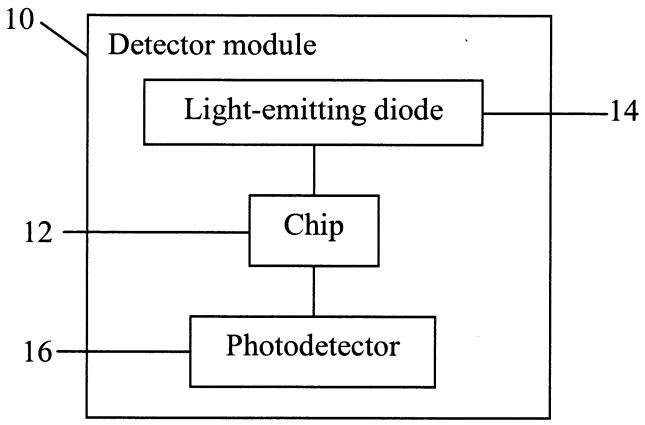

10
Detector module
Light-emitting diode
14
12
Chip
16
Photodetector

FIG. 1A

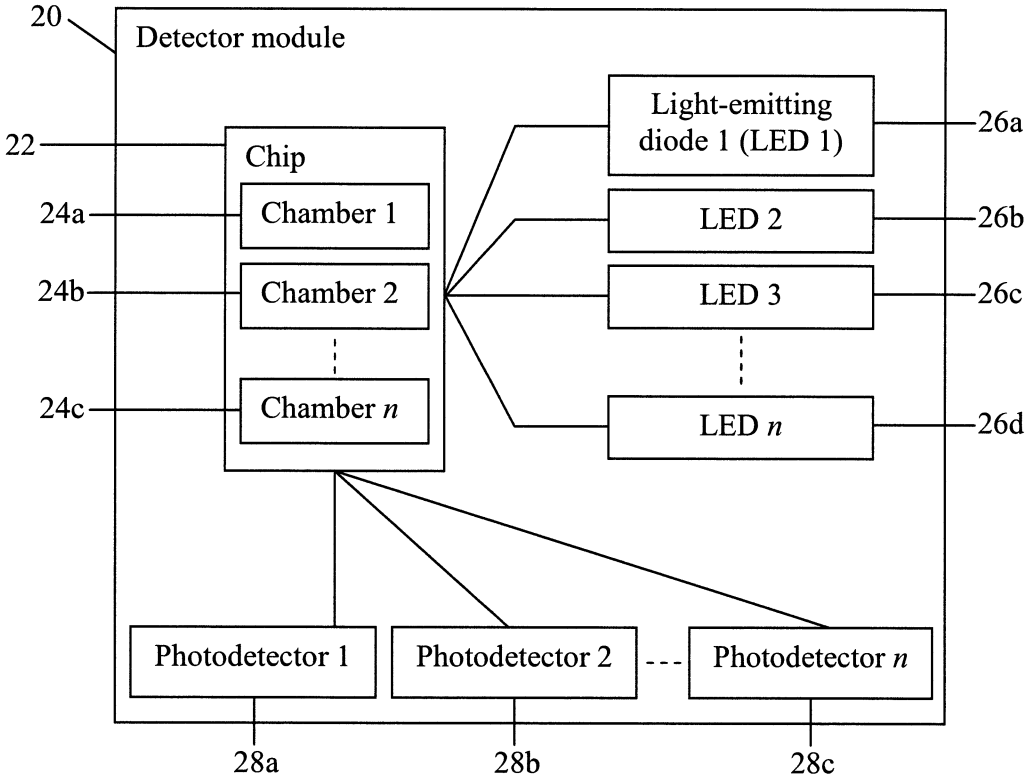

20
Detector module
22
Chip
24a
Chamber 1
24b
Chamber 2
24c
Chamber n
Light-emitting diode 1 (LED 1)
26a
LED 2
26b
LED 3
26c
LED n
26d
Photodetector 1
Photodetector 2
Photodetector n
28a
28b
28c

