



(19)
(12)

(KR)
(B1)

(45)
(11)
(24)

2010 04 23
10-0954714
2010 04 19

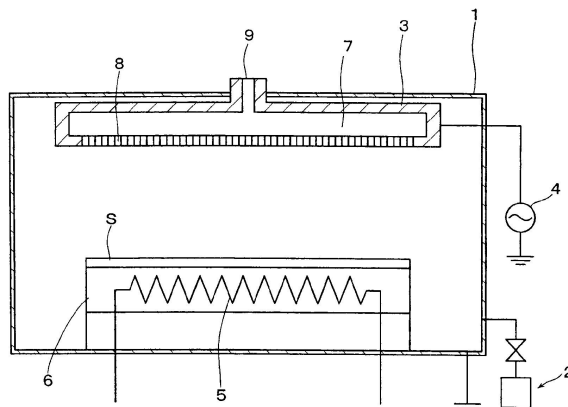
- (51) Int. Cl. (73)
- C23C 16/34* (2006 01) *HDIL 21/205* (2006 01) 2500
HDIL 23/52 (2006 01) *HDIL 21/285* (2006 01)
- (21) 10-2009-7004614 () (72)
- (22) () 2006 03 03
 2009 03 04 1220-1
- (85) 2009 03 04
- (65) 10-2009-0043554 1220-1
- (43) 2009 05 06
- (62) 10-2007-7012311 ()
 () 2006 03 03 (74)
 2007 05 31
- (86) PCI/JP2006/304072
- (87) W0 2006/093262
 2006 09 08
- (30) JP-P-2005-059085 2005 03 03 (JP)
- (56) KR1020020010615 A*
 KR1020010050926 A*
 Gladczuk, L. et al. Thin Solid Films,
 Vol. 476, pp. 295-302.*
 *

: 2

(54)

(57)

CVD, Ta, R-NR, R-NR =NR (R, R, 1
 6 NH₃, Ta-N₂)
 H, Cu, C, N
 Ta/N, Cu
 - 1



(72)

2500

1220-14

1220-14

1

2

, TaX₅ (X :) NH₃ ,

3

2 ,
800W , DC RF , DC 0 , 5 , RF 400

[0001] , , CVD

[0002] ,

[0003] , ,

[0004] (,) , CVD

1) .

[0005] , ,

[0006] 1 : 2002-26124 ()

[0007] (Ta₂N₅) CVD , Cu , Ta N , Ta/N

[0008] , Ta/N , (, Cu) , CVD , C N

, NH₃ , ,
 , 5sccm 100 1000sccm , , H
 , 5sccm 100 1000sccm(H₂)
 [0022] 2 , , NH₃
 , 300 , 150 300 , ,
 300 , 150 300 . ,
 1 100 , 1 100
 [0023] , , (Ta) R-NR , R-NR =NR (R R ,
 1 6 , ,)
 , , Ta 4 5 N (R,R)
 [0024] , CVD , , NH₃
 Ta-N-NH_x
 , , , , ,
 [0025] , CVD
 , 1 CVD
 [0026] 1 CVD , (1) ,
 (2) , (3)
 (3) (4) (1) , (1)
 , (5) (6) ,
 [0027] (3) , (7) , (6)
 (8) , ,
 [0028] (7) , (9) , NH₃ H
 () , (7)
 (9) , ,
 [0029] , , Ar
 , ,
 [0030] 1 CVD ,
 [0031] , (2) , (1) (, 10⁻⁴ 10⁻⁵)
 , (6) (S) , (5)
 (, 150 300) , (9) (7)
 NH₃ , (8) (S) , (S) ,

[0032] (1) (4) 27.12 (3) (3) (6)
 0.2W (S) NH₃ NH₃ (, NH₃)
 NH₃ (S)
 , Ta-N-NH₃
 (4) NH₃

[0033] (1) (9) H Ta-N
 N R(R) (4) H
 (S) (1)

[0034] 35 , Ta/N 1.9 2.0 , 600μ AES , C 5 , N 33

[0035] CVD , NH₃ H CVD

[0036] , Ar ()

