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(12) (B1)

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 (24) 2003 02 06

(21) 10 - 1998 - 0022476 (65) 1999 - 0007019  
(22) 1998 06 16 (43) 1999 01 25

(30) 97-159038 1997 06 16 (JP)

(73)	가	가	3	30	2
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(72) 가 581 - 4

가 2235 - 2

가 2 19-2-504

가 1 8 - 8 - 302

(74)

(54)

1(A) (E) SOI

2

3 5 ,

6

7

8

9 11 2

12 3

13(A), (B) V

< >

11: Si 12, 12', 12": Si

13: Si 14: Si

15: 401:

402: 403:

404, 404': 405, 405':

406, 406': 404a, 406a:

404b, 406b: 407:

408: 409:

410: 411:

412: 413, 414:

415, 415': 415a, 415a', 415a":

415b, 415b', 415b": 415c, 415c', 415c":

415d: 416:

,  
 Si 가 , SOI(Silicon On Insulator) 가 (SOI )  
 SOI ,  
 ,  
 (1) 가  
 (2)  
 (3) 가 가  
 (4)  
 (5)  
 (6) 가  
 SOI , 가 , 가  
 ,  
 SOI , Si CVD(Chemical Vapor Deposition)  
 SOS(Silicon On Sapphire) SOS , 가 SOI  
 가 , Si , 가 ,  
 ,  
 ,  
 SOS , SIMOX(Separation By ion IMplanted OXygen) SIMOX ,  
 가 ,  
 ,  
 Si ,  
 Si ,  
 ,  
 ,  
 Si ,  
 ,  
 5 - 21338 , SOI 1 , (SiO<sub>2</sub>) 2 , SOI  
 , 2 , SOI , SOI ,  
 , SOI , 100A 10μm SOI 가 SOI  
 가

7 - 302889

2

1

2

1

1  
1

2

2

(jet)

(hole) 가

가

가

가

가

가

가 , , 2 (clamp) (gap) 2

, 2 ,

, , 가 가

，  
，  
가

# 가

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1 , , , , , , ,  
1(A) (E) , SOI

1(A) , , Si (11) , , Si (12) , Si (13) Si (12)  
1(B) , 1 (10) .  
1(C) 0) , 1 (10) , 2 (20) , Si (14) (13) , SiO<sub>2</sub> (15) 2 (2  
(20) . , , 1 (10) 2 (20) , , Si (13) (15) 1 (10) 2 (15) ,  
Si (14) , , 1 (C) , ,  
1(D) (10" +20) , Si (12") / 2 Si (13) / Si (12) 2 Si (14) . , 1  
(10') , Si (11) (12') 가 (15) / Si (14) 가 . ,  
1 (10') , Si (11) Si (12') , ,  
, 1 (E) , 2 (10" +20) L (12")  
, Si (13) / (15) / Si (14) , , SOI 가 .  
Si , 1 (D) , , 2 ( , ) Si 2 ,  
< 1 >  
2 , , , , , (100) , ,  
, , , , , , , , , , , , , , , , , ,  
,  
,  
(100) , (vacuum chuck) (404), (406) 가 , (404), (406)  
(420) (420) (420) (420)  
406) (420b) , (100) (420a) (420b) 가 , (100) (420a), (420c) (420a),  
(420b) . (100) , (420a) 1 (420a) (420b) 2 (10') , (420c) 1  
2 (10" +20) (420) .

(404) , (405) (401) 가 (403)  
, (403) (402) . (402) 가  
(404) (402) (402) , (402) ,  
(420) , ( ) ,

(406) , (407) (401) 가 (408)  
, (408) , (409) (402) ,  
(409) , (420a) (420c) (409) (x ) (402) ,  
(420) (418) (420a) (420c) (420c) , (420a)  
x (420c) .

, (420) , (403), (404), (420), (406), (409) , . , (402) 2 (403) (406), (408) (408)

(408) (x ) , (411) 가 . (411) , (420)  
 (404), (406) , (410) (408) ,  
 (409) (x ) (2 ) . (404), (406) 가  
 가 (420) (411) , (410) (x )  
 , (420) 가 가 . (411) , (410) (42) (404),  
 (406) , (41) , 가 (410) .

(100) (42) , (413), (414) 가 (401)  
 (410) (412) (412a) (420) , , ( 2 ) ,  
 (404), (406) .

