

(19)
(12)

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(B1)

(51) 。 Int. Cl.⁷
C07D 265/30

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(11)
(24)

2004 02 05
10-0417091
2004 01 19

(21) 10-2001-0026537
(22) 2001 05 15

(65)
(43)

10-2002-0087658
2002 11 23

(73) 20

(72) 1-408

7 302

239-7

653

가 101-602

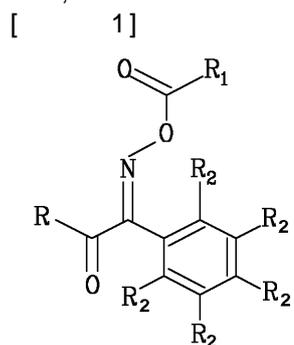
(74)

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(54)

1

UV



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UV

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가
가

, LCD

가

가 UV

61-118423 ,

1-68750 ,

3-4226

(p
(Opt.

hotoimaging) ,
Eng. 24 (1985) 808 J. Opt. Eng. 27 (1988) 301

(Photoinitiation system),

(dialkylaminobenzene)

4,590,145

4,255,513

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00/52530 ,

199 28 742 A1

4,202,697

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6,001,517

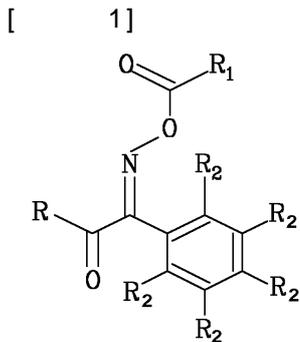
UV

UV

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가

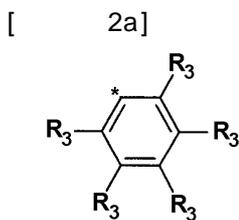
UV



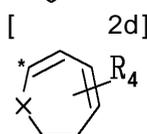
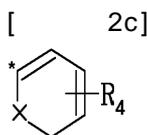
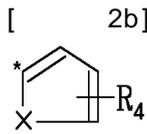
1, 2a, 2b, 2c, 2d, 4a, 4b, 4c, 4d, 4e, 4f, 4g, 4h, 4i, 4j, 4k, 4l, 4m, 5a, 5b, 5c, 5d, 5e, 5f

R₁, R₂, R₃, R₄, R₅, R₆, R₇, R₈

가, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100



2a, R₃, 가, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

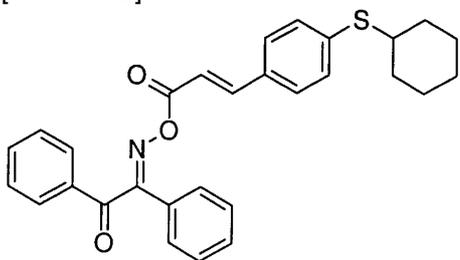


6 , 1 6 , 1
4 8)
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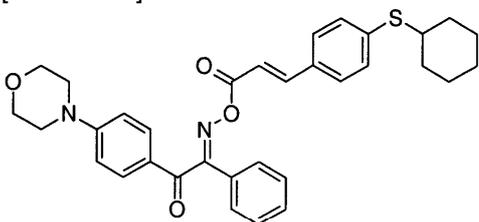
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5 6 R₅, R₆, R₇, R₈

1a 1g 1

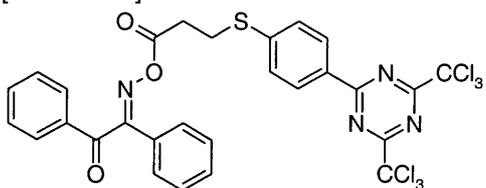
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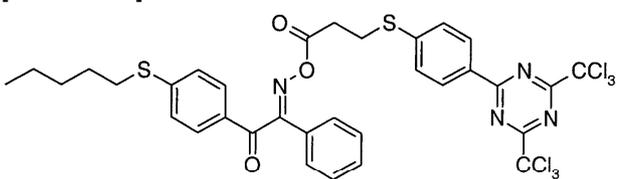
[1b]



