

(19)
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2004 06 05
10-0434494
2004 05 25

(21) 10-2001-0065444
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(65)
(43)

10-2003-0034490
2003 05 09

(73)

416

(72)

203

(74)

:

(54)

가

1a

1a
1b
2 3 4a 4b 5a 5b, 6
7a
7b
8a 7a , 8b 7b

가 (patterning) graphy) V(Ultra violet)

(design rule) 가 , 0.3um (Excimer)

(stepper) (design rule) i-line U.

(phase shift mask)

(Quartz)

(Quartz) 가

가

(phase shift mask) 가

(Focused Ion Beam system)가 (scanning)

가

가

가

가

(F) (Ga⁺) 가 XeF₂ 가 (Quartz, SiO₂) (Beam radius) 가 (Focused ion beam) (scanning method) (Ga⁺) 가 (F)가 (F)가 (Ga⁺)

(Focused ion beam) 가 (hydrocarbon, CxHy) 가

가 Ga_xC_y GaxCy MoSiO_xN_y CrF₂

(process margin)가

m) MoSiO_xN_y CrF₂ Ga_xC_y (shifter) (Ga⁺) (Focused Ion Beam GaxCy)

가 가 가 가

1a (101) (101) (105) (reticle) (101) (103) (101) (103) (103)

(103) (103) (Cr) (Cr₂O₅) (103)

(103) ()

(105) (105) (103) (101) (103) (105a) (105a) GaxCy (105b) Ga_xC_y (Focused Ion Beam) (deposition reaction) (101) (105a) (103)

(Ga⁺) (Hydrocarbon) (micro powder) GaxCy MoSiOxNy (C) CrF₂

1b 4a 4b 5a 5b 6 2 3

2 (103) 3 2 1b s1 ()

(103) 가 (106) 가 (106)

1b s2 4a 4c (101) ()

, FIB) 가 (106) (4b 1120, Focused Ion Beam) (101) (101) (105a)

(spot etch) (101) (101) XeF₂ 가 가 (101) (105a)

, 4b (1110) (101) (Ga⁺) (1120, focused ion beam) (105

) (101) 가 nm 가

(F)가 (101) 가 XeF₂ 가 (F) (Si) (quartz)

(volatile compound) SiF₄ (Quartz) (101) 가 가

(1120, Gallium ion beam) 가 가 가 가

가 XeF₂ (Quartz) 가 4c

(1120, gallium ion beam) (105)
 (105)
 (dose) (101) (dose)
 5a 5b 1b S3 (105) (105a)가 (105a) (105b)
 (101) 가 GaxCy (Focused Ion Beam) GaxCy 180 ° (scanning method)
 5b (Ga+) (1120) (105b) (1120, Beam spot) (105b)
 5a) (carbon source) 가 (1131,hydro carbon, CxHy) (C)가 (1130)
 (hydrocarbon) (C) (101) (scan)
 (Ga+) GaxCy (spot deposition) (scan)
 GaxCy가 (scan)
 6 (103) (105) (103) 가
 7a 7d 8a 8b (contact pattern) (Scanning electron microscope)
 7a 7b 7c 7d
 8b 7a 7c (7a 8a P100) (7a 8a P101, contact pattern)
 (7a 8a P1101) 가 (P1101)
 (7c 8b P1100) 가 (P1101)
 7d (P1101)
 Gate Pattern) 0.25 um (Metal Pattern) (contact pattern) (Active Pattern),
 (105b) GaxCy (Ga+) MoSiO_xN_y CrF₂
 (Mo) (Cr)
 MoSiO_xN_y (Si) (O)
 CrF₂ (F) (powder) (gaseous phase)
 (liquid phase) (solid phase) (Focused Ion Beam system)가
 (laser) X- (X-ray)

(57)

- 1. 가
- a) 가 ; 가
- b) ; 가
- c) a) , ; 가 ; 가 ; 가
- 2.
- 3. (Focused Ion Beam)
- 1 4. b) , 가 ; 가
- 4 5. , .
- 4 6. , 가 , ; (Focused Ion Beam)
- 7. (scanning method)
- 6 8. (Ga⁺)
- 6 9. 가 XeF₂
- 1 10. , c) , ;
- 11. (focused ion beam)
- 12.

11 (Focused Ion Beam) (Ga⁺)

13.

10

14.

13 (Hydrocarbon, C_xH_y)

15.

10 Ga_xC_y

16.

10 MoSiO_xN_y CrF₂

17.

, Ga_xC_y, MoSiO_xN_y CrF₂

18.

17

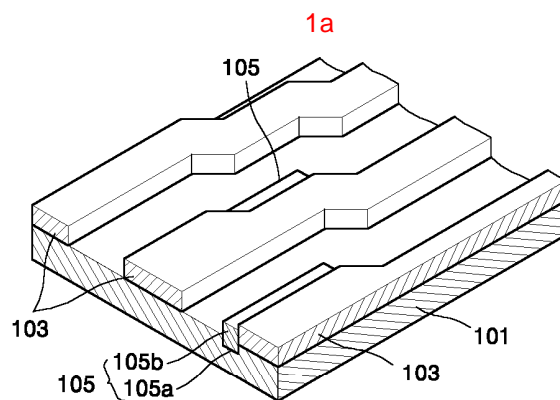
19.

