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2004 05 25

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(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 (phase shift mask) 가 (Focused Ion Beam system)가 (scanning) 가 가 가 가 (F) 가 (Ga<sup>+</sup>) 가 XeF<sub>2</sub> 가 (Quartz, SiO<sub>2</sub>) (Beam radius) 가 (F)가 (Ga<sup>+</sup>) 가 (F)가 (Ga<sup>+</sup>) (focused ion beam) (scanning method) (Focused ion beam) 가 (Ga<sup>+</sup>) 가 (hydrocarbon, CxHy) 가 Ga<sub>x</sub>C<sub>y</sub> GaxCy MoSiO<sub>x</sub>N<sub>y</sub> CrF<sub>2</sub>

(process margin)가

m) MoSiO<sub>x</sub>N<sub>y</sub> CrF<sub>2</sub> Ga<sub>x</sub>C<sub>y</sub> (shifter) (Ga<sup>+</sup>) (Focused Ion Beam Ga<sub>x</sub>C<sub>y</sub>)

가 가 가 가

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

(103) (103) (Cr) (Cr<sub>2</sub>O<sub>5</sub>) (103)

(103) ( )

(105) (105) (103) (101) (103) (105a) Ga<sub>x</sub>C<sub>y</sub> (105b) (105) (101) (105a) Ga<sub>x</sub>C<sub>y</sub> (Focused Ion Beam) (deposition reaction) (Ga<sup>+</sup>) (Hydrocarbon) (micro powder) Ga<sub>x</sub>C<sub>y</sub> MoSiO<sub>x</sub>N<sub>y</sub> (C) CrF<sub>2</sub>

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

2 (103) 3 2 (103) 1b s1 ( )

(103) 가 (106) 가 (106)

1b s2 (FIB) (101) (spot etch) 가 (106) (4b 1120, Focused Ion Beam) (101) (101) (105a) (101) (105a)

(1110) (101) XeF<sub>2</sub> 가 가 (1120, focused ion beam) (105) nm 가 가 (F) (Si) (quartz)

(F)가 (101) 가 XeF<sub>2</sub> 가 (SiO<sub>2</sub>) (Quartz) (101) (Si) (quartz) 가 가 가 가

(1120, Gallium ion beam) 가 XeF<sub>2</sub> (Quartz) 가 가 4c

(1120, gallium ion beam) (105)  
 (105)  
 (dose) (101) (dose)  
 5a 5b 1b S3 (105) (105a)가 (105a) (105b)  
 (101) (105) (105b) GaxCy GaxCy 180 ° (105b)  
 가 (Focused Ion Beam) (scanning method)  
 5b (Ga+) (1120) (10 (10  
 5a)) 가 (1120, Beam spot) (1130  
 ) (carbon source) 가 (1131,hydro carbon, CxHy) (C)가 (1130  
 ) (hydrocarbon) (C) (C)가  
 (Ga+) GaxCy (105b) (101)  
 (spot deposition) (scan)  
 GaxCy가 (scan)  
 6 (103) (105) (103)  
 가  
 7a 7d 8a 8b (contact pattern)  
 7a 7b (Scanning electron microscope)  
 7c 7d  
 8b 7a 7c 8a (7a 8a P101, contact pattern)  
 (7a 8a P100) 가 (P1101)  
 (7c 8b P1100) 가 (P1101)  
 7d (P1101)  
 Gate Pattern) 0.25 um (Metal Pattern) (contact pattern)  
 (Active Pattern), (105b) GaxCy MoSiO<sub>x</sub>N<sub>y</sub> CrF<sub>2</sub>  
 (Ga+) (Mo) (Cr)  
 , MoSiO<sub>x</sub>N<sub>y</sub> (Si) (O)  
 , CrF<sub>2</sub> (F) (powder) (gaseous phase)  
 (solid phase) (liquid 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)
- 6 7. , (scanning method)
- 6 8. , (Ga<sup>+</sup>)
- 6 9. , 가 XeF<sub>2</sub>
- 1 10. , c) , ;
- 10 11. , (focused ion beam)
- 12.

11 (Focused Ion Beam) (Ga<sup>+</sup>)

13.

10

14.

13 (Hydrocarbon, C<sub>x</sub>H<sub>y</sub>)

15.

10 Ga<sub>x</sub>C<sub>y</sub>

16.

10 MoSiO<sub>x</sub>N<sub>y</sub> CrF<sub>2</sub>

17.

, Ga<sub>x</sub>C<sub>y</sub>, MoSiO<sub>x</sub>N<sub>y</sub> CrF<sub>2</sub>

18.

17

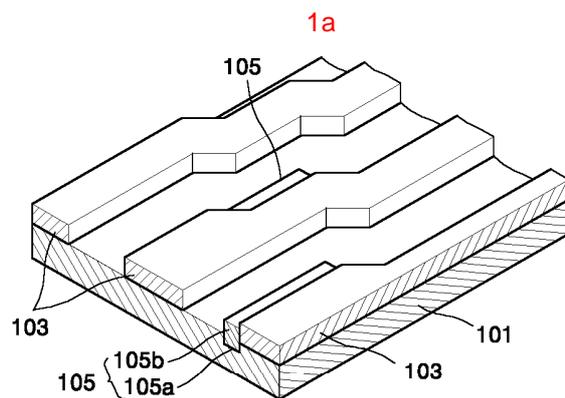
19.

