

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

(51) 。 Int. Cl.⁷
C23C 16/18

(45)
(11)
(24)

2004 07 12
10-0439581
2004 06 29

(21) 10-2002-0016724
(22) 2002 03 27

(65)
(43)

10-2003-0077811
2003 10 04

(73)

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(72)

756

9-1301

254-40

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756

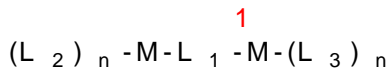
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(74)

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(54)

1



L_1 [CH₂=CH-Si(CH₃)₂]₂-O [CH₂=CH-R-Si(CH₃)₂]₂-O (, R C₁₋₈) ;

M Cu, Ni, Fe, Co, Ir, Ru ;

L_2 L_3 , - , , M ;
n 1 5 , M .

2a

1 [Cu(hfac)]₂-DVTMSO ¹H-NMR ;
 2a [Cu(hfac)]₂-DVTMSO , 2b
 , (hfac)Cu-COD ;
 3a 3d 2 (SEM)
 ;
 4a 4b 2 (SEM)

(MO CVD, metal organic chemical vapor deposition)

가

(nucleation)

가

(hfac)Cu-COD (hfac = 1,1,1,5,5,5-

, COD = 1,5-

[S. K. Reynolds, C. J. Smart, E. F. Baran, T. H. Baum, C. E. Larson and P. J. Brock, *Appl. Phys. Lett.*, 59, 2332(1992)]).

1

(L₂)_n-M-L₁-M-(L₃)_n

L₁ [CH₂=CH-Si(CH₃)₂]₂-O [CH₂=CH-R-Si(CH₃)₂]₂-O (, R C₁₋₈);

M ;

L₂ L₃ M ;

n 1 5 , M 1

SO = 1,2-
 $[CH_2=CH-Si(CH_3)_2]_2-O$ (DVTM
 $[CH_2=CH-R-Si(CH_3)_2]_2-O$ M
 Cu, Ni, Fe, Co, Ir Ru
 (Lewis base) L₂ L₃

L₃ 1, L₁, M, L₂ L₃ 1:2:1 L₁, M, L₂ 5:1:5

MOCVD 0 130 가
 , [Cu(hfac)]₂-DVTMSO {hfac = 1,1,1,5,5,5-
 , DVTMSO = 1,2- ([CH₂=CH-Si(CH₃)₂]₂-O)}
 , 1,1,1,5,5,5- , 1,2- (Cu₂O)

MOCVD (: (hfac)Cu-COD)가
 MOCVD

100 300 가
 , SiO₂, TiN
 (: 1 700nm)

가
 1 : [Cu(hfac)]₂-DVTMSO
 (Schlenk) , Cu₂O 5g, 1,2- (DVTMSO) 5.5ml 40ml
 1,1,1,5,5,5- (hfac) 5ml 10ml 가 , 0
 1 (84%).

¹H-NMR 1
 [Cu(hfac)]₂-DVTMSO가 1
 ; C: 29.72, H: 2.82

C: 29.71, H: 2.77
 [Cu(hfac)]₂-DVTMSO 2a , 2b 가
 (hfac)Cu-COD

2 :
 MOCVD 1 [Cu(hfac)]₂-DVTMSO TiN
 50 sccm , 65 ,

0.25 torr 100, 125, 150 200 20 MOCVD / 200
 20 40 MOCVD , 1000
 (SEM) 3 4 , 3a 3d 가 가 가
 가 , 4a 4b , 가 가

MOCVD

(57)

1.
 1 :
 1
 (L₂)_n-M-L₁-M-(L₃)_n

L₁ [CH₂=CH-Si(CH₃)₂]₂-O [CH₂=CH-R-Si(CH₃)₂]₂-O (, R C₁₋₈);

M ;

L₂ L₃ M ;
n 1 5 , M

2.

1 ,
M Cu, Ni, Fe, Co, Ir Ru

3.

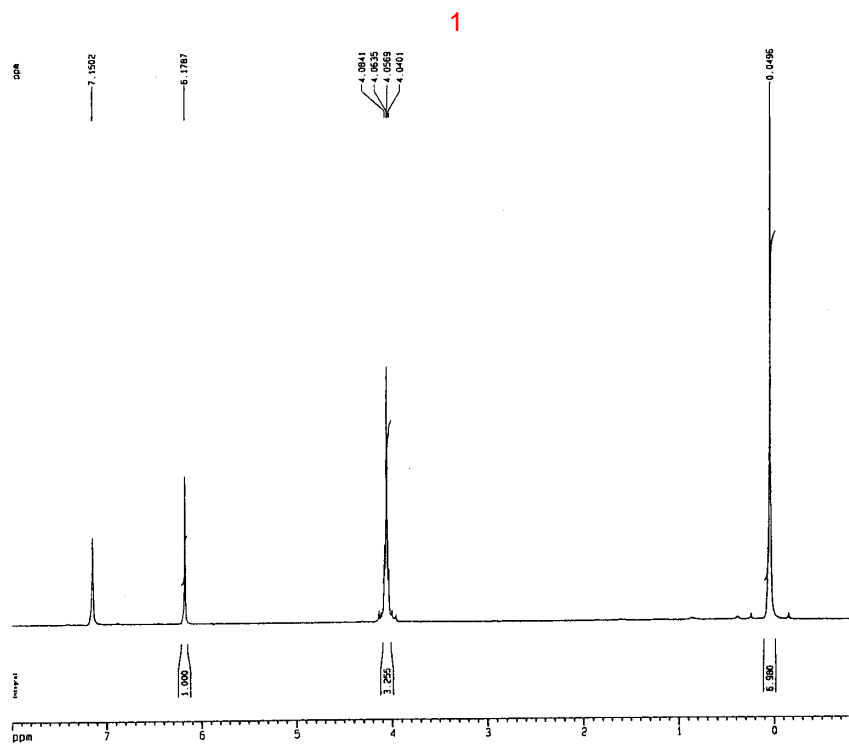
1 ,
[Cu(hfac)]₂-DVTMSO {hfac = 1,1,1,5,5,5- , DVTMSO = 1,2-
([CH₂=CH-Si(CH₃)₂]₂-O)}

