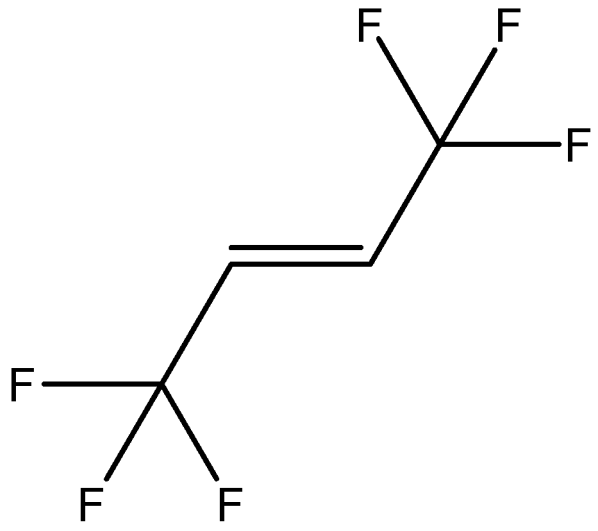


FIG 1

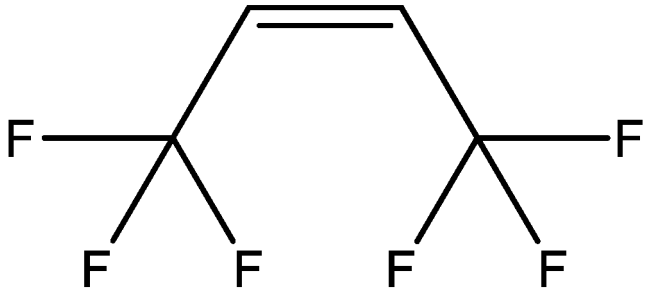


FIG 2

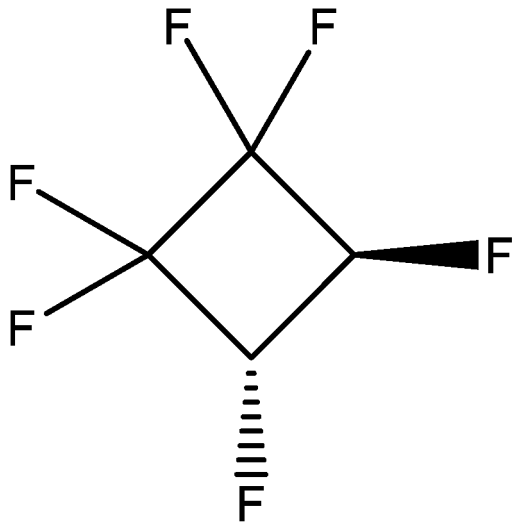


FIG 3

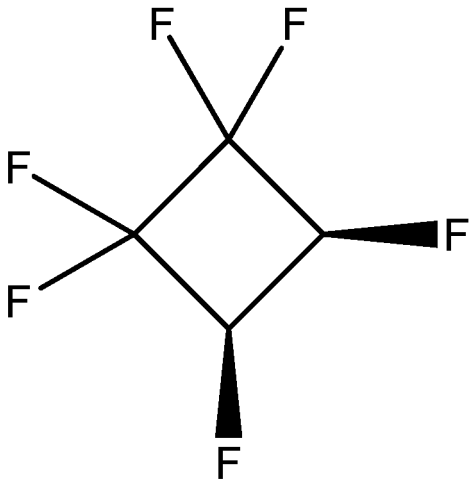


FIG 4

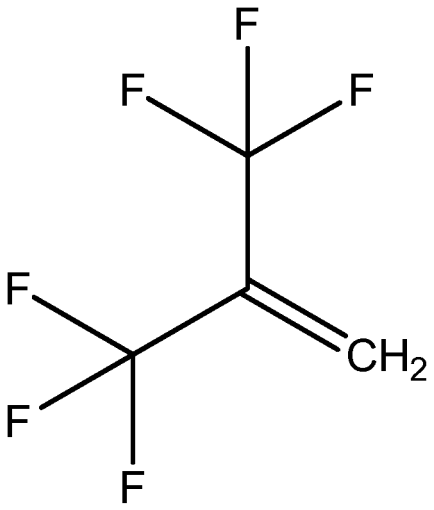


FIG 5

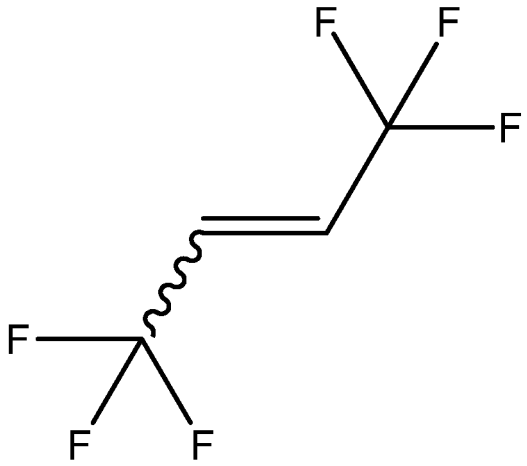


FIG 6

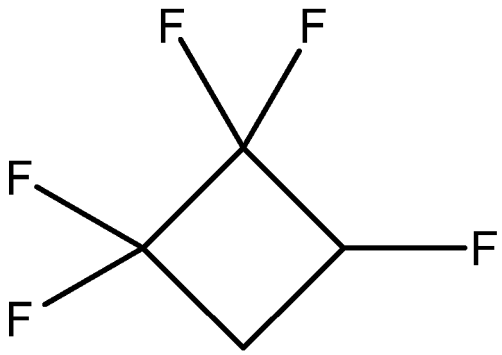


FIG 7

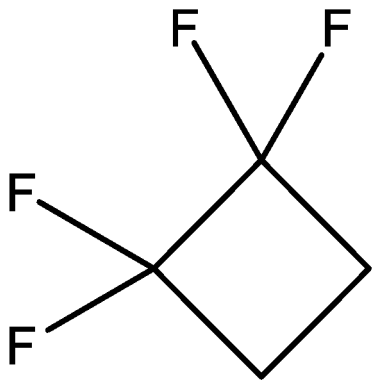
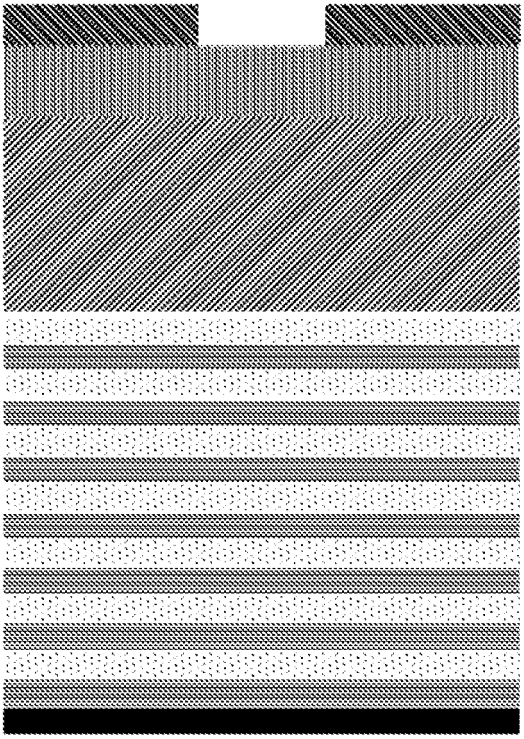


