

	(19) (12)	(KR) (A)	(11) (43)	10-2010-0039229 2010 04 15
(51)	Int. Cl.		(71)	
	003F 7/039 (2006.01)			
(21)	10-2009-0093691			150
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(a0-1) (a0) (A) (I)

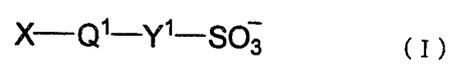
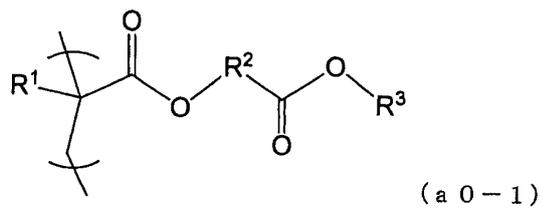
(a1) (B1) (B) ; (a0-1)

, R¹ , 1 5 1 5 , R² 2

, R³ -SO₂ (I) , X 3 30

, Q¹ 2 , Y¹ 1 4

[1]



(72)

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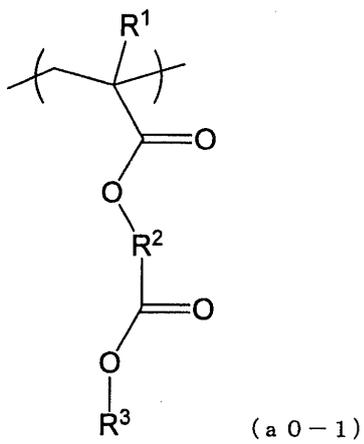
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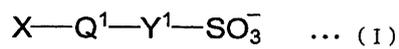
(A),
 (B),
 (A) (a0-1) (a0) (A1),
 (a1) (A1),
 (B) (I) (B1)

[1]



[(a0-1) , R¹ , 1 5 1 5
 , R² 2 , R³ -SO₂ .]

[2]



[(I) , X 3 30 , Q¹
 2 , Y¹ 1 4 .]

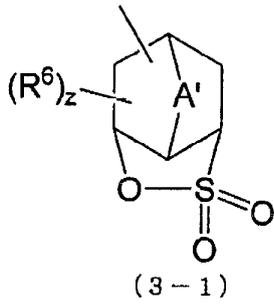
2

1 ,
 R³ -OSQ₂

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2 ,
 R³ (3-1)

[3]



[(3-1) , A' , 1 5 ,
 ; z 0 2 ; R⁶ , , -COOR',
 -CC(=O)R', , R' .]

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(A1)

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[0001]

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[0003]

[0004]

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(A)

(a0-1)

(a0)

(a1)

(A1)

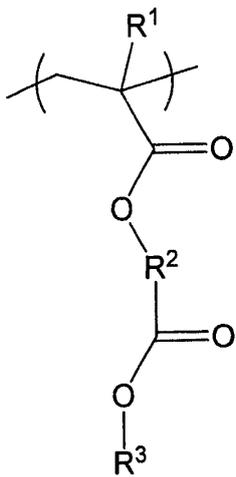
(B)

(I)

(B1)

[0027]

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(a 0 - 1)

[0028]

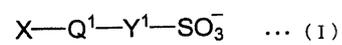
[(a0-1)

, R¹ , 1 5 1 5
 , R² 2 , R³ -SQ₂ .]

[0030]

[2]

[0031]



[0032]

[(I) , X 3 30 , Q¹

2, Y¹ 1 4

[0033]

[0034]

[0035]

[0036]

[0037]

[0038]

[0039]

[0040]

[0041]

[0042]

[0043]

[0044]

[0045]

[0046]

[0047]

[0048]

2, Y¹ 1 4 .]

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[0049] <(A) >

[0050] , , .

[0051] 500 , .
500 , , .

[0052] 500 () .

[0053] , 500 4000 , 500 4000

[0054] , 2000 , 2000
GPC ()

[0055] (A) (a0-1) (a0)
(a1) (A1) (A1)
)

[0056] [(A1)]

[0057] (A1) (a0) (a1)

[0058] , (A1) (a0) (a1) ,
(a2)

[0059] , (A1) (a0) (a1) , (a0), (a1) (a2)
(a3)

[0060] ((a0))

[0061] (a0-1) , R¹ , 1 5 1 5

[0062] R¹ 1 5 , n- , tert- , , , , ,

[0063] R¹ , , , , , , , , , ,

[0064] R¹ , , , , , , , , , ,

[0065] (a0-1) , R² 2

[0066] R² , 2 , 2

[0067] 2

[0068] R² , , , , , , , , , ,

[0069] , , , , , , , , , ,

[0070]

[0071]

[0072]

[0073]

[0074]

[0075]

[0076]

[0077]

[0078]

[0079]

[0080]

[0081]

[0082]

[0083]

[0084]

, 1 5, 1 2, 1 10, 1 8

[-(CH₂)₂], [- (CH₂)₃], [- (CH₂)₄], [- (CH₂)₅], [-CH₂],

-CH(CH₃)-, -CH(CH₃)-, -CH(CH₃)CH₂-, -C(CH₃)(CH₂CH₃)-, -C(CH₃)₂-

-CH(CH₃)CH₂-, -CH(CH₃)CH(CH₃)-, -C(CH₃)₂CH₂-, -CH(CH₃)CH₂CH₂-, -C(CH₃)₂CH₂CH₂-

-CH(CH₃)CH₂CH₂CH₂-, -CH₂CH(CH₃)CH₂CH₂-, -CH(CH₃)CH₂CH₂CH₂CH₂-, -CH₂CH(CH₃)CH₂CH₂CH₂-

1 5

1 5, (=O)

2), (

()

3 20, 3 12

6, 2, 3

7 12, 2

1 5, 1 5

(=O)

(anthryl), (bi phenyl), (fluorenyl), 1

1 2; 2

, 1-, 2-, 1-, 2-

1

5, 1 5, (=O)

2

R², 2

[0085] C(=O)-O , $-\text{NH}$, $-\text{NR}^{\text{O4}}$ (R^{O4}), $-\text{NH C(=O)}$, $=\text{N}$, $-\text{O}$, $-\text{C(=O)}$, $-\text{C(=O)-O}$, $(-\text{O}$

[0086] R^2

[0087] R^2 , 3

[0088] R^2 , 2, 2

[0089] R^2 , 1 4, 1 10, 1 3, 1 6

[0090] R^2 , 2

[0091] 2

[0092] R^2 , 2, $-\text{O}$, $-\text{C(=O)-O}$, $-\text{C(=O)}$, $-\text{OC(=O)-O}$, $-\text{C(=O)-NH}$, $-\text{NH}$ (H), $-\text{S}$, $-\text{S(=O)}$, $-\text{S(=O)-O}$, $-\text{A O B}$, $-\text{[A C(=O)-C]d B}$, A B, 2, d 0 3

[0093] R^2 , $-\text{NH}$, H, 1 10, 1 8, 1 5

[0094] $-\text{A O B}$, $-\text{[A C(=O)-C]d B}$, A B, 2

[0095] A B, 2, R^2

[0096] A, 1 5

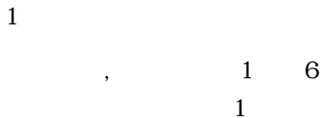
[0097] B, 1 5, 1 3

[0098] $-\text{[A C(=O)-C]d B}$, d 0 3, 0 2, 0 1, 1

[0099] (a0-1), R^3 , $-\text{SO}_2$

[0100] R^3 , $-\text{SO}_2$

[0115]

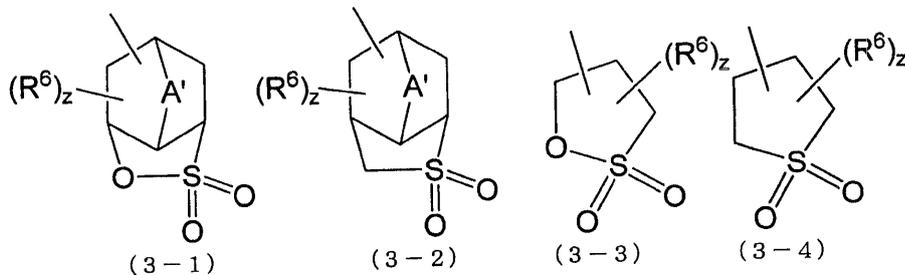


[0116]



[0117]

[3]



[0118]

[0119]

[, A' 1 5 ,
; z 0 2 ; R^6 , , , -COOR', -CC(=O)R',
, R' .]

[0120]

(3-1) (3-4) , A' (-O) (-S) 1
5 ,

[0121]

A' 1 5 , , n ,

[0122]

-O -S- , -OCH₂, -CH₂OCH₂, -S-CH₂, -CH₂S-CH₂

[0123]

A' 1 5 -O 1 5

[0124]

z 0 2 , 0

[0125]

z 2 , R^2 ,

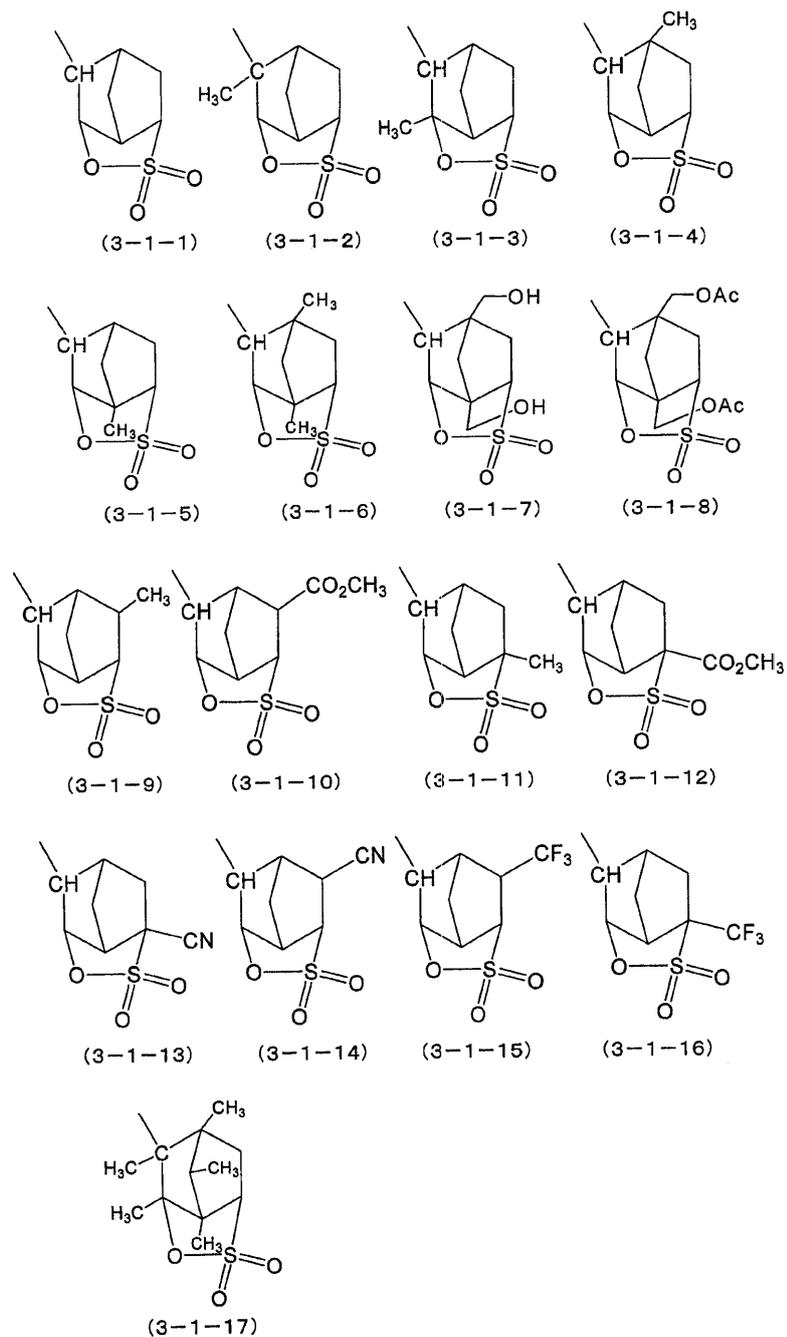
[0126]

R^6 , , -COOR', -CC(=O)R', , R^3
, -COOR',
-CC(=O)R',

[0127]

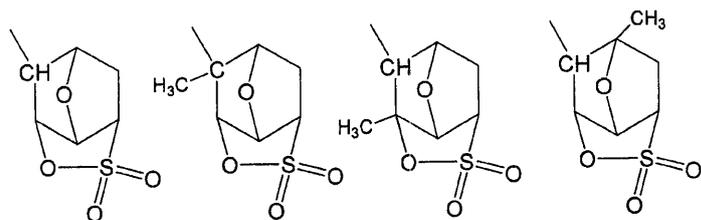
(3-1) (3-4) , Ac

[0128] [4]

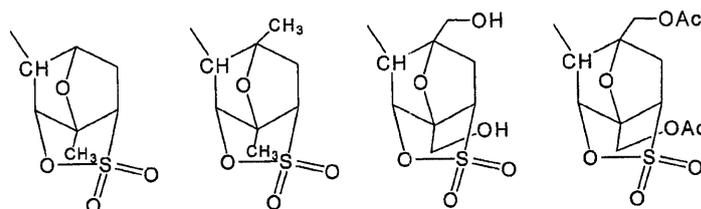


[0129]

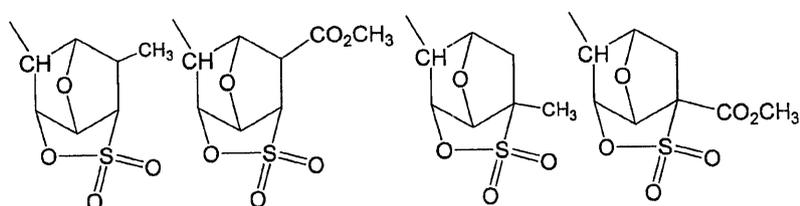
[0130] [5]



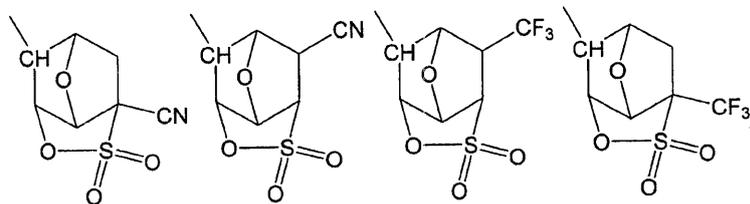
(3-1-18) (3-1-19) (3-1-20) (3-1-21)



(3-1-22) (3-1-23) (3-1-24) (3-1-25)



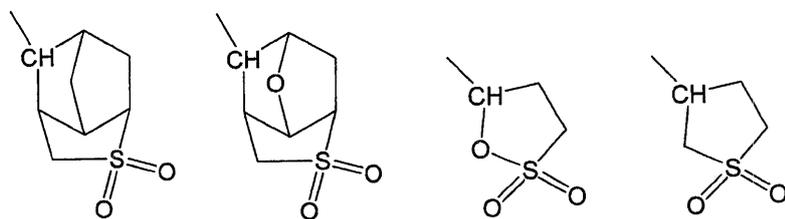
(3-1-26) (3-1-27) (3-1-28) (3-1-29)



(3-1-30) (3-1-31) (3-1-32) (3-1-33)

[0131]

[0132] [6]



(3-2-1) (3-2-2) (3-3-1) (3-4-1)

[0133]

[0134] R³, (3-1), (3-3) (3-4)

(3-1)

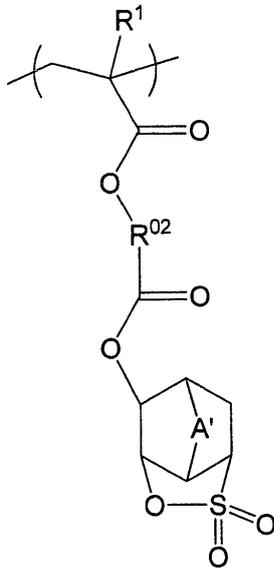
[0135] R³, (3-1-1), (3-1-18), (3-3-1) (3-4-1)

1

(3-1-1)

[0136] (a0) (a0-1-11)

[0137] [7]



(a0-1-11)

[0138]

[0139] [, R¹ , R⁰² , A' .]

[0140] R⁰² 1 10 , 1 8
 , 1 5 , 1 3 , 1 2 .

[0141] A' , (-O) (-S) .

[0142] (a0) 1 , 2 .

[0143] (A1) (a0) (A1)
 , MEF, (,
), CDU (), LVR () , (A1)
 1 60 , 5 50 , 10
 40 , 20 40 .

[0144] (a1)

[0145] (a1) (a0) ,

[0146] (a1) (A1) (A1)

3 ; , ()
 . , () , α , α

[0147] , 3 , (-C(O)-O) , 3 ,
 3 3 .

[0148]

[0149] , 3 , 3

[0150] 3 ,

[0151] , , ()

[0152] , $-C(R^{71})(R^{72})(R^{73})$, $-C(R^{71})(R^{72})(R^{73})$
 R^{71} R^{73} 1 5 tert- , 2- -2- , 2- -2-
 , 3- -3- 4 8 tert-

[0153]

[0154] (a1) , 1 5 , 1 5 , ,
 1 5 (=0)

[0155] ()

[0156] , 1 5 , 1 5
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[0157]

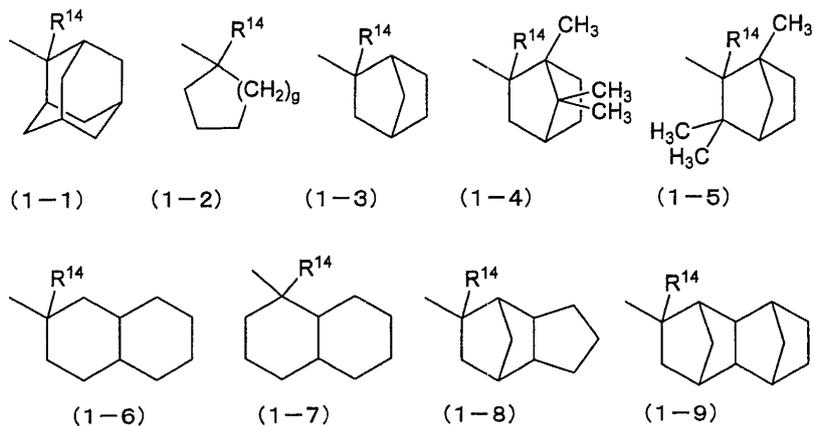
[0158] (i) 1 3 ;

[0159] (ii) 1 3

[0160] (i) 1 3 ,
 (1-1) (1-9)

[0161] (ii) 1 3
 (2-1) (2-6)

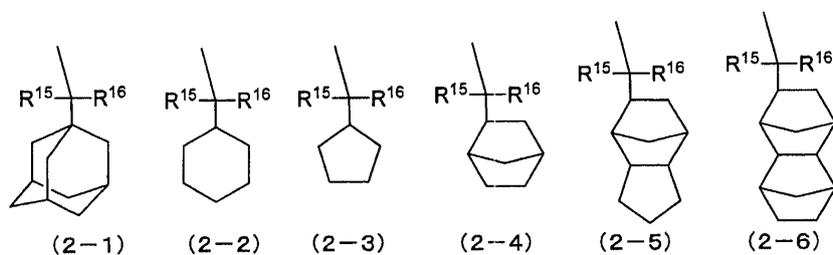
[0162] [8]



[0163]

[0164] [, R¹⁴ , g 0 8 .]

