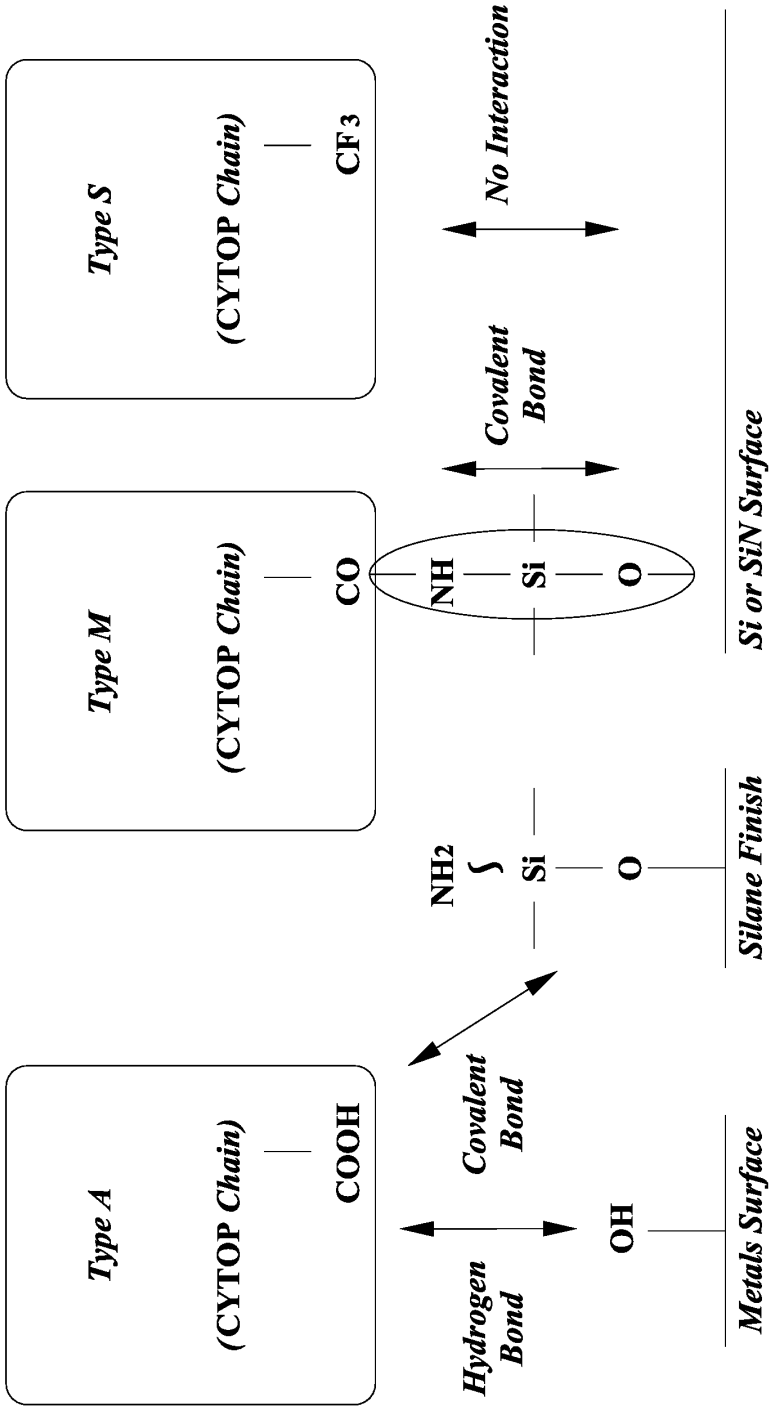

Type S
(CYTOP Chain)
CF3
No Interaction
Type M
(CYTOP Chain)
CO
NH
Si
O
Covalent Bond
Si or SiN Surface
NH2
Si
O
Silane Finish Surface
Type A
(CYTOP Chain)
COOH
Covalent Bond
OH
Hydrogen Bond
Metals Surface

