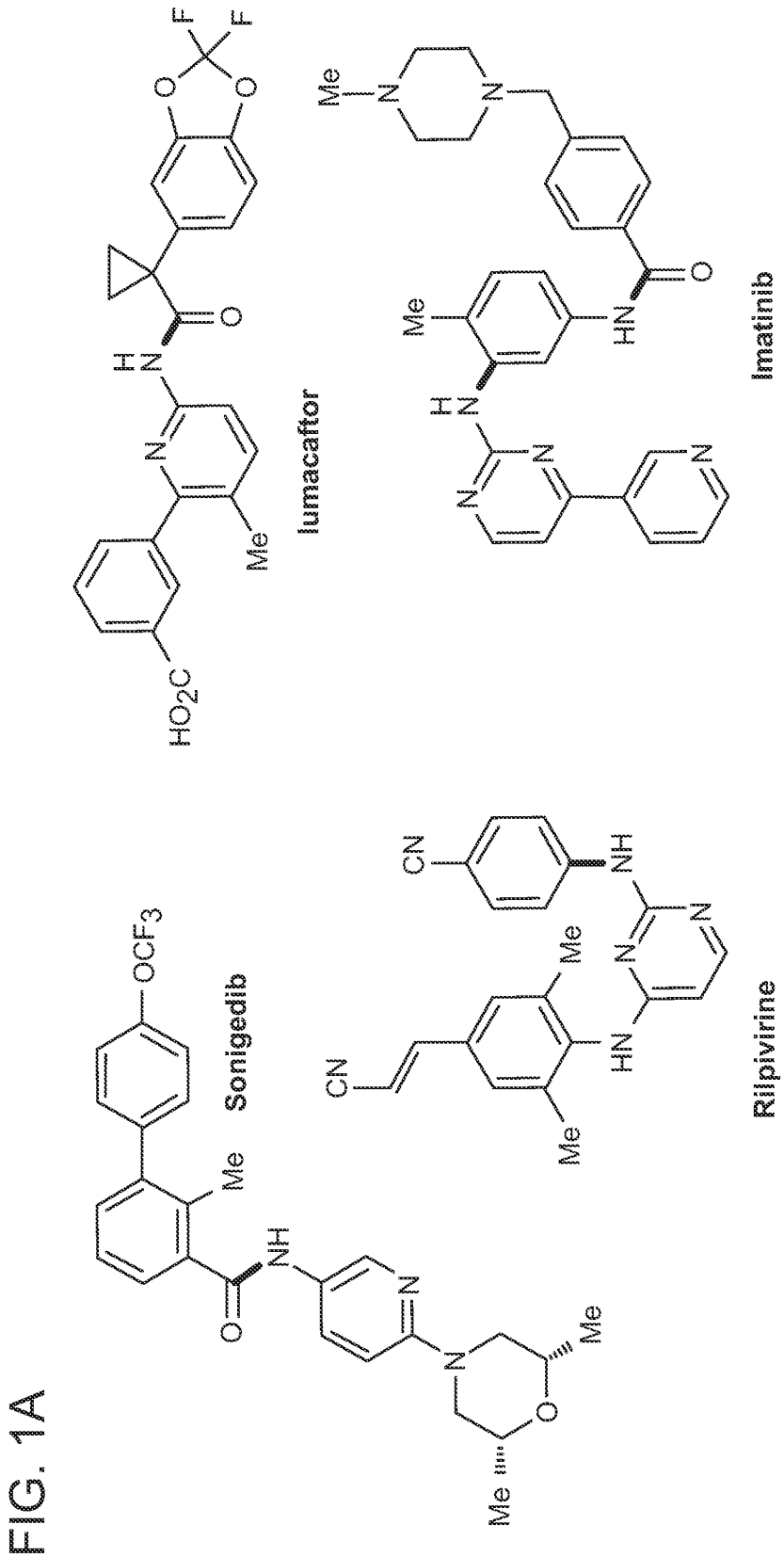
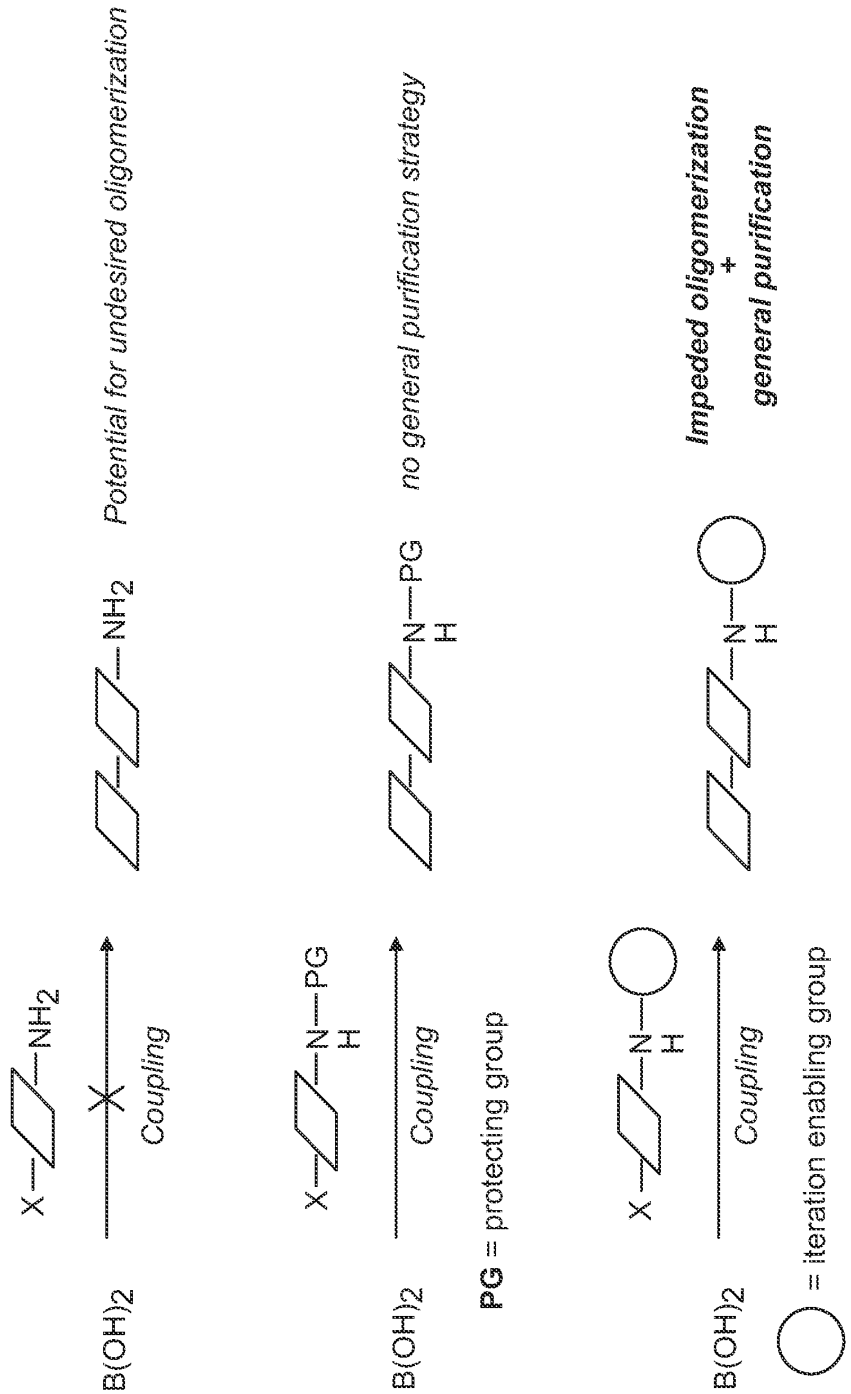