, (412) , y 2 , (420) 2  
 (412) , x,y,z 3 (420) . ,  
 (420) 가 , , ,

, 가 , , , , 2 , , (420a) X , , (404), (406)

(420) , (415) . (415) , X (420) 가 (401)  
(415) . (415) , X (420) 가 (401)  
(416) , (417) , (415) 가 .

$$18) \quad (420) \quad , \quad (419) \quad ( \quad , \quad ) \quad (418) \quad , \quad (415) \quad .$$

$$, \quad (415) \quad , \quad (420) \quad , \quad (415) \\ , \quad (420) \quad .$$

3 5 , , , (415c) 가 . . (415) (415a) (415)  
 b) (430) (420) . 6 (430) , , (418) (418) (418), (415c)  
 (415) , , (418) , (415) (415a) (430) (415b) . ,  
 , (415c) (419)

가

(420) , 가 V (420d) 가 V Si 2 ( 1 20) V Si V  
 (420d) , 1 ( 1 10) . V (420d) (430)  
 가 (chamfer) (420)

13(A), (B) V 1  
 3(A) , V (420d) , , 13(B) , V V  
 (420d) , V (a), (a') , , (420)  
 , V U , , (b), (b') , , (420d) 가 , (420)  
 , V , V 가, 가 (420)

, 가 V (420d) , V

(420) , , (420) ( ) (420d)  
 , , Si ( (420a) , , 1 (420b) ( 1 ( 12)) , 1 (11)) ( (420c)) , 1 (13) , , 가

(415a) 3 5 (418) (415c)

(415b) , , (420) , (x ) (420) (420) (y ) (415b) (tj) , 가 (420)  
 가 V (420d) (ts) (420) vgu  
 d (420d) ( 13(A)),

, (420) (x ) (415B) , , 가 (420)  
 , (420b) , , (417) , , (415b) , , (415b)

, (415) 가 (420) , , 4 (415b) , , (420)

(100) , , 가

(1) ( )

(2)

(3)

(4)

(5) (       ,   )가       가       ,

(6) 가

(7) ( , , ) 가

(8) 가 , ( , , )

) , , , . , (100) , (418)  
(415) ,  
가 .

(9) 가 ,

0.1 0.3mm

가 (100)  
가 (4150)

(10)

가 가 가 가 가 가 가 가

(100)

2

가 . 9 11 , 2

(415') , (420) , (420)  
( , ) (415d) 가 .

3

12 , 3 , , . , 1 (100)  
가 , , .

(100') , ((404'), (406')) 가  
 . , (404'), (406') , 12 (420)  
 (420) 가 V (420d) (404a), (406a)

8) (404a), (406a) (420) V (420d) . (415c) 가 , , (404a), (406a) , (404<sup>1</sup>) (406<sup>1</sup>) . (404a), (406a) , (41)

(404'), (406') , (420) (404b), (406b) (404b), (406b)  
(404b), (406b), (420) (420)  
(240) , が ,

(420) (100), 2 (404'), (406') 가 , ,  
 (411) (410) 가 , (420) (404')  
 , (404') , (411)  
 (410) , (406') (420) , , (406')

, (411) (410) ,  
, (402) (420) ,  
가 1 (100)  
9) x , (420c)

가  
(404'), (406')

(100') , (420) (404'), (406') (418)  
 (420) 가, ( ) .  
 ( , 1 (417) ) 가

, 1(A) (E) SOI

1

Si (11) , 가 625 [ $\mu\text{m}$ ] , 5 [inch] , 0.01 [ . cm] p n (100)  
 Si orosity) 가 15 [%] Si (11) HF (12) . ( 1(A)). (p

: 7 [ $\text{mA}/\text{cm}^2$ ]

: HF:H<sub>2</sub>O:C<sub>2</sub>H<sub>5</sub>OH=1:1:1

: 11 [min]

400 [ ] 가 , 1 Si (12) CVD 0.3 $\mu\text{m}$  Si (12)  
 ( (1B)), Si (13)

가 : SiH<sub>4</sub>

가 : H<sub>2</sub>

: 850 [ ]

:  $1 \times 10^{-2}$  [torr]

: 3.3 [ nm/sec ]

, Si ( Si (13) 500nm SiO<sub>2</sub> (15) . , 500nm SiO<sub>2</sub> (1  
 5) Si (14) , SiO<sub>2</sub> , 700 [ ] 2  
 ( 1(C)).