FIG. 1B

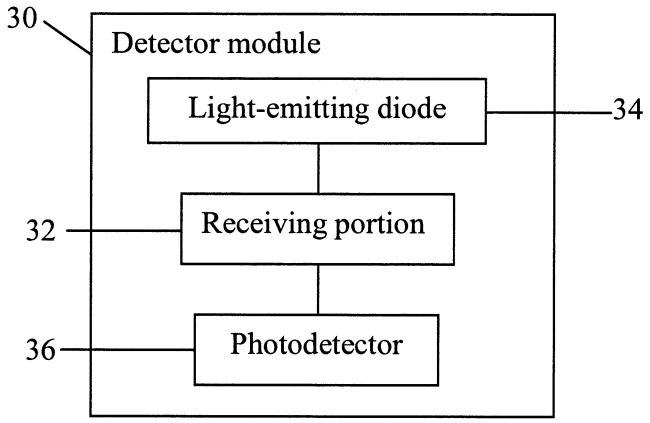

30
Detector module
Light-emitting diode
34
32
Receiving portion
36
Photodetector

FIG. 1C

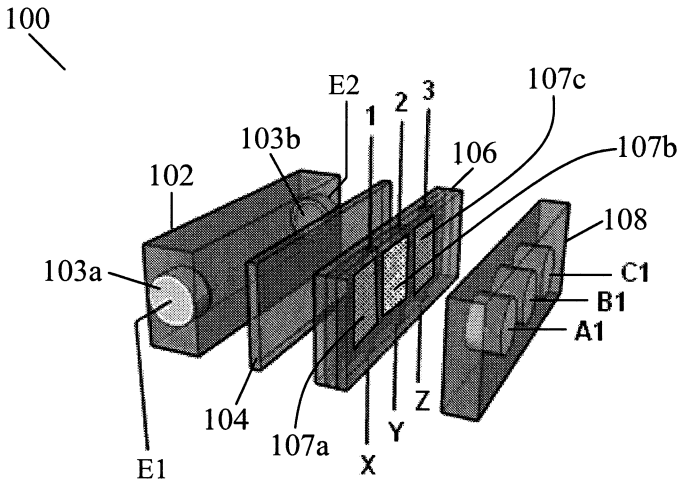

100
E2
1
2
3
107c
103b
106
107b
102
108
103a
C1
B1
A1
104
107a
Y
Z
X
E1

FIG. 1D

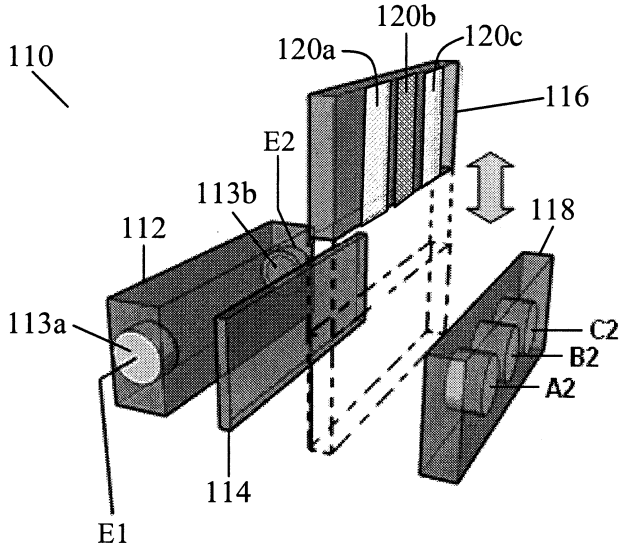

110
120b
120a
120c
116
E2
113b
118
112
113a
C2
B2
A2
114
E1

FIG. 1E

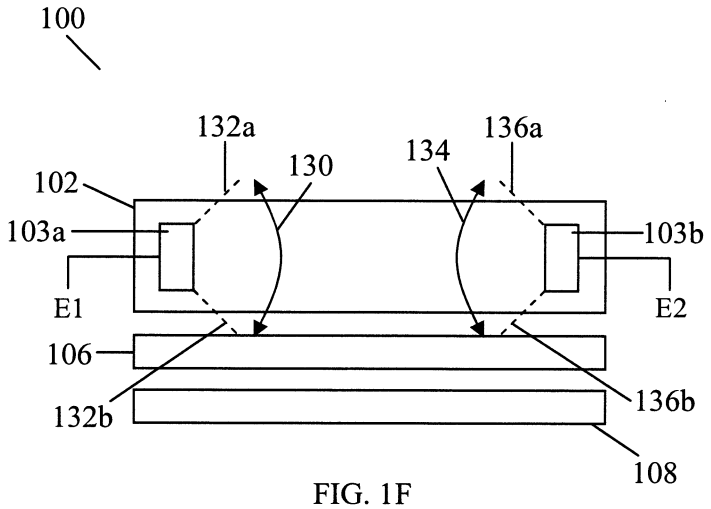

100
132a
136a
134
130
102
103a
103b
E1
E2
106
132b
136b
108

FIG. 1F