20.

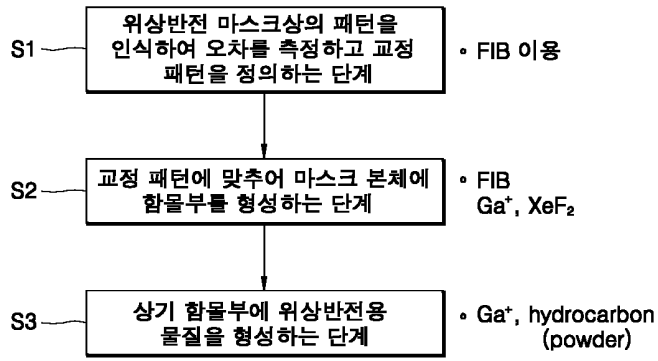
21.

22.

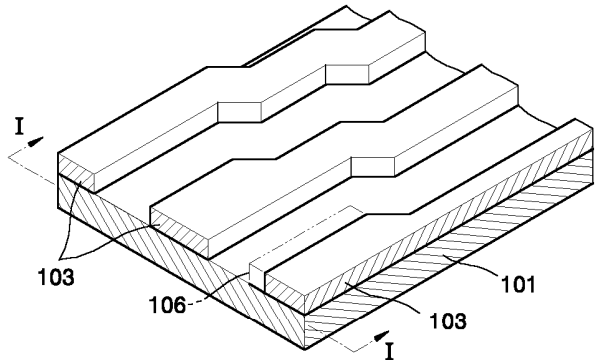
17 (Focused Ion Beam)



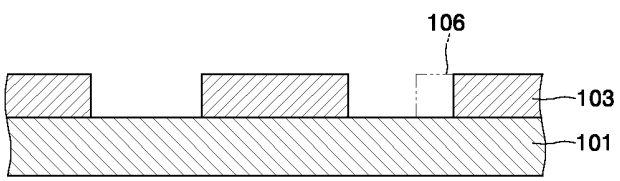
1b



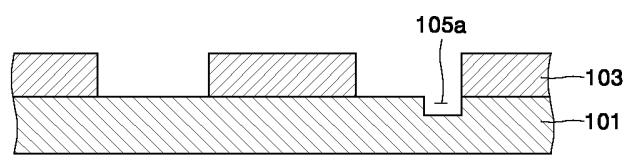
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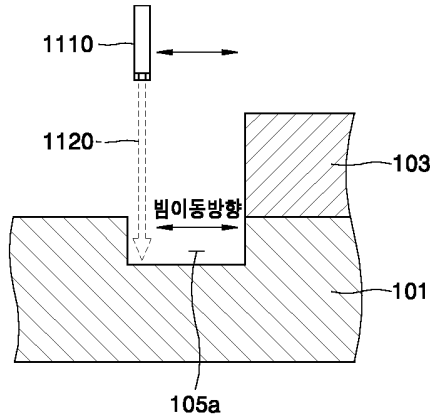
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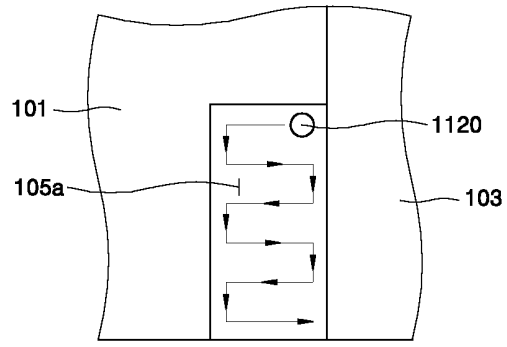
4a



