FIG. 1

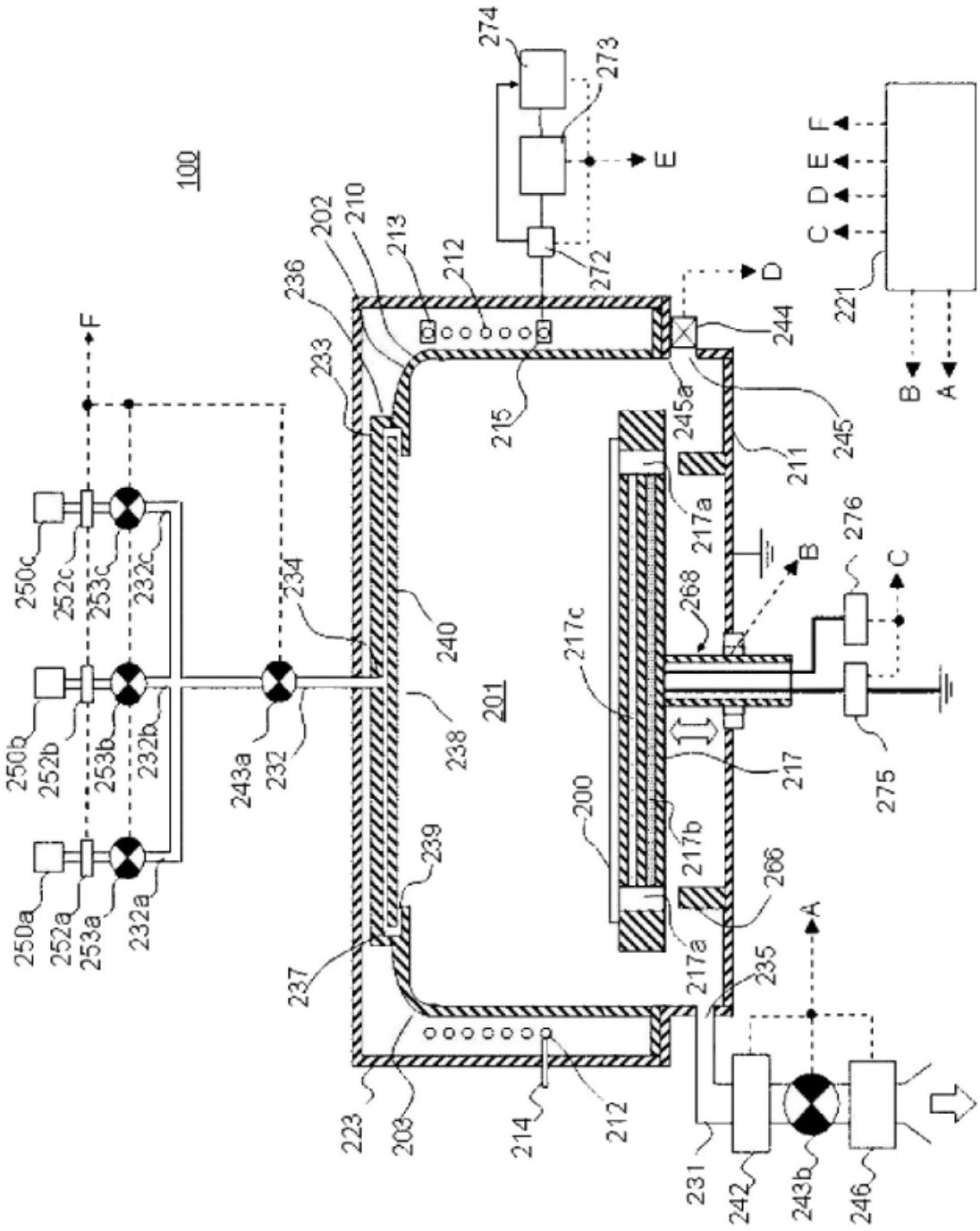

100
201
200
202
203
210
211
212
213
214
215
217
217a
217b
217c
221
223
231
232
232a
232b
232c
233
234
235
236
237
238
239
240
242
243a
243b
244
245
245a
246
250a
250b
250c
252a
252b
252c
253a
253b
253c
266
268
272
273
274
275
276
A
B
C
D
E
F