FIG 8



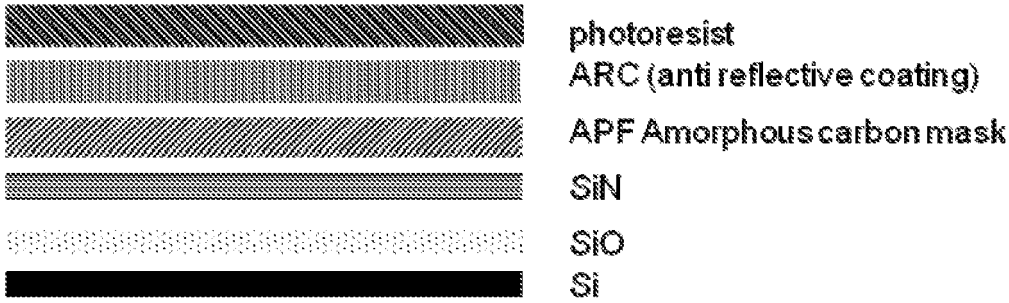

photoresist
ARC (anti reflective coating)
APF Amorphous carbon mask
SiN
SiO
Si

FIG 9

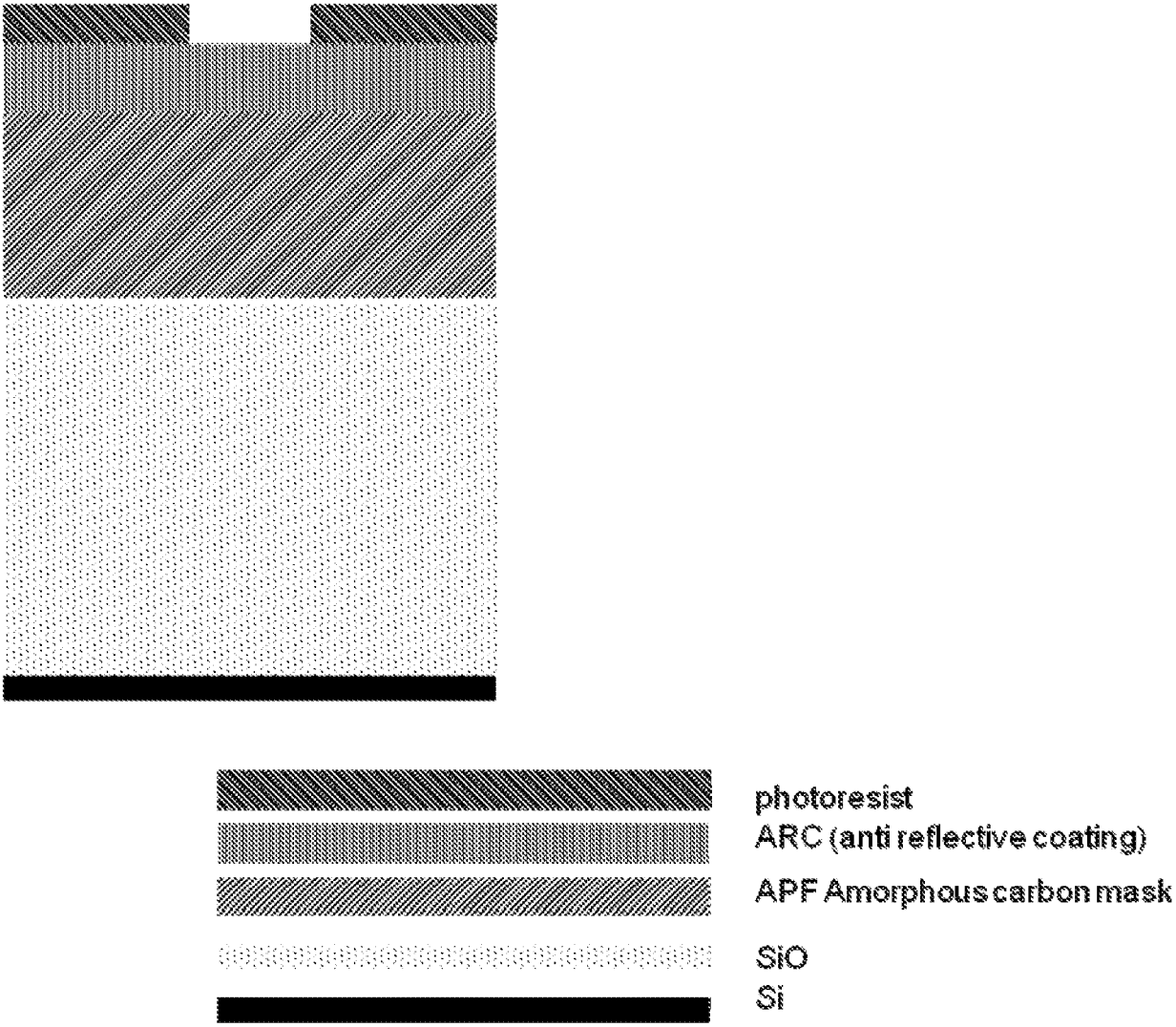
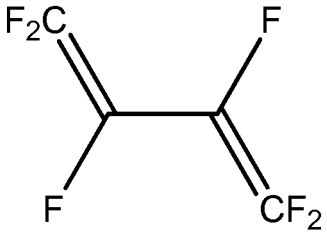

photoresist
