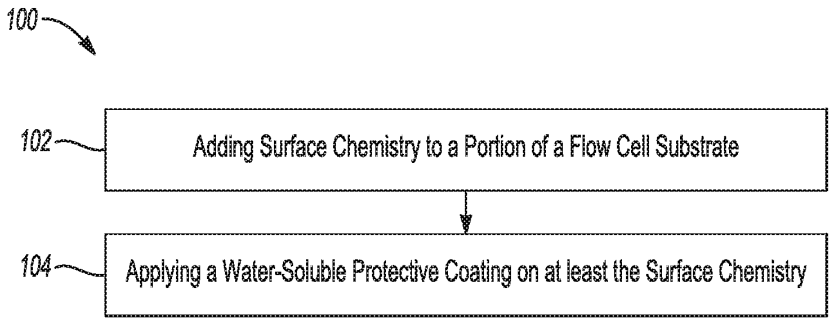

100
102
Adding Surface Chemistry to a Portion of a Flow Cell Substrate
104
Applying a Water-Soluble Protective Coating on at least the Surface Chemistry

Fig-1

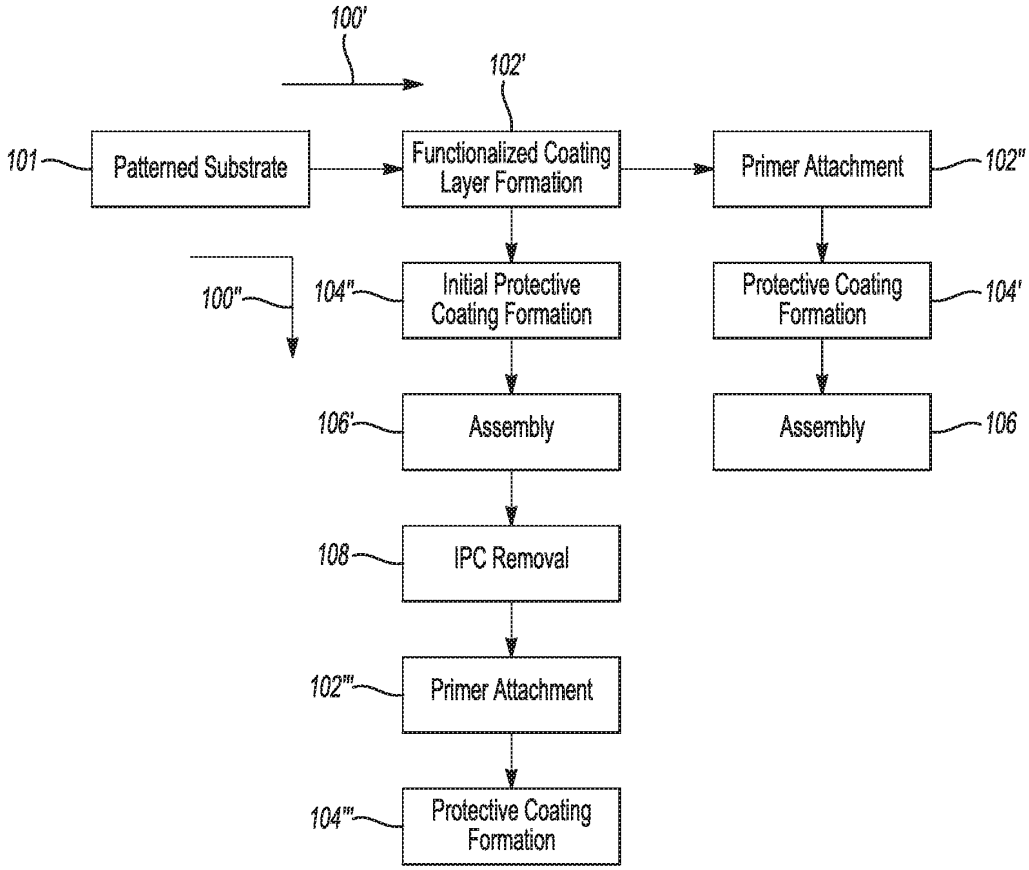

100'
102'
101
Patterned Substrate
Functionalized Coating Layer Formation
Primer Attachment
102"
100"
104"
Initial Protective Coating Formation
Protective Coating Formation
104'
106'
Assembly
Assembly
106
108
IPC Removal
102'''
Primer Attachment
104'''
Protective Coating Formation