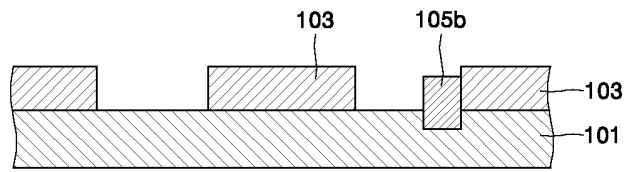
4b



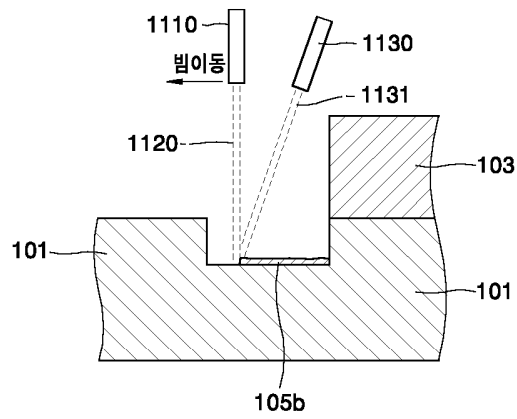
4c



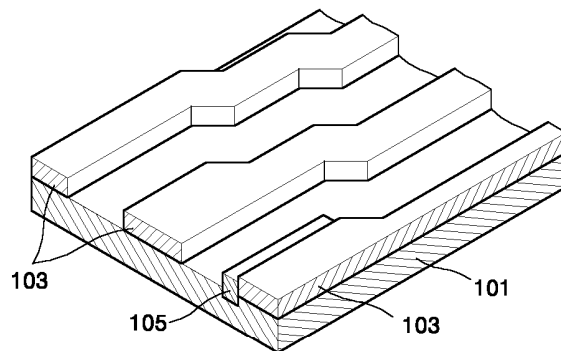
5a



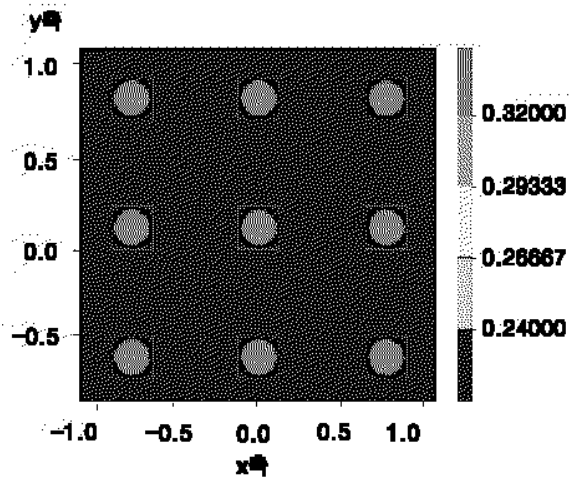
5b



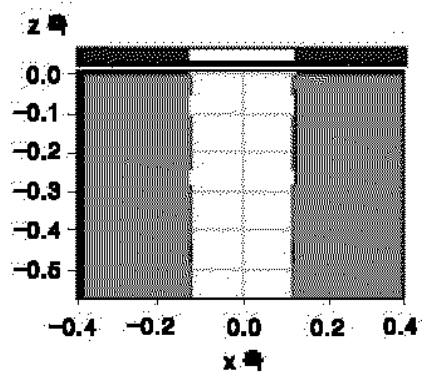
6



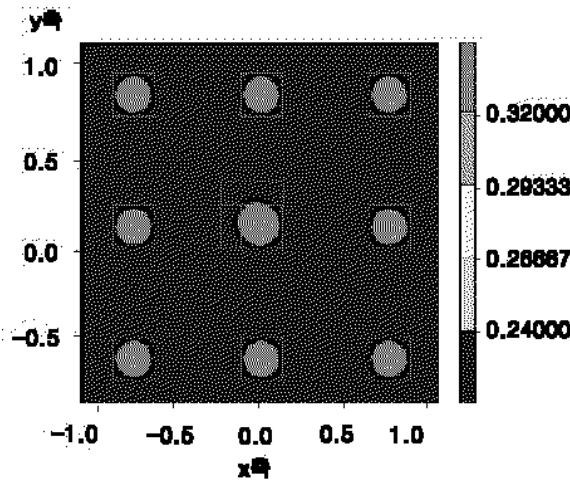
7a



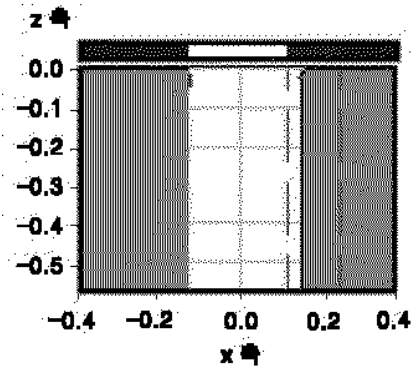
7b



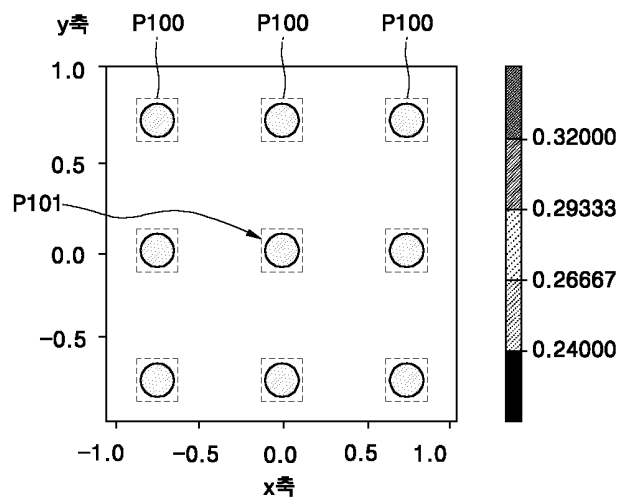
7c



7d



8a



8b

