

(19)
(12)

(KR)
(A)

(51) 。 Int. Cl. ⁷
G03F 7/004

(11)
(43)

2002 - 0038283
2002 05 23

(21) 10 - 2000 - 0068423
(22) 2000 11 17

(71)

136 - 1

(72)

103 302

107 1304

205 1102

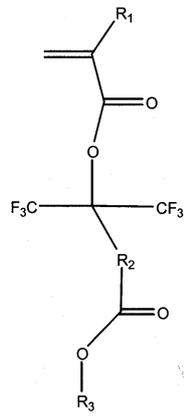
(74)

:

(54)

H) 가 1 , , 가 (TMA
157nm
VUV (157nm) EUV (13nm)

[1]



, R₁, R₂ R₃

1

1 5

2 6

VUV (vacuum ultraviolet)

가

193nm

, 2.38wt%

157nm

2.6wt%

157nm

VUV (157nm)

EUV (13nm)

가

(TMAH)

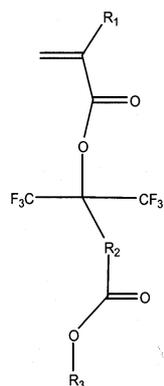
VUV

가
 , TMAH 가 ,
 가 . 2 가 ,
 가 , 가
 가

VUV (157nm) EUV (13nm)

;

[1]

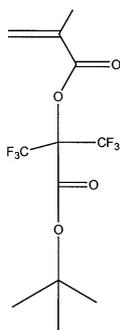


, R₁ H CH₃ , R₂ C₁ - C₁₀ C₁ - C₁₀
 , R₃ (acid labile protecting group)

7 , C₁ - C₂₀ , C₁ - C₂₀ , C₁ - C₂₀ 5 -
 , 1 - , 2 - , 2 - , 2 - , 2 - , 2 - , 2 - , 2 - ,
 , 1 - , 1 - , 1 - , 1 - , 1 - , 1 - , 1 - , 1 - , 1 - ,
 1 - , 1 - , 1 - , 1 - , 1 - , 1 - , 1 - , 1 - , 1 - ,

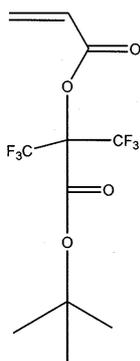
1 :
 (1,1,1,3,3,3, - 2 - tert -) ;

[1a]



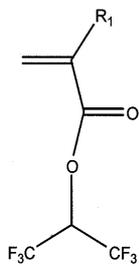
(1,1,1,3,3,3, - 2 - tert -) ;

[1b]



1 (dicarbonate) 4 - CF₃ -

[4]



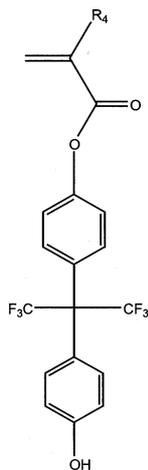
, R₁ H CH₃ .

i; LDA (lithium diisopropyl amide) NaH; CaH₂; KO^tBu (potassium tert - butoxide) NaOMe ; n - BuL

, 1

2 2

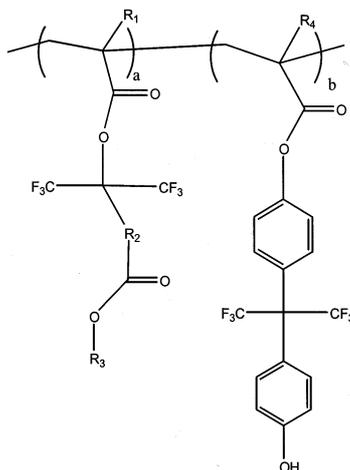
[2]



, R₄ H CH₃ .

3

[3]



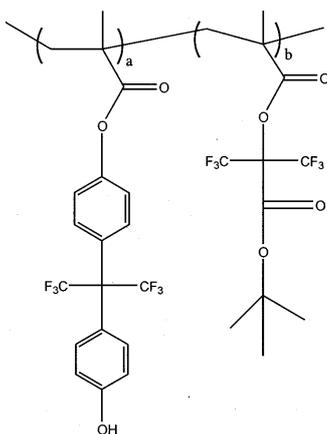
, R₁, R₂, R₃ R₄ ,

a : b = 20 - 100 mol% : 0 - 80 mol%

가 :

{ 2 - [4 - () - 1,1,1,3,3,3 -] / (1,1,1,3,3,3, -

[3a]



{ 2 - [4 - () - 1,1,1,3,3,3 -] / (1,1,1,3,3,3, -

0.1 10 %

3- , 3-
 , n - , , ,

400 3000 %
 1500 %

0.15 μ m

- (a) ;
- (b) ;
- (c) .

