FIG. 1

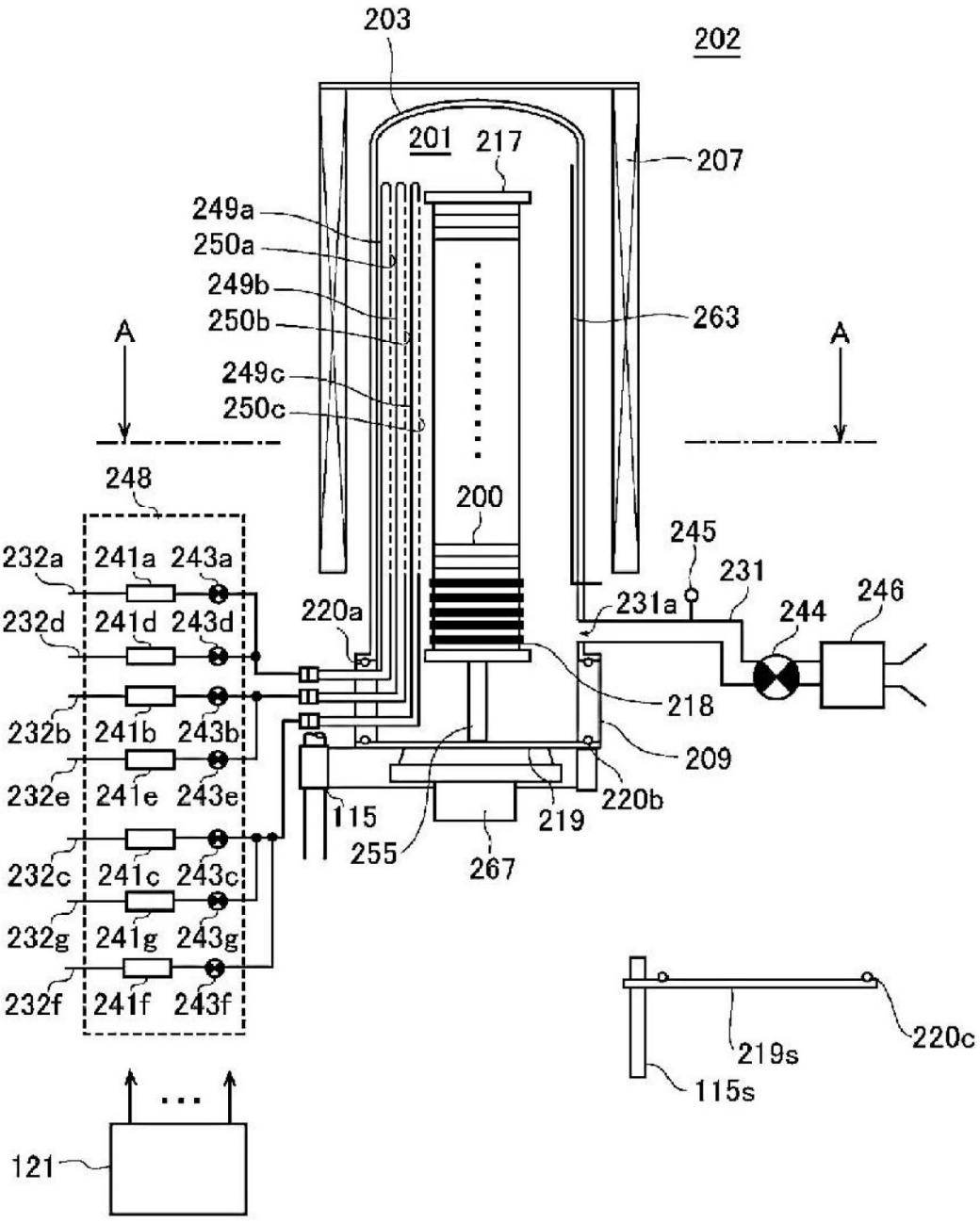

203
202
201
217
207
249a
250a
249b
250b
263
A
A
249c
250c
248
200
245
231
246
232a
241a
243a
220a
231a
244
232d
241d
243d
218
232b
241b
243b
209
232e
241e
243e
115
219
220b
255
267
232c
241c
243c
232g
241g
243g
232f
241f
243f
219s
220c
115s
121