[0165] [9]



[0166]

[0167] [, R¹⁵ R¹⁶ .][0168] R¹⁴ , .

[0169] , 1 5 , 1 4 , 1 2

, , n- , n- , n-

[0170] , 3 10 , 3 5

, , tert- , ,

[0171] g 0 3 , 1 3 , 1 2

[0172] R¹⁵ R¹⁶ , R¹⁴ .

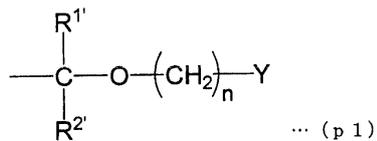
[0173] (1-1) (1-9), (2-1) (2-6) , (-O)

[0174] , (1-1) (1-9), (2-1) (2-6) ,

[0175]

[0176] , (p1)

[0177] [10]



[0178]

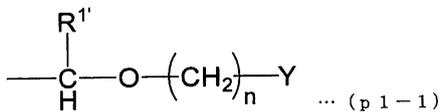
[10], $\text{R}^{1'}$, $\text{R}^{2'}$, Y , n 0 3 .]

[0180] (p1), n 0 2, 0 1, 0

[0181] $\text{R}^{1'}$, $\text{R}^{2'}$, R^1

[0182] $\text{R}^{1'}$, $\text{R}^{2'}$ 1
(p1) (p1-1)

[0183] [11]



[0184]

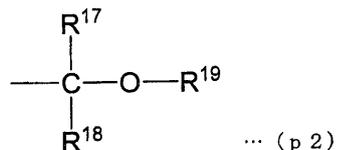
[11], $\text{R}^{1'}$, n , Y .]

[0186] Y , R^1

[0187] Y , ArF

[0188] (p2)

[0189] [12]



[0190]

[12], R^{17} , R^{18} ; R^{19} , R^{17} , R^{19} , R^{17} , R^{19} .]

[0192] R^{17} , R^{18} 1 15, R^{17} , R^{18}

[0193] R^{19} 1 15

[0194] R^{19} 1 5

[0195] R^{19} 4 15 , 4 12
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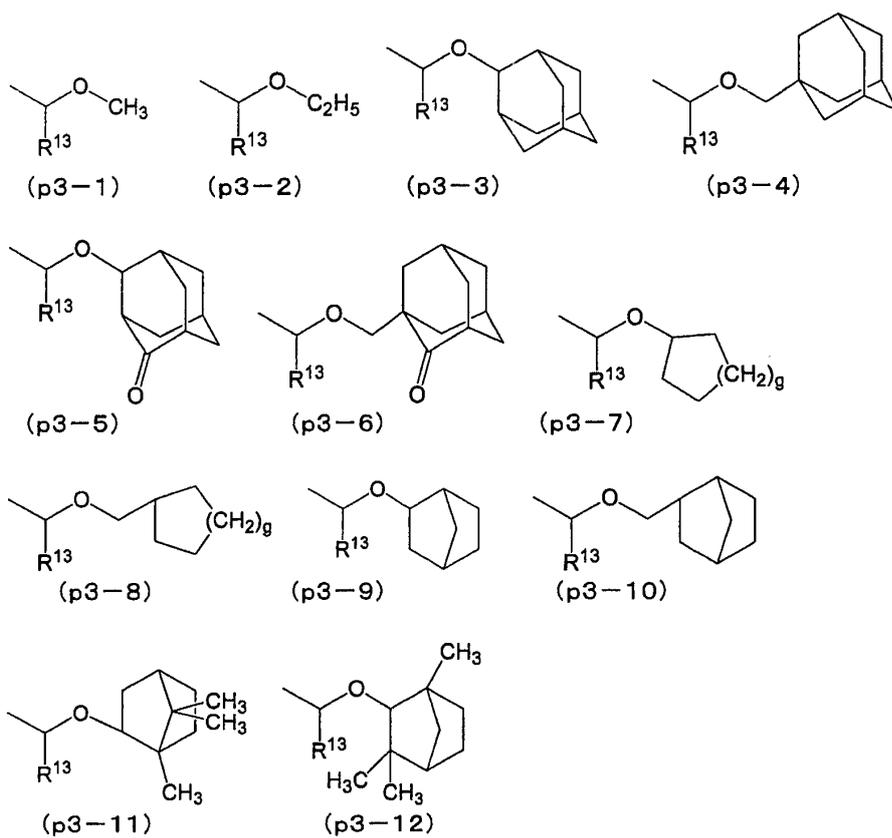
1 1

[0196] (p2) , R^{17} R^{19} (
1 5) , R^{19} R^{17}

[0197] , R^{17} , R^{19} , R^{19} , R^{17}
4 7 , 4 6

[0198] (p3-1) (p3-12)

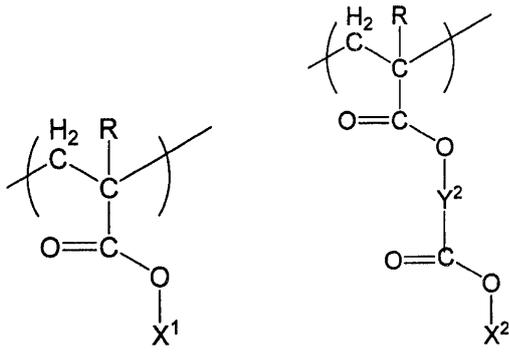
[0199] [13]



[0200]
[0201] [, R^{13} , g .]

[0202] (a1) , (a1-0-1) , (a1-0-2)

[0203] [14]



(a1-0-1)

(a1-0-2)

[0204]

[0205] [, R , ; X¹ ; Y² ; X² .]

[0206] (a1-0-1) , R (a0-1) R¹ .

[0207] X¹ , 3

[0208] (a1-0-2) , R .

[0209] X² (a1-0-1) X¹ .

[0210] Y² 2 , (a0-1) R² .

[0211] Y² , 2 2 .

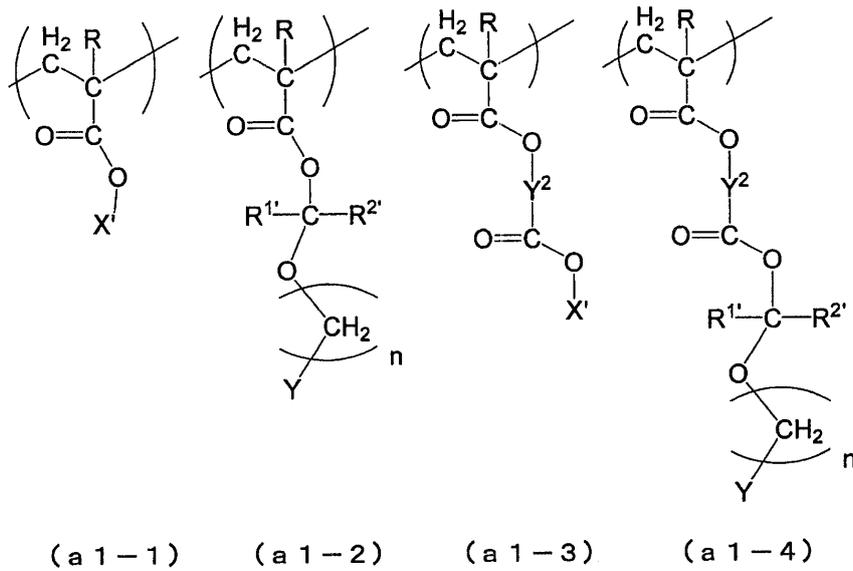
[0212] , -A-OB- -A-C(=O)-OB- , -(CH₂)_x-C(=O)-O-(CH₂)_y-

[0213] x 1 5 , 1 2 , 1 .

[0214] y 1 5 , 1 2 , 1 .

[0215] (a1) , (a1-1) (a1-4) .

[0216] [15]



[0217]

[0218] [, X 3 , Y 1 5 , ; n 0 3 ; Y² 2 ; R , R¹, R² 1 5 .]

[0219] , X X¹ 3

[0220] R¹, R², n, Y , (p1) R¹, R², n, Y .

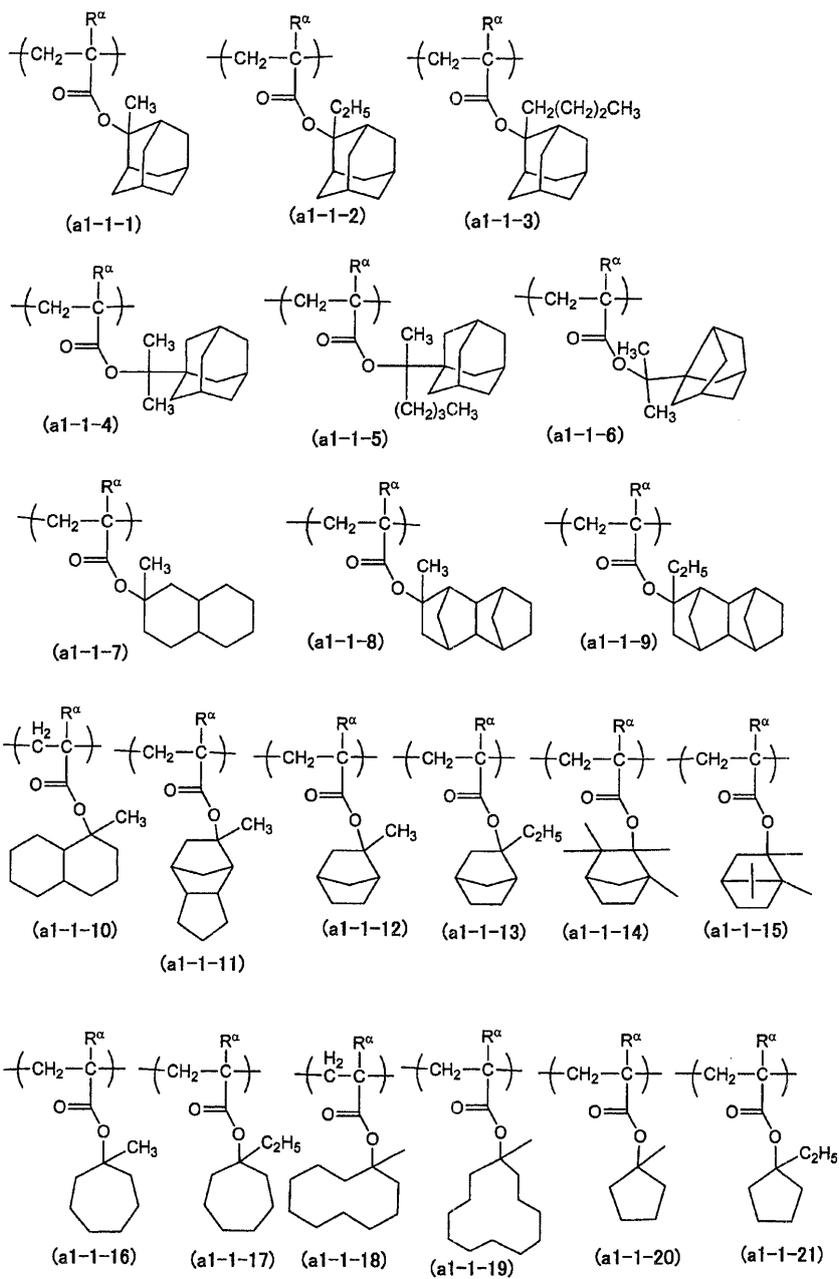
[0221] Y² , (a1-0-2) Y² .

[0222] , (a1-1) (a1-4) .

[0223] , R , .

[0224]

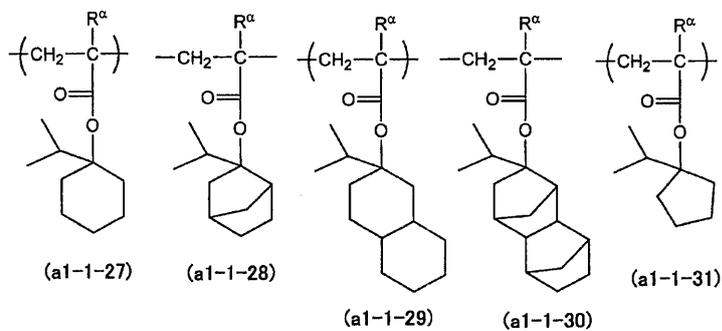
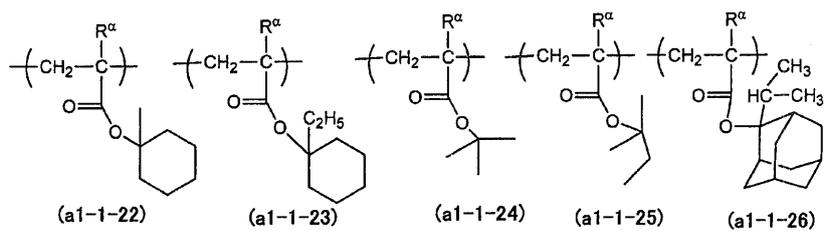
[16]



[0225]

[0226]

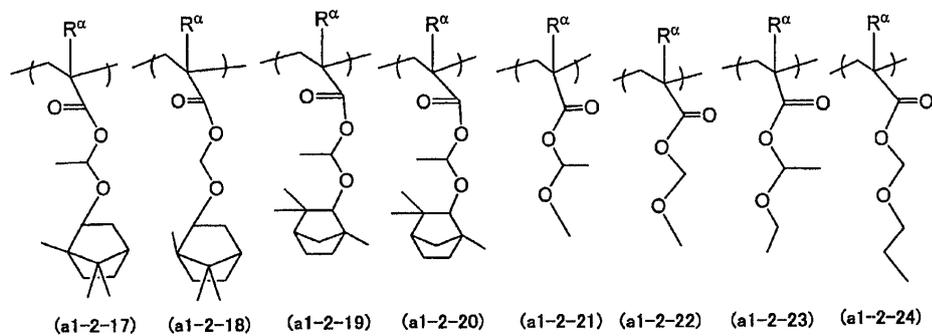
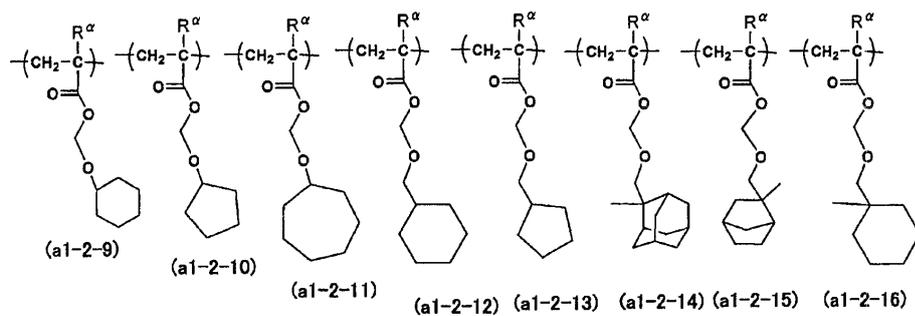
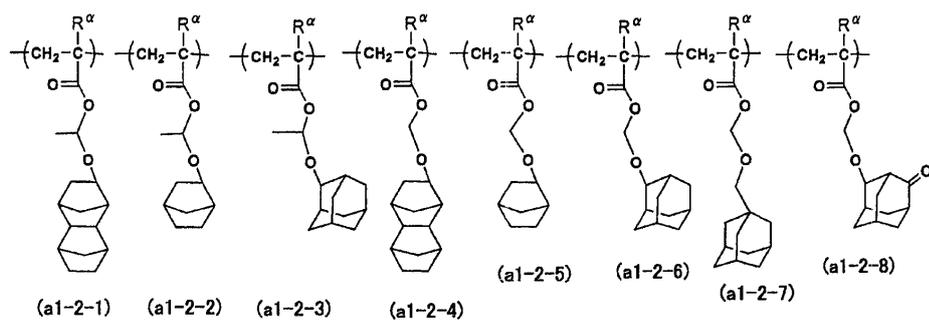
[17]



[0227]

[0228]

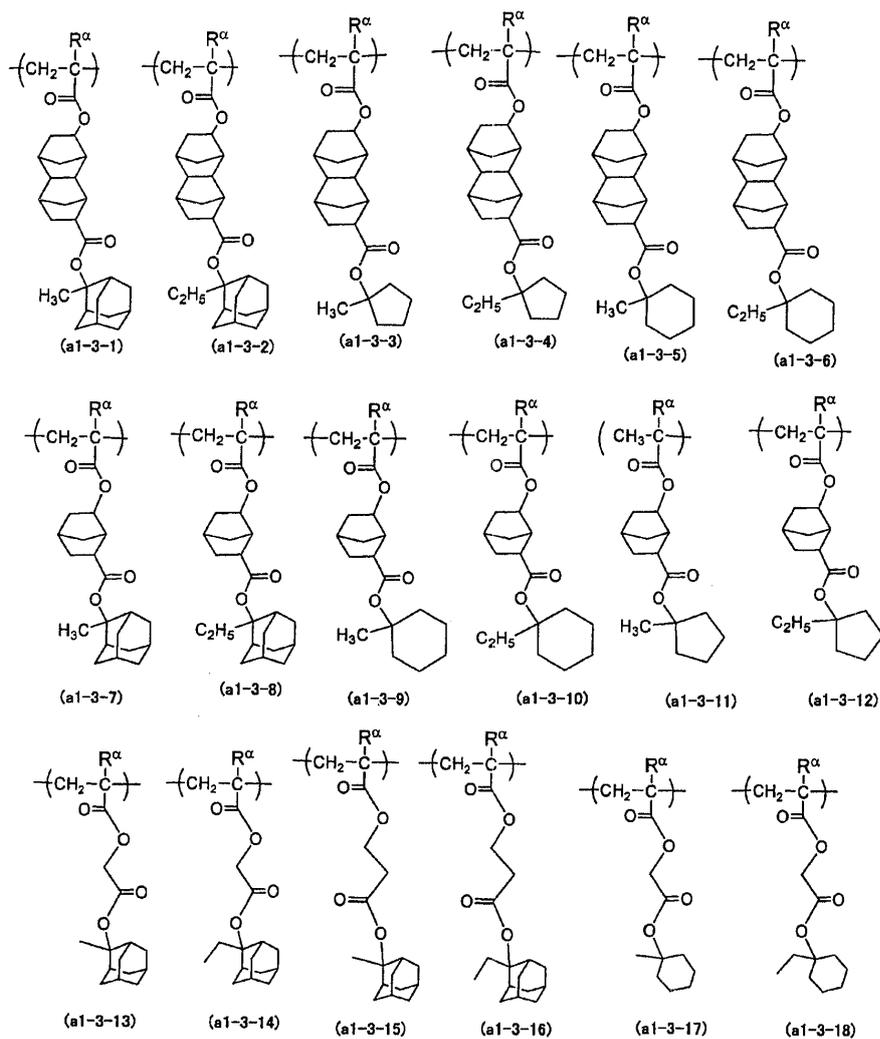
[18]