Fig-2

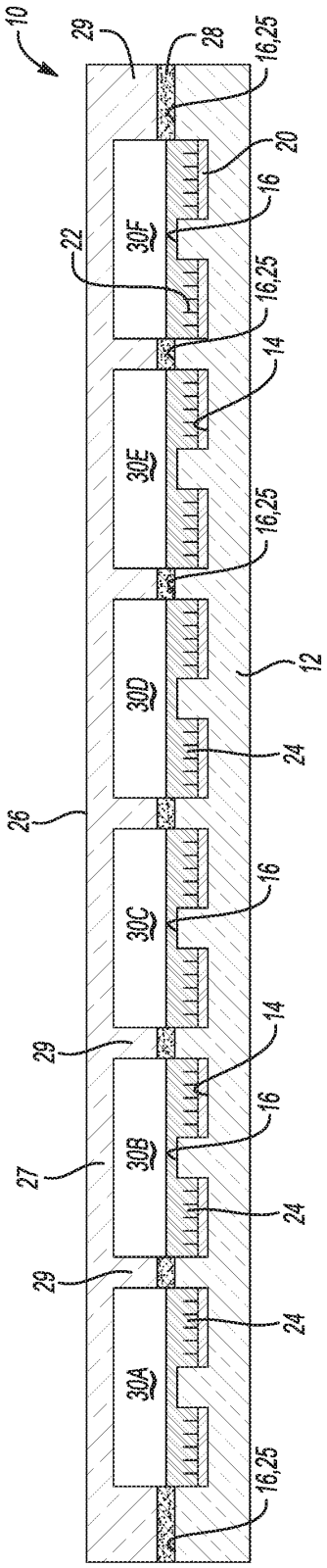

10
29
28
16,25
20
16
22
30F
16,25
14
30E
16,25
12
30D
24
26
30C
16
29
14
16
27
30B
24
29
24
30A
16,25

Fig-3

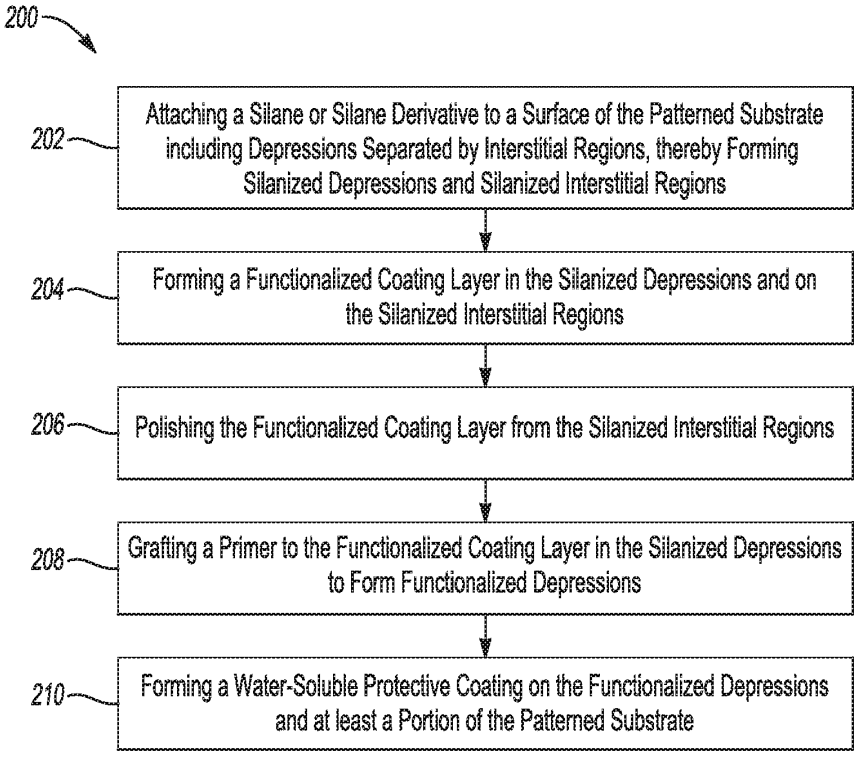

200
202
Attaching a Silane or Silane Derivative to a Surface of the Patterned Substrate including Depressions Separated by Interstitial Regions, thereby Forming Silanized Depressions and Silanized Interstitial Regions
204
Forming a Functionalized Coating Layer in the Silanized Depressions and on the Silanized Interstitial Regions
206
Polishing the Functionalized Coating Layer from the Silanized Interstitial Regions
208
Grafting a Primer to the Functionalized Coating Layer in the Silanized Depressions to Form Functionalized Depressions
210
Forming a Water-Soluble Protective Coating on the Functionalized Depressions and at least a Portion of the Patterned Substrate