, (b) /
 10 200 .

EUV (Extreme Ultra Violet), VUV (Vacuum Ultra Violet), ArF, KrF, E - , X -
 , 0.1 50 mJ/cm²

1. 1a

1,1,1,3,3,3 - (0.1mole) 100mL 0
 NaH (0.11mole) 10 . 0 0.12mole
 - tert - 50mL 가 5
 (0.1N NaOH)
 (MgSO₄), 1a
 (: 92%).

2. 1b

1,1,1,3,3,3 - (0.1mole) 100mL 0
 KO^tBu (potassium tert - butoxide, 0.11mole) 10 0
 0.12mole - tert - 50mL 가
 5 / (0.
 1N NaOH) (MgSO₄),
 1b (: 94%).

3. {2-[4-()-1,1,1,3,3,3-] / (1,1,1,3,3,3,-
-2-terttert-) }
- 2-[4-()-1,1,1,3,3,3-] (0.1 mole), (1,1,1,3,3,3,-
-2-tert-) (0.1mole), AIBN (0.4g) 100mL
60 8
3a (: 58%).
4. {2-[4-()-1,1,1,3,3,3-] / (1,1,1,3,3,3,-
-2-terttert-) }
- 2-[4-()-1,1,1,3,3,3-] (0.1 mole), (1,1,1,3,3,3,-
-2-tert-) (0.1mole), AIBN(0.4g) 100mL
60 8
3b (: 52%).

5.

3 (10g) 0.06g (PGMEA) 150g 0.06g 0.20μm

0 90 , KrF 110 90 , 11
2.38 wt% TMAH 30 0.13μm L/S
(1).

6.

4 (10g) 0.06g PGMEA 150g 0.20μm 0.06g

0 90 , KrF 110 90 , 11
2.38 wt% TMAH 30 0.13μm L/S
(2).

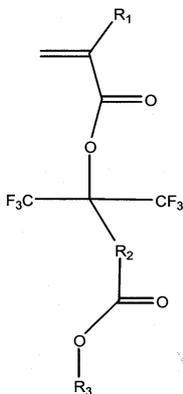
, KrF , 157
nm 가 KrF (248nm) ArF (193nm) VUV (157nm) EUV (13nm)

(57)

1.

1

[1]



, R₁ H CH₃ , R₂ C₁ - C₁₀ C₁ - C₁₀
 , R₃ (acid labile protecting group)

2.

1 ,

C₁ - C₂₀ , C₁ - C₂₀ , C₁ - C₂₀ 5 -

7

3.

1 ,

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

4.

1 ,

1 (1,1,1,3,3,3, - (1,1,1,3,3,3, - -2- tert -)
 (1,1,1,3,3,3, - -2- tert -)

5.

1 ,

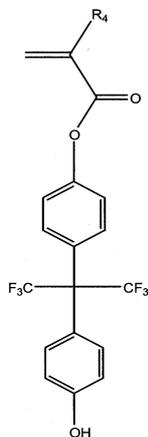
6.

5 ,

2

2

[2]



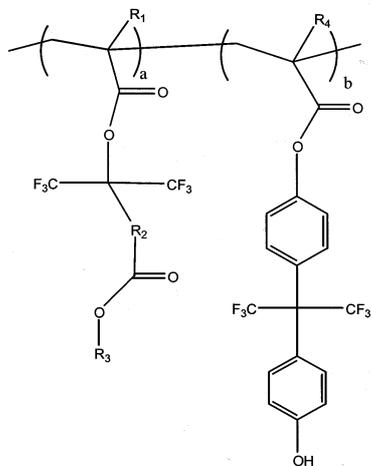
, R₄ H CH₃ .

7.

5 ,

3

[3]



9

,
3 - , 3 - ,
, n - , , , ,

14.

9

,
400 3000 %

15.

(a) 9 ;

(b) ;

(c) .

16.

15

,
(b) i) ; ii)

17.

15

,
10 200 .

18.

15

,
EUV (Extreme Ultra Violet), VUV (Vacuum Ultra Violet), ArF, KrF, E - , X -

19.

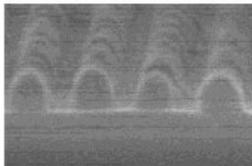
15

,
0.1 50 mJ/cm²

20.

15

1



2