[0229]

[0230]

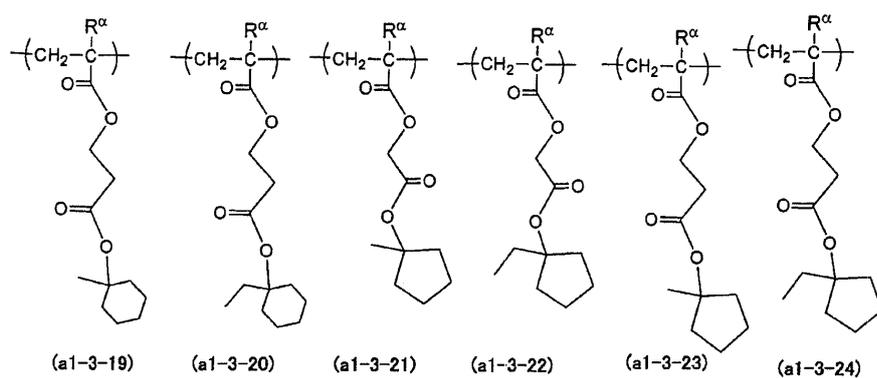
[19]



[0231]

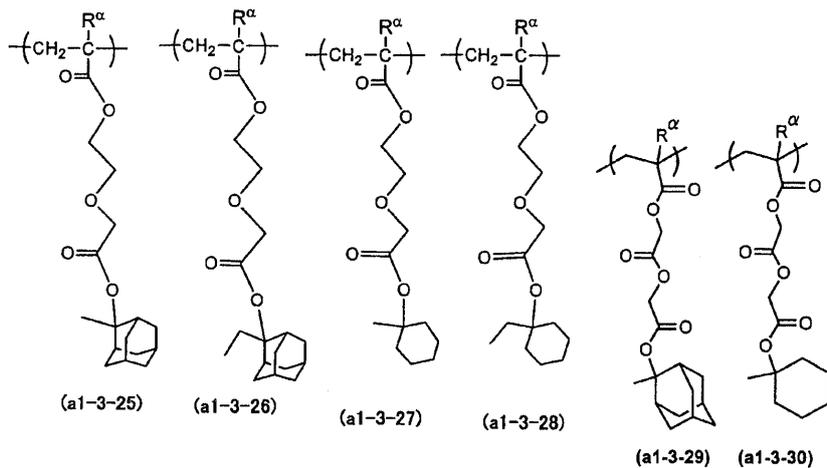
[0232]

[20]



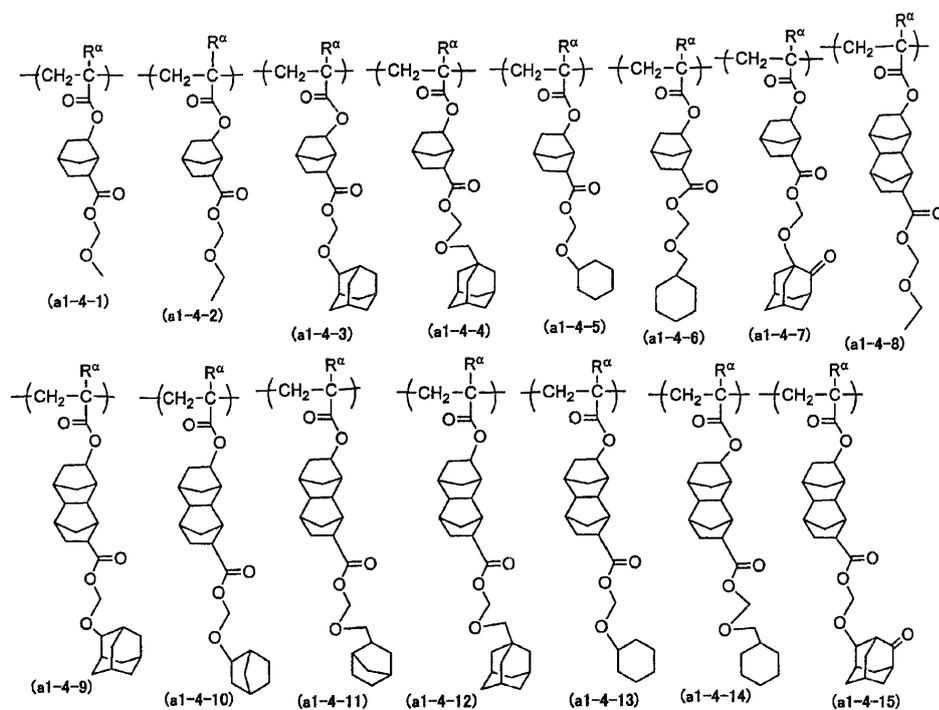
[0233]

[0234] [21]



[0235]

[0236] [22]



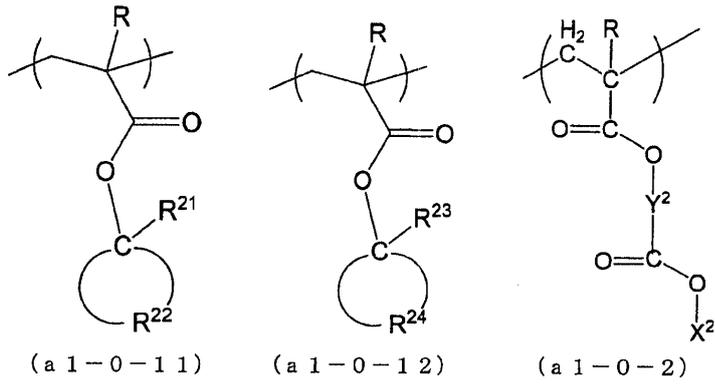
[0237]

[0238]

[0239]

(a1) , 1 , 2
 (a1-0-2) (a1-0-11) (a1-0-12)
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[0240] [23]



[0241]

[0242] [, R , , R²¹ , R²² R²² , R²³ , R²⁴ R²⁴ , Y² 2 , X² .]

[0243] , R Y², X²

[0244] (a1-0 11) , R²¹ , (1-1) (1-9) R¹⁴ ,

[0245] R²² R²² , 3 , 1 , 3 8 , 4 6 , 5 6 .

[0246] (-O) ,

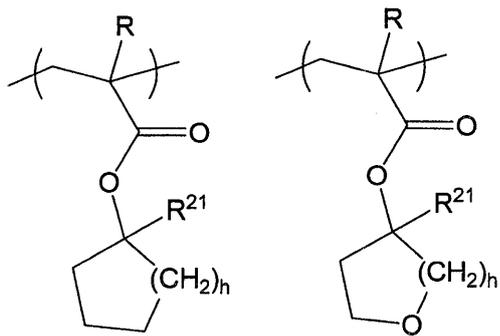
[0247] , ,

[0248] R²² , (-O)

[0249] (a1-0 11) , (a1-1-16) (a1-1-23) , (a1-1-16) (a1-1-17), (a1-1-20) (a1-1-23) (a1-1-02) , (a1-1-02)

[0250] , h 1 2 , 2 .

[0251] [24]



(a 1-1-0 2) (a 1-1-0 2')

[0252] (, R R²¹ , h 1 3 .)

[0254] (a1-0 12) , R²³ , (1-1) (1-9) R¹⁴

[0255] R²⁴ R²⁴ , 3

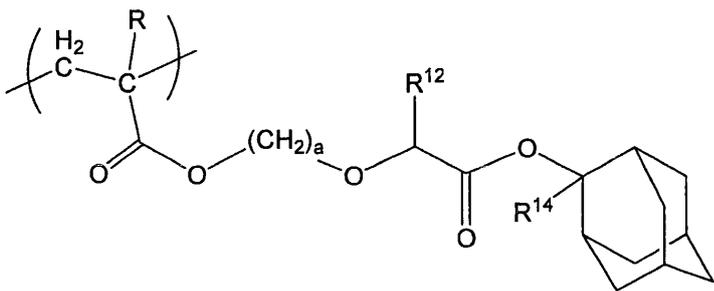
[0256] (a1-0 12) , (a1-1-26) (a1-1-31)

[0257] (a1-0 2) , (a1-3) (a1-4) , (a1-3)

[0258] (a1-0 2) , Y² -A O B -A C(=O)-O B

[0259] 02) ; (a1-3-01) ; (a1-3-03) ; (a1-3-

[0260] [25]

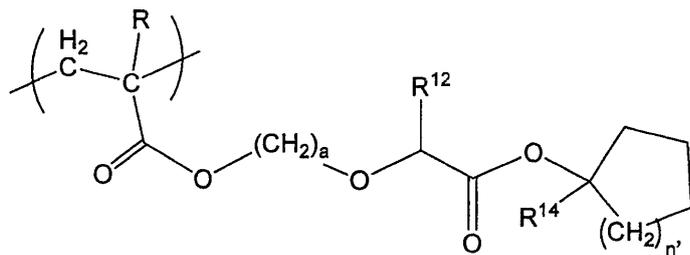


(a 1-3-0 1)

[0261] (, R R¹⁴ , R¹² , a 1 10 .)

[0262] (, R R¹⁴ , R¹² , a 1 10 .)

[0263] [26]

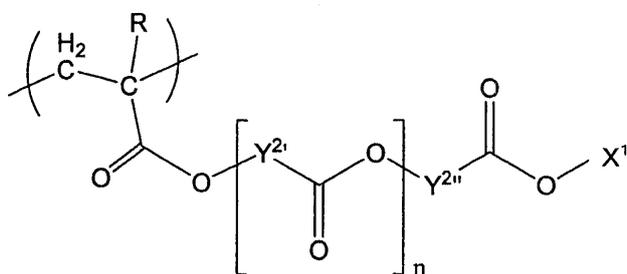


(a 1 - 3 - 0 2)

[0264]

[0265] (, R R¹⁴ , R¹² , a 1 10 , n' 0
3 .)

[0266] [27]



(a 1 - 3 - 0 3)

[0267]

[0268] [, R , Y^z Y^z 2 , X^j
, n 0 3 .]

[0269] (a1-3-01) (a1-3-02) , R¹² .

[0270] a 1 8 , 1 5 , 1 2 .

[0271] n' 1 2 , 2 .

[0272] (a1-3-01) , (a1-3-25) (a1-3-26)

[0273] (a1-3-02) , (a1-3-27) (a1-3-28)

[0274] (a1-3-03) , Y^z , Y^z 2 , (a1-3) Y^z

[0275] Y^z , 2 , 1 5

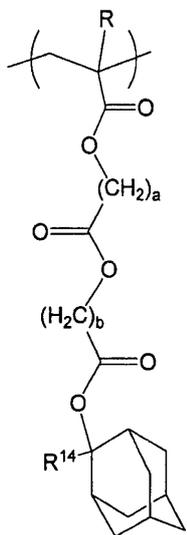
[0276] Y^z , 2 , 1 5

[0277] X^j , 3 (i) 1 3
(1-1)

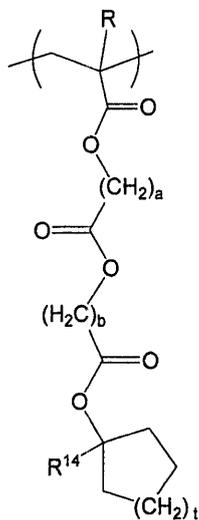
[0278] n 0 3 , n 0 2 , 0 1 , 1

[0279] (a1-3-03) , (a1-3-03-1) (a1-3-03-2) (a1-3-29) (a1-3-30) , (a1-3-03-1) , (a1-3-03-1)

[0280] [28]



(a1-3-03-1)



(a1-3-03-2)

[0281]

[0282] [, R R¹⁴ , a 1 10 , b 1 10 , t 0 3 .]

[0283] a 1 5 , 1 2 .

[0284] b 1 5 , 1 2 .

[0285] t 1 3 , 1 2 .

[0286] , (A1) 2 (a1) 2 .

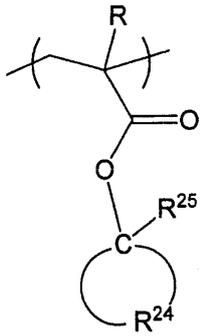
[0287] , 2 , 1 (a1-0-11) , (a1-0-12) (a1-0-2) 1 .

[0288] , 2 (a1) , (a1-0-11) , (a1-0-12) (a1-0-2) 1 (a1)

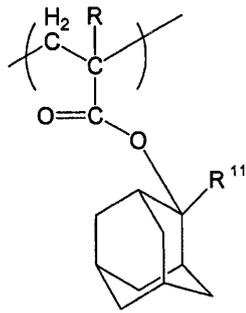
[0289] (a1-0-11) , (a1-0-12) 1 (a1) , (a1-1) , (a1-1-1) (a1-1-2), (a1-1-7) (a1-1-15) (a1-1-01) , (a1-2) , (a1-4)

[0290] (a1-1-01) , (a1-1-1) (a1-1-2) (a1-1-101)

[0291] [29]



(a 1-1-0 1)



(a 1-1-1 0 1)

[0292]

[0293] [, R , R²⁵ R¹¹ 1 5 , R²⁴ .]

[0294] (A1) , (a1) (A1) 10 80 , 20 70 , 25 60 , 25 50 ,

[0295] ((a2))

[0296] (a2)

[0297] , , -O C(O)- 1 () ,

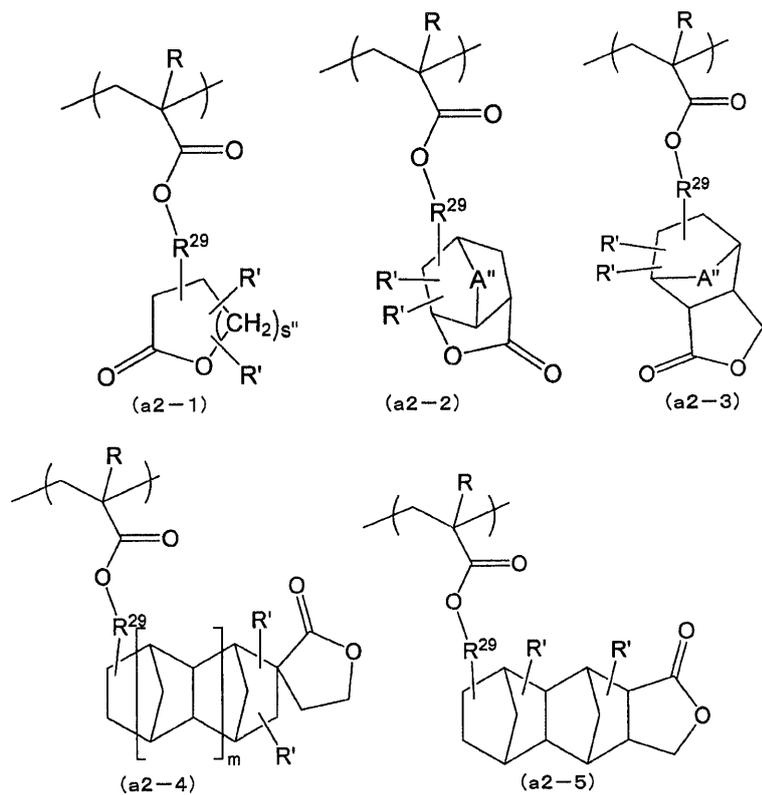
[0298] (a2) (A1) ,

[0299] (a2)

[0300] , 4 6 1 1 , 1 1 , 1

[0301] (a2) , (a2-1) (a2-5)

[0302] [30]



[0303]

[0304]

[, R , ; R , ,
 1 5 , 1 5 -COOR' , R' ; R²⁹
 2 , s'' 0 1 2 ; A''
 1 5 , ; m 0 1 .]

[0305]

(a2-1) (a2-5) R (a1) R .

[0306]

R 1 5 , 1 5 , -COOR' , (3-1)
 R⁶ , , -COOR' . R

[0307]

A'' , (3-1) A' .

[0308]

R²⁹ 2 . 2 , (a0-1) R² 2
 , (-C(=O)-O) ,
 . R²⁹ 2
 . R² ,

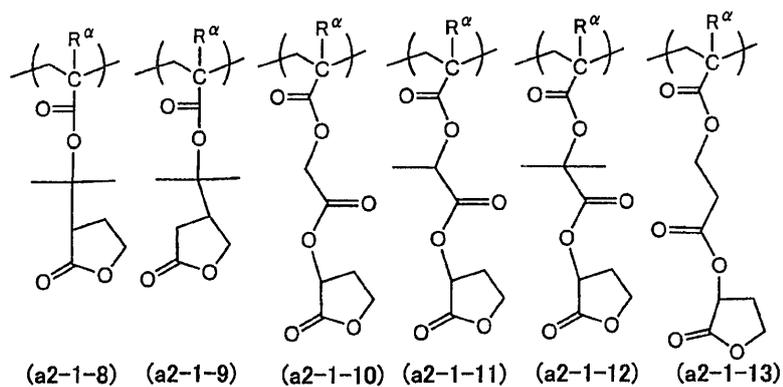
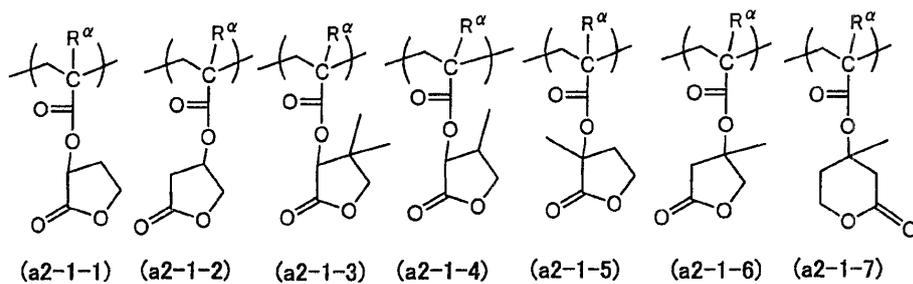
[0309]

s'' 1 2 .