FIG. 1

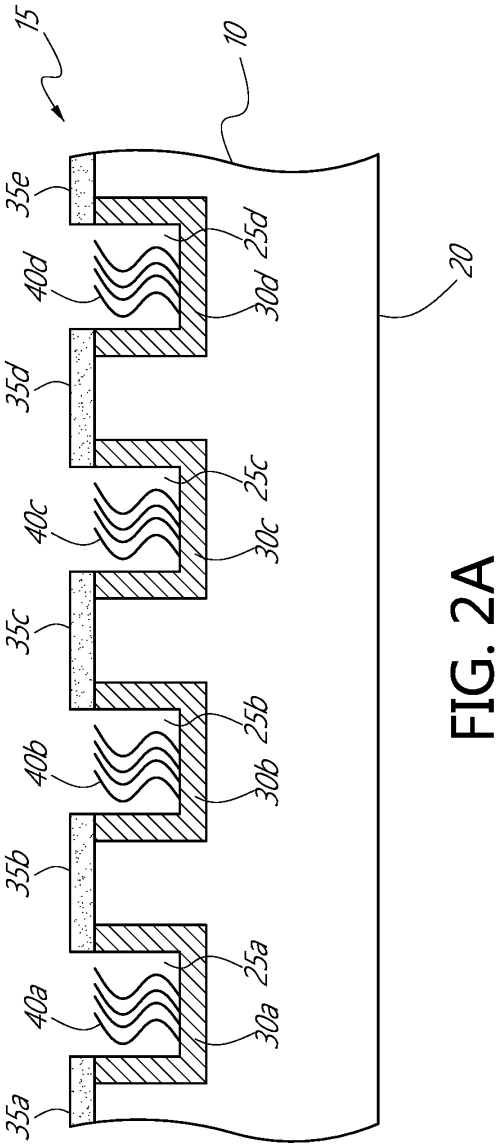


FIG. 2A

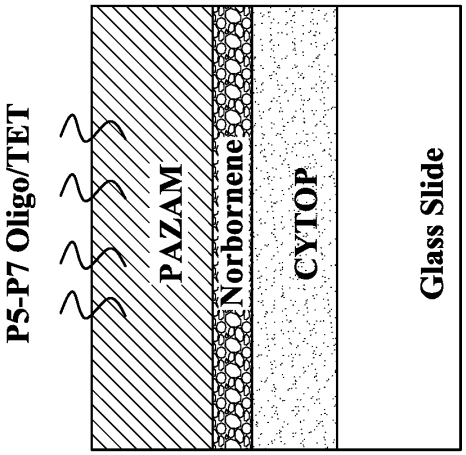


FIG. 2B

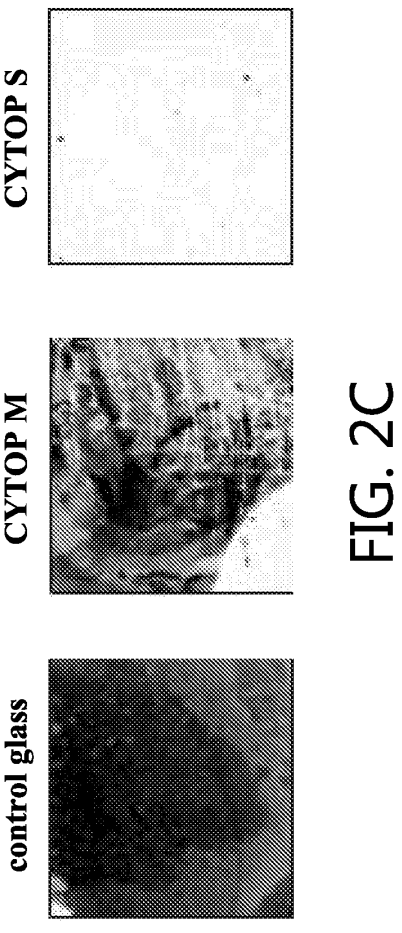


FIG. 2C

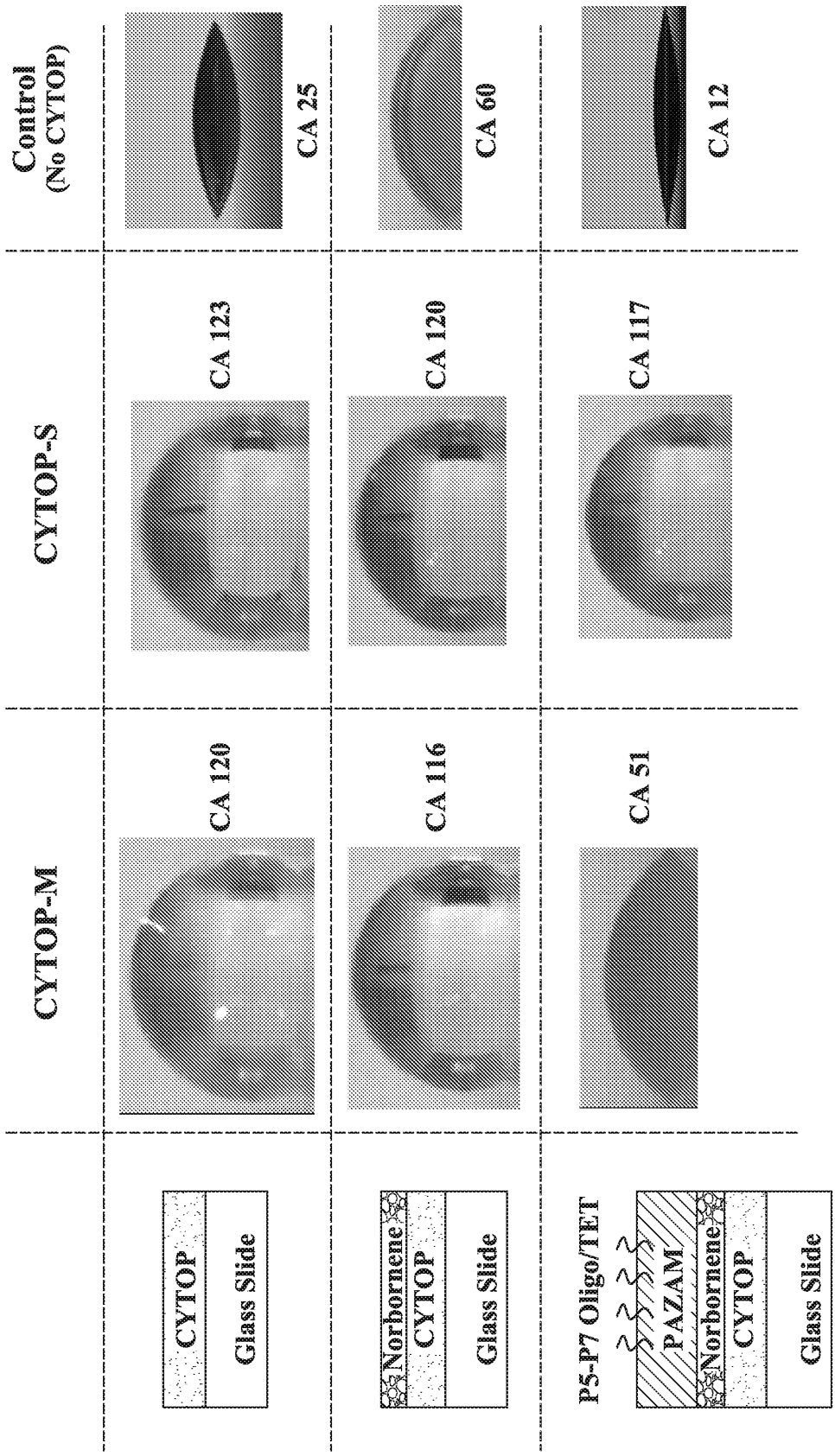

Control (No CYTOP)
CYTOP-S
CYTOP-M
CA 25
CA 60
CA 12
CA 123
CA 120
CA 117
CA 120
CA 116
CA 51
CYTOP
Glass Slide
Norbornene
CYTOP
Glass Slide
P5-P7 Oligo/TET
PAZAM
Norbornene
CYTOP
Glass Slide

