FIG 1

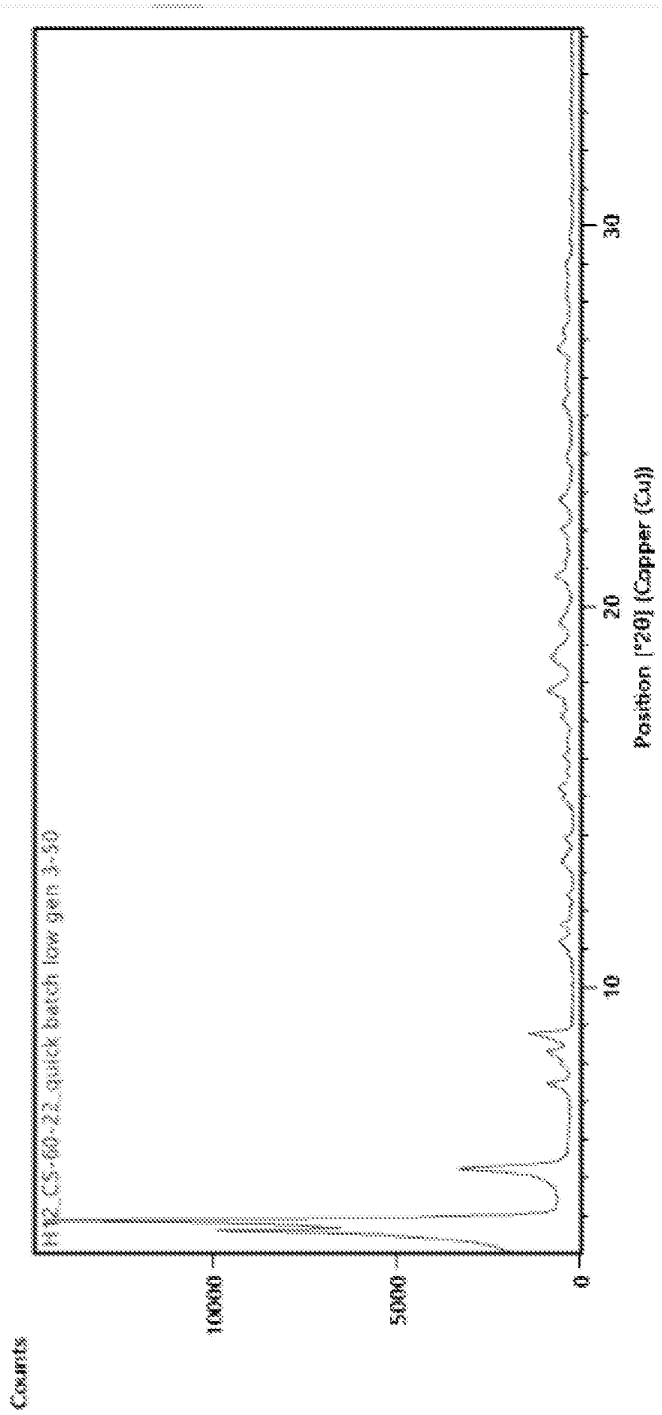

#12_CS-60-22_quick batch low gen 3-50
Counts
10000
5000
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 2

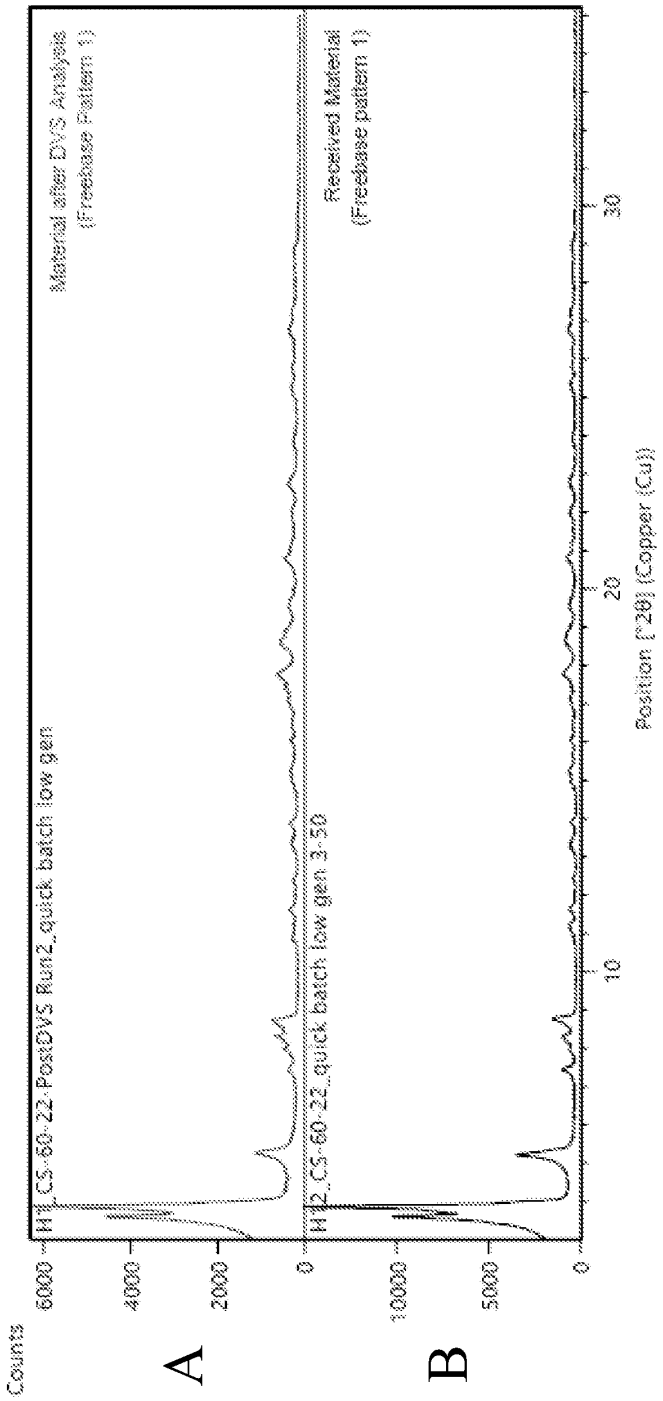

A
B
Counts
6000
4000
2000
0
10000
5000
0
H1_CS-60-22 PostDVS Run2_quick batch low gen
Material after DVS Analysis
(Freebase Pattern 1)
H1_CS-60-22_quick batch low gen 3-50
Received Material
(Freebase pattern 1)
10
20
30
Position [°2θ] (Copper (Cu))

FIG 3

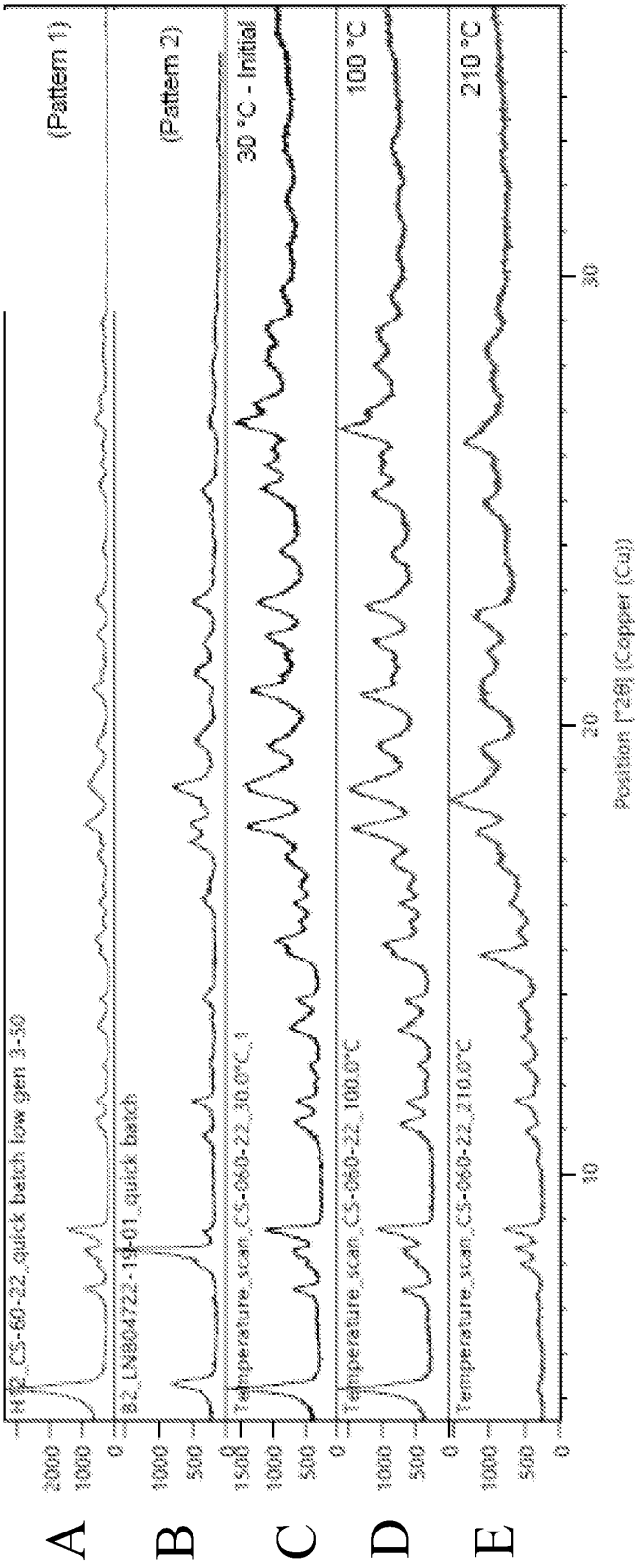

A
B
C
D
E
(Pattern 1)
(Pattern 2)
30 °C - Initial
100 °C
210 °C
Position [°2θ] (Copper (Cu))

FIG 4

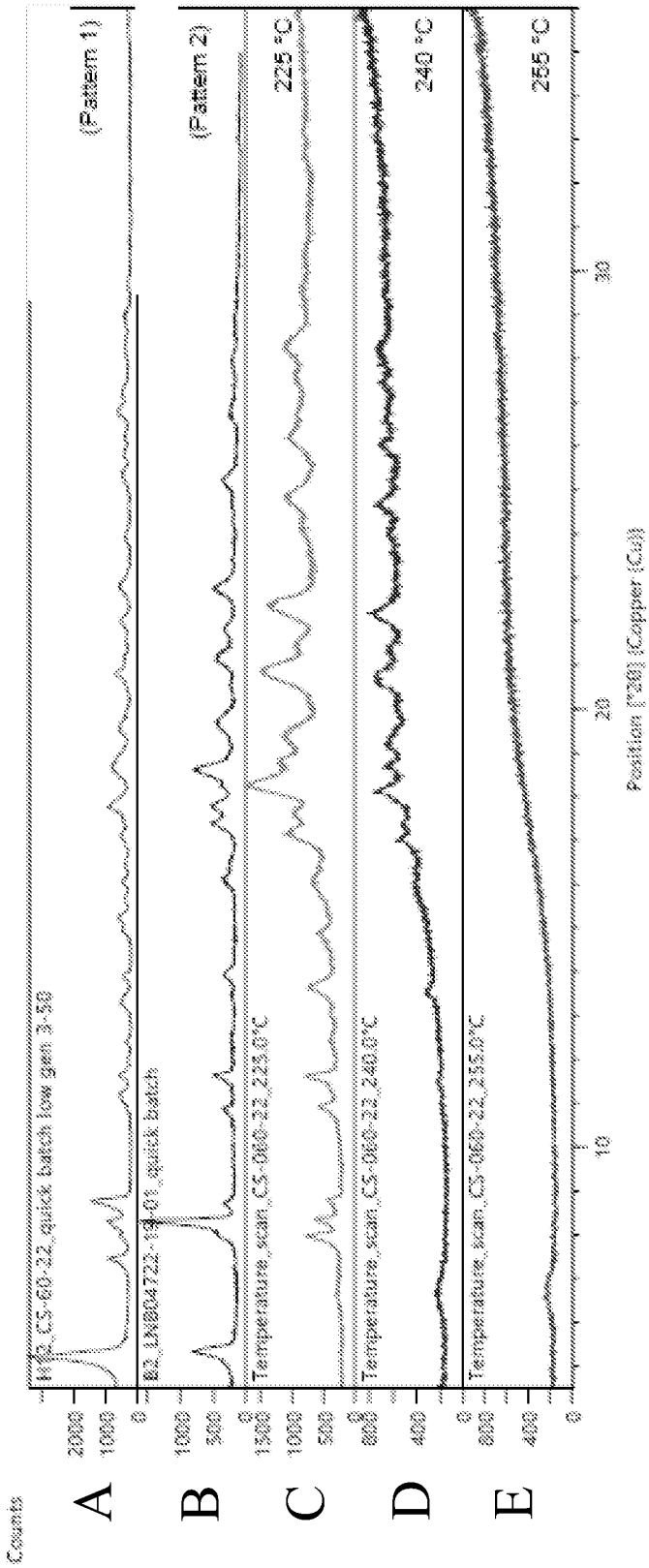

A
B
C
D
E
Counts
(Pattern 1)
(Pattern 2)
225 °C
240 °C
255 °C
Position [°2θ] (Copper (Cu))

FIG 5

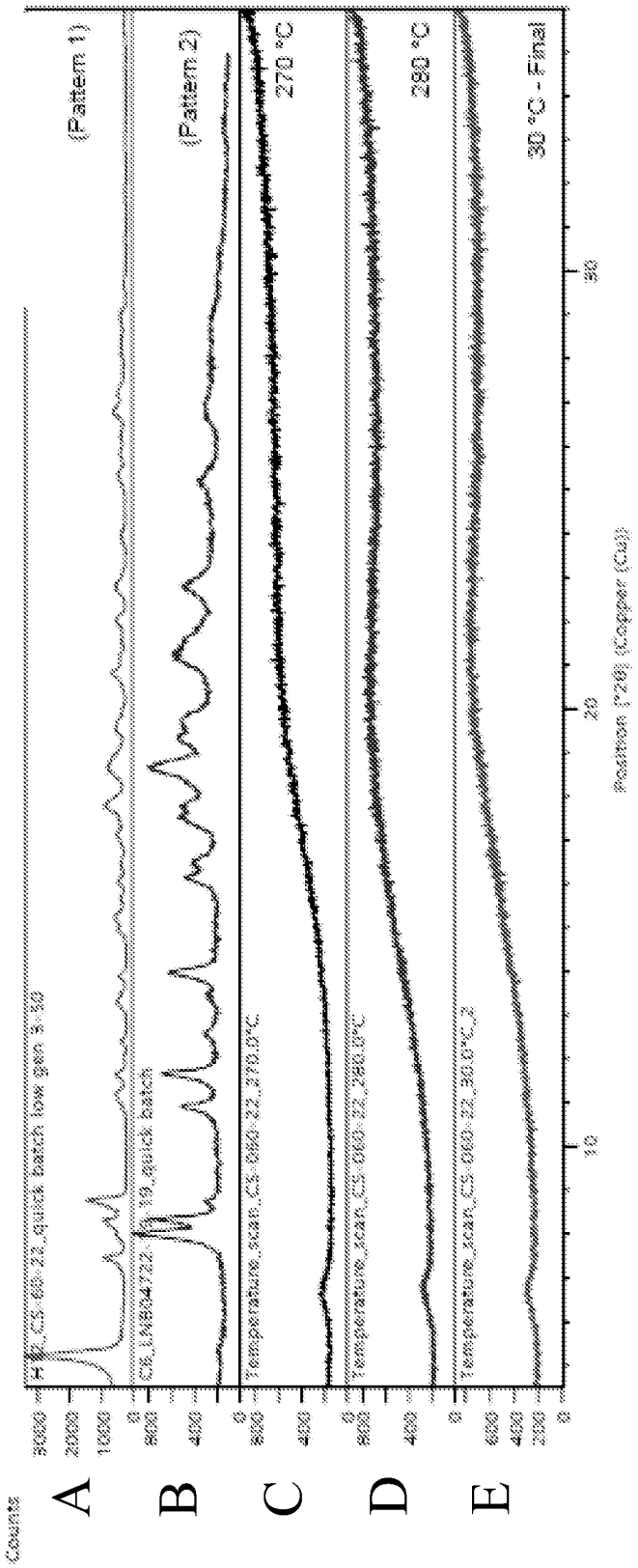

A
B
C
D
E
Counts
(Pattern 1)
(Pattern 2)
270 °C
280 °C
30 °C - Final
Position [°2θ] (Copper (Cu))

FIG 6

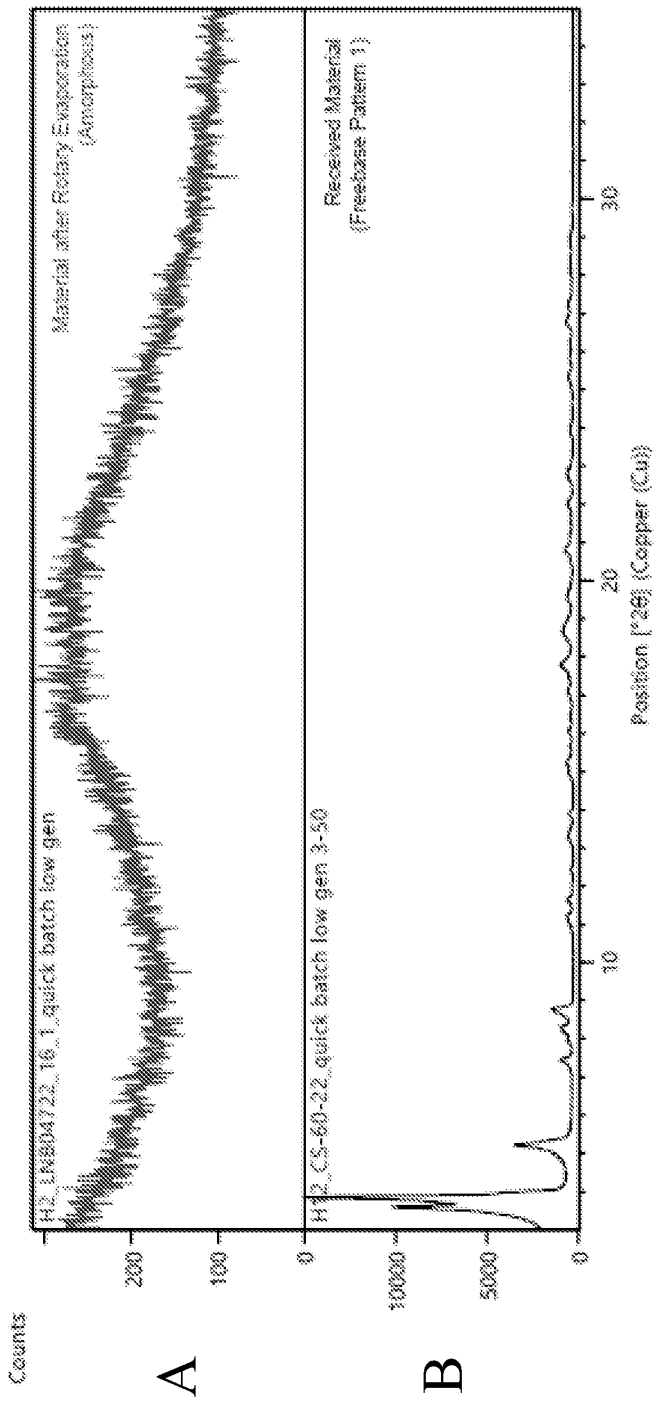

Material after Rotary Evaporation (Amorphous)
H2_LRB04722_16_1_quick batch low gen
Received Material (Freebase Pattern 1)
H12_CS-60-22_quick batch low gen 3-50
Counts
A
B
200
100
0
10000
5000
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 7

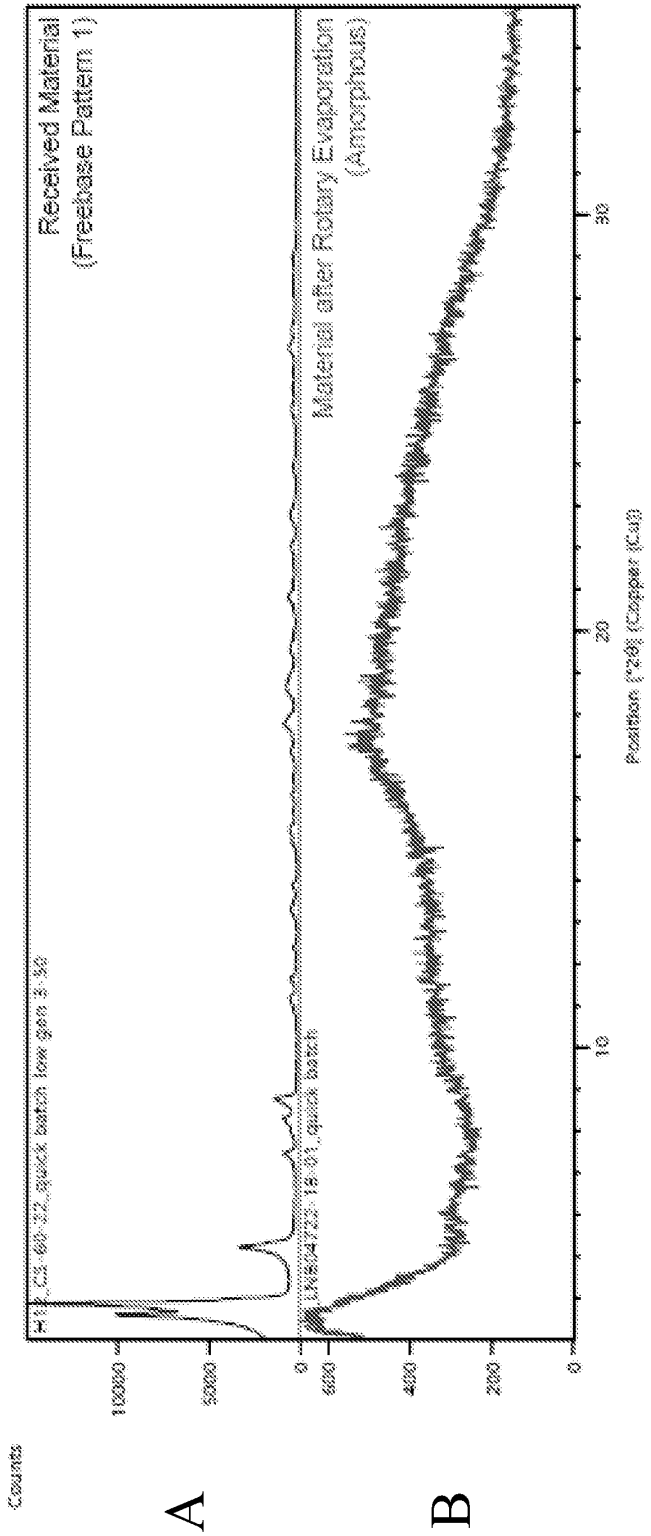

Received Material
(Freebase Pattern 1)
Material after Rotary Evaporation
(Amorphous)
Counts
10000
5000
0
600
400
200
0
10
20
30
Position [°2θ] (Copper (Cu))
A
B

FIG 8

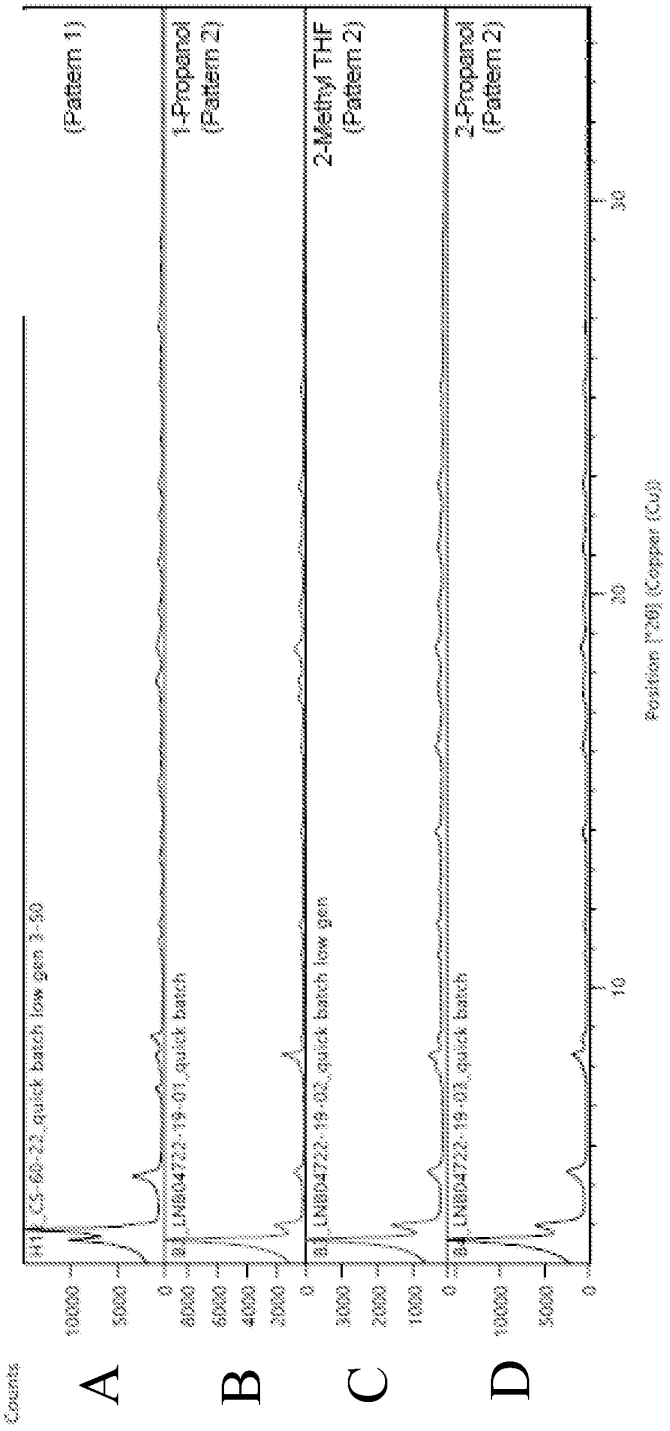

A
B
C
D
Counts
(Pattern 1)
1-Propanol
(Pattern 2)
2-Methyl THF
(Pattern 2)
2-Propanol
(Pattern 2)
Position [°2θ] (Copper (Cu))

FIG 9

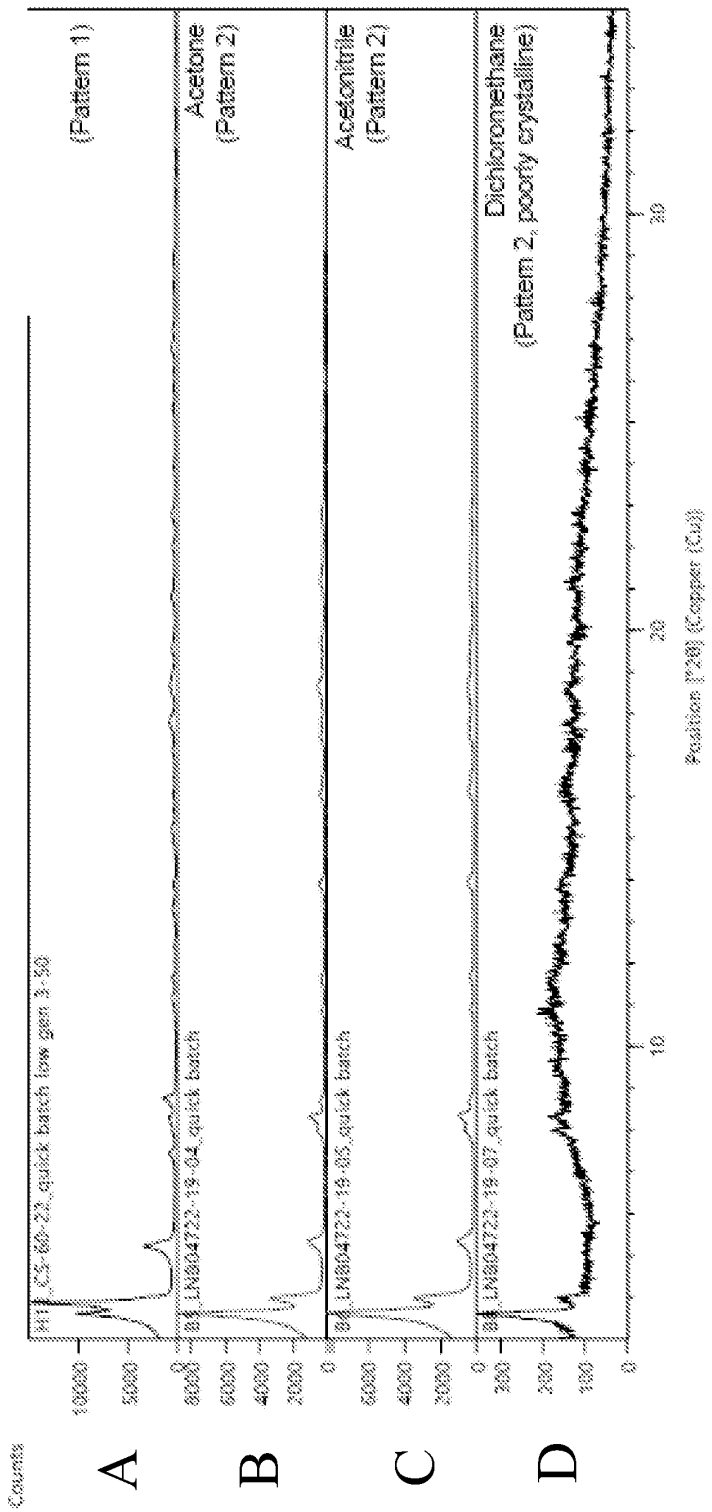

A
B
C
D
Counts
(Pattern 1)
Acetone
(Pattern 2)
Acetonitrile
(Pattern 2)
Dichloromethane
(Pattern 2, poorly crystalline)
Position [°2θ] (Copper (Cu))

FIG 10

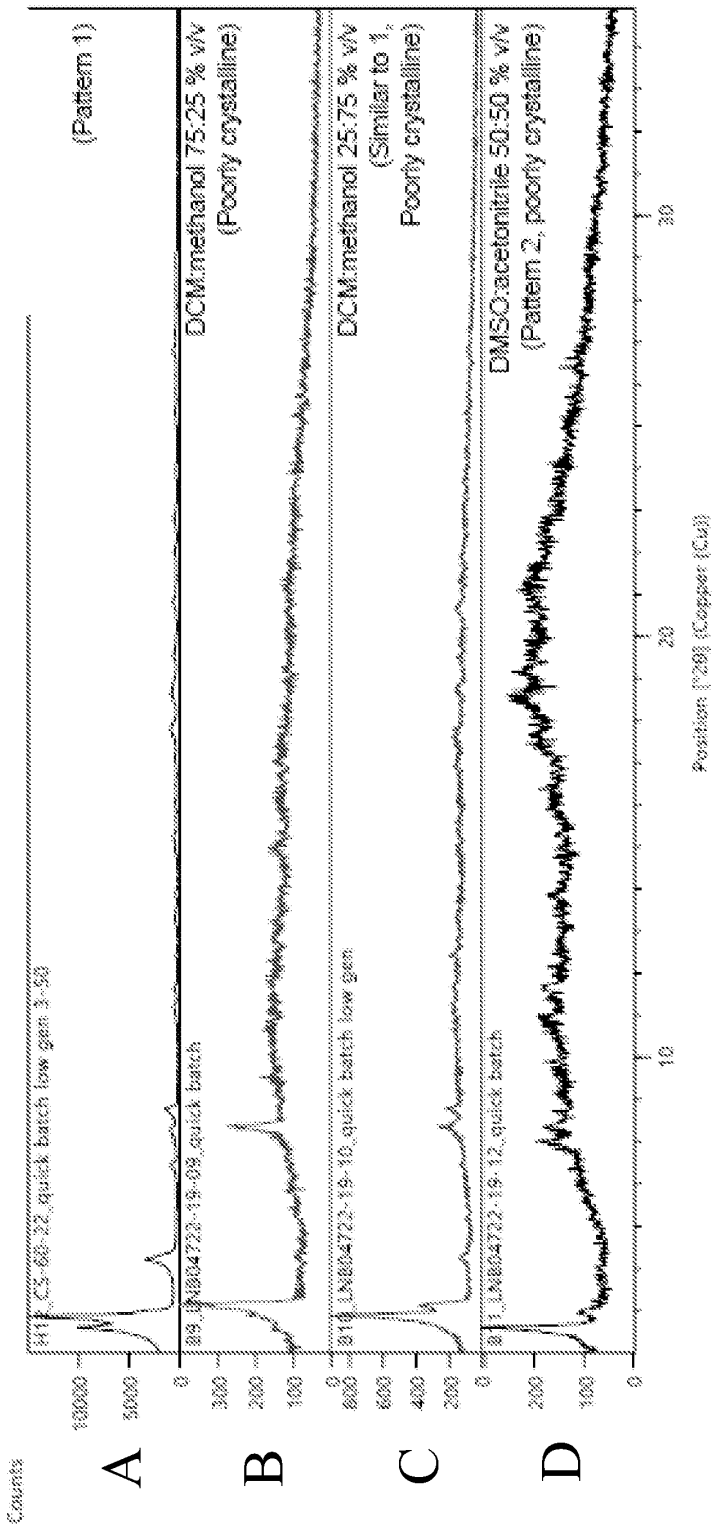

Counts
A
B
C
D
(Pattern 1)
DCM:methanol 75:25 % v/v
(Poorly crystalline)
DCM:methanol 25:75 % v/v
(Similar to 1,
Poorly crystalline)
DMSO:acetonitrile 50:50 % v/v
(Pattern 2, poorly crystalline)
Position [°2θ] (Copper (Cu))

FIG 11

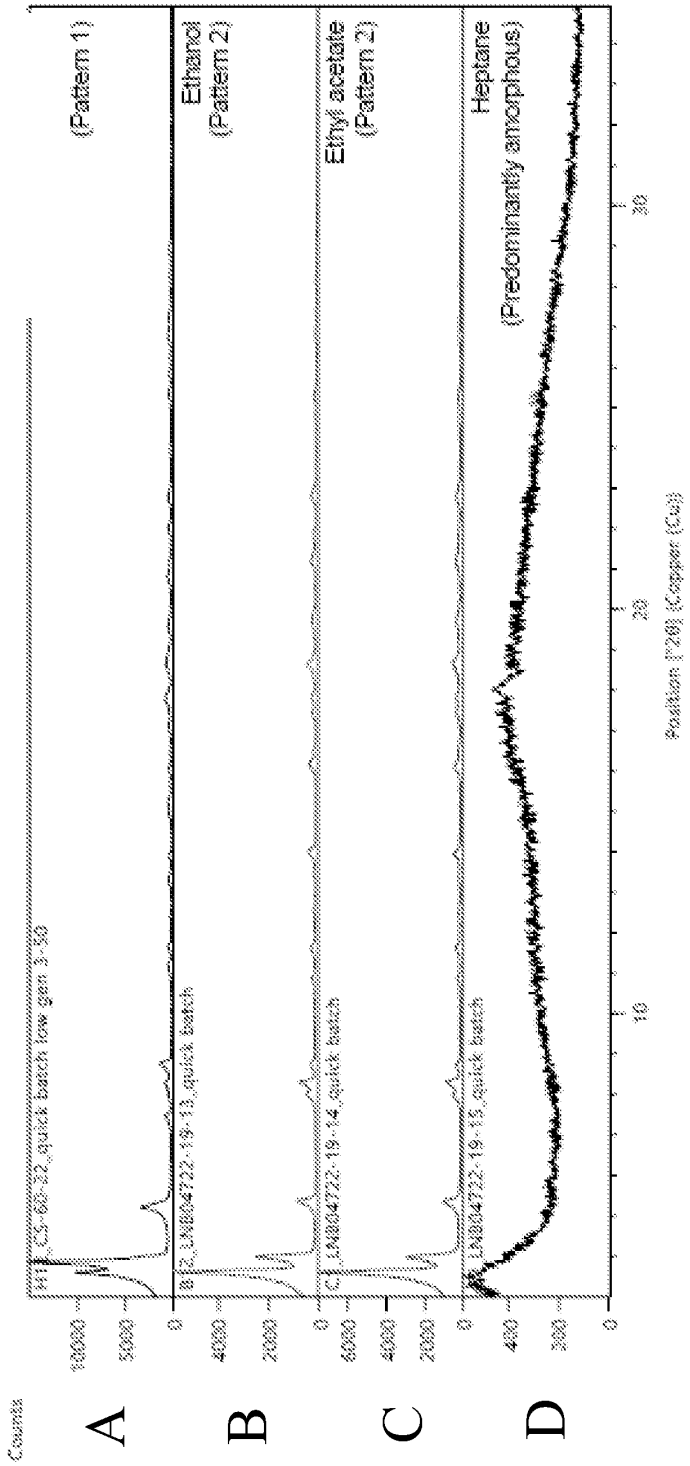

A
B
C
D
Counts
(Pattern 1)
Ethanol
(Pattern 2)
Ethyl acetate
(Pattern 2)
Heptane
(Predominantly amorphous)
Position [°2θ] (Copper (Cu))
10
20
30