ARC (anti reflective coating)
APF Amorphous carbon mask
SiO
Si

FIG 10


F2C
F
F
CF2

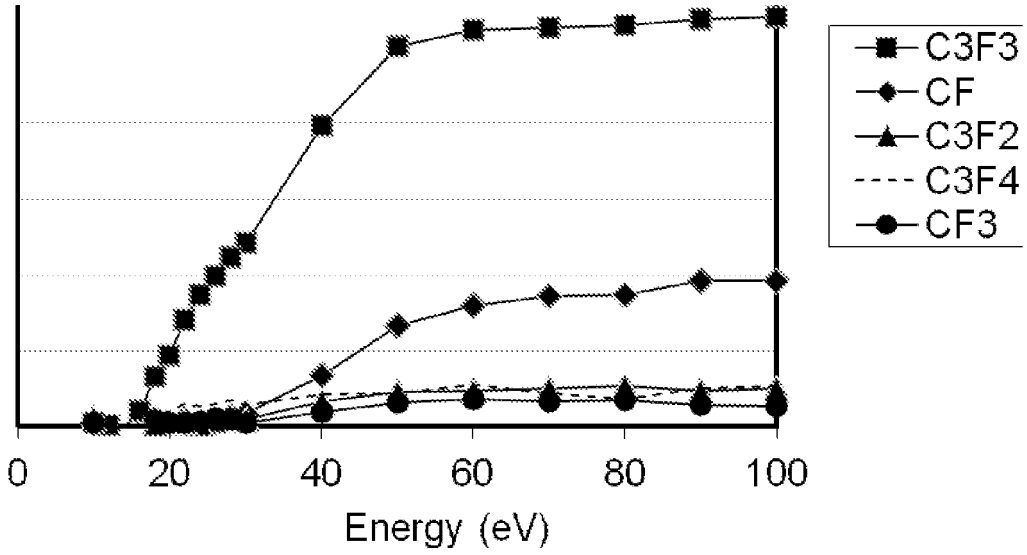
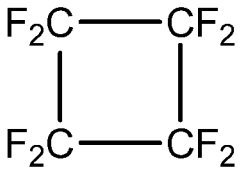

C3F3
CF
C3F2
C3F4
CF3
0
20
40
60
80
100
Energy (eV)