FIG. 3

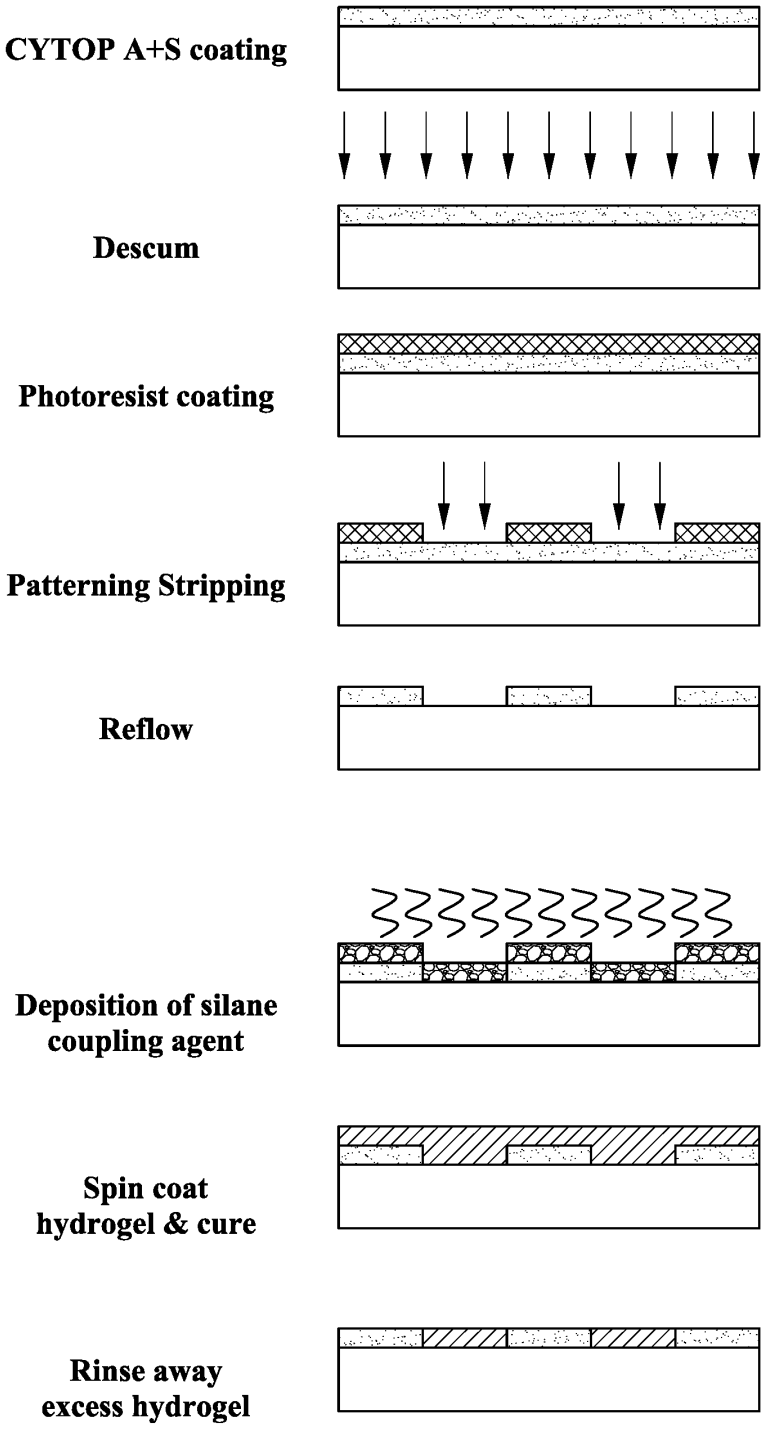

CYTOP A+S coating
Descum
Photoresist coating
Patterning Stripping
Reflow
Deposition of silane coupling agent
Spin coat hydrogel & cure
Rinse away excess hydrogel

FIG. 4

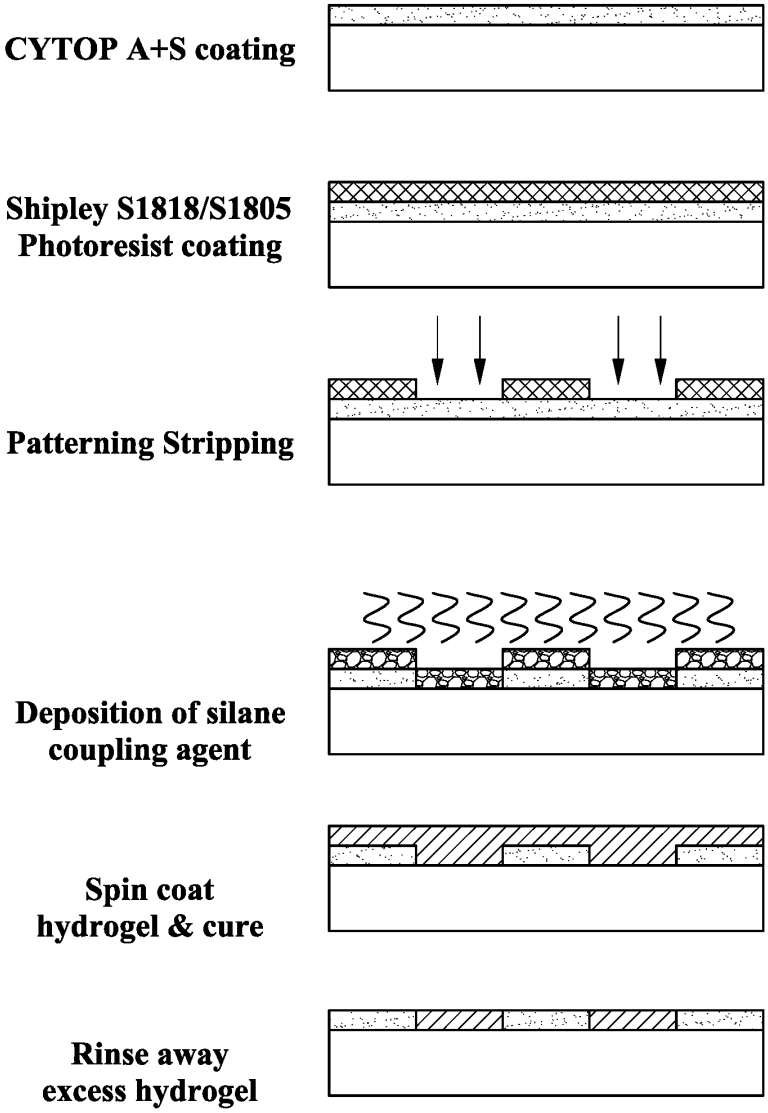

CYTOP A+S coating
Shipley S1818/S1805
Photoresist coating
Patterning Stripping
Deposition of silane
coupling agent
Spin coat
hydrogel & cure
Rinse away
excess hydrogel