FIG. 1A

FIG. 1B


1)
X
NH2
B(OH)2
Coupling
Potential for undesired oligomerization
2)
X
N
PG
H
B(OH)2
Coupling
no general purification strategy
PG = protecting group
3)
X
N
H
B(OH)2
Coupling
Impeded oligomerization
+
general purification
= iteration enabling group

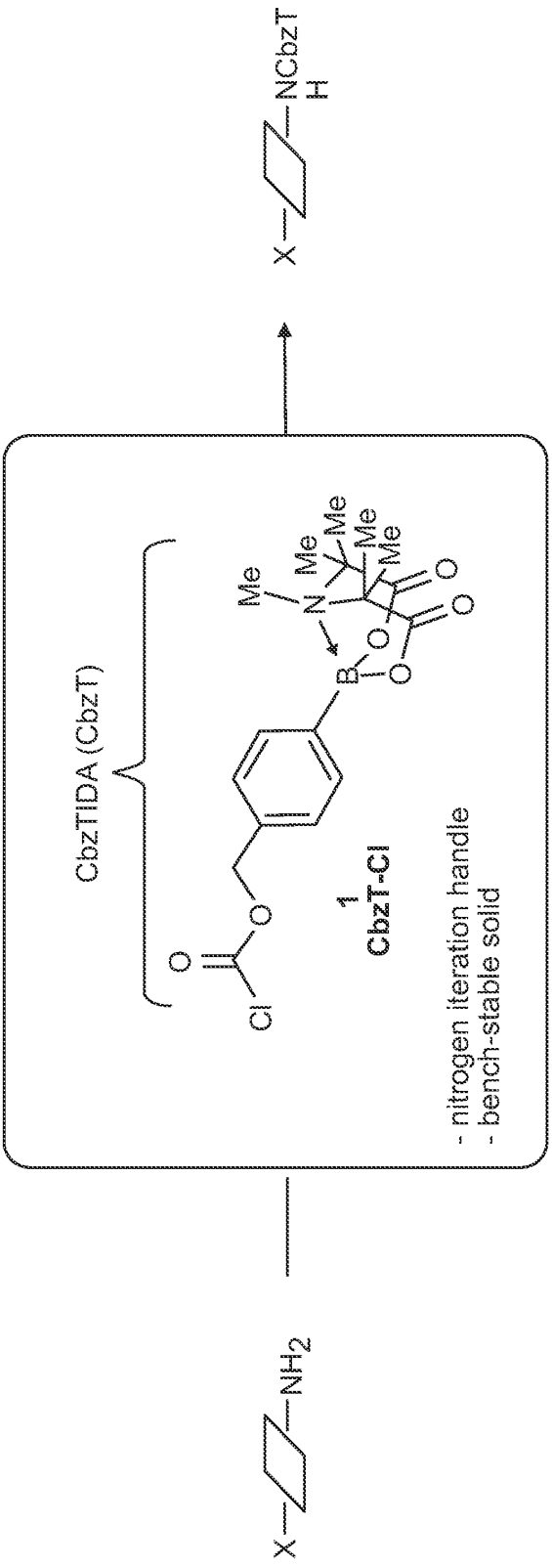

X
NH2
CbzTIDA (CbzT)
Me
N
Me
Me
Me
Me
O
O
O
O
B
O
O
Cl
1
CbzT-Cl
- nitrogen iteration handle
- bench-stable solid
X
NCbzT
H

FIG. 1C

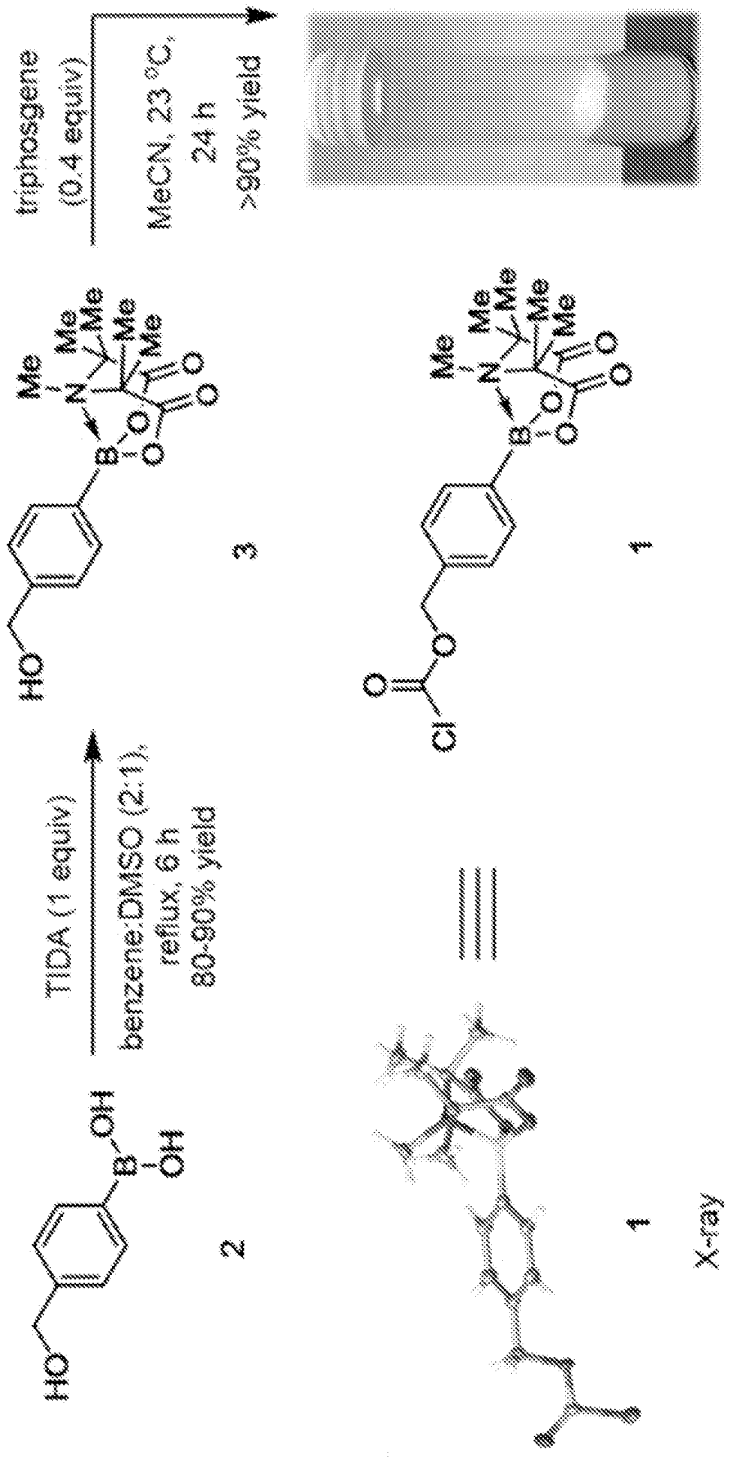

TIDA (1 equiv)
benzene:DMSO (2:1),
reflux, 6 h
80-90% yield
triphosgene
(0.4 equiv)
MeCN, 23 °C,
24 h
>90% yield
2
3
1
1
X-ray

