가 (flexible prepolymer) 가

	(基材)	1 ~ 200 μm,	3 ~ 50 μm	
		(増感劑),	가	
			(casting)	(putty),
			(部)	가
(5)				
1 [ (i) ]				
가 16.2	161.7		18.6	12.2
80 1	200 800	( ) 1000	가	
(	400	가 (60 )	5	69 ~ 70
		(i) 20.3		
2 [ (ii) ]				
13.6 18.3	180.3		18.6	p-
가 80 1				
1		(ii) 20.2		1
17 ~ 118				
3 [ (iii) ]				
15.7 20.8	208.2		18.6	p-
가 80 1				
1		(iii) 21.6		
134 ~ 135				
4 [ (iv) ]				
23.9	238.6		18.6	p-
18.0 가 80 1				
1			(iv) 21.6	
145 ~ 148				
5 [ (V) ]				
6 22.0	220.1		37.2	16.
가 80 6				
1		(V) 35.2		147
~ 152				

6 [ (vi) ]

28.6 286.4 37.2 -2,6 -  
 21.6 가 80 6  
 1  
 195 ~ 200 (vi) 37.0

(1) :

[ 1] (a)

1 (4 - - ) 29.0 , 4,4 ' - 23.9 ,  
 39.8 398 가 80 가 3  
 NaPF<sub>6</sub> ( 263.2 NaPF<sub>6</sub> 16.8 ) 280.0 5  
 가 . 650 가 (70 )  
 0 (a) 46.0 131 ~ 1  
 39

원소	실측치 (wt %)	계산치 (wt %)
C	56.72	56.71
H	3.24	3.22
S	9.79	9.77
P	4.75	4.72
F	23.17	23.15

[ 2] (b)

2 [4 - (p- - ) ] 30.4 , 20.2 1  
 79.8 가 24 NaSbF<sub>6</sub> ( 405.3 NaSb  
 F<sub>6</sub> 25.8 ) 431.1 5 가  
 650 가 (70 ) , 0  
 (b) 50.8 110 ~ 118

원소	실측치 (wt %)	계산치 (wt %)
C	52.98	52.99
H	3.48	3.47
S	8.85	8.84
Sb	16.80	16.78
F	15.73	15.71

[ 3] (c)

3 [4 - (p - ) - ] 32.5 , 4,4 ' - 36  
 240.6 가 24 ) 431.1 5 NaSbF<sub>6</sub> ( 4  
 05.3 NaSbF<sub>6</sub> 25.8 ) 650 가 (70 ) 0 가  
 (c) 63.3 125 ~ 129

원소	실측치 (wt %)	계산치 (wt %)
C	41.22	41.21
H	2.24	2.23
S	7.10	7.10
Cl	3.93	3.92
Br	17.72	17.69
Sb	13.49	13.47
F	12.65	12.62

[ 4] (d)

4 34.8 , 20.2 173.1 가 24  
 NaSbF<sub>6</sub> ( 405.3 NaSbF<sub>6</sub> 26.8 ) 4  
 31.1 0 가 650 가  
 (70 ) 0  
 (d) 53.9

원소	실측치 (wt %)	계산치 (wt %)
C	51.54	51.52
H	3.30	3.28
S	8.35	8.33
Sb	15.83	15.82
F	14.84	14.82

[ 5] (e)

5 50.3 , 40.4 208.1 가 24  
 NaSbF<sub>6</sub> ( 810.6 NaSbF<sub>6</sub> 51.7 ) 8  
 62.3 가 650 가  
 (70 ) 0  
 94.1 152 ~ 162 (e)

원소	실측치 (wt %)	계산치 (wt %)
C	50.05	50.03
H	3.02	3.00
S	9.57	9.54
Sb	18.11	18.10
F	16.99	16.96

[ 6] (f)

6 55.3 , 4,4 ' - 46.1 233.4 가  
 24 ) 862.3 NaSbF<sub>6</sub> ( 810.6 NaSbF<sub>6</sub> 51.7  
 650 가 (70 ) 가 0  
 (f) 96.5 201 ~ 205