FIG 12

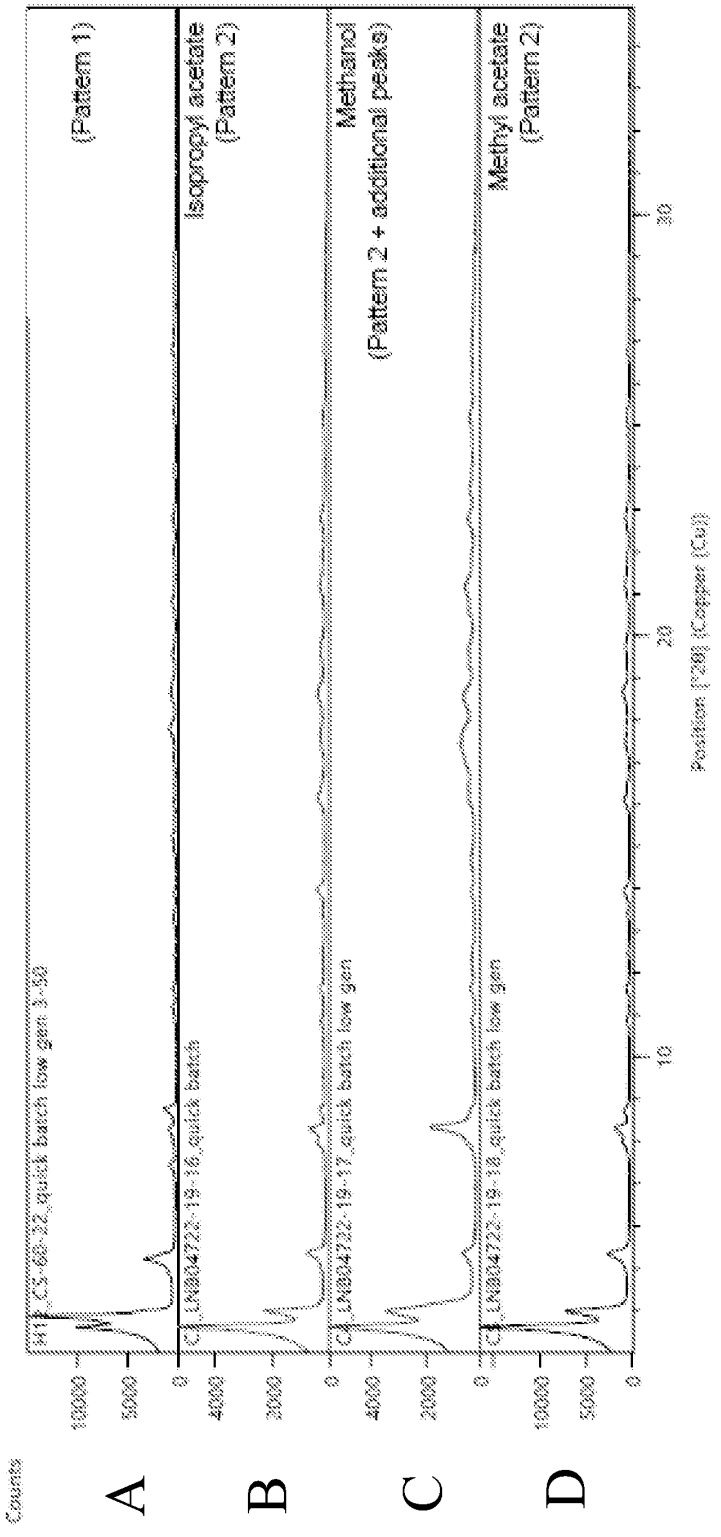

A
B
C
D
Counts
(Pattern 1)
Isopropyl acetate
(Pattern 2)
Methanol
(Pattern 2 + additional peaks)
Methyl acetate
(Pattern 2)
Position [°2θ] (Copper (Cu))

FIG 13

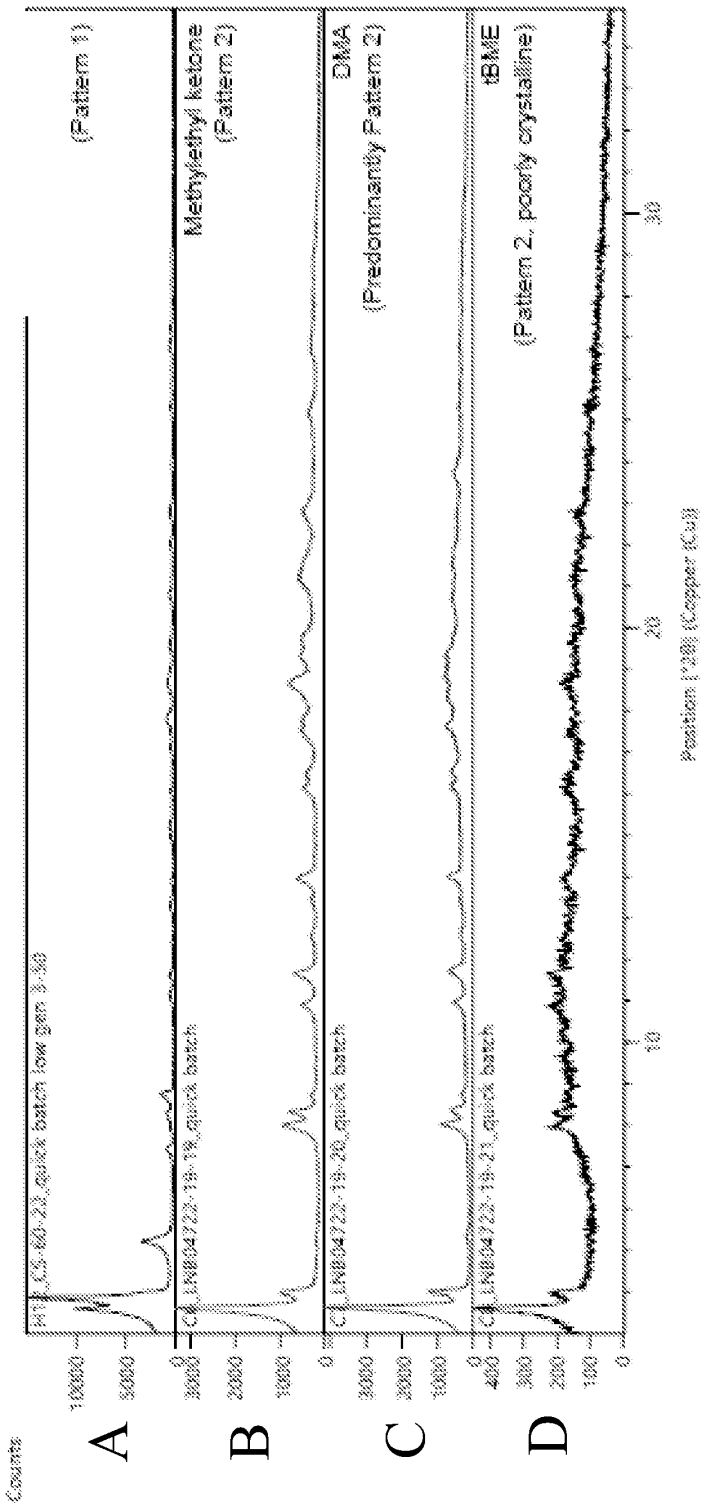

A
B
C
D
Counts
(Pattern 1)
Methylethyl ketone
(Pattern 2)
DMA
(Predominantly Pattern 2)
tBME
(Pattern 2, poorly crystalline)
Position [°2θ] (Copper (Cu))

FIG 14

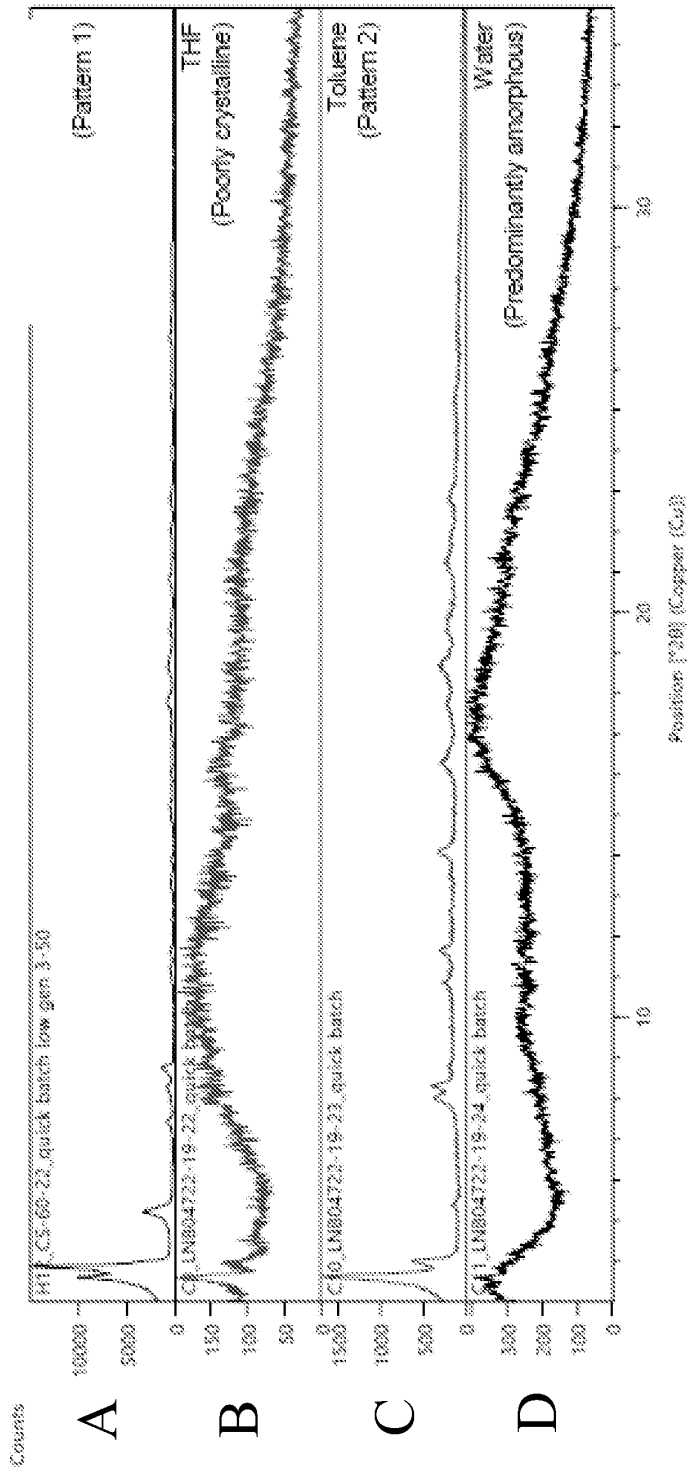

A
B
C
D
Counts
(Pattern 1)
THF
(Poorly crystalline)
Toluene
(Pattern 2)
Water
(Predominantly amorphous)
Position [°2θ] (Copper (Cu))
10
20
30

FIG 15

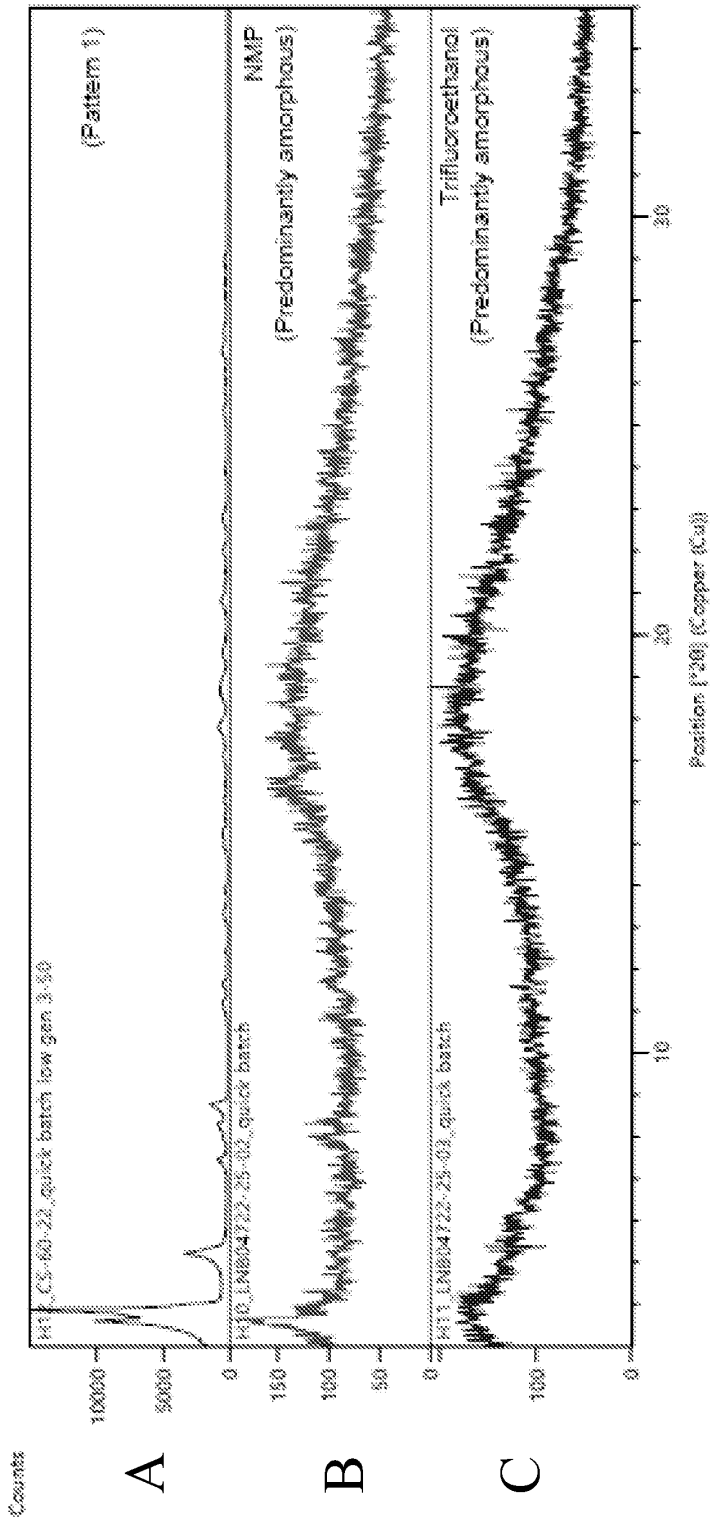

A
B
C
Counts
(Pattern 1)
NMP
(Predominantly amorphous)
Trifluoroethanol
(Predominantly amorphous)
Position [°2θ] (Copper (Cu))

FIG 16

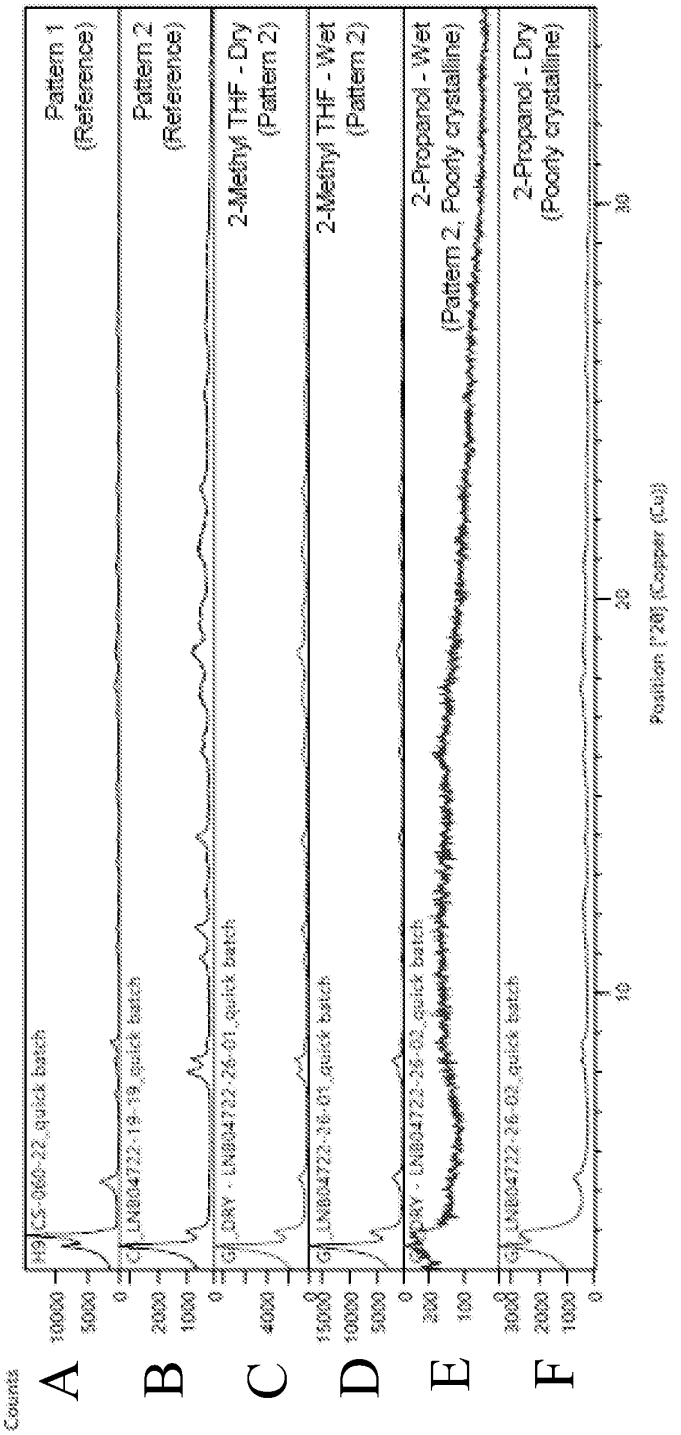

Counts
A
Pattern 1 (Reference)
B
Pattern 2 (Reference)
C
2-Methyl THF - Dry (Pattern 2)
D
2-Methyl THF - Wet (Pattern 2)
E
2-Propanol - Wet (Pattern 2, Poorly crystalline)
F
2-Propanol - Dry (Poorly crystalline)
Position [°2θ] (Copper (Cu))

FIG 17

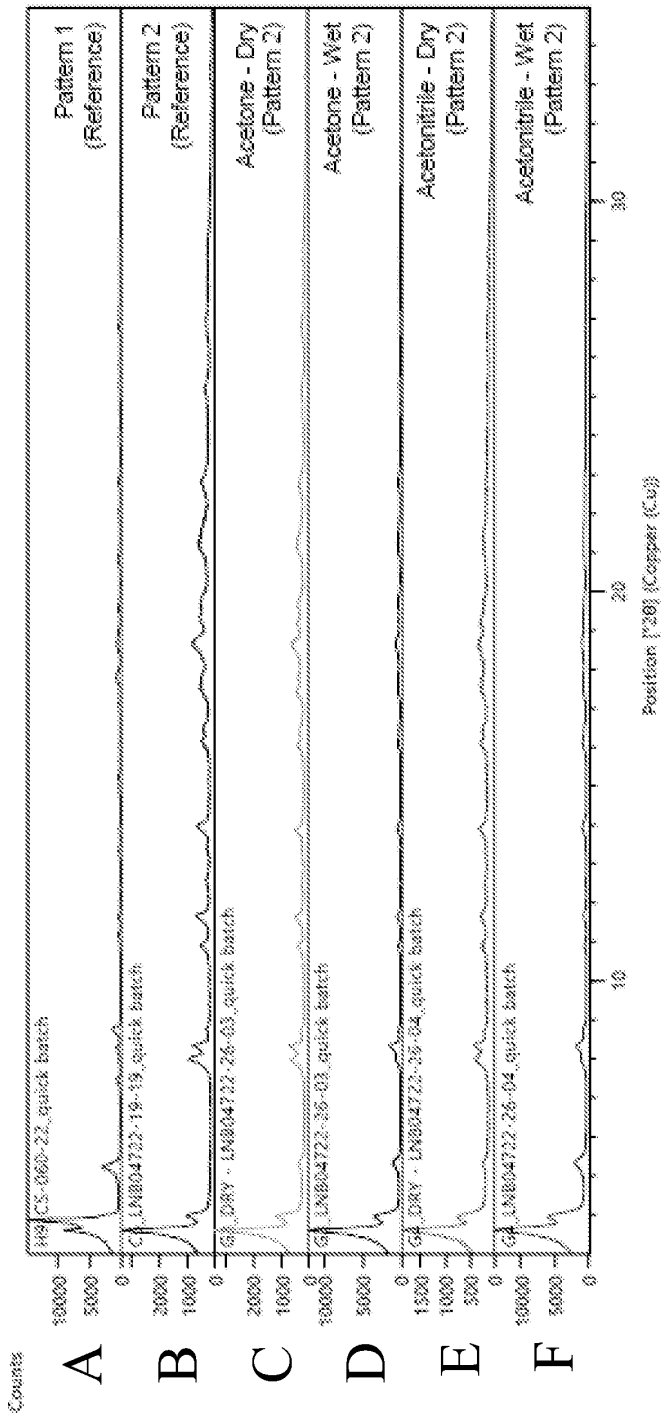

Counts
A
B
C
D
E
F
Pattern 1 (Reference)
Pattern 2 (Reference)
Acetone - Dry (Pattern 2)
Acetone - Wet (Pattern 2)
Acetonitrile - Dry (Pattern 2)
Acetonitrile - Wet (Pattern 2)
Position [°2θ] (Copper (Cu))

FIG 18

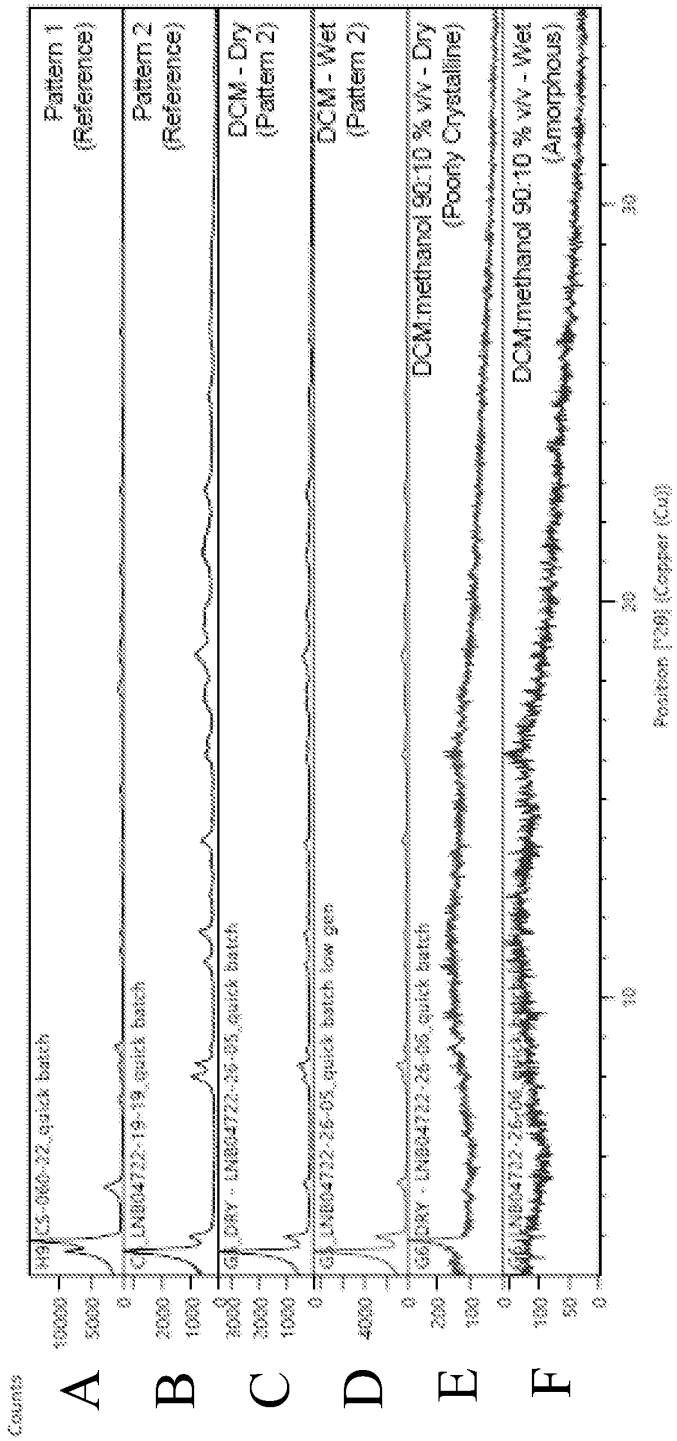

Counts
A
B
C
D
E
F
Pattern 1 (Reference)
Pattern 2 (Reference)
DCM - Dry (Pattern 2)
DCM - Wet (Pattern 2)
DCM:methanol 90:10 % v/v - Dry (Poorly Crystalline)
DCM:methanol 90:10 % v/v - Wet (Amorphous)
Position [°2θ] (Copper (Cu))

FIG 19

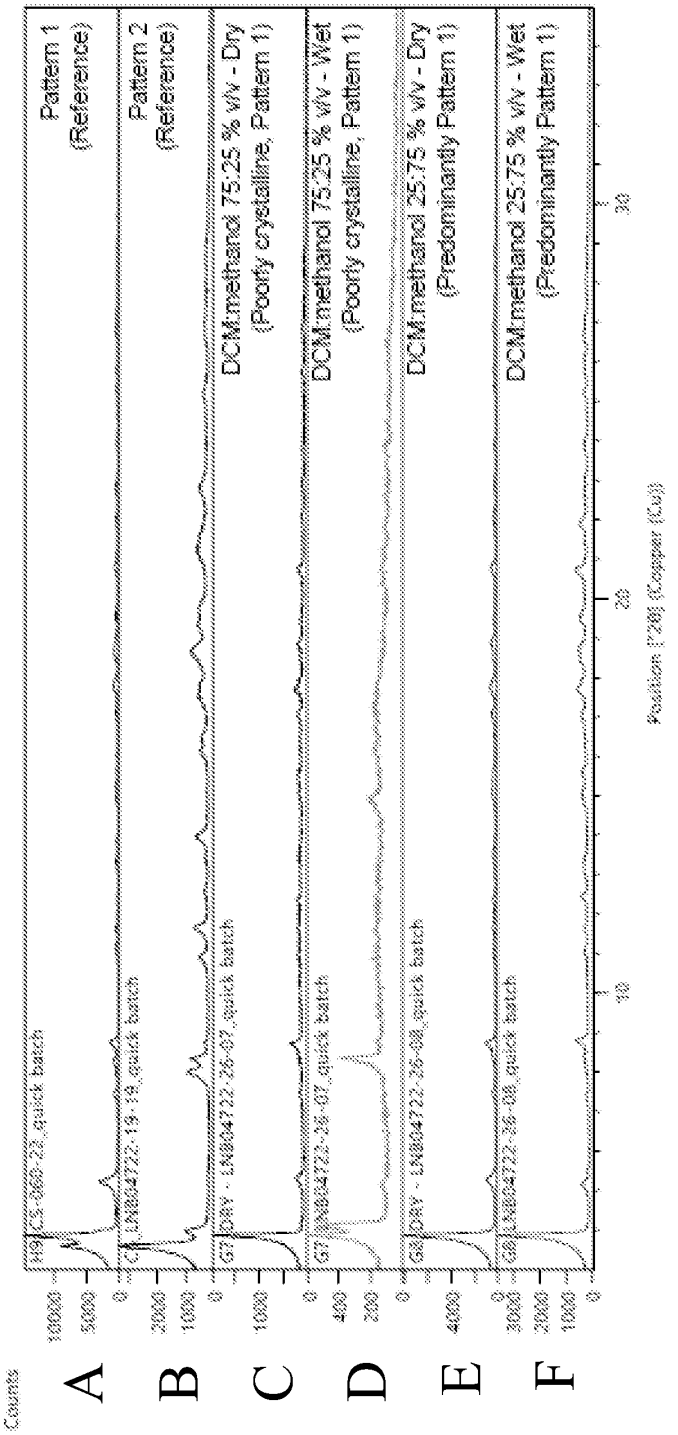

Counts
A
B
C
D
E
F
Pattern 1 (Reference)
Pattern 2 (Reference)
DCM:methanol 75:25 % v/v - Dry (Poorly crystalline, Pattern 1)
DCM:methanol 75:25 % v/v - Wet (Poorly crystalline, Pattern 1)
DCM:methanol 25:75 % v/v - Dry (Predominantly Pattern 1)
DCM:methanol 25:75 % v/v - Wet (Predominantly Pattern 1)
Position [°2θ] (Copper (Cu))

FIG 20

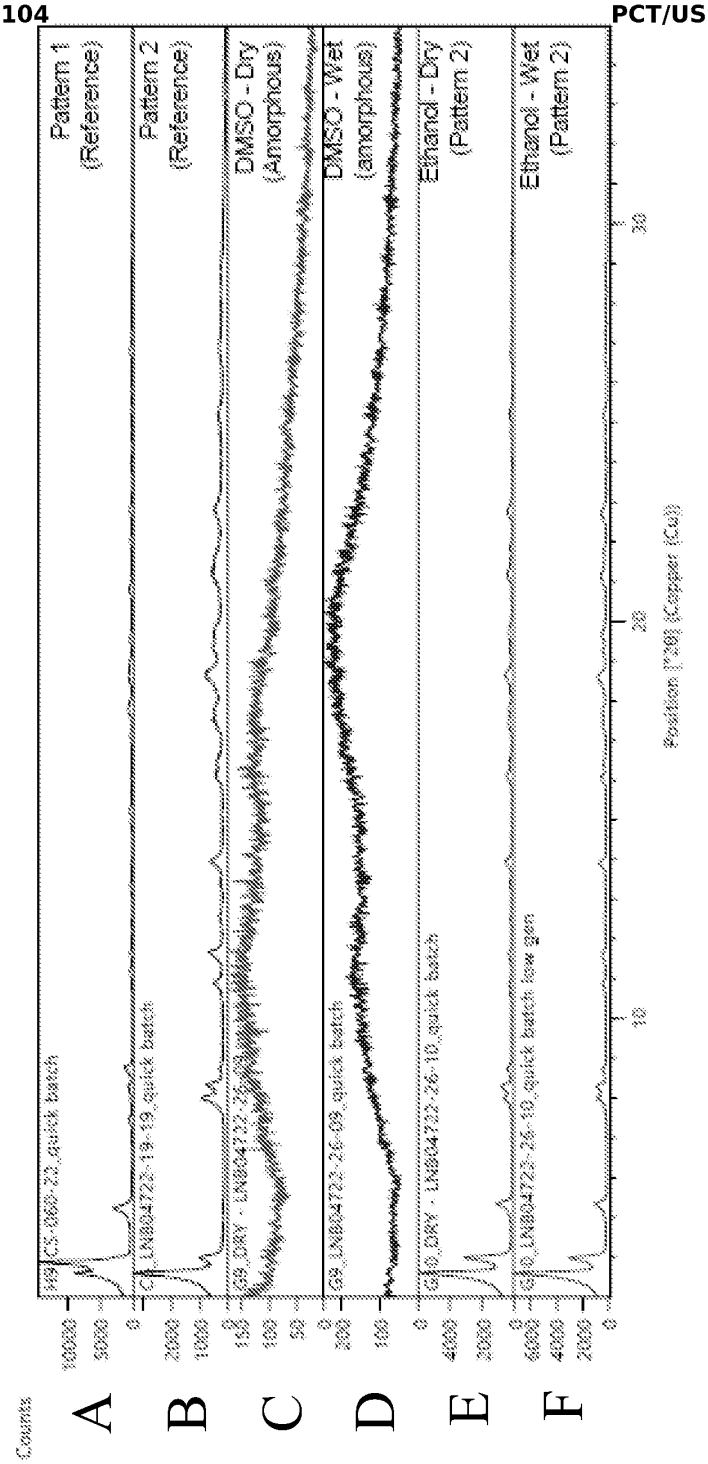

Counts
A
B
C
D
E
F
Pattern 1 (Reference)
Pattern 2 (Reference)
DMSO - Dry (Amorphous)
DMSO - Wet (amorphous)
Ethanol - Dry (Pattern 2)
Ethanol - Wet (Pattern 2)
Position [°2θ] (Copper (Cu))

FIG 21

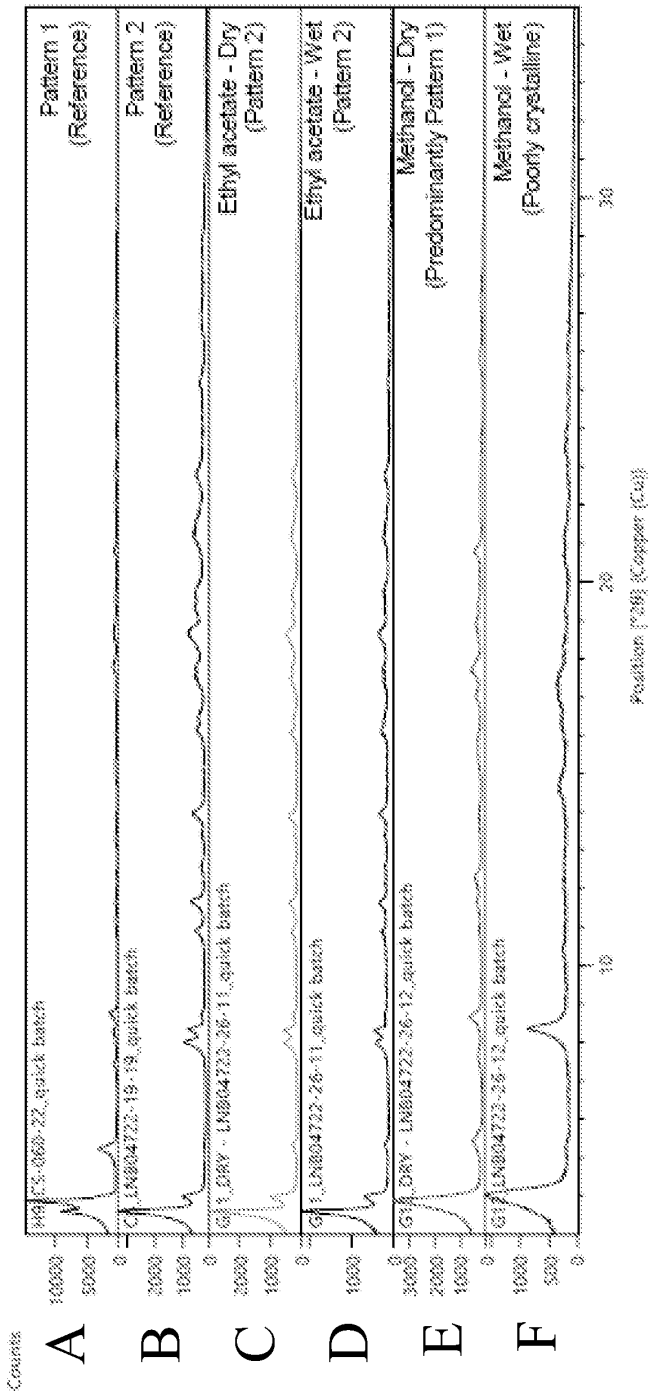

A
Pattern 1
(Reference)
B
Pattern 2
(Reference)
C
Ethyl acetate - Dry
(Pattern 2)
D
Ethyl acetate - Wet
(Pattern 2)
E
Methanol - Dry
(Predominantly Pattern 1)
F
Methanol - Wet
(Poorly crystalline)
Counts
Position [°2θ] (Copper (Cu))

FIG 22

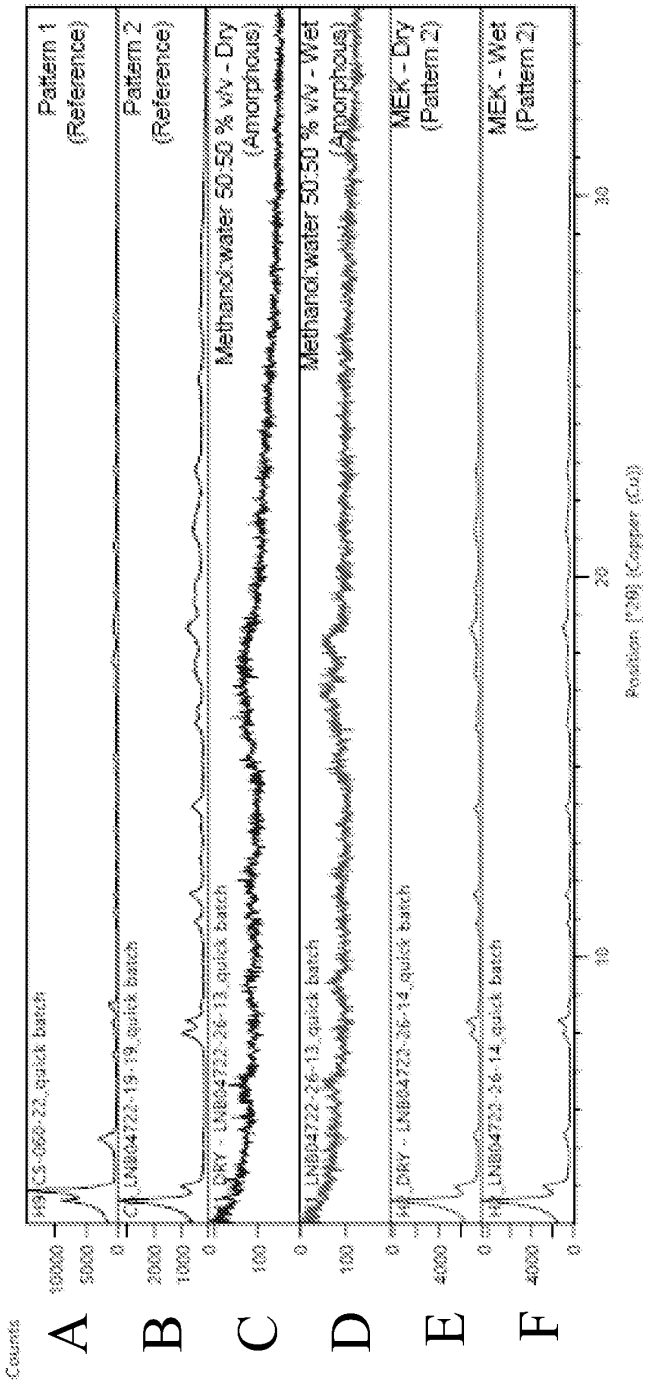

Counts
A
B
C
D
E
F
Pattern 1 (Reference)
Pattern 2 (Reference)
Methanol:water 50:50 % v/v - Dry (Amorphous)
Methanol:water 50:50 % v/v - Wet (Amorphous)
MEK - Dry (Pattern 2)
MEK - Wet (Pattern 2)
Position [°2θ] (Copper (Cu))