FIG. 2

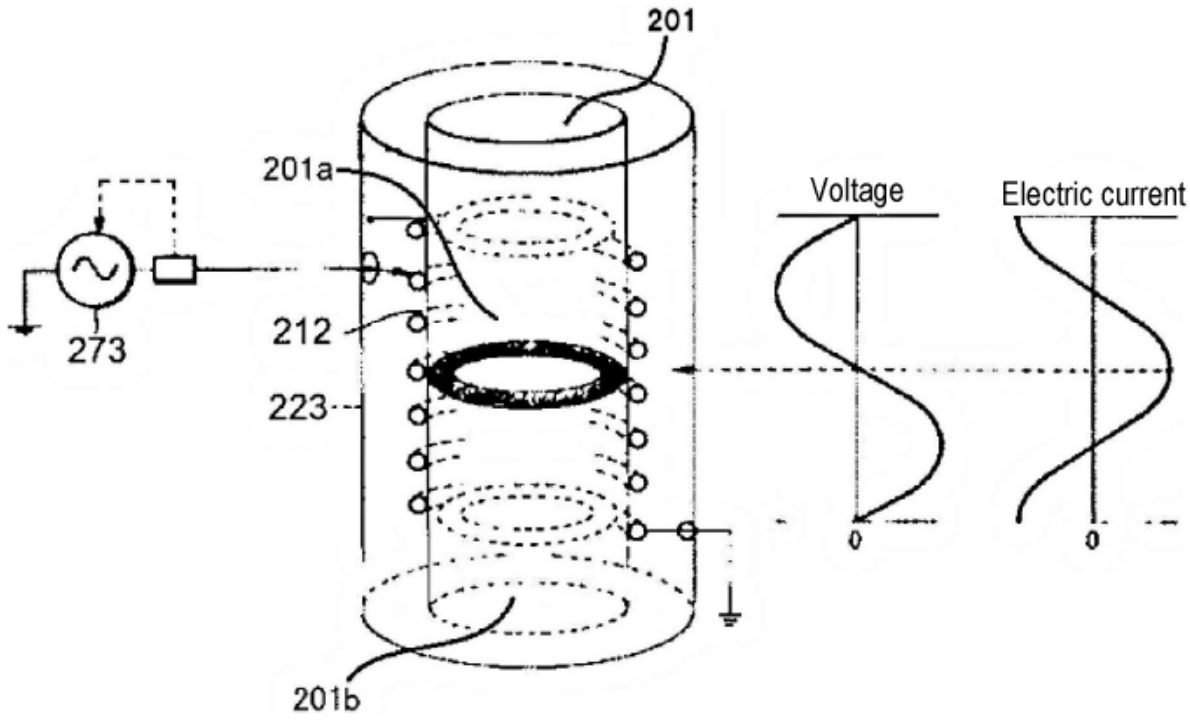


FIG. 3

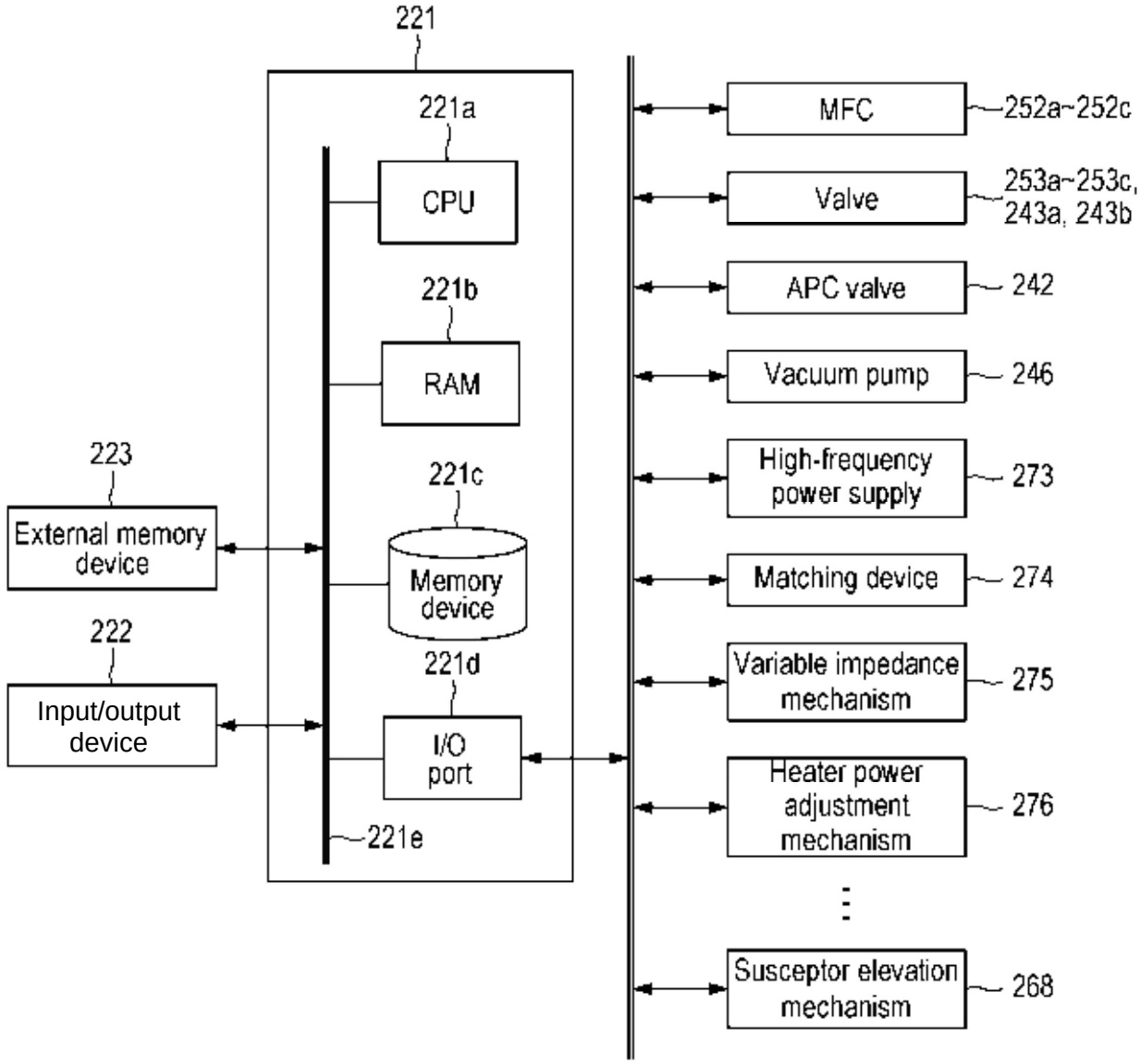

221
221a
CPU
221b
RAM
221c
Memory device
221d
I/O port
221e
223
External memory device
222
Input/output device
MFC
252a~252c
Valve
253a~253c, 243a, 243b
APC valve
242
Vacuum pump
246
High-frequency power supply
273
Matching device
274