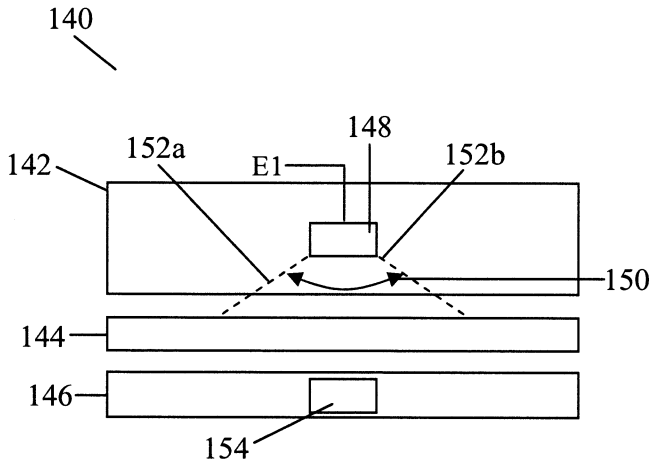

140
148
152a
E1
152b
142
150
144
146
154

FIG. 1G

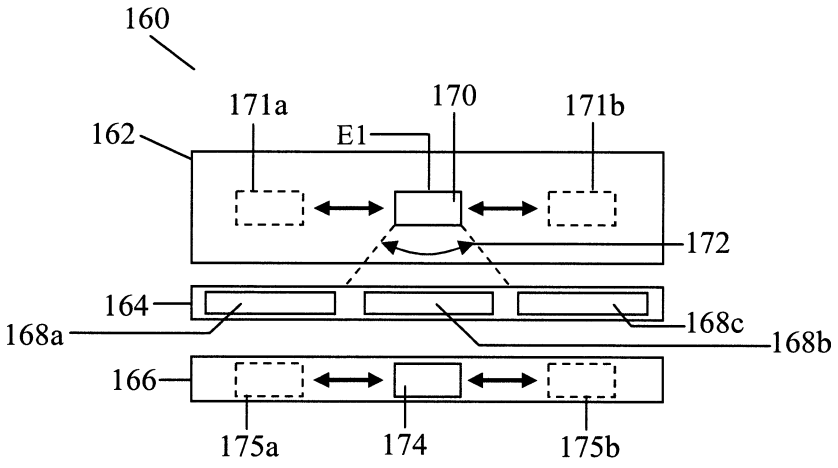

160
171a
170
171b
162
E1
172
164
168a
168c
168b
166
175a
174
175b

FIG. 1H

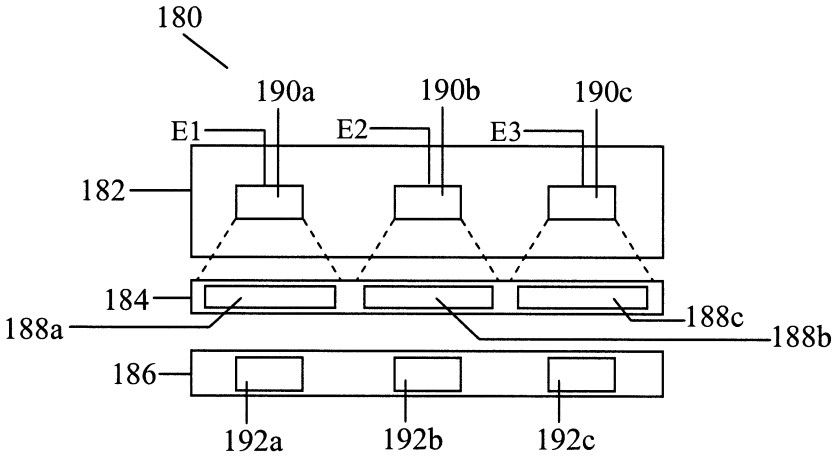

180
190a
190b
190c
E1
E2
E3
182
184
188a
188c
188b
186
192a
192b
192c

FIG. 1I

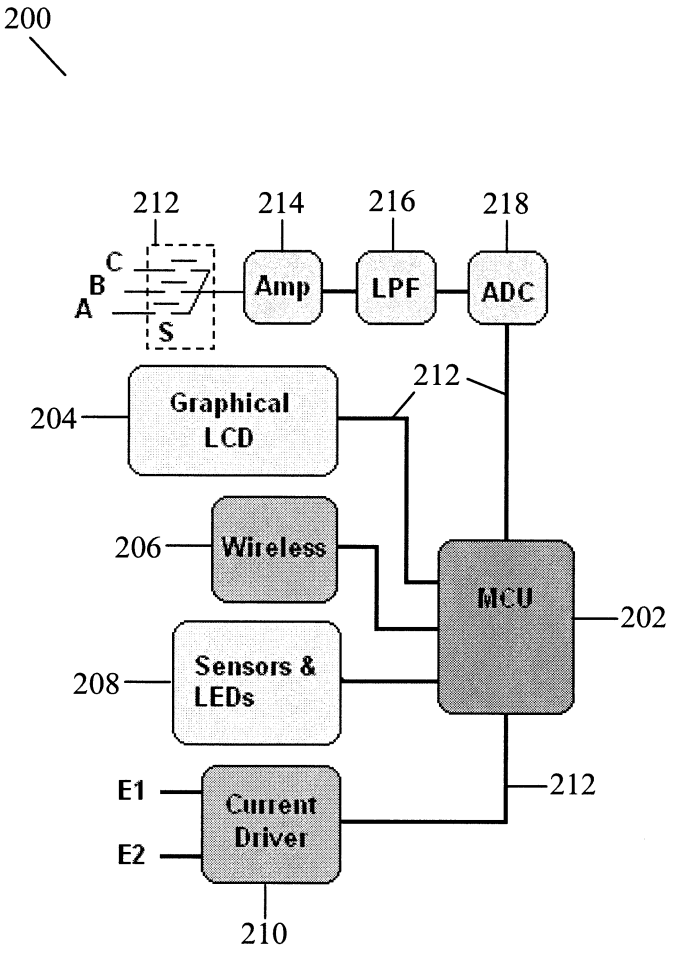

200
212
214
216
218
C
B
A
S
Amp
LPF
ADC
212
204
Graphical LCD
206
Wireless
MCU
202
208
Sensors & LEDs
212
E1
E2
Current Driver
210