FIG. 5

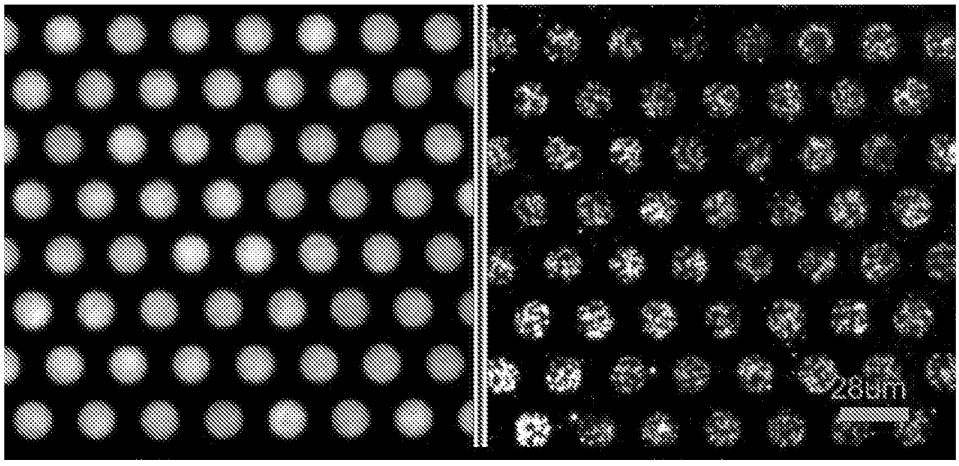


FIG. 6A FIG. 6B

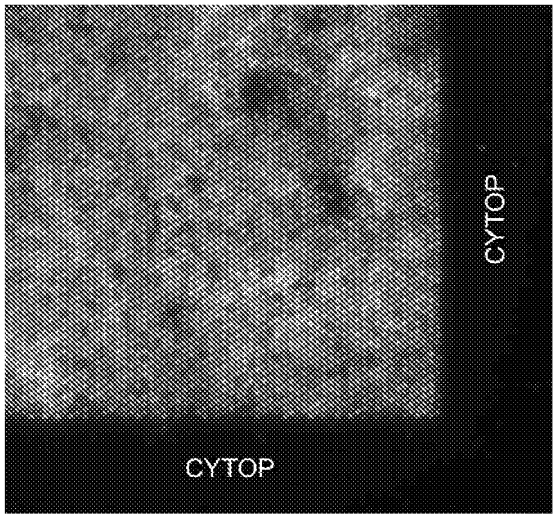


FIG. 6C

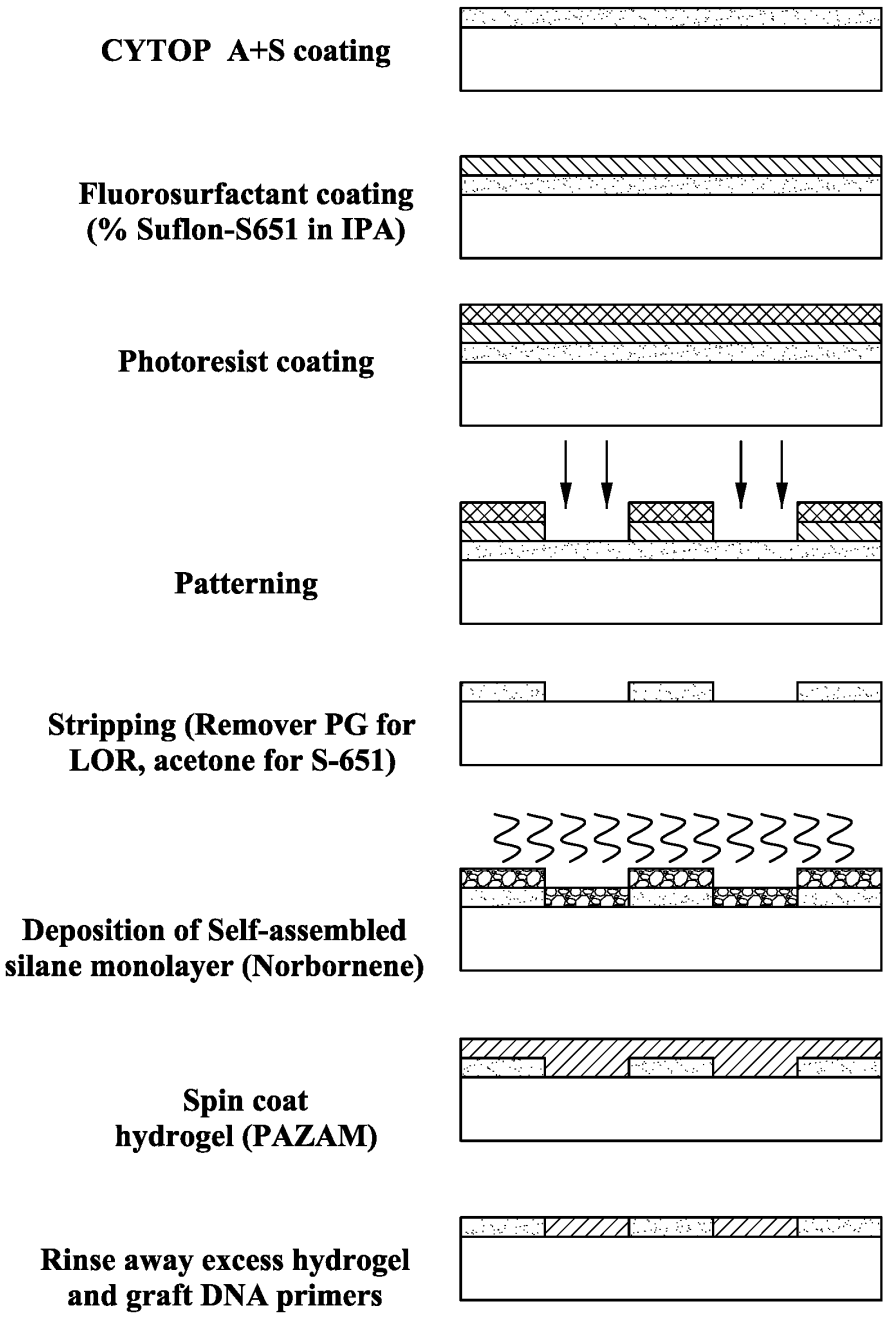

CYTOP A+S coating
Fluorosurfactant coating
(% Suflon-S651 in IPA)
Photoresist coating
Patterning
Stripping (Remover PG for
LOR, acetone for S-651)
Deposition of Self-assembled
silane monolayer (Norbornene)
Spin coat
hydrogel (PAZAM)
Rinse away excess hydrogel
and graft DNA primers