FIG. 2

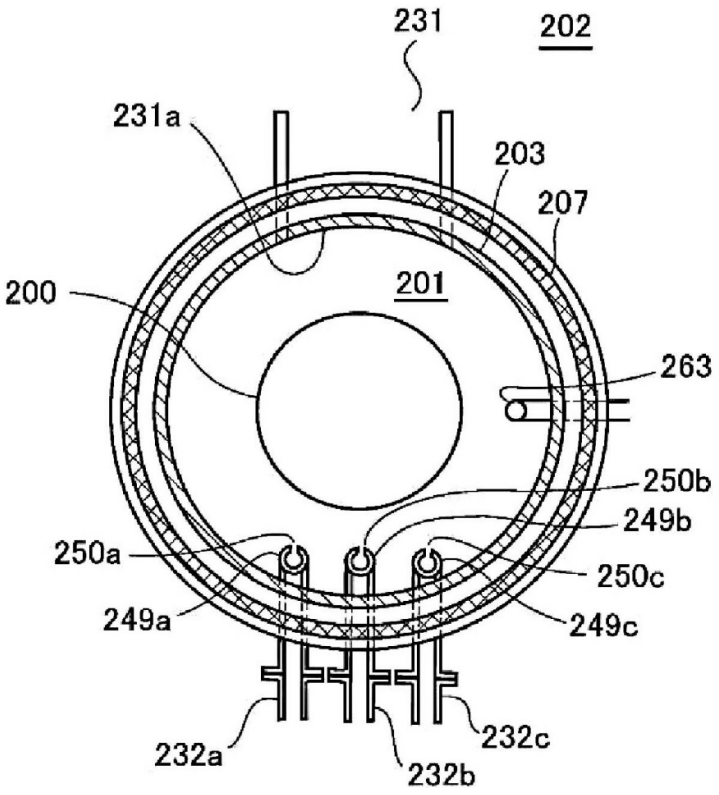

231
202
231a
203
207
200
201
263
250b
249b
250a
250c
249a
249c
232a
232b
232c

FIG. 3

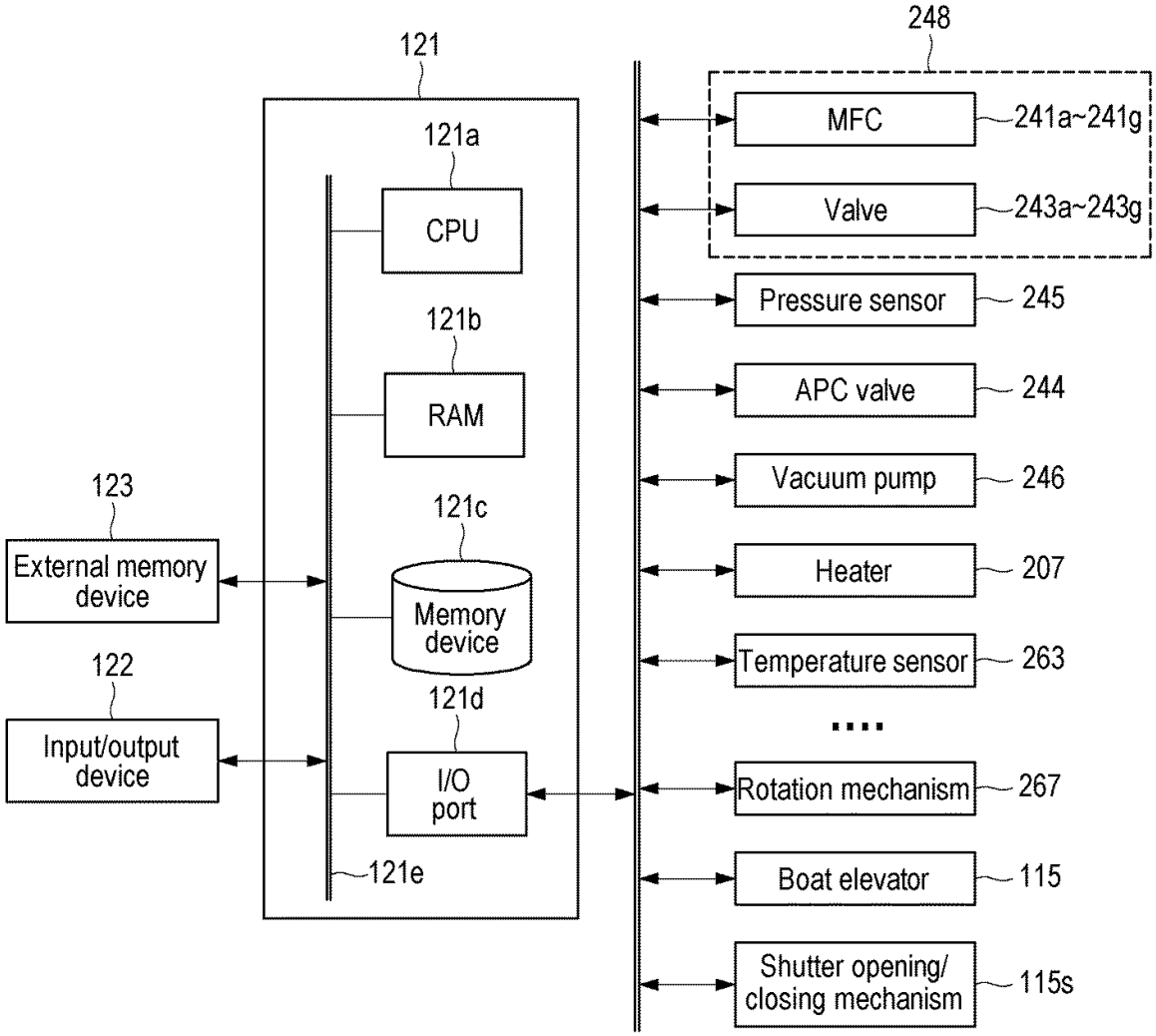

121
121a
CPU
121b
RAM
121c
Memory device
121d
I/O port
121e
123
External memory device
122
Input/output device
248
MFC
241a~241g
Valve
243a~243g
Pressure sensor
245
APC valve
244
Vacuum pump
246