Variable impedance mechanism
275
Heater power adjustment mechanism
276
Susceptor elevation mechanism
268

FIG. 4

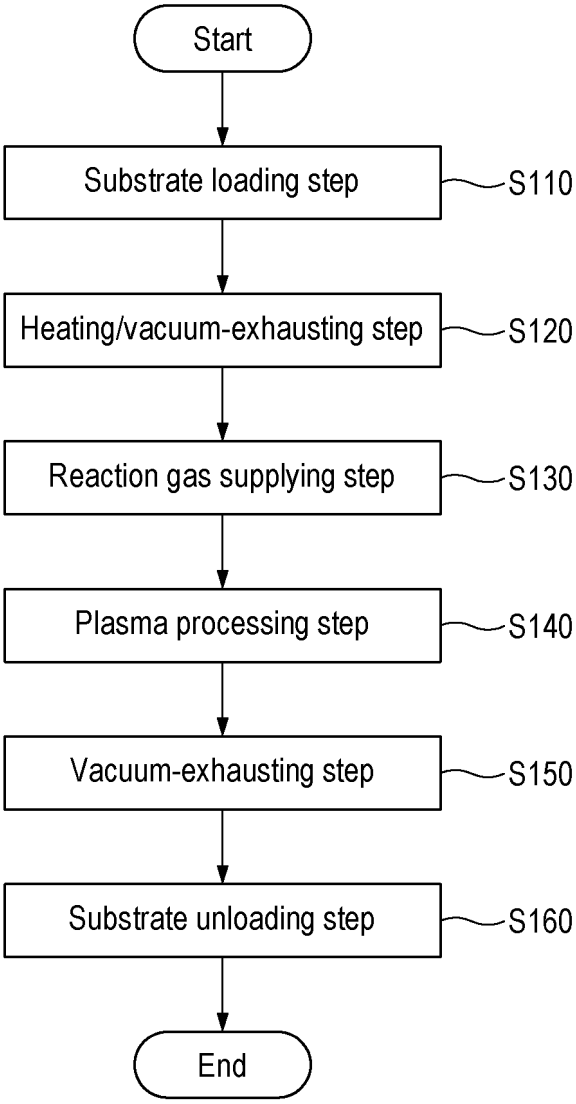

Start
Substrate loading step
S110
Heating/vacuum-exhausting step
S120
Reaction gas supplying step
S130
Plasma processing step
S140
Vacuum-exhausting step
S150
Substrate unloading step
S160
End