FIG. 2A

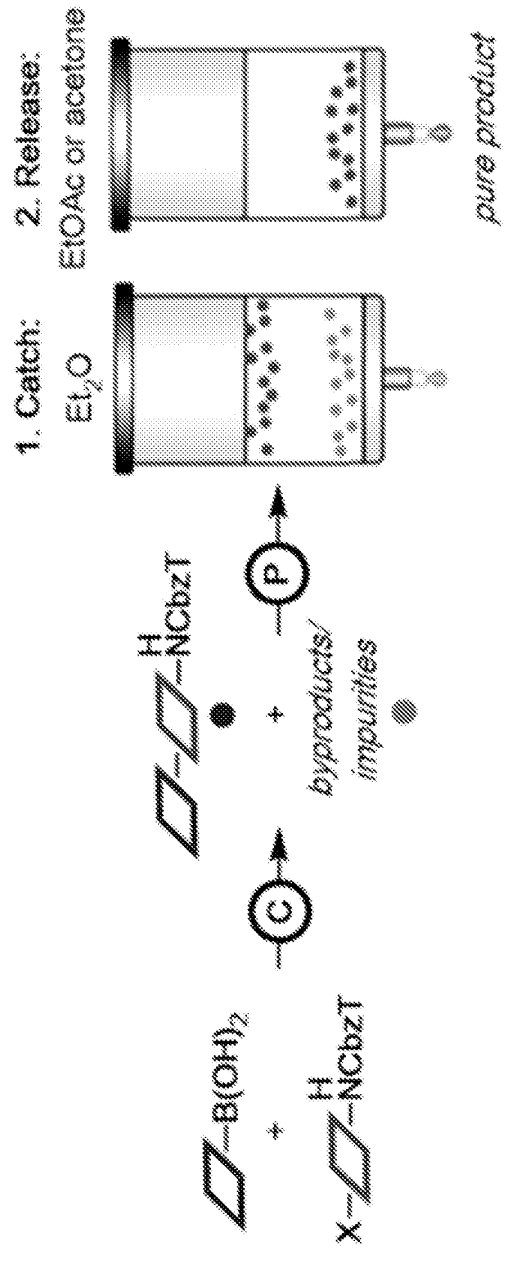

1. Catch:
Et_2O
2. Release:
EtOAc or acetone
pure product
byproducts/
impurities
P
C
$B(OH)_2$
X
H
NCbzT

FIG. 2B

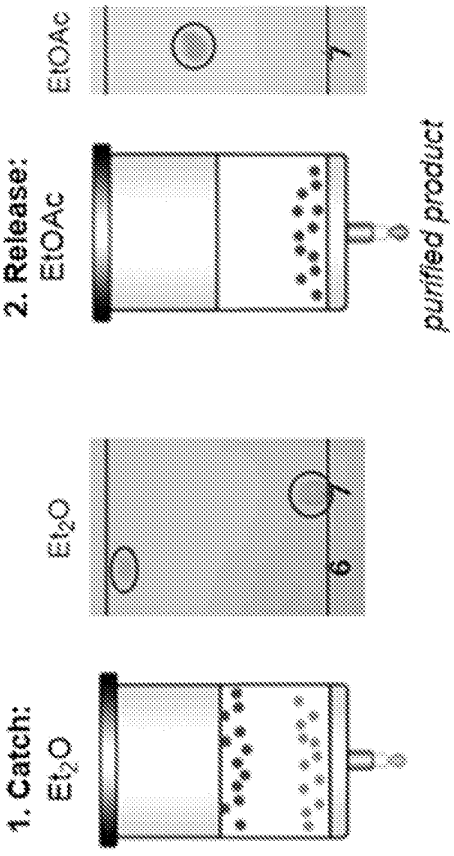
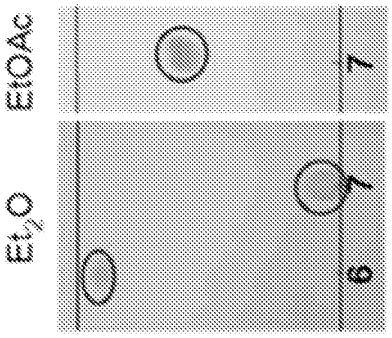

1. Catch:
Et2O
Et2O
6
7
2. Release:
EtOAc
purified product
EtOAc
7

FIG. 2C


EtOAc
Et2O
7
6
7

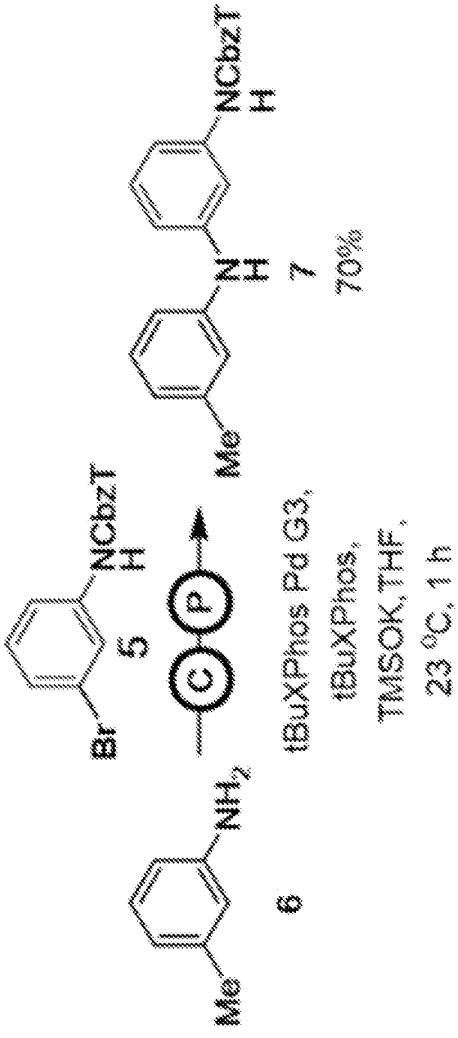

NCbzT
H
Br
5
C
P
Me
NH2
6
tBuXPhos Pd G3,
tBuXPhos,
TMSOK, THF,
23 °C, 1 h
N
H
Me
7
70%
NCbzT
H