Heater
207
Temperature sensor
263
Rotation mechanism
267
Boat elevator
115
Shutter opening/ closing mechanism
115s

FIG. 4

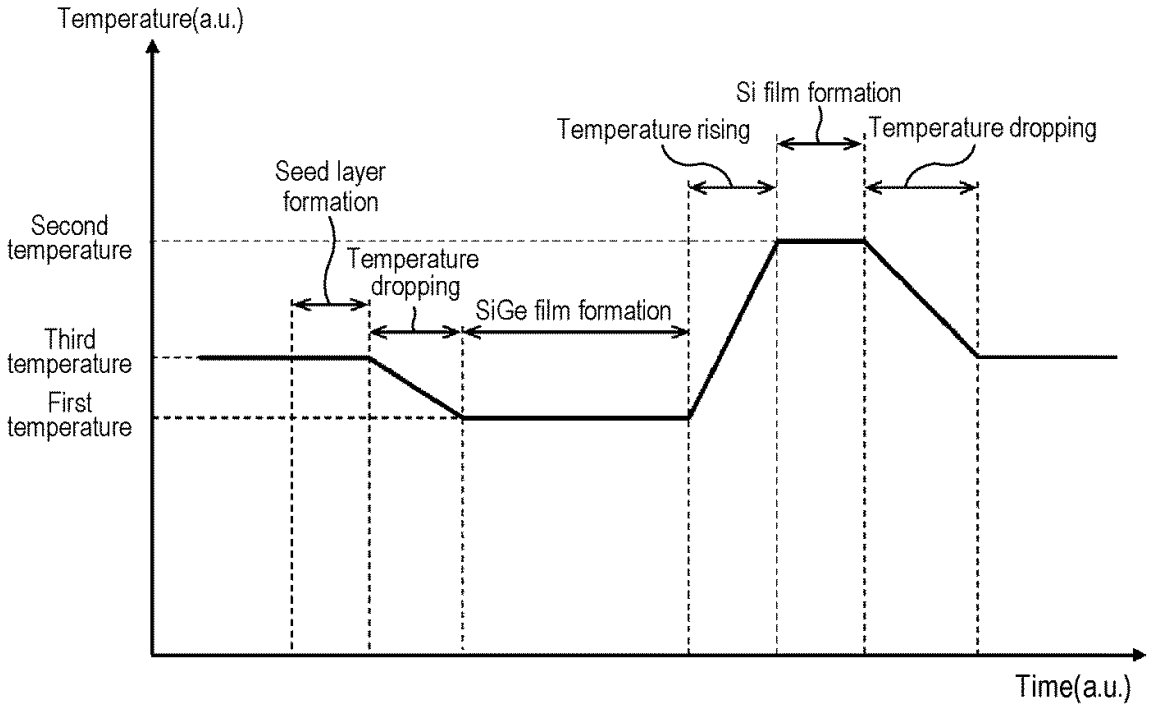

Temperature(a.u.)
Si film formation
Temperature rising
Temperature dropping
Seed layer formation
Second temperature
Temperature dropping
SiGe film formation
Third temperature
First temperature
Time(a.u.)