Fig-4

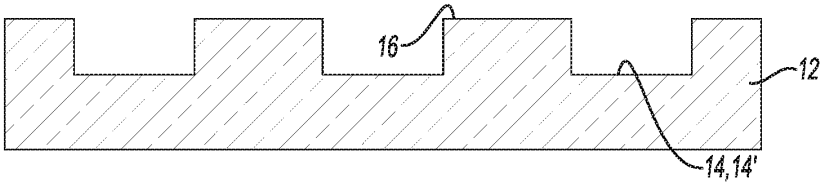


Fig-5A

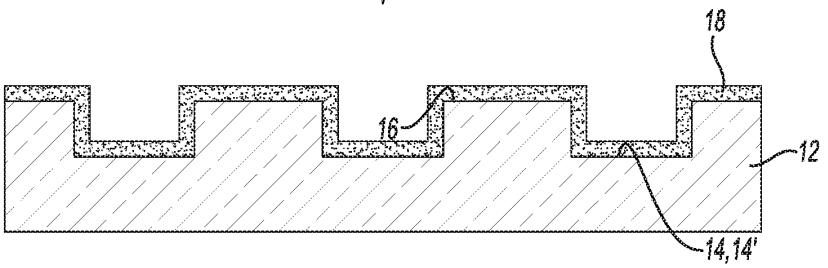


Fig-5B

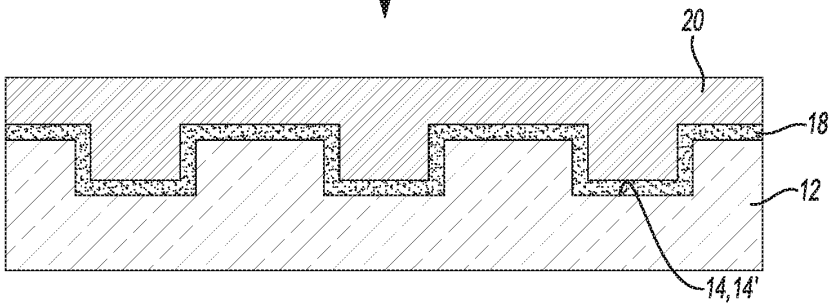


Fig-5C

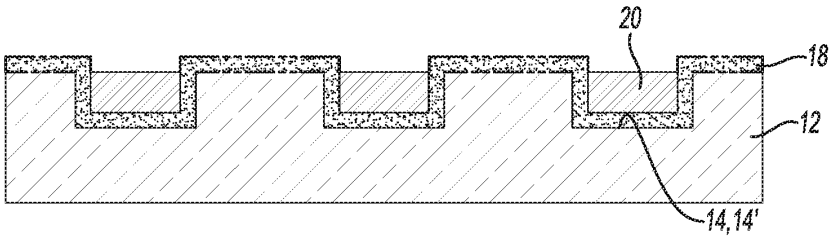


Fig-5D

To Fig 5E

To Fig 5I

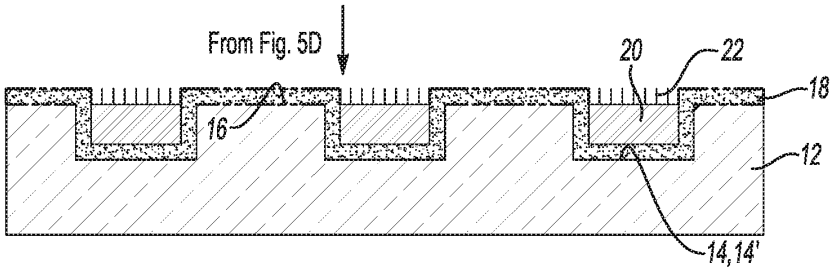


Fig-5E

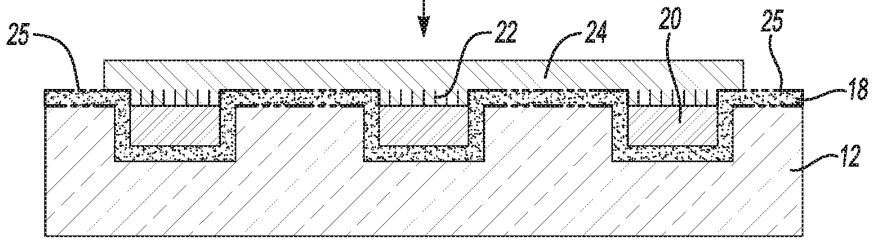


Fig-5F

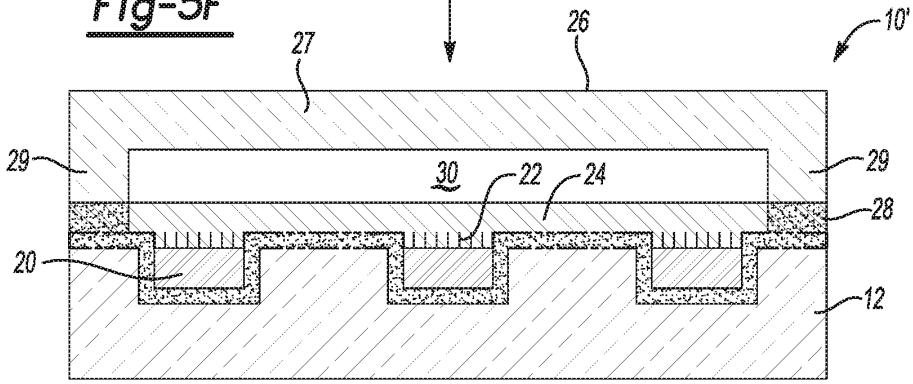


Fig-5G

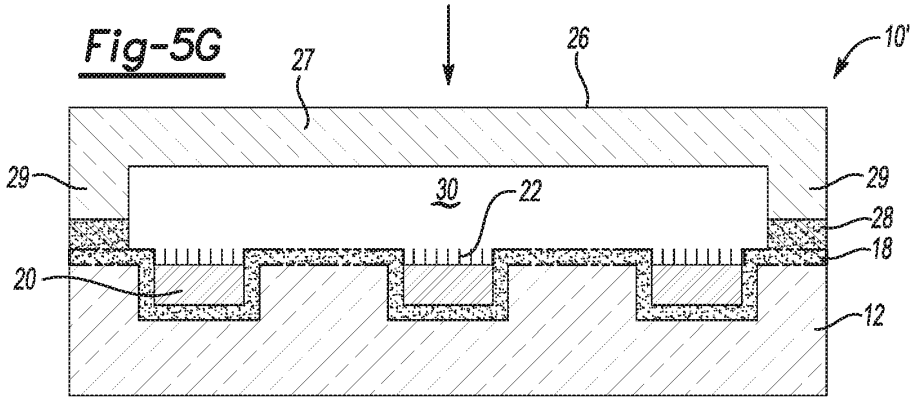


Fig-5H

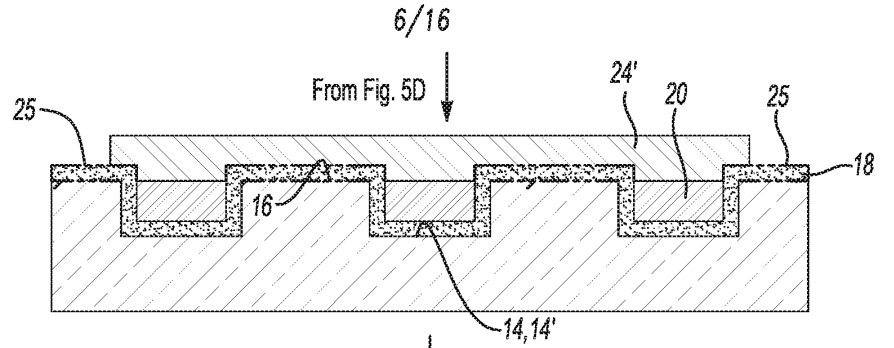


Fig-5I

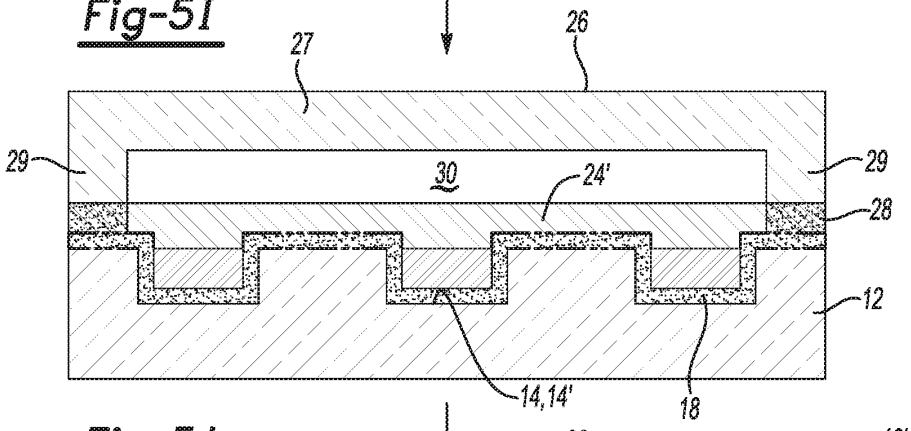


Fig-5J

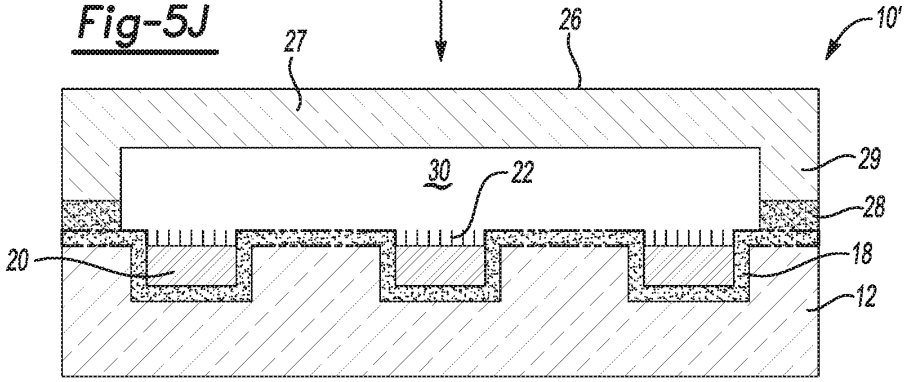


Fig-5K

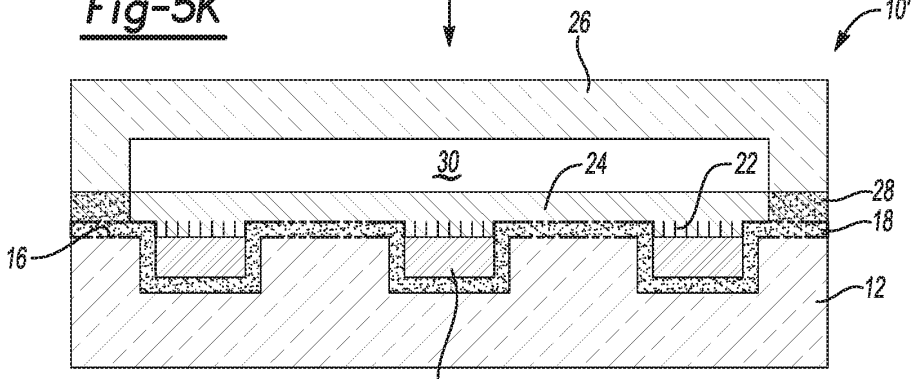