FIG 11


F2C
CF2
F2C
CF2

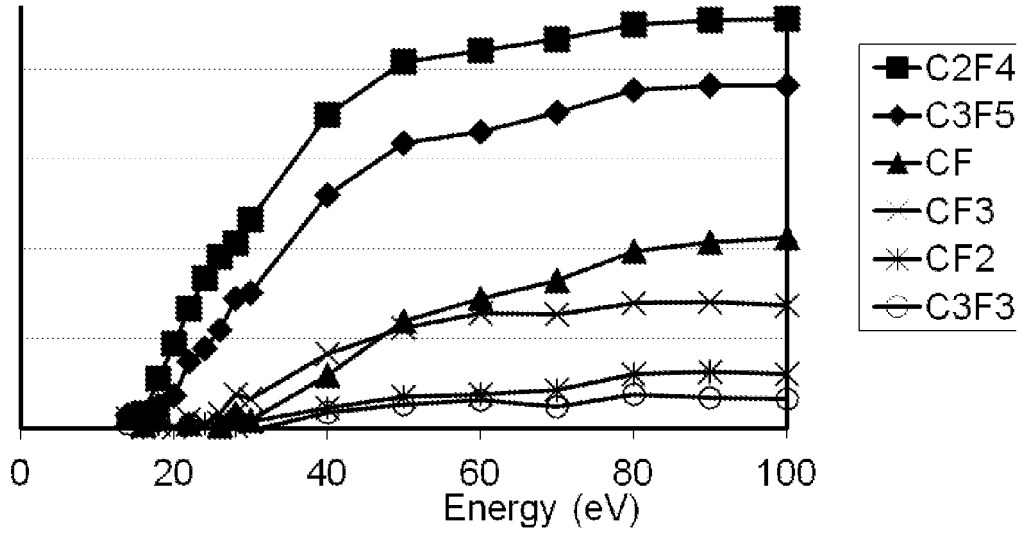

C2F4
C3F5
CF
CF3
CF2
C3F3
0
20
40
60
80
100
Energy (eV)

FIG 12

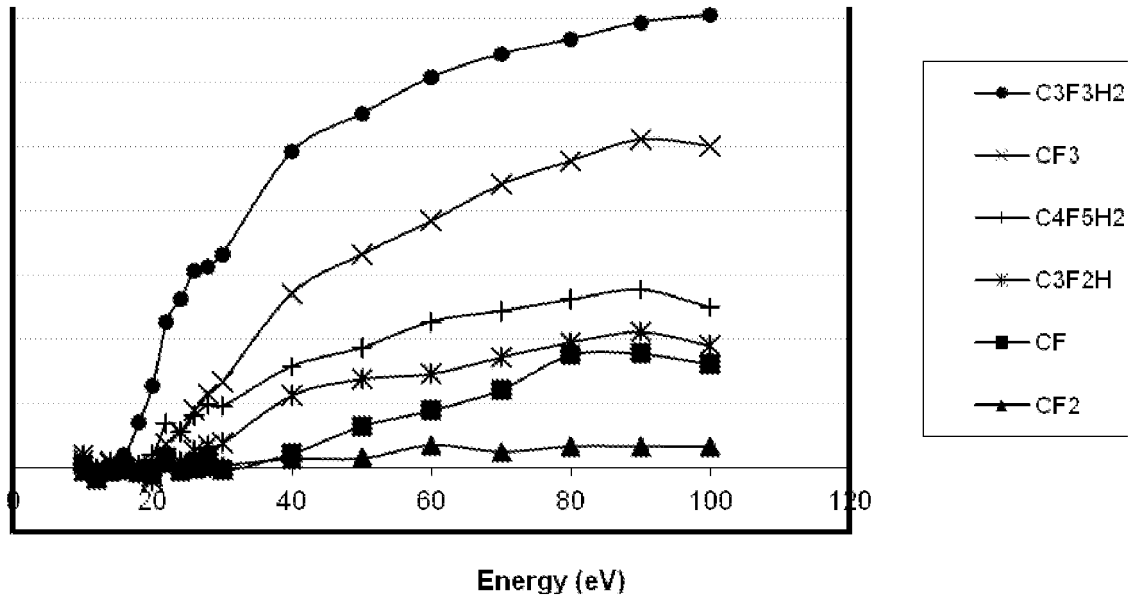

C3F3H2
CF3
C4F5H2
C3F2H
CF
CF2
0
20
40
60
80
100
120
Energy (eV)