FIG. 2D

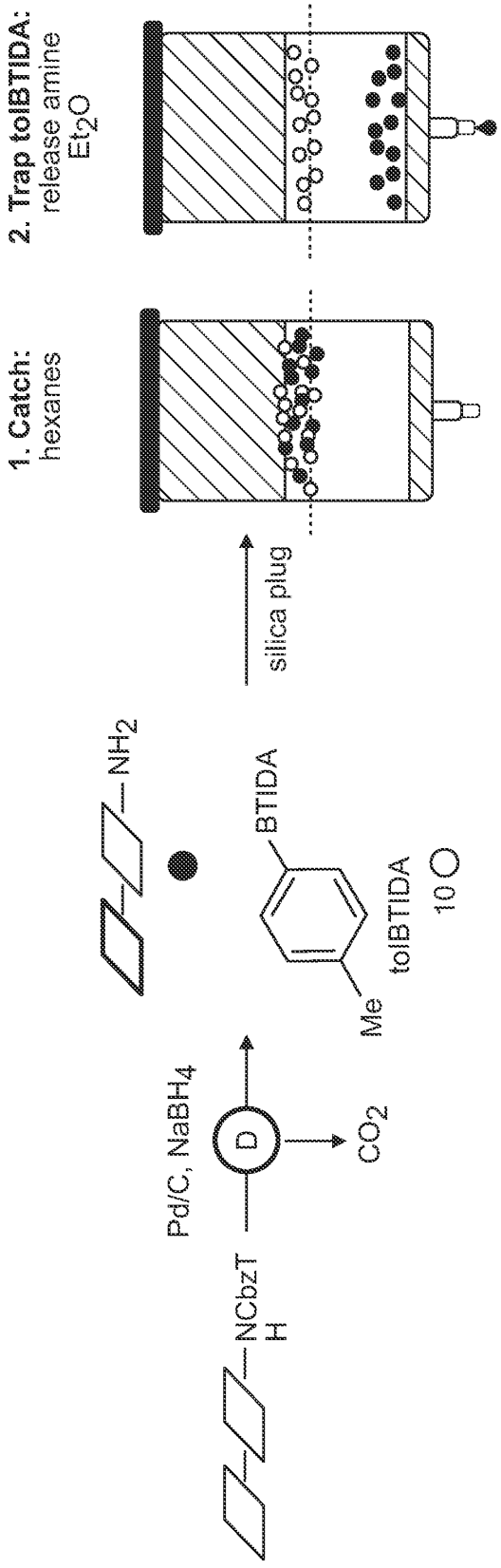

2. Trap tolBTIDA:
release amine
Et_2O
1. Catch:
hexanes
silica plug
NH_2
BTIDA
tolBTIDA
Me
10
Pd/C, $NaBH_4$
D
CO_2
NCbzT
H

