

(19) (KR)
(12) (A)

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2002 - 0076184
2002 10 09

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(30) 09/820,227 2001 03 27 (US)

(71) 가 가 가 22 22

(72) 98683 18 가 18806
98682 227 가 8115
97007 179 가 7574
98607 2216

(74) :

(54)

가 ; (-)Cu(I)(hfac) [hfac] (hfac)Cu(I)L [L ; 가]
L ;
hfac .] (hfac)Cu(I)L [L 1- , 1-)Cu(I)(hfac) []

CVD

~ 1.7 μ - cm

IC

CVD

CVD

< 1.8 μ - cm,

CVD 가

가

가

CVD

[Beach, Chem. Mater., Vol. 2, pp. 216 - 219 (1990)]

$Cu(C_5H_5)(PR_3)$ [R = ,]

- Smith (tert - BuO)Cu(PMe₃)

CVD

Hampden

[Chem. Mater., Vol. 2, p636 (1990)]

].

1990

(I)

가

CVD

가

(I)

Doyle

4,385,005 (Process for separating unsaturated hydrocarbons using copper or silver complexes with fluorinated diketones, 1983 5 24)

4,425,281 (Copper or silver complexes with fluorinated diketones and unsaturated ligands, 1984 1 10)

[Doyle, Org

anometallics, Vol. 4, p. 830 (1985)].

5,096,737 (Baum, Ligand stabilized +1 metal - diketone coordination complexes and their use in chemical vapor deposition of metal thin films, 1992 3 17) CVD

(I)

가

[Baum, Chem. Mater., Vol. 4, p365 (1992)] [Baum, J. Electrochem. Soc., 1993, Vol. 140, No. 1., 154 - 158 (1993)]

$Cu(hfac)(CH_3C \equiv CCH_3)$ 가

CV

D

1,6 - 1,5 -

(I)

1,5 -

1,5 -

(I)

((DMCOD)Cu(hfac)),

(I)

((HYN)Cu(hfac))

가

가

. (DMCOD)Cu(hfac)

, 2.5 μ - cm

2.1 μ - cm . (HYN)Cu(hfac) TiN 가 ,

(I)(hfac) ((BUY)Cu(hfac)) 1.93 μ - cm 가 가

[Norman , Journal de Physique IV, Vol. 1., C2 - 271 - 278, 1991 9] 5,085,731 (Vol atile liquid precursors for the chemical vapor deposition of copper, 1992 2 4)

Cu(hfac)(TMVS) [TMVS =] , Cu(hfac)(TMVS) CVD TMVS 가 가 가

가 ; (-)Cu(I)(hfac) [hfac] (hfac)Cu(I)L [L] ; 가

] (hfac)Cu(I)L [L 1 - , 1 -] Cu(I)(hfac) [hfac]

, 가 CVD

CVD

가

CVD

] (hfac)Cu(I)L [L , 1 - , 1 -] (hfac)Cu(I)L 가 , CVD . (-)Cu(I)(hfac) . 2 3 , CVD

c)Cu(I)1 - 10 % (w/w) (-)Cu(I)(hfac) 90 % (w/w) (hfac)Cu(I)TMVS
 10 % (w/w) (-)Cu(I)(hfac) 90 % (w/w) (hfa

CVD 65 , 65 , 190 , 0.5 ,
 100 sccm , 2.5 sccm , 20 mm

IC , 1.9 μ - cm (seed layer) , 가 CVD

가 , 가

(57)
 1.

가 ; (-)Cu(I)(hfac) [hfac , 가] (hfac)Cu(I)
 L [L] ;

2.
 1 , 가 1 - , 1 -

3.
 1 , 가 10 % (-)Cu(I)(hfac) 90 %
 (hfac)Cu(I)L

4.
 1 , 가 65 , 65 ,
 190 , 0.5 , 100 sccm ,
 2.5 sccm , 20 mm

5.

가 ; (-)Cu(I)(hfac) [hfac] (hfac)Cu(I)
 L [L 1- , 1- ,
 , 10 % (-)Cu(I)(hfac) 90
 % (hfac)Cu(I)L ; 가
 ; .

6.

5 , 가 65 , 65 ,
 190 , 0.5 , 100 sccm ,
 2.5 sccm , 20 mm .

7.

, (-)Cu(I)(hfac) [hfac
] (hfac)Cu(I)L [L 1- , 1-
] .

8.

7 , 10 % (-)Cu(I)(hfac) 90 % (hfac)Cu(I)L
 .

9.

7 , 가 65 , 65 , 190
 , 0.5 , 100 sccm ,
 2.5 sccm , 20 mm .