[0310]

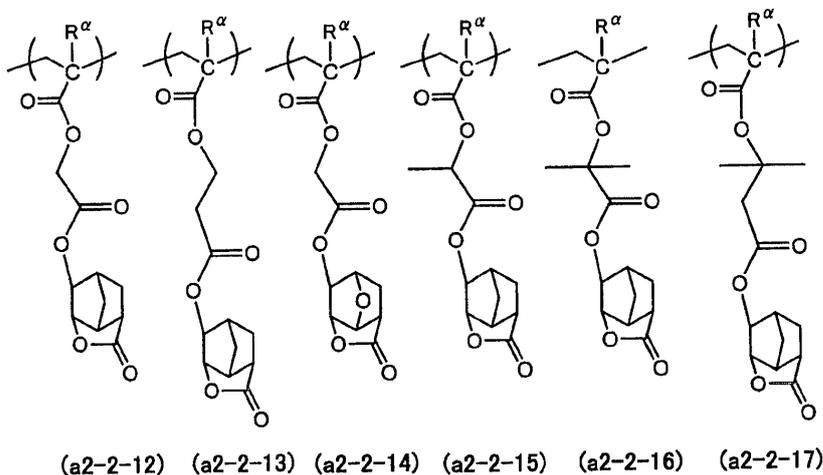
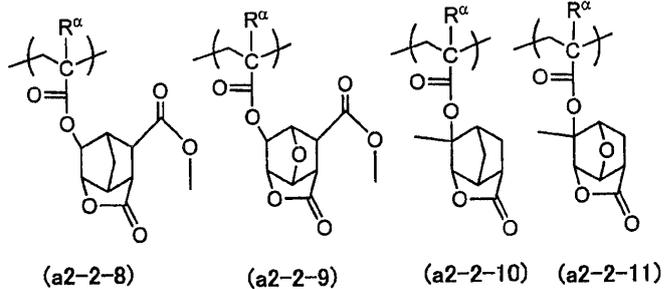
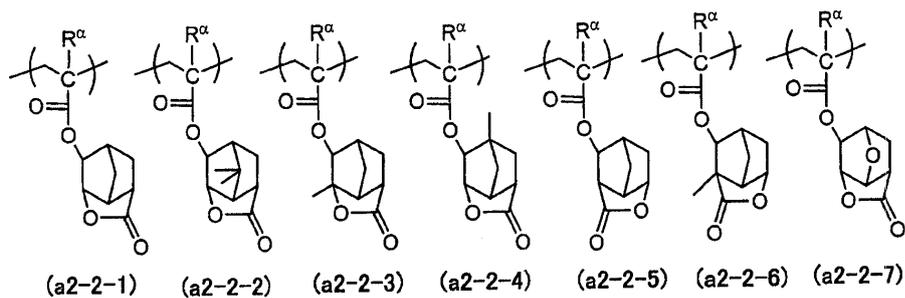
, (a2-1) (a2-5) . , R

[0311] [31]



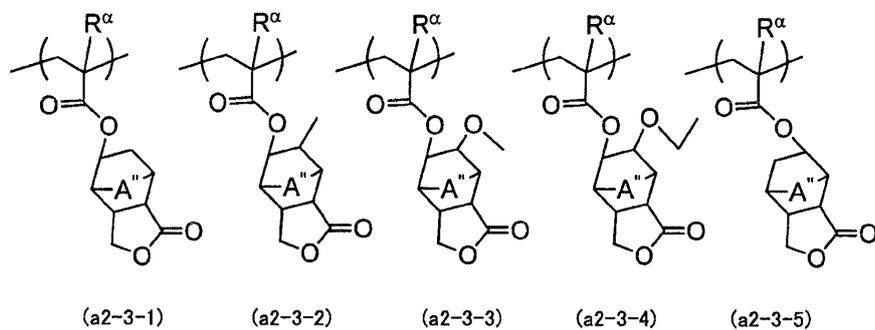
[0312]

[0313] [32]



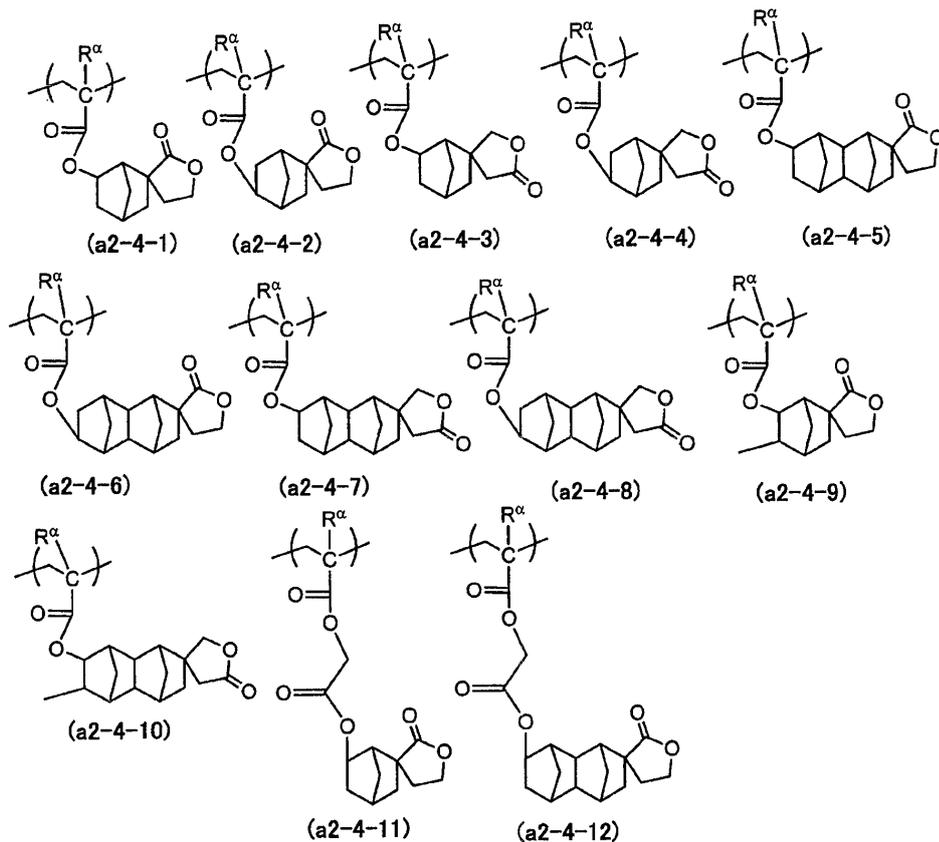
[0314]

[0315] [33]



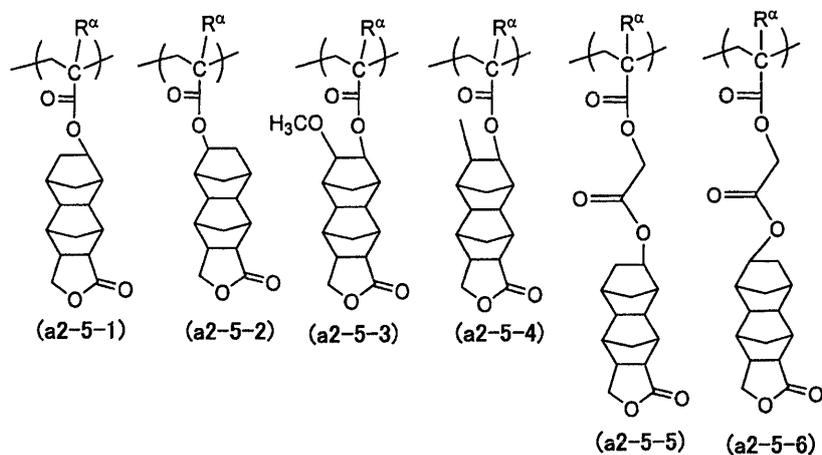
[0316]

[0317] [34]



[0318]

[0319] [35]



[0320]

[0321] (A1) , (a2) , 1 , 2

[0322] , (A1) (a2) , (a2-1)
(a2-2) 1

[0323] (A1) (a2) (A1) , (A1)

, 1 50 , 5 50
, 10 45 , MEF, CDCl

[0324] (A1) (a2) (a2) (a0) (A1) (a0)
 10 65 1 70 5 70
 MF, CU 20 65

[0325] (A1) (a0) (a2) (A1) (a0)
 (a2) (a0) 1 40 10 35
 15 30 (a2) 1 45 10 45
 20 45

[0326] (a3)

[0327] (a3)

[0328] (A1) (a3) (A)

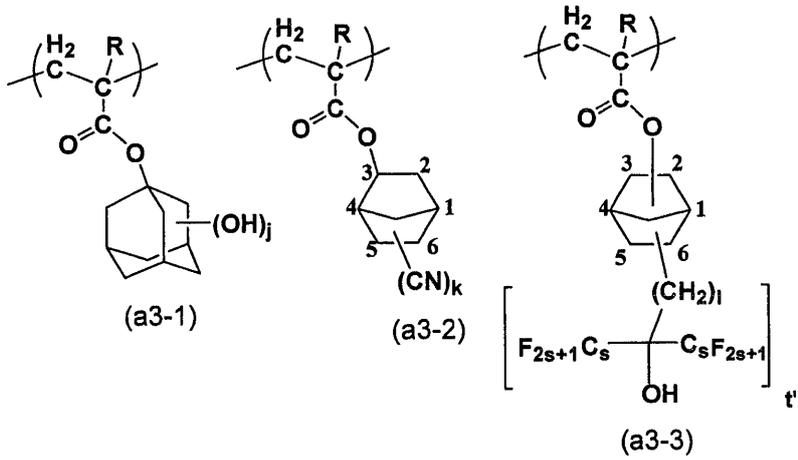
[0329]

[0330] 1 10 (ArF)
 ()
 7 30

[0331] 2
 2
 2
 2

[0332] (a3) 1 10
 (a3-1) (a3-2)
 (a3-3)

[0333] [36]



[0334]

[0335] (, R , j 1 3 , k 1 3 , t' 1 3 , l 1 5 , s 1 3 .)

[0336] (a3-1) , j 1 2 , 1 j 2 , 3 5 . j 1 , 3

[0337] , j 1 , 3

[0338] (a3-2) , k 1 . 5 6

[0339] (a3-3) , t' 1 . 1 1 . s 1 . 2- 3- 5 6 []

[0340] (a3) , 1 , 2

[0341] (A1) (a3) (A1) 5 50 , 5 40 , 5 25 (a3)

[0342] ()

[0343] (A1) (a1) (a3) (, (a4))

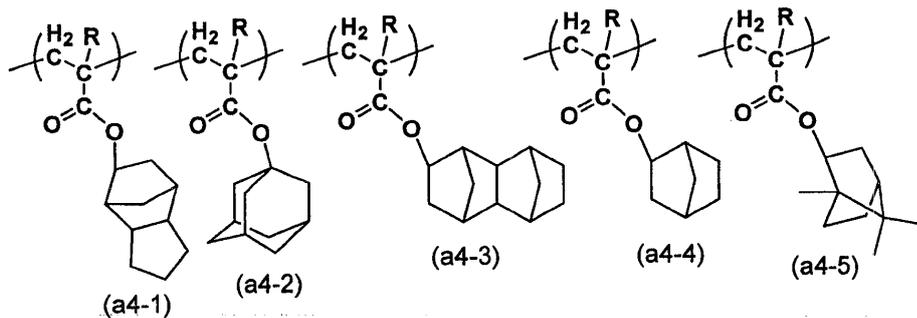
[0344] (a4) (a1) (a3) , ArF , KrF (ArF)

[0345] (a4) , () , ArF , KrF ((a1) ArF)

[0346] 1 , 1 5

[0347] (a4) , (a4-1) (a4-5)

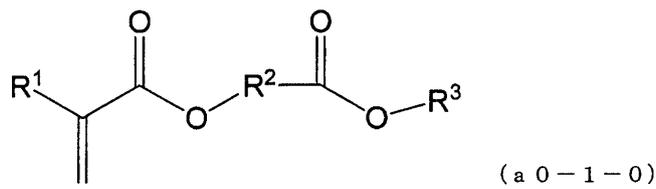
[0348] [37]



[0349] [, R]

[0350] [, R]

[0365] [38]



[0366]

[0367] [(a0-1-0) , R¹ R³ .]

[0368] (a0-1-0)

[0369] (X 1) (X 1)

(X 2) (X 2) (a0-1-0)

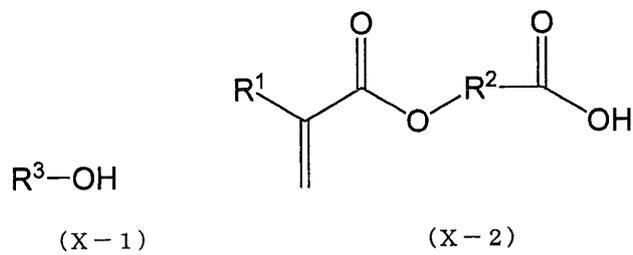
[0370] , K₂CO₃ Cs₂CO₃ ; , 4

(DMP), (EDCI), (DCC), -N
(Bop)

[0371] , , , , , P

, 2

[0372] [39]



[0373]

[0374] (A) (A1)

(, (A2) .)

[0375] (A2)

(ArF , KrF (ArF)
(a1) (a2) (a4)
, 500 4000 ()

[0376] (A2) 1 , 2

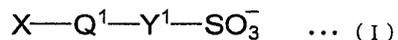
[0377] , (A)

[0378] <(B) >

[0379] , (B) (I) (B1) (B1)

.)

[0380] [40]



[0381]

[0382] [(I) , X $\begin{matrix} 3 & 30 \\ 1 & 4 \end{matrix}$, Q¹
2 , Y¹
1 4 .]

[0383] (B1)

[0384] (I) , X $\begin{matrix} 3 & 30 \\ 1 & 4 \end{matrix}$.

[0385] X , () .

[0386] $\begin{matrix} 3 & 30 \\ 1 & 4 \end{matrix}$, 5 20 , 6 15 , 6 12 , 5

[0387] (anthryl) , (bi phenyl) , (fluorenyl) ,
1 ;
, 1- , 2- , 1- , 2-
1 4 , 1 2
, 1 .

[0388] , , ,

[0389] .

[0390] , , ,

[0391] , , , , , , , , ,

(=O) .

[0392] , 1 5 , ,
, n- , tert-

[0393] , 1 5 , ,
, n- , iso- , n- , tert-

[0394] , , , , ,

[0395] ,

[0396] X () ,

[0397] X , (,) ,

[0398] X , ,

[0399]

[0400]

[0401]

-C(=O)-NH, -NH (H, ...), -O, -C(=O)-O, -C(=O)-, -OC(=O)-O, ...), -S-, -S(=O)_z, -S(=O)_zO

[0402]

(=O, ...)

[0403]

, iso-, n-, tert- ... 1 5 ... n-

[0404]

[0405]

, tert- ... 1 5 ... n-

[0406]

X, 5 30, 5 20, 6 15, 6 12, 3 30

[0407]

1, 1, 1, 1

[0408]

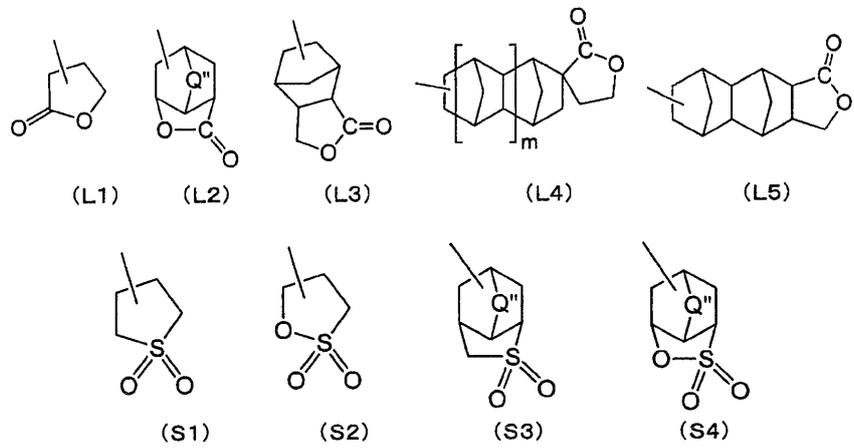
1

[0409]

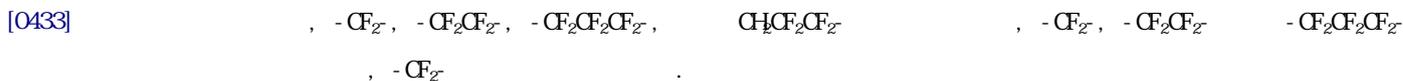
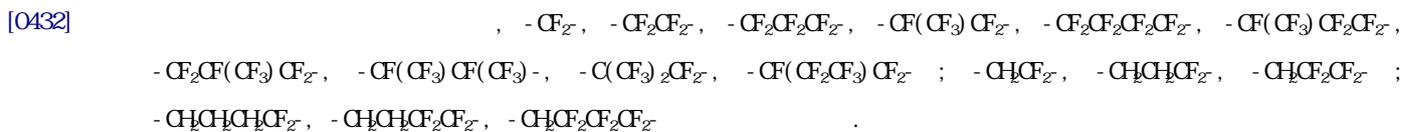
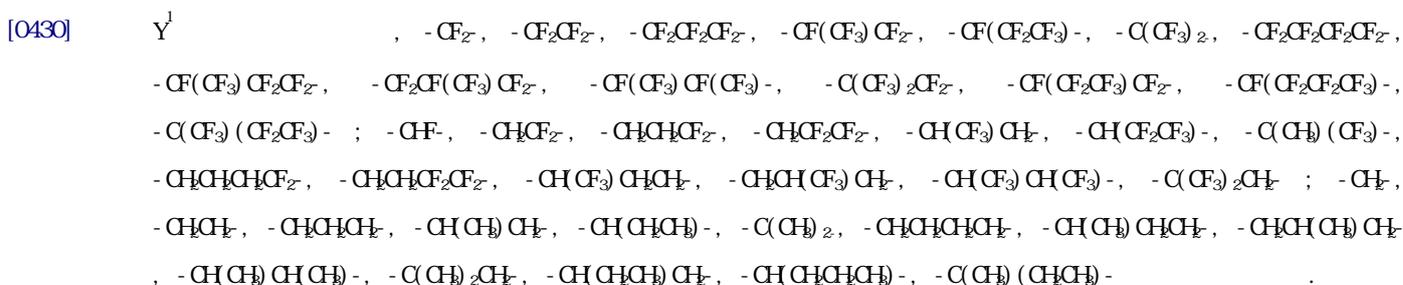
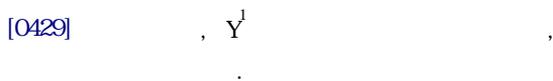
, -O, -C(=O)-O, -S-, -S(=O)_z, -S(=O)_zO (L1) (L5), (S1) (S4)

[0410]

[41]



[0411]