원소	실측치 (wt %)	계산치 (wt %)
C	52.23	52.20
H	3.55	3.53
S	8.98	8.97
Sb	17.09	17.06
F	15.99	15.98

[ 7] (g)

5 50.3 , 4,4 ' - 47.6 225.4 가  
 24 ) 862.3 NaSbF<sub>6</sub> ( 810.6 NaSbF<sub>6</sub> 51.7  
 가 0 650 가 (70 )  
 163 ~ 172 (g) 94.1

원소	실측치 (wt %)	계산치 (wt %)
C	47.51	47.48
H	2.58	2.56
S	9.07	9.05
Sb	17.20	17.18
F	21.40	21.46

[ 8] (h)

1 32.8 , 4.0 1,4 - 100 가 24  
 (h) 41.8

원소	실측치 (wt %)	계산치 (wt %)
C	52.80	52.78
H	4.45	4.43
S	7.23	7.22
Sb	13.70	13.71
F	12.85	12.84

[ 9] (j)

7 70.8 , 4.0 200 가 24  
 , 78.2 , - 48.5 1 0.04 가 120  
 15 .

(j) 126.7 1 % [

원소	실측치 (wt %)	계산치 (wt %)
C	53.86	53.84
H	5.48	5.49
S	5.15	5.13
Sb	9.76	9.75
F	9.13	9.13

[ 10] (k)

5 50.3 , 4,4 ' - 47.6 225.4 가  
 24 ) 559.8 NaPF<sub>6</sub> ( 5.62 NaPF<sub>6</sub> 33.6  
 650 가 (70 ) 0  
 (k) 104.9 154 ~ 163

원소	실측치 (wt %)	계산치 (wt %)
C	54.48	54.46
H	2.97	2.94
S	10.35	10.38
P	5.01	5.02
F	24.59	24.61

[ 11 ~ 30 1 ~ 6]

( )

1 2 ,  
 5 μ 8 cm (80 W/cm)

1 2

:

: 가 .

C : .

L : .

x : .

xx : .

: 40 3 .

C : .

L : .

x : .

: (照射量) (mJ/cm<sup>2</sup>) .

: (mJ/cm<sup>2</sup>) .

C : .

L : .

x : .

: 1000 mJ/cm<sup>2</sup> .

C : .

L : .

x : 가 .

x x : 가 .

	실 시 예										비 고 예		
	11	12	13	14	15	16	17	18	19	20	1	2	3
관중합 반응 개시제 : 실시예 1 에서 제조	1.5												
관중합 반응 개시제 : 실시예 2 에서 제조		1.5											
관중합 반응 개시제 : 실시예 3 에서 제조			1.5										
관중합 반응 개시제 : 실시예 4 에서 제조				1.5									
관중합 반응 개시제 : 실시예 5 에서 제조					1.5								
관중합 반응 개시제 : 실시예 6 에서 제조						1.5							
관중합 반응 개시제 : 실시예 7 에서 제조							1.5						
관중합 반응 개시제 : 실시예 8 에서 제조								1.5					
관중합 반응 개시제 : 실시예 9 에서 제조									1.5				
관중합 반응 개시제 : 실시예 10 에서 제조										1.5			
회합물 1 (*1)											1.5		
회합물 2 (*2)												1.5	
회합물 3 (*3)													1.5
예측시 수지 : Celloxide 2021 (*4) EHPF-3150 (*5)	80 20												
투명성	○	○	○	○	○	○	○	○	○	○	○	○	○
지장 안정성	○	○	○	○	○	○	○	○	○	○	○	○	○
고화속감 (mj/cm <sup>2</sup> )	69	23	23	23	23	23	23	23	30	69	140	75	75
광택	○	○	○	○	○	○	○	○	○	○	○	○	○
냄새	○	○	○	○	○	○	○	○	○	○	△	△	○