FIG. 5A

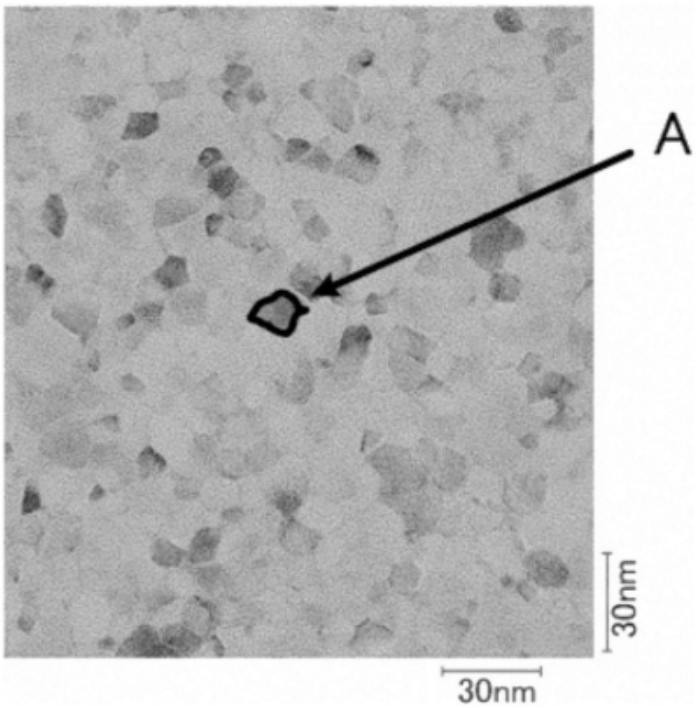


FIG. 5B

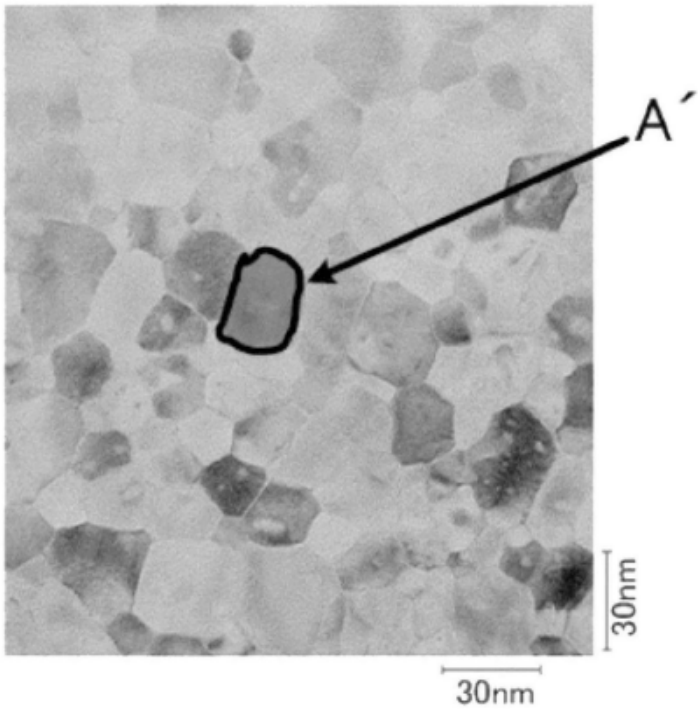


FIG. 6

W grain size (nm)	(A) Reference	(B) 100%	(C) 80%	(D) 65%
Minimum value	4	8	9	9
Maximum value	18	25	46	47
Average value	10	15	19	21