3 (100') , 0.2 [ $\text{mm}$ ] , 250 [ kg  
 ( 1(D)). , , ,  
 f/ $\text{cm}^2$  ] 1 , , 2

, 2 (100') , Si , Si HF:HNO<sub>3</sub>:CH<sub>3</sub>:COOH  
 가 . , SiO<sub>2</sub> (15) , 가 0.2 $\mu\text{m}$  Si (13) 가  
 SOI . ( 1(E)).

1. 1(B) SOI Si (15) Si (13) SiO<sub>2</sub> 가

2. Si (11) Si 1  
가 (chamfer)

3. 1 (100) 3 (100') 1 2  
0 [mm] 850 [kgf/cm<sup>2</sup>] 0.625 [mm] 1.  
, V , V ,  
, SOI 1 SOI 가  
, SOI ,  
,  
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(57)

1.

(jet)

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1 , 2 , (hol  
e)

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1 , 가

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5 , V 가

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1 2 , 가

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11 , 2

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18 19 , ,

21.

20 , 가 ,

22.

18 , 가

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22 , V 가

24.

18 19 , ;

가

25.

,

가

26.

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26 , 가 , 가 , , 가

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25            27            ,            가

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25            ,            가

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29            ,            V            가

31.

25            26            ,

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가

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44.

1 2

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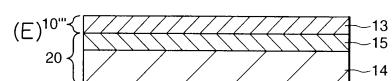
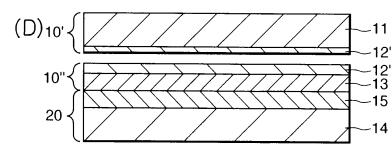
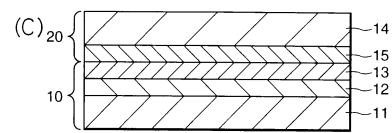
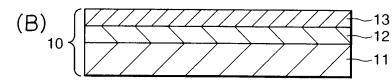
45.

44 , 가 가

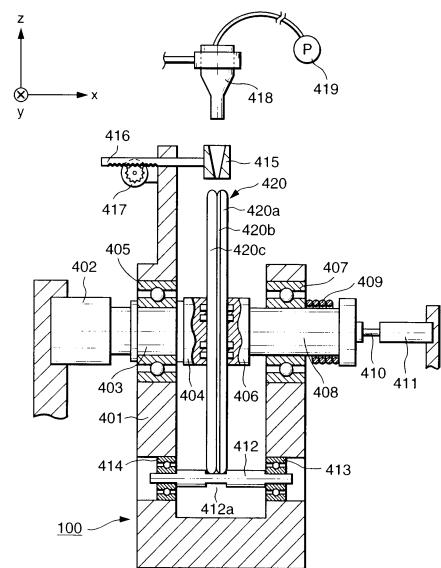
46.