FIG 13

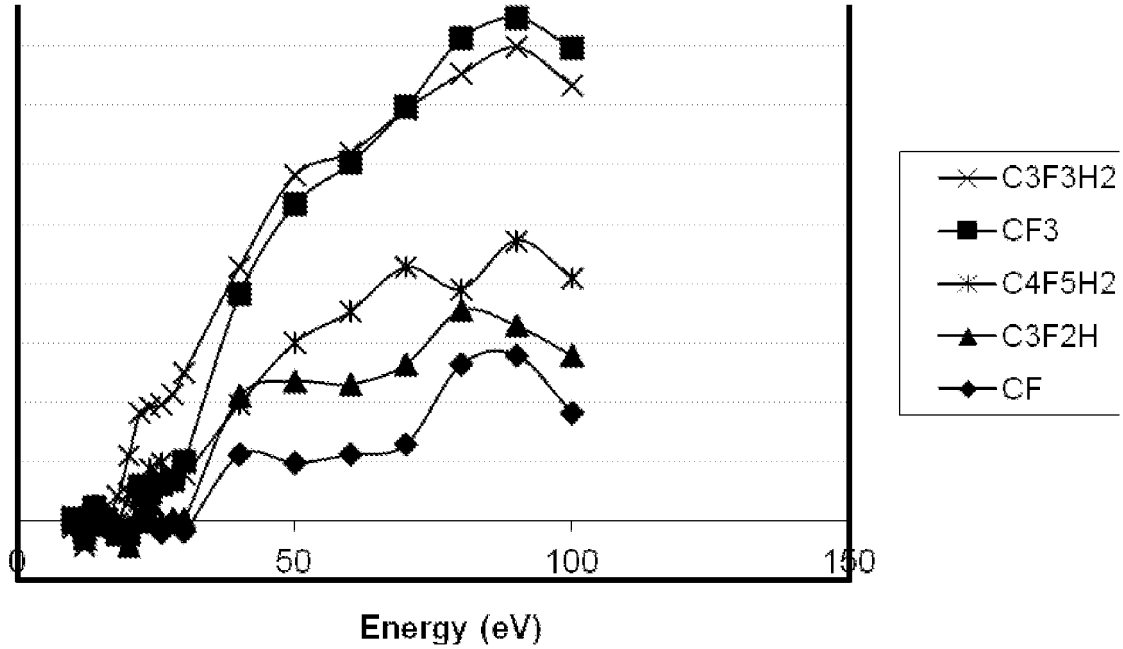

C3F3H2
CF3
C4F5H2
C3F2H
CF
0
50
100
150
Energy (eV)

FIG 14

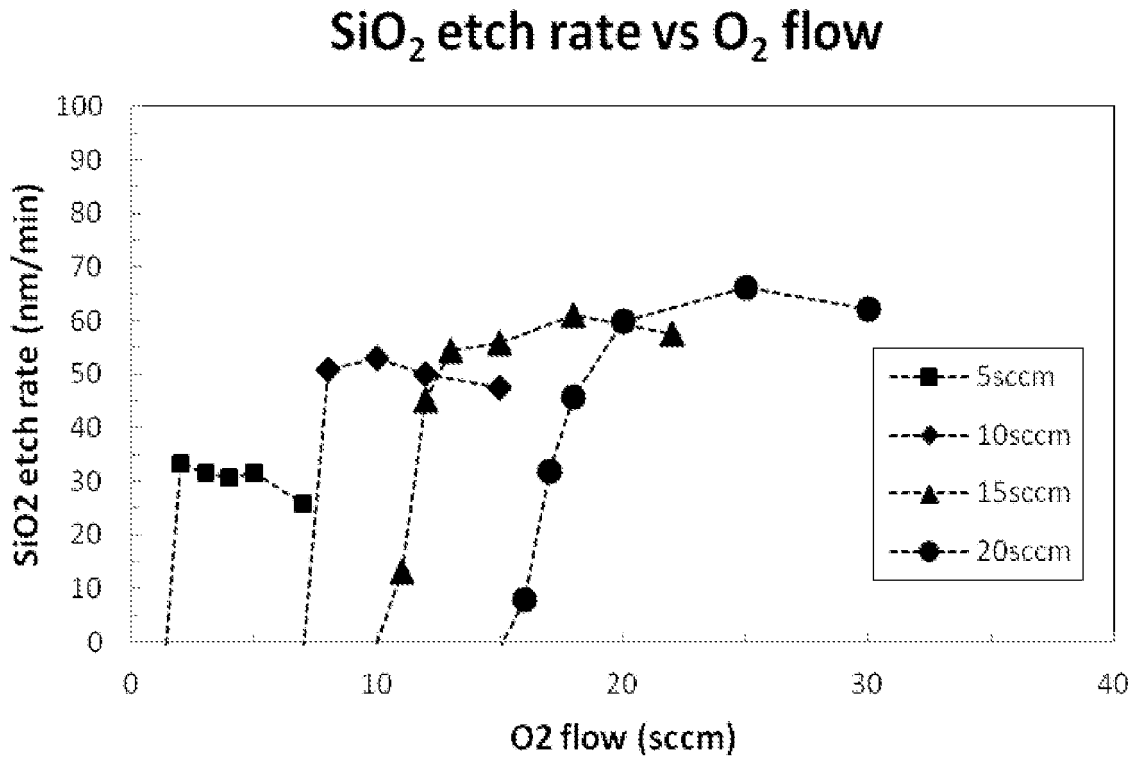

SiO2 etch rate vs O2 flow
SiO2 etch rate (nm/min)
O2 flow (sccm)
5sccm
10sccm
15sccm
20sccm
0
10
20
30
40
50
60
70
80
90
100