Fig-5L

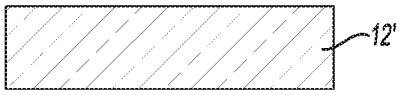


Fig-6A

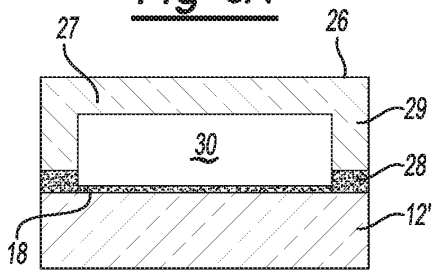


Fig-6B

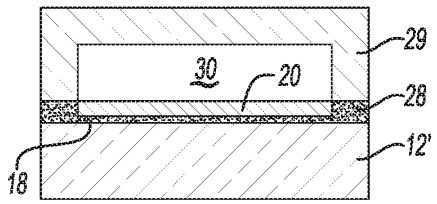


Fig-6C

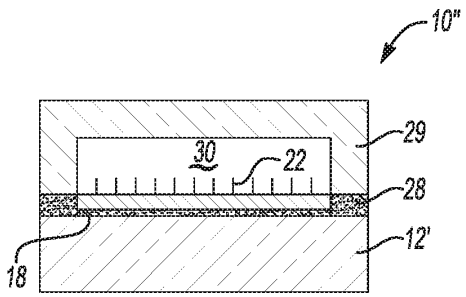


Fig-6D

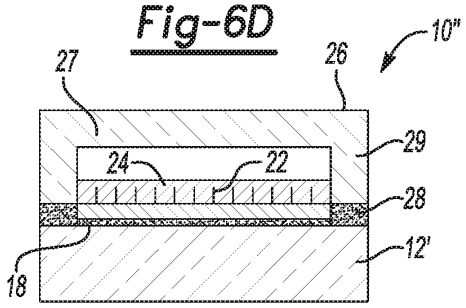


Fig-6E

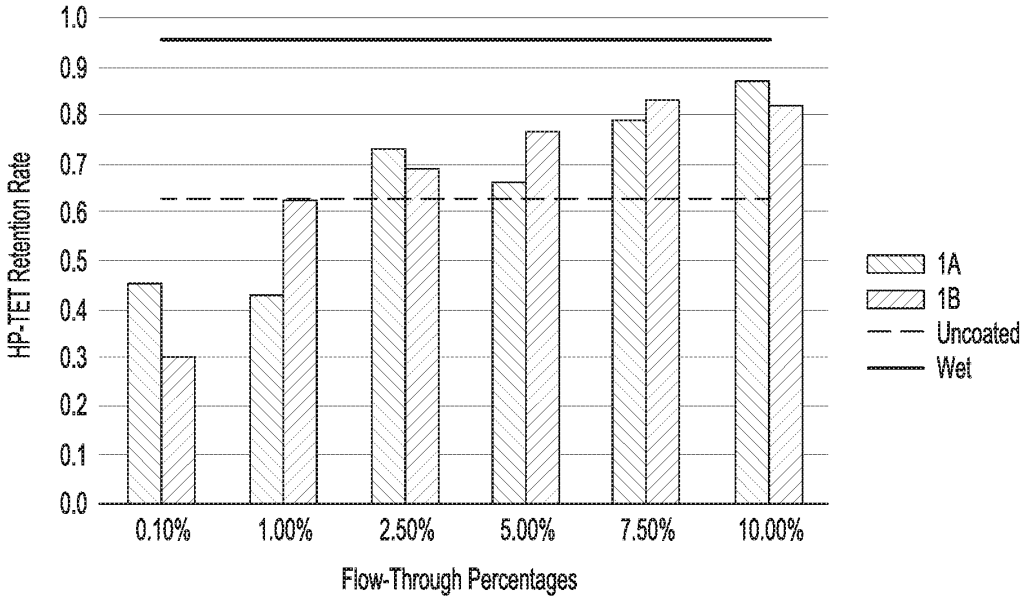


Fig-7

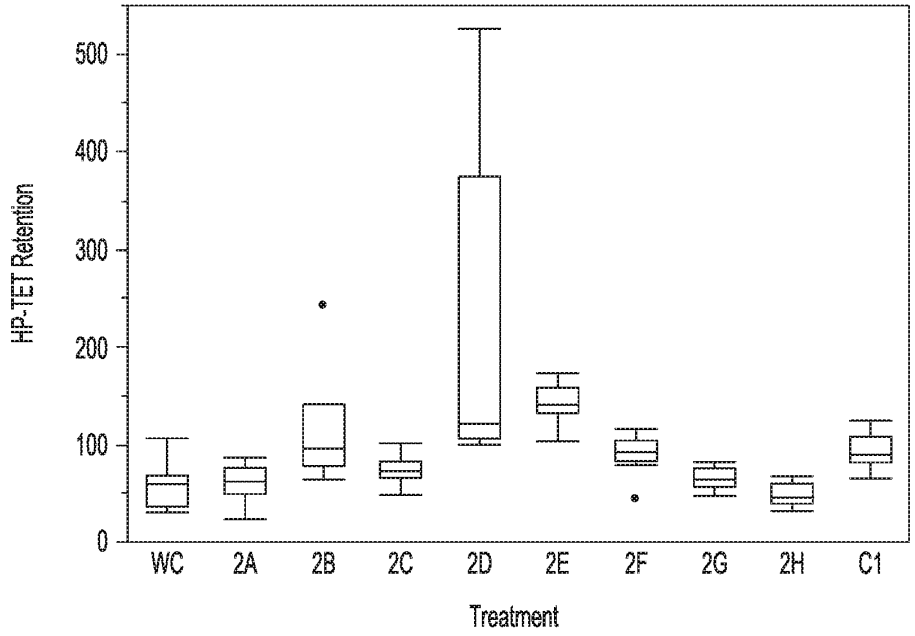

HP-TET Retention
500
400
300
200
100
0
WC
2A
2B
2C
2D
2E
2F
2G
2H
C1
Treatment

Fig-8

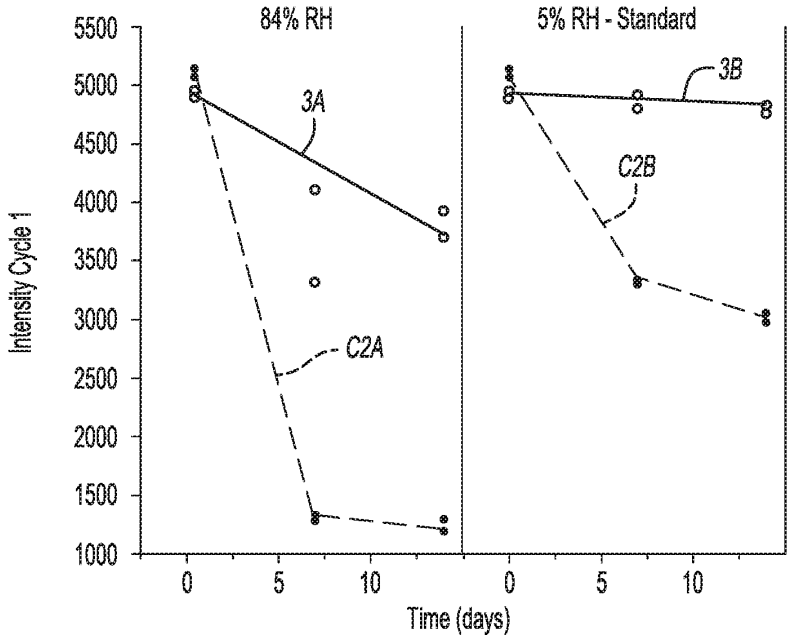

84% RH
5% RH - Standard
Intensity Cycle 1
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
3A
C2A
3B
C2B
0
5
10
0
5
10
Time (days)