FIG. 7

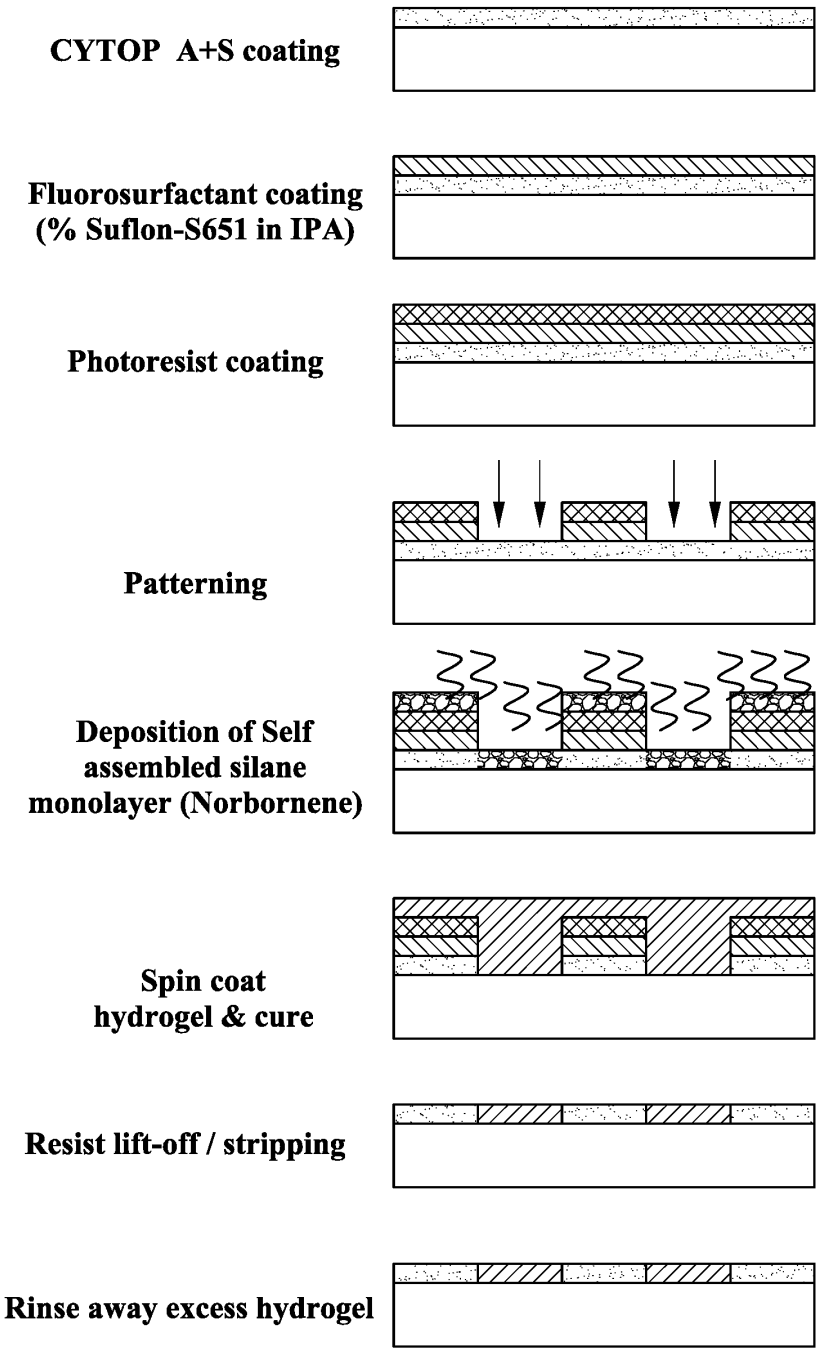

CYTOP A+S coating
Fluorosurfactant coating
(% Suflon-S651 in IPA)
Photoresist coating
Patterning
Deposition of Self
assembled silane
monolayer (Norbornene)
Spin coat
hydrogel & cure
Resist lift-off / stripping
Rinse away excess hydrogel

FIG. 8A

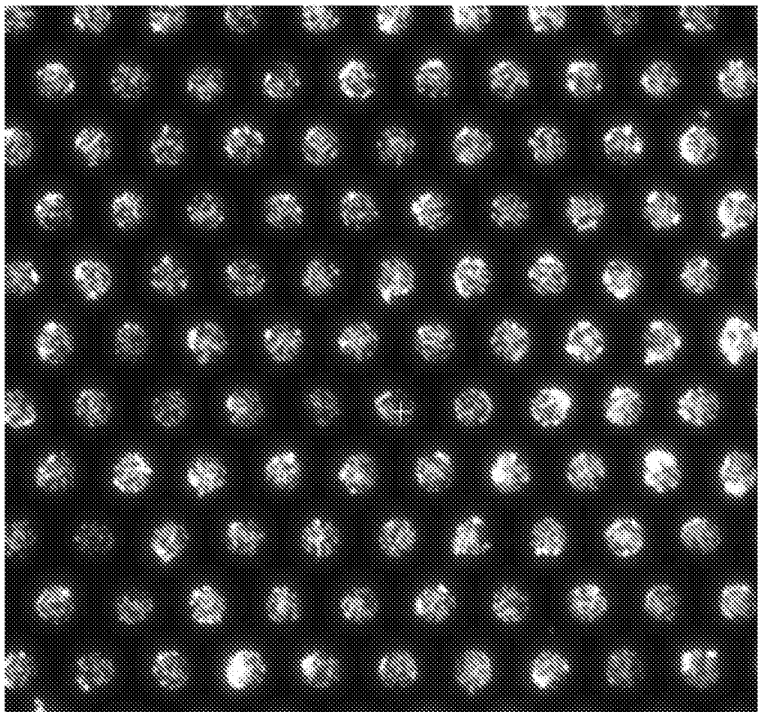


FIG. 8B

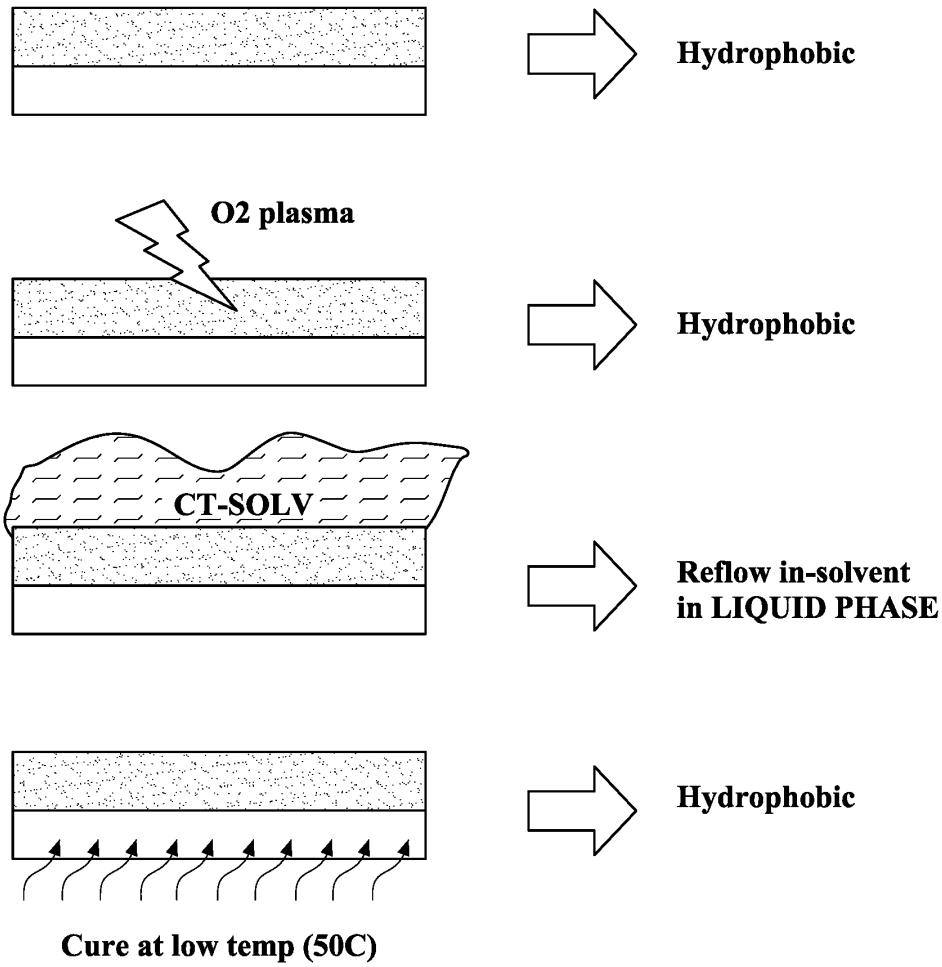

Hydrophobic
O2 plasma
Hydrophobic
CT-SOLV
Reflow in-solvent
in LIQUID PHASE
Hydrophobic
Cure at low temp (50C)