FIG 23

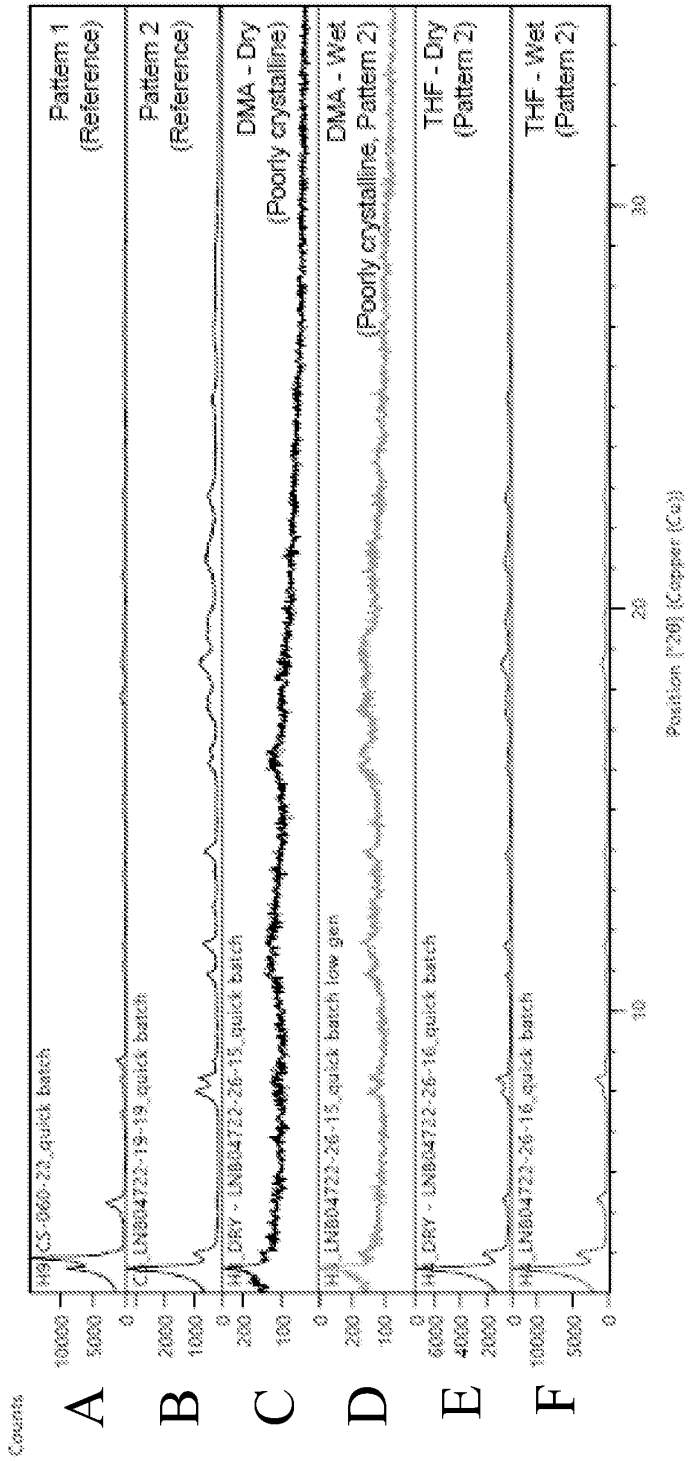

Counts
A
B
C
D
E
F
Pattern 1 (Reference)
Pattern 2 (Reference)
DMA - Dry (Poorly crystalline)
DMA - Wet (Poorly crystalline, Pattern 2)
THF - Dry (Pattern 2)
THF - Wet (Pattern 2)
Position [°2θ] (Copper (Cu))

FIG 24

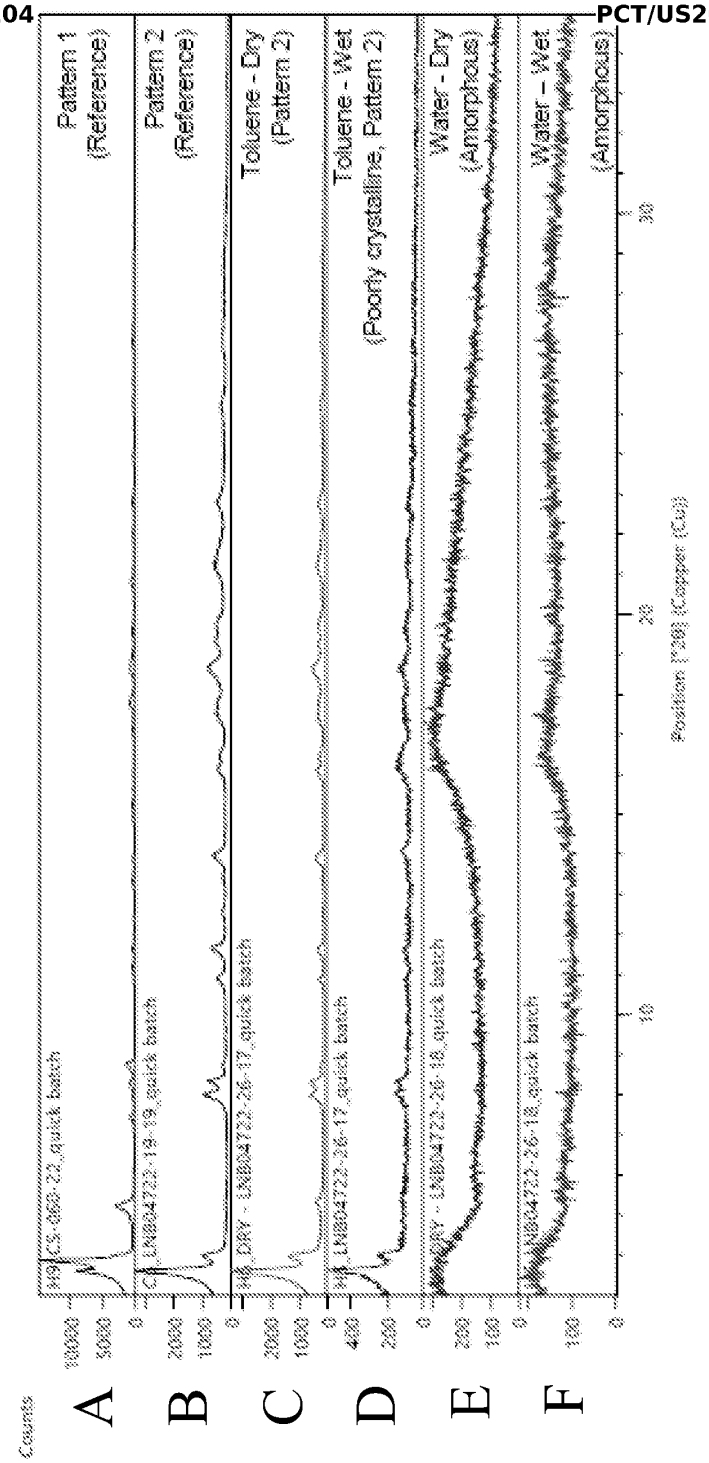

Counts
A
B
C
D
E
F
Pattern 1 (Reference)
Pattern 2 (Reference)
Toluene - Dry (Pattern 2)
Toluene - Wet (Poorly crystalline, Pattern 2)
Water - Dry (Amorphous)
Water – Wet (Amorphous)
Position [°2θ] (Copper (Cu))

FIG 25

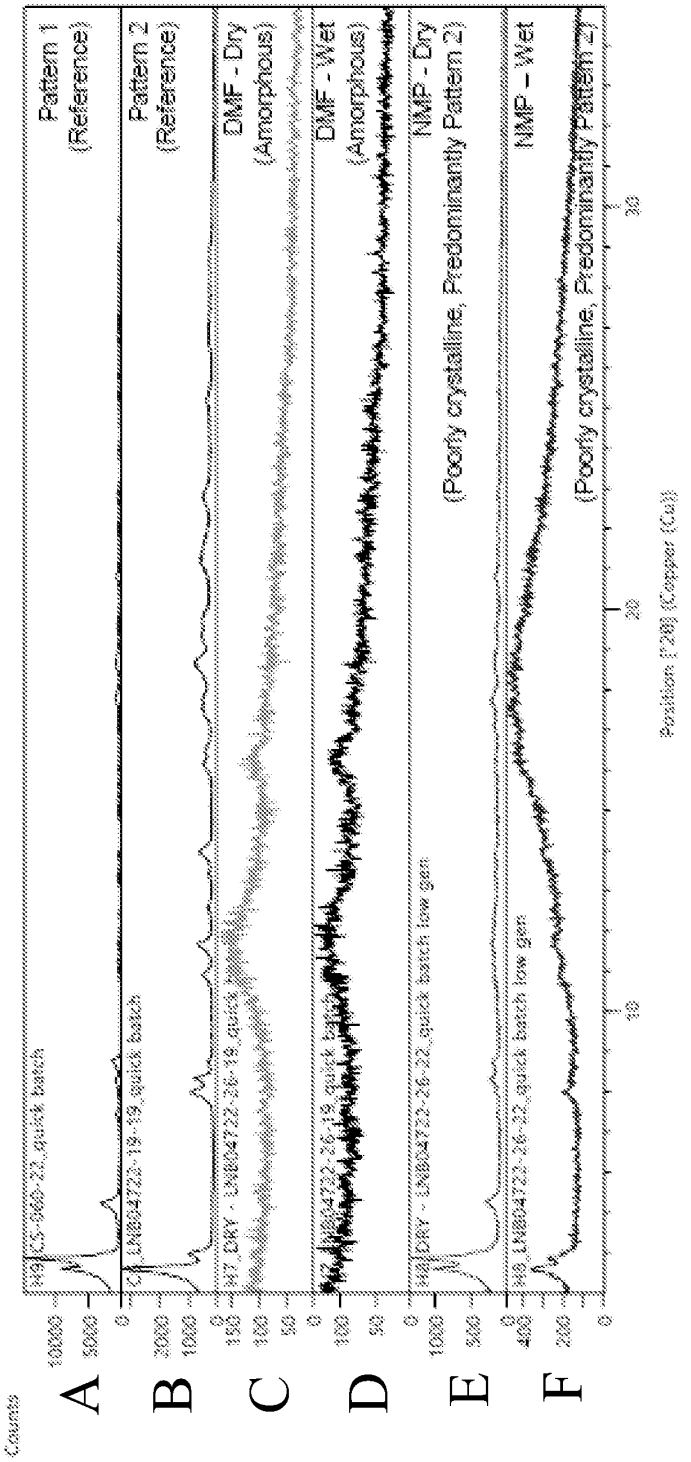

Counts
A
Pattern 1
(Reference)
B
Pattern 2
(Reference)
C
DMF - Dry
(Amorphous)
D
DMF - Wet
(Amorphous)
E
NMP - Dry
(Poorly crystalline, Predominantly Pattern 2)
F
NMP – Wet
(Poorly crystalline, Predominantly Pattern 2)
10
20
30
Position [°2θ] (Copper (Cu))

FIG 26

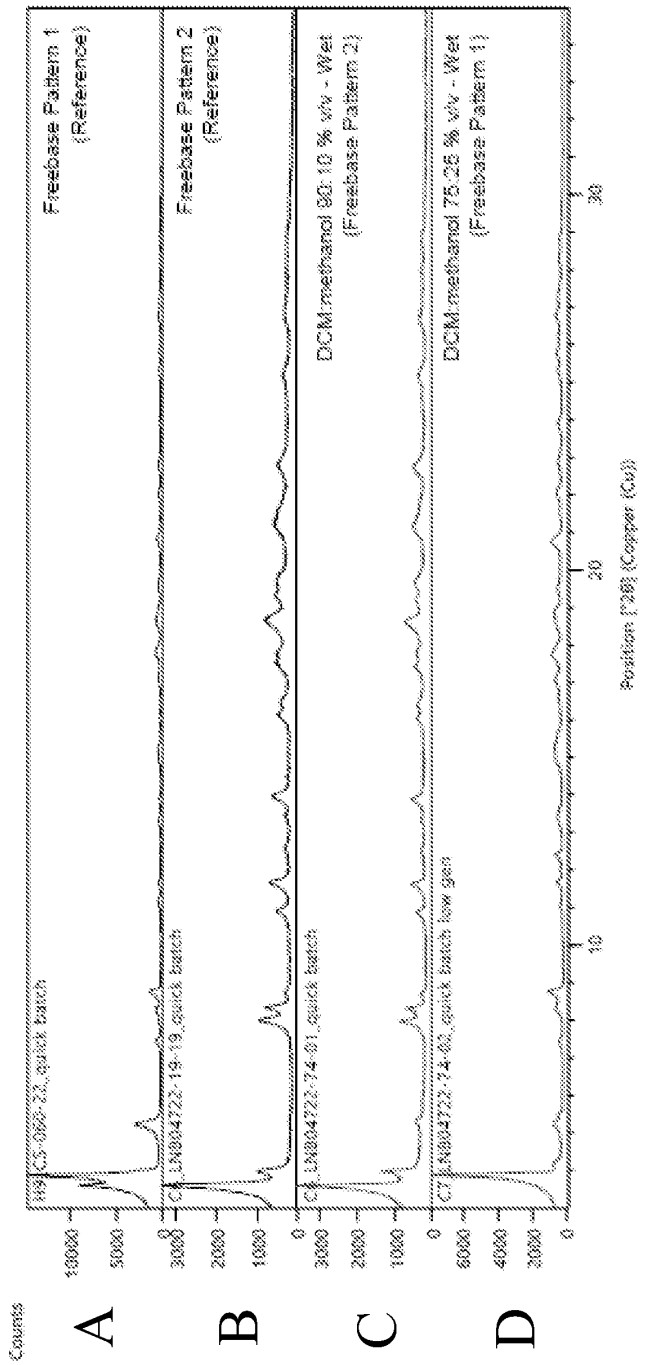

Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
DCM:methanol 90:10 % v/v - Wet
(Freebase Pattern 2)
DCM:methanol 75:25 % v/v - Wet
(Freebase Pattern 1)
Counts
A
B
C
D
Position [°2θ] (Copper (Cu))

FIG 27

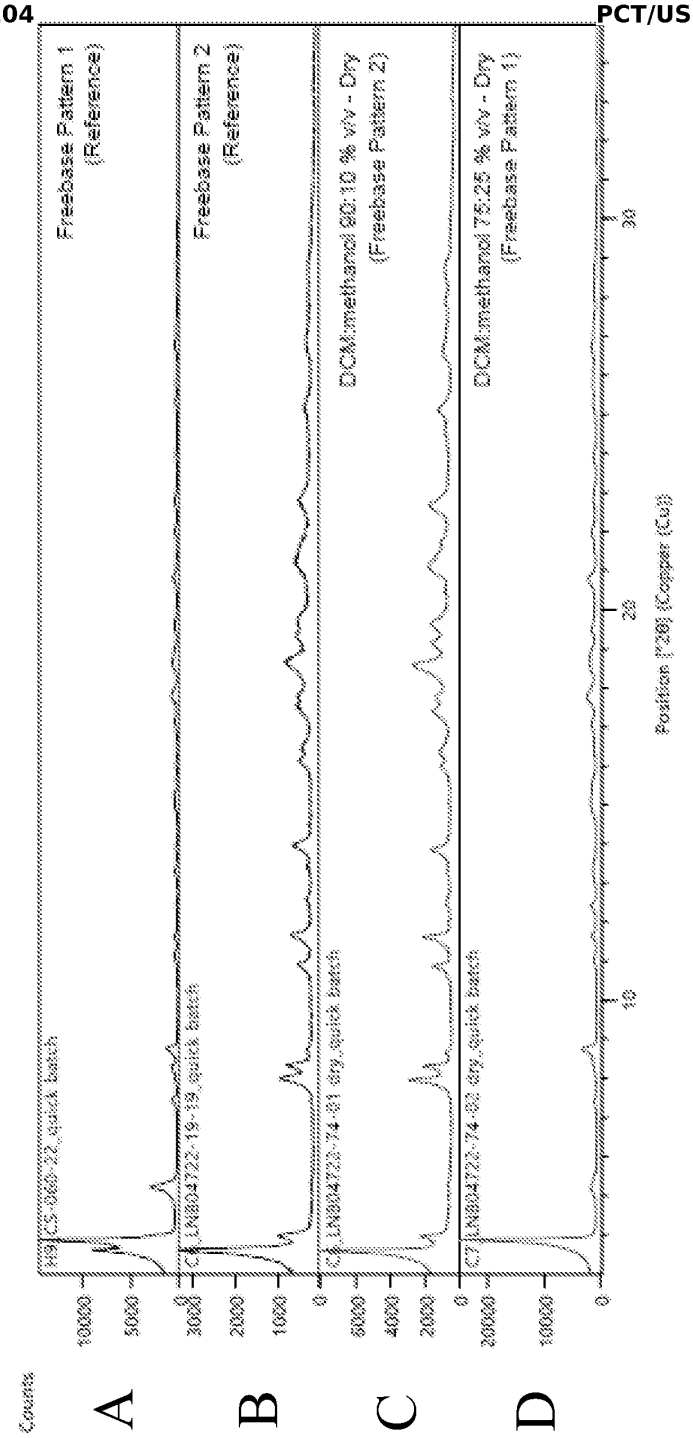

Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
DCM:methanol 90:10 % v/v - Dry
(Freebase Pattern 2)
DCM:methanol 75:25 % v/v - Dry
(Freebase Pattern 1)
Counts
A
B
C
D
Position [°2θ] (Copper (Cu))

FIG 28

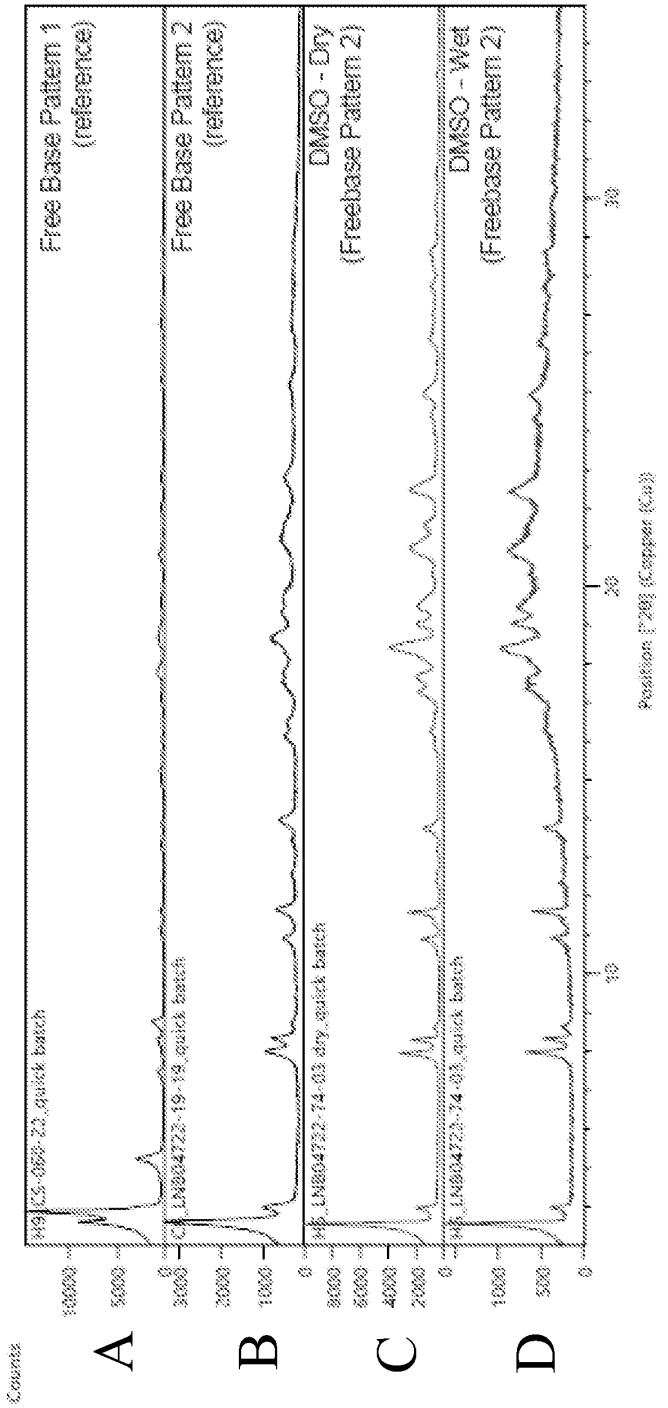

Free Base Pattern 1 (reference)
Free Base Pattern 2 (reference)
DMSO - Dry (Freebase Pattern 2)
DMSO - Wet (Freebase Pattern 2)
A
B
C
D
Counts
Position [°2θ] (Copper (Cu))

FIG 29

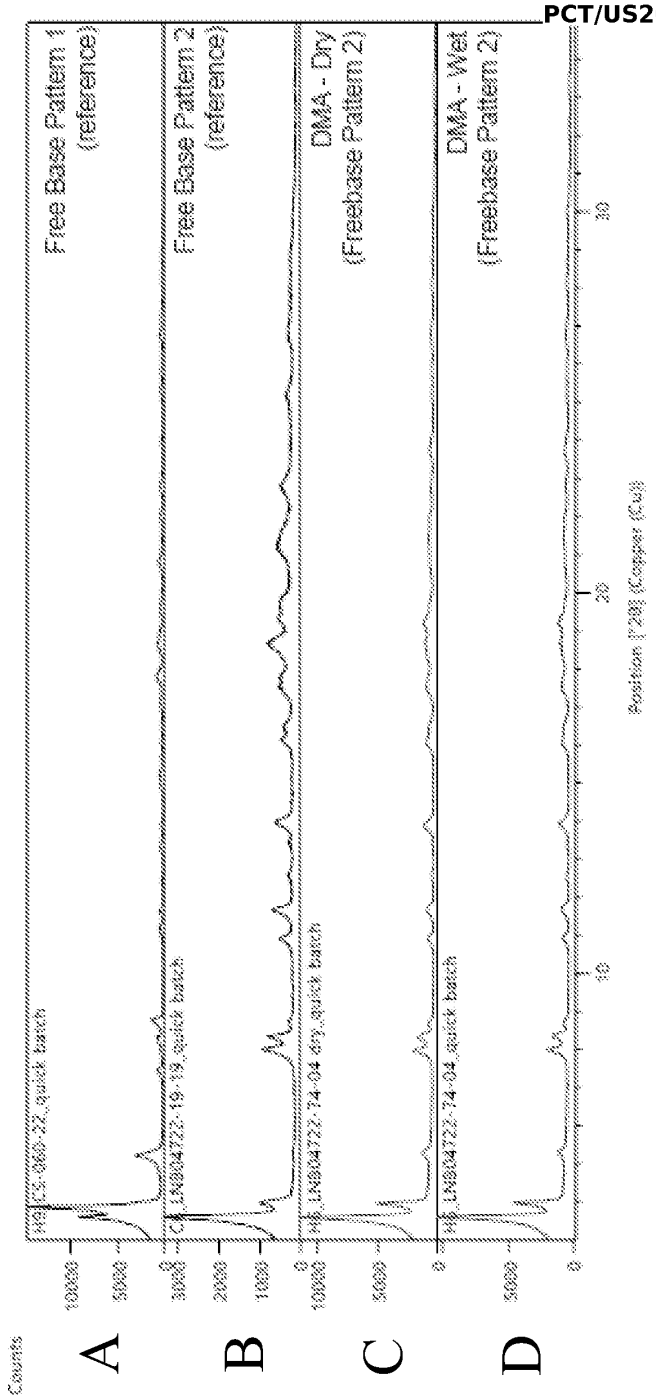

Free Base Pattern 1 (reference)
Free Base Pattern 2 (reference)
DMA - Dry (Freebase Pattern 2)
DMA - Wet (Freebase Pattern 2)
Counts
A
B
C
D
Position [°2θ] (Copper (Cu))

FIG 30

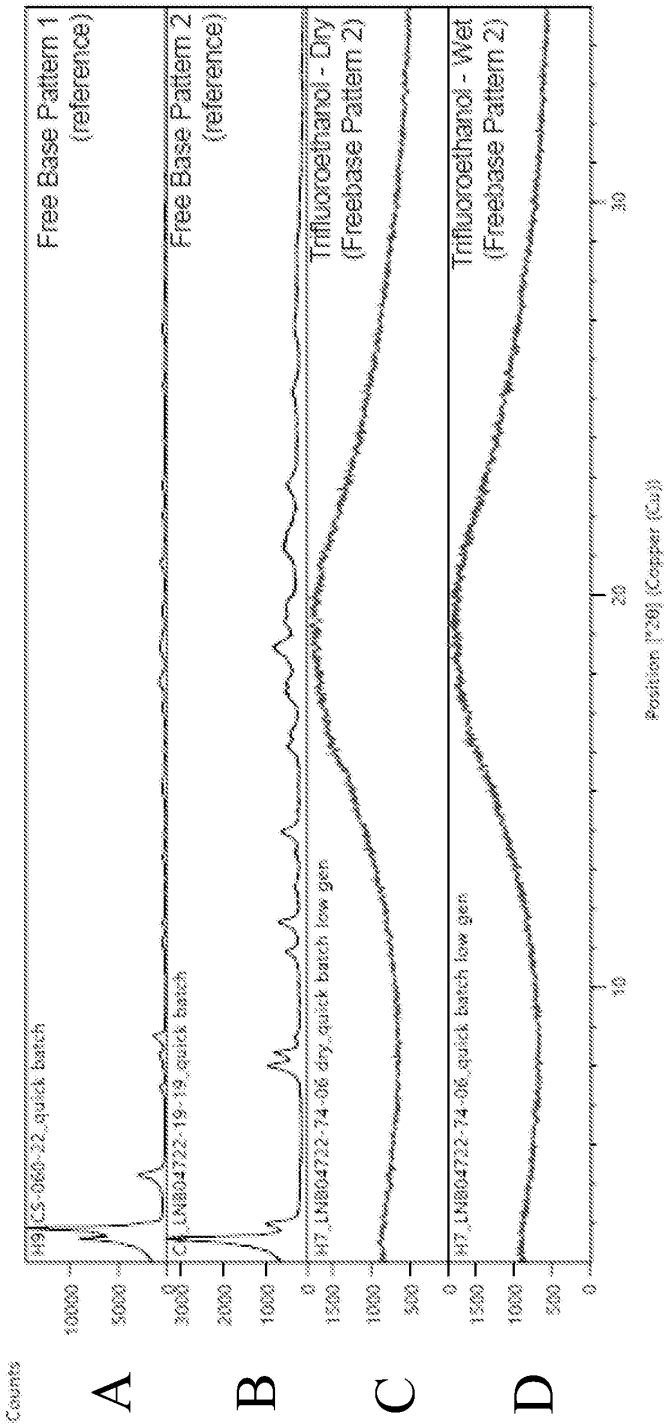

Free Base Pattern 1 (reference)
Free Base Pattern 2 (reference)
Trifluoroethanol - Dry (Freebase Pattern 2)
Trifluoroethanol - Wet (Freebase Pattern 2)
Counts
A
B
C
D
10
20
30
Position [°2θ] (Copper (Cu))

FIG 31

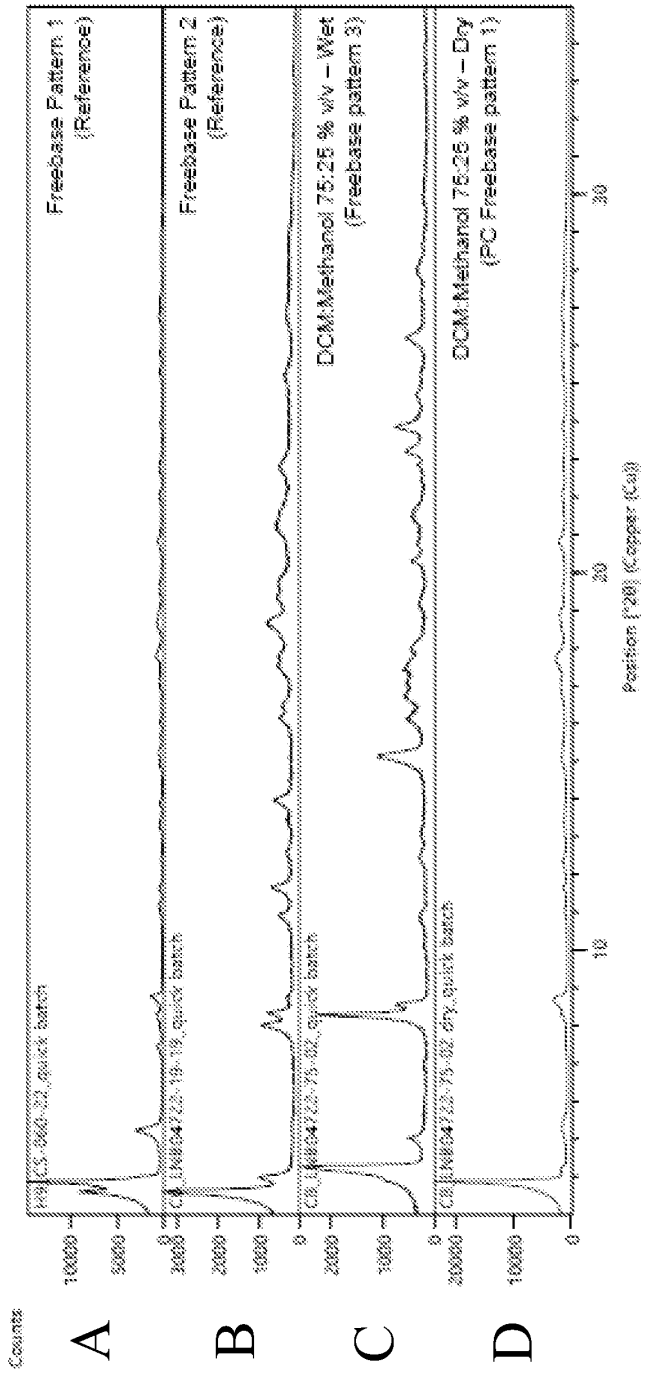

Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
DCM:Methanol 75:25 % v/v – Wet
(Freebase pattern 3)
DCM:Methanol 75:25 % v/v – Dry
(PC Freebase pattern 1)
A
B
C
D
Counts
Position [°2θ] (Copper (Cu))

FIG 32

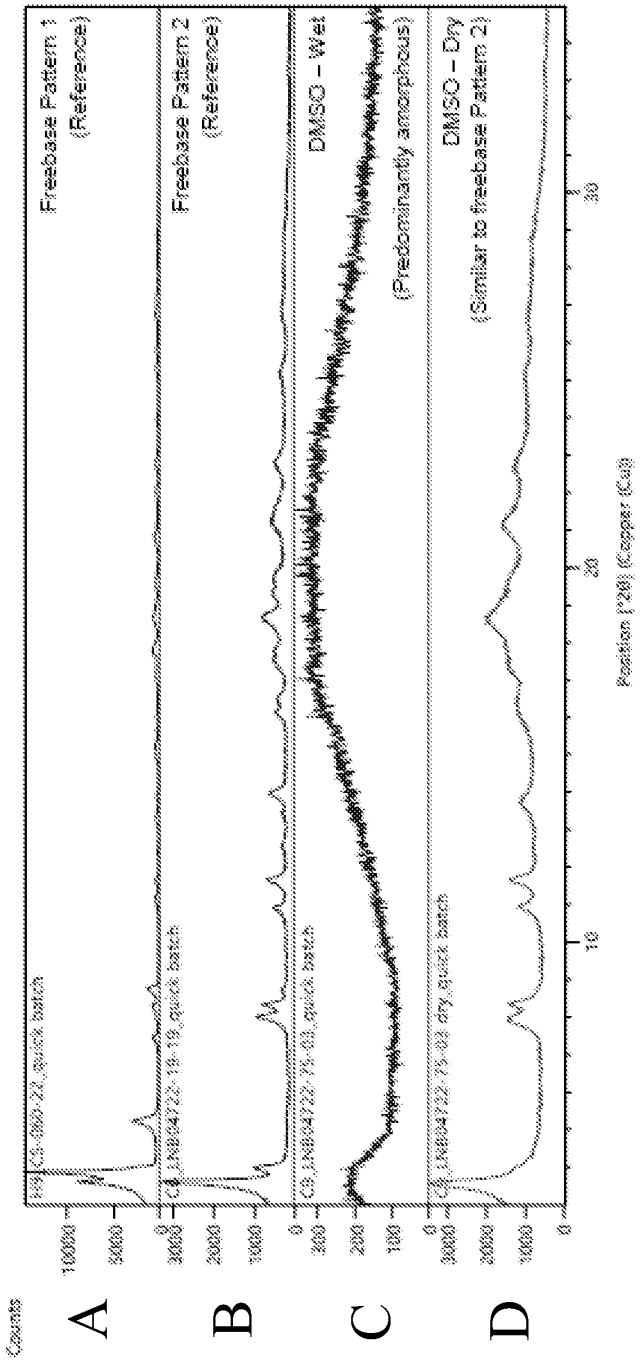

Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
DMSO – Wet
(Predominantly amorphous)
DMSO – Dry
(Similar to freebase Pattern 2)
A
B
C
D
Counts
Position [°2θ] (Copper (Cu))

FIG 33

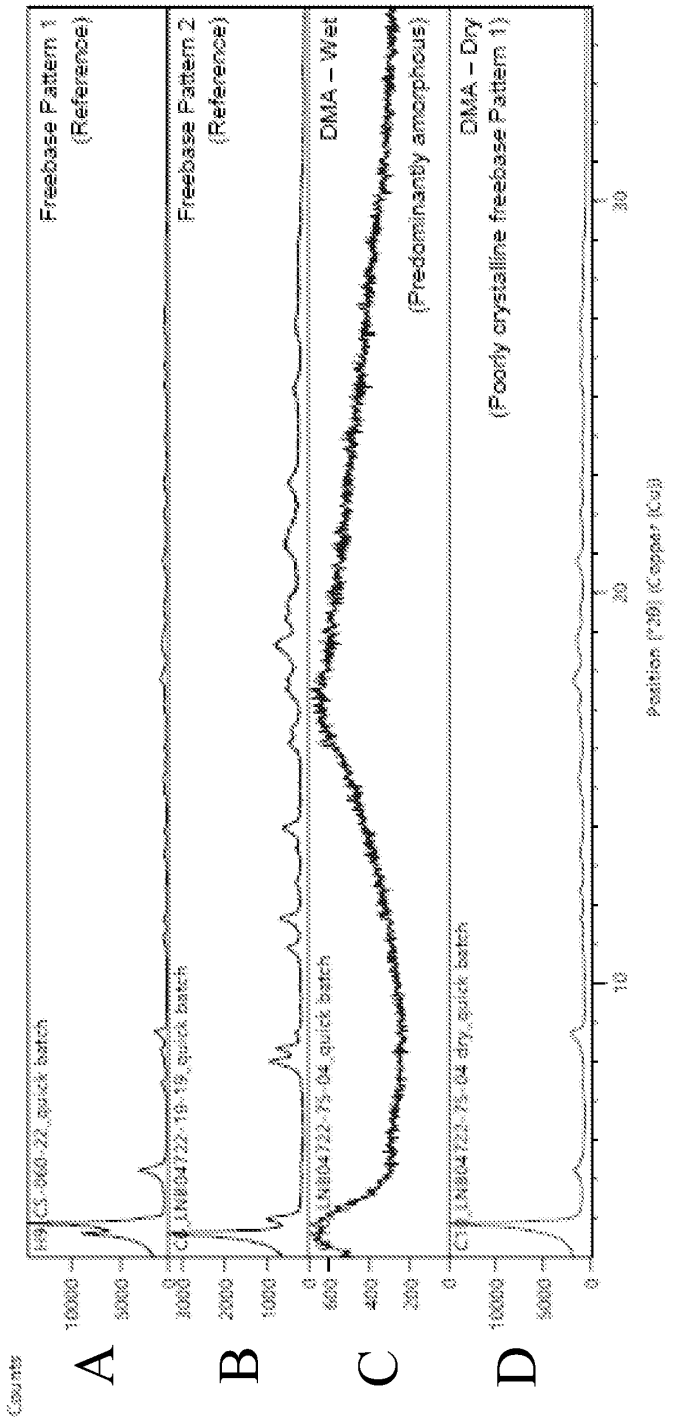

Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
DMA – Wet
(Predominantly amorphous)
DMA – Dry
(Poorly crystalline freebase Pattern 1)
A
B
C
D
Counts
Position (°2θ) (Copper (Cu))