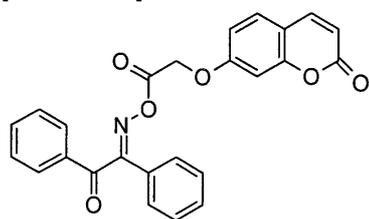
[1c]



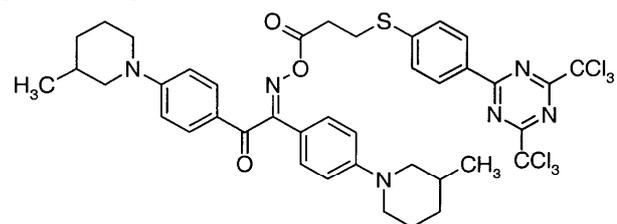
[1d]



[1e]



[1f]



[1g]

t- , , , 1,2- , 1,1,1- , 1,1,2- , 1,1,2- , 3-

1 e) 1

가 () 5HIISAF-HS, KH, 3HHAF-HS, NH, 3M, 300HAF-HS, 116HMMAF-HS, 116MAF, FMFEF-HS, SOFEF, VGPF, SVHSRF-HS, SSRF(); II, N339, SH, H, LH, HA, SF, N550M, M, E, G, R, N760M, LR, #2700, #2600, #2400, #2350, #2300, #2200, #1000, #

980, #900, MCF88, #52, #50, #47, #45, #45L, #25, #CF9, #95, #3030, #3050, MA7, MA77, MA8, MA11, MA 100, MA40, OIL7B, OIL9B, OIL11B, OIL30B OIL31B(); PRINTEX-U, PRINTEX-V, PRINTE X-140U, PRINTEX-140V, PRINTEX-95, PRINTEX-85, PRINTEX-75, PRINTEX-55, PRINTEX-45, PRINTEX -300, PRINTEX-35, PRINTEX-25, PRINTEX-200, PRINTEX-40, PRINTEX-30, PRINTEX-3, PRINTEX-A, S PECIAL BLACK-550, SPECIAL BLACK-350, SPECIAL BLACK-250, SPECIAL BLACK-100, LAMP BLAC K-101(); RAVEN-1100ULTRA, RAVEN-1080ULTRA, RAVEN-1060ULTRA, RAVEN-1040, RAVEN -1035, RAVEN-1020, RAVEN-1000, RAVEN-890H, RAVEN-890, RAVEN-880ULTRA, RAVEN-860ULTRA, RAVEN-850, RAVEN-820, RAVEN-790ULTRA, RAVEN-780ULTRA, RAVEN-760ULTRA, RAVEN-520, RA VEN-500, RAVEN-460, RAVEN-450, RAVEN-430ULTRA, RAVEN-420, RAVEN-410, RAVEN-2500ULTRA , RAVEN-2000, RAVEN-1500, RAVEN-1255, RAVEN-1250, RAVEN-1200, RAVEN-1190ULTRA, RAVE N-1170()

6B(C.I.12490), (C.I. 74260), (C.I. 74160), (BASF K0084. K0086), (C.I.21090), GRO(C.I. 21090), 4T-564D, (C.I.42595), C.I.PIGMENT RED97, C.I.PIGMENT RED 122, C.I.PIGMENT RE D 149, C.I.PIGMENT RED 168, C.I.PIGMENT RED 177, C.I.PIGMENT RED 180, C.I.PIGMENT RED 192, C.I.P IGMEN T BLUE 15:1, C.I. PIGMENT BLUE 15:4, C.I. PIGMENT BLUE 15:6, C.I. PIGMENT BLUE 22, C.I. PIGMENT BLUE 60, C.I. PIGMENT BLUE 64, C.I.PIGMENT YELLOW 83, C.I.PIGMENT YELLOW 139 C.I. PIGMENT VI OLET 23