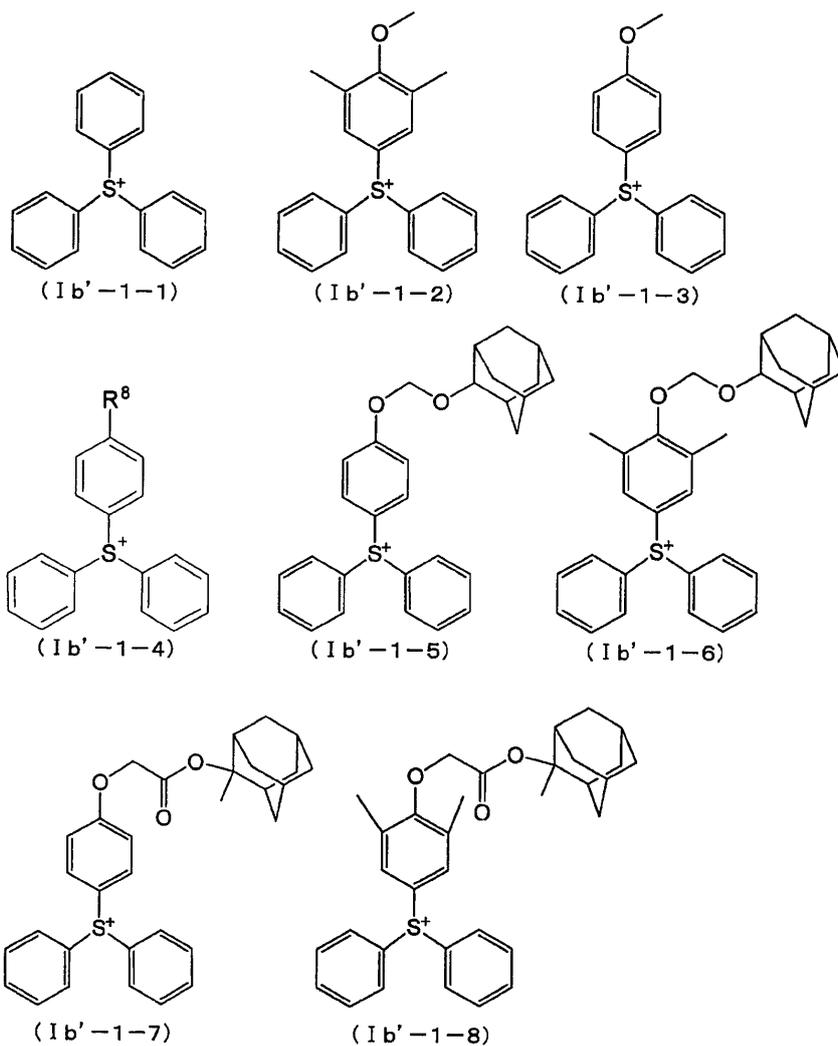
[0434]



[0438]



[0468] [43]



[0469]

[0470] (Ib-2) , R^{15} R^{16} , R^{15} R^{16} , 1

[0471] R^{15} R^{16} , R^{11} R^{13} ,

[0472] R^{15} R^{16} , R^{11} R^{13} ,

[0473] , R^{15} R^{16} ,

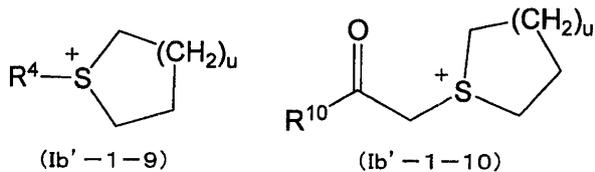
[0474] (Ib-2) , (4 tert-)

[0475] , (B1) , (Ib'-1-9) (Ib'-1-10)

[0476] (Ib'-1-9) (Ib'-1-10) , R^4 R^{10} , 1 5 , 1 5 ,

[0477] u 1 3 , 1 2 ,

[0478] [44]



[0479]

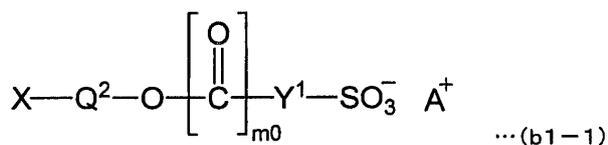
[0480] , (B1)

(B2)

[0481] , (B1) (B2)

[0482] , (B1) , (b1-1) (b1-2)

[0483] [45]



[0484]

[0485] [(b1-1) , X Y¹ , Q² , n0 0 1 , A⁺ .]

[0486] (b1-1) , X ,

[0487] Q² , Q¹

[0488] Q² , X

Q² , X

Q²

[0489] n0 0 , 1 X n0

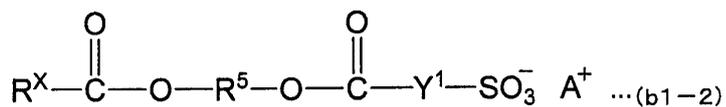
1 , X

n0 0

[0490] A⁺ , (B1)

(Ib-1)

[0491] [46]



[0492]

[0493] [(b1-2) , Y¹ A⁺ , R^x (, .) ; R⁵ .]

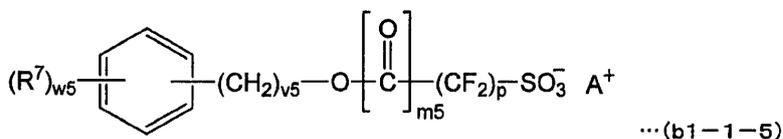
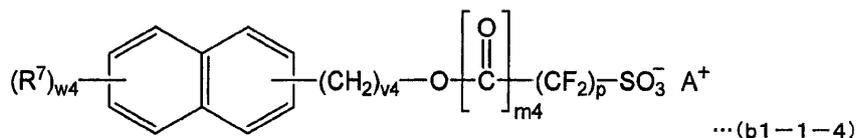
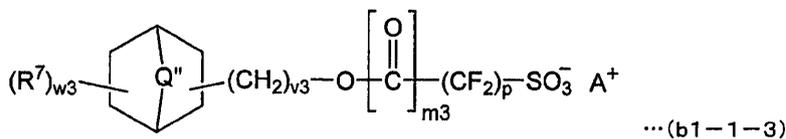
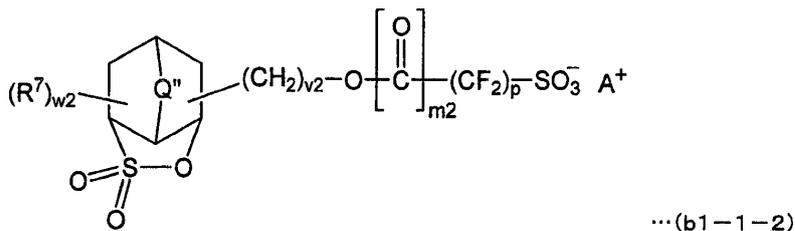
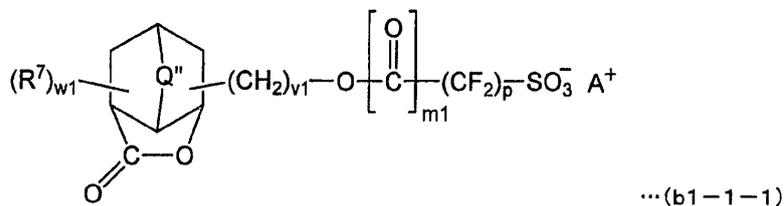
[0494] , R^x (, .)

(b1-1) X ,

(,

.)

[0495] R⁵ (b1-1) Q²
 [0496] (B1) , (b1-1-1) (b1-1-5) , (b1-2-1)
 (b1-2-3)
 [0497] [47]



[0498]
 [0499] [, Q² , R⁷ , w1 w5 0 3 , v1
 v5 0 5 , m1 m5 0 1 , p 1 3
 . A⁺ .]

[0500] R⁷ , X , ,
 [0501] R⁷ (w1 w5) 2 , R⁷ ,

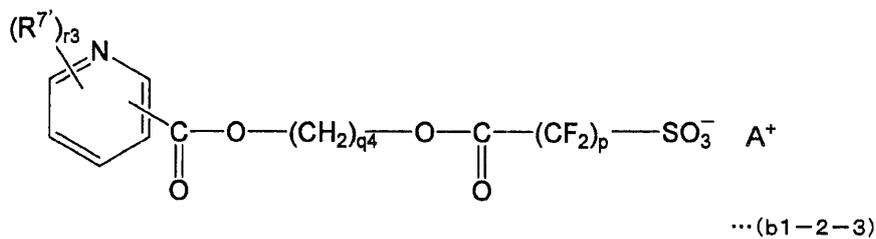
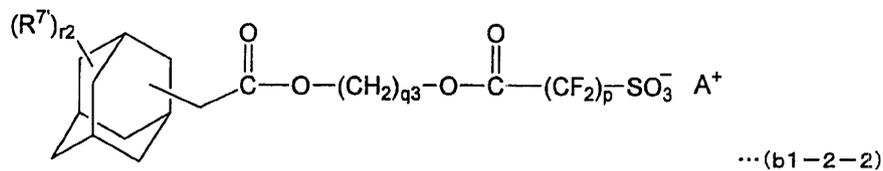
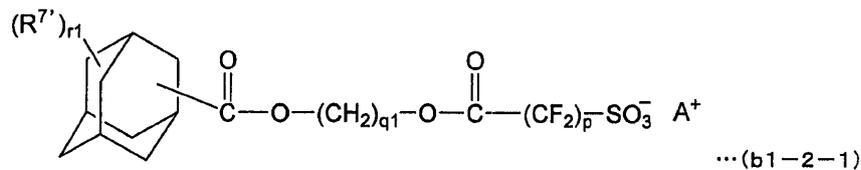
[0502] v1 v5 0 3 , 0 .

[0503] w1 w5 0 2 , 0 .

[0504] p 1 2 , 1 .

[0505] A⁺ , (B1)

[0506] [48]



[0507]

[0508] [, A+, p , R7 , r1 r3 0 3 ; q1, q3 q4 1 12 .]

[0509]

R7 , R7 .

[0510]

R7 (r1 r3) 2 , R7 ,

[0511]

r1 r3 0 2 , 0 1 .

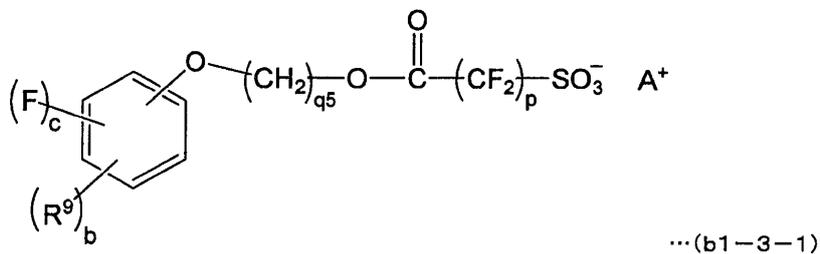
[0512]

q1, q3 q4 1 5 , 1 3 .

[0513]

, (B1) , (b1-3-1) , (b1-4-1)

[0514] [49]



[0515]

[0516] [, A+, p , q5 0 5 ; R9 , , (, .), , , (=O, -COOR', -C(=O)R', ; b 0 2 , c 1 5 , 1 ≤ b c ≤ 5 .]

[0517]

(b1-3-1) , p 1 2 , 1 .

[0518]

q5 1 4 , 1 2 , 2 .

[0519]

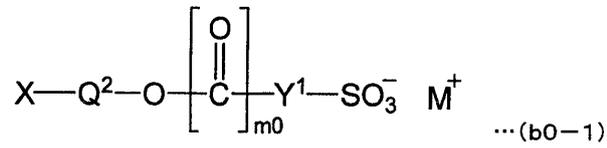
R9 , , (, .), X

(b1-4-1)

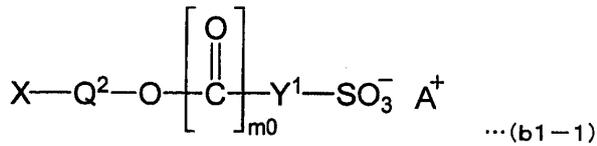
[0541] [(b1-1)]

[0542] (b1-1) (b1-1) (b0-1) (b0-1) ,
 (b0-2) (b0-2)

[0543] [51]



A⁺ Z⁻ ... (b0-2)



[0544]

[0545] (b0-1) (b0-2) , X Q², n0, Y¹, A⁺ (b1-1) X Q², n0, Y¹, A⁺

[0546] M⁺ , ,

[0547] Z⁻ () .

[0548] , (b0-1)
 , BF₄⁻, AsF₆⁻, SbF₆⁻, PF₆⁻ Cl Q⁻

[0549] Z⁻ (b0-1) , p-

[0550] (b0-1), (b0-2) ,

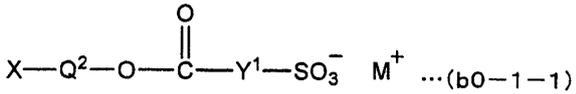
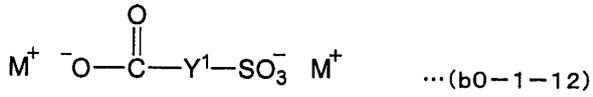
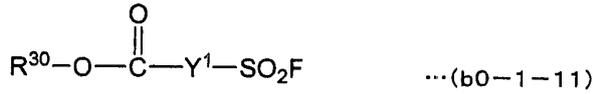
[0551] (b0-1) , (b0-1-11)

(b0-1-12)

(b0-1-13)

(b0-1) n0 1 ((b0-1-1))

[0552] [52]



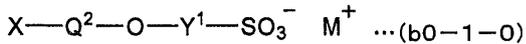
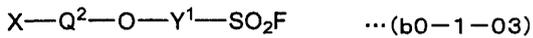
[0553]

[0554] [, R³⁰ 1 5 , X Q², Y¹, M⁺ (b0-1) X Q², Y¹, M⁺ .]

[0555] , , (b0-1-01) , (b0-1-02) , (b0-1-03) , (b0-1) n0 0 ((b0-1-0)) .

[0556] (b0-1-02) X_n .

[0557] [53]



[0558]

[0559] [, X Q², Y¹, M⁺ (b0-1) X Q², Y¹, M⁺ , X_n .]

[0560] (b0-2) ,

[0561]

[0562] (b0-1) (b0-2) , , , , ,

[0563] 0 150 , 0 100 , 0.5 10 (b0-1) (b0-2) , 1 5

[0564] (b0-2) (b0-1) 1 0.5 2

- [0597] 1 1 30 2 10 3 30
- [0598] 1 10 1 20 1 15
- [0599] 3 10 3 20 3 15 1- 1- 2- 1- 2- 1- 2- 3- 4
- [0600] 2 5 2 4 3 1 2
- [0601]
- [0602] 5 30 5 20 6 15 3 30 6 12 1 1
- [0603] (4 1) R²⁰
- [0604] (bi phenyl) (fluorenyl) (anthryl) 1 ;
- [0605] 1 10 1 8 1 4
- [0606] (4 1) R²⁰ (4 1) R²⁰ (4 1) (4 2) (4 3)
- [0607] (4 1), (4 2)
- [0608] (4 2) (0 1) (0 1) (0 2) (0 2) (4 2) (4 2)

[0627] (0-2) ,

[0628] (0-2) ,

[0629] (0-2) 1 0.5 3 , 1 2

[0630] 20 150 , 50 120 , 0.5 12 , 1 5

[0631] (4-2) ,

2

[0632] (4-3) (5-1) , ,
 (4-3) (5-1) , ,
 (4-3) (5-1) ,

[0633] (4-3) (5-1) , ,
 (THF), (DMF), (DMSO),

[0634] , 4 (DMP), ;
 K_2CO_3 , Cs_2CO_3

[0635] (5-1) (4-3) 1 3 , 1 2

[0636] -20 40 , 0 30 (4-3)
 (5-1) , 1 120 , 1 48

[0637] (b0-01) (b0-02)
 (b0-01) (b0-02) , , ,

[0638] 0 150 , 0 100
 (b0-01) (b0-02) , 0.5 10
 , 1 5

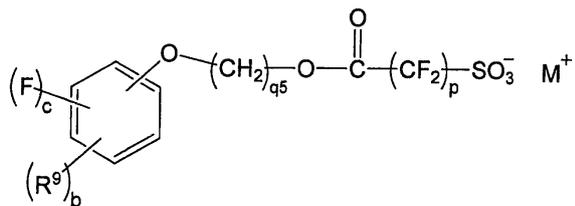
[0639] (b1-2) , ,
 2

[0640] (b1-2) 1H (NMR) , ^{13}C -NMR , ^{19}F -NMR ,
 (IR) , (MS) , X

[0641] [(b1-3-1)]

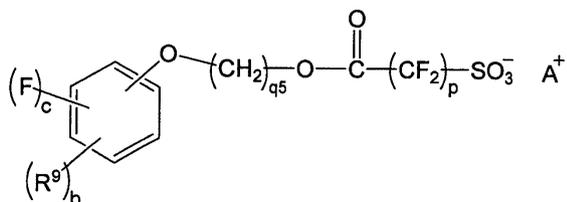
[0642] (b1-3-1) (b1-3-1) (I-5) (I-5) ,
 (b0-2) (b0-2)

[0643] [58]



... (I-5)

A⁺ Z⁻ ... (b0-2)



... (b1-3-1)

[0644]

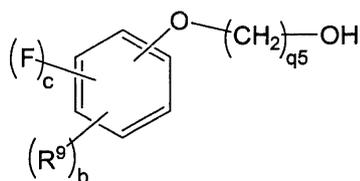
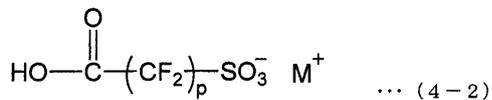
[, R⁹, b, c, q5, p (b1-3-1) R⁹, b, c, q5, p M⁺
 Z⁻, A⁺ (b0-2) Z⁻, A⁺ .]

[0646] (I-5), (b0-2) , .

[0647] (I-5) , , (4-2)

(4-2) (I-4) (I-4) ,

[0648] [59]



... (I-4)

[0649]

[0650] (4-2) (4-3) (4-2) .

[0651] (I-4) , R⁹, b, c, q5 (b1-3-1) R⁹, b, q5, c .

[0652] (4-2), (I-4) , .

[0653] (4-2) (I-4) , (4-2) (I-4)

, , , , , NN

[0654]

, (I-5) , .

[0655] 20 200 , 50 150 .
 (4-2) (I-4) , 1

30 , 3 30 .

[0656] (4-2) , (I-4) 1

[0672] (I-6)

[0673] (I-6) (b0-2)

[0674] 0 150 0 100
 (I-6) (b0-2) 0.5 10
 , 1 5

[0675] (b0-2) (I-6) 1 0.5 2

[0676] (b1-4)

2

[0677] ¹H (NMR) ¹³C-NMR ¹⁹F-
 NMR (IR) (MS) X

[0678] [(B2)]

[0679] (B) (B1) (

(B2) .)

[0680] (B2) (B1) ()

[0681] (b-1) (b-2)

[0682] [61]

[0683]
$$\begin{array}{c} R^{1''} \\ | \\ R^{2''}-S^+ \\ | \\ R^{3''} \end{array} R^{4''}SO_3^- \dots(b-1) \quad \begin{array}{c} R^{5''} \\ \diagdown \\ I^+ \\ \diagup \\ R^{6''} \end{array} R^{4''}SO_3^- \dots(b-2)$$

[0684] [(b-1) , R^{1'} R^{3'} , R^{1'} R^{3'} 1 , R^{1'} R^{3'} 2
 (b-2) , R^{5'} R^{6'}
 , R^{5'} R^{6'} 1
 (b-1) (b-2) , R^{4'}
 .]