FIG. 9A

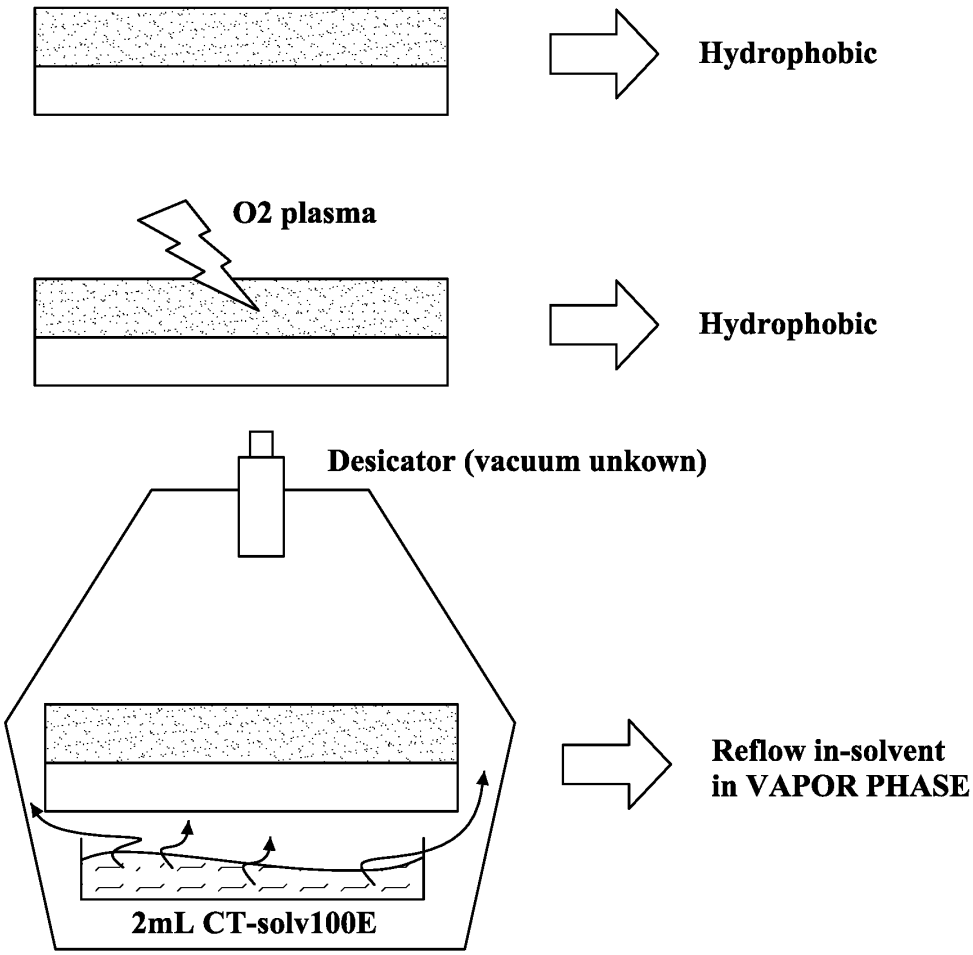

Hydrophobic
O2 plasma
Hydrophobic
Desicator (vacuum unkown)
Reflow in-solvent
in VAPOR PHASE
2mL CT-solv100E