Fig-9

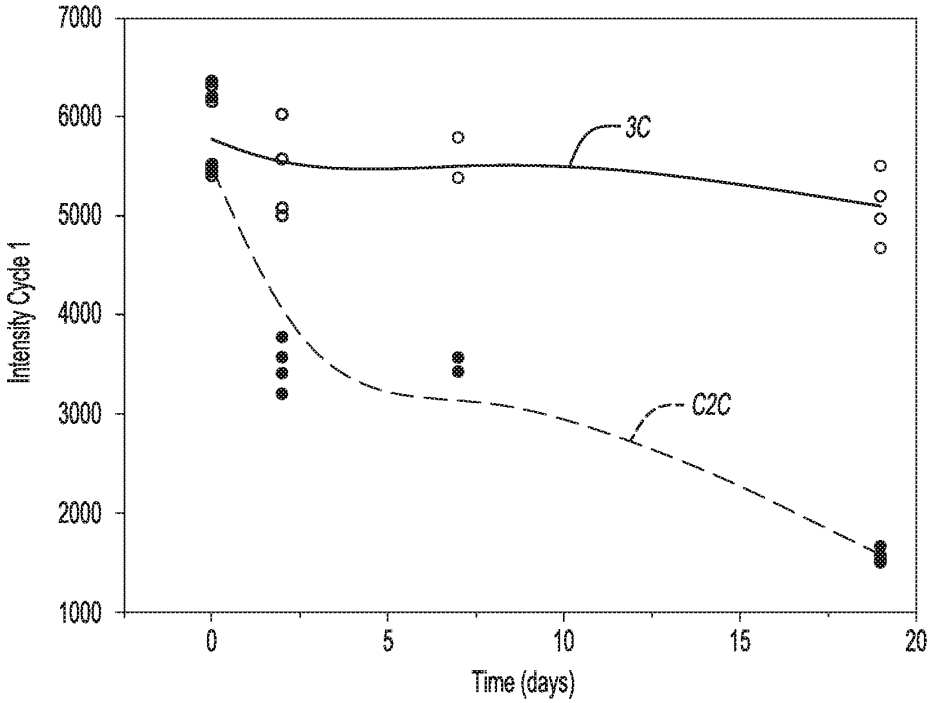


Fig-10

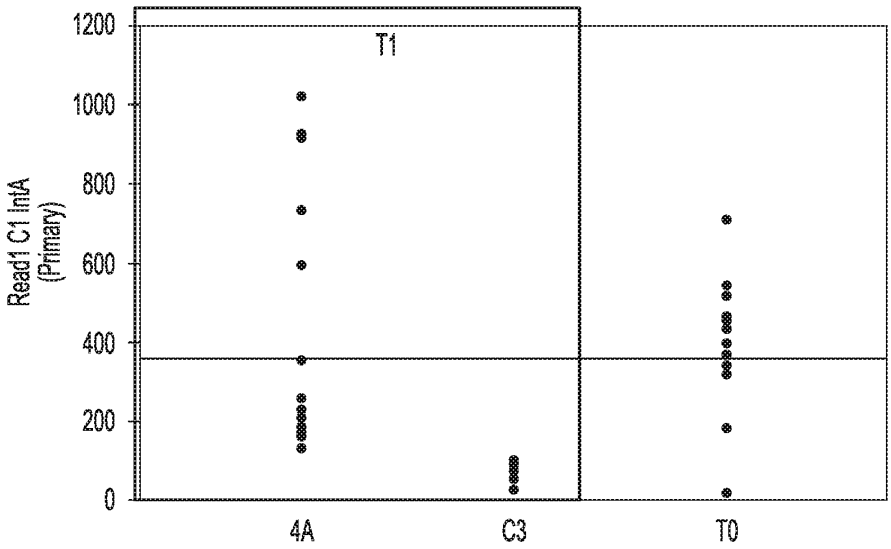


Fig-11A

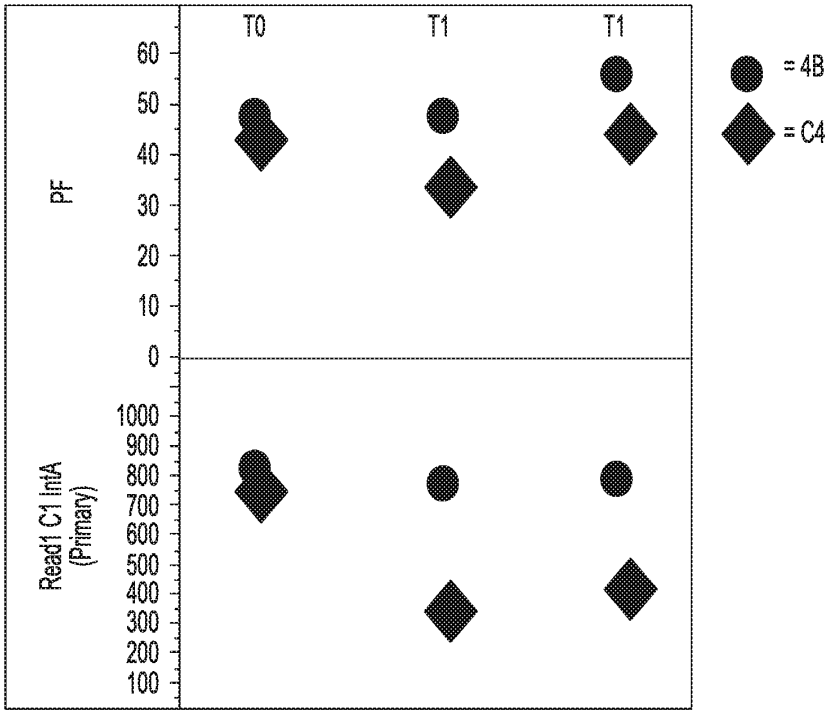


Fig-11B

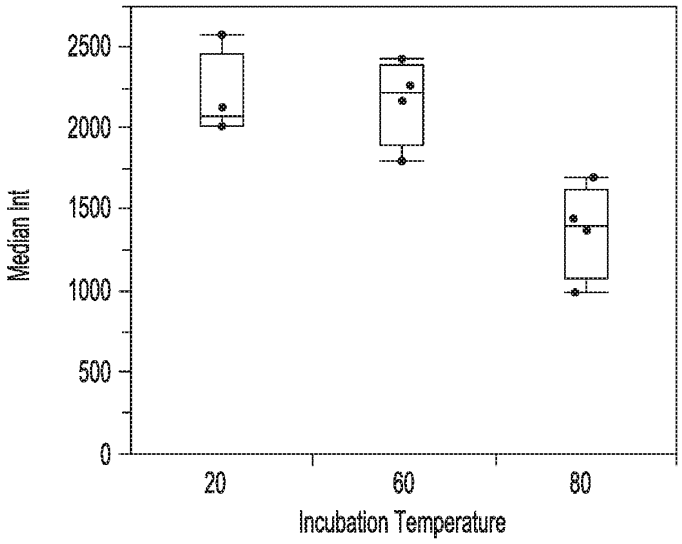


Fig-12A

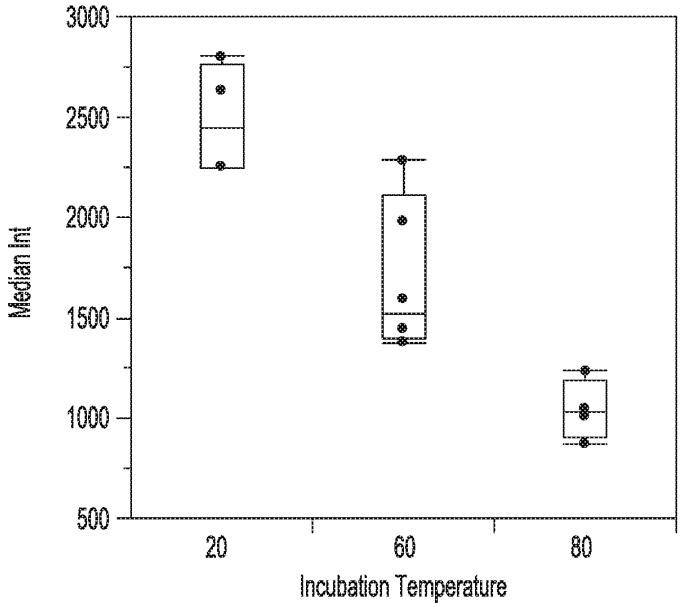


Fig-12B