[0037] (S) (, Cu)

[0038] (S) Cu

[0039] PV D

[0040] (Ta)

[0041] (S) Ar ()

C N

[0042]

, C N , DC RF , DC RF 5 , RF , 400 800W , DC RF , DC RF

[0043]

(S) , Ar , (

[0044]

(S) , ,

[0045]

2 , 1

[0046]

(100) , (101) (103) (102)

[0047]

(101) , (101a) (101b) (101c) (101c) (101b) (101d) (101d)

[0048]

(101b) (101d) (102) (103) (102) (103a)

[0049]

(103a) (103b) (103b) (103b) (100) (103b) (103c) (103a) (103b) (103c) (103a) (103c) (103d)

[0050]

(100)

[0051]

(100) (101) (101c) (101d) 1 (103) (103b) (103c) 1

[0052]

(101) (103) (101c) (101d) (103b) (103c)

[0053]

1

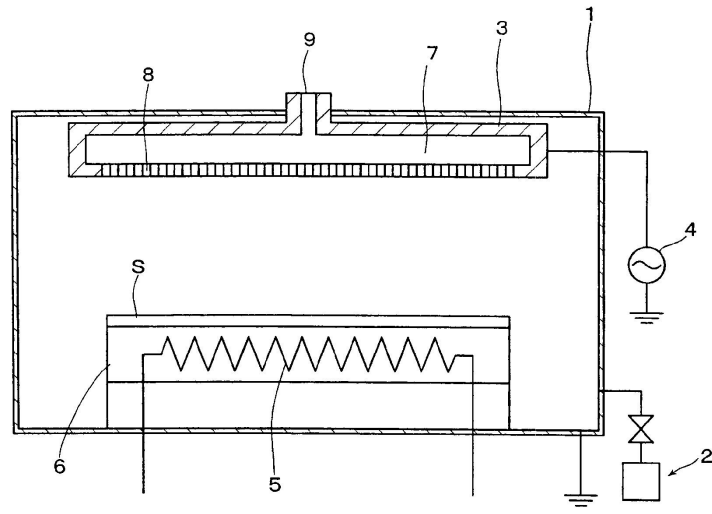
[0054]

, 1 , (M)

- [0055] NH₃ H NH₃ , Si O₂ (S) (2)
10⁻⁵ (1) (S) , Ar , Ta
- [0056] (1) (S) (6) (S) ,
(5) 250 (9) (7) 5sccm NH₃
100sccm (8) (S)
- [0057] (1) (4) , 27.12 ,
0.2W (3) (S) NH₃ (S)
NH₃ , Ta-N NH₃
(4)
- [0058] (1) (9) H ,
Ta-N
N R(R) (4) , H
(S) (1)
- [0059] , Ta/N 1.9 , C 5 , N 35
- [0060] (MO) NH₃
- [0061] (H) (μ ·) , 4
(Rs) , SEM (T) , : Rs· T
- [0062] (MO) NH₃ H (H) , MO
H (2000μ ·) MO NH₃
(5000μ ·) (600μ ·)
- [0063] , MO H R () , C ,
, MO NH₃ Ta
- [0064] , MO NH₃ H , NH₃
Ta-N , H
Ta-N , R R () , C N
- [0065] , Ar
- [0066] (S) ,
Cu

- [0067] 2
- [0068] 1
- [0069] Ar (S)
DC : 5 , RF : 600W
-30 150
- [0070] (S)
C N , Ta/N 3.5 C N : C 0.1 , N
22 , : 90μ
- [0071] , Ar
- [0072] (S)
- [0073] Cu
- [0074] tert- ()
1 , Ta/N 1.8 C 5 , N 35.7 , 700μ
- [0075] 4
- [0076] H , H₂ , 1
1
- [0077] , CVD , C N , Ta/N , Cu
- [0078] 1 ,
- [0079] 2 ,
- [0080] _____
- [0081] 1 : 2 :
- [0082] 3 : 4 :
- [0083] 5 : 6 :
- [0084] 7 : 8 :
- [0085] 9 : S :

1



2