FIG. 9B

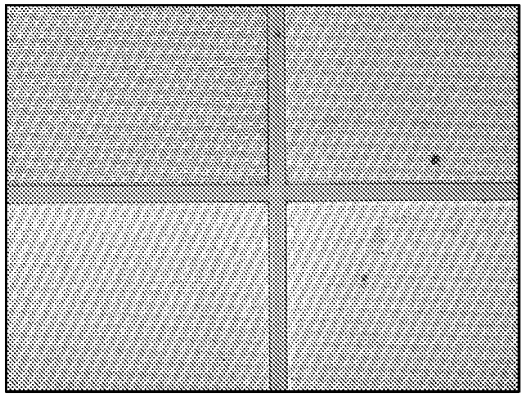


FIG. 10A

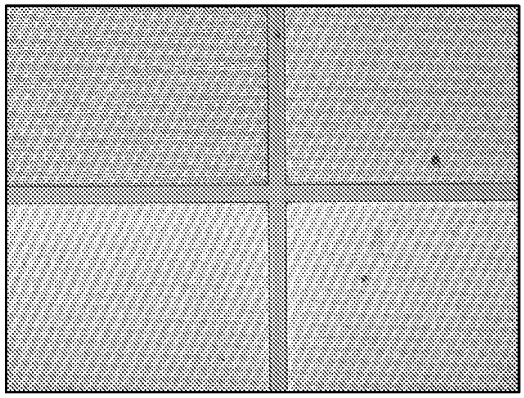


FIG. 10B

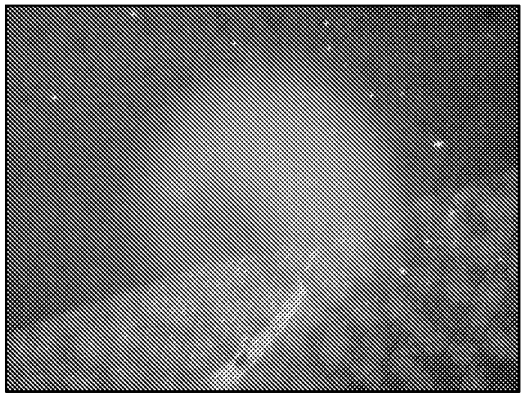


FIG. 10C

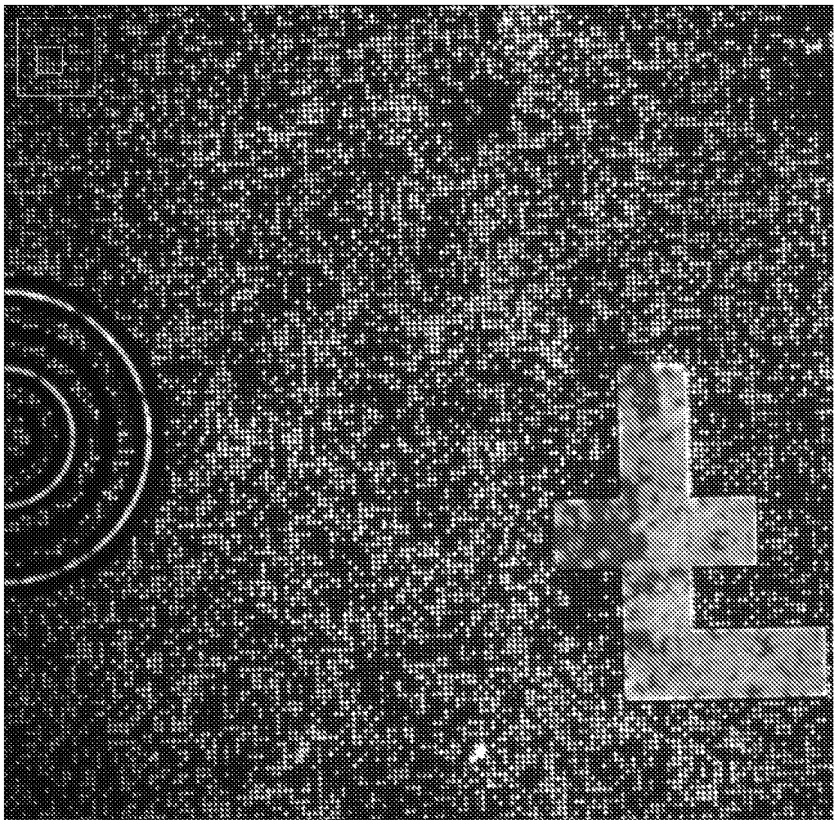


FIG. 11A

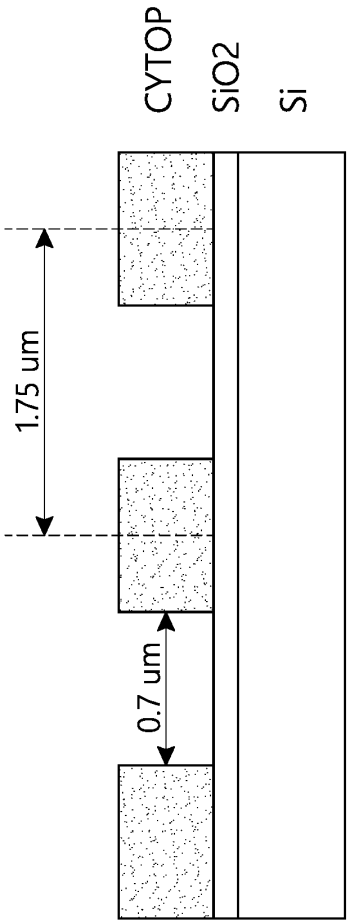


FIG. 11B

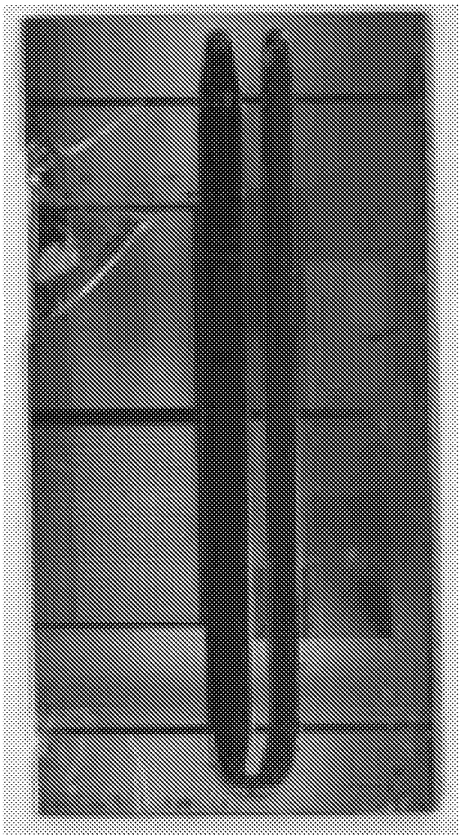
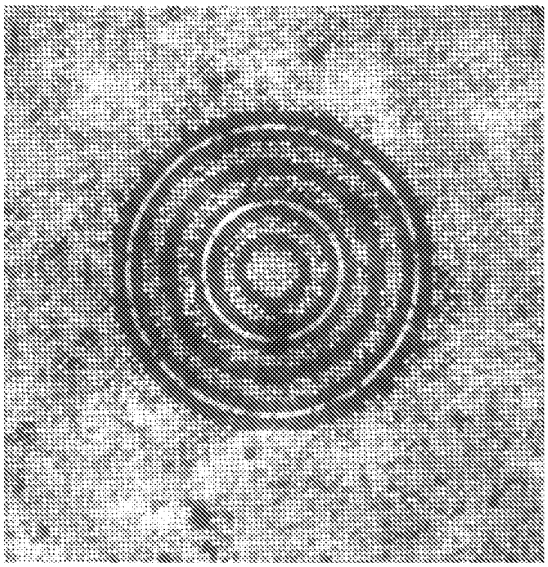
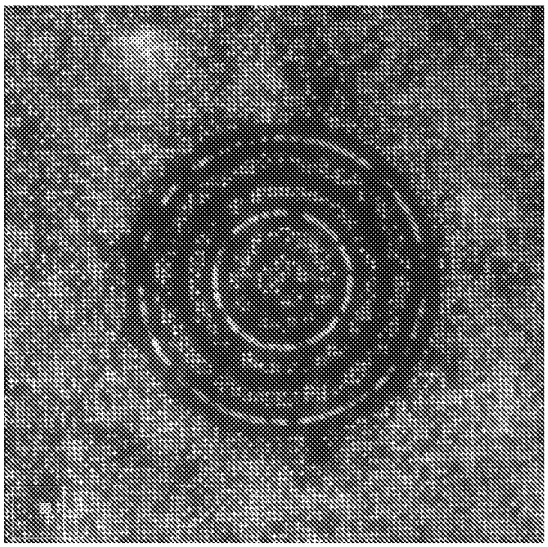