FIG 15

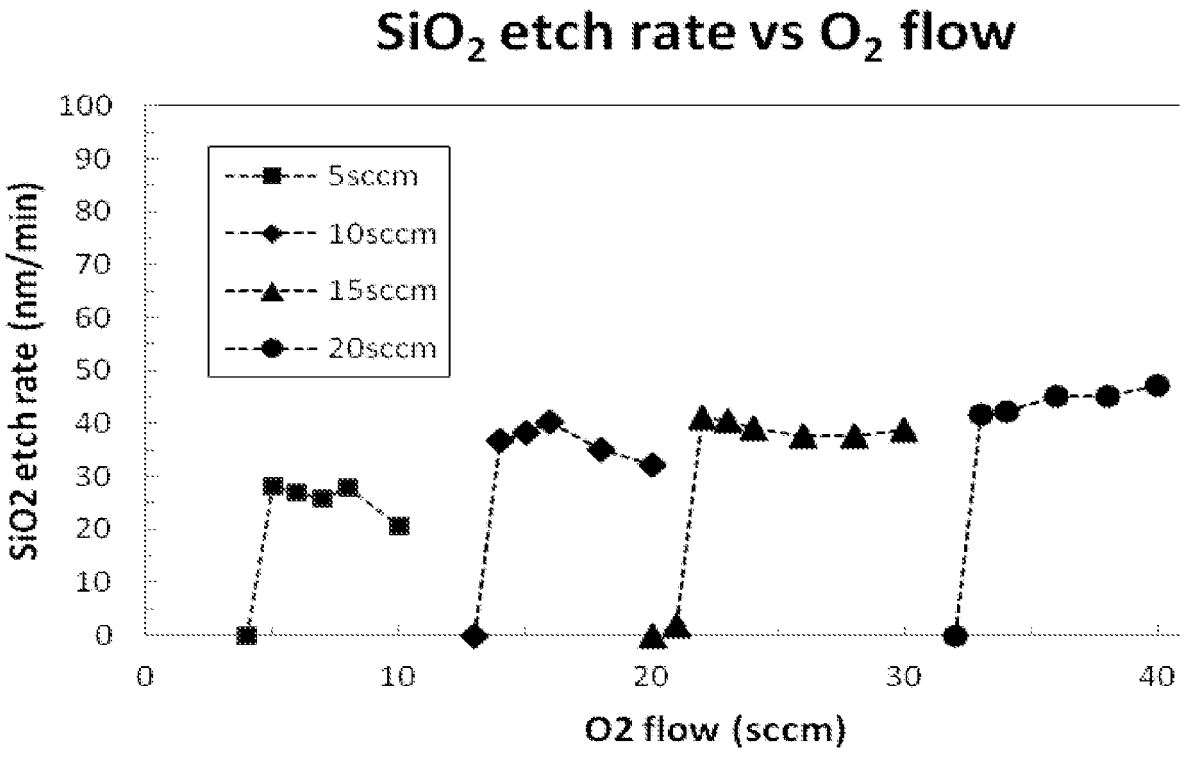

SiO2 etch rate vs O2 flow
SiO2 etch rate (nm/min)
O2 flow (sccm)
5sccm
10sccm
15sccm
20sccm
0
10
20
30
40
50
60
70
80
90
100