20.

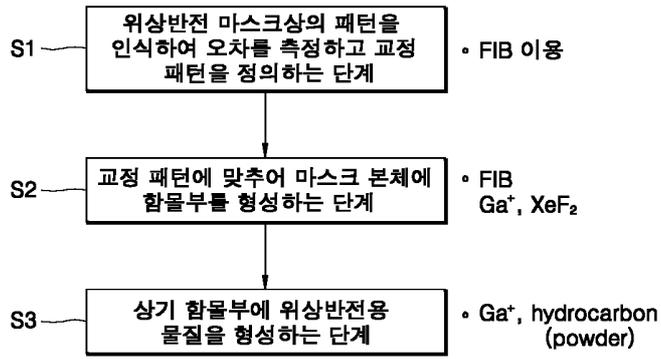
21.

22.

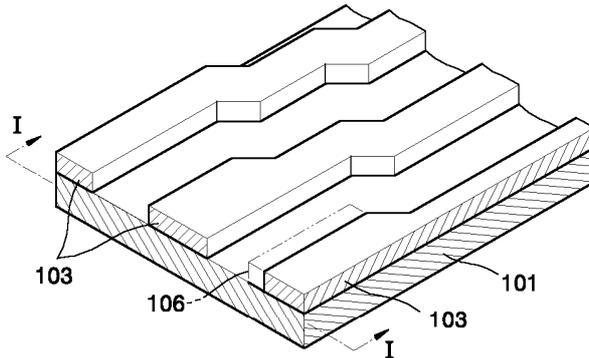
17 (Focused Ion Beam)



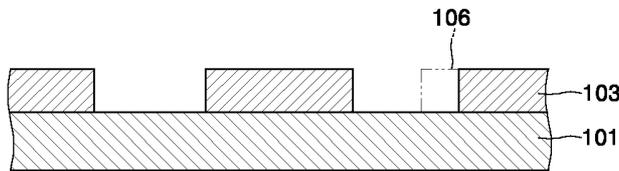
1b



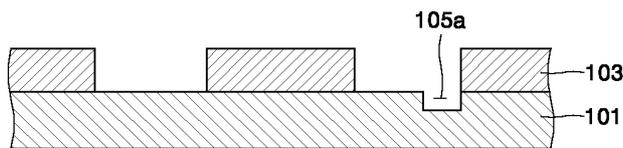
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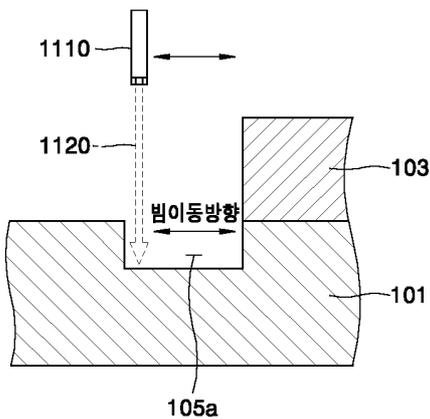
3