FIG. 11C



900nm wells

FIG. 12B



700nm wells

FIG. 12A

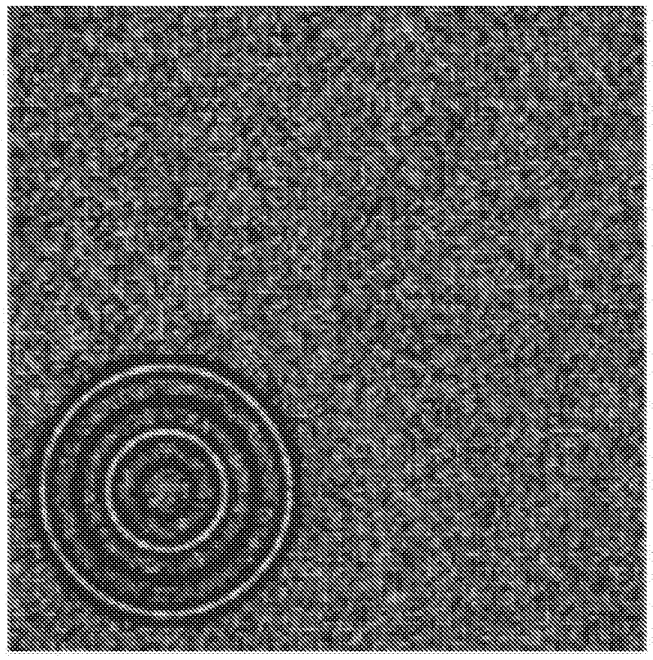
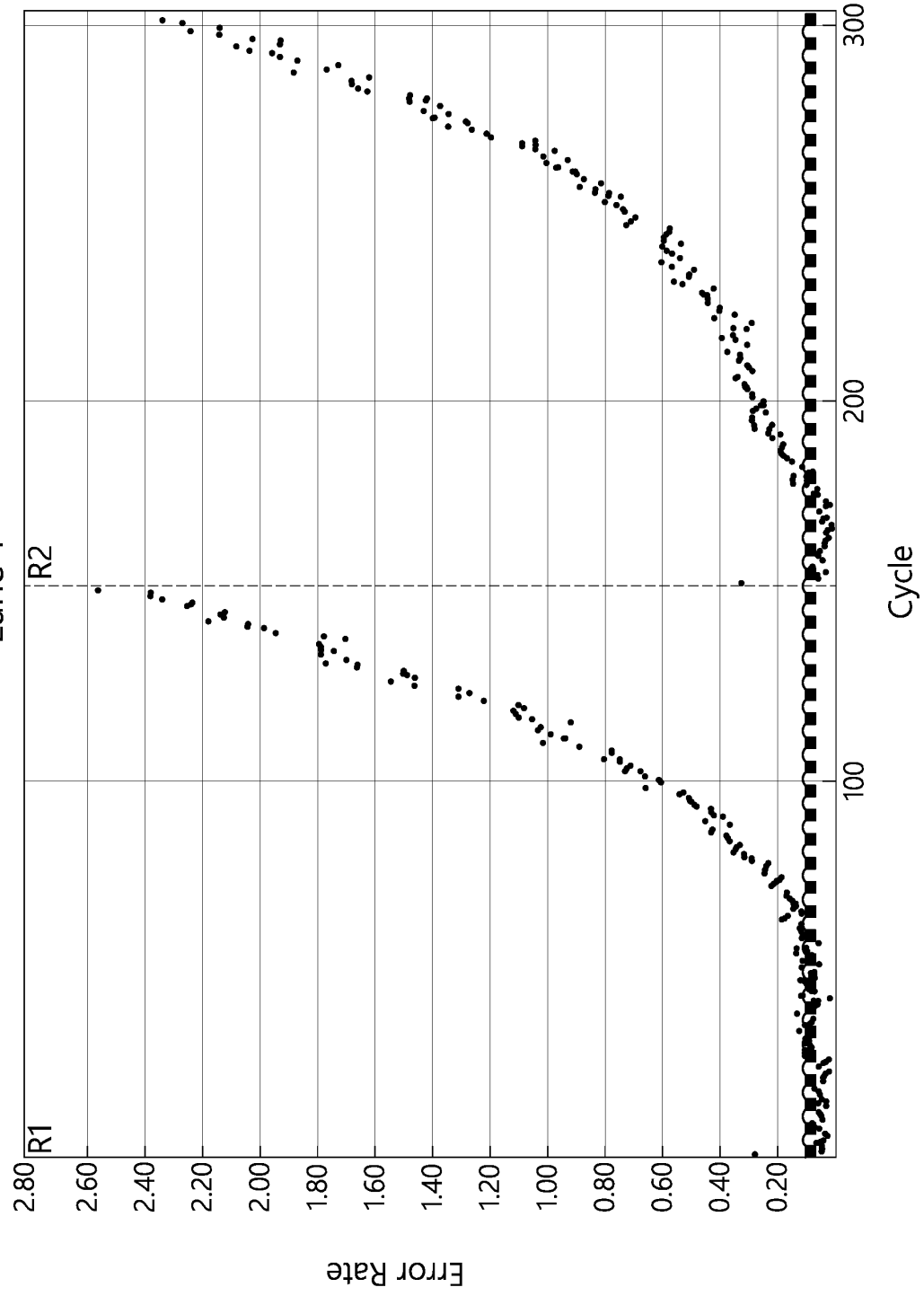


FIG. 13A

FIG. 13B


Lane 1
R1
R2
Error Rate
2.80
2.60
2.40
2.20
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
100
200
300
Cycle

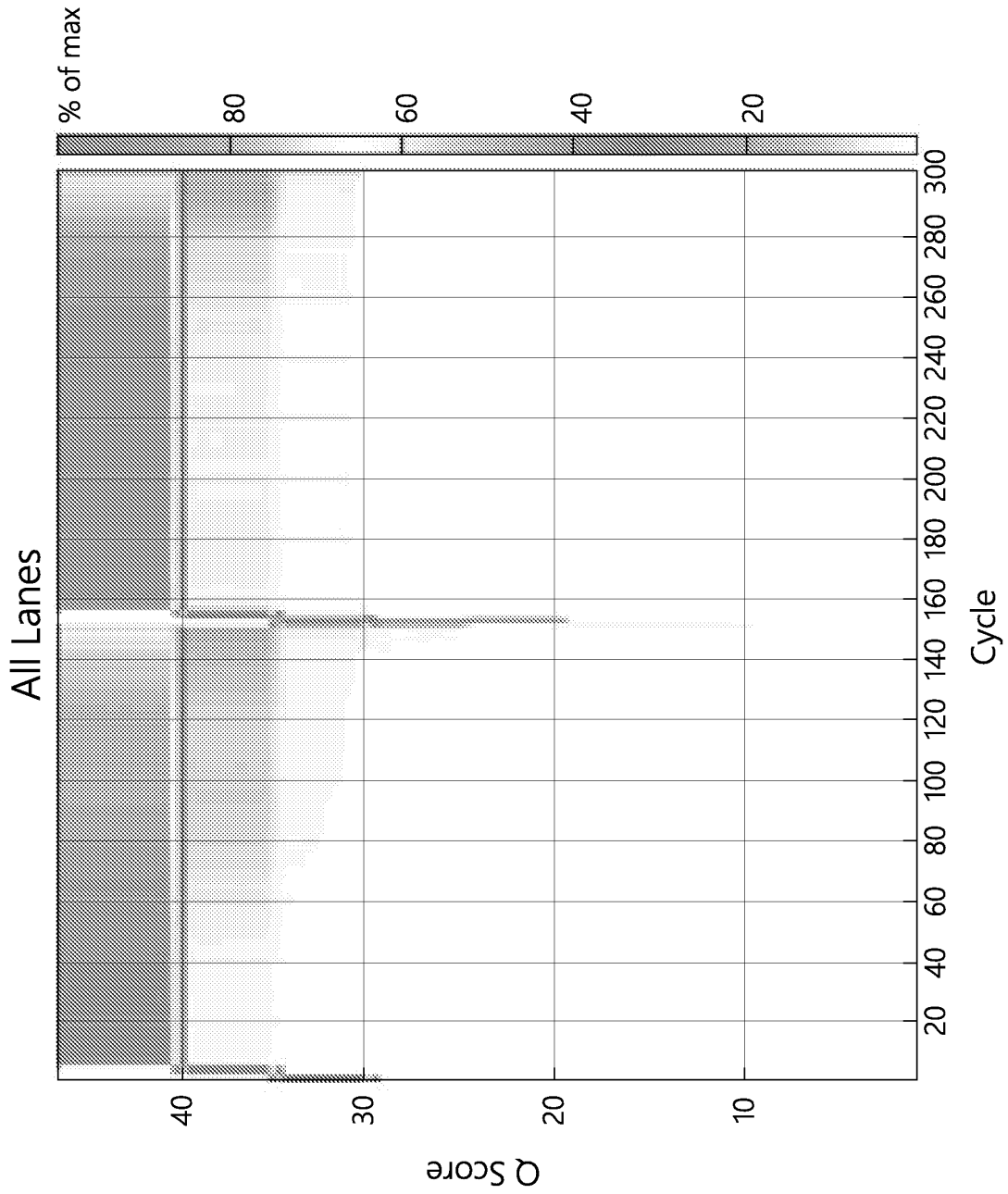

% of max
80
60
40
20
All Lanes
Cycle
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
Q Score
40
30
20
10

FIG. 13C