FIG. 5A

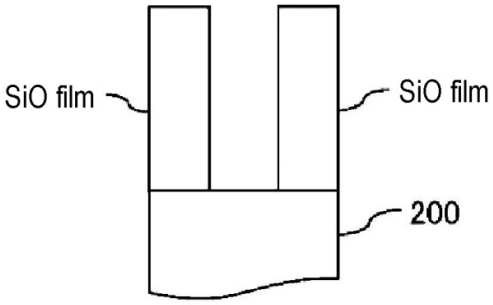


FIG. 5B

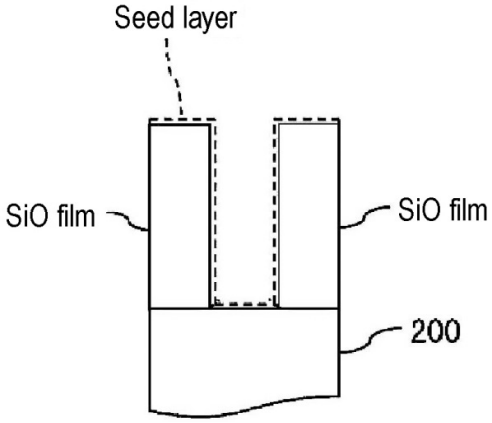


FIG. 5C

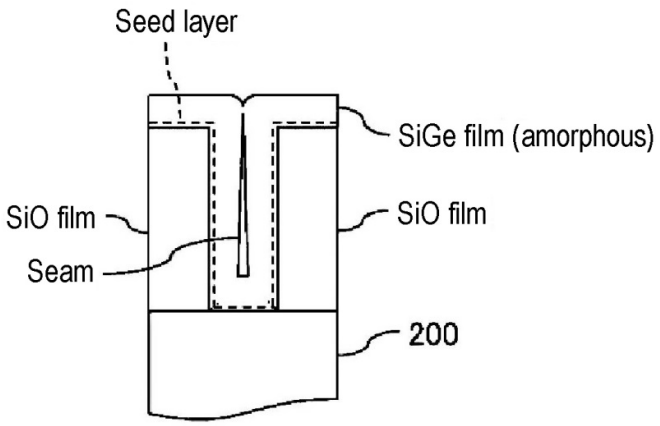

Seed layer
SiGe film (amorphous)
SiO film
SiO film
Seam
200

FIG. 5D

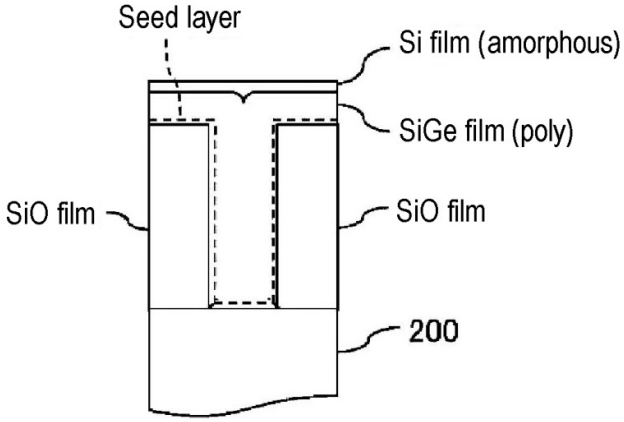

Seed layer
Si film (amorphous)
SiGe film (poly)
SiO film
SiO film
200

FIG. 6A