FIG. 2

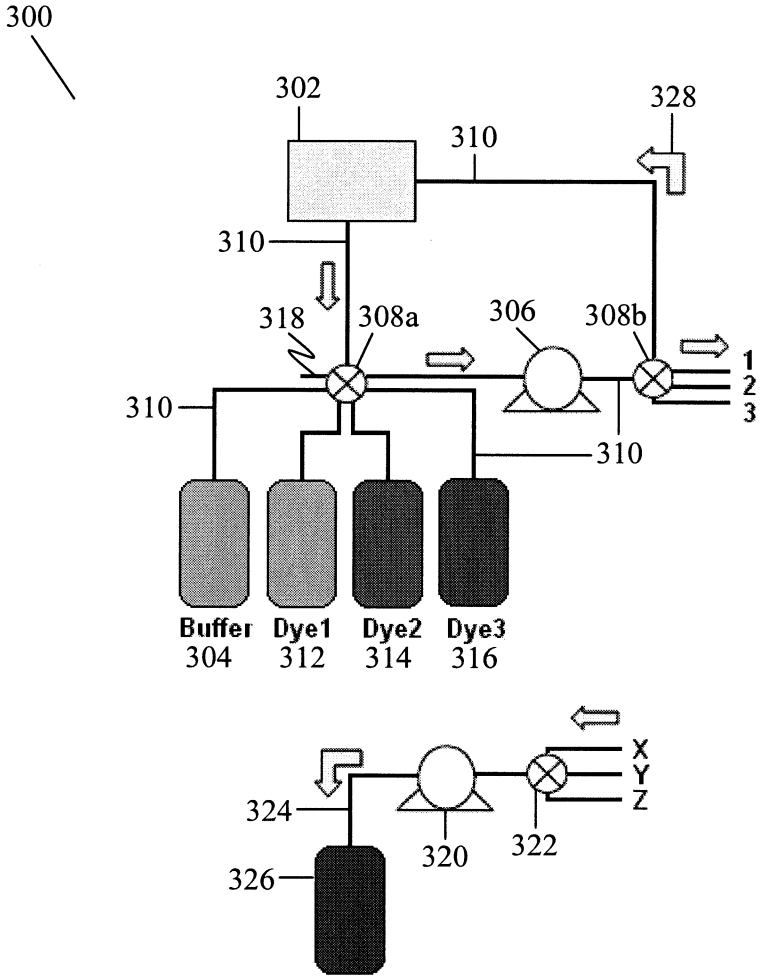

300
302
328
310
310
318
308a
306
308b
1
2
3
310
310
Buffer
304
Dye1
312
Dye2
314
Dye3
316
X
Y
Z
324
320
322
326