[0685] (b-1) , R^{1'} R^{3'} (Ib-1) R^{11'} R^{13'}

[0686] (b-2) , R^{5'} R^{6'} (Ib-2) R^{15'} R^{16'}

[0687] (b-1) (b-2) (Ib' - 1-9) (Ib' - 1-10)

[0688] (b-1) , R^{4'}

[0689] 1 10 , 1 8
1 4 .

[0690] R^{1r} , 4 15 ,
4 10 , 6 10 .

[0691] 1 10 , 1 8 ,
1 4 .

[0692] () 10 100 ,
50 100 , ()

[0693] R^{4r} , , .

[0694] (b-2) R^{4r} (b-1) R^{4r} .

[0695] (b-1), (b-2) , (4 tert-)

, (4) , (4)

, , ;

, (4) , (4)

, (4 tert-) , (1-(4

)) , (1-) ; 1-

; 1-(4) ; 1-(3 5 -4

) ; 1-(4 -1-) ; 1-(4 -1-)

; 1-(4 n- -1-) ; 1-

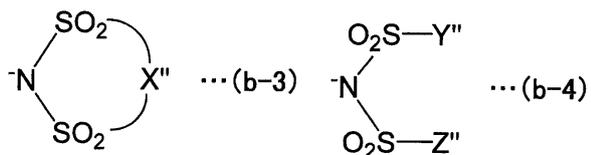
, ; 1-(4)

; 1-(3 5 -4) ; 1-(4)

[0696] , n- , n- , n- ,
1- , 2- ; d- -10- , ,
, p-

[0697] , (b-1) (b-2) , (b-3) (b-4)
((b-1) (b-2)).

[0698] [62]



[0699]

[0700] [, X' 1 2 6 ; Y', Z' 1 10 .]

[0701] X' 1 2 6 , 3 5 3 .

[0702] Y', Z' 1 1 1 10 , 1 7, 1 3 .

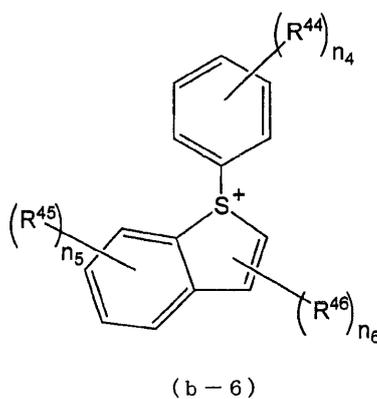
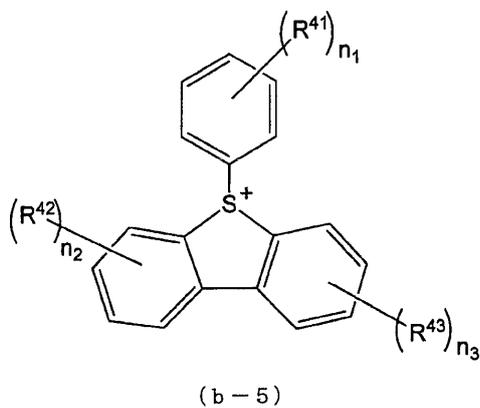
[0703] X' Y', Z' ,

[0704] , X' Y', Z' , 200

[0705] 90 100 , 70 100 ,

[0706] , (b-5) (b-6)

[0707] [63]



[0708]

[0709] [, R⁴¹ R⁴⁶ , , , ; n₁ n₅ 0 3 , n₆ 0 2 .]

[0710] R⁴¹ R⁴⁶ , 1 5 , , n- , tert-

[0711] 1 5 , ,

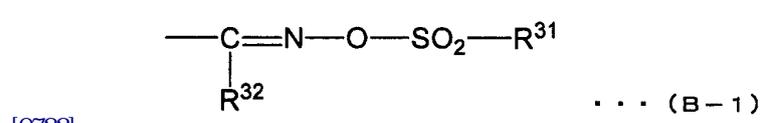
[0712] 1 , ,

[0713] R^{41} R^{46} n_1 n_6 2 , R^{41} R^{46} ,
 [0714] n_1 0 2 , 0 1 , 0 .
 [0715] n_2 n_3 0 1 , 0 .
 [0716] n_4 0 2 , 0 1 .
 [0717] n_5 0 1 , 0 .
 [0718] n_6 0 1 , 1 .

[0719] (b-5) (b-6) ,
 (b-1) (b-2) ($R^{41}SO_2$)
 ; (b-3) (b-4) , 1 4 , 1 4
 -n- , -n- ,

[0720] (B-1) 1 ,

[0721] [64]



[0722] ((B-1) , R^{31} , R^{32})

[0723] R^{31} , R^{32} (,) (,)

[0724] R^{31} , 1 6 ,

[0725] R^{31} 8 , 1 6 , 1 10 , 1
 (,)

[0726] R^{31} 4 20 , 4 10 , 6
 10 ,

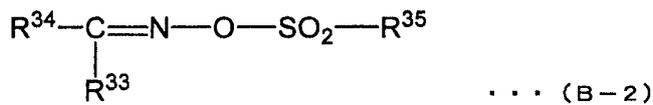
[0728] R³¹ , 1 4 , 1 4

[0729] R³² , R³¹ , R³²

[0730] R³² , 1 8 , 1 8

[0731] (B-2) (B-3)

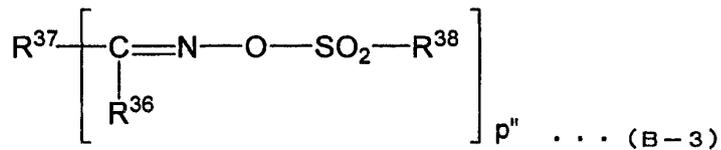
[0732] [65]



[0733]

[0734] [(B-2) , R³³ , R³⁴ , R³⁵ .]

[0735] [66]



[0736]

[0737] [(B-3) , R³⁶ , R³⁷ 2 3 , R³⁸ , p'' 2 3 .]

[0738] (B-2) , R³³ , 1 10 , 1 8 , 1 6

[0739] R³³ ,

[0740] R³³ , 50 , 70 , 90

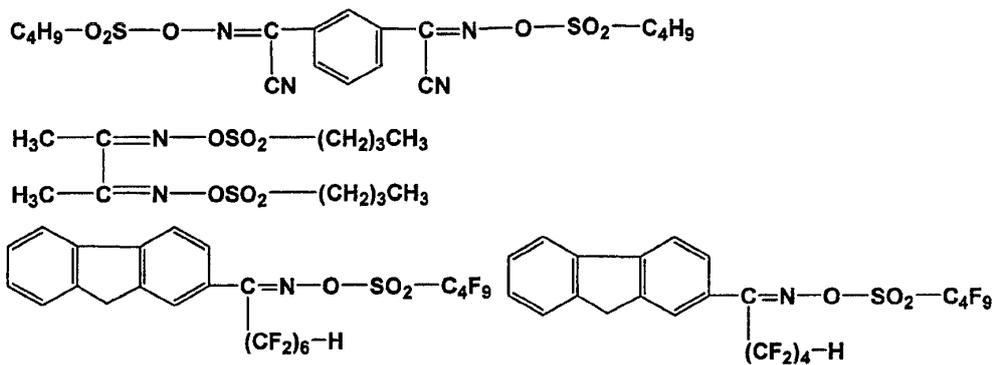
[0741] R³⁴ , (bi phenyl) , (fluorenyl) , (anthryl) , 1

[0742] R³⁴ , 1 10 , 1 8 , 1 4

[0743] R³⁵ , 1 10 , 1 8 , 1 6

[0744] R³⁵ ,

[0753] [67]



[0754]

[0755]

() , (p-) , (1,1-) ,
 () , (2,4)

[0756]

11-035551 , 11-035552 , 11-035573

[0757]

() , 11-322707
 1,3- () , 1,4- () , 1,6- ()
) , 1,10- () , 1,2- ()
) , 1,3- () ,
 1,6- () , 1,10- ()

[0758]

(B2) 1 , 2

[0759]

0.5 50 , 1 40 (B) (A) 100

[0760]

< >

[0761]

[(D)]

[0762]

(D) () (D)

[0763]

(D) , (B)

[0764]

, 1 , 2 3 1 20

[0765]

, NH₃ 1 , 20
 ()

[0766]

, n- , n- , n- , n- , n-
 ; , -n- , -n- , -n- ,
 ; , -n- , -n- , -n- , -n- , -n-
 , -n- , -n- , -n- , -n- , -n-
 ; , , -n- , -
 n- , /

[0767]

, () ()

[0768]

[0769]

6 10 , 1,5-
[4 3 0]-5- , 1,8- [5 4 0]-7- , 1,4 [2 2 2]

[0770]

(2-) , {2-(2-) } ,
{2-(2-) } , {2-(1-) } , {2-(1-) }
, {2-(1-) } , [2-{2-(2-) }]

[0771]

, (D) , , , 4

[0772]

, 2

[0773]

(D)

[0774]

(D) (A) 100 0.01 5.0

[0775]

[(E)]

[0776]

1 (E) (, (E))

[0777]

[0778]

[0779]

1 5 , 6 15

[0780]

-n-

[0781]

- -n-

[0782]

(E) 1 , 2

[0783]

(E)

[0784]

(E) (A) 100 0.01 5.0

[0785]

[0786]

[(S)]

[0787]

((S))

[0788]

(S)

1 2

2 (-Q¹-) , (B1)

[0805] , (A1) , (a0) -SQ-
(a0) , (A1) (a0) , (B1)
(B1)

[0806]
[0807] , (EL)
(MEF)

[0808]
[0809]

[0810]
[0811] , 80 150
(PAB) 40 120 , 60 90
ArF , EUV
, 80 150 , PEB () 40 120 , 60
90
(TMAH) 0.1 10
()

[0812]
[0813] /
BARC (BARC) (

[0814] , ArF , KrF , F₂ , EUV
() , VUV () , EB () , X , X
KrF , ArF , EB EUV, ArF

[0815] ()
(Liquid Immersion Lithography)

[0816] () , ()

[0817] , ,

[0818]

[0819]

$C_3H_2F_5$, $C_4F_9OCH_3$, $C_4F_9OC_2H_5$, C_5F_7
70 180 , 80 160

[0820]

[0821]

(2-) (102) (174)

[0822]

[0823]

[0824]

[0825]

(1) (1)

[0826]

< (Al) (1)>

[0827]

(Al) 1 3

[0828]

[1 ((1))]

[0829]

(1)

[0830]

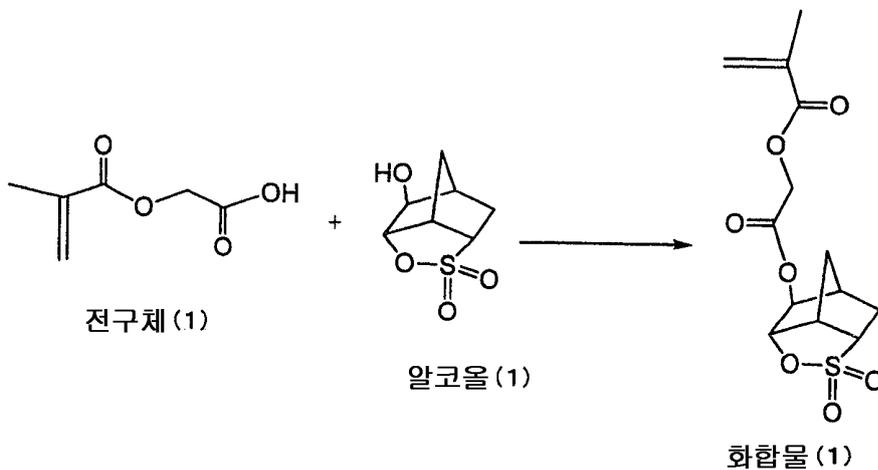
500 3 (1) 20 g (105.14 m),
(EDCI) 30.23 g (157.71 m) (DMAP) 0.6 g (5 m) THF
300 (0) (1) 16.67 g (115.66 m)
12

[0831]

(TLC) , 50 , 1NHCl aq
, 3 (1)

[0832]

[68]



[0833]

[0834]

(1)

$^1\text{H-NMR}$ (CDCl_3 , 400 MHz) : δ (ppm) = 6.22 (s, 1H, H^a), 5.70 (s, 1H, H^b), 4.71–4.85 (m, 2H, H^{c-d}), 4.67 (s, 2H, H^k), 3.40–3.60 (m, 2H, H^{e-f}), 2.58–2.70 (m, 1H, H^g), 2.11–2.21 (m, 2H, H^h), 2.00 (s, 3H, Hⁱ), 1.76–2.09 (m, 2H, H^j).

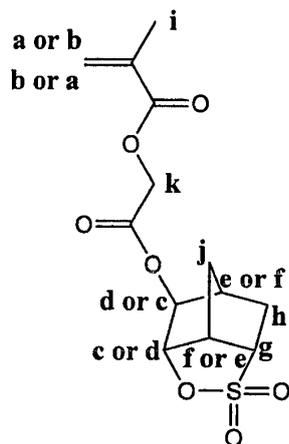
[0835]

[0836]

(1)

[0837]

[69]



[0838]

[0839]

[1 (1)]

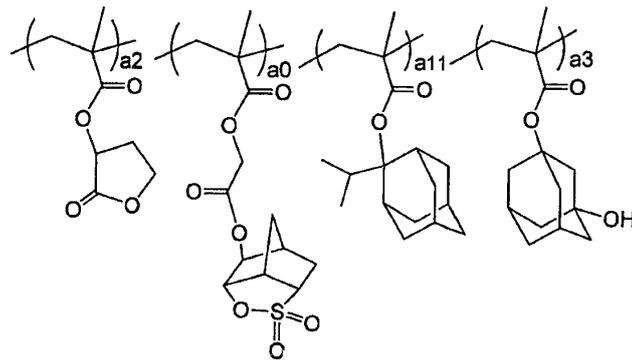
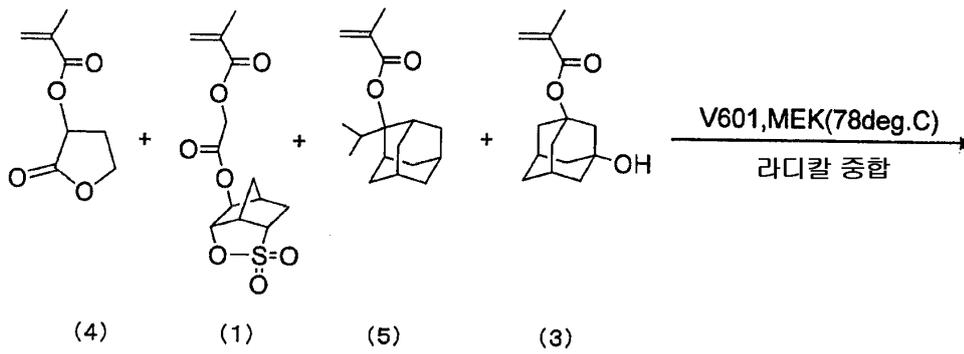
[0840]

, 3, 10.00 g (31.65 m) (1), 9.10 g (38.88 m)
 (2), 4.05 g (17.18 m) (3) 34.73 g (MEK)
 (V-601) 5.8 m
 , 6 78 MEK 19.29 g
 1 , /
 , () , /
 , 1 15 g .

[0841]

1 GPC (M_w) 9,200
 , (M_w/M_n) 1.52 , 13 (600 MHz $^{13}\text{C-NMR}$)
 (()) a0 / a1 / a3 = 39.5 / 41.4 / 19.1

[0847] [71]



고분자 화합물 2

[0848]

[0849] [3 (3)]

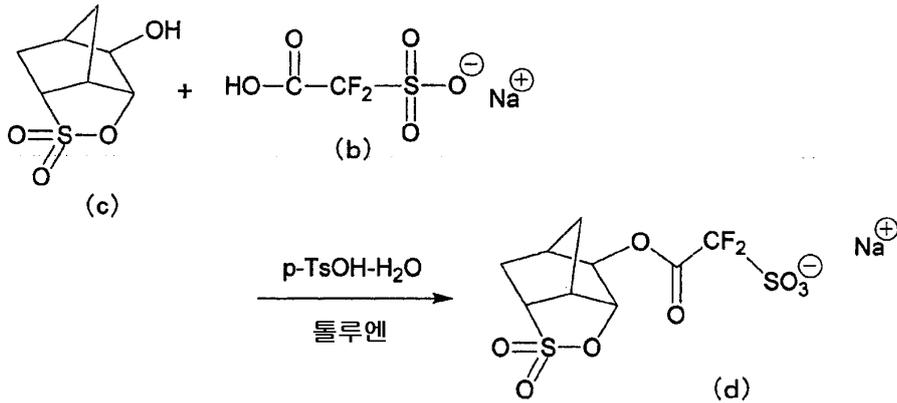
[0850] , 3 , 11.77 g (69.23 m) (4), 15.00 g (47.47 m)
 (1), 16.58 g (63.29 m) (5), 4.65 g (27.69 m) (6), 3.27 g
 (13.85 m) (3) , 76.91 g (MEK) , , 3
 (V-601) 22.1 m , , 3
 78 MEK 42.72 g , , 4 ,
 , (n) , ,
 , n / , ,
 , 3 41 g .

[0851] 3 , GPC (M_w) 7,900
 , (M_w/M_n) 1.78 . , 13 (600 MHz ¹³C-NMR)
 () () a₂ / a₀ / a₁₁ / a₁₂ / a₃ = 35.0 / 26.5 /
 17.9 / 13.2 / 7.4 .

[0863] [1 ((e))]

[0864] (i) 0.43 g, (b) 5.00 g, -CH (c) 5.68 g, 100 g, p, 1
 100 g, 10, 2
 100 g, 2
 30 g
 TBME 300 g, 300 g
 (d) 6.88 g (: 78.4)

[0865] [75]



[0866]

[0867] (d), $^1\text{H-NMR}$, $^{19}\text{F-NMR}$

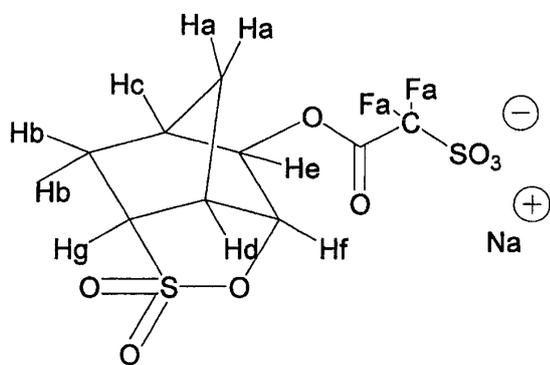
$^1\text{H-NMR}$ (DMSO-d₆, 400MHz) : δ (ppm) 1.73-2.49 (m, 4H, Ha, Hb), 2.49 (m, 1H, Hc), 3.48 (m, 1H, Hd), 3.88 (t, 1H, He), 4.66 (t, 1H, Hf), 4.78 (m, 1H, Hg).