FIG. 7

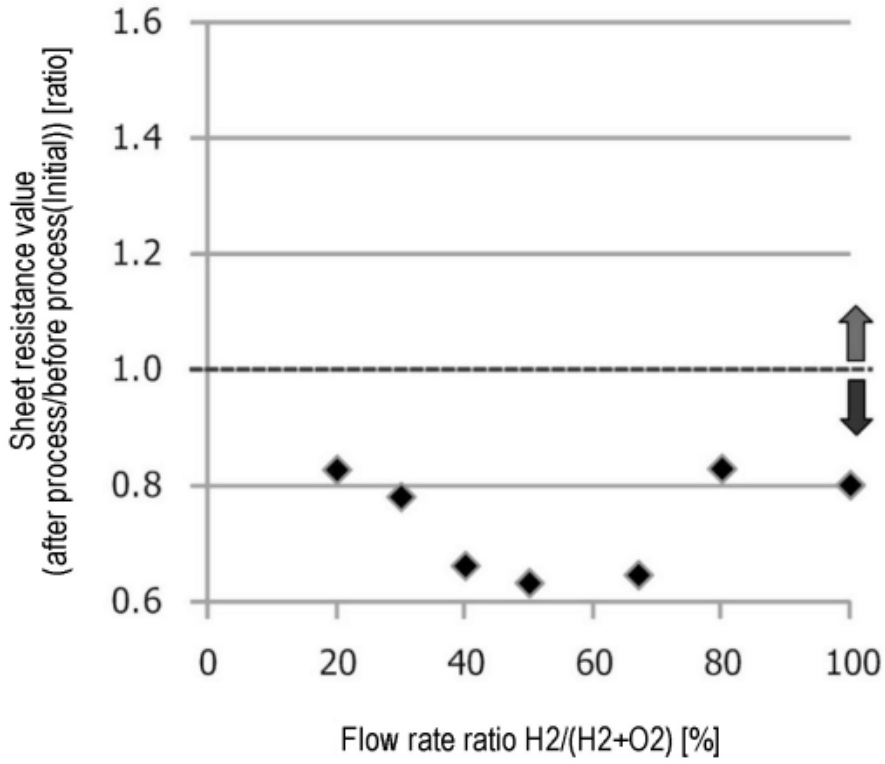
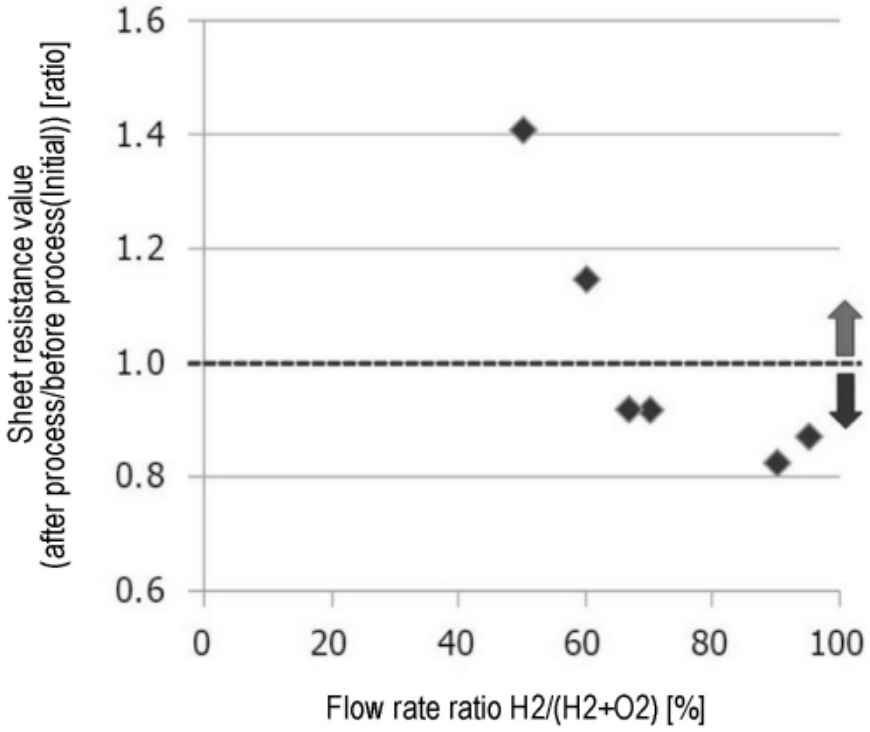

Sheet resistance value
(after process/before process(Initial)) [ratio]
1.6
1.4
1.2
1.0
0.8
0.6
0
20
40
60
80
100
Flow rate ratio H2/(H2+O2) [%]

FIG. 8


Sheet resistance value
(after process/before process(Initial)) [ratio]
1.6
1.4
1.2
1.0
0.8
0.6
0
20
40
60
80
100
Flow rate ratio H2/(H2+O2) [%]