FIG. 3

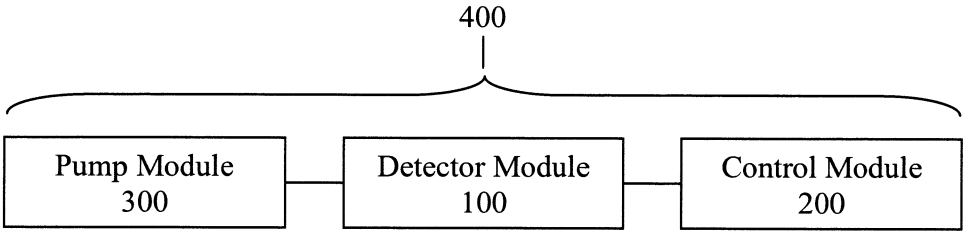


FIG. 4A

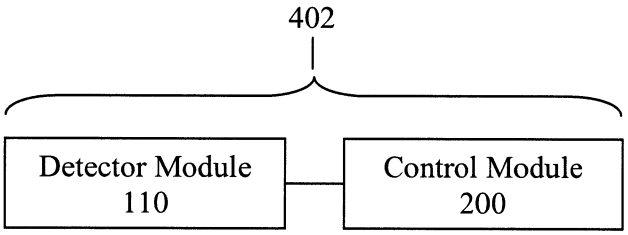


FIG. 4B

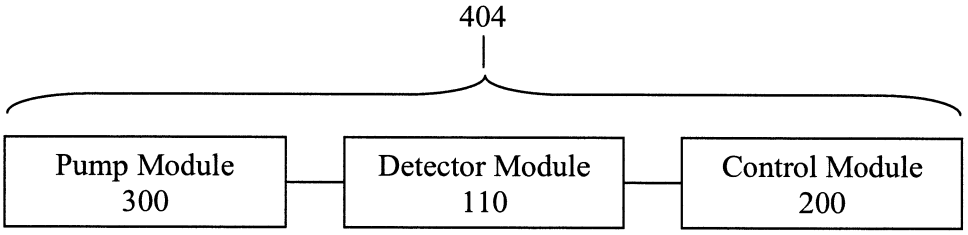


FIG. 4C

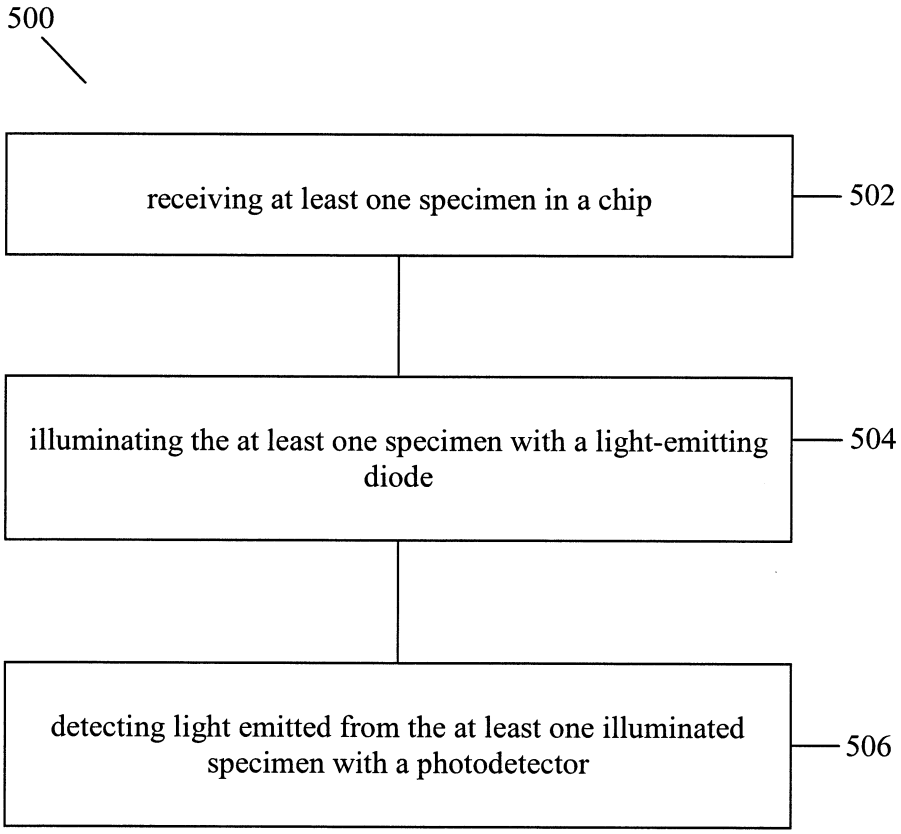

500
receiving at least one specimen in a chip
502
illuminating the at least one specimen with a light-emitting diode
504
detecting light emitted from the at least one illuminated specimen with a photodetector
506