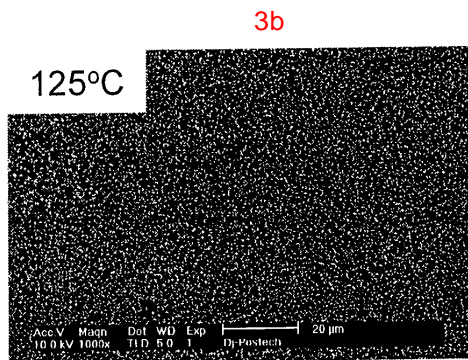
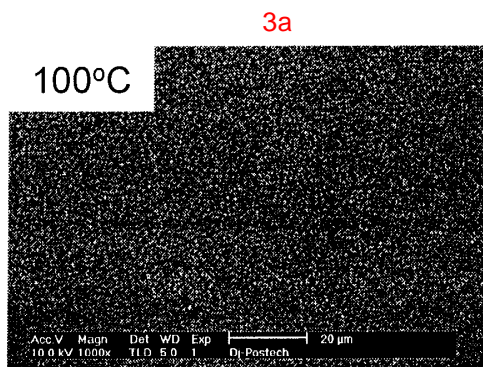
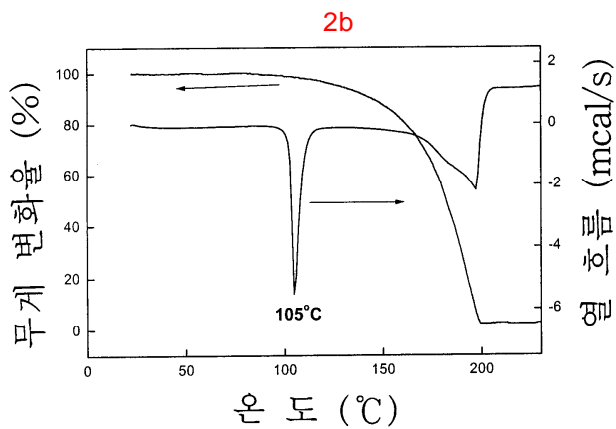
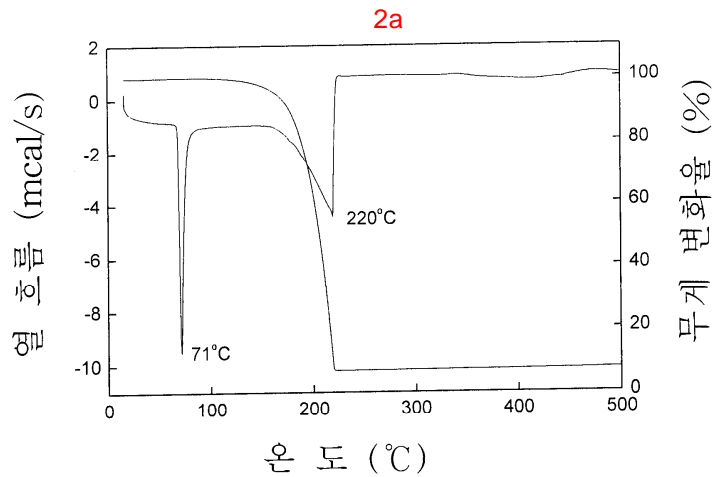
4.

0 25 L₁, M , L₂ L₃ 1:2:1 5:1 5

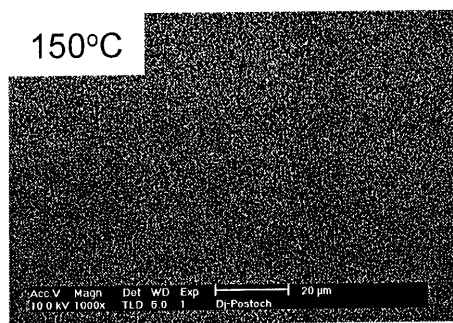
5.

1 3

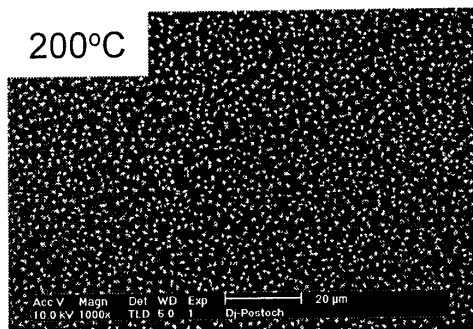




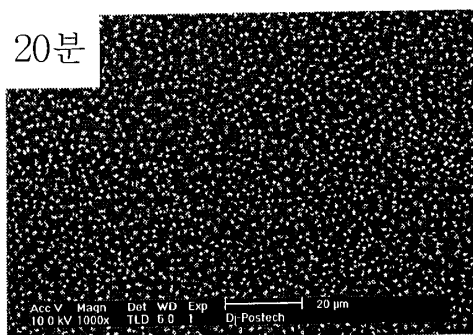
3c



3d



4a



4b