f) 2

2 2,2'- (2-)-4,4',5,5'- , 2,2'- (2,3-)-4,4',5,5'- ; 2- -2- -1- - 1- , 1-(4-)-2- -2- -1- , 4-(2-)- (2-) , 1- , 2,2- -2- , 2- -(4-)-2- -1- -1- , 2- - 2- , 4,4'- () , 2,4,6- , -o- , 3,3- - 4- , 3,3',4,4'- (t-) ; 9- , 2- -9- , 2- -9- ; , 2,4- , 2- , 1- -4- ; , 2- ; , 2- , t- , 2,6- - -9,10- ; 9- , 1,7- (9-) , 1,5- (9 -) , 1,3- (9-) ; , 1,7,7- - [2,2,1] -2,3- , 9,10- ; 2,4,6- , (2, 6-)-2,4,4- , (2,6-) , 2-n- 4-() ; 4-() , -4-() , 2,6- (4-) , 2,6- (4-)-4- - ; 3,3'- -7-() , 2,6- (4-)-4- - ; 3,3'- -7-() , 3- -7-() , 3- - 7- , 10,10'- [1,1,7,7- -2,3,6,7- -1H,5H,11H-Cl]- [6,7,8-ij]- -11- ; 4- , 4- ; 2- , 3- - - 1

가 , 가 , 가 g) 가 , 2- , 2- , 2,5- -1,3,4- , 2- -4,6- , (3-) ,

(3-), (2-), (2-), (3-)
), (2-), (3-)
 1 p- (pyrocatechol), t- (t-butyl catechol),
 (phenothiazine) 1
 가 , , ,
 .
 , 1
 0.1 5 , 가 0.5 10 , 가
 1 20 , 10 95 , 0.5 20 , 2
 , 0.1 5 , 가 0.01 20 .
 250 450 nm (arc),
 , Xe
 (roll coater), (curtain coater), (spin coater),
 ,
 가
 , TFT LCD
 , PDP

[]
 1 : 1a (1- -2- -2-(O-4- -)-)
 a. (Benzil monoxime)
 (120 mmol) 25 g 150 mL 60 가 (144 mmol)
 l) 9.9 g 20 g 가 가 . NaOH 17 g 69 g 가
 가 가 60 90 700 mL
 b. 4- (cyclohexylmercaptocinnamic acid)
 4- (161 mmol) 20 g, (172 mmol) 20 g, 30 g 200
 mL DMF , 120 12 1500 mL
 3 ??
 97 % 4- 4- (1
 00 mmol) 22 g, (220 mmol) 23 g, 3 mL 80 mL 100 2
 , 800 mL 1 N HCl
 4- (: 95 %).
 c. 1a
 b 4- (11 mmol) 2.88 g 50 mL
 70 (acid chloride) a
 (11 mmol) 2.5 g 50 mL THF 100 mL 2-
 1 mL 가 THF 10 mL 가 가
 가 45 12
 (rotary evaporator)
 (eluent) (MC)/ = 3/1
 1a (1- -2- -2-(O-4- -)-)
)-)
 1 H NMR (300 MHz, -d6) 7.99 (2H, dd, Ar-H), 7.32-7.77 (15H, m, Ar-H, OCOCH=C), 6.38 (1H, d, OC
 OC=CH), 3.35 (1H, m, Ph-SH-), 1.18-2.04 (10H, m, CH₂)
 UV() : max = 338 nm
 2 : 1b (1-[4-(4-)]-2- -2-(O-4- -)-)

a. 4-(4-)
 500 mL 2- (MC) 200 mL (81 mmol)
 ol) 10.8 g , 20 mL 4- (62 mmol) 20 g
 .2 g 20 mL 가 (68 mmol) 11
 12 DMF 30 mL 150 mL

L (quenching)
 3
 50 mL 가 4-
 (Buchner funnel) 4-(4-)
 b. 1-[4-(4-)]-2- -2-
 a 4-(4-) (25 mmol) 7 g 50 mL THF
 (isoamyl nitrite)(30 mmol) 3.5 g 0.92 g 20 mL
 (40 mmol) 12 200 mL

c. 1b
 4- (9.2 mmol) 2.4 g 50 mL 70
 b 1-[4-(4-)]-2- -2-
 (7.5 mmol) 2.3 g 50 mL THF 100 mL 2-
 1 mL 가 THF 10 mL
 가 , 45 12