FIG. 5

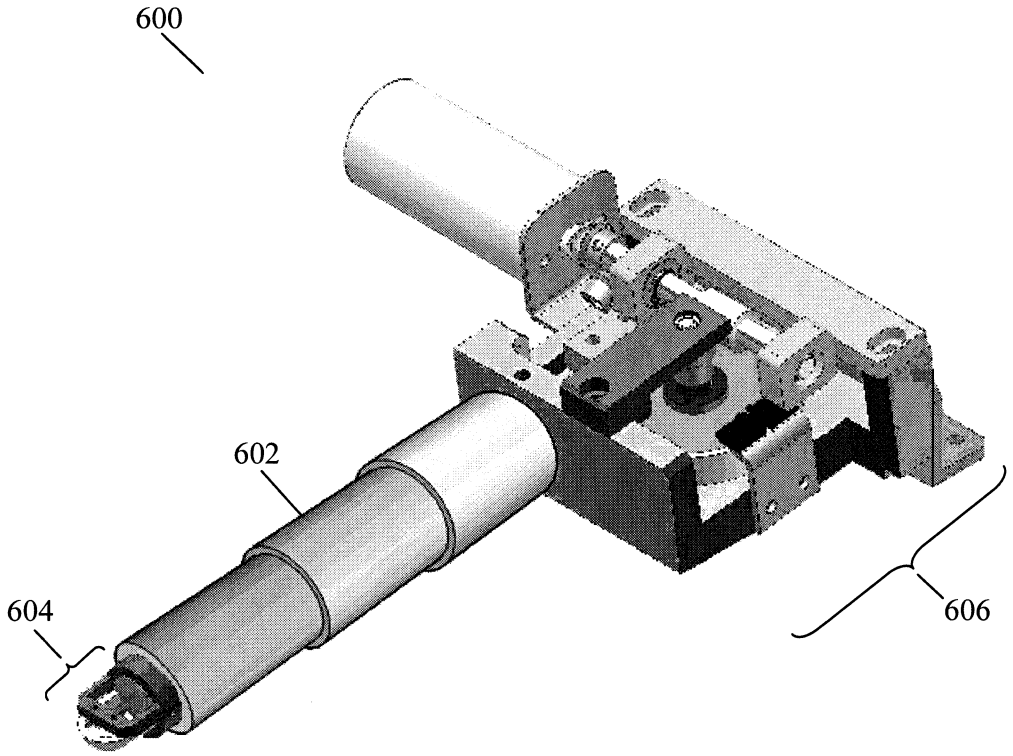


FIG. 6

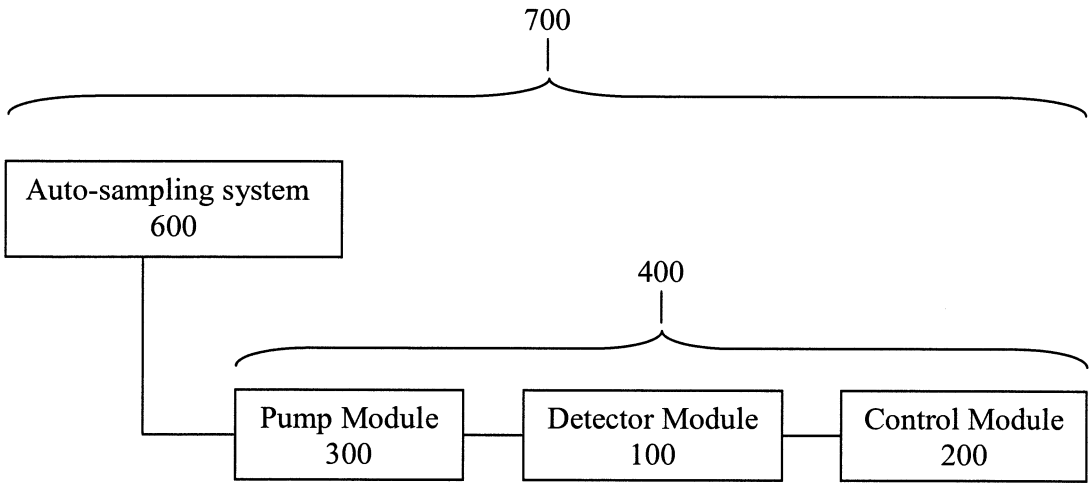

700
Auto-sampling system
600
400
Pump Module
300
Detector Module
100
Control Module
200

FIG. 7

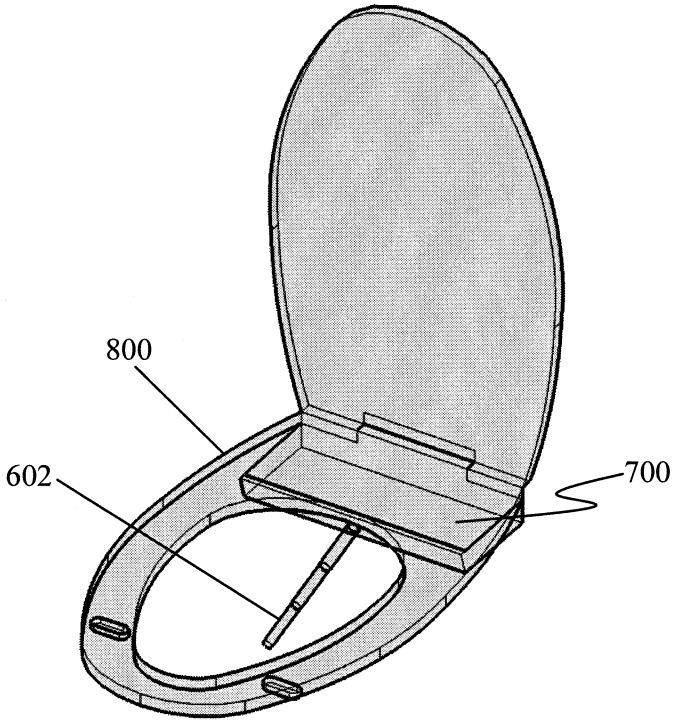


FIG. 8

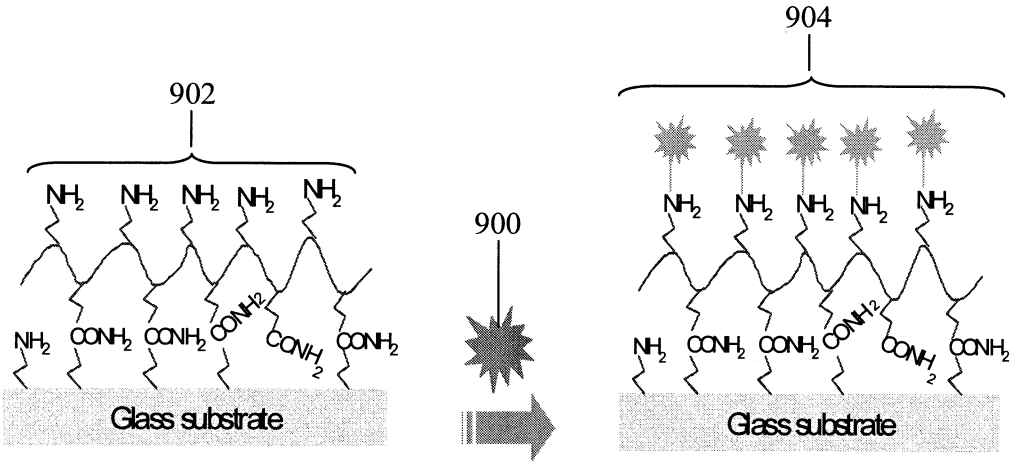


FIG. 9

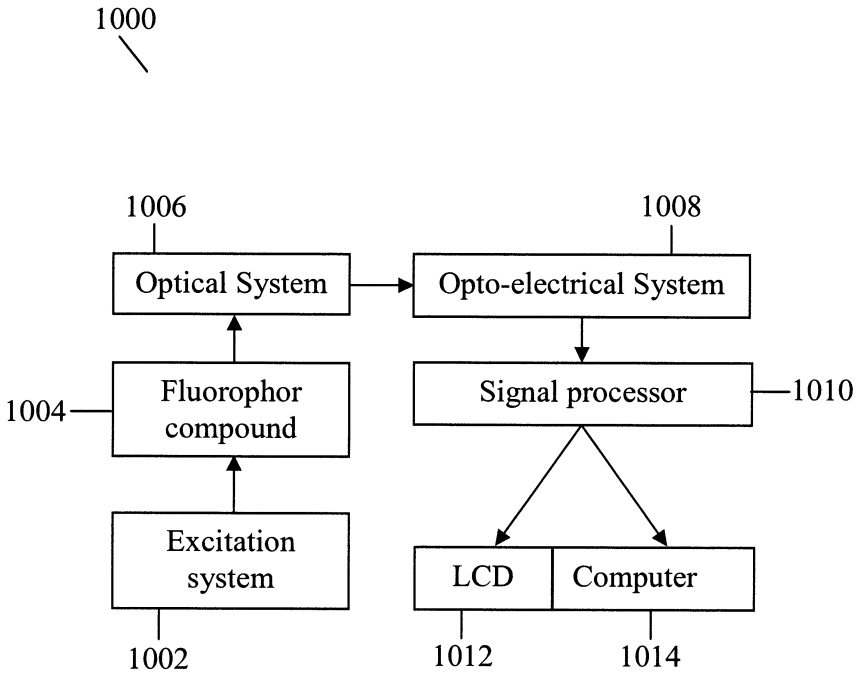

1000
1006
1008
Optical System
Opto-electrical System
Fluorophor compound
1004
Signal processor
1010
Excitation system
LCD
Computer
1002
1012
1014