FIG 34

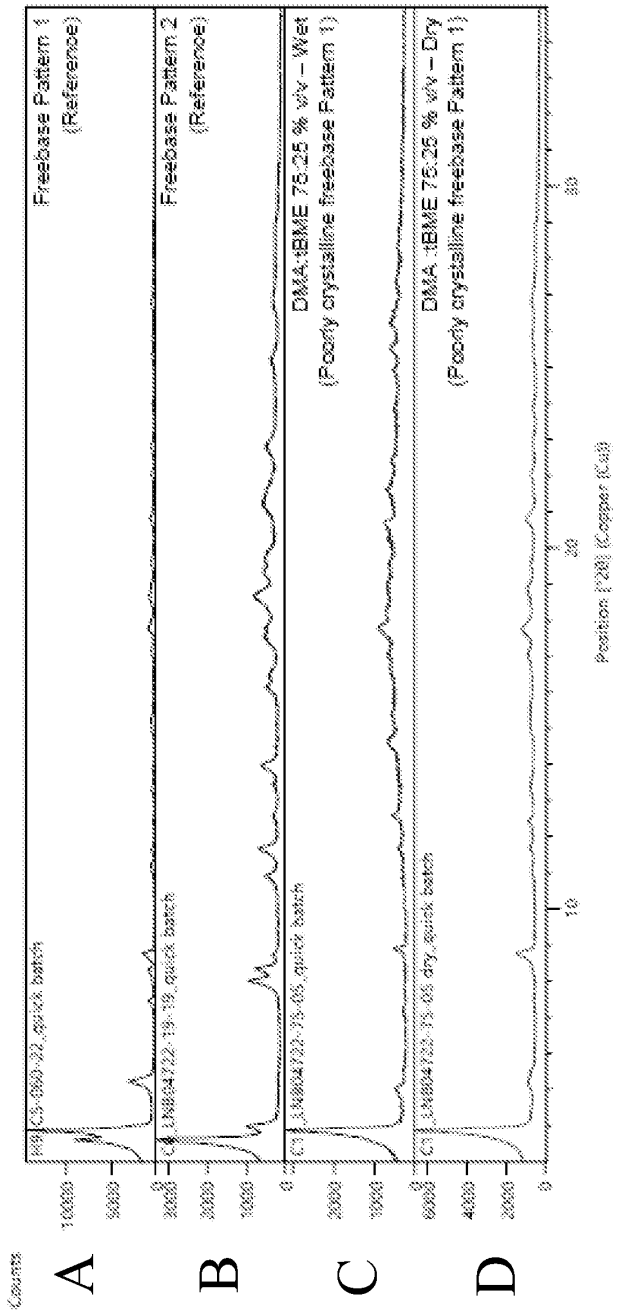

A
B
C
D
Counts
Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
DMA:tBME 75:25 % v/v – Wet
(Poorly crystalline freebase Pattern 1)
DMA :tBME 75:25 % v/v – Dry
(Poorly crystalline freebase Pattern 1)
Position [°2θ] (Copper (Cu))

FIG 35

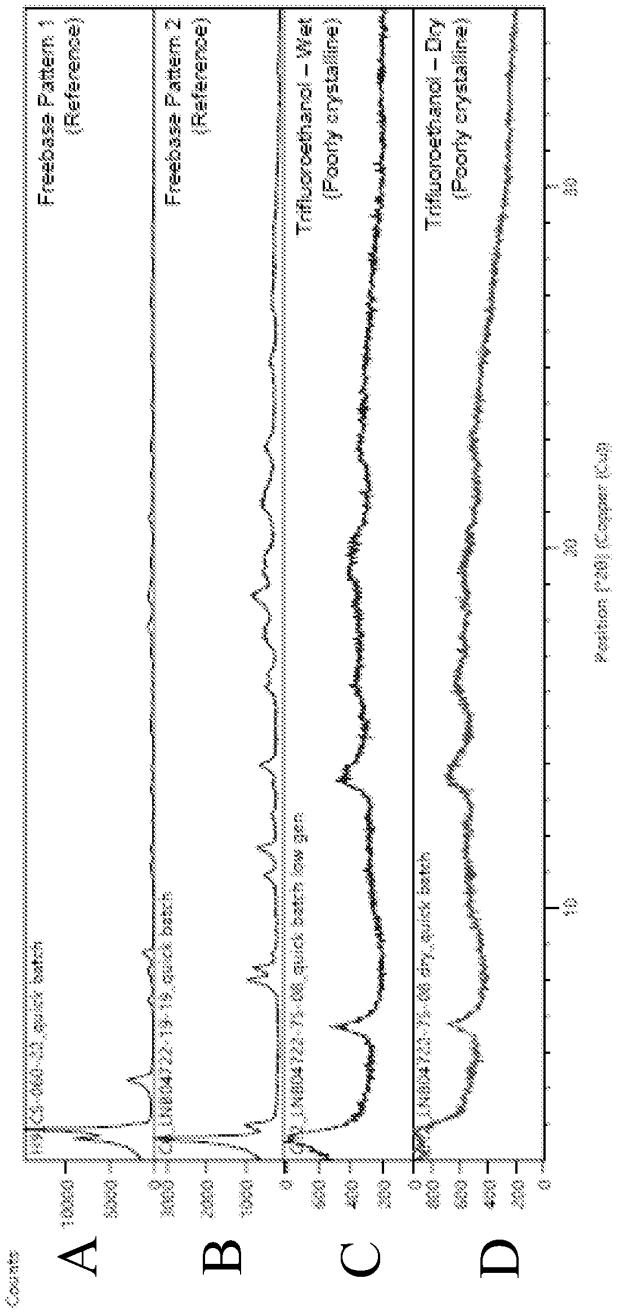

Counts
A
Freebase Pattern 1
(Reference)
B
Freebase Pattern 2
(Reference)
C
Trifluoroethanol – Wet
(Poorly crystalline)
D
Trifluoroethanol – Dry
(Poorly crystalline)
Position [°2θ] (Copper (Cu))

FIG 36

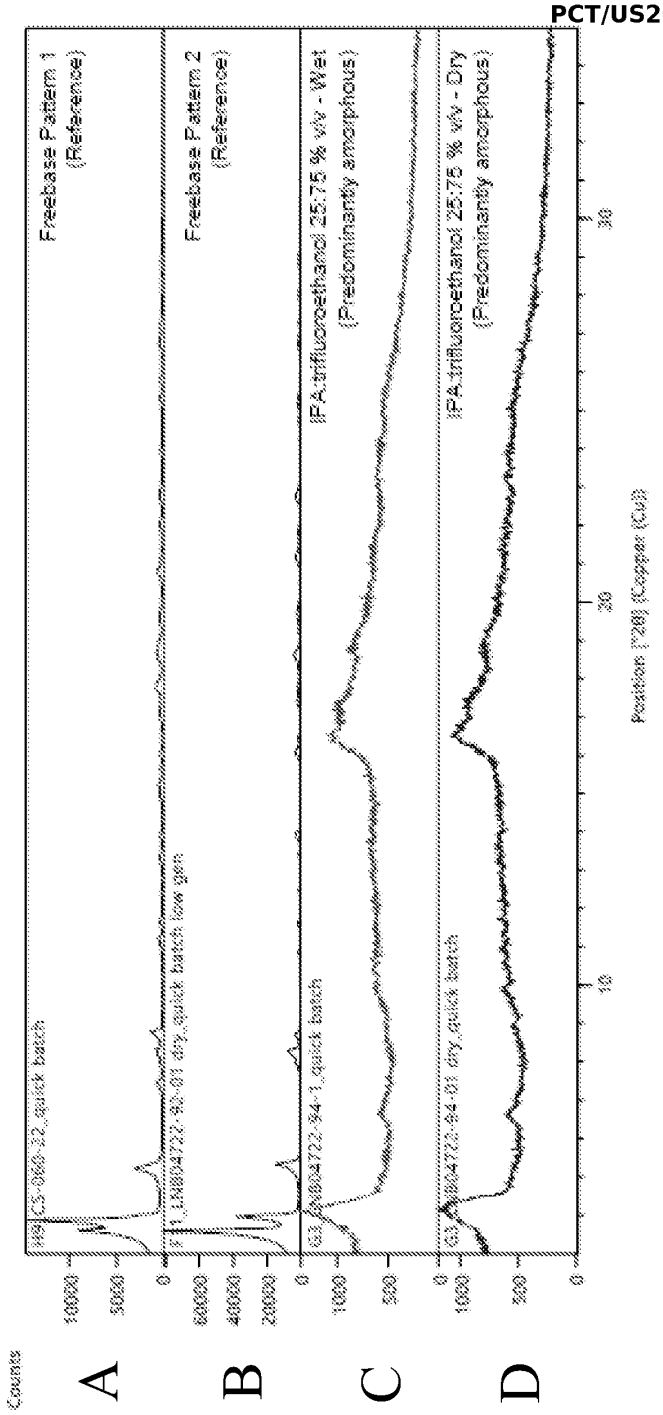

Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
IPA:trifluoroethanol 25:75 % v/v - Wet
(Predominantly amorphous)
IPA:trifluoroethanol 25:75 % v/v - Dry
(Predominantly amorphous)
Counts
A
B
C
D
Position [°2θ] (Copper (Cu))

FIG 37

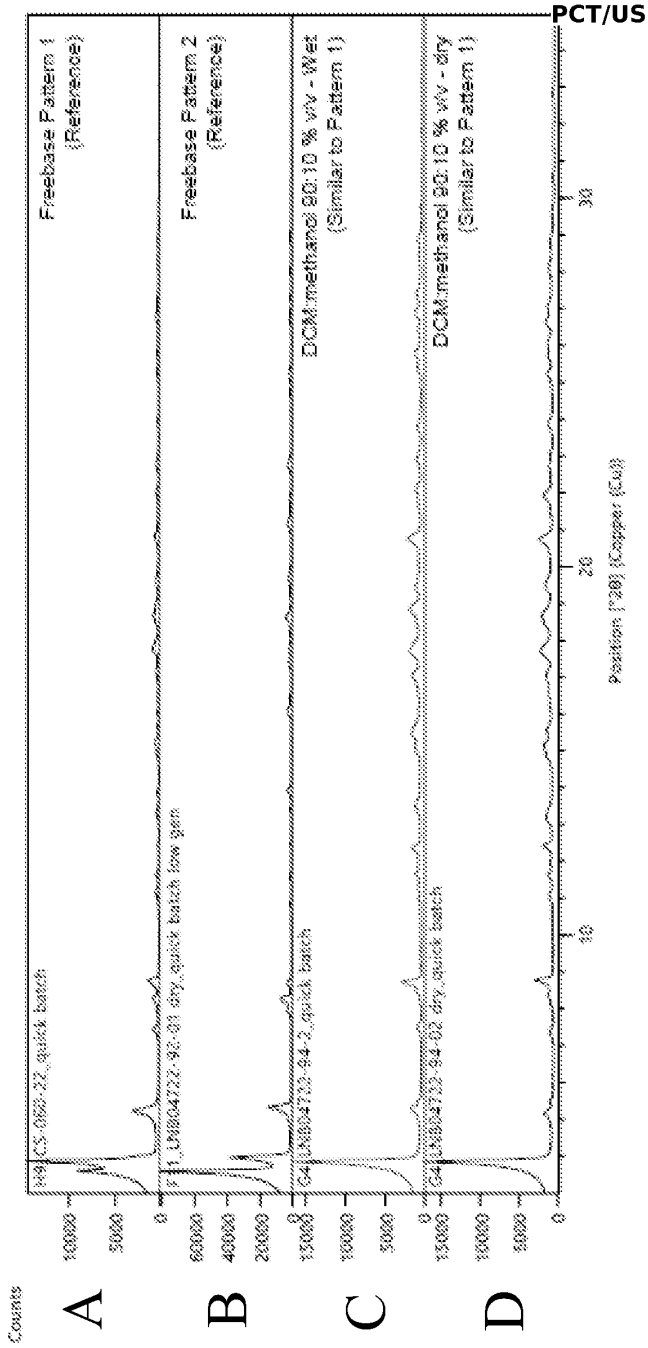

Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
DCM:methanol 90:10 % v/v - Wet
(Similar to Pattern 1)
DCM:methanol 90:10 % v/v - dry
(Similar to Pattern 1)
A
B
C
D
Counts
Position [°2θ] (Copper (Cu))

FIG 38

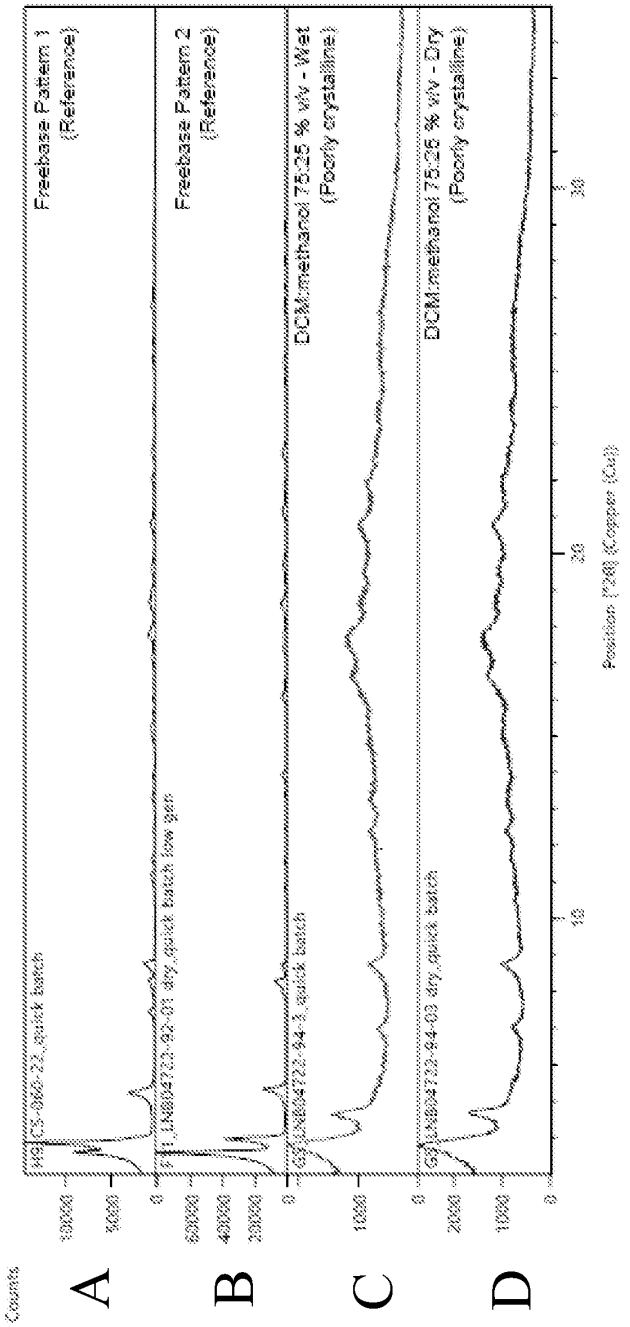

Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
DCM:methanol 75:25 % v/v - Wet
(Poorly crystalline)
DCM:methanol 75:25 % v/v - Dry
(Poorly crystalline)
Counts
A
B
C
D
Position [°2θ] (Copper (Cu))

FIG 39

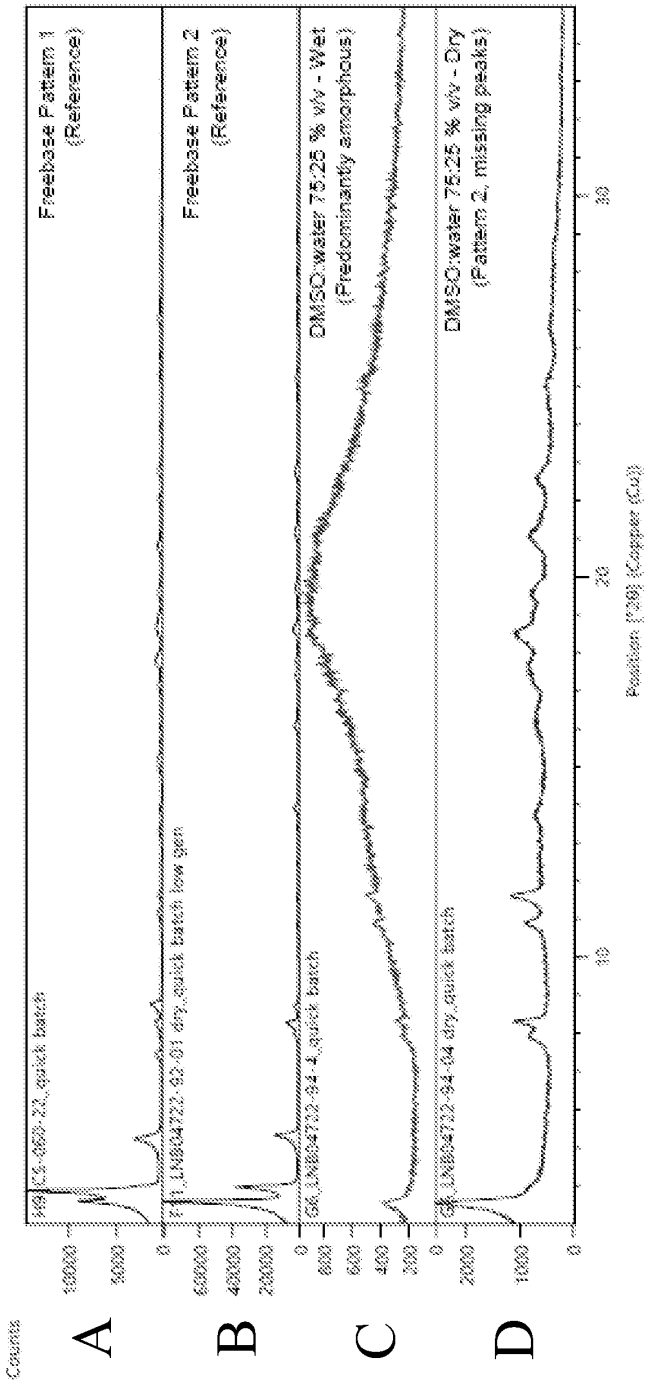

Counts
A
B
C
D
Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
DMSO:water 75:25 % v/v - Wet
(Predominantly amorphous)
DMSO:water 75:25 % v/v - Dry
(Pattern 2, missing peaks)
Position [°2θ] (Copper (Cu))

FIG 40

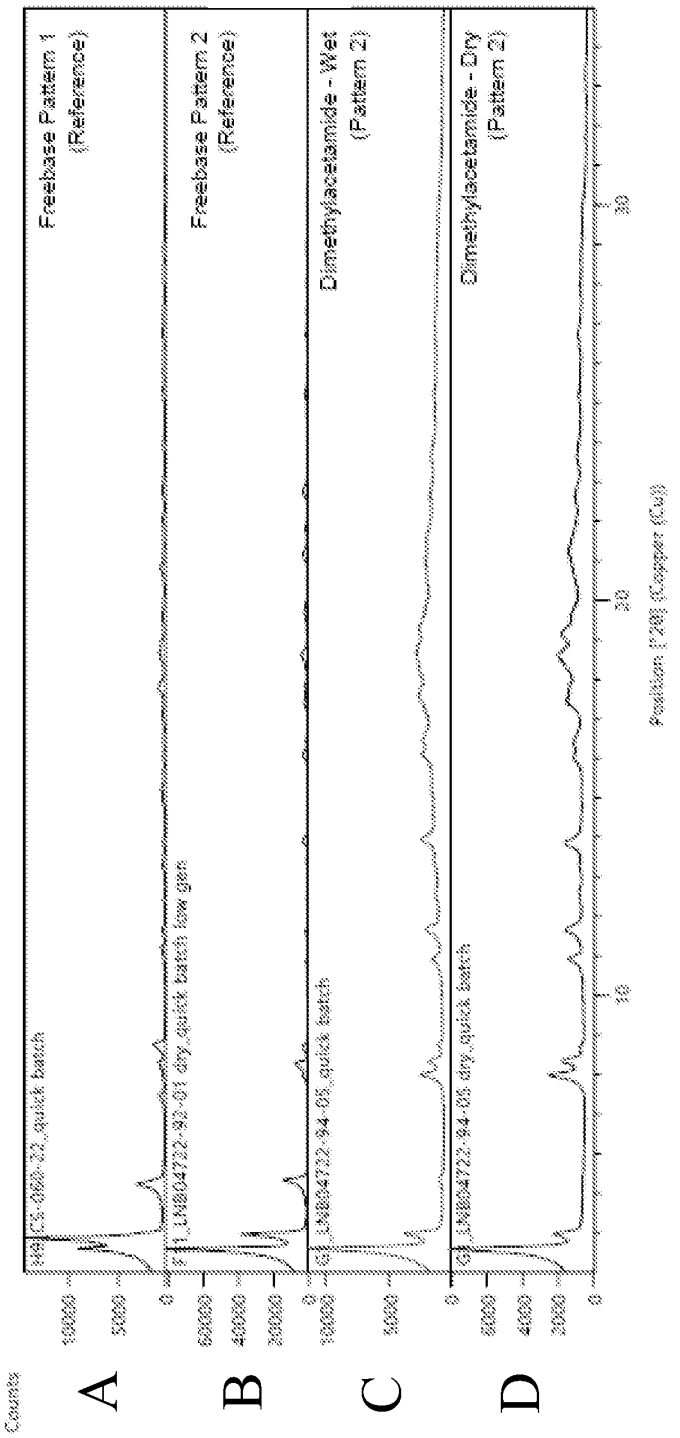

Freebase Pattern 1 (Reference)
Freebase Pattern 2 (Reference)
Dimethylacetamide - Wet (Pattern 2)
Dimethylacetamide - Dry (Pattern 2)
Counts
A
B
C
D
Position [°2θ] (Copper (Cu))

FIG 41

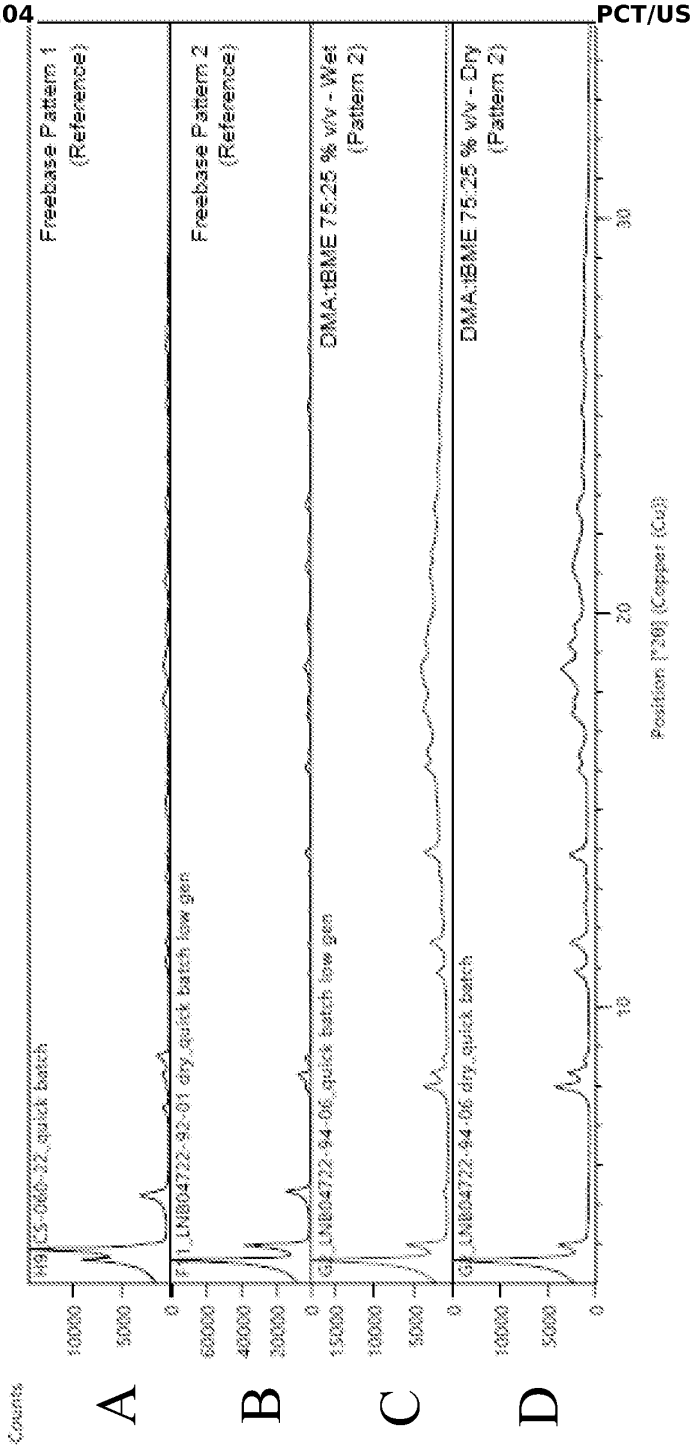

Counts
A
B
C
D
Freebase Pattern 1 (Reference)
Freebase Pattern 2 (Reference)
DMA:IBME 75:25 % v/v - Wet (Pattern 2)
DMA:IBME 75:25 % v/v - Dry (Pattern 2)
Position [°2θ] (Copper (Cu))

FIG 42

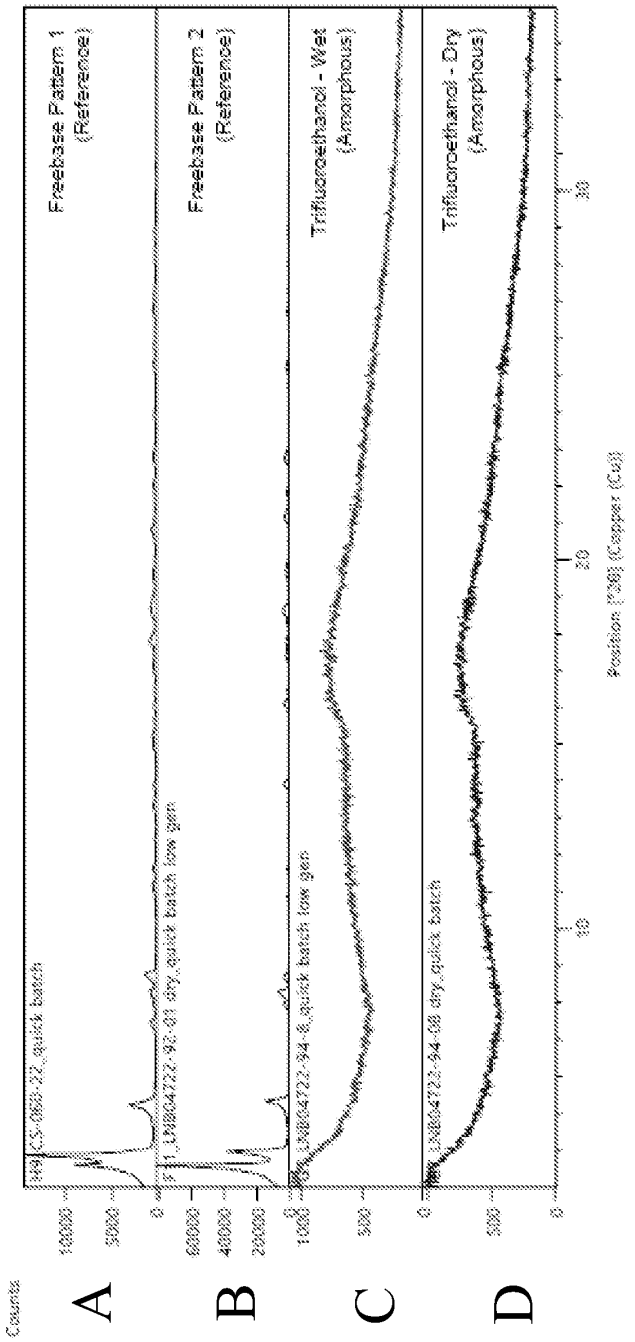

Freebase Pattern 1 (Reference)
Freebase Pattern 2 (Reference)
Trifluoroethanol - Wet (Amorphous)
Trifluoroethanol - Dry (Amorphous)
Counts
A
B
C
D
10000
5000
0
60000
40000
20000
1000
500
0
500
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 43

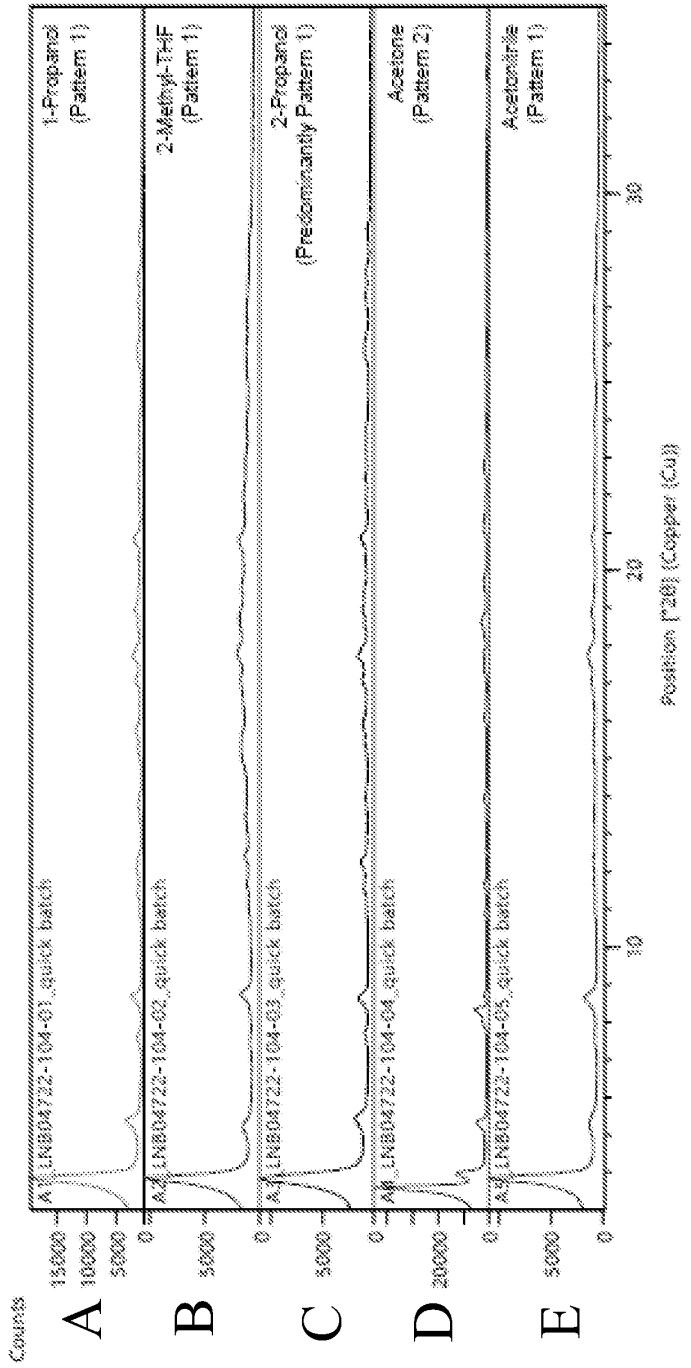

A
B
C
D
E
Counts
15000
10000
5000
0
3000
20000
1-Propanol
(Pattern 1)
2-Methyl-THF
(Pattern 1)
2-Propanol
(Predominantly Pattern 1)
Acetone
(Pattern 2)
Acetonitrile
(Pattern 1)
10
20
30
Position [°2θ] (Copper (Cu))

FIG 44

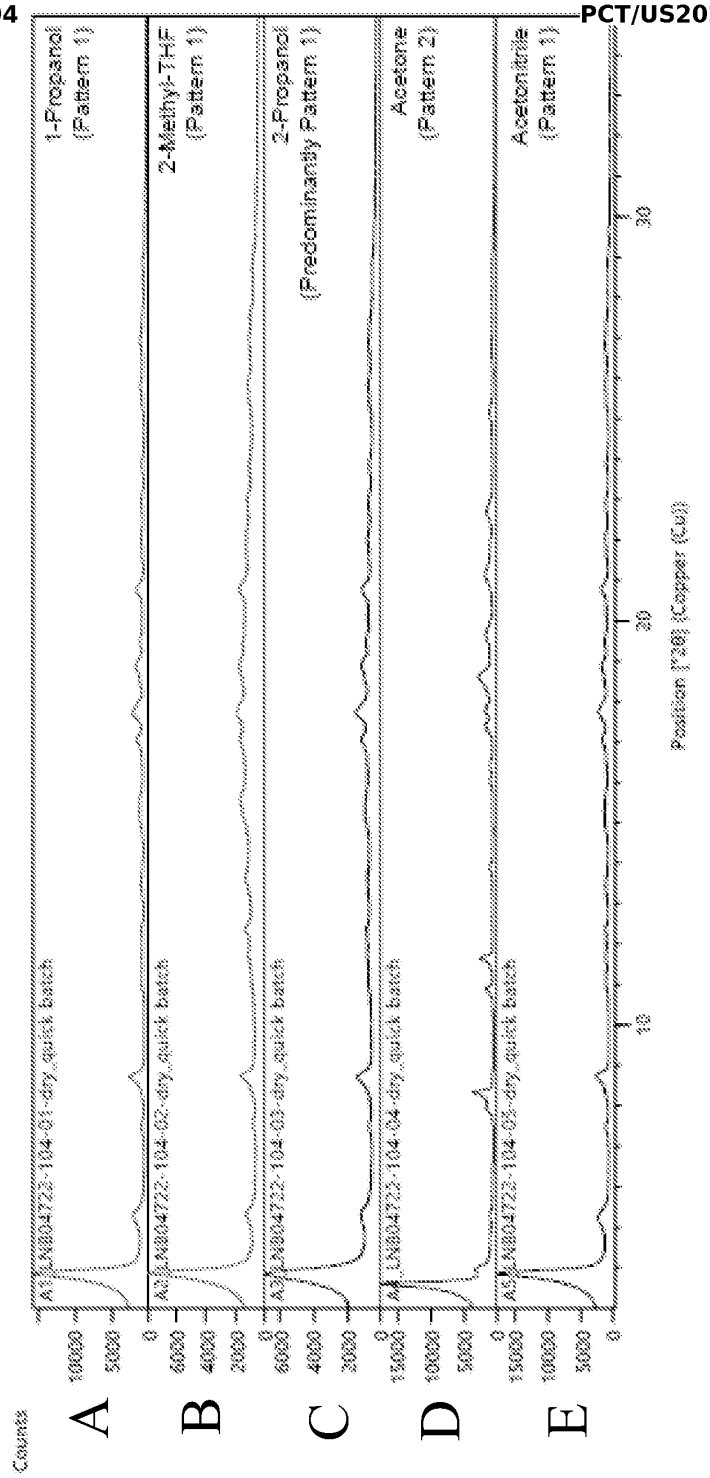

A
B
C
D
E
Counts
1-Propanol
(Pattern 1)
2-Methyl-THF
(Pattern 1)
2-Propanol
(Predominantly Pattern 1)
Acetone
(Pattern 2)
Acetonitrile
(Pattern 1)
Position [°2θ] (Copper (Cu))