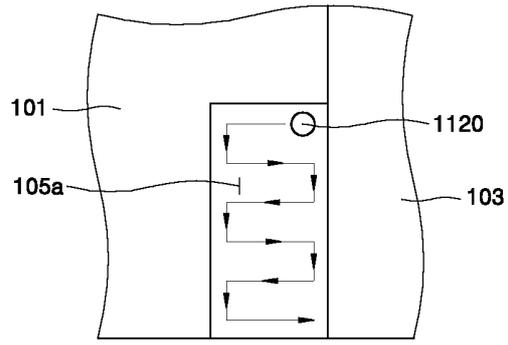
4a



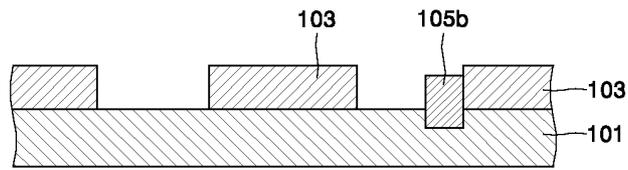
4b



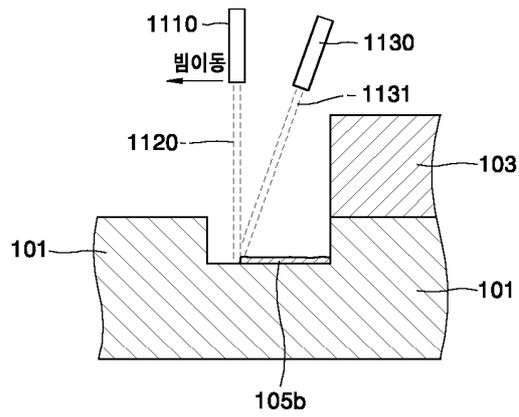
4c



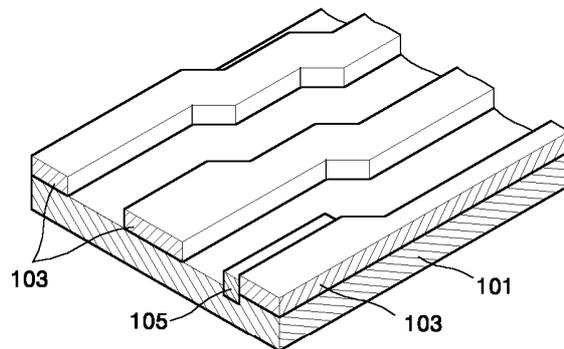
5a



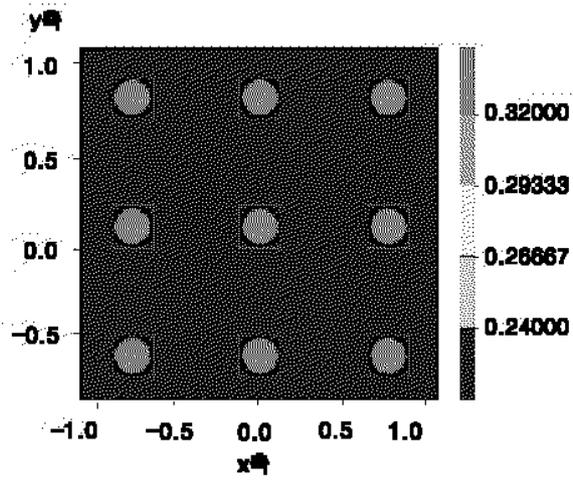
5b



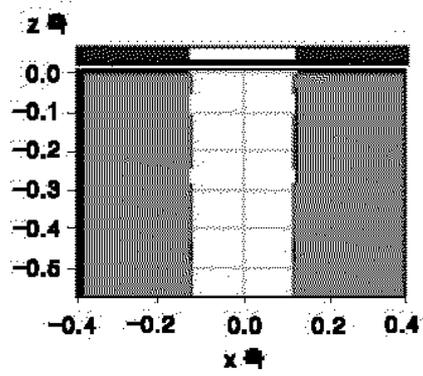
6



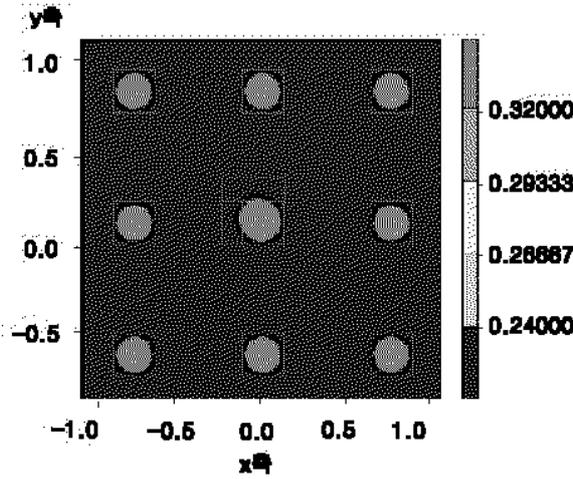
7a



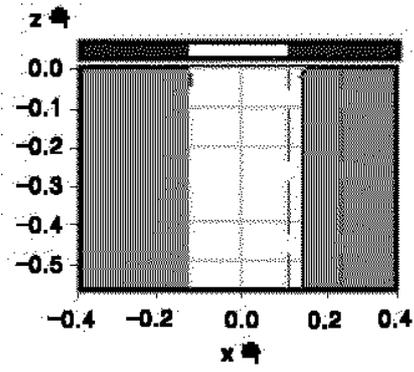
7b



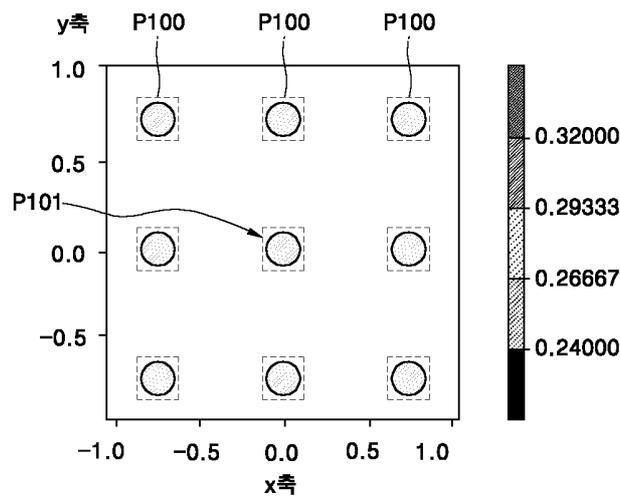
7c



7d



8a



8b