FIG. 10

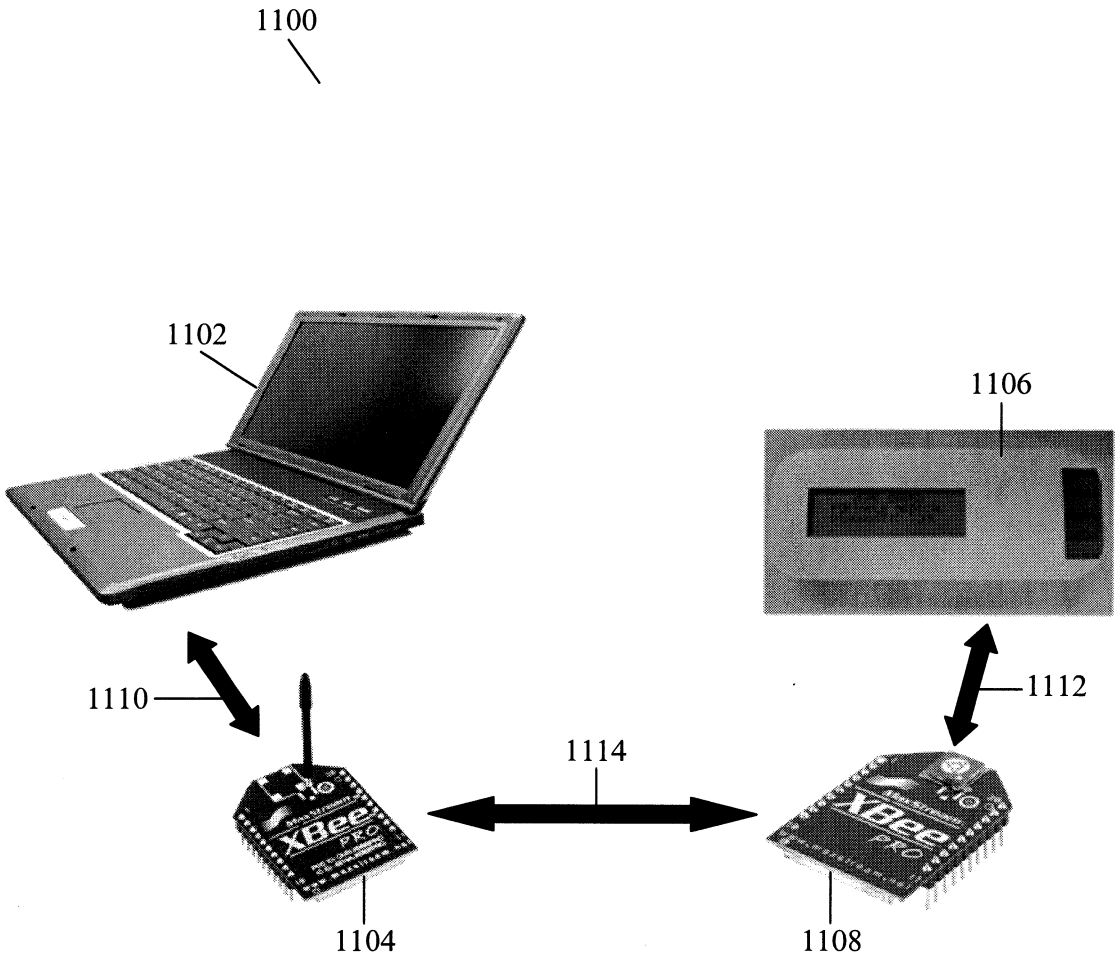


FIG. 11

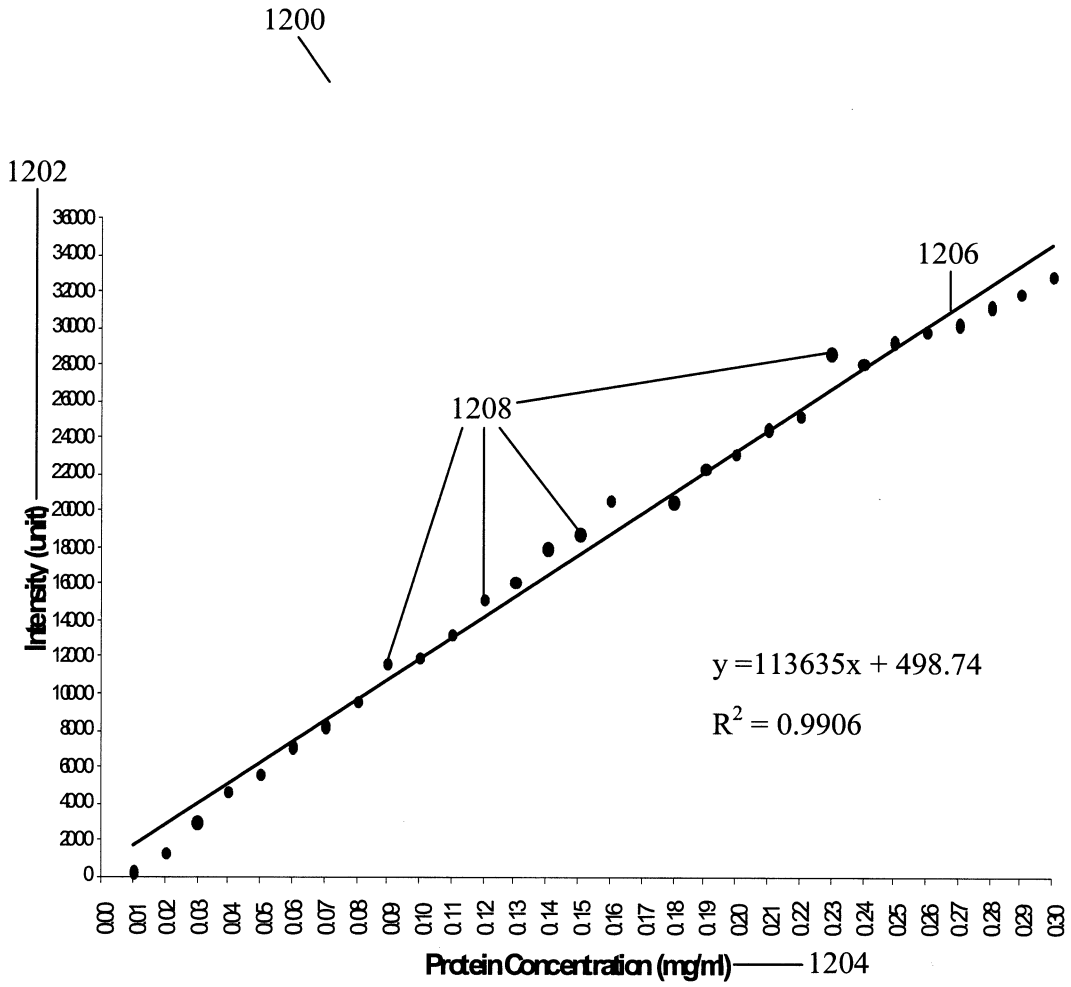

1200
1202
1206
1208
y =113635x + 498.74
R2 = 0.9906
Intensity (unit)
Protein Concentration (mg/ml)
1204

FIG. 12