FIG 45

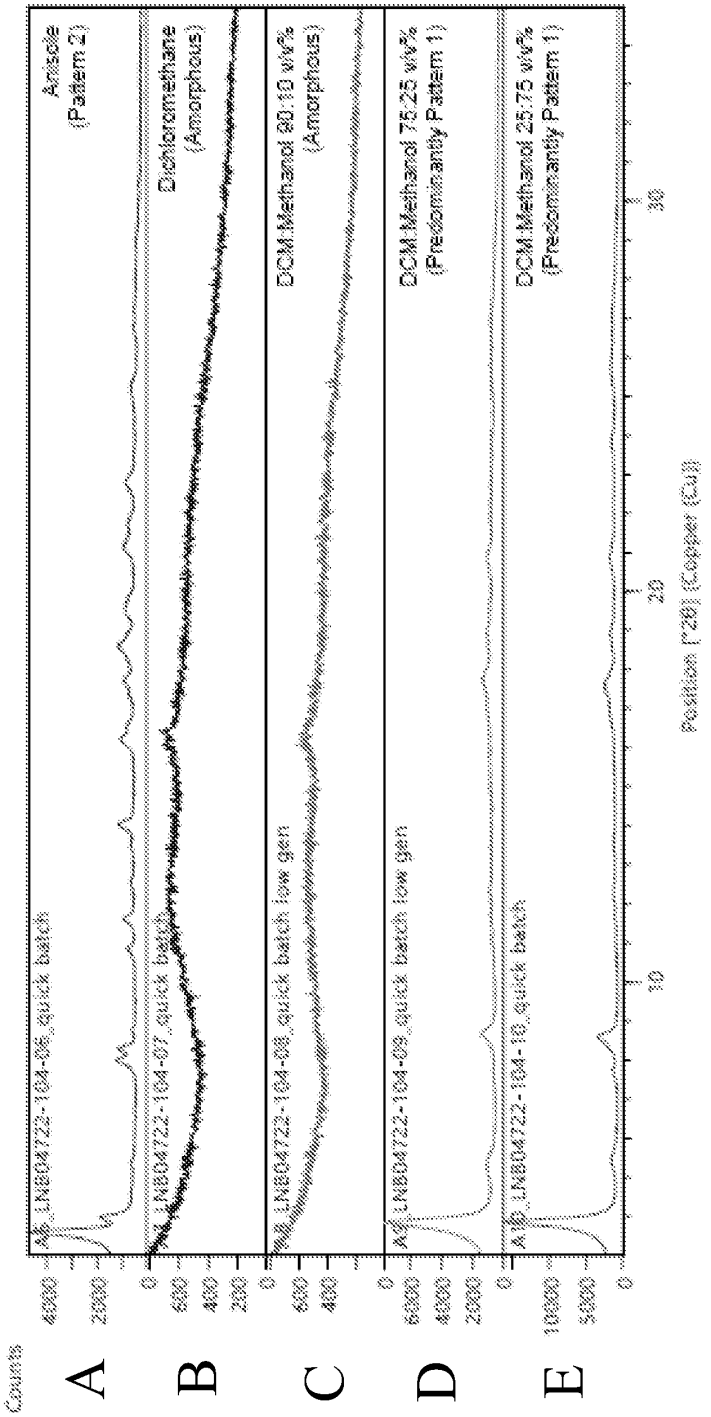

Counts
A
B
C
D
E
Anisole (Pattern 2)
Dichloromethane (Amorphous)
DCM:Methanol 80:10 v/v% (Amorphous)
DCM:Methanol 75:25 v/v% (Predominantly Pattern 1)
DCM:Methanol 25:75 v/v% (Predominantly Pattern 1)
Position [°2θ] (Copper (Cu))

FIG 46

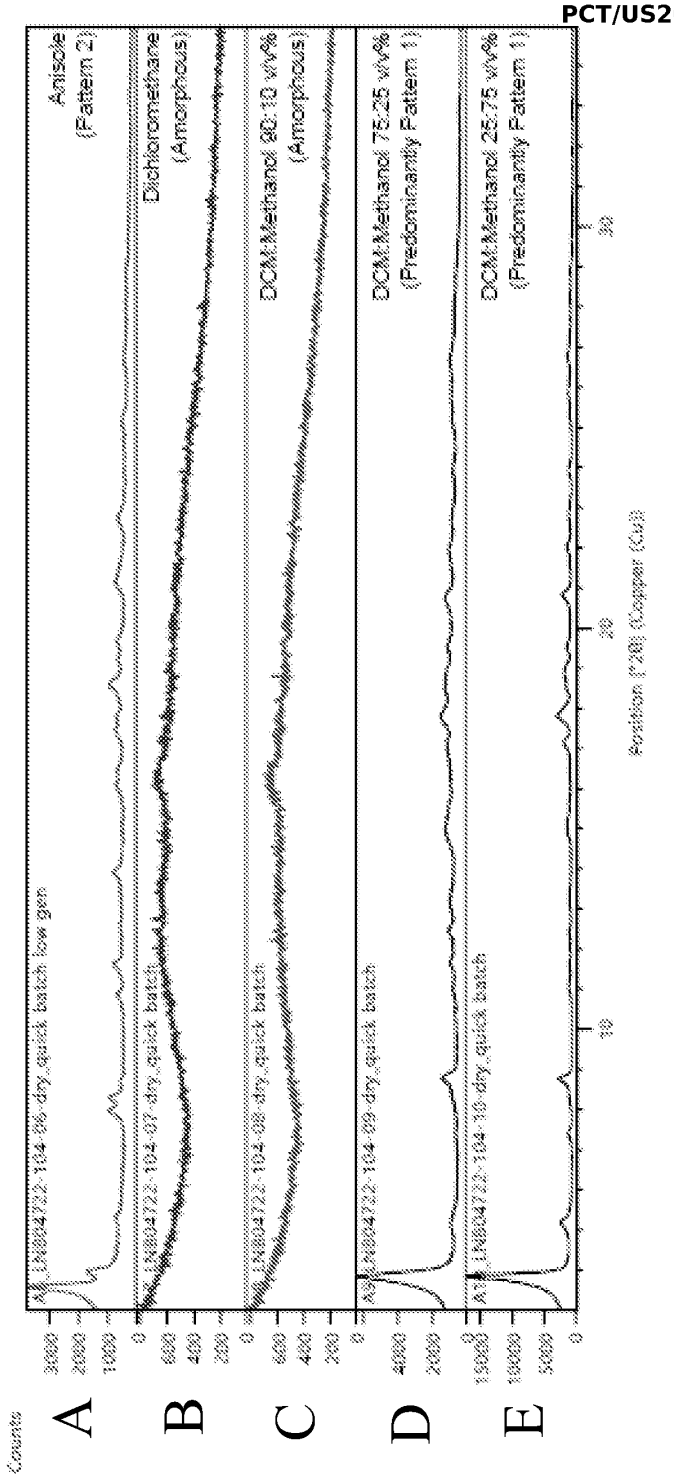

Counts
A
B
C
D
E
Anisole (Pattern 2)
Dichloromethane (Amorphous)
DCM:Methanol 92:10 v/v% (Amorphous)
DCM:Methanol 75:25 v/v% (Predominantly Pattern 1)
DCM:Methanol 25:75 v/v% (Predominantly Pattern 1)
Position [°2θ] (Copper (Cu))

FIG 47

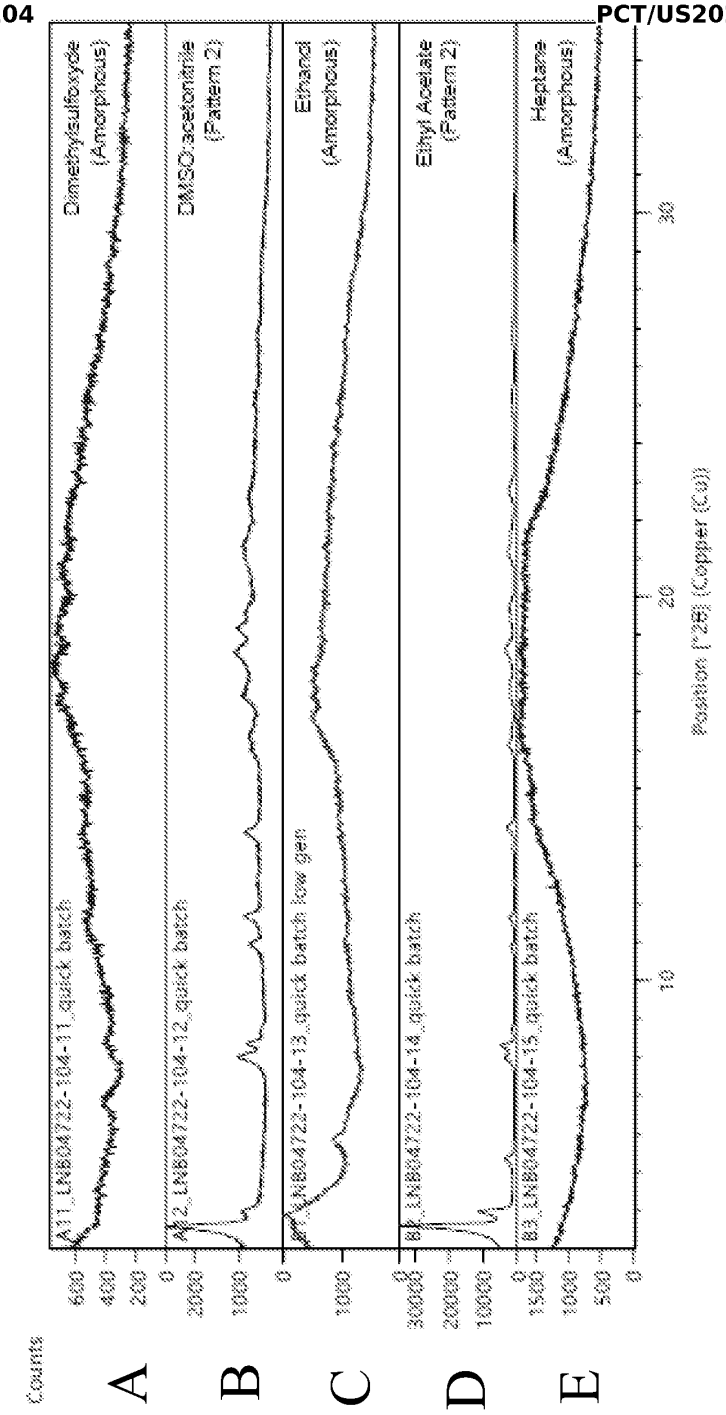

A
B
C
D
E
Counts
A11_LNB04722-104-11_quick batch
Dimethylsulfoxyde (Amorphous)
A12_LNB04722-104-12_quick batch
DMSO:acetonitrile (Pattern 2)
A13_LNB04722-104-13_quick batch low gen
Ethanol (Amorphous)
B1_LNB04722-104-14_quick batch
Ethyl Acetate (Pattern 2)
B3_LNB04722-104-15_quick batch
Heptane (Amorphous)
Position [°2θ] (Copper (Cu))

FIG 48

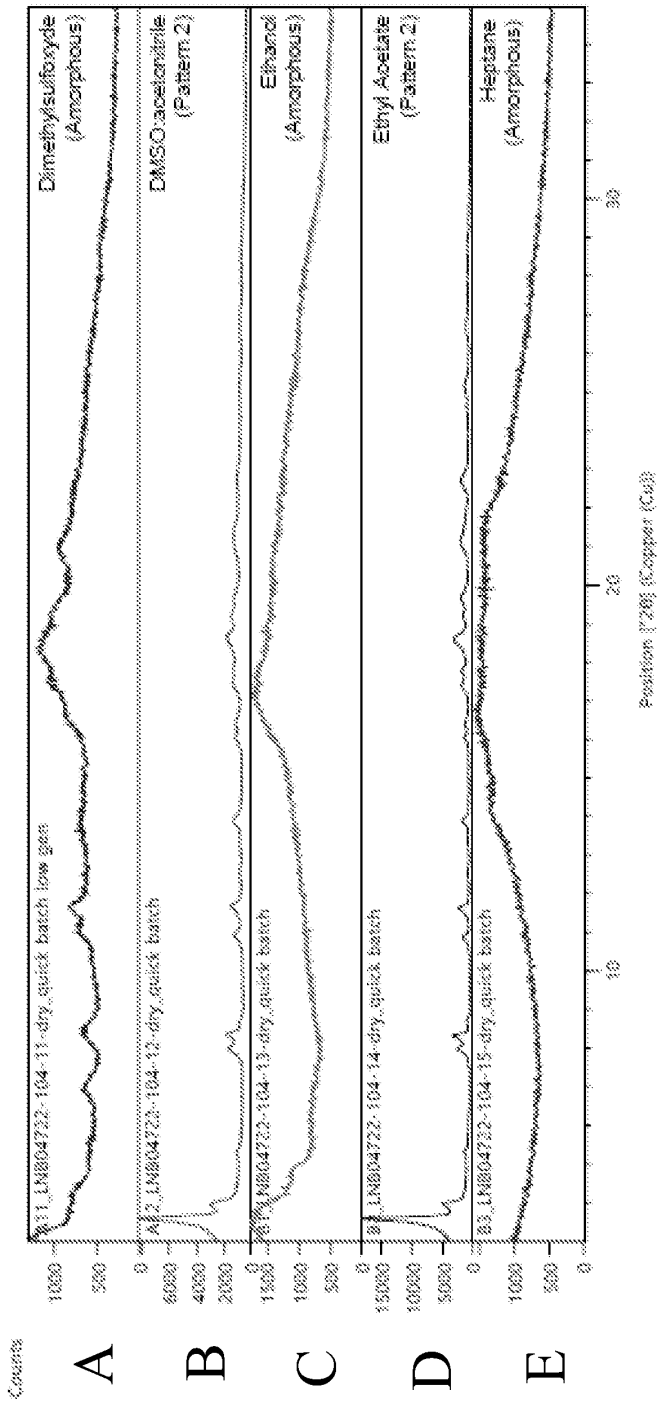

A
B
C
D
E
Counts
Dimethylsulfoxyde (Amorphous)
DMSO:acetonitrile (Pattern 2)
Ethanol (Amorphous)
Ethyl Acetate (Pattern 2)
Heptane (Amorphous)
Position [°2θ] (Copper (Cu))

FIG 49

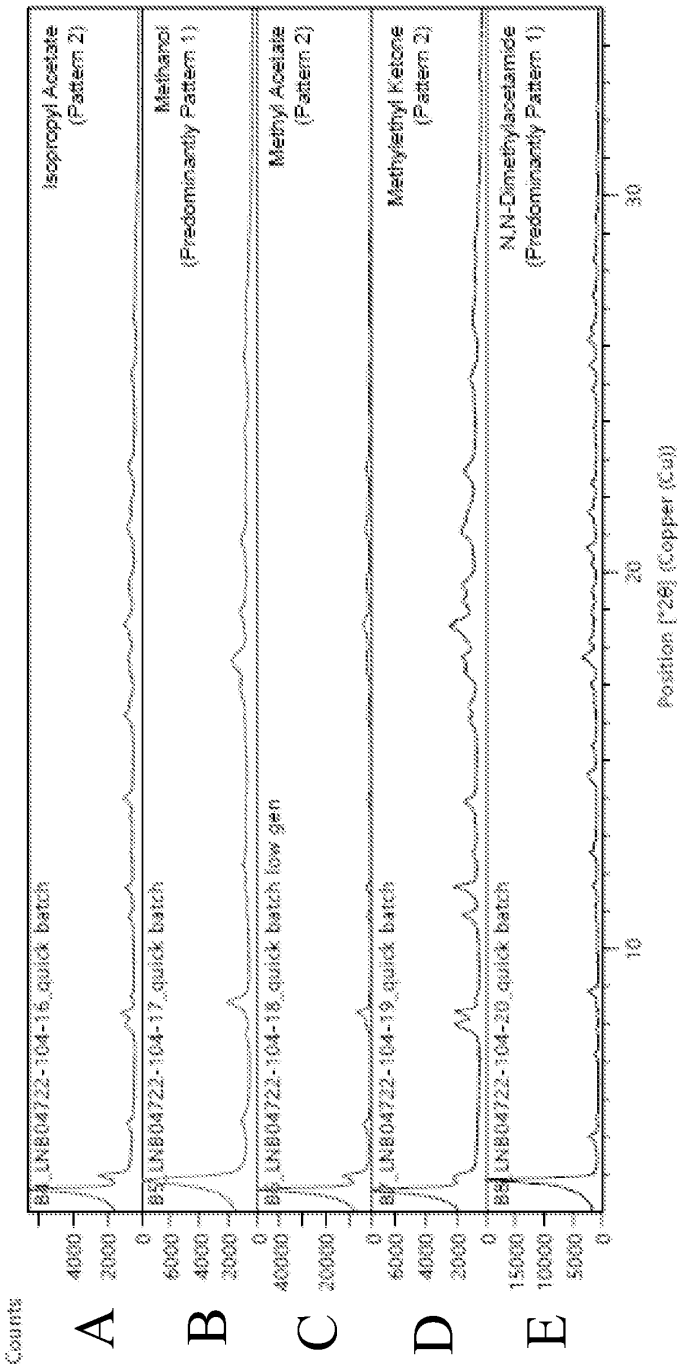

Counts
A
B
C
D
E
Isopropyl Acetate (Pattern 2)
Methanol (Predominantly Pattern 1)
Methyl Acetate (Pattern 2)
Methylethyl Ketone (Pattern 2)
N,N-Dimethylacetamide (Predominantly Pattern 1)
LNB04722-104-16_quick batch
LNB04722-104-17_quick batch
LNB04722-104-18_quick batch low gain
LNB04722-104-19_quick batch
LNB04722-104-20_quick batch
Position [°2θ] (Copper (Cu))

FIG 50

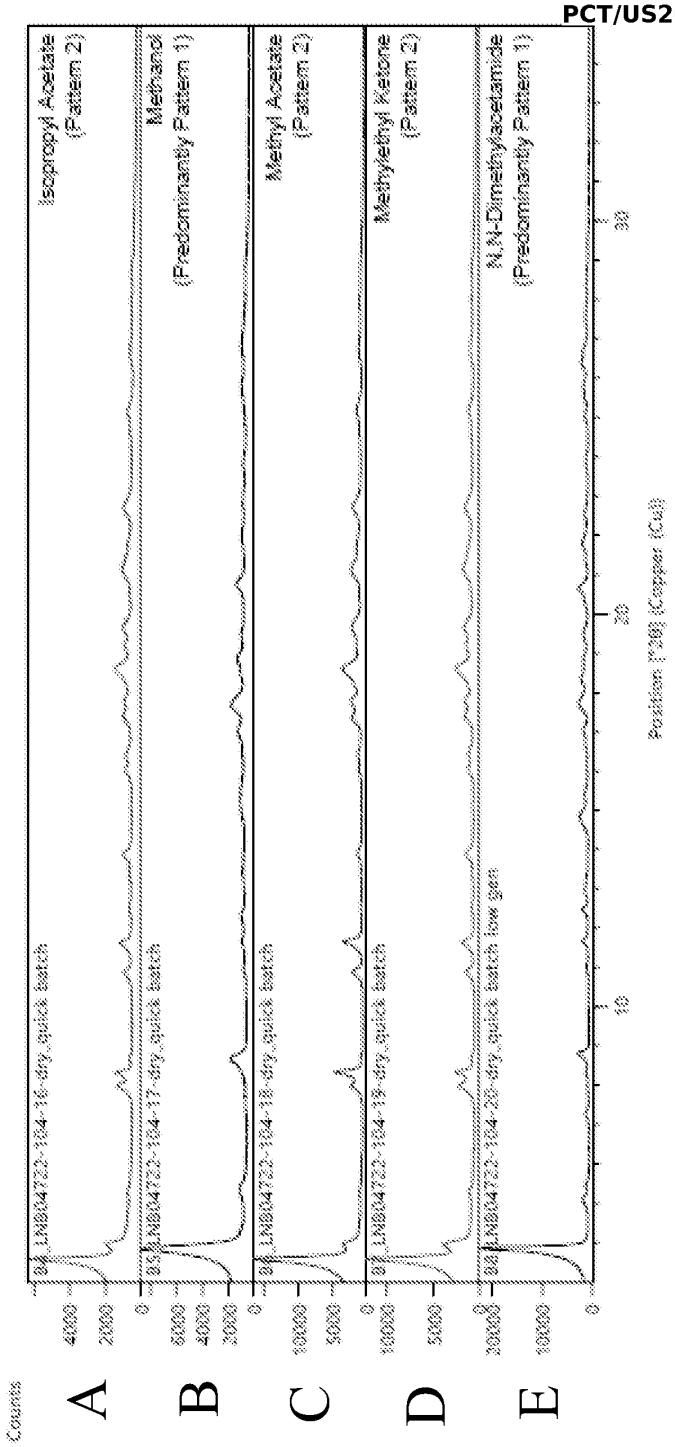

Counts
A
B
C
D
E
Isopropyl Acetate (Pattern 2)
Methanol (Predominantly Pattern 1)
Methyl Acetate (Pattern 2)
Methylethyl Ketone (Pattern 2)
N,N-Dimethylacetamide (Predominantly Pattern 1)
Position [°2θ] (Copper (Cu))

FIG 51

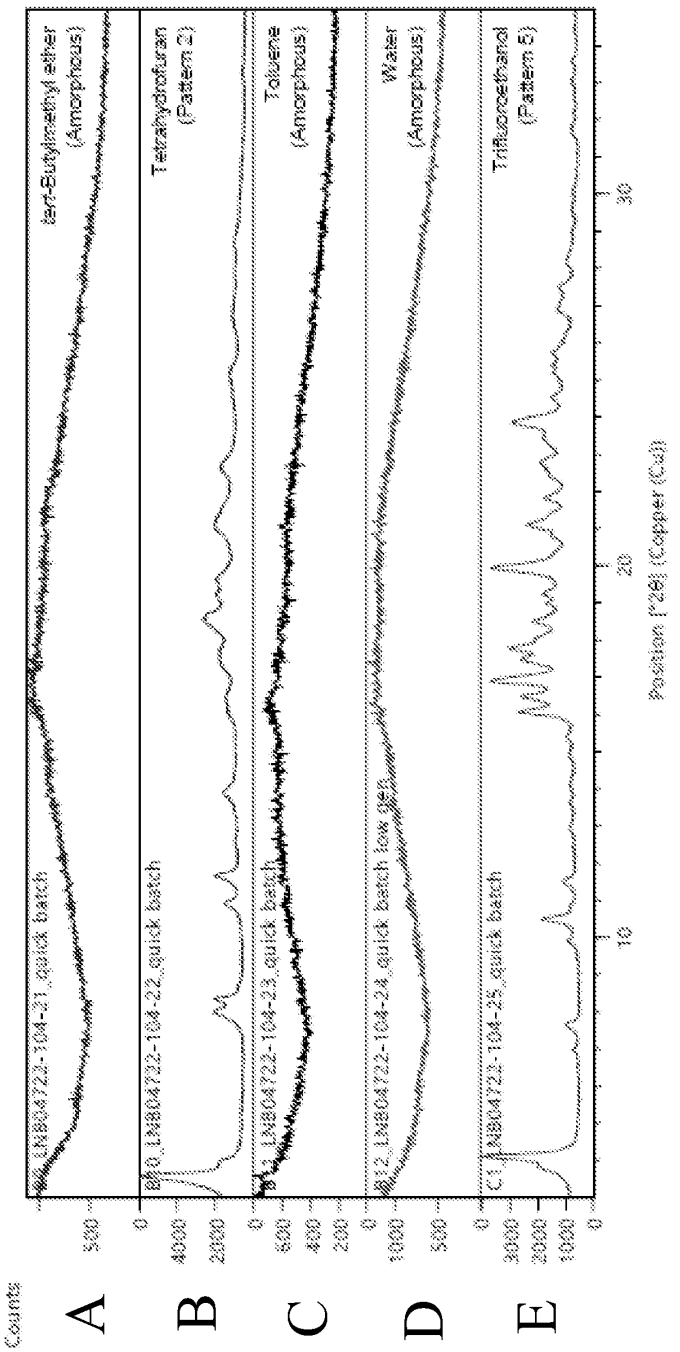

A
B
C
D
E
Counts
tert-Butylmethyl ether (Amorphous)
Tetrahydrofuran (Pattern 2)
Toluene (Amorphous)
Water (Amorphous)
Trifluoroethanol (Pattern 5)
Position [°2θ] (Copper (Cu))

FIG 52

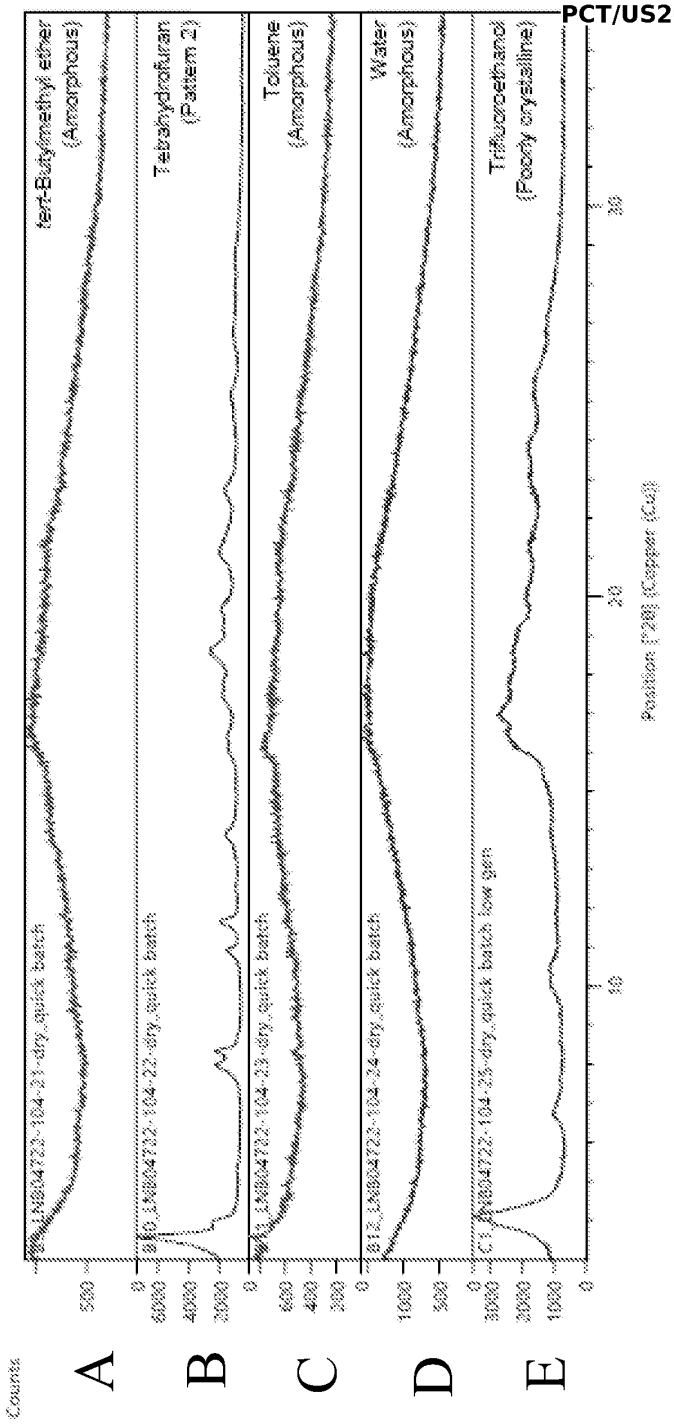

tert-Butylmethyl ether (Amorphous)
Tetrahydrofuran (Pattern 2)
Toluene (Amorphous)
Water (Amorphous)
Trifluoroethanol (Poorly crystalline)
Counts
Position [°2θ] (Copper (Cu))
A
B
C
D
E

FIG 53

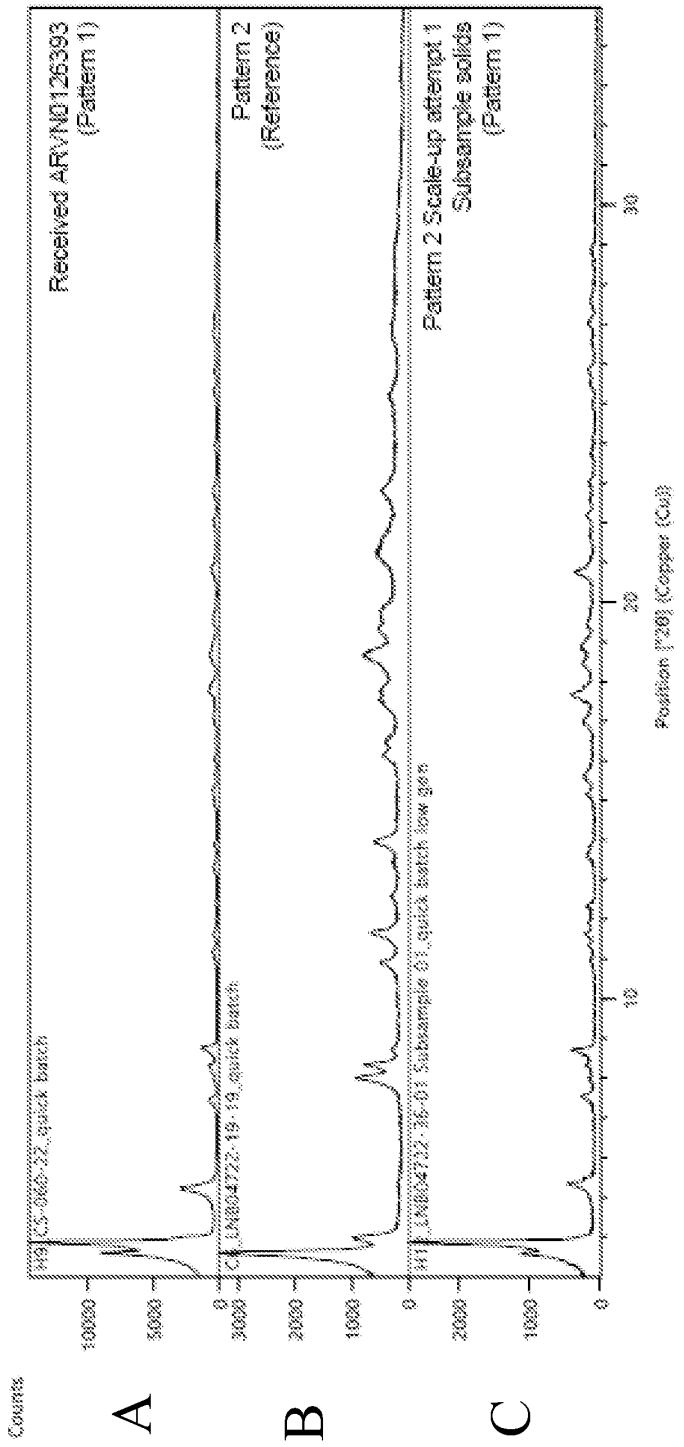

Counts
A
B
C
Received ARVN0125393 (Pattern 1)
Pattern 2 (Reference)
Pattern 2 Scale-up attempt 1 Subsample solids (Pattern 1)
Position [°2θ] (Copper (Cu))

FIG 54

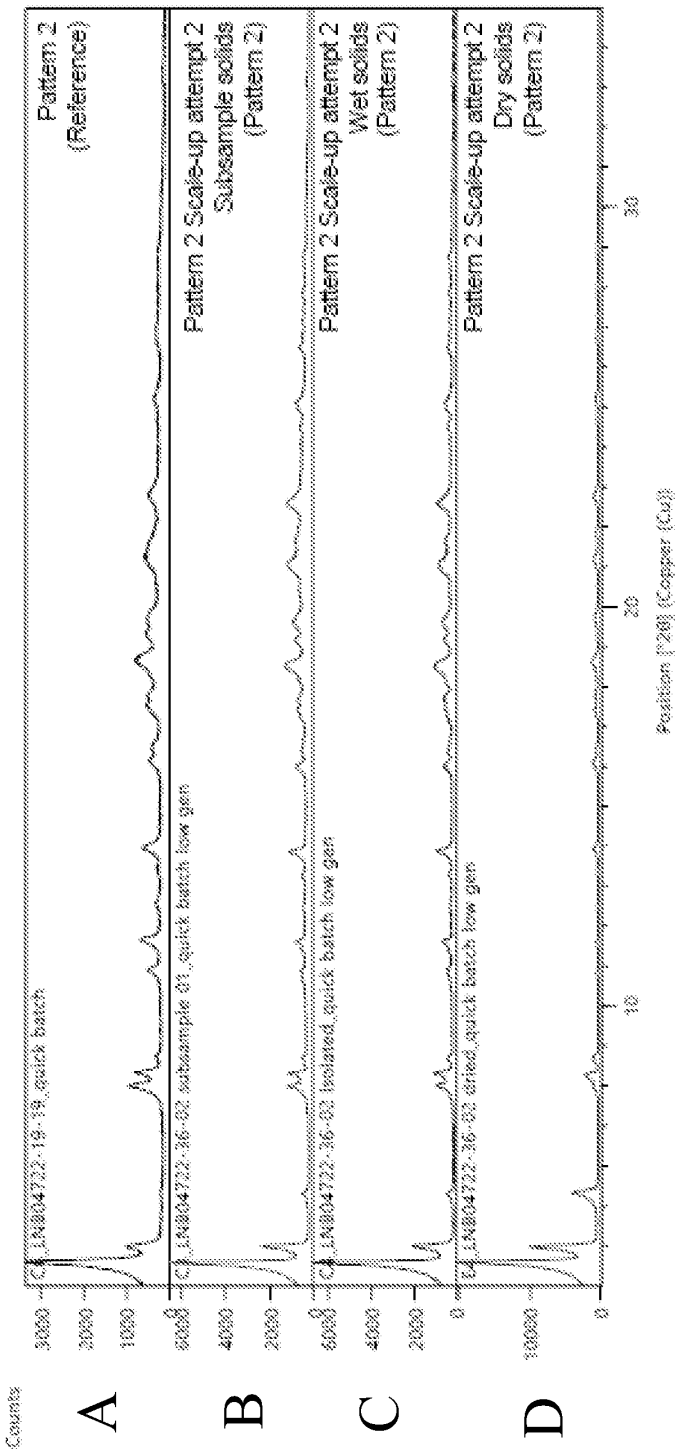

Counts
A
B
C
D
Pattern 2 (Reference)
Pattern 2 Scale-up attempt 2 Subsample solids (Pattern 2)
Pattern 2 Scale-up attempt 2 Wet solids (Pattern 2)
Pattern 2 Scale-up attempt 2 Dry solids (Pattern 2)
Position [°2θ] (Copper (Cu))

FIG 55

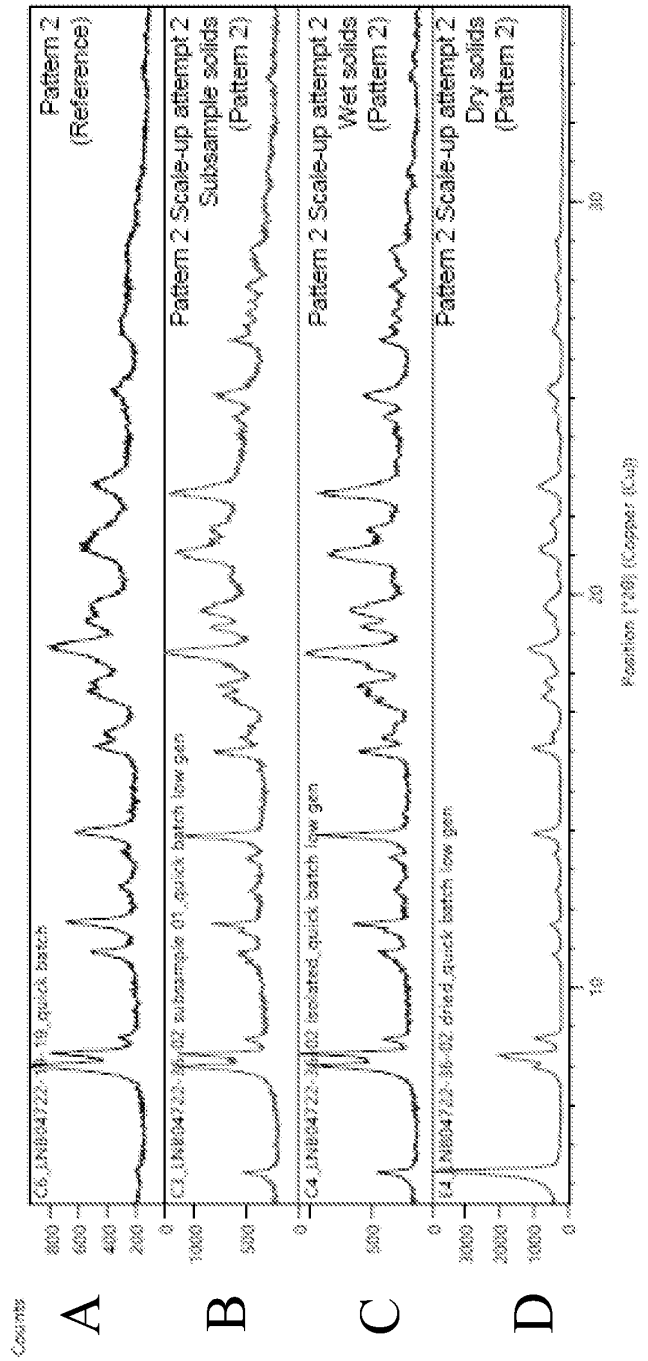

A
B
C
D
Counts
Pattern 2 (Reference)
Pattern 2 Scale-up attempt 2 Subsample solids (Pattern 2)
Pattern 2 Scale-up attempt 2 Wet solids (Pattern 2)
Pattern 2 Scale-up attempt 2 Dry solids (Pattern 2)
Position [°2θ] (Copper (Cu))