- (주) : \*1) 회합물 1 : 트리메닐술폴놀 헥사플루오로포스페이트  
 \*2) 회합물 2 : 디메닐-4-디오레놀시페닐술폴놀 헥사플루오로포스페이트  
 \*3) 회합물 3 : 4,4'-비스[4-비스(1,2-히드록시에톡시페닐)술폴노]디페닐술폴피도 비스헥사플루오로포스페이트  
 \*4) Celloxide 2021 : Daicel 사제의 지환식 예측시 수지  
 \*5) EHPF-3150 : Daicel 사제의 지환식 예측시 수지

	실 시 예										비 고 예		
	21	22	23	24	25	26	27	28	29	30	4	5	6
관중합 반응 개시제 : 실시예 1 에서 제조	1.0												
관중합 반응 개시제 : 실시예 2 에서 제조		1.0											
관중합 반응 개시제 : 실시예 3 에서 제조			1.0										
관중합 반응 개시제 : 실시예 4 에서 제조				1.0									
관중합 반응 개시제 : 실시예 5 에서 제조					1.0								
관중합 반응 개시제 : 실시예 6 에서 제조						1.0							
관중합 반응 개시제 : 실시예 7 에서 제조							1.0						
관중합 반응 개시제 : 실시예 8 에서 제조								1.0					
관중합 반응 개시제 : 실시예 9 에서 제조									1.0				
관중합 반응 개시제 : 실시예 10 에서 제조										1.0			
회합물 1													1.0
회합물 3												1.0	1.0
비닐 에테르 : VEctomer 2010 (*6) VEctomer 4020 (*7) 트리메틸렌 글리콜 디비닐 에테르	60 60 10	25 25 10	60 60 10	25 25 10	60	25 25 10	25 25 10						
투명성	○	○	○	○	○	○	○	○	○	○	x x	x	○
지장 안정성	○	○	○	○	○	○	○	○	○	○	○	○	○
고화속감 (mj/cm <sup>2</sup> )	23	12	12	12	12	12	12	12	12	23	— (*8)	24	34
광택	○	○	○	○	○	○	○	○	○	○	○	x	○
냄새	○	○	○	○	○	○	○	○	○	○	—	○	△

- (주) : \*6) VEctomer 2010 : Allied-Signal 사제의 방향족 우레탄 비닐 에테르  
 \*7) VEctomer 4020 : Allied-Signal 사제의 아레 구조식의 지방족 에스테르 비닐 에테르  $(CH_2=CH-O-CH_2-\text{H}-CH_2-O-C(=O)-CH_2-CH_2)_2$   
 \*8) 조성물은 각 성분의 혼합비가 불칭하여 혼합 즉시 분리되어 1000 mj/cm<sup>2</sup> 이상의 자외선 조사량으로 조사해도 경화되지 않았음.

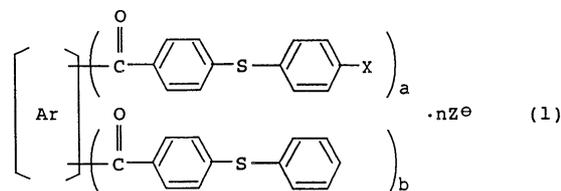
1 2

가

(57)

1.

(1)



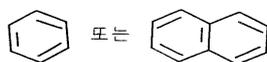
[ Ar 1 가 4 가 , X 가 , a 1  
 ~ 2, b 0 1, a + b 1 ~ 2, n 1 ~ 2, Z (3)  
 ;



( M , Q , m 3 ~ 6 , [ 0 1 , m + [ 4 ~ 6 ] ).

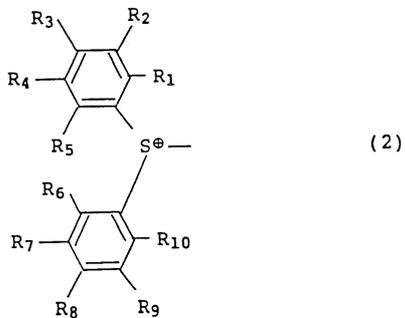
2.