44 , 1

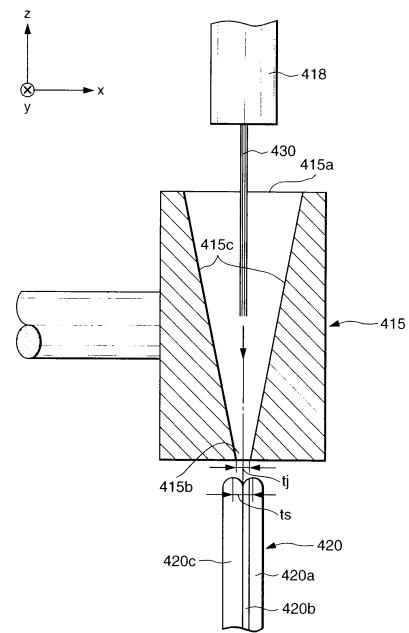
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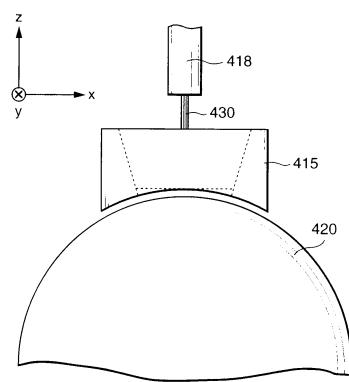
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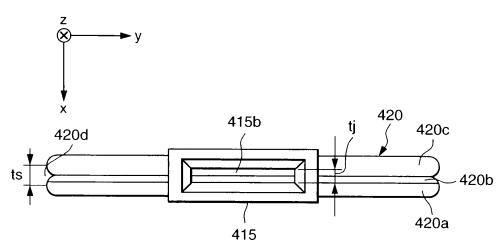
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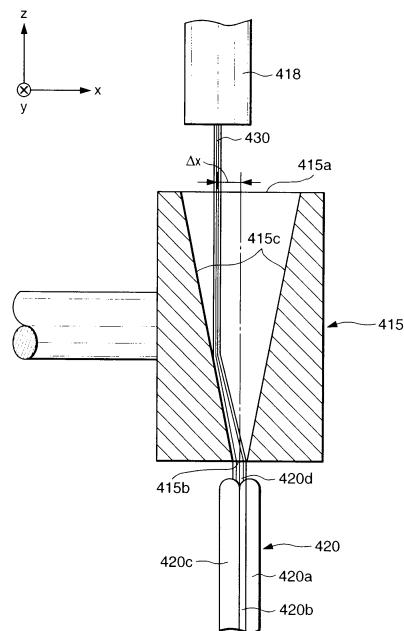
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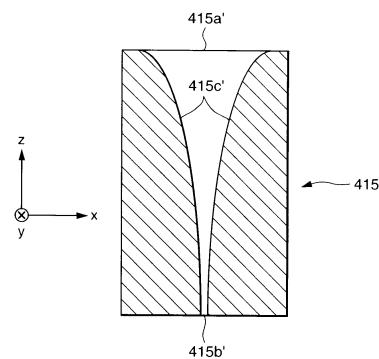
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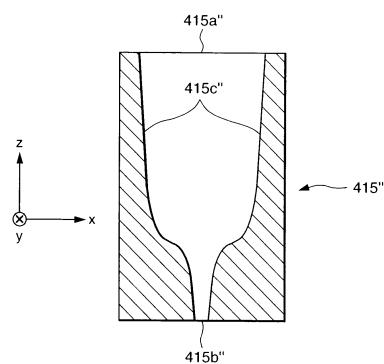
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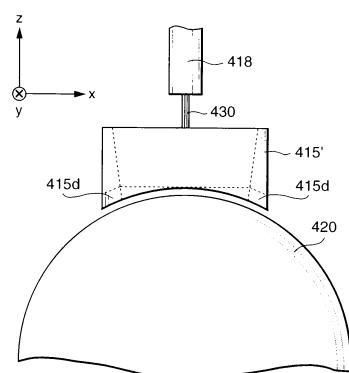
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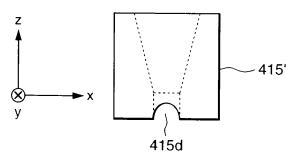
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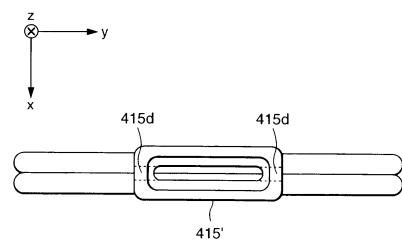
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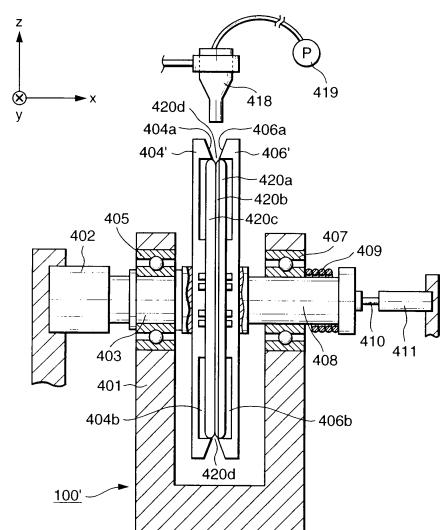
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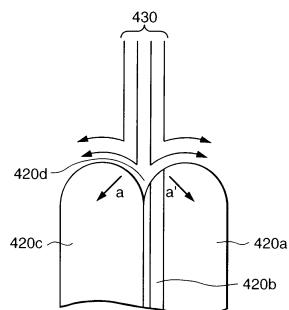
11



12



(A)



(B)