FIG 56

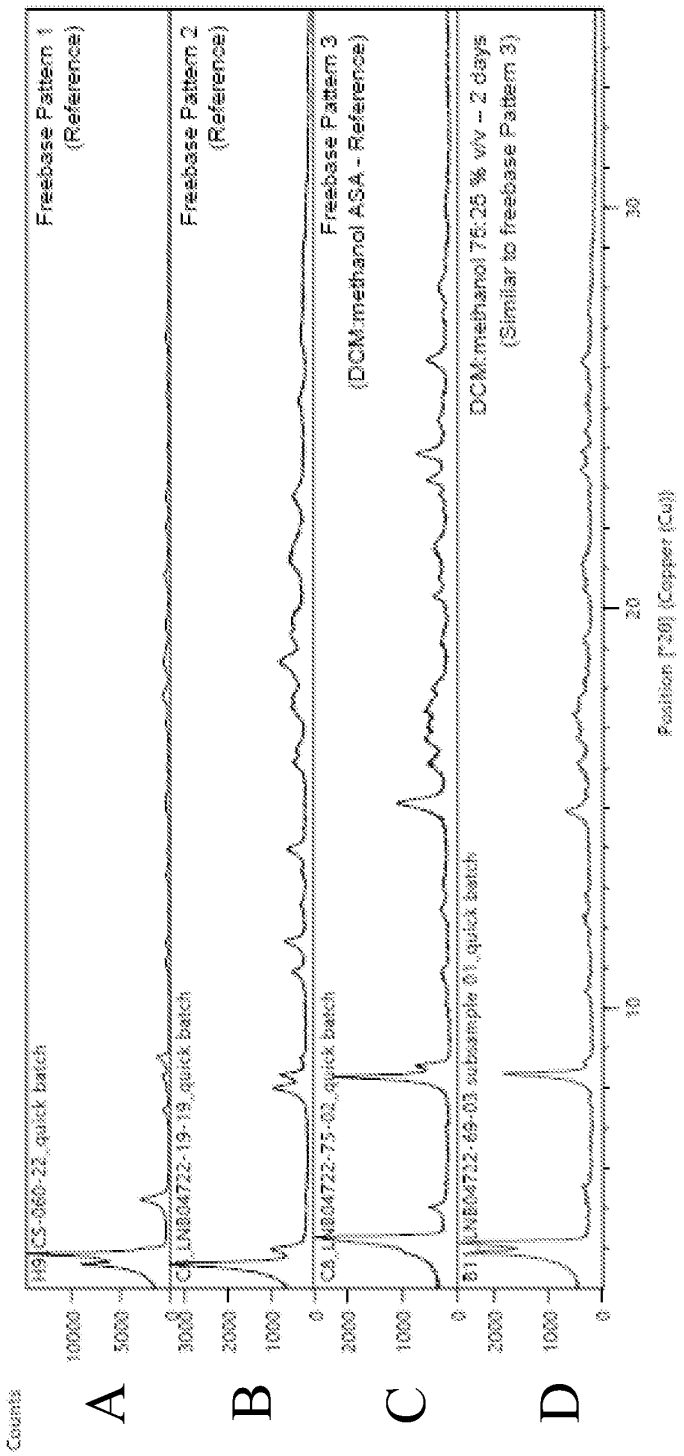

Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
Freebase Pattern 3
(DCM:methanol ASA - Reference)
DCM:methanol 76:25 % v/v – 2 days
(Similar to freebase Pattern 3)
A
B
C
D
Counts
Position [°2θ] (Copper (Cu))

FIG 57

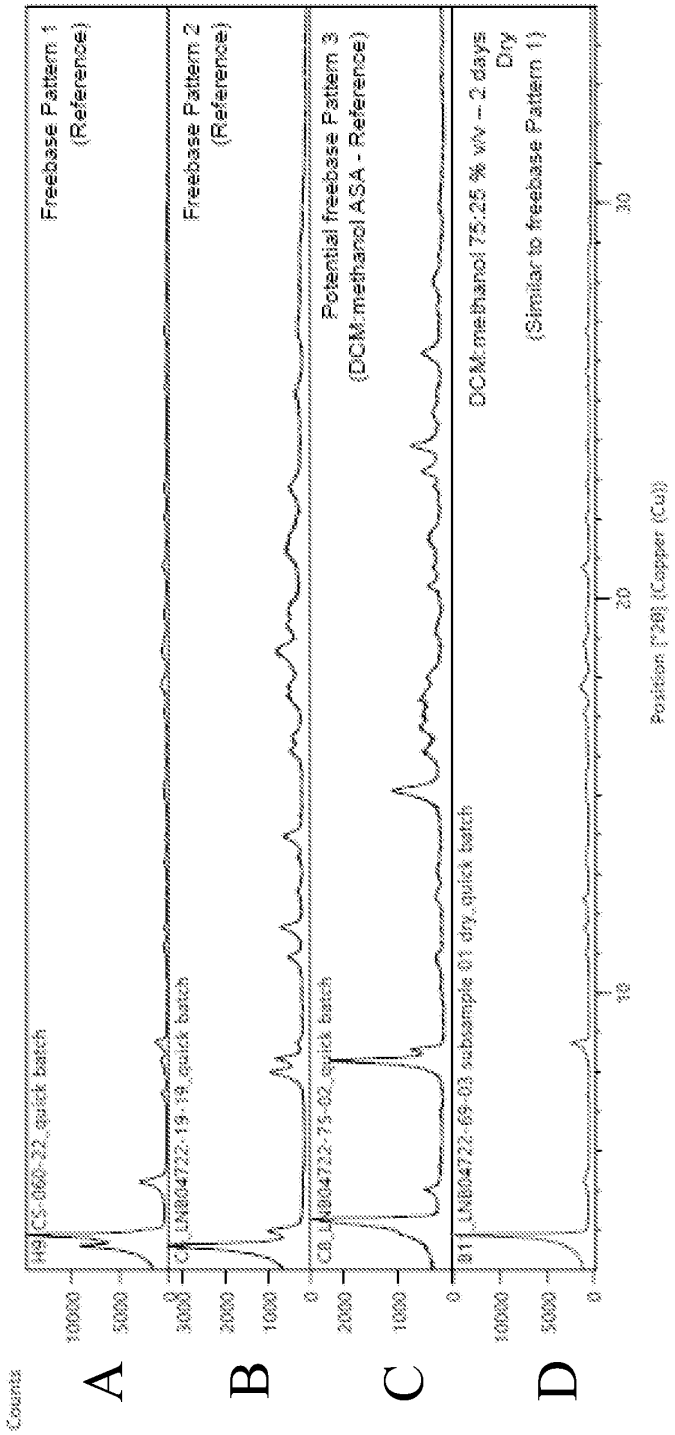

Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
Potential freebase Pattern 3
(DCM:methanol ASA - Reference)
DCM:methanol 75.25 % w/v – 2 days
Dry
(Similar to freebase Pattern 1)
A
B
C
D
Counts
Position [°2θ] (Copper (Cu))

FIG 58

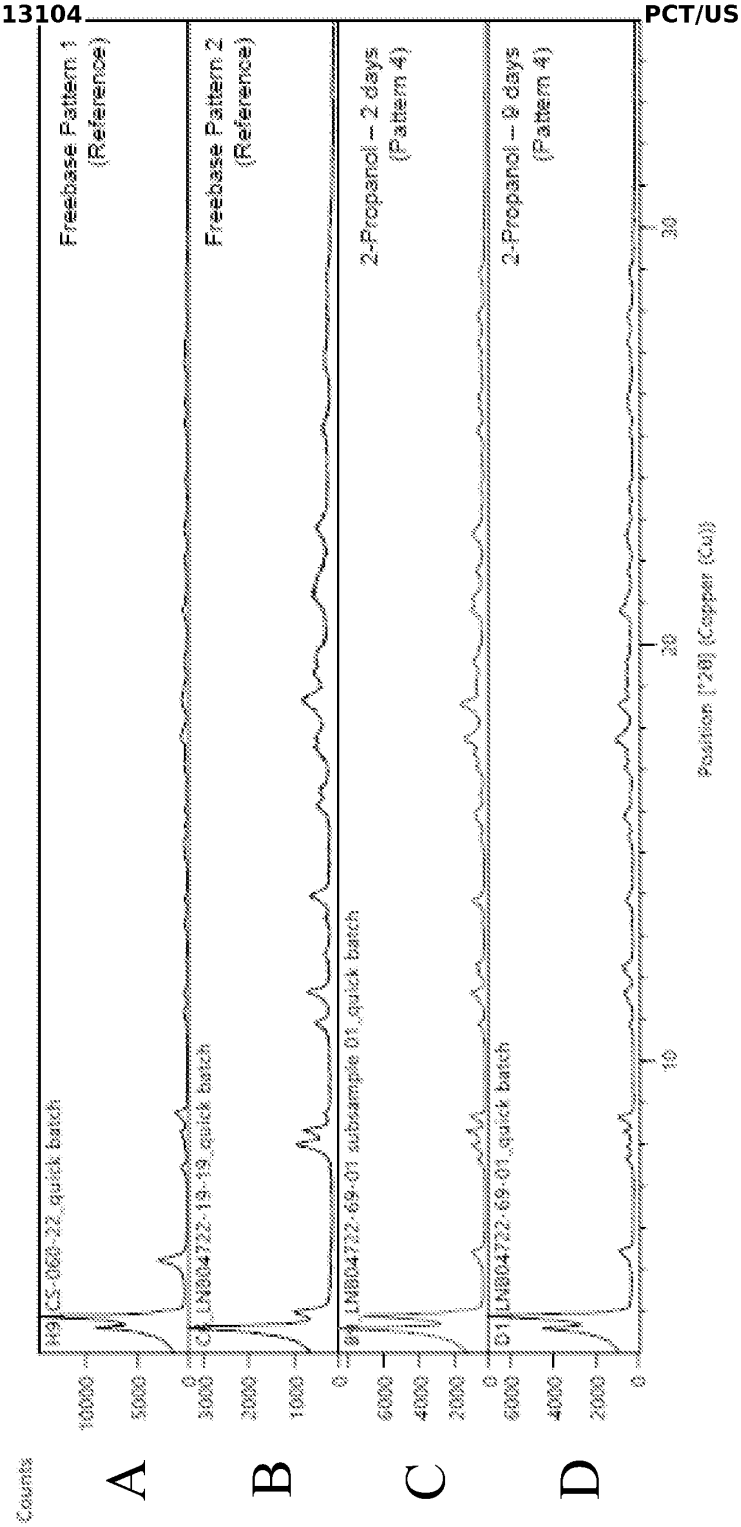

Freebase Pattern 1 (Reference)
Freebase Pattern 2 (Reference)
2-Propanol – 2 days (Pattern 4)
2-Propanol – 0 days (Pattern 4)
A
B
C
D
Counts
Position [°2θ] (Copper (Cu))

FIG 59

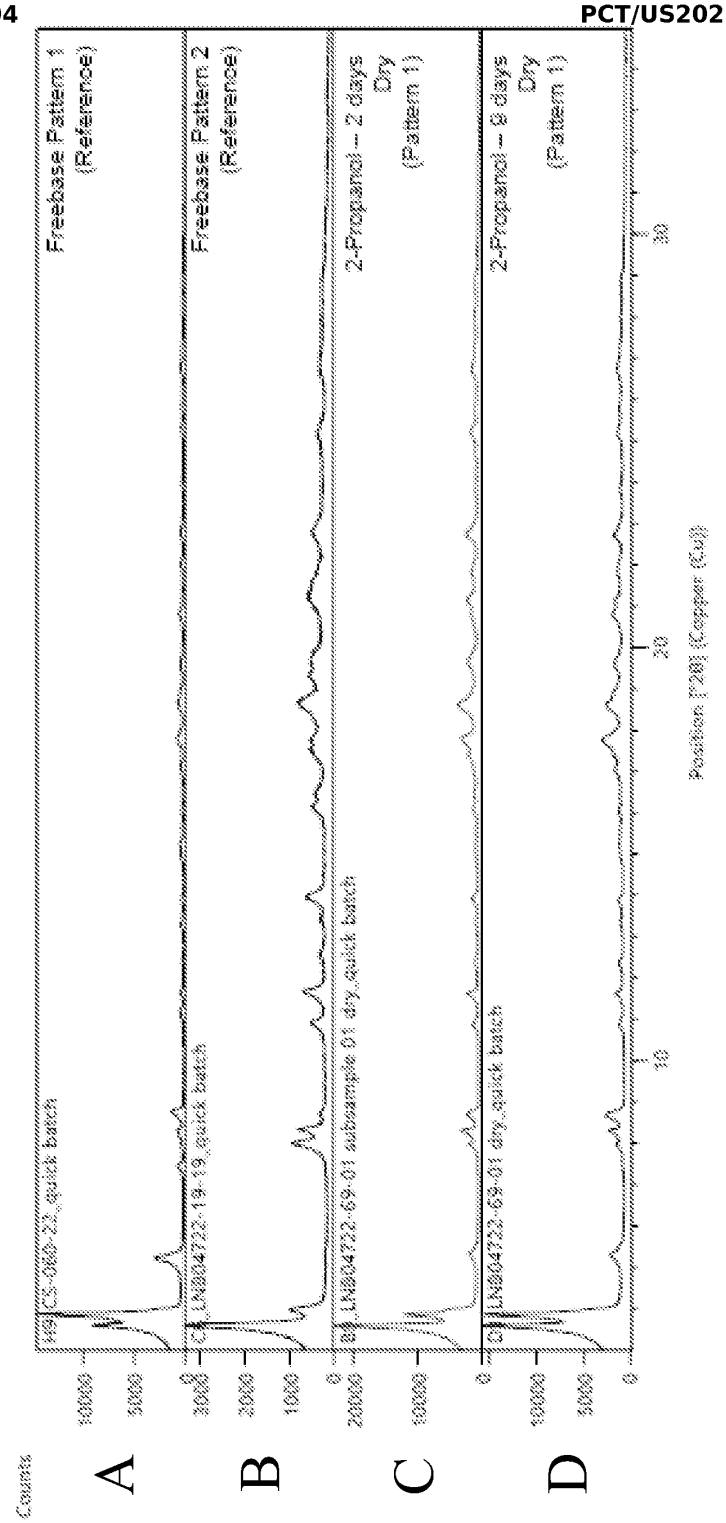

Freebase Pattern 1
(Reference)
CS-060-22_quick batch
Freebase Pattern 2
(Reference)
LN804722-19-19_quick batch
2-Propanol – 2 days
Dry
(Pattern 1)
LN804722-69-01 subsample 01 dry_quick batch
2-Propanol – 9 days
Dry
(Pattern 1)
LN804722-69-01 dry_quick batch
Counts
A
B
C
D
Position [°2θ] (Copper (Cu))

FIG 60

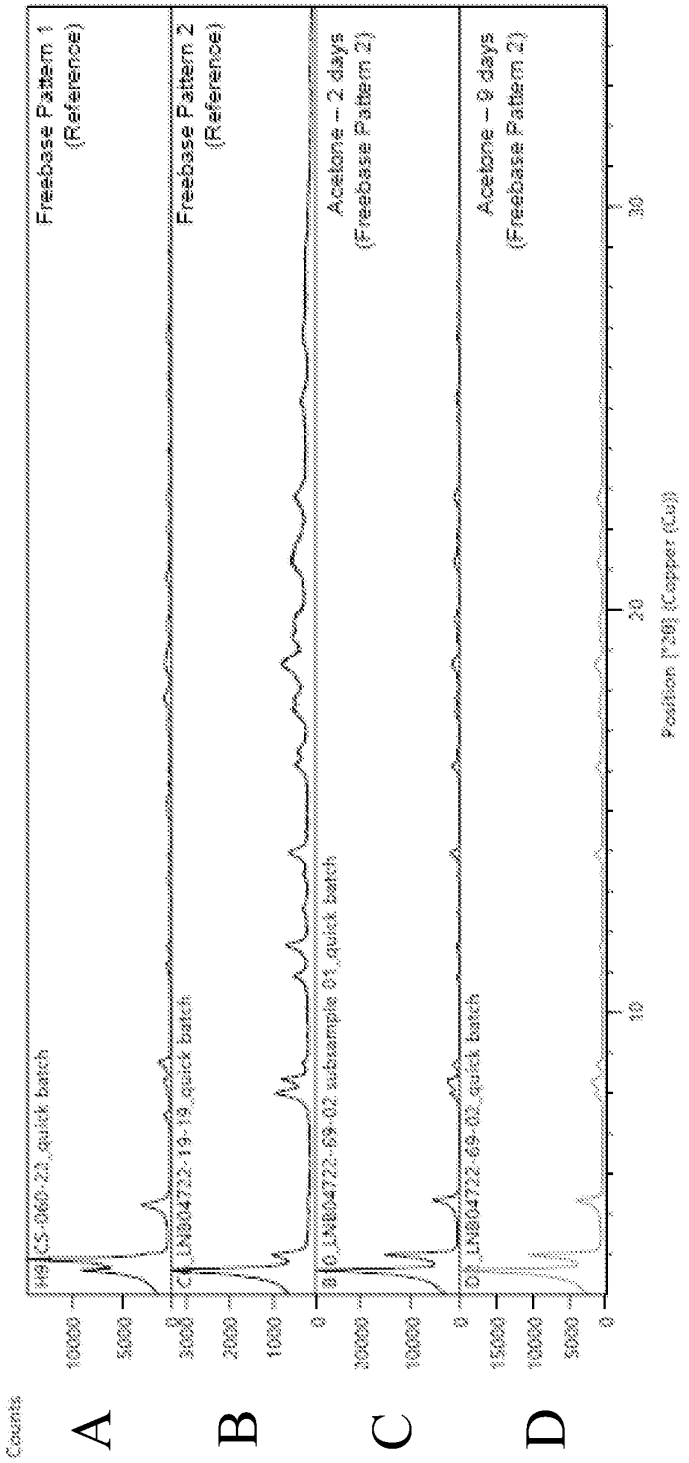

Freebase Pattern 1 (Reference)
H9_CS-060-23_quick batch
Freebase Pattern 2 (Reference)
C1_LN804722-19-19_quick batch
Acetone – 2 days (Freebase Pattern 2)
B1_LN804722-69-02 subsample 01_quick batch
Acetone – 9 days (Freebase Pattern 2)
D1_LN804722-69-02_quick batch
Counts
A
B
C
D
10000
5000
0
3000
2000
1000
0
10000
5000
0
15000
10000
5000
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 61

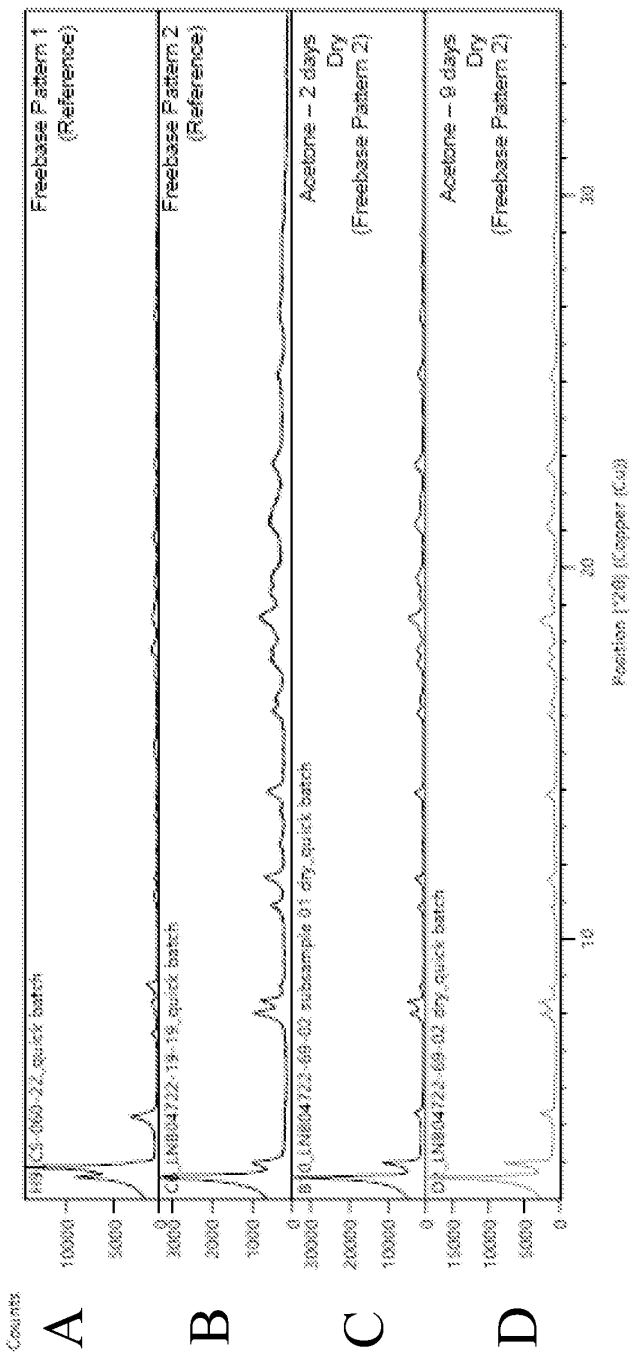

Counts
A
B
C
D
Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
Acetone – 2 days
Dry
(Freebase Pattern 2)
Acetone – 9 days
Dry
(Freebase Pattern 2)
Position (°2θ) (Cooper (Cu))

FIG 62

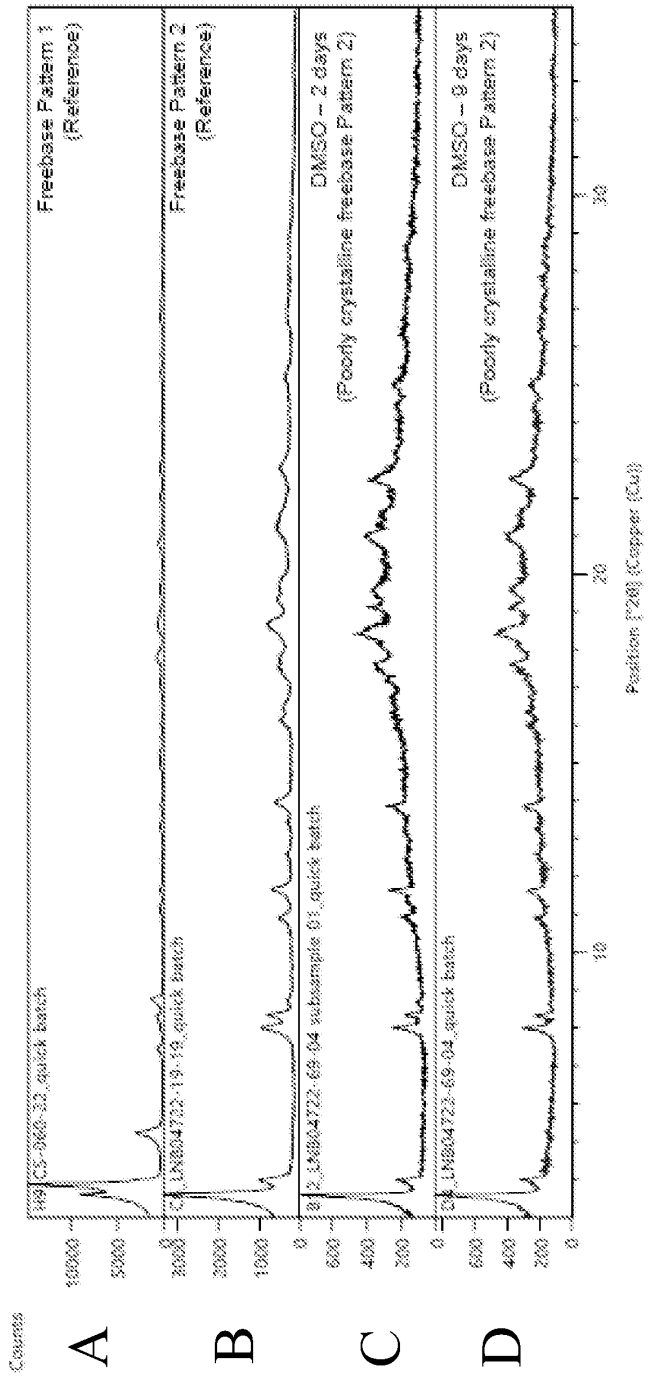

A
B
C
D
Counts
Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
DMSO – 2 days
(Poorly crystalline freebase Pattern 2)
DMSO – 9 days
(Poorly crystalline freebase Pattern 2)
Position [°2θ] (Copper (Cu))

FIG 63

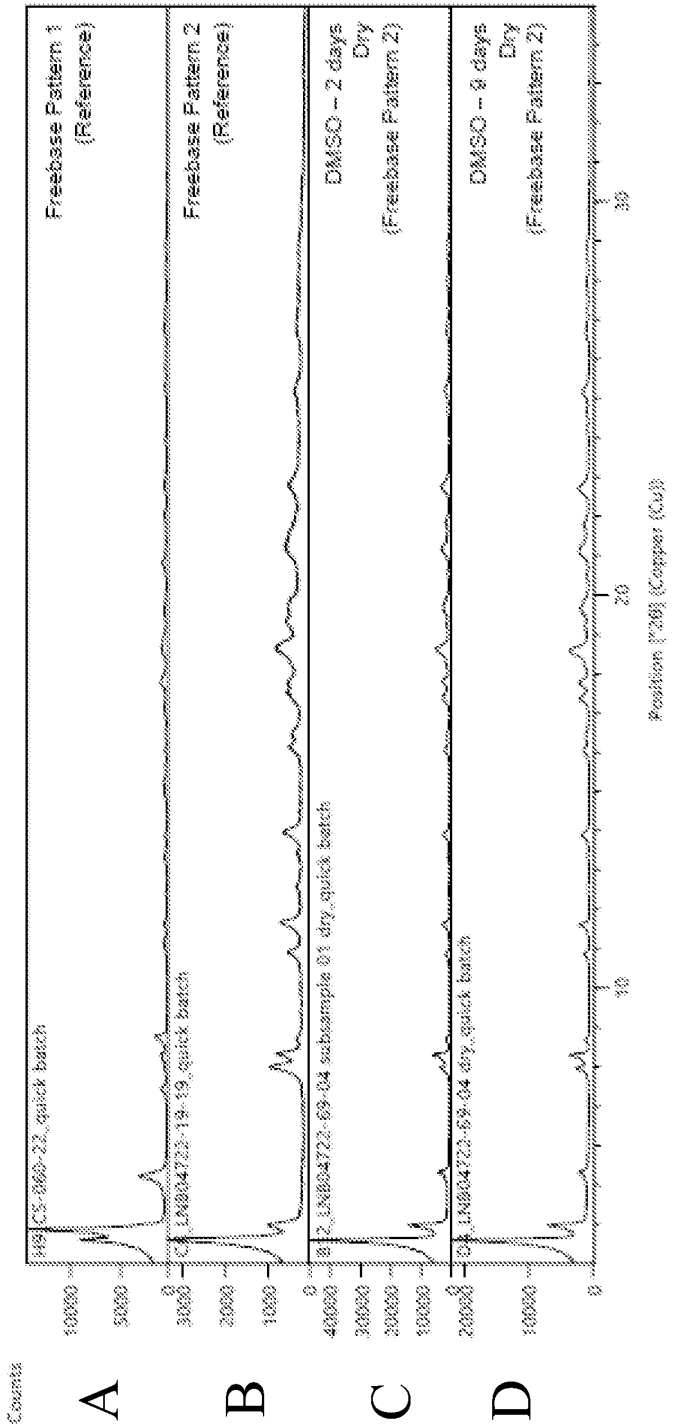

Freebase Pattern 1 (Reference)
Freebase Pattern 2 (Reference)
DMSO – 2 days Dry (Freebase Pattern 2)
DMSO – 8 days Dry (Freebase Pattern 2)
Counts
A
B
C
D
Position [°2θ] (Copper (Cu))

FIG 64

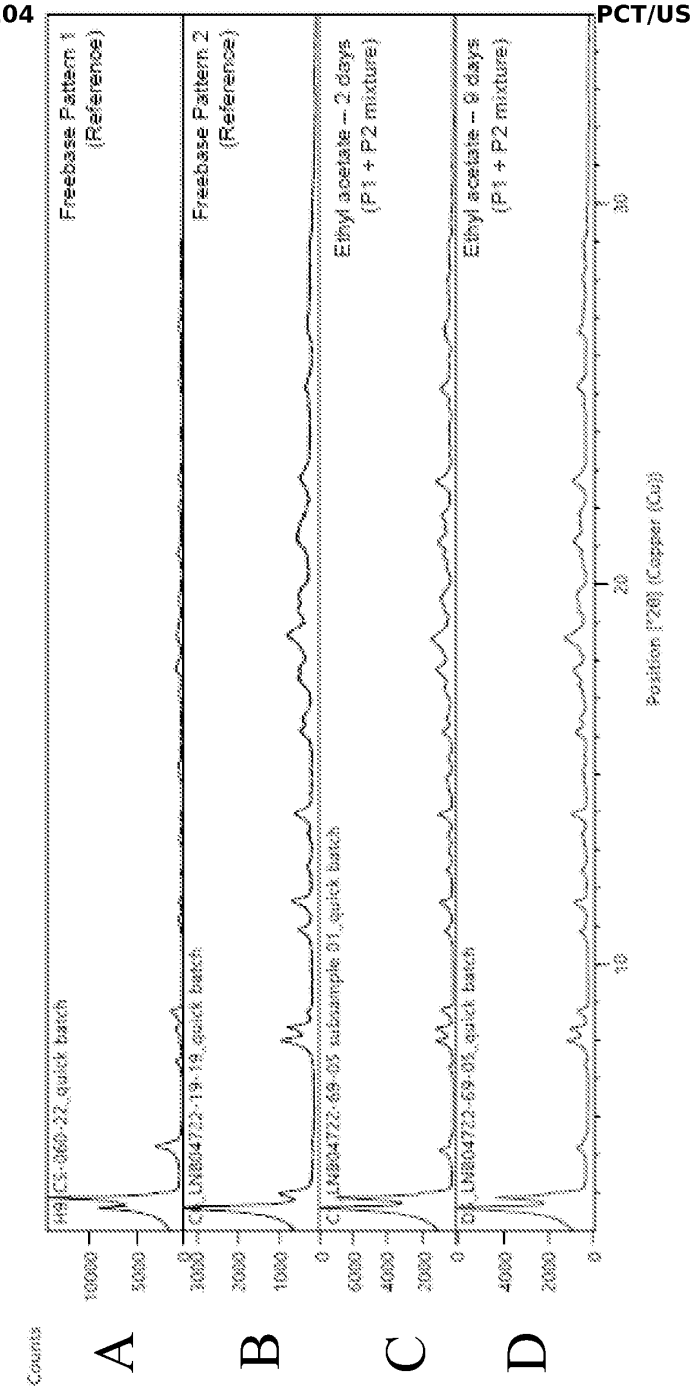

Freebase Pattern 1 (Reference)
Freebase Pattern 2 (Reference)
Ethyl acetate – 2 days (P1 + P2 mixture)
Ethyl acetate – 8 days (P1 + P2 mixture)
Counts
A
B
C
D
Position [°2θ] (Copper (Cu))

FIG 65

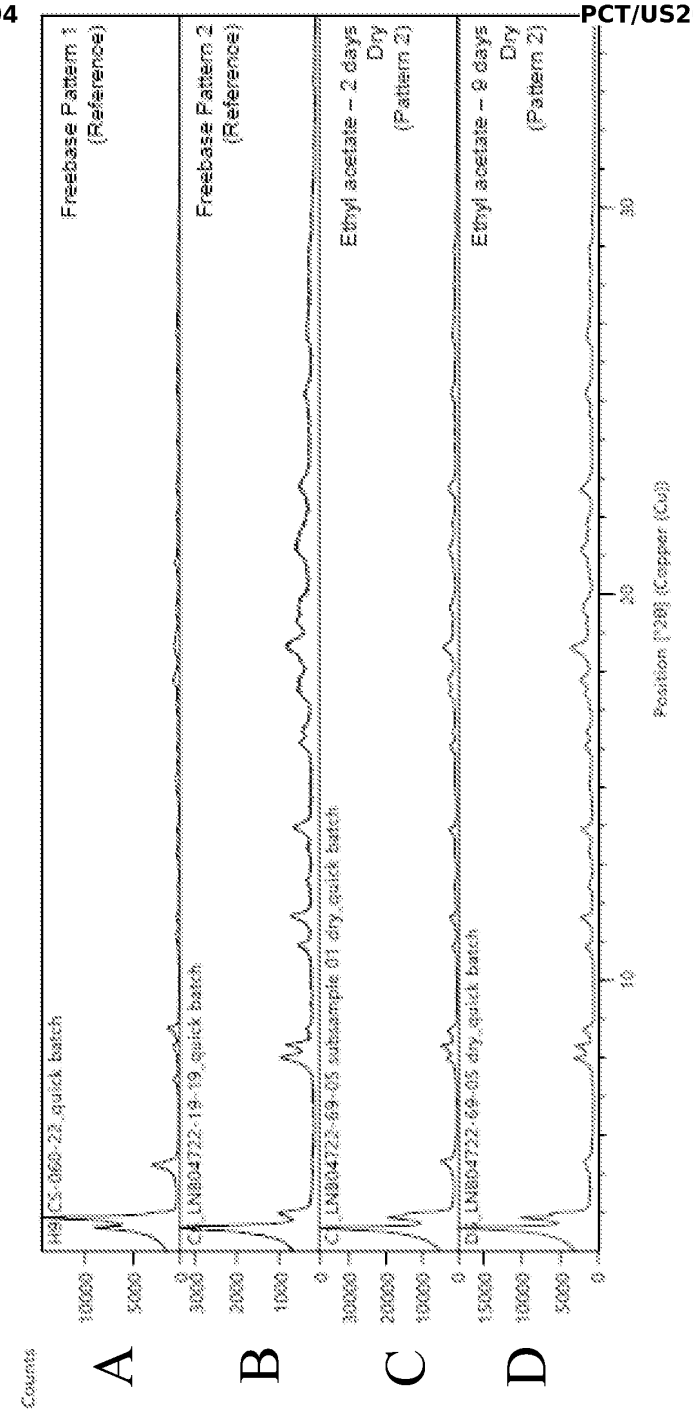

A
B
C
D
Counts
Freebase Pattern 1 (Reference)
Freebase Pattern 2 (Reference)
Ethyl acetate – 2 days Dry (Pattern 2)
Ethyl acetate – 8 days Dry (Pattern 2)
Position [°2θ] (Copper (Cu))

FIG 66

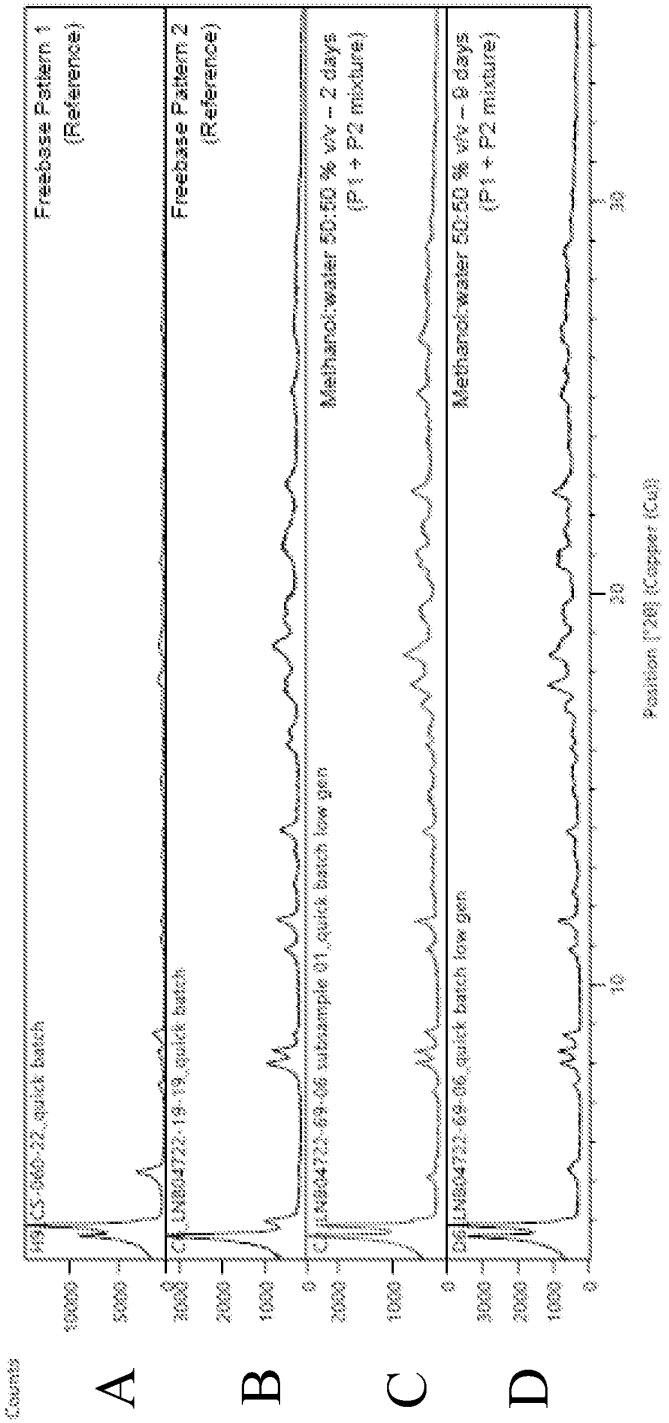

Counts
A
B
C
D
Freebase Pattern 1 (Reference)
Freebase Pattern 2 (Reference)
Methanol:water 50:50 % v/v – 2 days (P1 + P2 mixture)
Methanol:water 50:50 % v/v – 6 days (P1 + P2 mixture)
Position [°2θ] (Copper (Cu))