1b ()
 1-[4-(4-)]-2- -2-(O-4- -)
¹H NMR (300 MHz, -d6) 7.83 (2H, d, Ar-H), 7.75 (2H, dd, Ar-H), 7.31-7.51 (8H, m, Ar-H, OCOCH=C), 7.02 (2H, d, ArH), 6.39 (1H, OCOC=CH), 3.73 (4H, t, OCH₂-), 3.36 (5H, m, NCH₂-, Ph-SH-), 1.22-1.72 (10H, m, CH₂).
 UV() max = 334 nm
 3 : 1c

a. 3-(4-)
 4- (165 mmol) 20 g, 3- (188 mmol) 20 g, 50 g 300 mL DMF
 100 20 , 1500 mL
 , 2 N HCl (pH paper , pH ~ 2)
 3-(4-)

b. 3-{4-[2,4- ()-s- (-6-yl)] } (TPA)
 a 3-(4-) (106 mmol) 22 g, AlBr₃ 2 g, 가 (heat-gun)
 150 g (dry) HCl , 24
 가 . TLC 1000 mL / TPA (: >87 %), NMR,
 1000 mL

FT-IR, UV-vis.
¹H NMR (CDCl₃, ppm) 9.03 (1H, broad peak, COOH), 8.57(2H, d, Ar-H), 7.41(2H, d, Ar-H), 3.30(2H, t, -C H₂-S), 2.78(2H, t, -CH₂-).
 UV-vis.(nm) max = 356 nm
 c. 1c
 b TPA(10 mmol) 5.0 g, 50 mL 70 2
 (10 mmol) 2.3 g 50 mL THF 100 mL 2-
 1 mL 가 10 mL THF
 가 , 45 12

1c
 / = 2/1

¹H NMR (300 MHz, -d6) 8.53 (2H, d, Ar-H), 7.93 (2H, d, Ar-H), 7.42-7.73 (10H, m, Ar-H), 3.25 (2H, t, SCH₂-), 2.80 (2H, t, OCOCH₂-).
 UV() max = 352 nm.
 4 : 1d

a. 4-(1-)
 4- (56 mmol) 13.0 g, 1- (67 mmol) 7.0 g 150 mL DMF 250 mL 2-
 120 12 (73 mmol) 10.0 g 가
 2 L

/ 4-(1-)

b. 1-[4-(1-) -2- -2-) (17 mmol) 5.0 g 50 mL THF
 a (20 mmol) 2.1 g 4-(1-) 0.6 g 20 mL (27 mm
 ol) 3 200 mL

c. 1d , THF 50
 1-[4-(1-) -2- -2-)
 3 b TPA(17 mmol) 8.4 g 60 mL 70 2
 b 1-[4-(1-) -2- -2-)
 (13 mmol) 3.9 g 80 mL THF 250 mL 2-
 2 mL 가 20 mL THF
 가 , 45 12

1d
¹H NMR (300 MHz, -d6) 8.53 (2H, d, Ar-H), 7.78 (2H, d, Ar-H), 7.69 (2H, d, Ar-H), 7.36-7.55 (7H, m, Ar-H), 3.25 (2H, t, OCO-C-CH₂S), 3.21 (2H, t, C-C-CH₂S) 2.78 (2H, t, OCOCH₂-), 0.80-1.65 (9H, m, H).

UV() max = 334 nm.

5 : 1e
 a. -7- - (Coumarin-7-oxy-acetic acid)
 7- (123 mmol) 20 g, (190 mmol) 18 g, 50 g 200 mL DMF
 120 12 1500 mL 2 N HCl
 pH 2 가
 -7- - (: 35 %).

b. 1e
 a -7- - (17 mmol) 3.7 g, 50 mL 70 2
 (13 mmol) 3.0 g 50 mL THF 100 mL 2-
 1 mL 가
 THF 10 mL 가 45 12
 / = 1/1
 1e

¹H NMR (300 MHz, -d6) 7.87-7.93 (3H, m, Ar-H), 7.70-7.73 (3H, m, Ar-H, OCOC=CH-), 7.42-7.60 (6H, m, Ar-H), 6.79 (1H, dd, Ar-H), 6.72 (1H, d, Ar-H), 6.24 (1H, d, OCOCH=C-), 5.07 (2H, s, OCOCH₂O).

UV() max = 317 nm.