$^{19}\text{F-NMR}$ (DMSO-d₆, 400MHz) : δ (ppm) -107.7 (m, 2F, Fa), (단, 헥사플루오로벤젠의 피크를 -160ppm으로 하였다)

[0868]

[0869] (d)

[0870] [76]

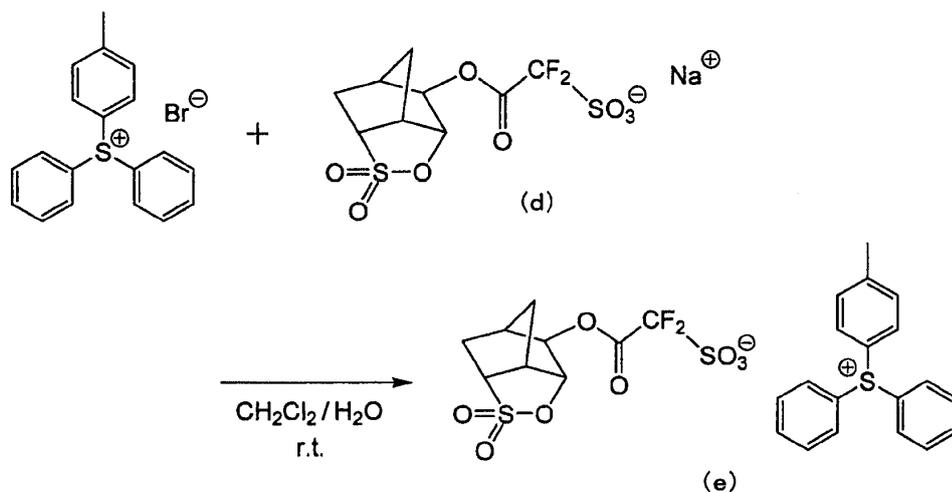


[0871]

[0872] (ii) 3.72 g, (d) 3.21 g, 32.1 g, 1, 4
 1, HI, 3, 4

(e) 4.94 g (: 86.8)

[0873] [77]



[0874]

[0875] (e) , ¹H-NMR ¹⁹F-NMR

¹H-NMR (DMSO-d₆, 400MHz) : δ (ppm) 1.74-2.21 (m, 4H, anion), 2.41 (t, 3H, PhCH₃), 2.58 (m, 1H, anion), 3.48 (m, 1H, anion), 3.87 (t, 1H, anion), 4.66 (t, 1H, anion), 4.78 (m, 1H, anion), 7.58 (m, 2H, ph), 7.64-7.84 (m, 12H, ph).

¹⁹F-NMR (DMSO-d₆, 400MHz) : δ (ppm) -107.6 (m, 2F, Fa), (단, 헥사플루오로벤젠의 피크를 -160ppm으로 하였다)

[0876]

[0877] (e) (e)

[0878] [2 ((g))]

[0879] (i) 20 (12.2 g) (60.75 g) (8.53 g) 2.6 (8.81 g)
 15 20 30 , 40
 2 (109.35 g)
 (54.68 g)
 20 25 (386.86 g) , 20 25
 30 (f-01) (70.9).

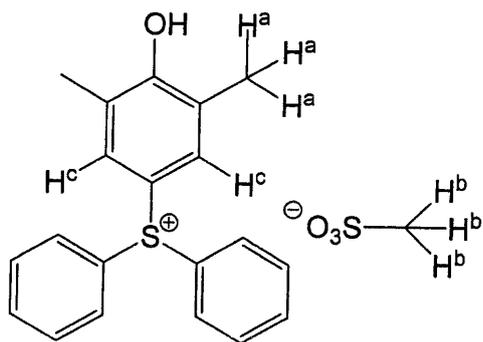
[0880] (f-01) , ¹H-NMR

¹H-NMR (DMSO-d₆, 600MHz) : δ (ppm) = 7.61-7.72 (m, 10H, phenyl), 7.14 (s, 2H, H^c), 3.12 (s, 3H, H^b), 2.22 (s, 6H, H^a).

[0881]

[0882] (f-01)

[0883] [78]



[0884]

[0885] (ii) (f-01) (4 g) (79.8 g) ,
 (6.87 g) , 2 -2 (3.42 g) , 24
 , ()
 3.98 g (66).

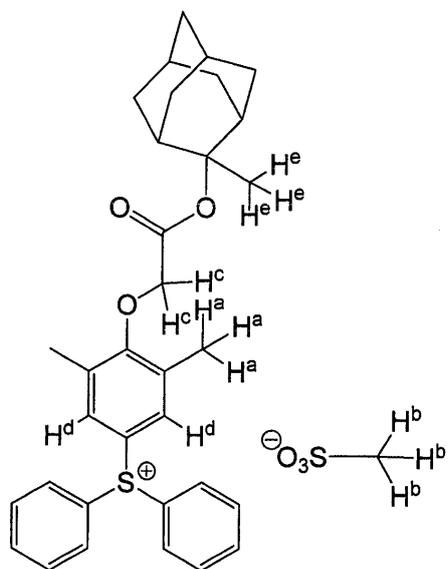
[0886] , ¹H NMR

¹H-NMR (CDCl₃, 600MHz) : δ (ppm) = 7.83-7.86 (m, 4H, phenyl), 7.69-7.78 (m, 6H, phenyl), 7.51 (s, 2H, Hd), 4.46 (s, 2H, Hc), 2.39 (s, 6H, Ha), 2.33 (s, 2H, Adamantane), 2.17 (s, 2H, Adamantane), 1.71-1.976 (m, 11H, Adamantane), 1.68 (s, 3H, Hb), 1.57-1.61 (m, 2H, Adamantane) .

[0887]

[0888] , , (f-1)

[0889] [79]

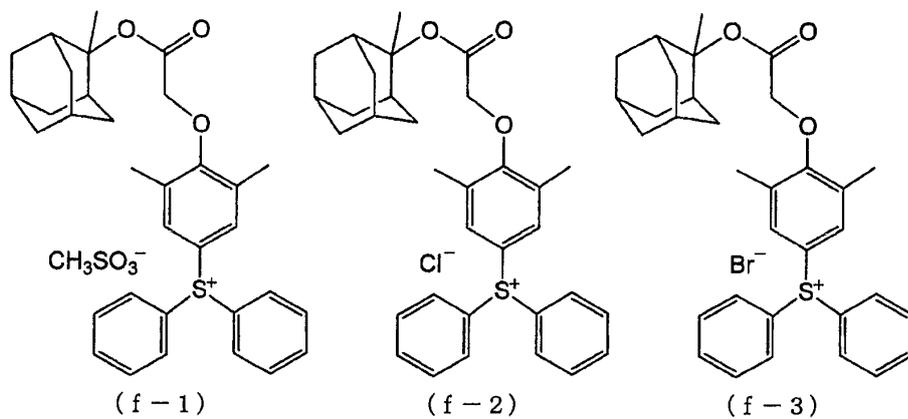


[0890]

[0891] , (f-1) , NMR (f-2)

(f-3)
 (f-1) 21.4 , (f-2) 11.4 , (f-3) 67.2

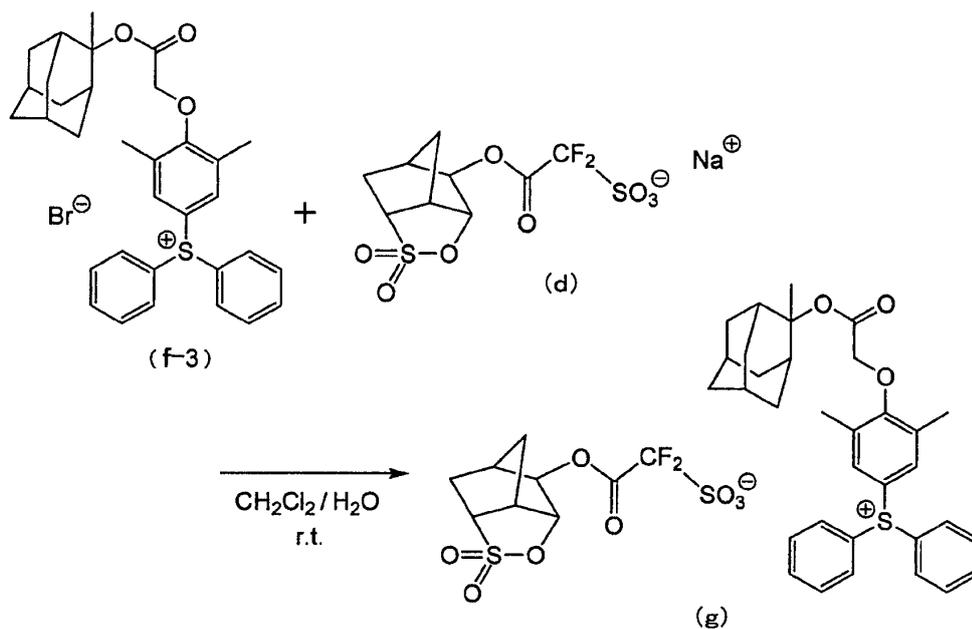
[0892] [80]



[0893]

[0894] (iii) (d) 5.00 g 50.0 g , (f-3) 6.19 g ,
 50.0 g 10
 1 HI 3 , 1 , 1 , 4
 , (g) 8.58 g (: 90.4)

[0895] [81]



[0896]

[0897]

(g), ¹H-NMR, ¹⁹F-NMR

¹H-NMR (DMSO-d₆, 400MHz) : δ (ppm) = 1.47-1.95 (m, 15H, Ad, 3H, anion), 2.13-2.16 (m, 2H, Ad, 1H, anion), 2.30 (s, 6H, PhCH₃), 2.49 (m, 1H, anion), 3.48 (m, 1H, anion), 3.88 (t, 1H, anion), 4.58 (s, 2H, CH₂), 4.66 (t, 1H, anion), 4.78 (m, 1H, anion), 7.57 (m, 2H, Ph), 7.72-7.84 (m, 10H, Ph).

¹⁹F-NMR (DMSO-d₆, 400MHz) : δ (ppm) -107.8 (m, 2F, CF₂), (단, 헥사플루오로벤젠의 피크를 -160ppm으로 하였다)

[0898]

[0899]

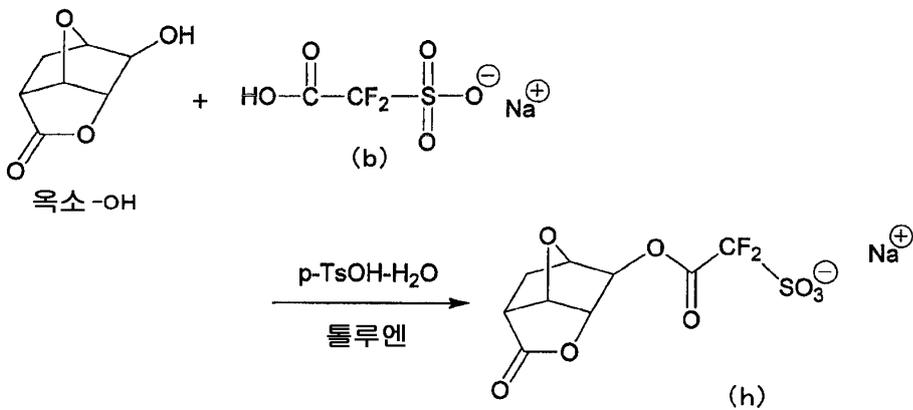
[0900]

[0901]

(g) (g)
 [3 ((i))]
 (i) (b) 5.00 g (: 93.7), -CH 3.69 g 25.00 g , p-
 1 0.410 g , 110 20 , ,
 79.50 g , , 23.86 g 2 ,
 (h) 4.55 g (: 55.8) .

[0902]

[82]

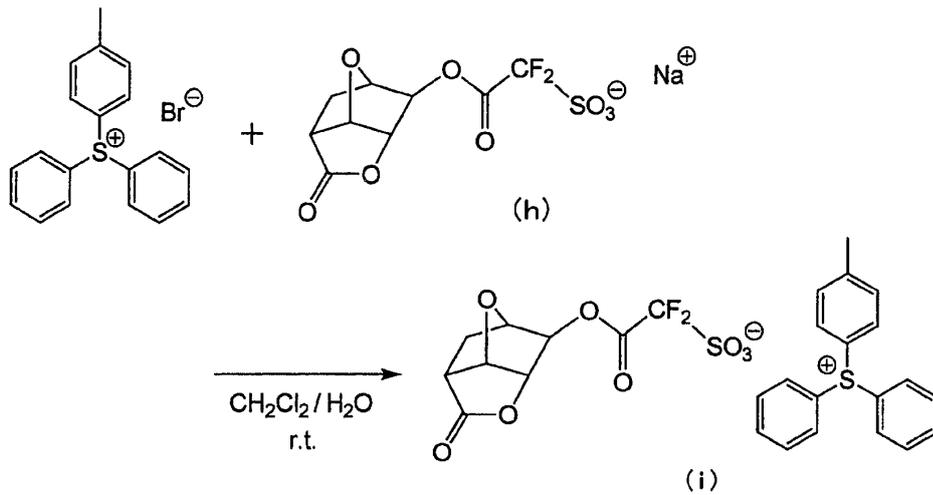


[0903]

[0904]

(ii) , (h) 1.36 g 13.6 g , 4 ,
 0.53 g , 5.30 g , 3 ,
 , 18.6 g , ,
 (i) 0.35 g (: 35.7) .

[0905] [83]



[0906]

[0907] (i) , ¹H-NMR ¹⁹F-NMR

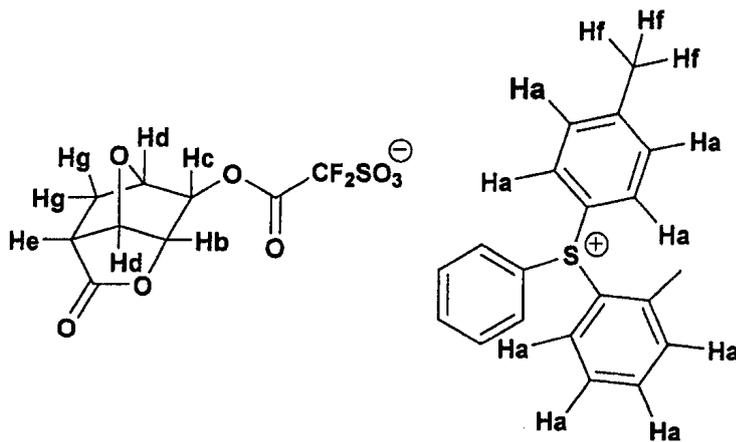
¹H-NMR (DMSO-d₆, 400MHz) : δ (ppm) = 7.89 ~ 7.77 (m, 15H, Ha), 5.48 (m, 1H, Hb), 4.98 (s, 1H, Hc), 4.73~4.58 (d, 2H, Hd), 2.71 (m, 1H, He), 2.54 (m, 3H, Hf), 2.14 (m, 2H, Hg).

¹⁹F-NMR (DMSO, 376 MHz) : δ (ppm) = -107.1 (단, 헥사플루오로벤젠의 피크를 -160ppm으로 하였다)

[0908]

[0909] (i)

[0910] [84]



[0911]

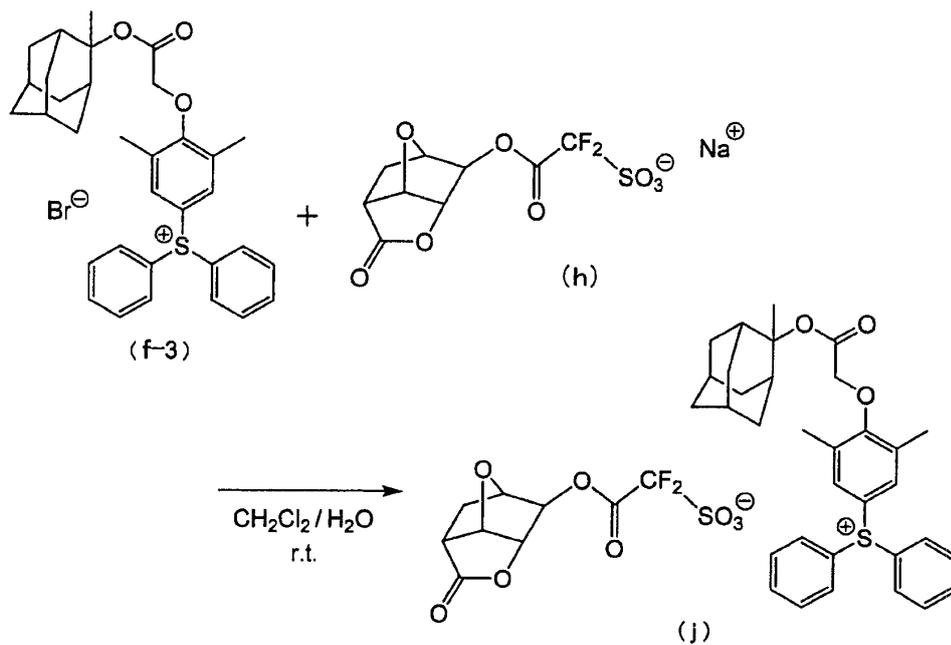
[0912] [4 (j)]

[0913] (f-3) 1.79 g , 15.81 g 31.62 g

(h) 1.33 g , 25 1

(j) 2.35 g (83.3).

[0914] [85]



[0915]

[0916]

(j) , $^1\text{H-NMR}$ $^{19}\text{F-NMR}$

$^1\text{H-NMR}$ (DMSO- d_6 , 400MHz) : δ (ppm) = 7.76 - 7.88 (m, 10H, Phenyl), 7.63 (s, 2H, Hb), 5.51 (s, 1H, Hd), 5.01 (s, 1H, He), 4.62 - 4.76 (m, 4H, Hc + Hf), 2.75 (m, 1H, Hh), 2.53 - 1.51 (m, 25H, Ha + Hg + Adamantane).