FIG 67

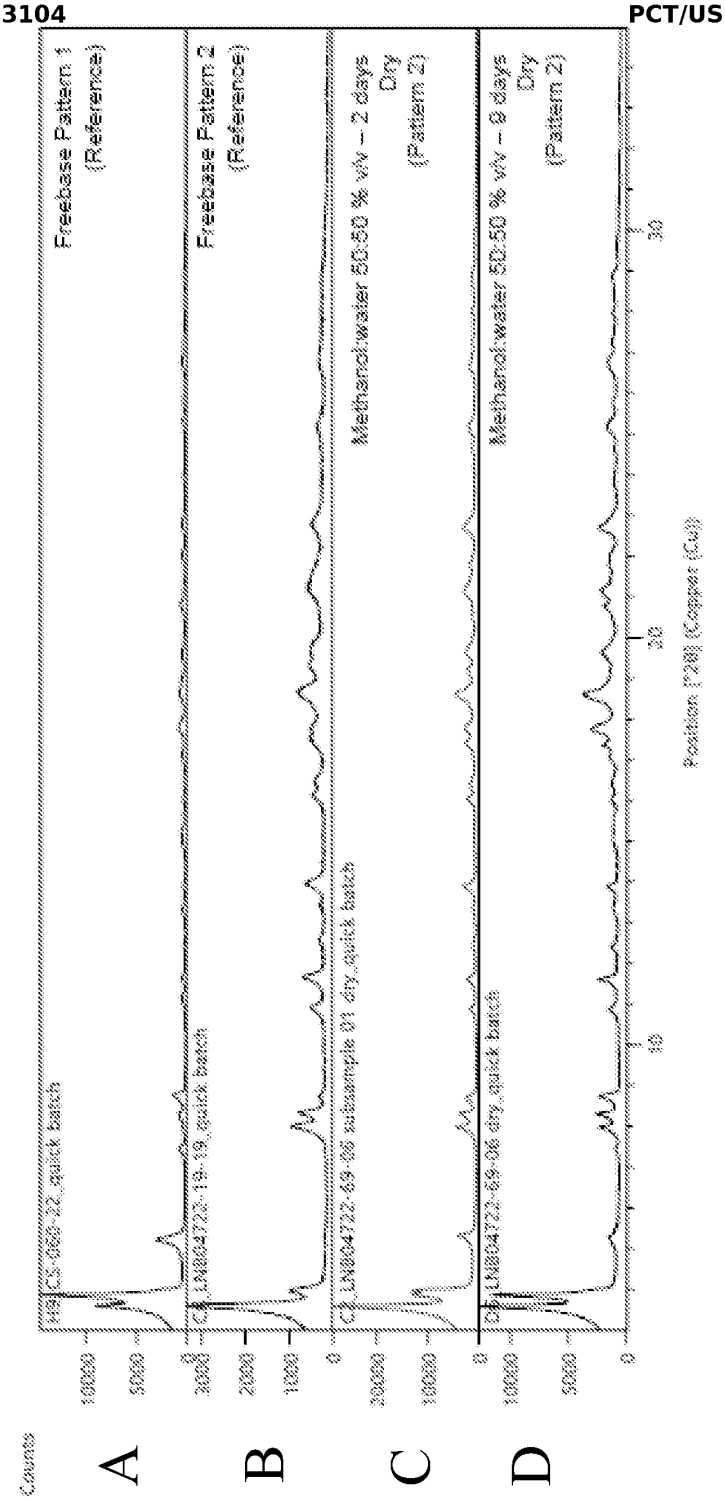

Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
Methanol/water 50:50 % v/v – 2 days
Dry
(Pattern 2)
Methanol/water 50:50 % v/v – 9 days
Dry
(Pattern 2)
A
B
C
D
Counts
Position [°2θ] (Copper (Cu))

FIG 68

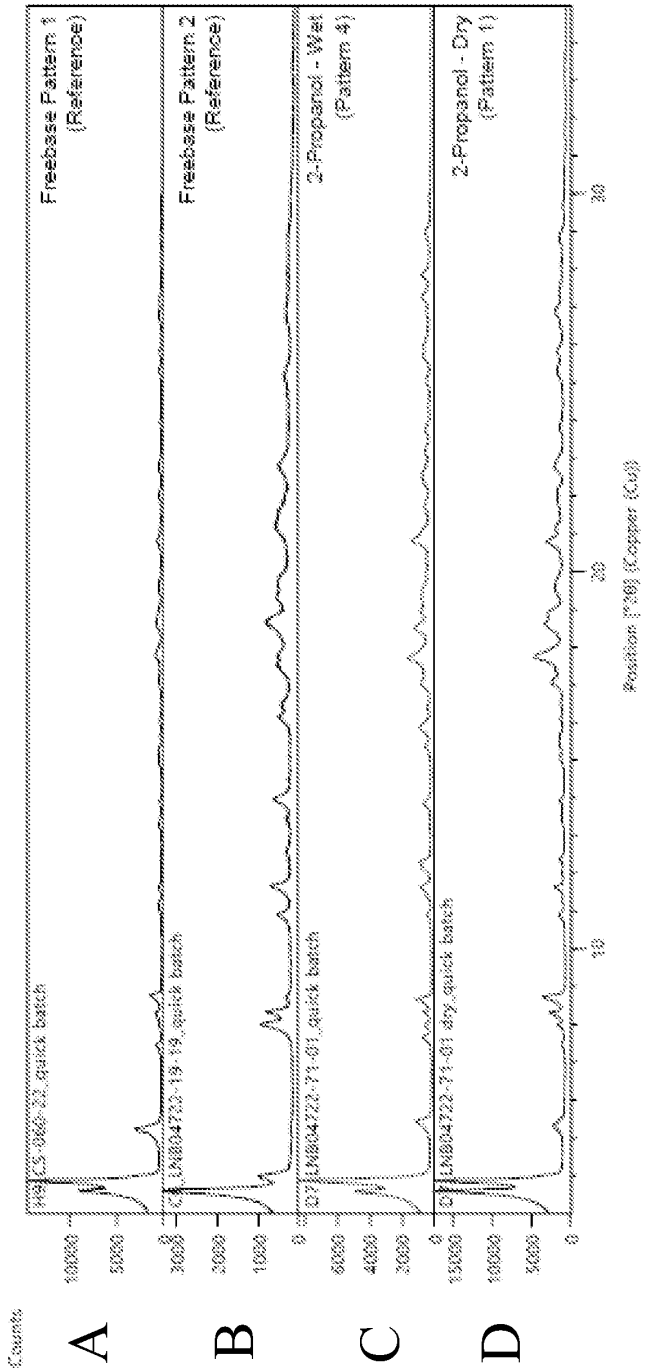

Freebase Pattern 1 (Reference)
Freebase Pattern 2 (Reference)
2-Propanol - Wet (Pattern 4)
2-Propanol - Dry (Pattern 1)
Counts
A
B
C
D
Position [°2θ] (Copper (Cu))

FIG 69

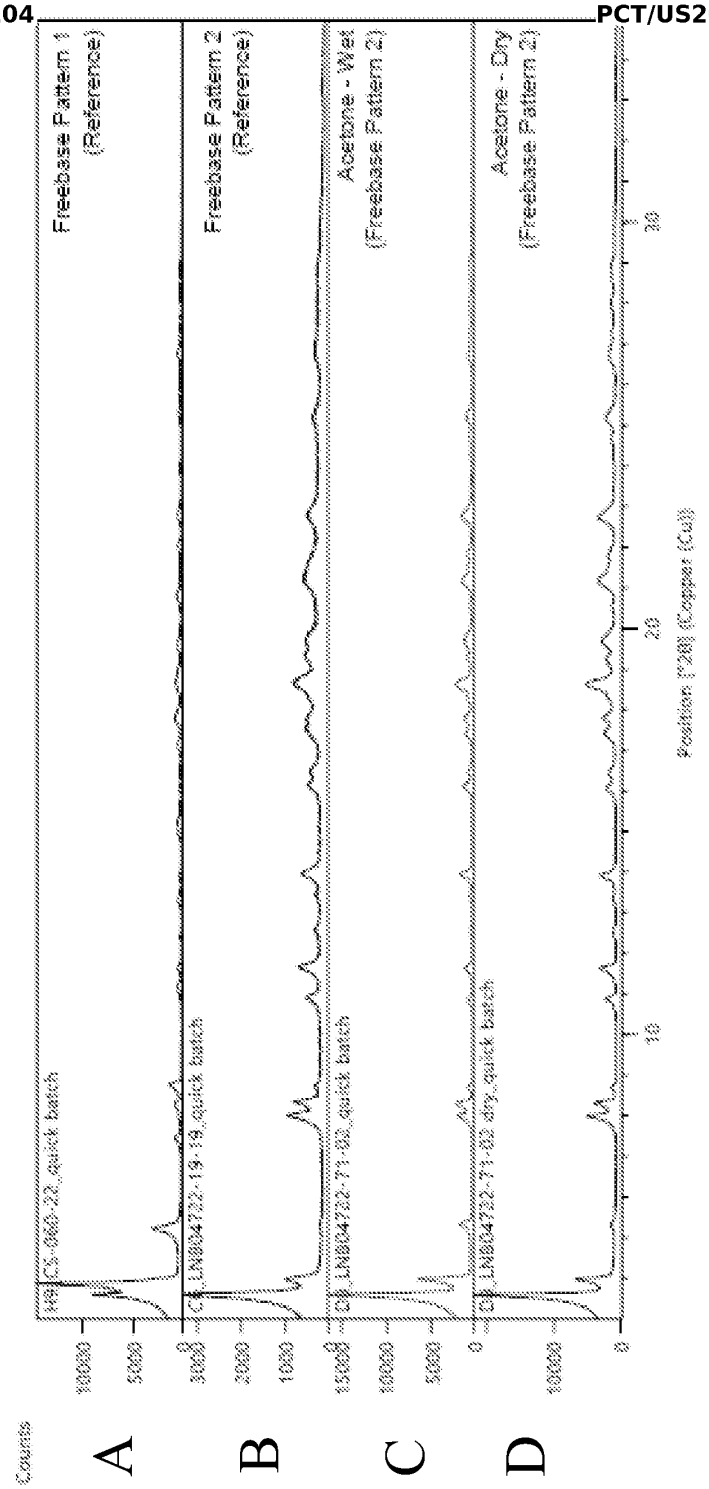

Freebase Pattern 1 (Reference)
Freebase Pattern 2 (Reference)
Acetone - Wet (Freebase Pattern 2)
Acetone - Dry (Freebase Pattern 2)
Counts
Position [°2θ] (Copper (Cu))
A
B
C
D

FIG 70

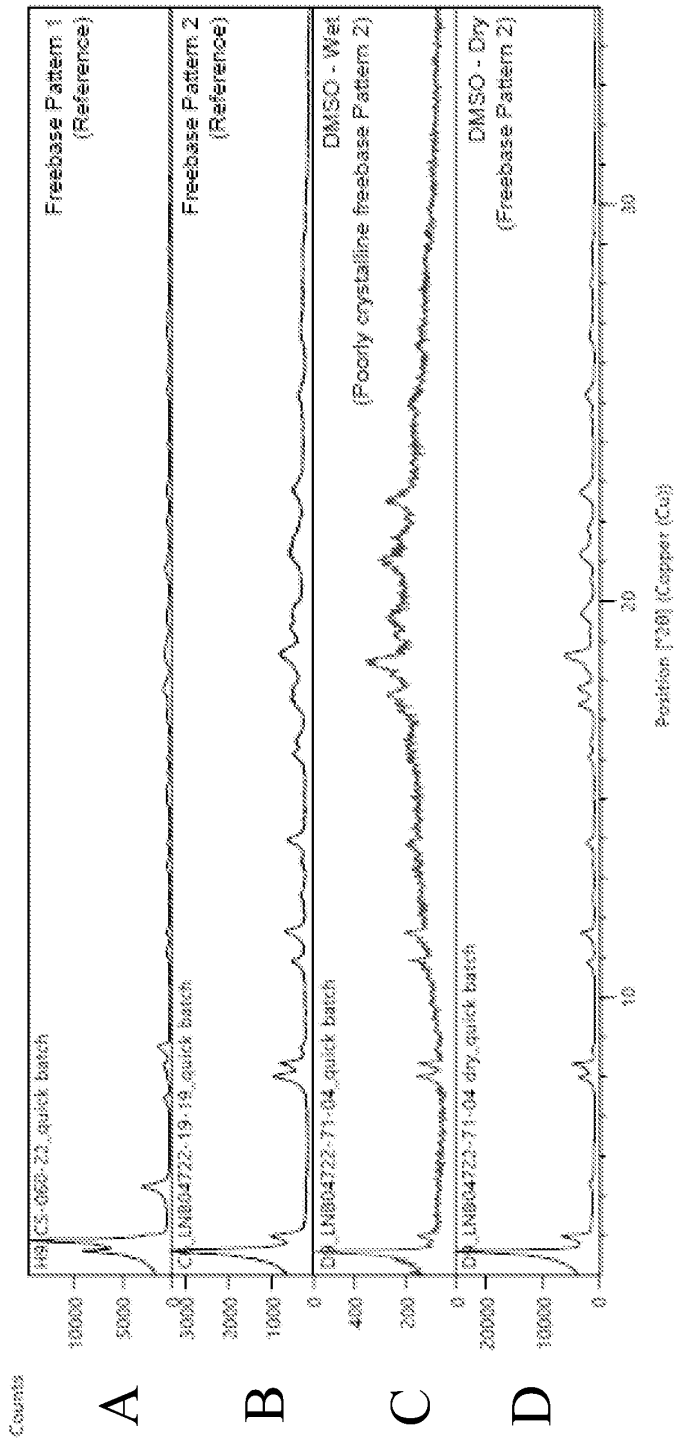

Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
DMSO - Wet
(Poorly crystalline freebase Pattern 2)
DMSO - Dry
(Freebase Pattern 2)
A
B
C
D
Counts
Position [°2θ] (Copper (Cu))

FIG 71

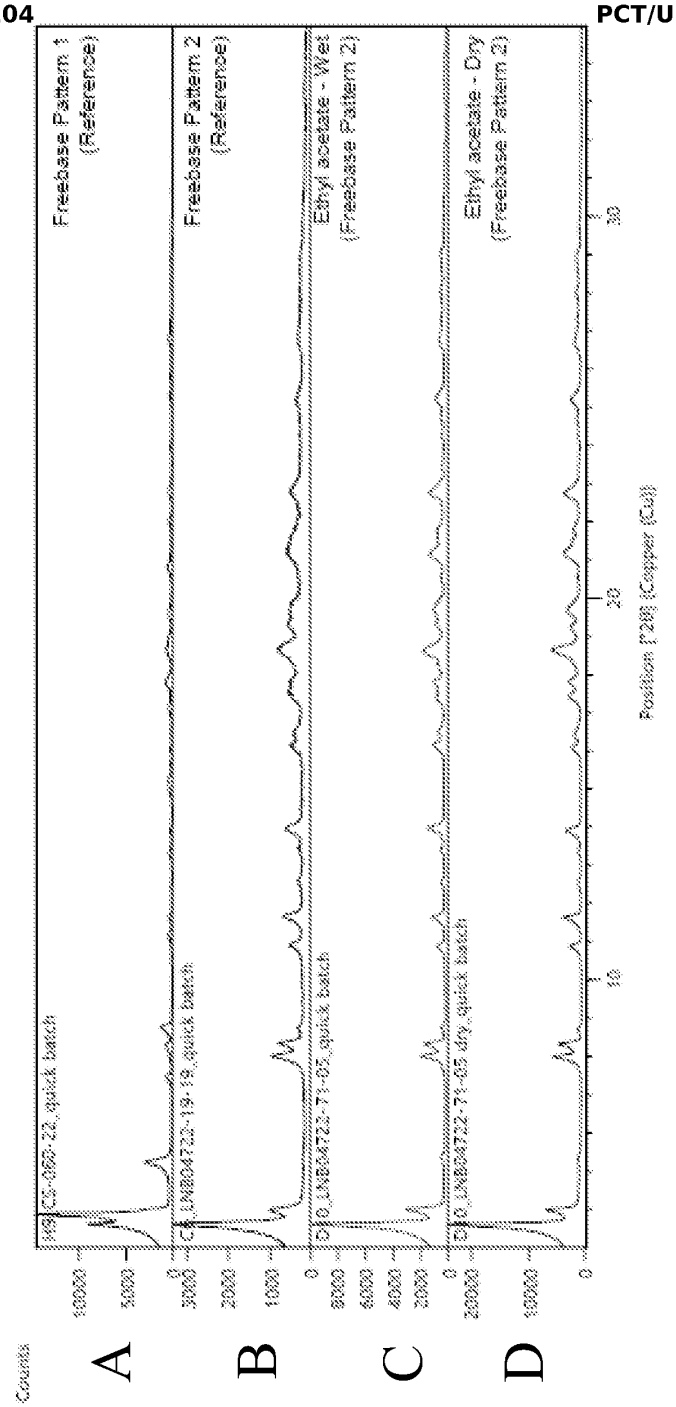

Freebase Pattern 1 (Reference)
Freebase Pattern 2 (Reference)
Ethyl acetate - Wet (Freebase Pattern 2)
Ethyl acetate - Dry (Freebase Pattern 2)
A
B
C
D
Counts
Position [°2θ] (Copper (Cu))

FIG 72

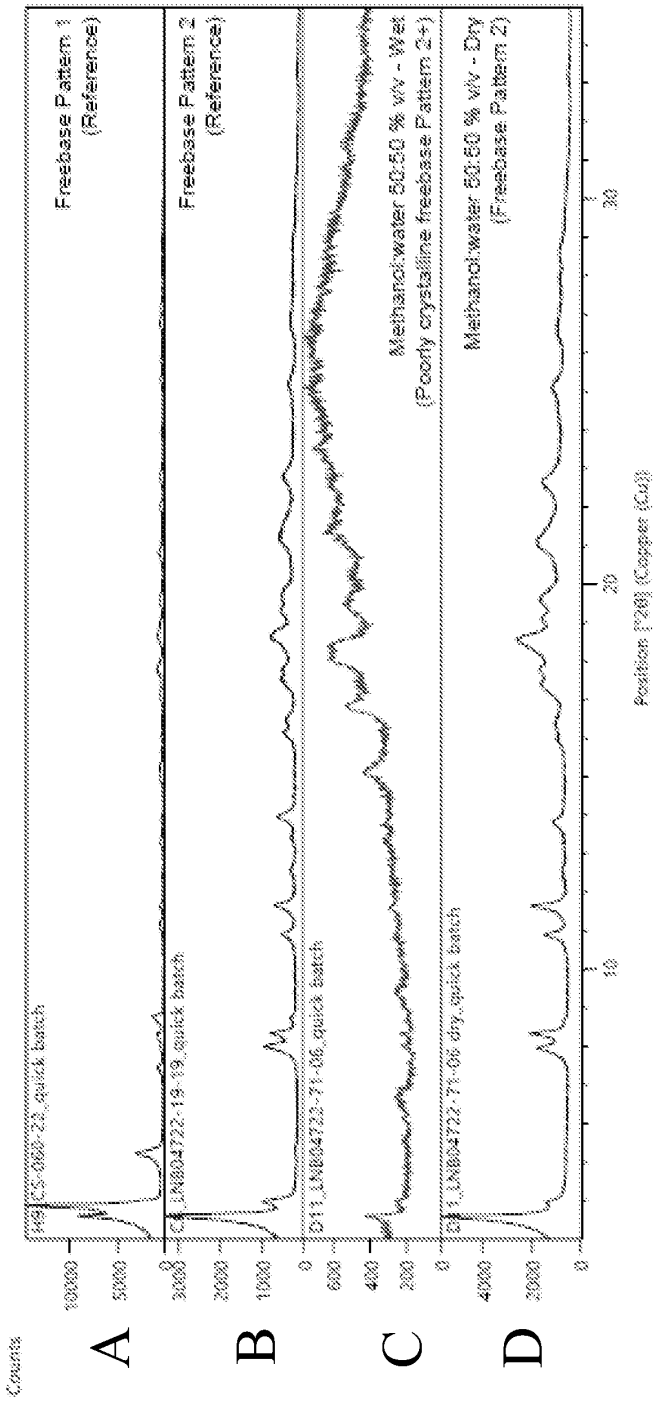

Counts
A
B
C
D
Freebase Pattern 1
(Reference)
Freebase Pattern 2
(Reference)
Methanol:water 60:60 % v/v - Wet
(Poorly crystalline freebase Pattern 2+)
Methanol:water 60:60 % v/v - Dry
(Freebase Pattern 2)
Position [°2θ] (Copper (Cu))

FIG 73

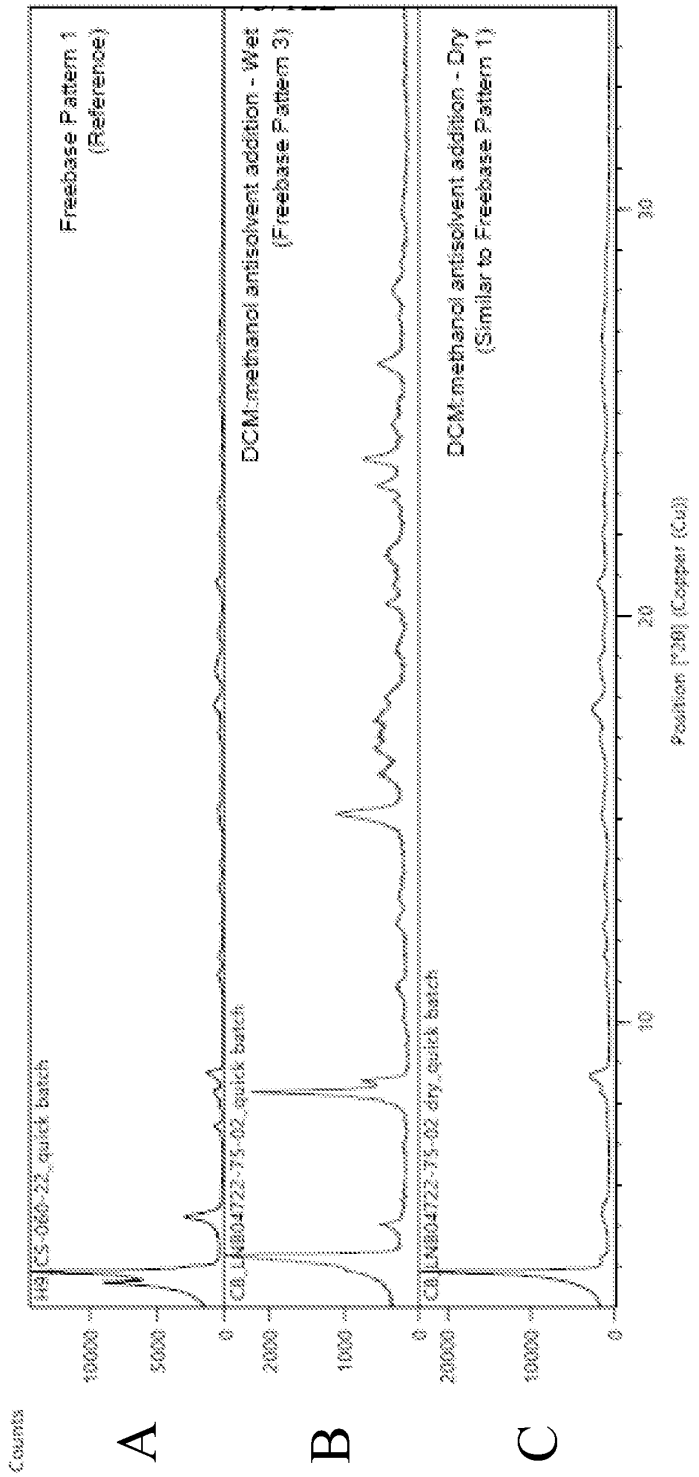

Freebase Pattern 1
(Reference)
DCM:methanol antisolvent addition - Wet
(Freebase Pattern 3)
DCM:methanol antisolvent addition - Dry
(Similar to Freebase Pattern 1)
Counts
A
B
C
Position [°2θ] (Copper (Cu))

FIG 74

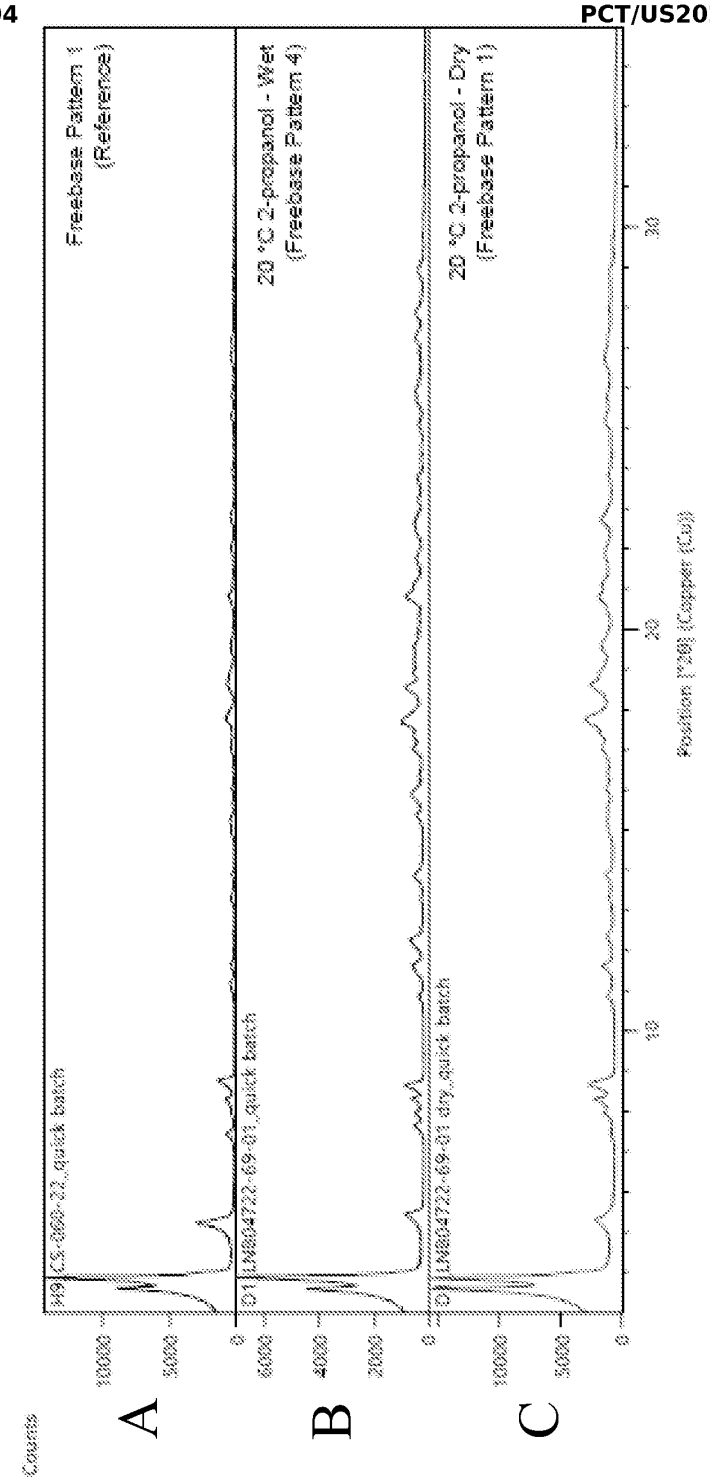

Freebase Pattern 1
(Reference)
H9 CS-360-22_quick batch
20 °C 2-propanol - Wet
(Freebase Pattern 4)
D1 LM6847722-69-01_quick batch
20 °C 2-propanol - Dry
(Freebase Pattern 1)
D1 LM6847722-69-01 dry_quick batch
Counts
A
B
C
10000
5000
0
6000
4000
2000
0
10000
5000
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 75

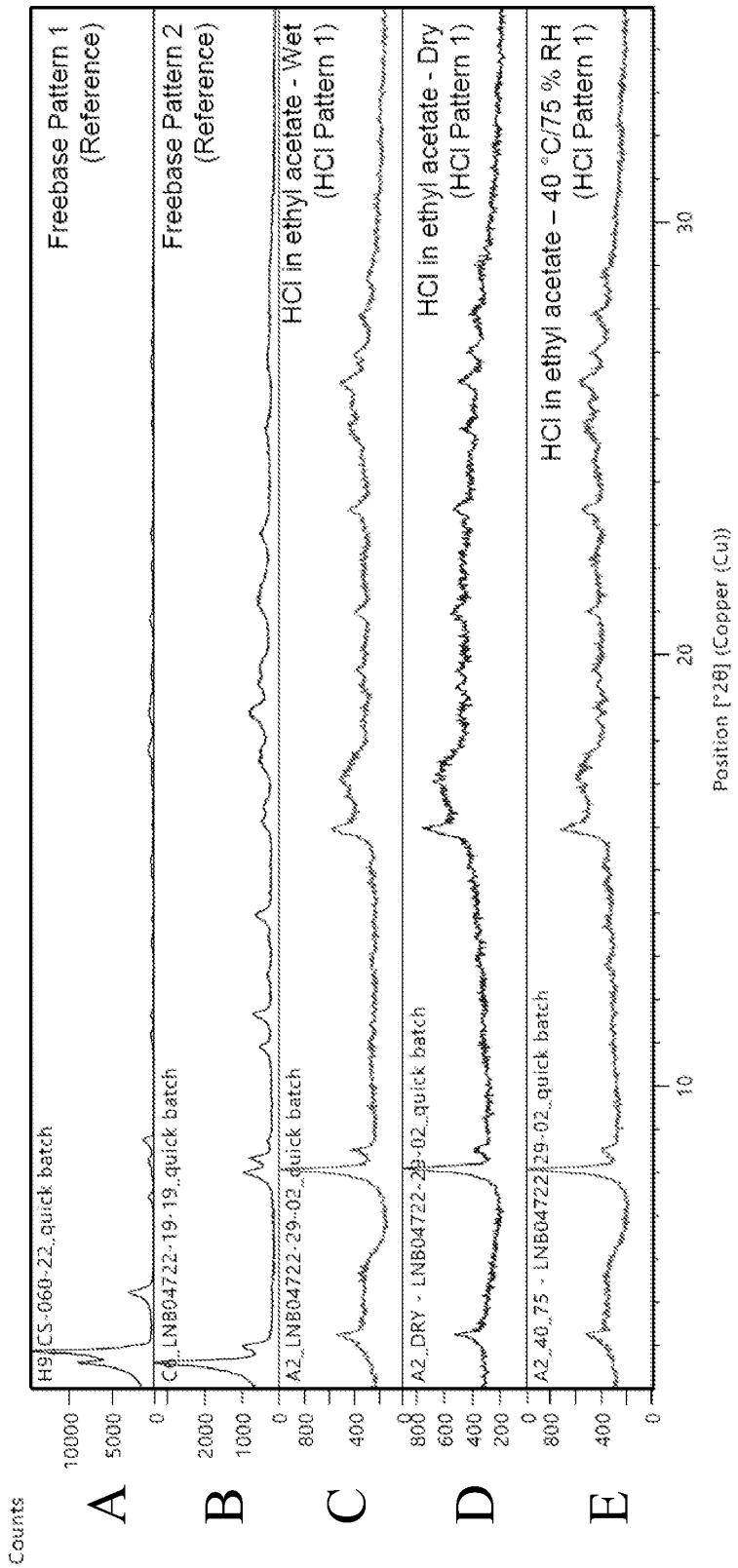

Counts
A
B
C
D
E
H9_CS-060-22_quick batch
Freebase Pattern 1 (Reference)
C6_LNB04722-19-19_quick batch
Freebase Pattern 2 (Reference)
A2_LNB04722-29-02_quick batch
HCl in ethyl acetate - Wet (HCl Pattern 1)
A2_DRY - LNB04722-29-02_quick batch
HCl in ethyl acetate - Dry (HCl Pattern 1)
A2_40_75 - LNB04722-29-02_quick batch
HCl in ethyl acetate – 40 °C/75 % RH (HCl Pattern 1)
Position [°2θ] (Copper (Cu))

FIG 76

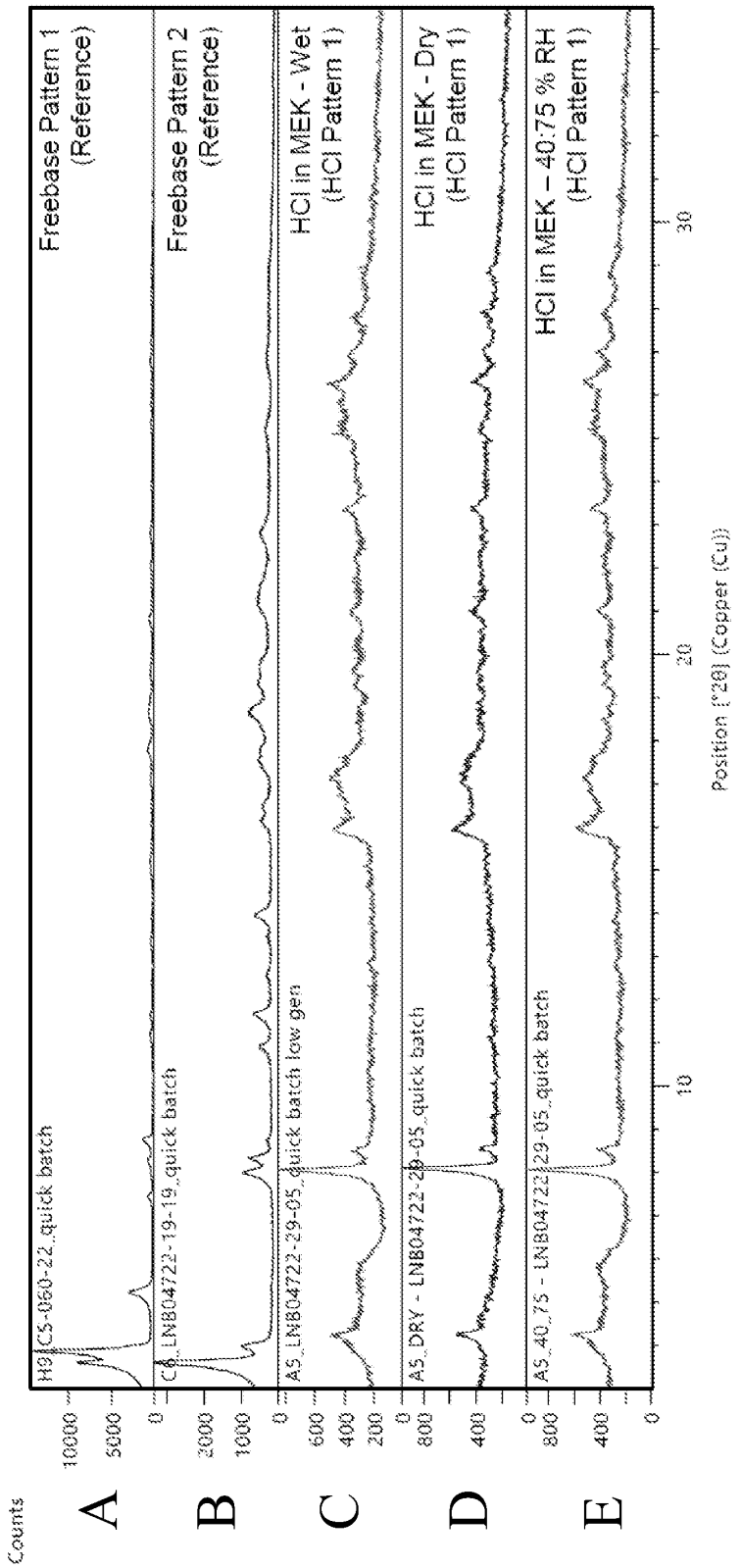

Counts
A
B
C
D
E
H9_C5-060-22_quick batch
Freebase Pattern 1 (Reference)
C8_LNB04722-19-19_quick batch
Freebase Pattern 2 (Reference)
A9_LNB04722-29-05_quick batch low gen
HCl in MEK - Wet (HCl Pattern 1)
A5_DRY - LNB04722-29-05_quick batch
HCl in MEK - Dry (HCl Pattern 1)
A9_40_75 - LNB04722-29-05_quick batch
HCl in MEK – 40:75 % RH (HCl Pattern 1)
10
20
30
Position [°2θ] (Copper (Cu))