1 , :  
 Ar ,



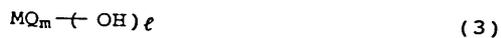
[ (C<sub>1</sub> - C<sub>5</sub>) , (C<sub>1</sub> - C<sub>5</sub>)  
 가 ] ;

가 (2)



[ R<sub>1</sub> - R<sub>10</sub> , , , 가 C<sub>1</sub> - C<sub>5</sub>  
 . ] ;

a 1 ~ 2 ; b 0 1 ; a + b 1 ~ 2 ; n 1 ~ 2 ; Z (3)



( M , Q , m 3 ~ 6 , [ 0 1 , m + [ 4 ~ 6 ] ).

3.

2, Ar , R<sub>1</sub> - R<sub>10</sub>, (C<sub>1</sub> - C<sub>5</sub>), M

4.

3, R<sub>1</sub> - R<sub>5</sub> 가, R<sub>6</sub> - R<sub>10</sub> 가, R<sub>6</sub> - R<sub>10</sub> 가

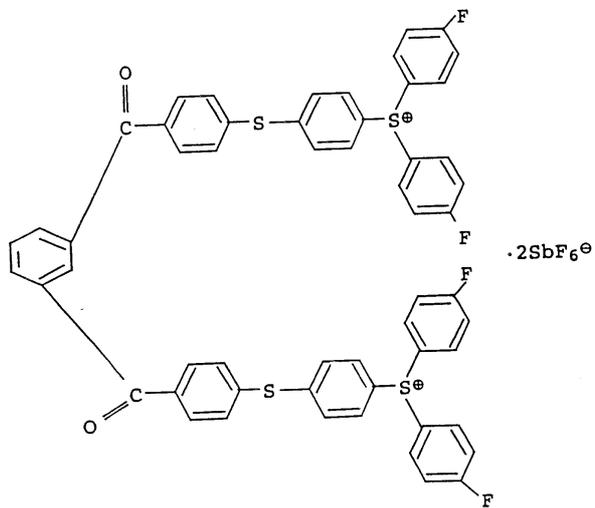
5.

2, Ar , R<sub>3</sub>, R<sub>8</sub>, R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub> - R<sub>7</sub>, R<sub>9</sub>, R<sub>10</sub>, a  
 2, b, 0, n, 2, M, m, 6, 0

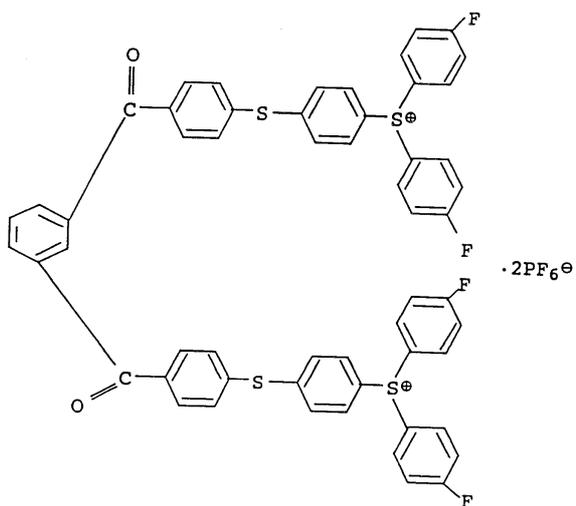
6.

5, 가

7.



8.



9.

1            8

10.

1            8

11.

10

12.

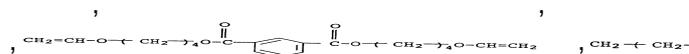
11

13.

11

- 1,4 -

, 1,4 -



14.

10

7            8

15.

10

16.

10 , 100 0.01 ~ 20 .

17.

100 7 8 0.1 ~ 10 .

18.

100 7 8 0.1 ~ 10 .

19.

18 , , 1,4 - , CH<sub>2</sub> - CH<sub>2</sub> - C(=O) - O - CH<sub>2</sub> -  - CH<sub>2</sub> - O - CH=CH<sub>2</sub> )<sub>2</sub> ,

20.

10 19 .

21.

10 19 .