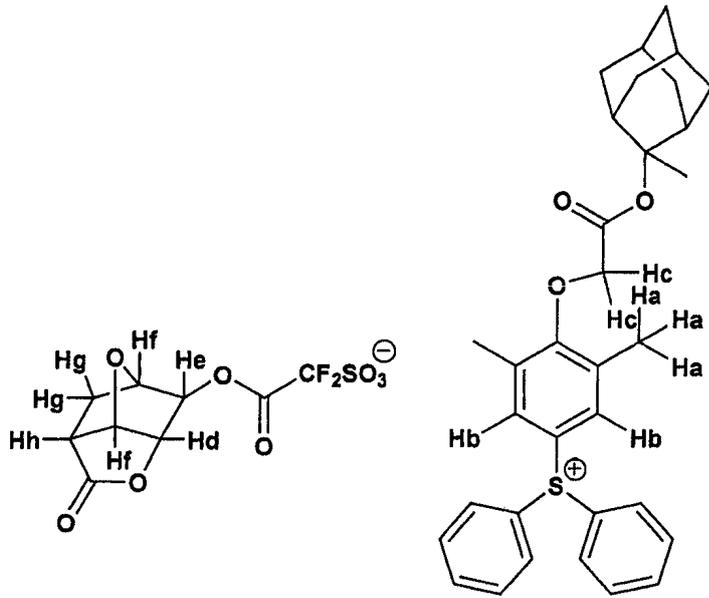
$^{19}\text{F-NMR}$ (DMSO- d_6 , 400MHz) : δ (ppm) = -106.7, (단, 헥사플루오로벤젠의 피크를 -160ppm으로 하였다)

[0917]

[0918]

(j)

[0919] [86]



[0920]

[0921] < (1) >

[0922] (1 8 1, 1 2)

[0923] 1

1

	(A) 성분	(B) 성분	(D) 성분	(E) 성분	(S) 성분	
실시예1	(A)-1 [100]	(B)-1 [7. 30]	(D)-1 [0. 4]	(E)-1 [0. 55]	(S)-1 [2890]	(S)-2 [10]
실시예2	(A)-1 [100]	(B)-2 [10. 06]	(D)-1 [0. 4]	(E)-1 [0. 55]	(S)-1 [2890]	(S)-2 [10]
실시예3	(A)-1 [100]	(B)-3 [6. 90]	(D)-1 [0. 4]	(E)-1 [0. 55]	(S)-1 [2890]	(S)-2 [10]
실시예4	(A)-1 [100]	(B)-4 [9. 67]	(D)-1 [0. 4]	(E)-1 [0. 55]	(S)-1 [2890]	(S)-2 [10]
실시예5	(A)-2 [100]	(B)-1 [7. 30]	(D)-1 [0. 4]	(E)-1 [0. 55]	(S)-1 [2890]	(S)-2 [10]
실시예6	(A)-2 [100]	(B)-2 [10. 06]	(D)-1 [0. 4]	(E)-1 [0. 55]	(S)-1 [2890]	(S)-2 [10]
실시예7	(A)-3 [100]	(B)-1 [7. 30]	(D)-1 [0. 4]	(E)-1 [0. 55]	(S)-1 [2890]	(S)-2 [10]
실시예8	(A)-3 [100]	(B)-2 [10. 06]	(D)-1 [0. 4]	(E)-1 [0. 55]	(S)-1 [2890]	(S)-2 [10]
비교예1	(A)-4 [100]	(B)-5 [6. 74]	(D)-1 [0. 4]	(E)-1 [0. 55]	(S)-1 [2890]	(S)-2 [10]
참고예1	(A)-4 [100]	(B)-1 [7. 30]	(D)-1 [0. 4]	(E)-1 [0. 55]	(S)-1 [2890]	(S)-2 [10]
참고예2	(A)-4 [100]	(B)-2 [10. 06]	(D)-1 [0. 4]	(E)-1 [0. 55]	(S)-1 [2890]	(S)-2 [10]

[0924]

[0925] 1 , , [] ()

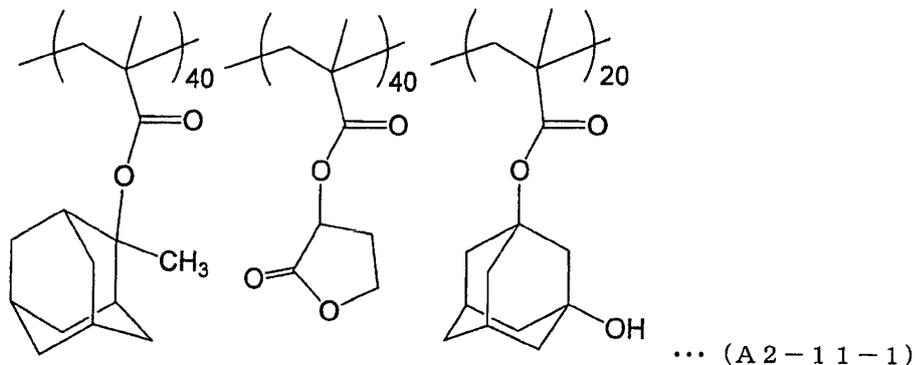
[0926] (A) - 1 : 1.

[0927] (A) - 2 : 2

[0928] (A)-3 : 3

[0929] (A)-4 : (A2-11-1) , Mw 10000, Mw/Mn 1.72 , ()
() .

[0930] [87]



[0931]

[0932] (B)-1 : (e).

[0933] (B)-2 : (g).

[0934] (B)-3 : (i).

[0935] (B)-4 : (j).

[0936] (B)-5 : (4) -n-

[0937] (D)-1 : -n-

[0938] (E)-1 :

[0939] (S)-1 : PGMEA/PGME = 6/4 () .

[0940] (S)-2 : - .

[0941] < >

[0942] ,

[0943] []

[0944] 12 , ARC29A (,)
205 , 60 , 89

[0945] , , 2 , 60 (PAB) ,
100 .

[0946] , , TILC-057 (,)
, 90 60 , 90 .

[0947] , ArF NSR-S609B (; NA () = 1.07, = 0.97 , ArF
(193) ,

[0948] , 2 60 (PEB) , 23 2 38
TMAH NMD-3 (,) 30 , 30

[0949] , (CH .) 90 (140)

[0950] []

[0951]) , 90 , 140 CH Eop (ml/)
2

[0952] [(EL)]

[0953] CH 90 ± 5 (85.5 , 94.5)
EL (:) 2

[0954] EL () = (|E1 - E2| / Eop) × 100

[0955] E1 : 85.5 CH (ml/)

[0956] E2 : 94.5 CH (ml/)

[0957] , EL

[0958] [(MEF)]

[0959] 2 Eop , 76 82 (1 , 7)
, 140 CH

[0960] , () , MEF 2 ()

[0961] , MEF () 1

[0962] []

[0963] CH , SEM(, : S-9220) ,

[0964] A : (,) .

[0965] B : (,) .

[0966] C : () .

2

	실시예 1	실시예 2	실시예 3	실시예 4	비교예 1	실시예 5	실시예 6	실시예 7	실시예 8	참고예 1	참고예 2
PAB/PEB (°C)	110/100	110/100	110/100	110/100	110/105	90/85	90/85	90/85	90/85	110/105	110/105
Eop (mJ/cm ²)	70.1	85.3	69.3	83.6	48.5	24.4	31.8	26.9	34.7	69.9	78.6
5%EL 마진 (%)	11.29	11.56	9.76	9.96	8.41	11.37	11.98	11.64	12.10	10.69	10.72
MEF	6.23	6.15	6.87	6.62	9.45	5.63	5.60	5.55	5.42	7.32	7.01
진원성	A	A	B	B	C	A	A	A	A	B	B

[0967]

[0968]

[0969]

[0970]

[0971]

[0972]

[0973]

1 8 1

5 EL 1 8 MEF 1

(A1) -O-SO₂-

(BI) 1, 2 5 8 1, 2 (A1)

< (A1) (2) >

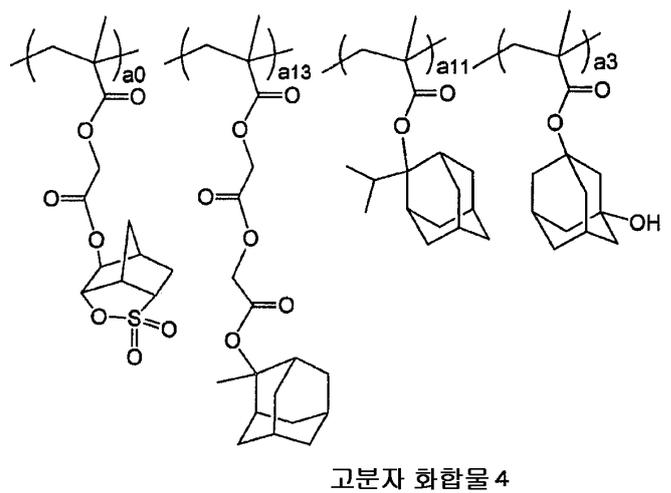
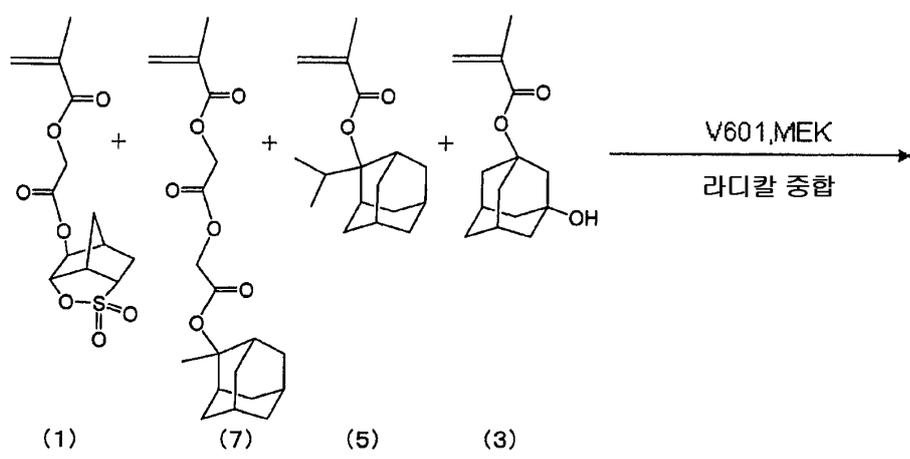
(A1) 4 5

[0974] [4 (4)]
 [0975] , 3 , 17.42 g (55.13 m) (1), 8.91 g (25.47 m)
 (7), 90.00 g (343.51 m) (5), 6.01 g (25.47 m) (3) ,
 183.51 g (MEK) , , 3 78 MEK
 (V-601) 31.5 m , 4 , ,
 101.95 g ,

[0976] , n- /2- n- , , 4 25 g .

[0977] 4 GPC (M_w) 5,100
 , (M_w/M_n) 1.27 , 13 (600 MHz ¹³C-NMR)
 () a₀ / a₁₃ / a₁₁ / a₃ = 32.5 / 11.0 / 45.1
 / 11.4 .

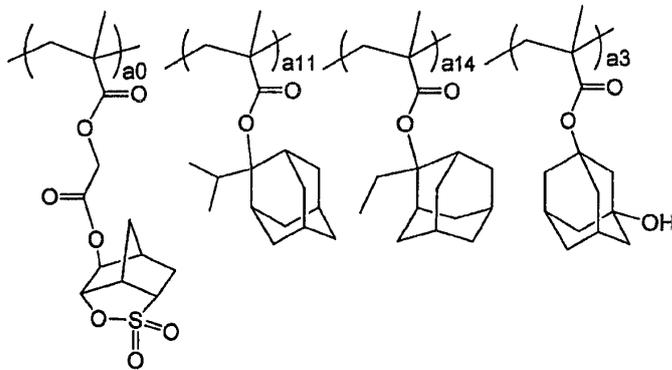
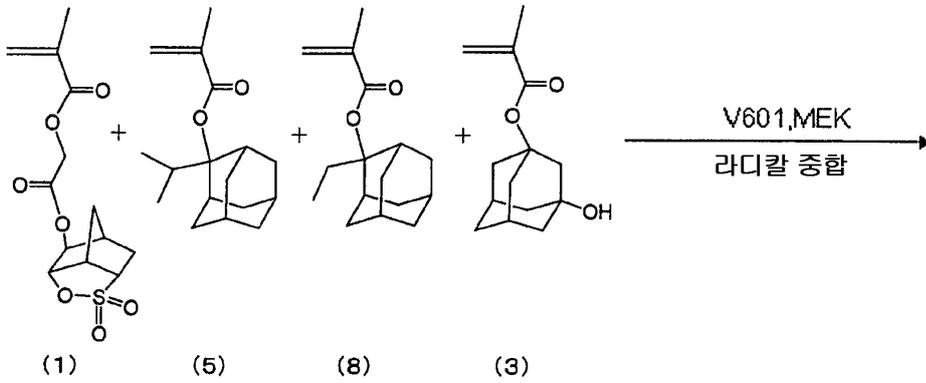
[0978] [88]



[0979]
 [0980] [5 (5)]
 [0981] 4 , (7) (8)
 , 5 .
 [0982] 5 , GPC (M_w) 7900

(Mv/Mi) 1.68 , 13 (600 MHz, ¹³C-NMR)
 () a0 / a11 / a14 / a3 = 35 / 39 / 15 / 11

[0983] [89]



고분자 화합물 5

[0984]

[0985] < (B1) (2) >

[0986]

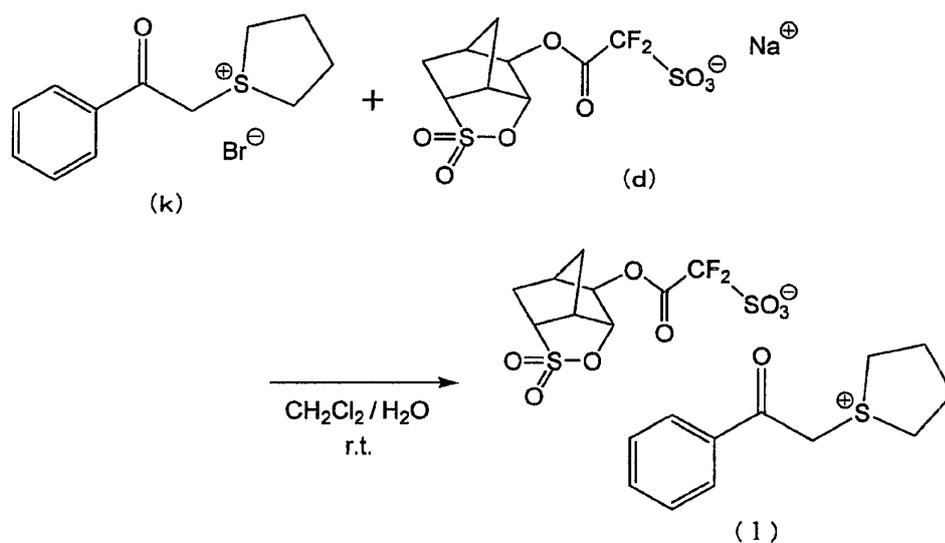
(B1) (1)
 NMR, ¹H NMR (TMS), ¹⁹F-NMR
 NMR (, -160 ppm).

[0987] [5 ((1))]

[0988]

(k) (7.40 g) , (209.8 g) , (104.9 g) ,
 (d) (10.49 g) , 30 ,
 () ,
 (l) 9.81 g .

[0989] [90]



[0990]

[0991] (1) , $^1\text{H-NMR}$ $^{19}\text{F-NMR}$

$^1\text{H-NMR}$ (DMSO-d₆, 400MHz) : δ (ppm) = 1.71–2.03 (m, 3H, Anion), 2.18–2.36 (m, 5H, CH₂S + Anion), 2.51 (s, 1H, Anion), 3.43–3.66 (m, 5H, SCH₂CH₂ + Anion), 3.89 (d, 1H, Anion), 4.66 (t, 1H, Anion), 4.78 (m, 1H, Anion), 5.31 (s, 2H, SCH₂C=O), 7.58–7.61 (t, 2H, Ar), 7.73–7.76 (t, 1H, Ar), 7.99–8.01 (d, 2H, Ar)

$^{19}\text{F-NMR}$ (DMSO-d₆, 376MHz) : δ (ppm) = -107.7

[0992]

[0993] (1)

[0994] < (2) >

[0995] (9 12 2 3)

[0996] 3

3

	(A) 성분	(B) 성분			(E) 성분	(S) 성분	
실시예9	(A)-5 [100]	(B)-6 [13.8]	-	(B)-8 [1.0]	(E)-1 [0.26]	(S)-1 [2300]	(S)-2 [25]
실시예10	(A)-5 [100]	(B)-7 [5.0]	(B)-1 [2.7]	(B)-8 [1.0]	(E)-1 [0.26]	(S)-1 [2300]	(S)-2 [25]
비교예2	(A)-5 [100]	(B)-5 [14.0]	-	(B)-8 [1.0]	(E)-1 [0.26]	(S)-1 [2300]	(S)-2 [25]
실시예11	(A)-6 [100]	(B)-7 [5.0]	(B)-1 [2.7]	(B)-8 [1.0]	(E)-1 [0.26]	(S)-1 [2300]	(S)-2 [25]
실시예12	(A)-6 [100]	(B)-6 [13.8]	-	(B)-8 [1.0]	(E)-1 [0.26]	(S)-1 [2300]	(S)-2 [25]
비교예3	(A)-6 [100]	(B)-5 [14.0]	-	(B)-8 [1.0]	(E)-1 [0.26]	(S)-1 [2300]	(S)-2 [25]

[0997]

[0998]

3, , [] () , 3, -

[0999]

(A)-5 : 4

[1000]

(A)-6 : 5

[1001]

(B)-1 : (e).

[1002]

(B)-5 : (4) -n

[1003]

(B)-6 : (l).

[1004]

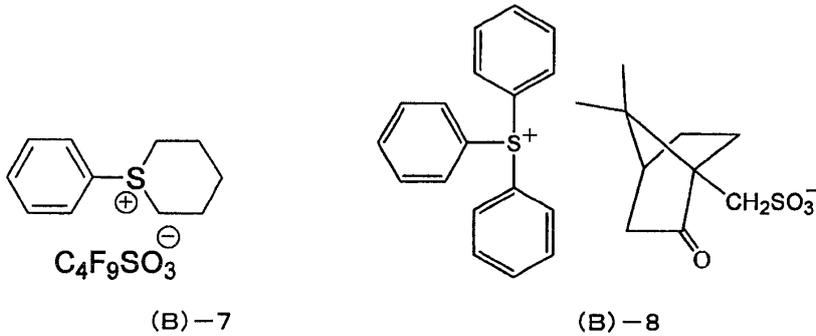
(B)-7 : (B)-7

[1005]

(B)-8 : (B)-8

[1006]

[91]



[1007]

(E)-1 :

[1008]

(S)-1 : PGMEA/PGME = 6/4 ()

[1009]

(S)-2 : -

[1010]

< >

[1011]

[1012]

[1013]

[]

[1014]

8 , ARC29 (,)

205 , 60

82

- [1015] , 100 60 (PAB) , 160
- [1016] , ArF S302 (; NA () = 0.60, 2/3) (6)
() ArF (193)
- [1017] , 90 60 (PEB) , 23 2.38
(TMAH) (: NMD-3) 30
- [1018] , 140 , 280
(LS)
- [1019] []
- [1020] , LS Eop (mJ/ ;)
4
- [1021] []
- [1022] Eop 140 , 280 LS , SEM
, LS A : B :
4

4

	PAB/PEB (°C)	Eop (mJ/cm ²)	LS 패턴의 단면 형상
실시예9	100/90	39	A
실시예10	100/90	11	A
비교예2	100/90	22	B
실시예11	100/90	11	A
실시예12	100/90	39	A
비교예3	100/90	22	B

- [1023]
- [1024] 4 , 9 12 2 3
LS