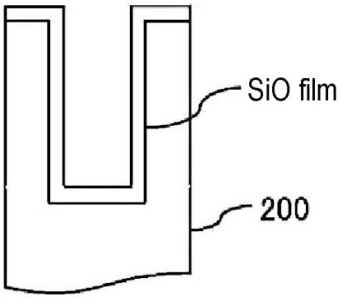


FIG. 6B

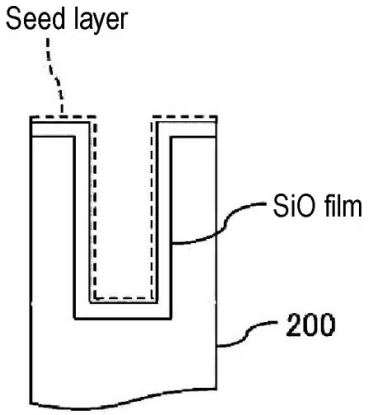


FIG. 6C

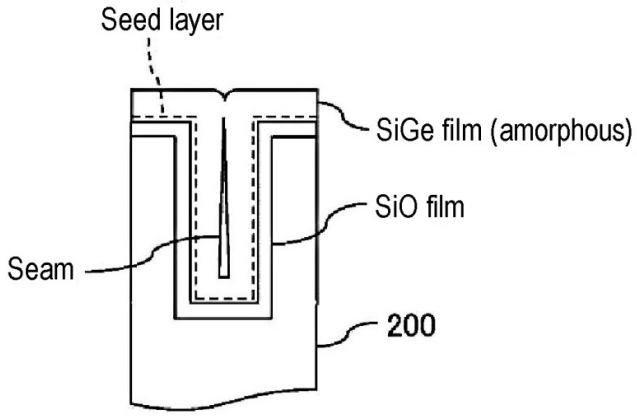

Seed layer
SiGe film (amorphous)
SiO film
Seam
200

FIG. 6D

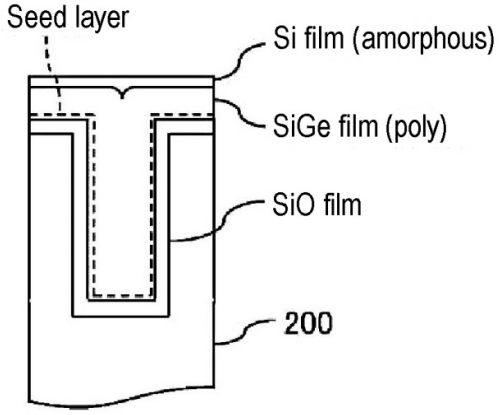

Seed layer
Si film (amorphous)
SiGe film (poly)
SiO film
200

FIG. 7A