FIG. 3A

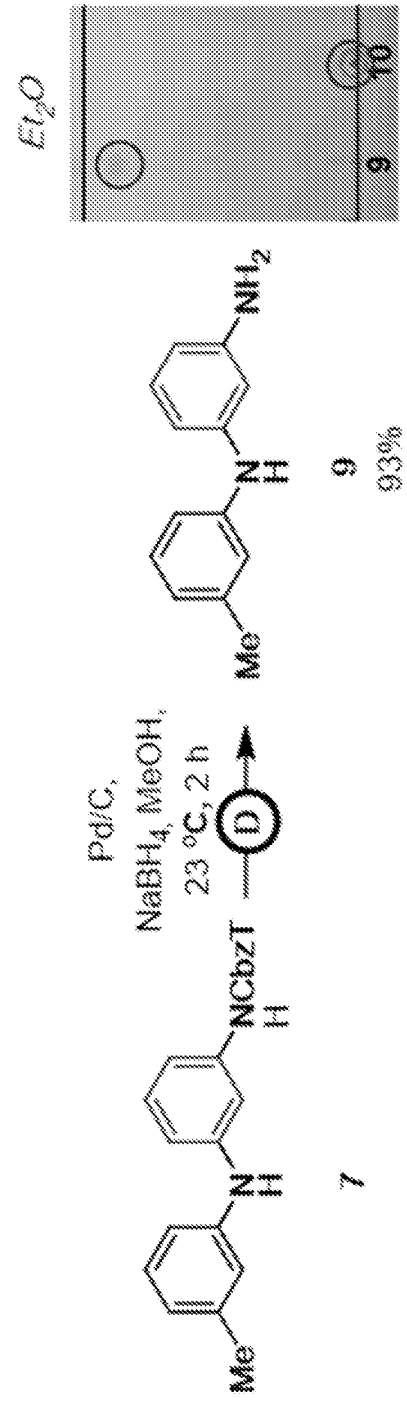


FIG. 3C

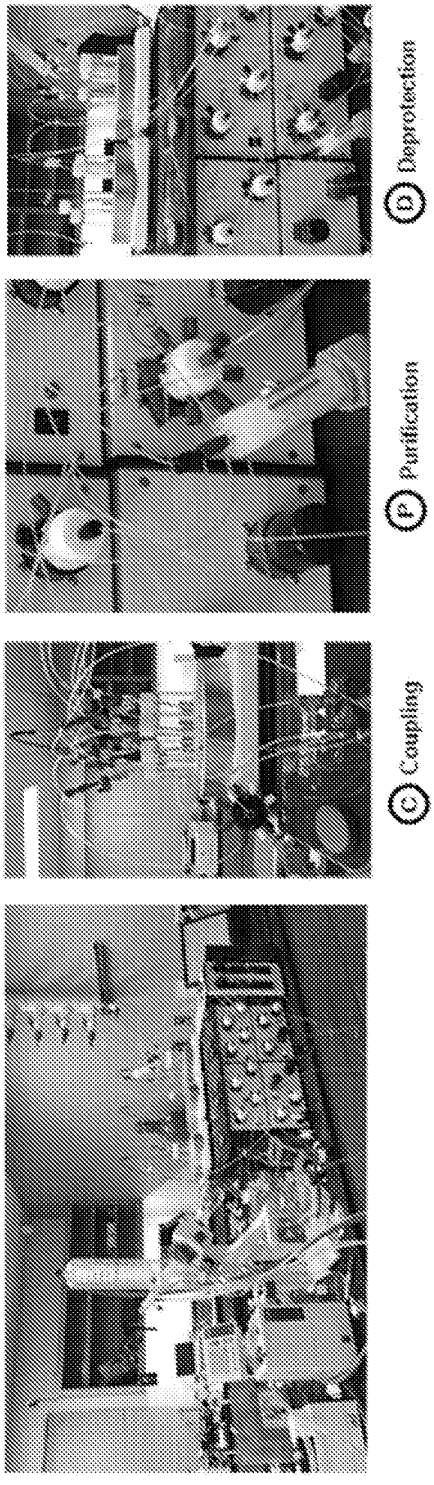


FIG. 4

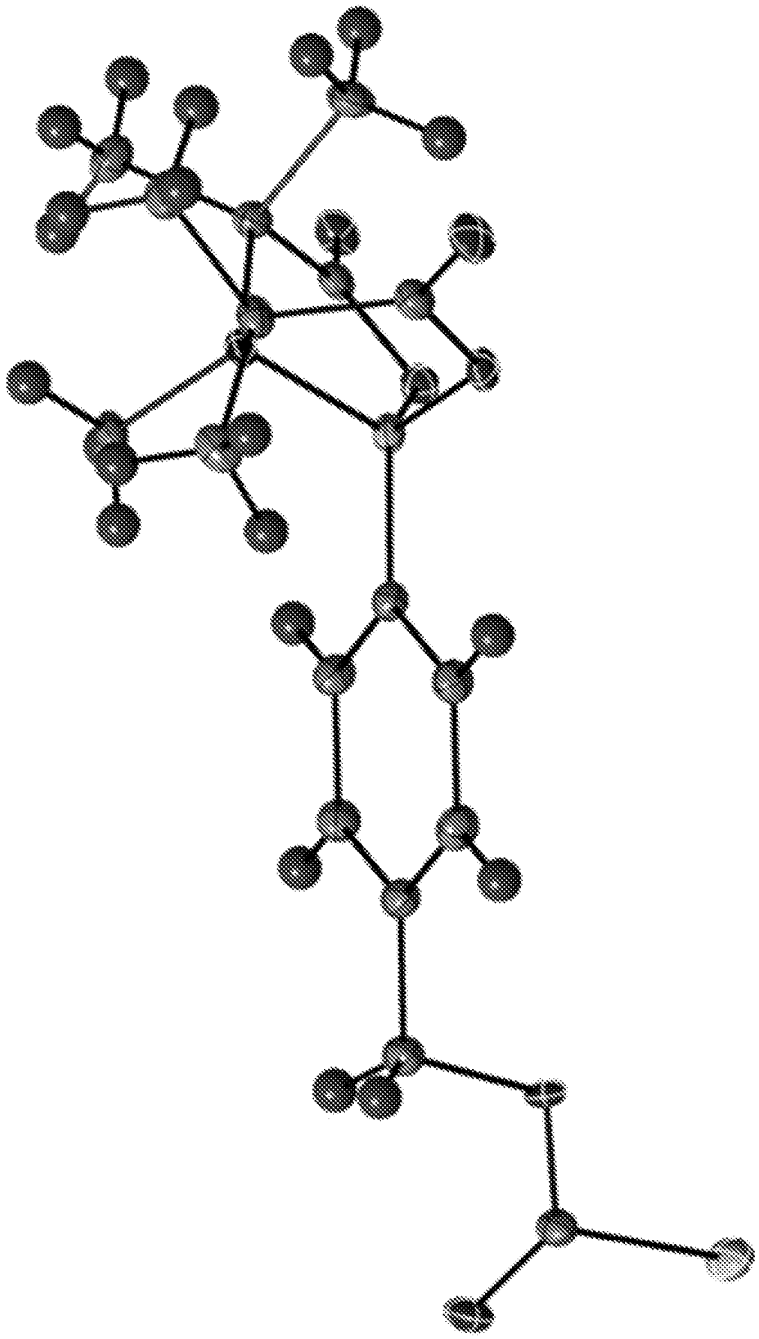