FIG 16

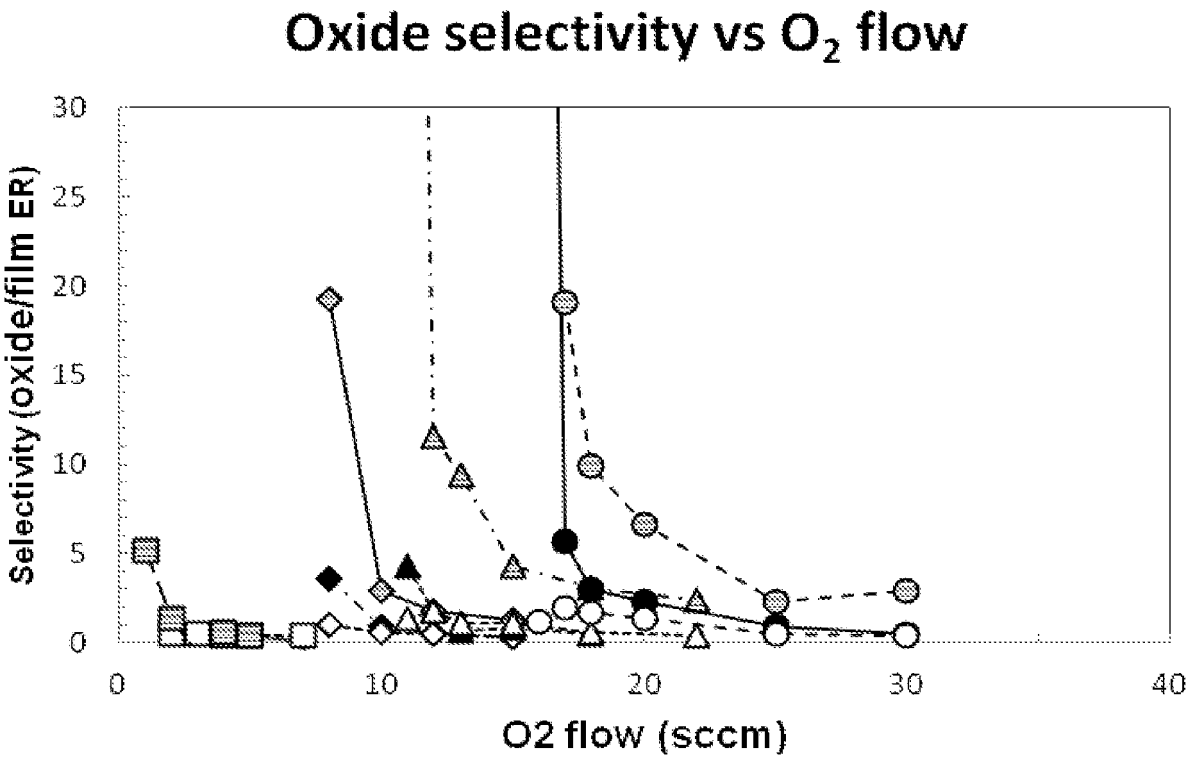

Oxide selectivity vs O_2 flow
Selectivity (oxide/film ER)
30
25
20
15
10
5
0
0
10
20
30
40
O2 flow (sccm)

FIG 17

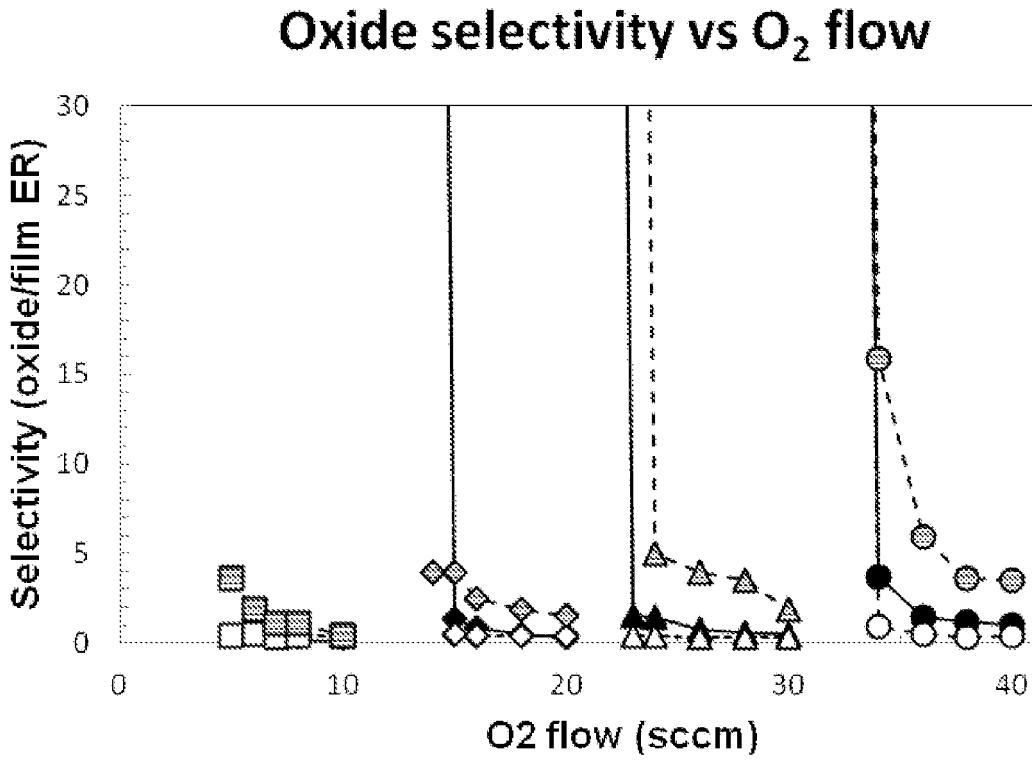

Oxide selectivity vs O_2 flow
Selectivity (oxide/film ER)
30
25
20
15
10
5
0
0
10
20
30
40
O2 flow (sccm)