6 : 1f
 a. 4,4'- (3-)
 4,4'- (26 mmol) 6.4 g, 3- (140 mmol) 13.8 g, 30 g 100 mL DMF
 140 12 700 mL 가
 (4,4'- (3-))
 NMR (spectroscopy) (: 95 %).

b. 4,4'- (3-)
 a 4,4'- (3-) (10 mmol) 4 g 40 mL 40 mL
 , 4,4'- (3- ??) 0.85 g 1.3 mL 60 30
 8 g 20 wt% aq. NaOH 10
 /
 = 10 /1 4,4'- (3-)
 (: 65 %).

c. 1f
 3 b TPA(1.3 mmol) 0.63 g 20 mL 70 2
 b 4,4'- (3-) (1.3 m
 mol) 0.50 g 15 mL THF 50 mL 2- 0.5 mL
 가 3 mL THF 가 ,
 45 12
 / = 2/3 1f

¹ H NMR (300 MHz, -d6) 8.53 (d, 2H, Ar-H), 7.79 (2H, d, Ar-H), 7.48 (2H, d, Ar-H), 7.40 (2H, d, Ar-H), 6.90 (4H, d, Ar-H), 3.76-3.86 (4H, m, NCH₂ CMe-), 3.17 (2H, t, SCH₂ CCO₂-), 2.46-2.84 (6H, m, NCH₂ C-, SCCH₂ CO₂-), 1.12-1.80 (10H, m, H), 0.90 (6H, d, CH₃).

UV() max = 356 nm.

7 : 1g(5- -2-yl-2- -2-(0-9-)-)

a. 5- -2-yl
 2- (0.22 mol) 21.6 g (0.22 mol) 30 g , 85 가
 , 90 가 (PPA, 120 g) , 3 , 100 g
 가 4 , 60 , 300 g
 , 5 % NaOH ,

b. 5- -2-yl
 5- -2-yl-2- -2-
 a 5- -2-yl (0.093 mol) 20 g 300 mL THF 2-
 3 mL , 40 50
 (0.11 mol) 13.1 g 가 가 40
 , 30 % NaOH 60 g 20 30 .

c. 5-
 9- 1g (10 mmol) 2.3 g 30 mL 70 12
 40 mL THF b 100 mL 2- 5- -2-yl-2- -2- (8.7 mmol) 2.0 g
 10 mL THF , 2 mL 가 45 12
 300 mL 30 .
 200 mL 가 , 3 g 1g
 (5- -2-yl-2- -2-(0-9-)-)

¹ H NMR (300 MHz, CDCl₃) 8.55 (d, 2H, Ar-H), 8.02 (3H, m, Ar-H), 7.50-7.63 (7H, m, Ar-H), 7.28 (3H, m, Ar-H), 6.88 (1H, d, Ar-H), 2.58 (3H, s, Ar-CH₃).

UV() max = 395, 374, 317, 260 nm.

1
 C.I. Pigment Red 254 10 , 가 BzMA/MAA(: 70/30, Mw : 25,000) 5
 , 1a 3 , PGMEA 79 3 , (bead mill) 10 1
 0.3 mm , (milling) 10 10
 (spin coating) 100 2 (pr
 ebake) 가 1.8 μm (high-pressure mercury lamp) 200 mJ/cm² , pH 11.3 11.7 KOH
 200 40 , (postbake)
 가 .

2
 C.I. Pigment Green 36 10 , 가 BzMA/MAA(: 70/30, Mw : 25,000) 5
 , 1b 3 , PGMEA 79 3 , 10 2
 0.3 mm 10 10
 100 2 가 1.8
 μm pH 11.3 11.7 KOH 200 mJ/cm²
 40 , 200
 가 .