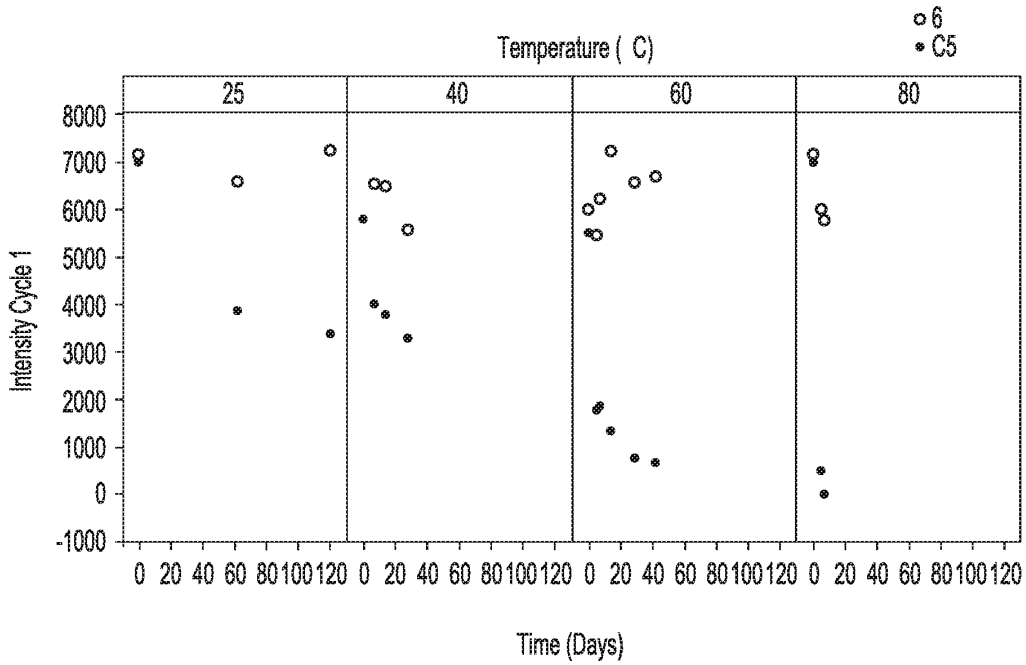


Fig-13

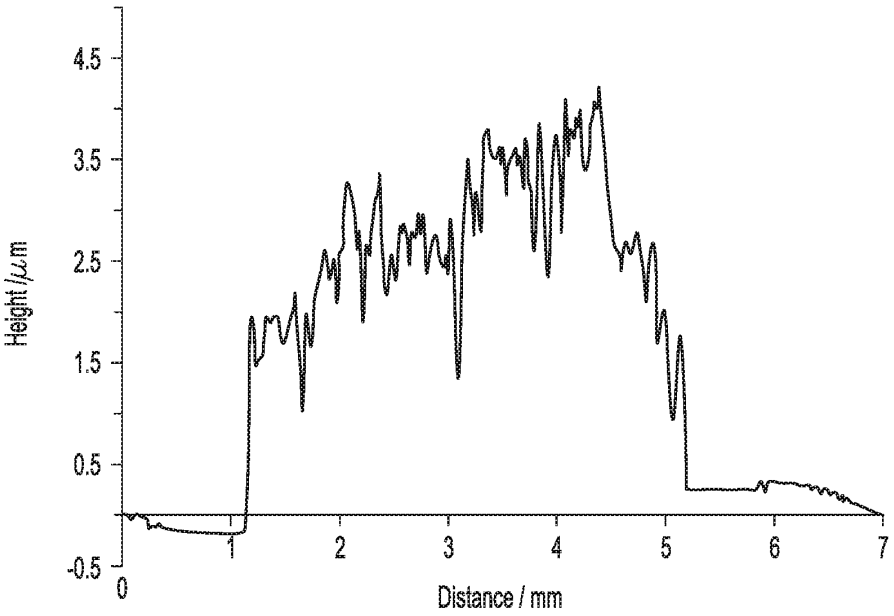

Height /μm
4.5
3.5
2.5
1.5
0.5
-0.5
0
1
2
3
4
5
6
7
Distance / mm

Fig-14

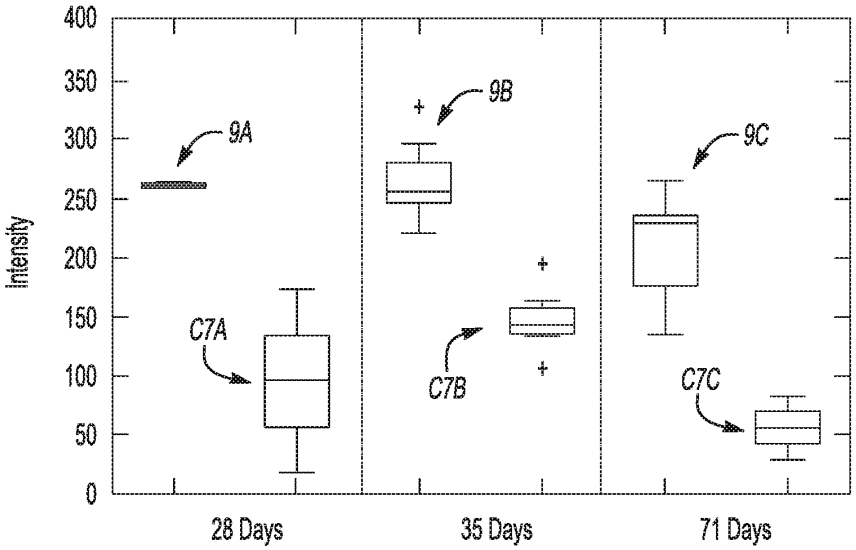

Intensity
400
350
300
250
200
150
100
50
0
9A
9B
9C
C7A
C7B
C7C
28 Days
35 Days
71 Days