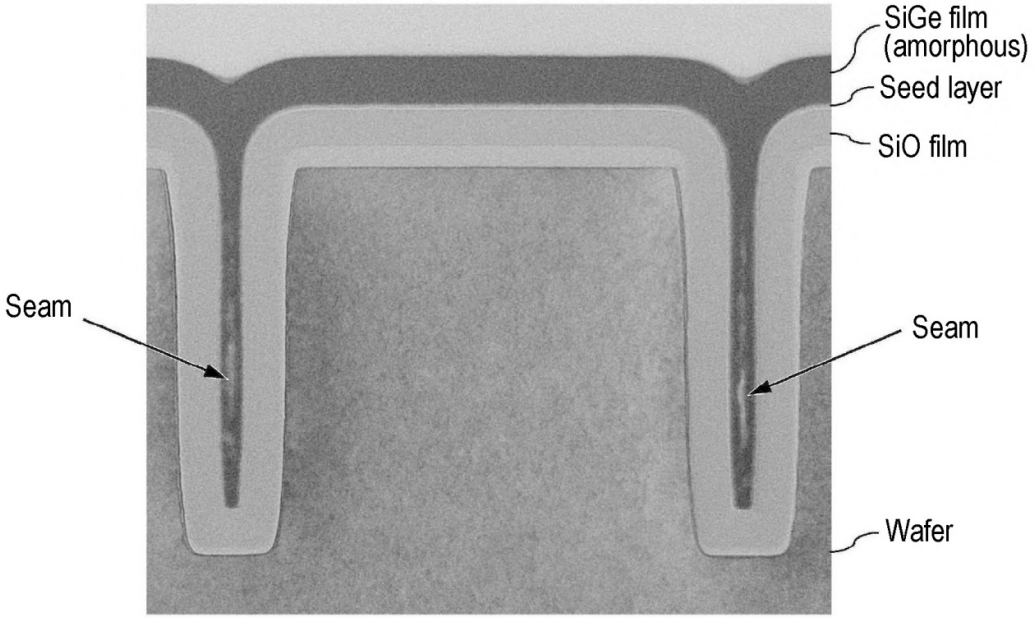

SiGe film
(amorphous)
Seed layer
SiO film
Seam
Seam
Wafer

FIG. 7B

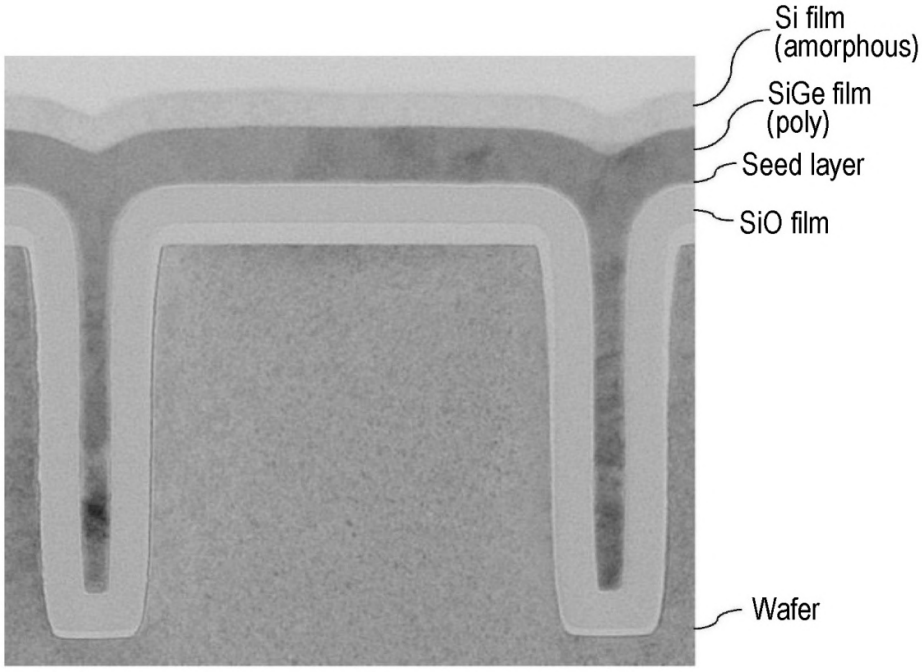
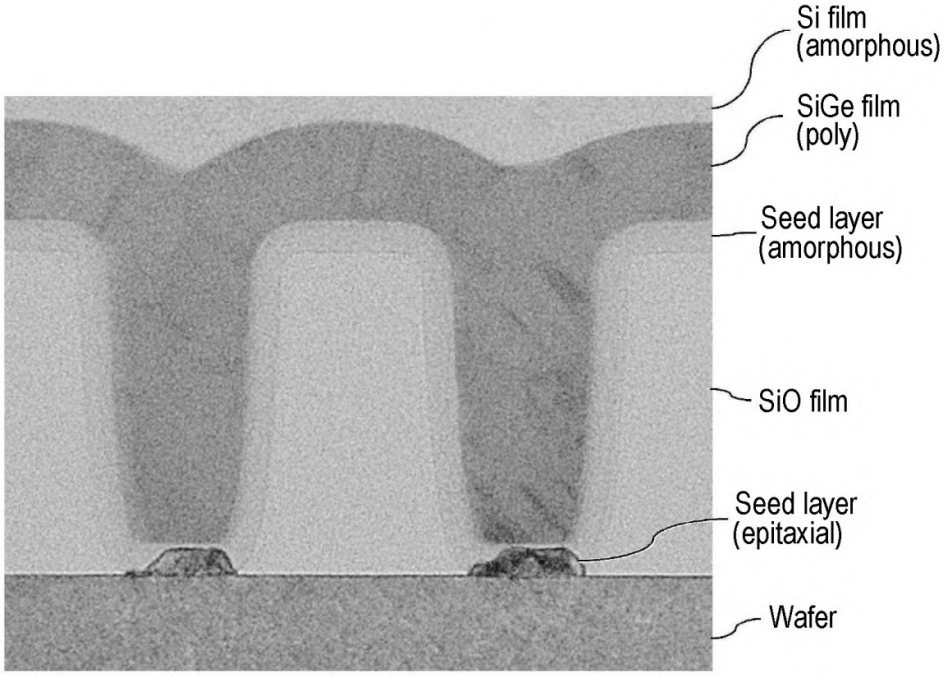

Si film
(amorphous)
SiGe film
(poly)
Seed layer
SiO film
Wafer

FIG. 8


Si film
(amorphous)
SiGe film
(poly)
Seed layer
(amorphous)
SiO film
Seed layer
(epitaxial)
Wafer