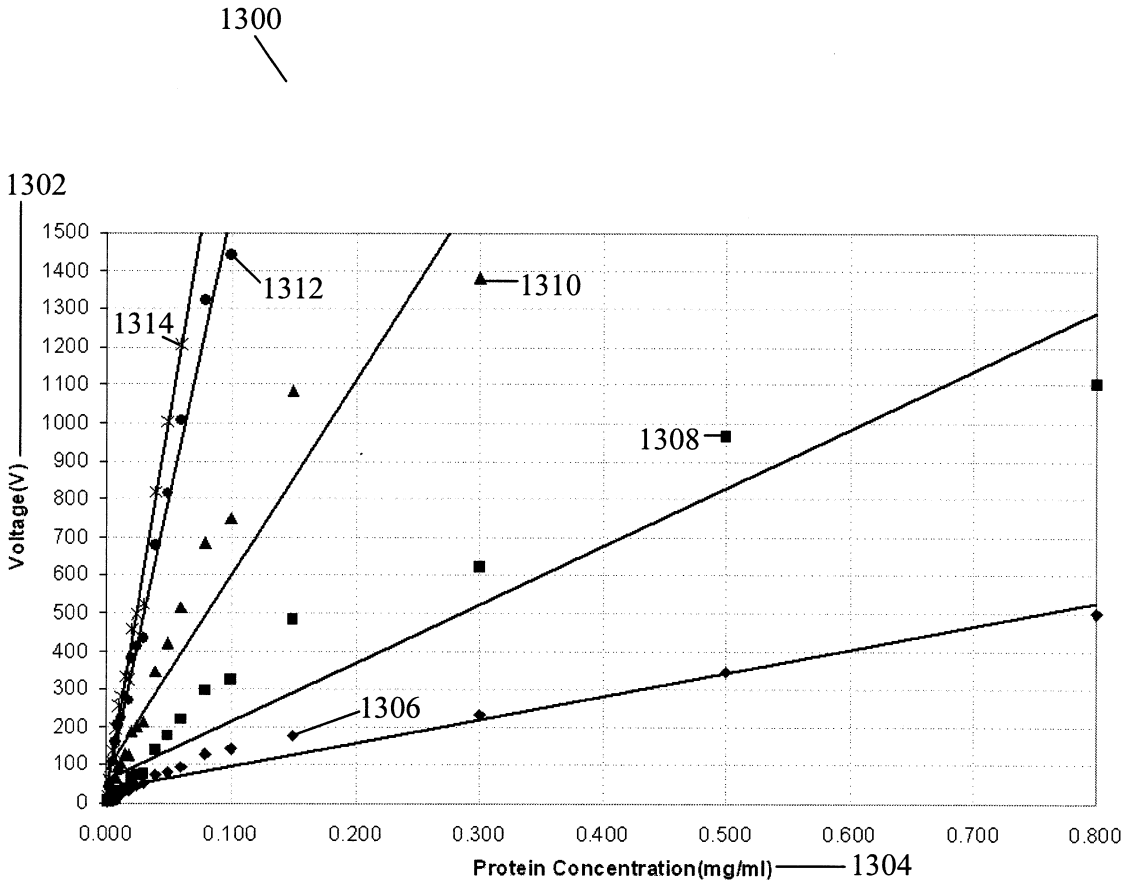

1300
1302
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
Voltage(V)
1312
1310
1314
1308
1306
0.000
0.100
0.200
0.300
0.400
0.500
0.600
0.700
0.800
Protein Concentration(mg/ml)
1304

FIG. 13