Fig-15

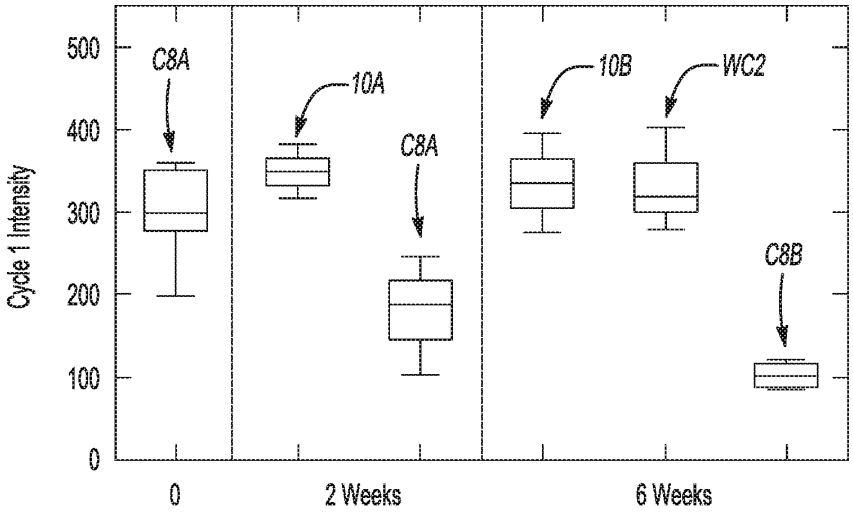

Cycle 1 Intensity
500
400
300
200
100
0
C8A
10A
C8A
10B
WC2
C8B
0
2 Weeks
6 Weeks

Fig-16

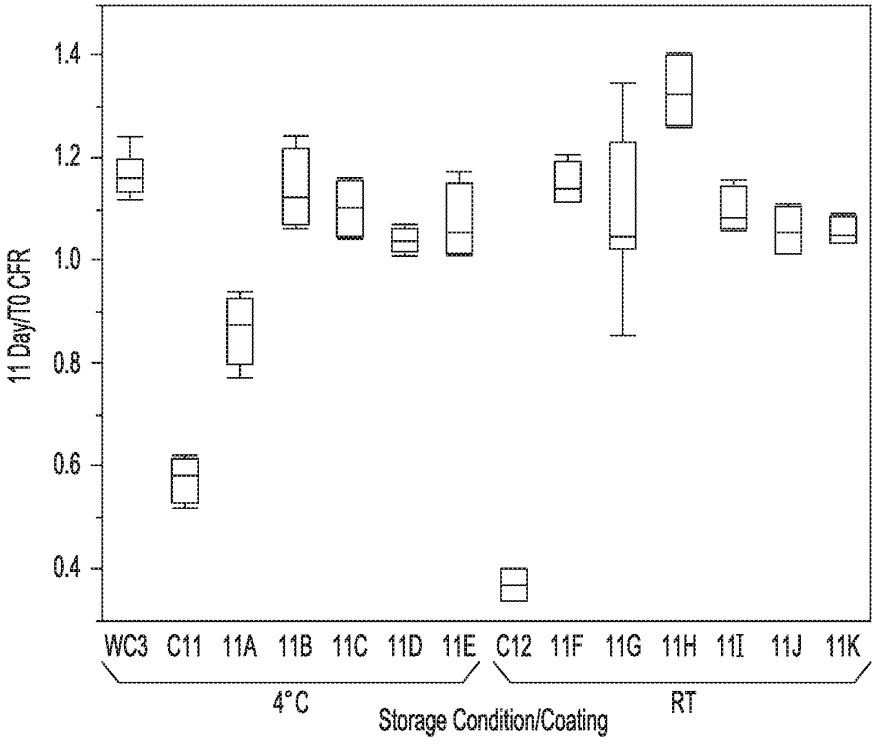

11 Day/T0 CFR
1.4
1.2
1.0
0.8
0.6
0.4
WC3
C11
11A
11B
11C
11D
11E
C12
11F
11G
11H
11I
11J
11K
4°C
RT
Storage Condition/Coating

Fig-17

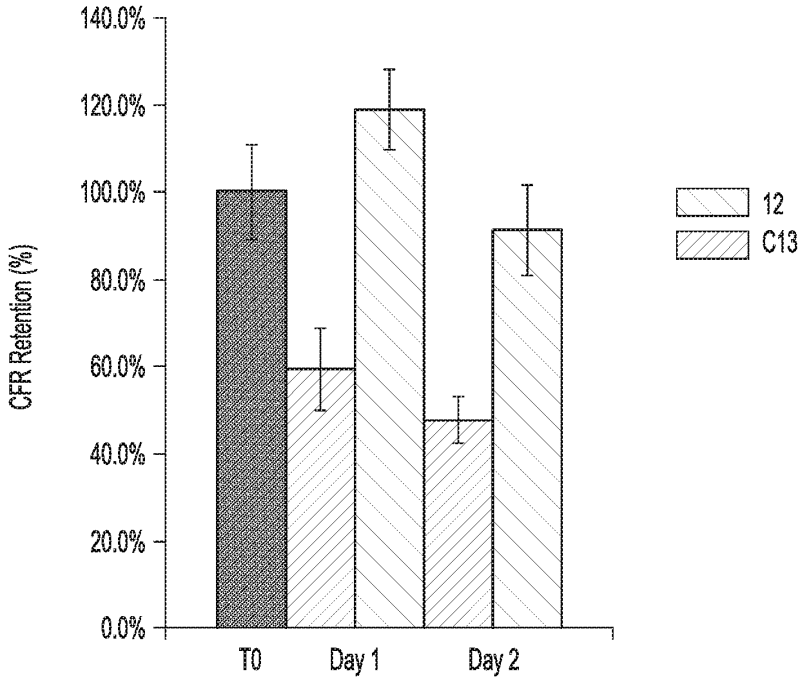

140.0%
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
CFR Retention (%)
T0
Day 1
Day 2
12
C13