FIG. 5

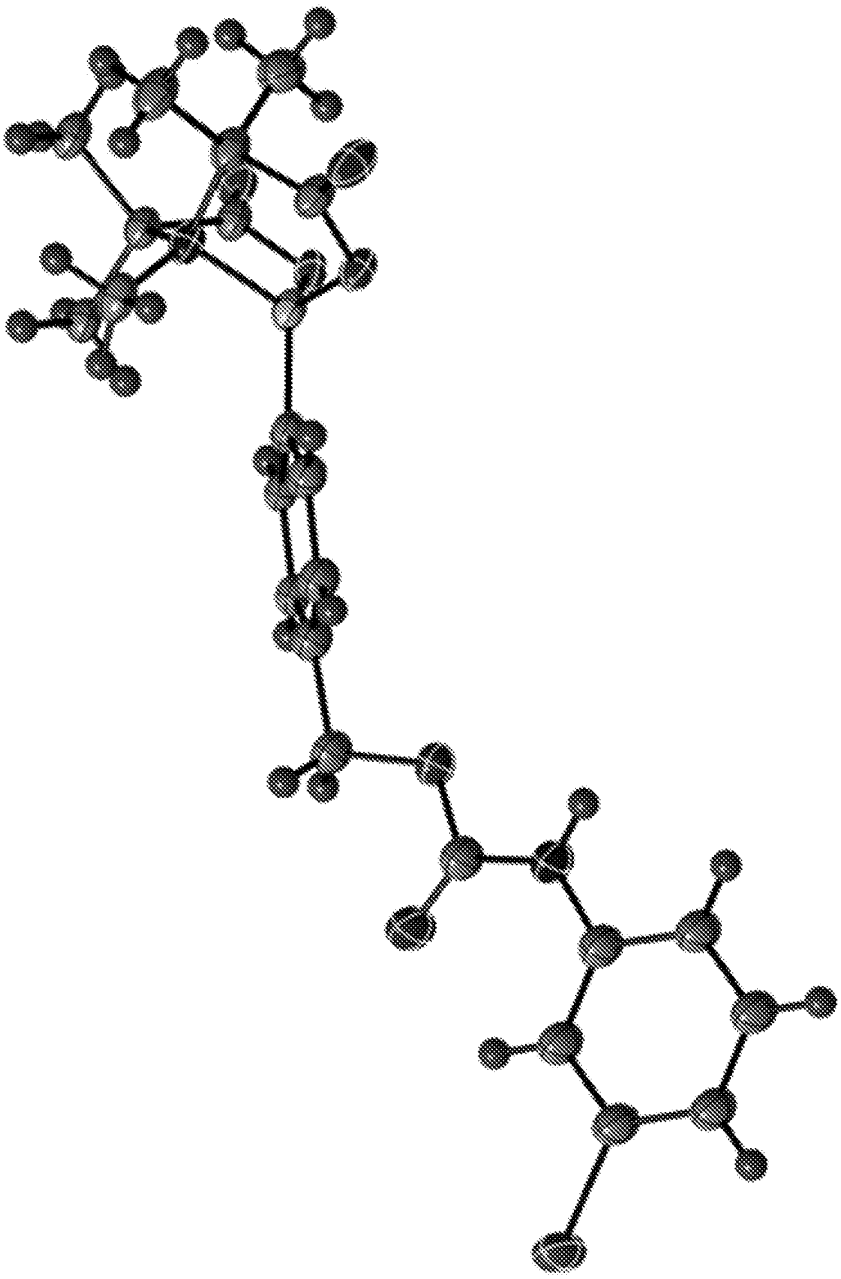


FIG. 6

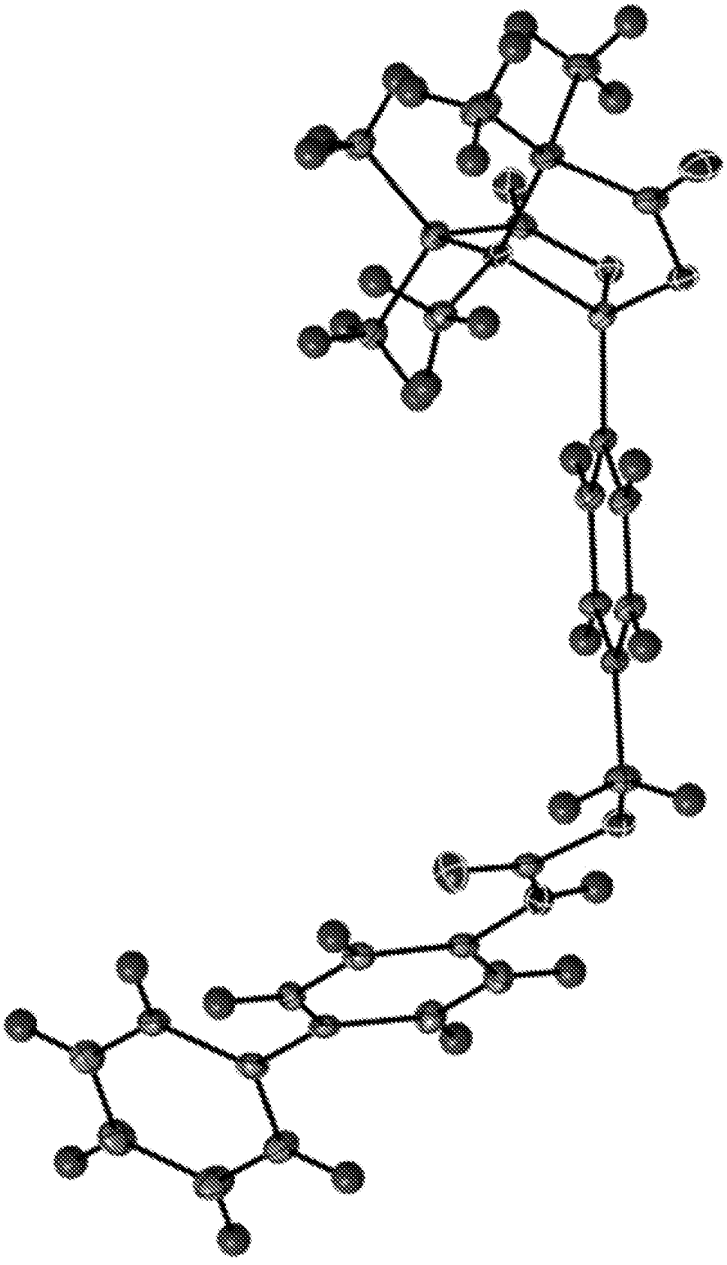


FIG. 7

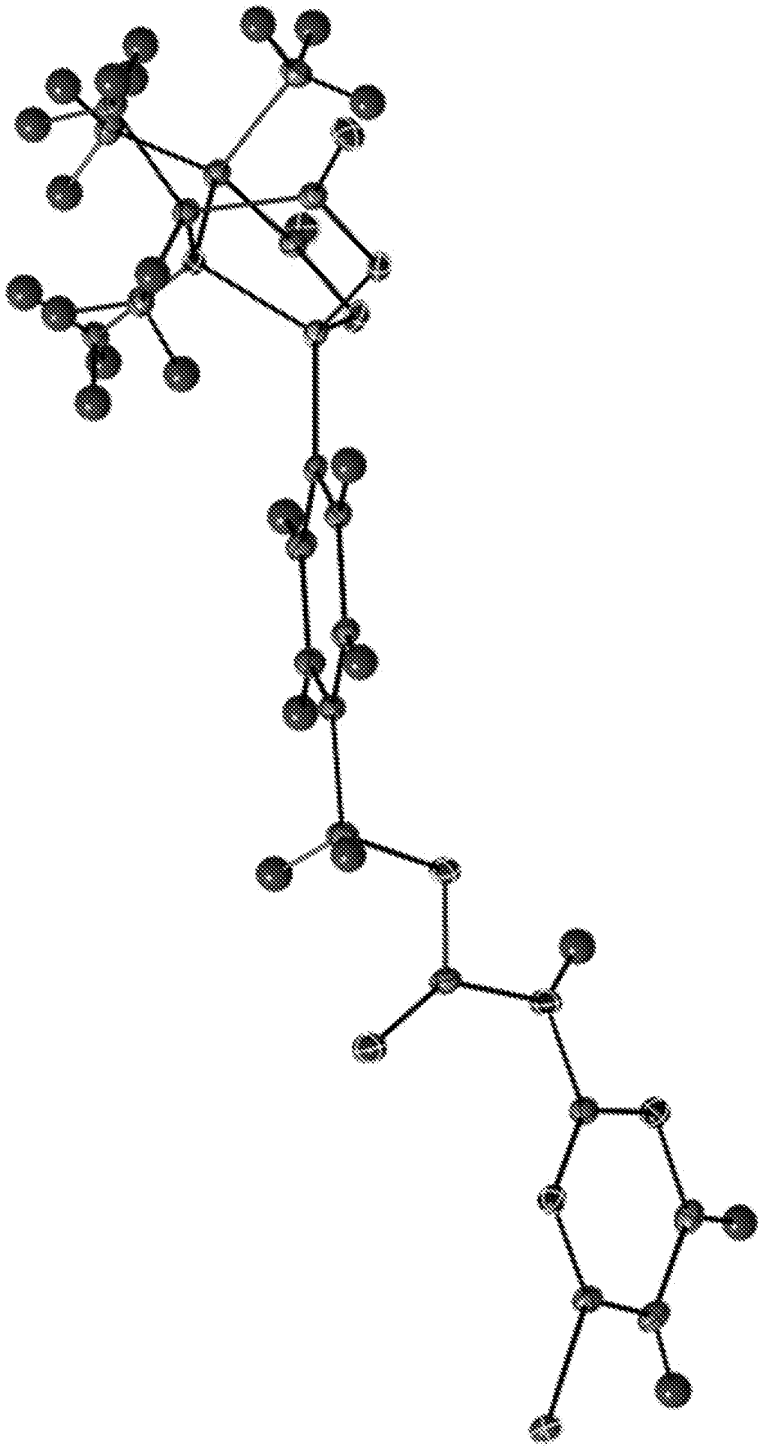