3
 C.I. Pigment Blue 15:6 10 , 가 BzMA/MAA (: 70/30, Mw : 25,000) 5
 , 1c 3 , PGMEA 79 3 , 10 3

0.3 mm 10 10
 100 2 가 1.8
 μm 200 mJ/cm²
 pH 11.3 11.7 KOH 200
 40 가
 4
 10 , 가 BzMA/MAA(: 70/30, Mw : 25,000) 5 ,
 3 , PGMEA 79 3 , 4 1d
 0.3 mm , 10 10
 100 2 가 1.8
 μm 200 mJ/cm²
 pH 11.3 11.7 KOH 200
 40 가
 5
 가 BzMA/MAA(: 70/30, Mw : 25,000) 9 ,
 PGMEA 79 7 , 5 1e 5 ,
 3 5 5 가 1.8 μm
 100 2 가 1.8 μm
 200 mJ/cm² pH 11.3 11
 .7 KOH 200 가 40
 6
 C.I. Pigment Red 254 10 , 가 BzMa/MAA(: 70/30, Mw : 25,000) 5
 , 1f 3 , PGMEA 79 3 , 10 6
 0.3 mm 10 10
 100 2 가 1.8
 μm 200 mJ/cm² pH 11.3 11
 .7 KOH 200 가 40
 7
 C.I. Pigment Green 36 10 , 가 BzMA/MAA(: 70/30, Mw : 25,000) 5
 , 1g 3 , PGMEA 79 3 , 10 7
 0.3 mm 10 10
 100 2 가 1.8
 μm 200 mJ/cm² pH 11.3 11
 .7 KOH 200 가 40
 가
 1 7 (가)
 가

UV

(57)

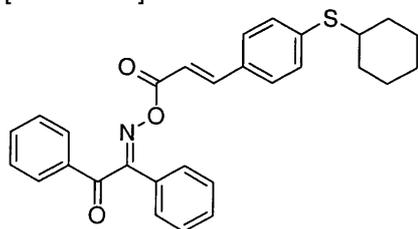
1.

2.

1a

[1a]

:

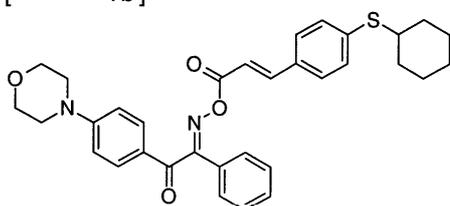


3.

1b

[1b]

:

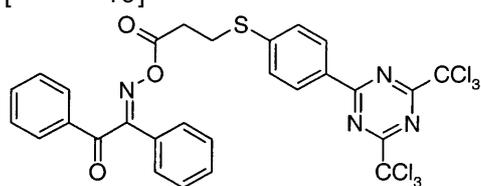


4.

1c

[1c]

:

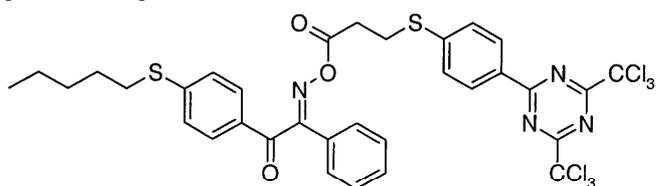


5.

1d

[1d]

:

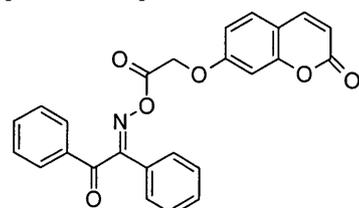


6.

1e

[1e]

:

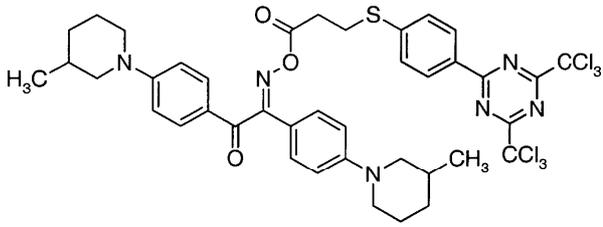


7.

1f

[1f]

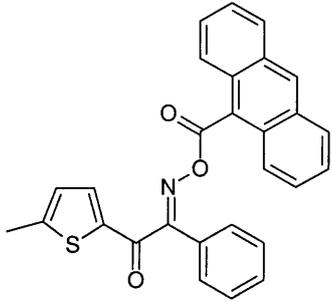
:



8.

[1g] 1g

:



9.

- a) 1 8 , 0
- .1 5 ;
- b) 가 1 20 ; 0.5 10 ;
- c) 가 1 20 ;
- d) 10 95 ;

10.

- e) 9 , 20
- 0.5

11.

- f) 9 10 , 0.5 5
- 2