Fig-18

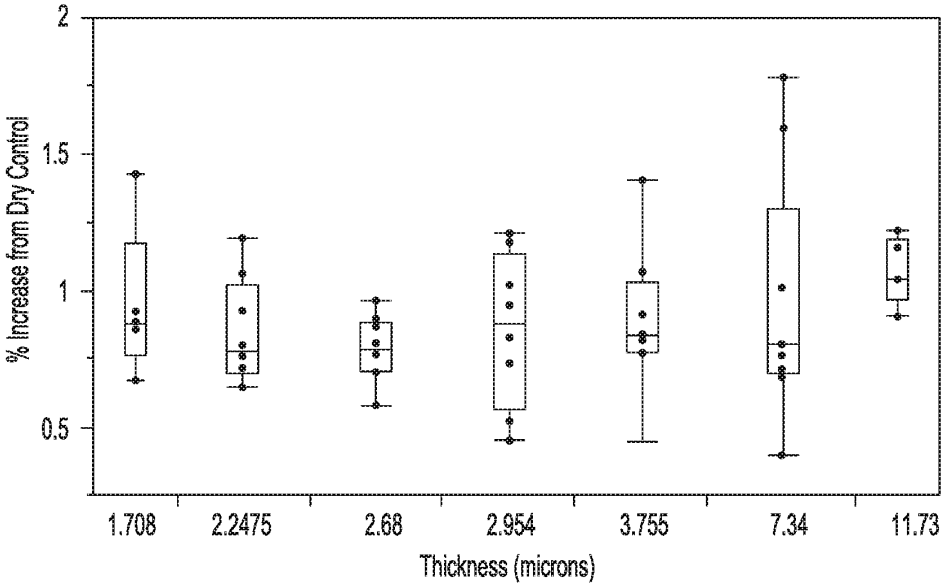

2
1.5
1
0.5
% Increase from Dry Control
1.708
2.2475
2.68
2.954
3.755
7.34
11.73
Thickness (microns)

Fig-19

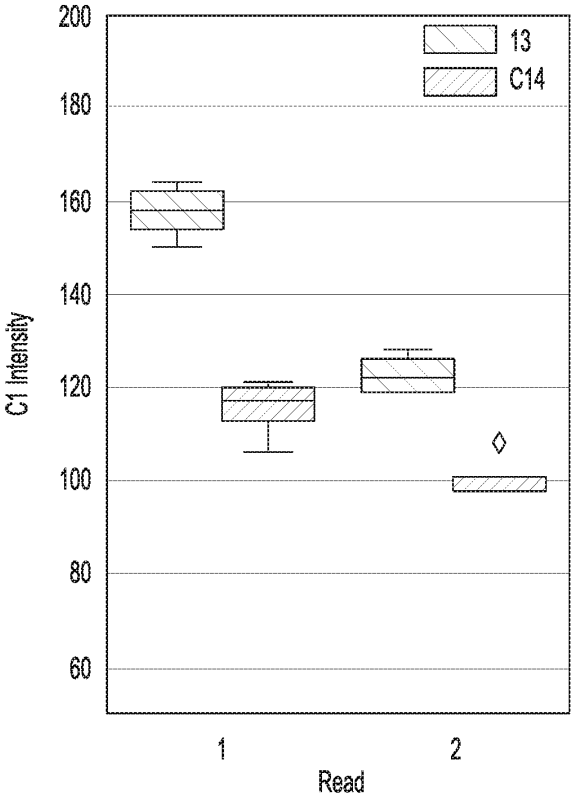

200
180
160
140
120
100
80
60
C1 Intensity
13
C14
1
2
Read

Fig-20

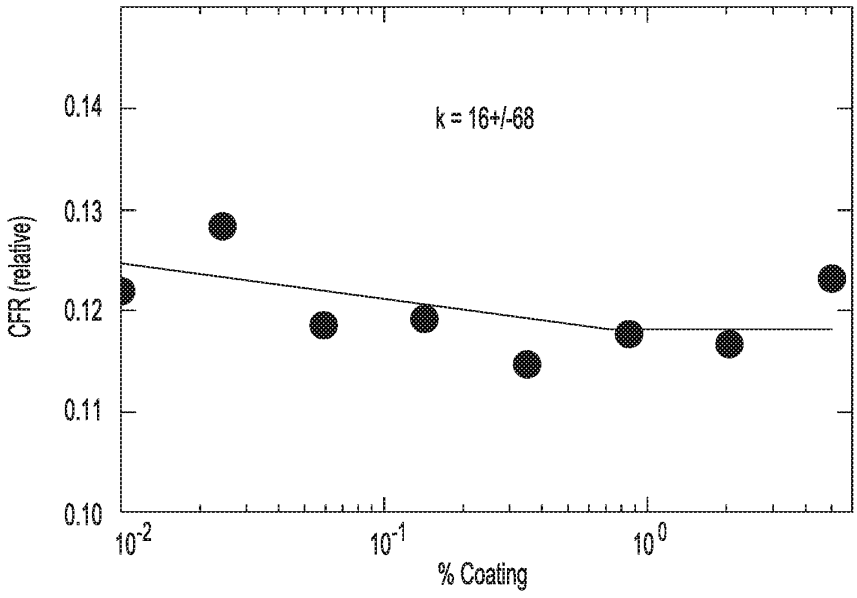

0.14
0.13
0.12
0.11
0.10
CFR (relative)
k = 16+/-68
10-2
10-1
100
% Coating

Fig-21

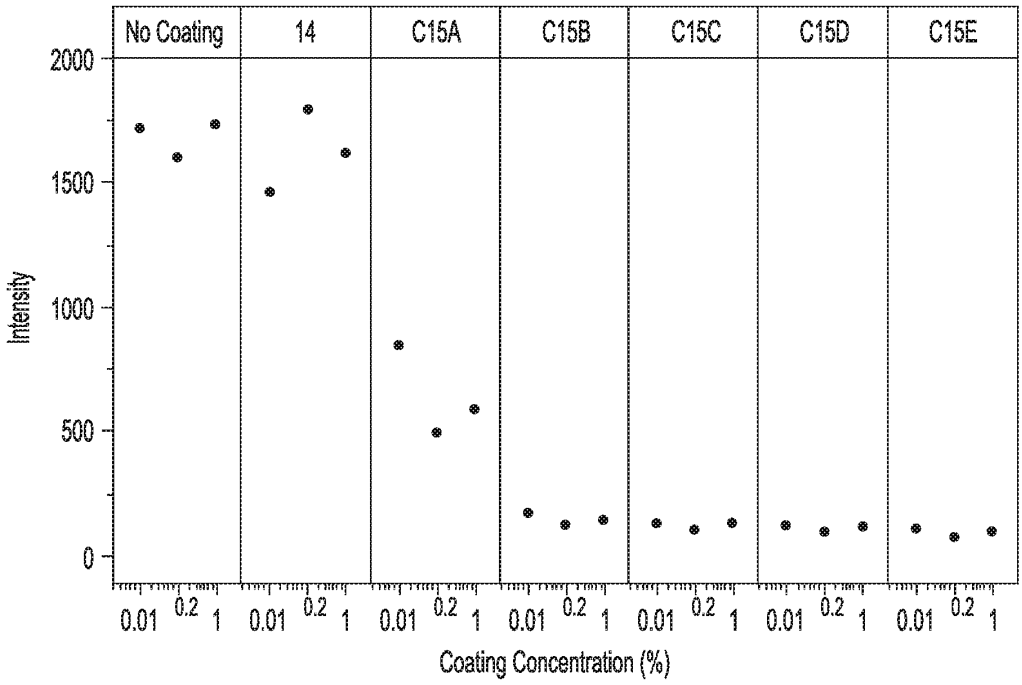

No Coating
14
C15A
C15B
C15C
C15D
C15E
2000
1500
1000
500
0
Intensity
0.01
0.2
1
Coating Concentration (%)

Fig-22