FIG. 8

FIG. 9A

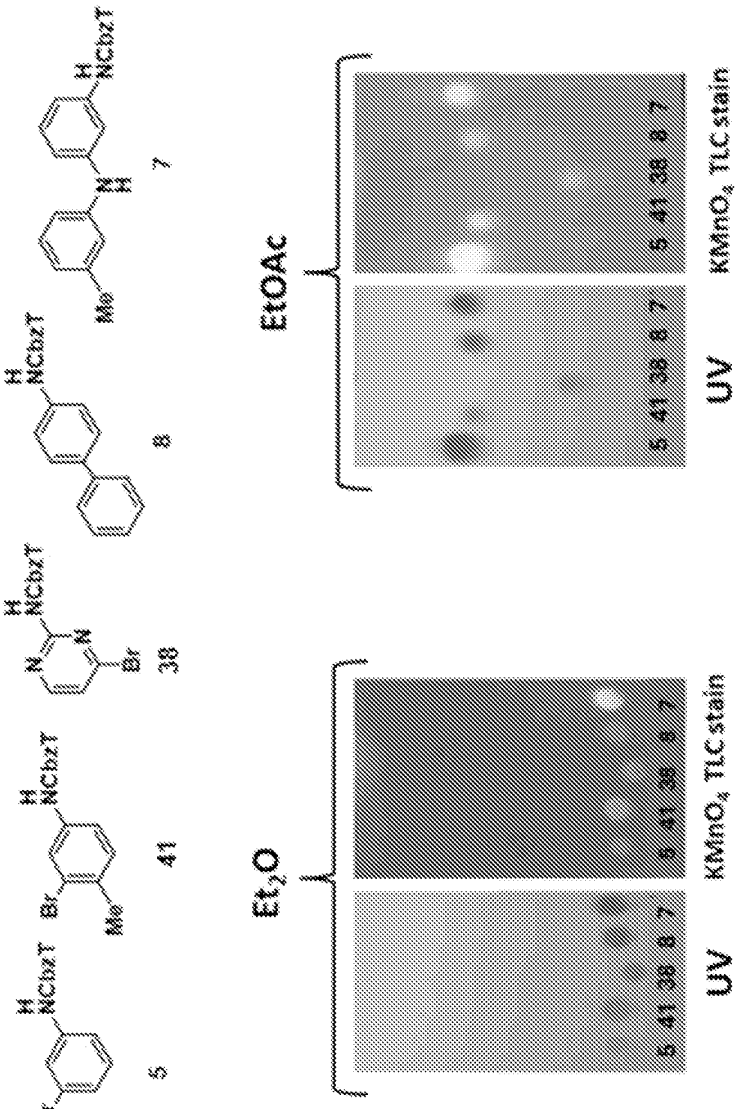


FIG. 9B

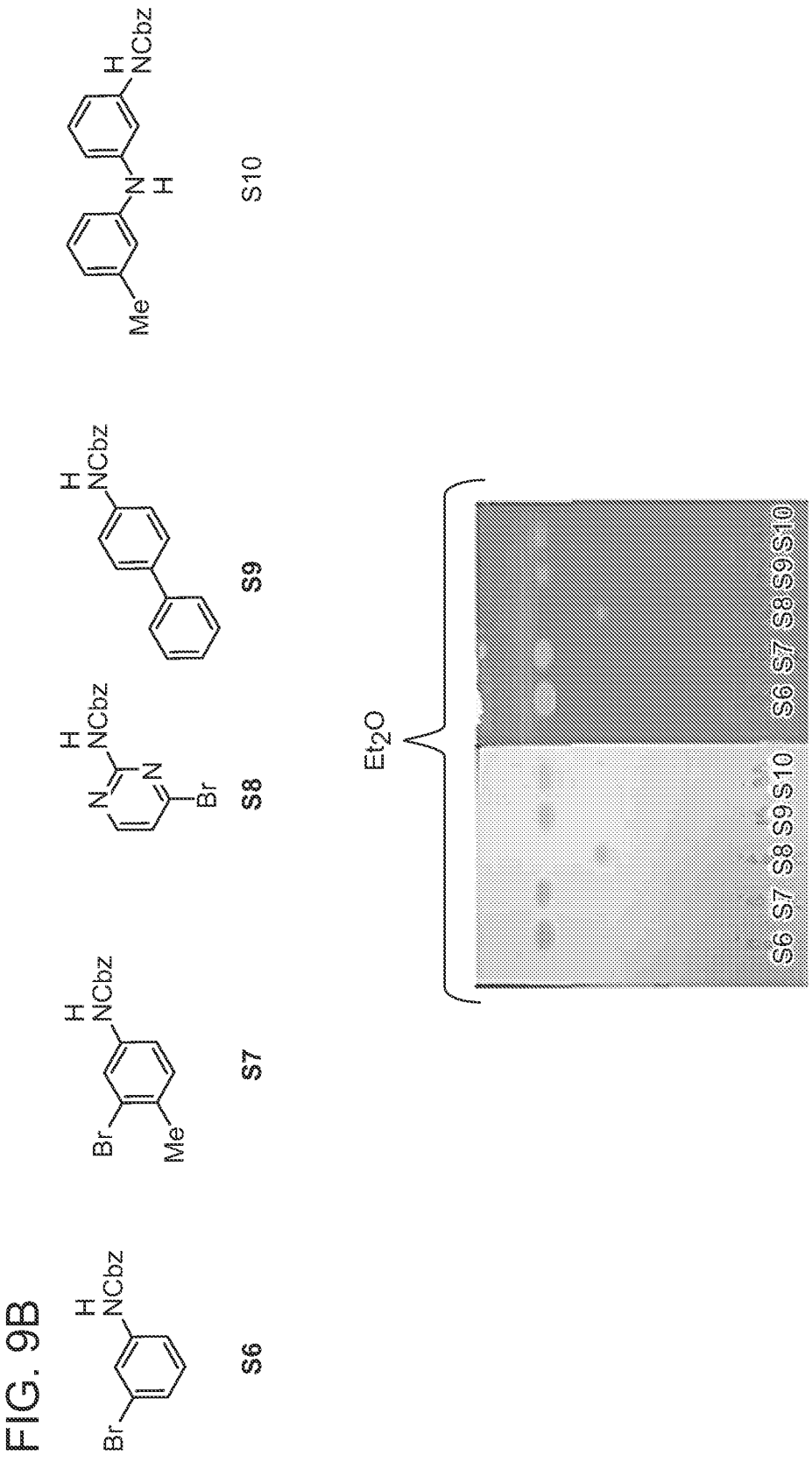
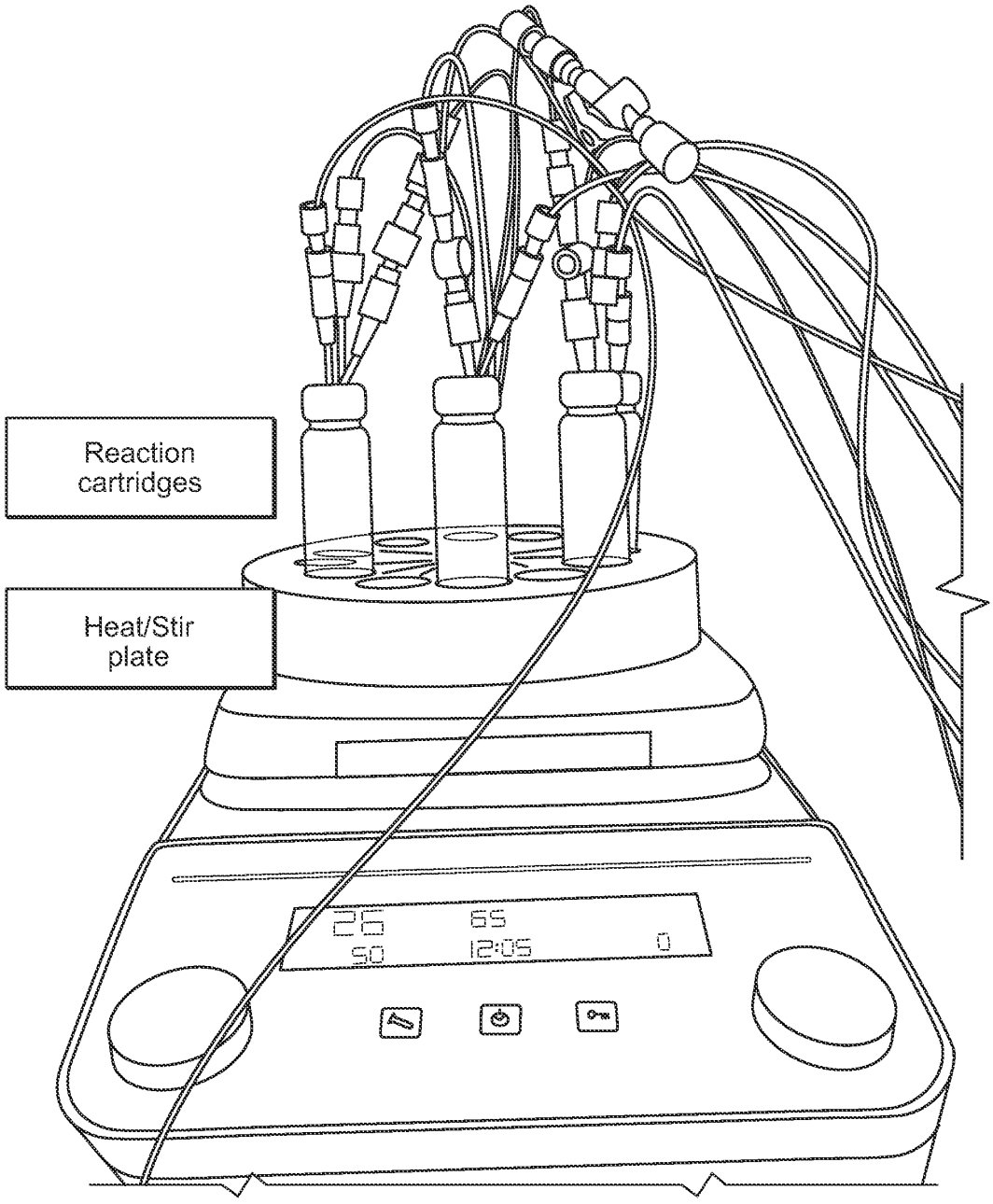