FIG 18

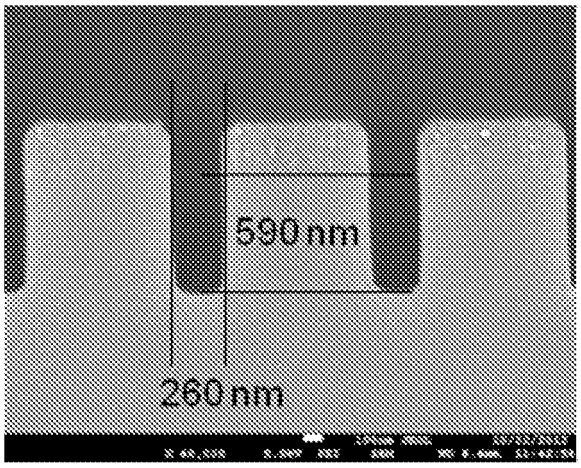


FIG 19

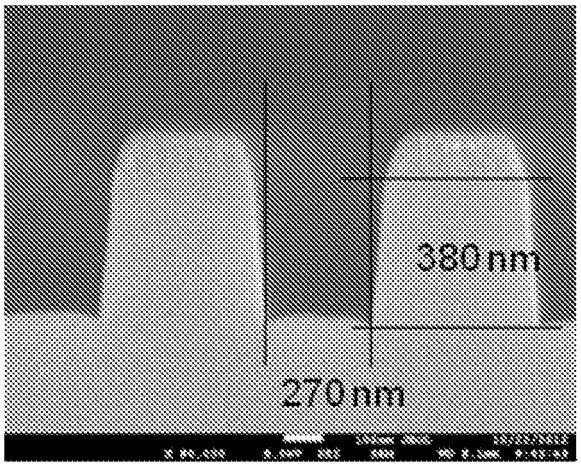


FIG 20

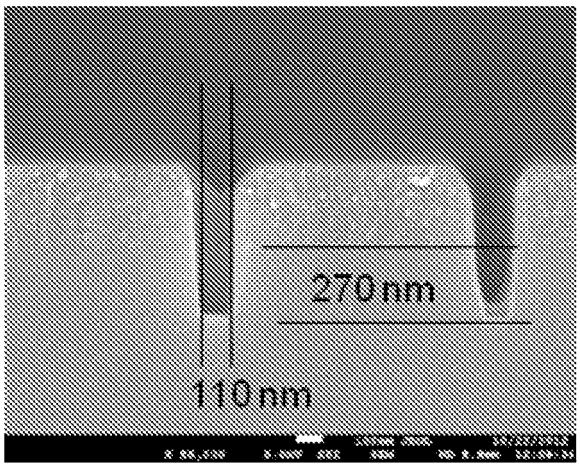


FIG 21

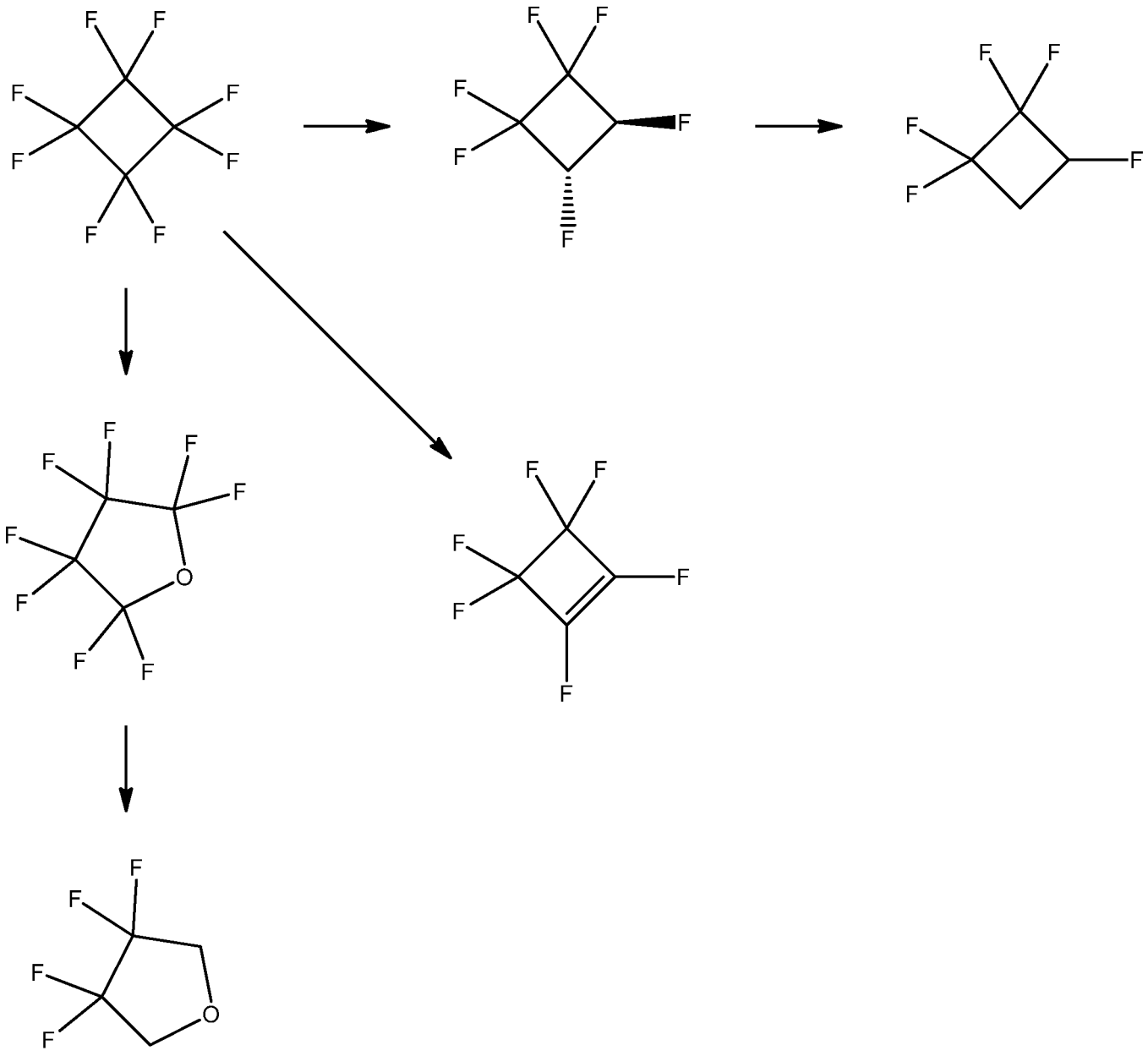


FIG 22