FIG. 10



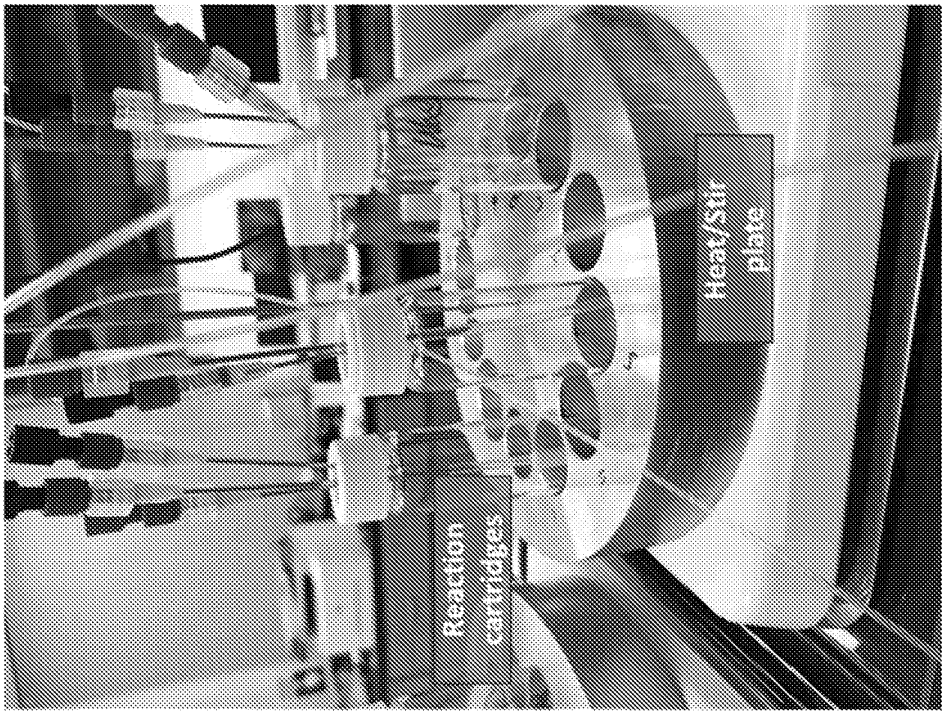


FIG. 11

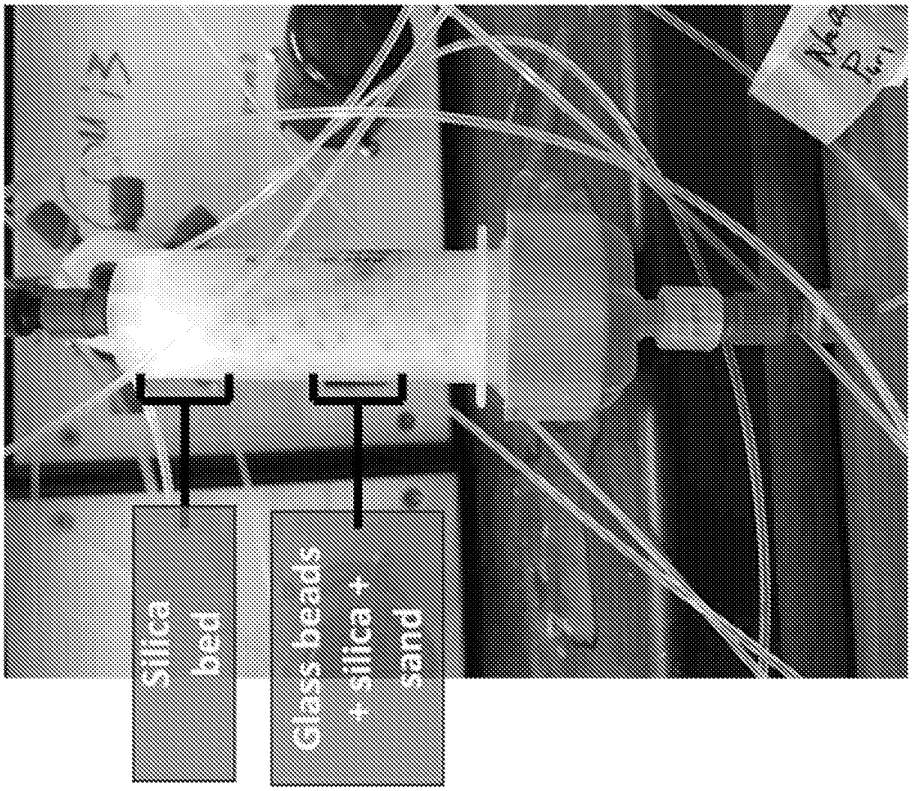


FIG. 12

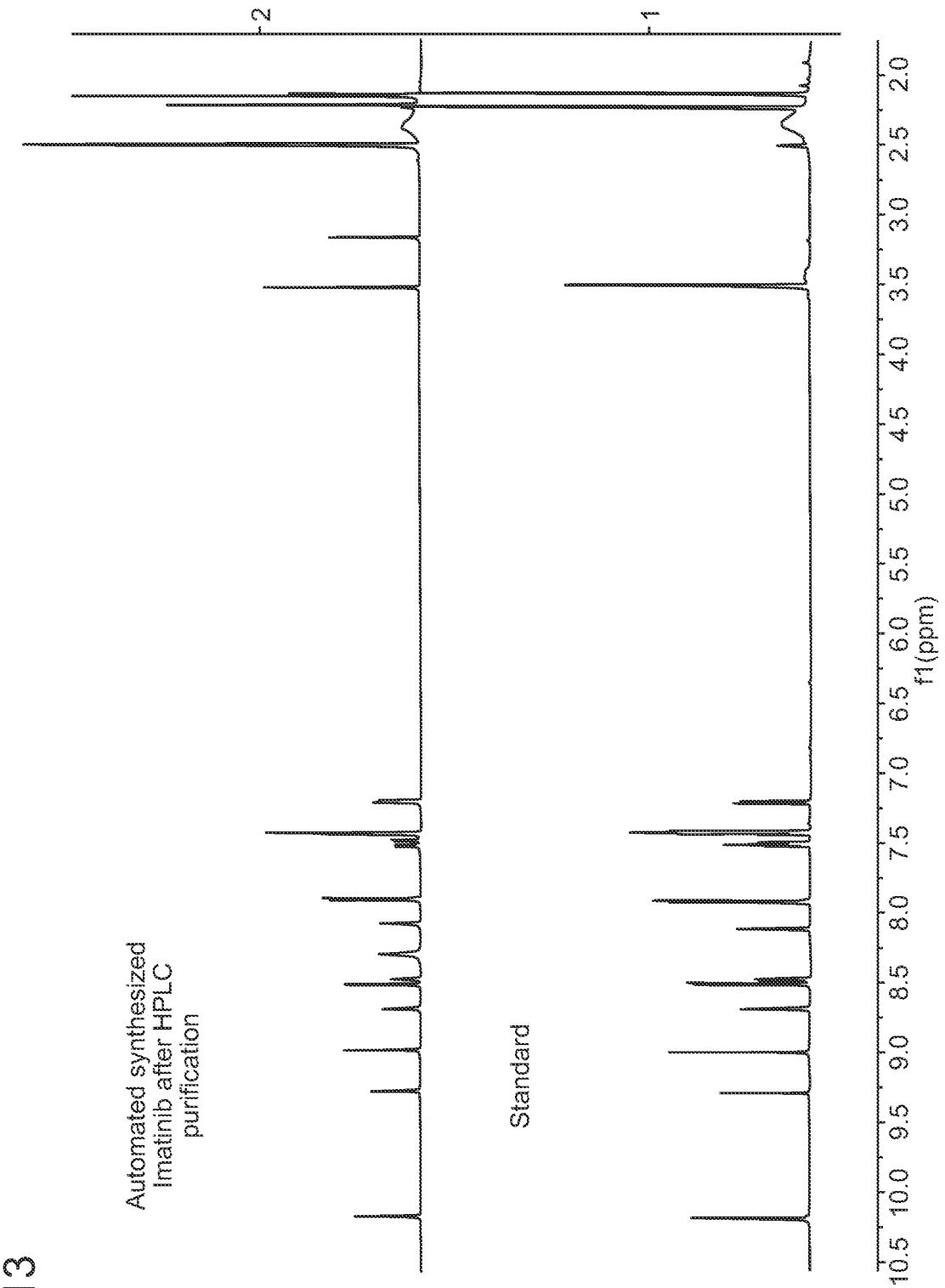

2
1
Automated synthesized
Imatinib after HPLC
purification
Standard
10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0
f1(ppm)

FIG. 13