FIG 77

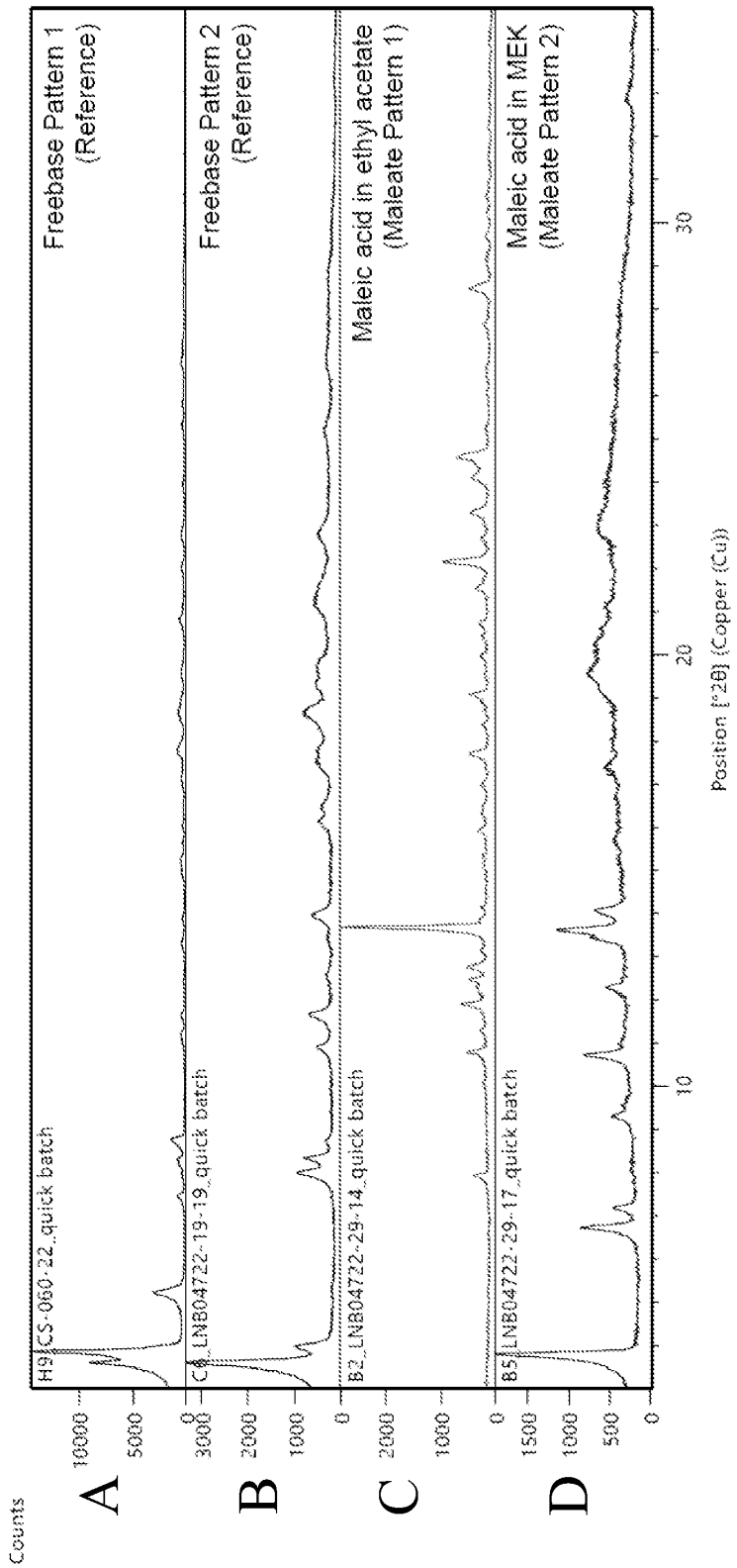

Freebase Pattern 1
(Reference)
H9_CS-060-22_quick batch
Freebase Pattern 2
(Reference)
C8_LNB04722-79-19_quick batch
Maleic acid in ethyl acetate
(Maleate Pattern 1)
B2_LNB04722-29-14_quick batch
Maleic acid in MEK
(Maleate Pattern 2)
B5_LNB04722-29-17_quick batch
A
B
C
D
Counts
10000
5000
0
3000
2000
1000
0
2000
1000
0
1500
1000
500
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 78

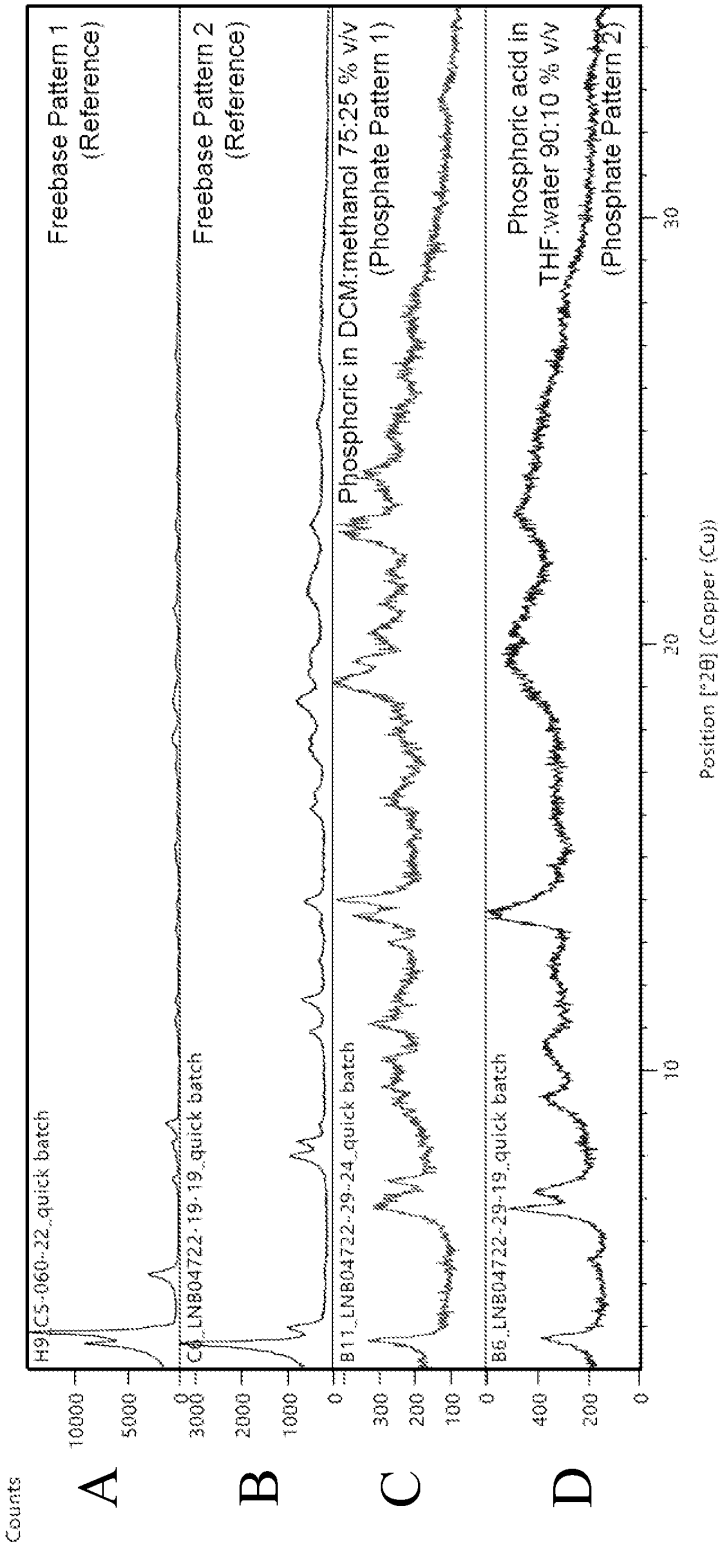

Freebase Pattern 1
(Reference)
H9_C5-060-22_quick batch
Freebase Pattern 2
(Reference)
C9_LNB04722-19-19_quick batch
Phosphoric in DCM:methanol 75:25 % v/v
(Phosphate Pattern 1)
B11_LNB04722-29-24_quick batch
Phosphoric acid in
THF:water 90:10 % v/v
(Phosphate Pattern 2)
B6_LNB04722-29-19_quick batch
A
B
C
D
Counts
10000
5000
0
3000
2000
1000
0
300
200
100
0
400
200
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 79

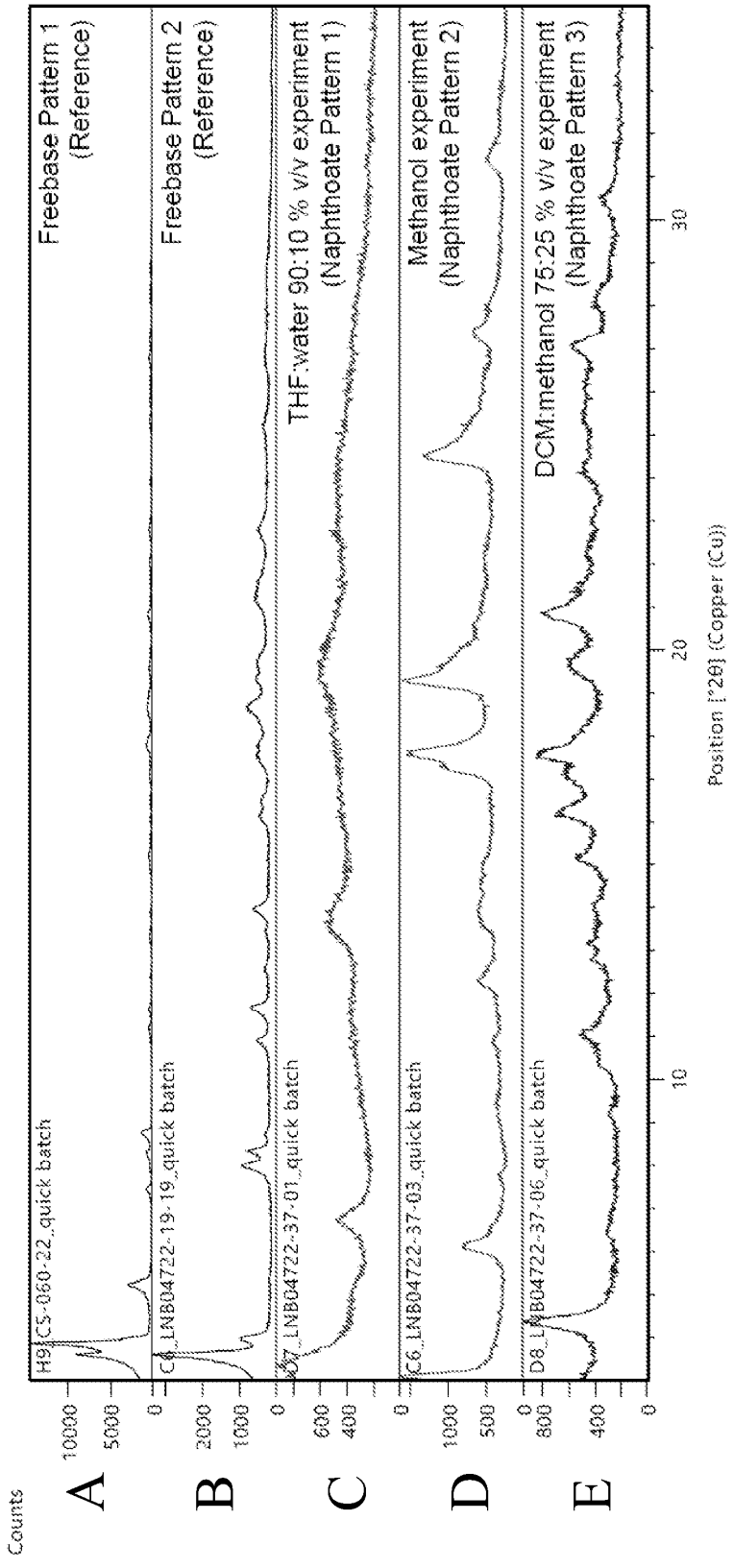

A
B
C
D
E
Counts
H9_C5-060-22_quick batch
Freebase Pattern 1 (Reference)
C4_LNB04722-19-19_quick batch
Freebase Pattern 2 (Reference)
C7_LNB04722-37-01_quick batch
THF:water 90:10 % v/v experiment (Naphthoate Pattern 1)
C6_LNB04722-37-03_quick batch
Methanol experiment (Naphthoate Pattern 2)
D8_LNB04722-37-06_quick batch
DCM:methanol 75:25 % v/v experiment (Naphthoate Pattern 3)
Position [°2θ] (Copper (Cu))

FIG 80

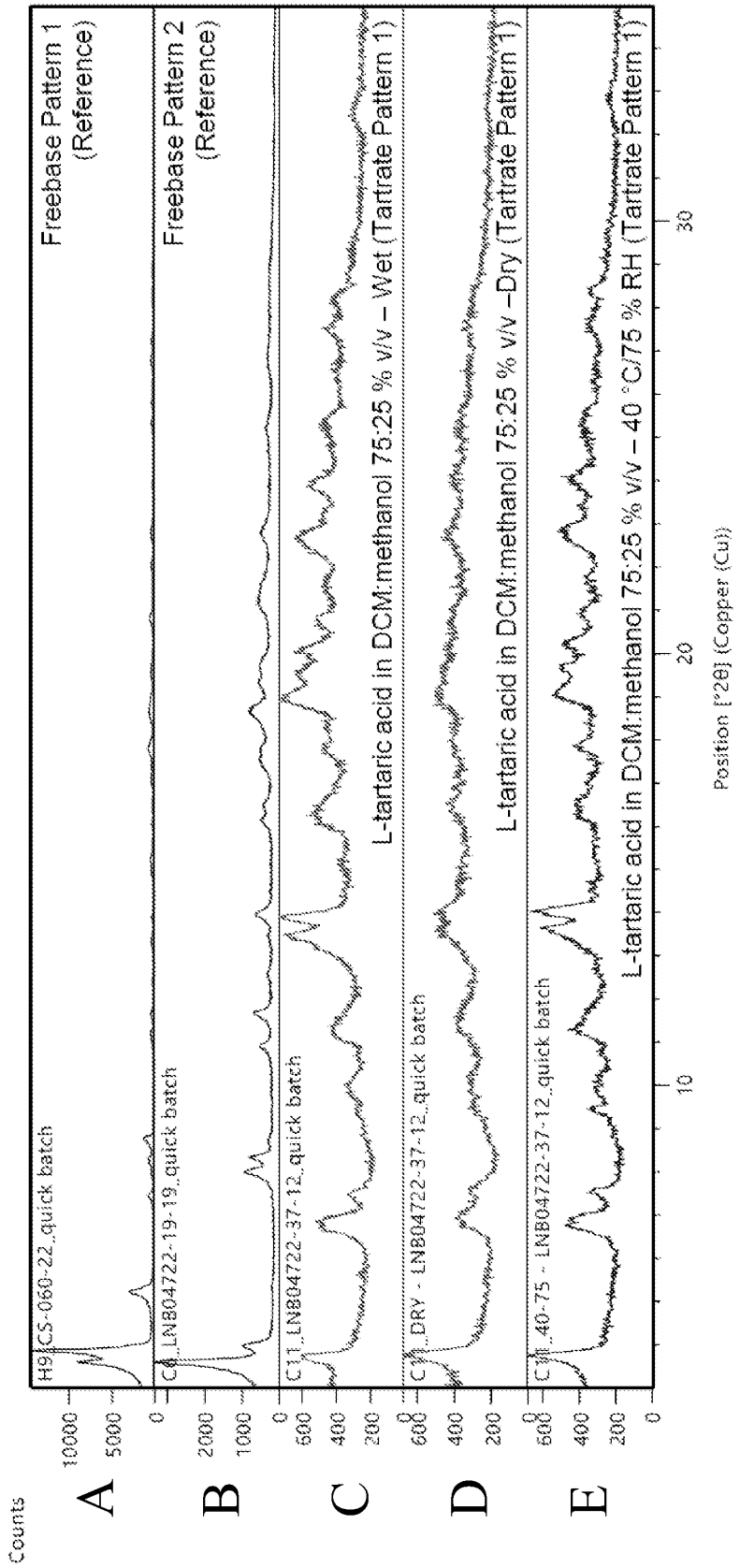

Counts
A
B
C
D
E
H9_CS-060-22_quick batch
Freebase Pattern 1 (Reference)
C9_LNB04722-19-19_quick batch
Freebase Pattern 2 (Reference)
C11_LNB04722-37-12_quick batch
L-tartaric acid in DCM:methanol 75:25 % v/v – Wet (Tartrate Pattern 1)
C11_DRY - LNB04722-37-12_quick batch
L-tartaric acid in DCM:methanol 75:25 % v/v –Dry (Tartrate Pattern 1)
C11_40-75 - LNB04722-37-12_quick batch
L-tartaric acid in DCM:methanol 75:25 % v/v – 40 °C/75 % RH (Tartrate Pattern 1)
Position [°2θ] (Copper (Cu))

FIG 81

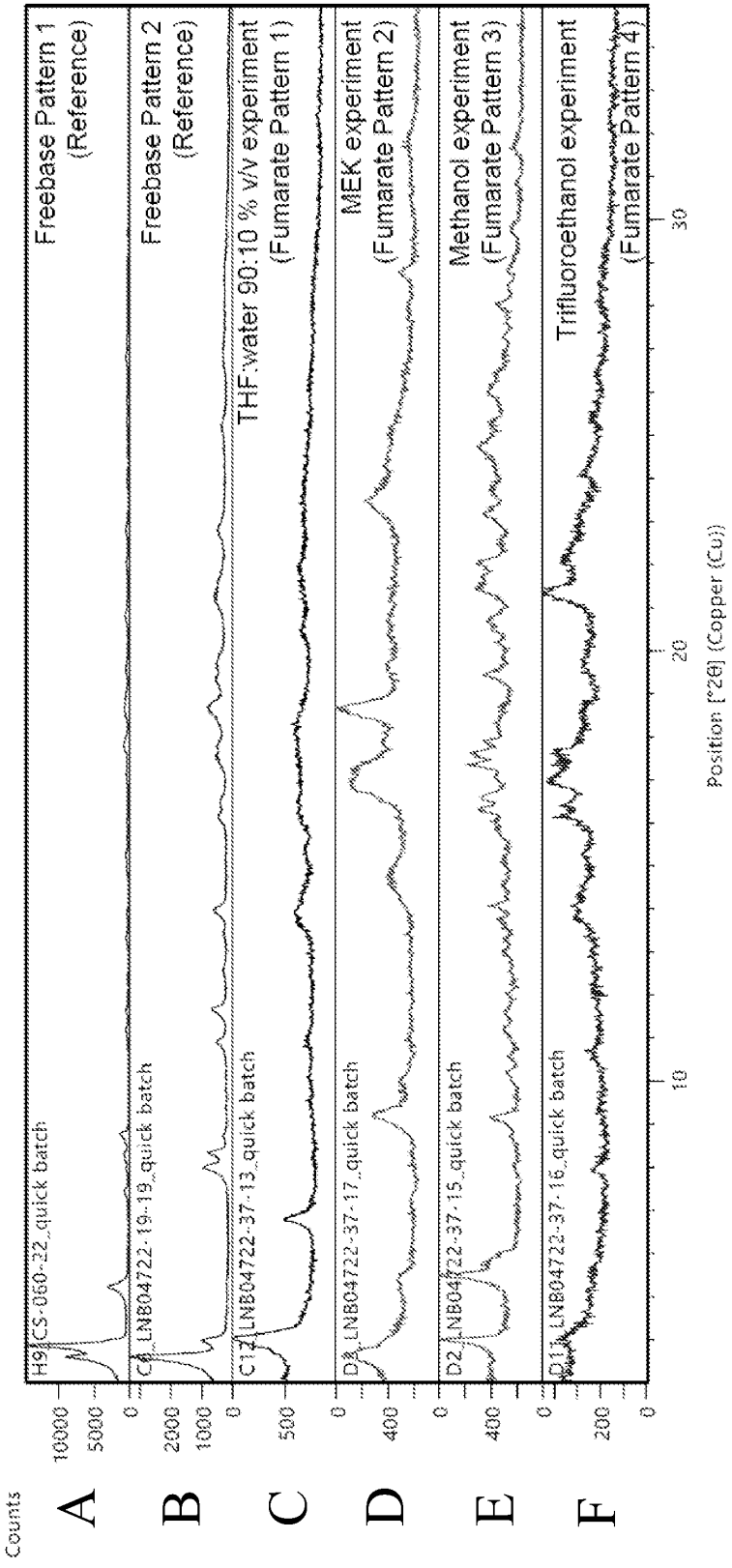

Freebase Pattern 1 (Reference)
H9_CS-060-22_quick batch
Freebase Pattern 2 (Reference)
C9_LNB04722-19-19_quick batch
THF:water 90:10 % v/v experiment (Fumarate Pattern 1)
C12_LNB04722-37-13_quick batch
MEK experiment (Fumarate Pattern 2)
D9_LNB04722-37-17_quick batch
Methanol experiment (Fumarate Pattern 3)
D2_LNB04722-37-15_quick batch
Trifluoroethanol experiment (Fumarate Pattern 4)
D11_LNB04722-37-16_quick batch
Counts
A
B
C
D
E
F
10000
5000
0
2000
1000
500
400
200
10
20
30
Position [°2θ] (Copper (Cu))

FIG 82

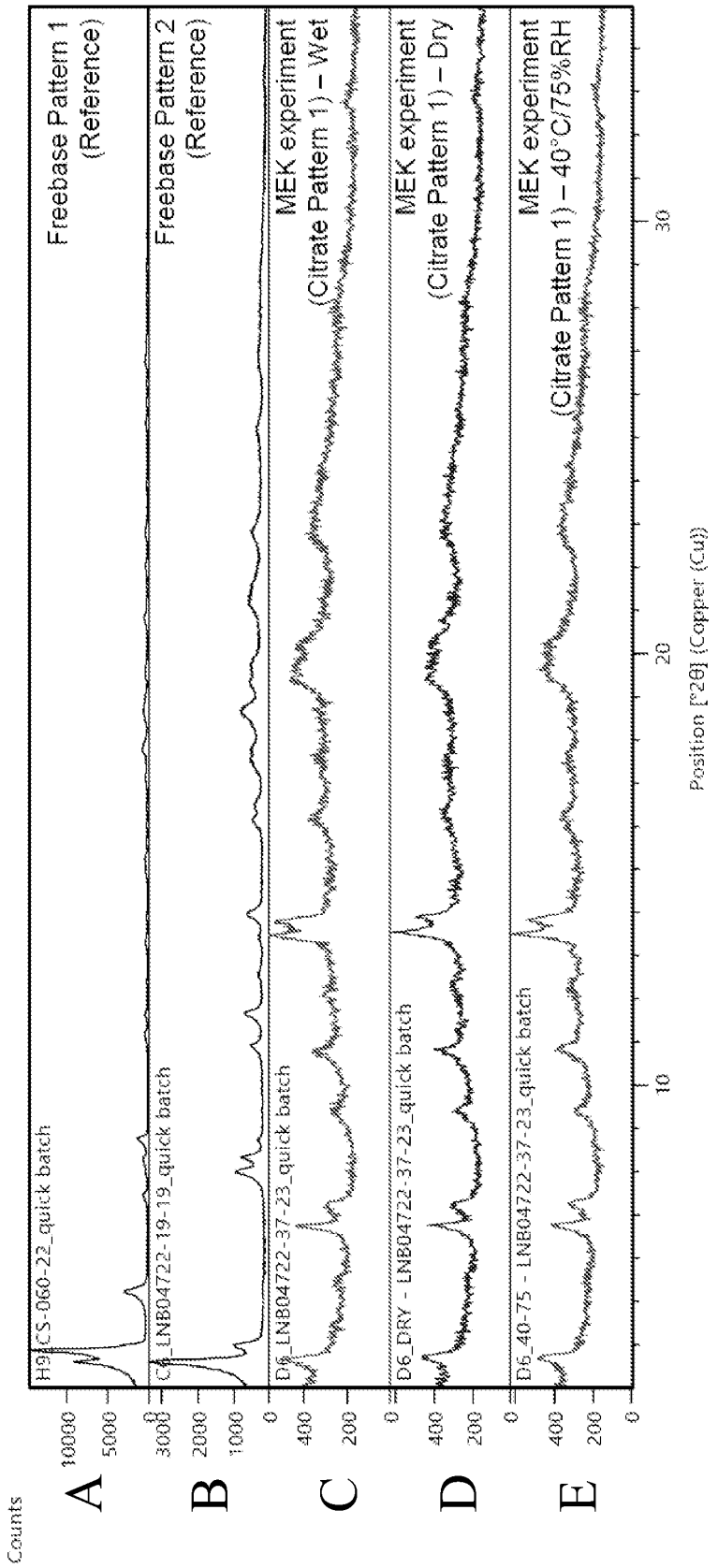

Counts
A
B
C
D
E
H9_CS-060-22_quick batch
Freebase Pattern 1 (Reference)
C4_LNB04722-19-19_quick batch
Freebase Pattern 2 (Reference)
D6_LNB04722-37-23_quick batch
MEK experiment (Citrate Pattern 1) – Wet
D6_DRY - LNB04722-37-23_quick batch
MEK experiment (Citrate Pattern 1) – Dry
D6_40-75 - LNB04722-37-23_quick batch
MEK experiment (Citrate Pattern 1) – 40°C/75%RH
Position [°2θ] (Copper (Cu))

FIG 83

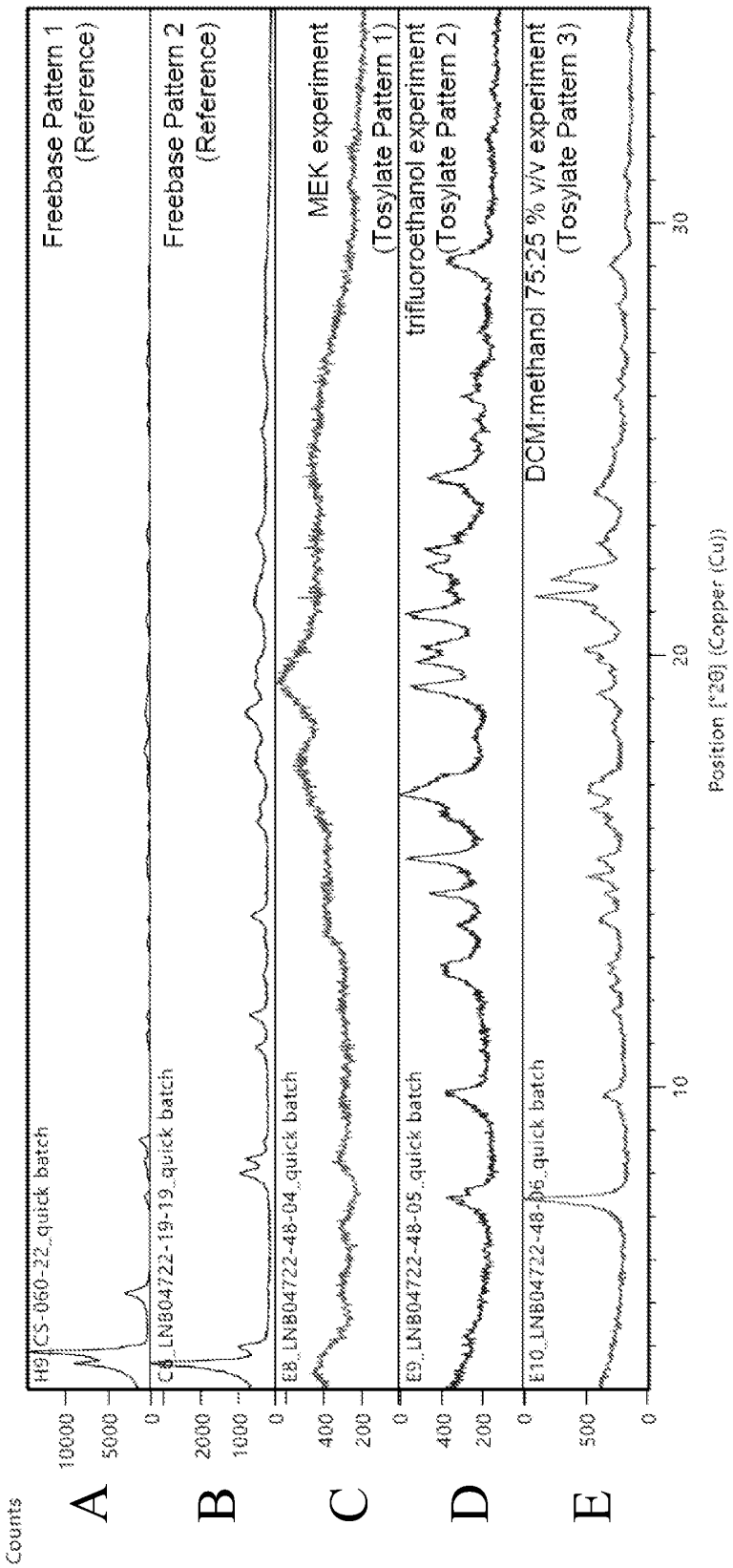

Freebase Pattern 1 (Reference)
Freebase Pattern 2 (Reference)
MEK experiment (Tosylate Pattern 1)
trifluoroethanol experiment (Tosylate Pattern 2)
DCM:methanol 75:25 % v/v experiment (Tosylate Pattern 3)
A
B
C
D
E
Counts
Position (°2θ) (Copper (Cu))

FIG 84

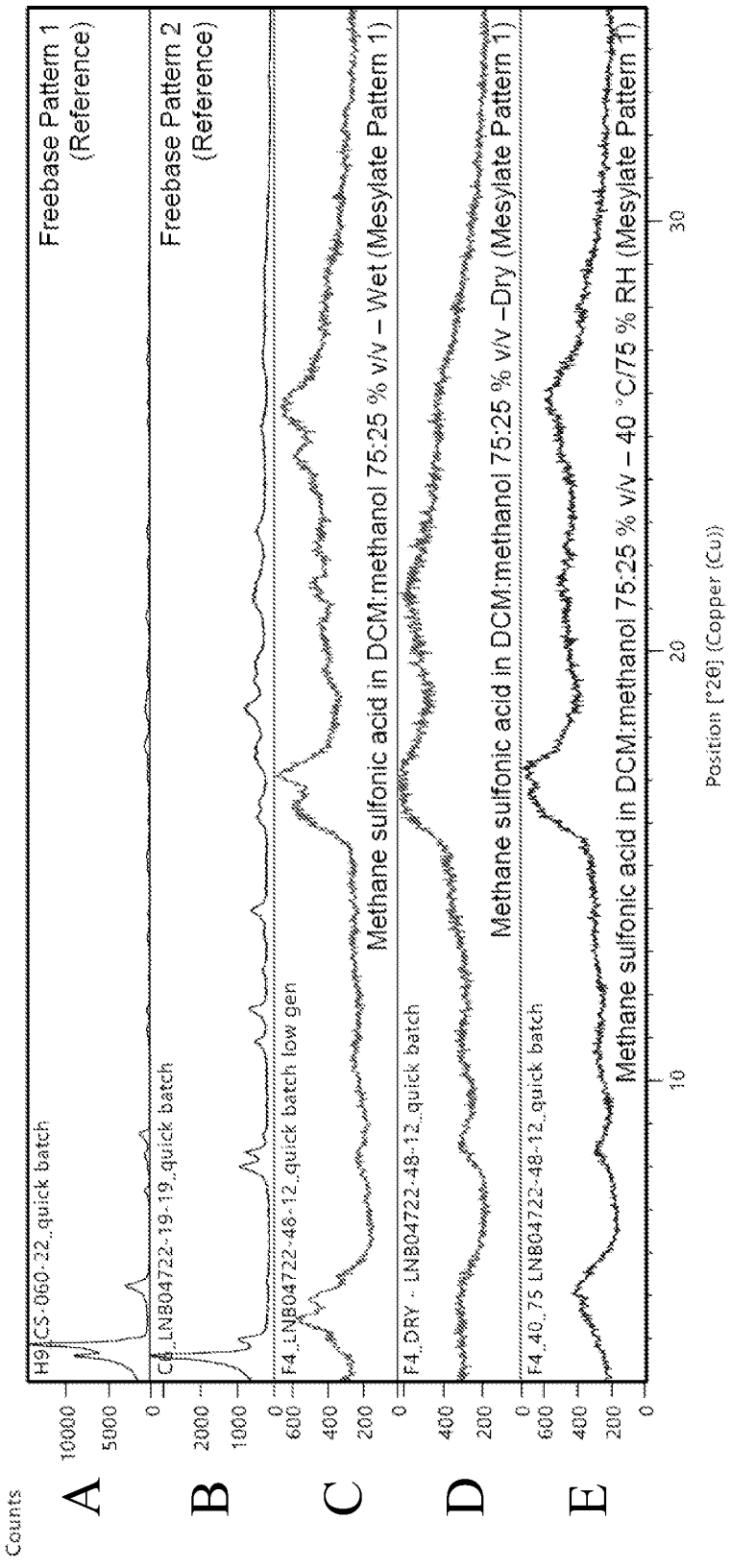

Counts
A
B
C
D
E
H9_CS-060-22_quick batch
Freebase Pattern 1 (Reference)
C4_LNB04722-19-19_quick batch
Freebase Pattern 2 (Reference)
F4_LNB04722-48-12_quick batch low gen
Methane sulfonic acid in DCM:methanol 75:25 % v/v – Wet (Mesylate Pattern 1)
F4_DRY - LNB04722-48-12_quick batch
Methane sulfonic acid in DCM:methanol 75:25 % v/v –Dry (Mesylate Pattern 1)
F4_40_75 LNB04722-48-12_quick batch
Methane sulfonic acid in DCM:methanol 75:25 % v/v – 40 °C/75 % RH (Mesylate Pattern 1)
Position [°2θ] (Copper (Cu))

FIG 85

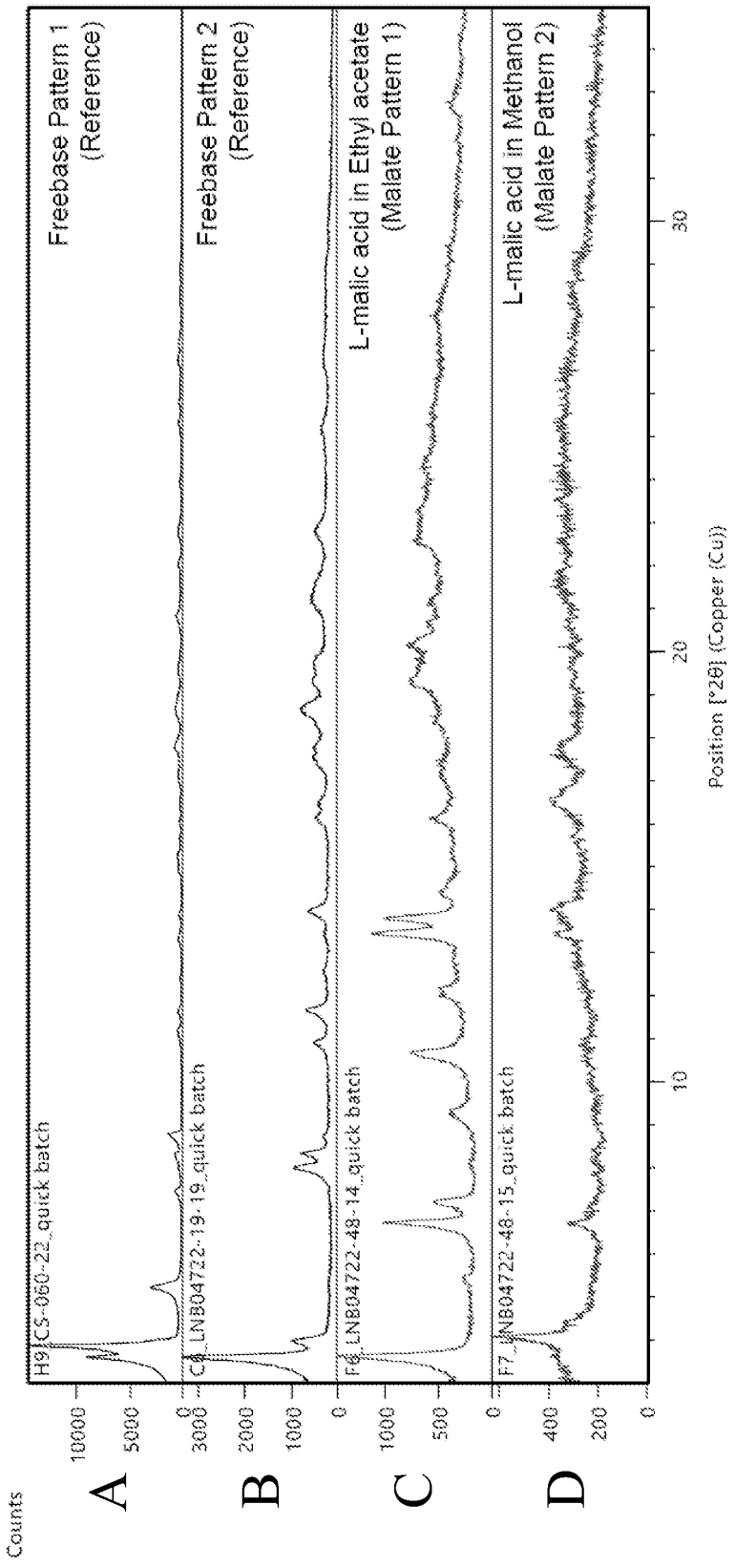

Freebase Pattern 1
(Reference)
H9_CS-060-22_quick batch
Freebase Pattern 2
(Reference)
C4_LNB04722-19-19_quick batch
L-malic acid in Ethyl acetate
(Malate Pattern 1)
F6_LNB04722-48-14_quick batch
L-malic acid in Methanol
(Malate Pattern 2)
F7_LNB04722-48-15_quick batch
A
B
C
D
Counts
10000
5000
0
3000
2000
1000
0
1000
500
0
400
200
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 86

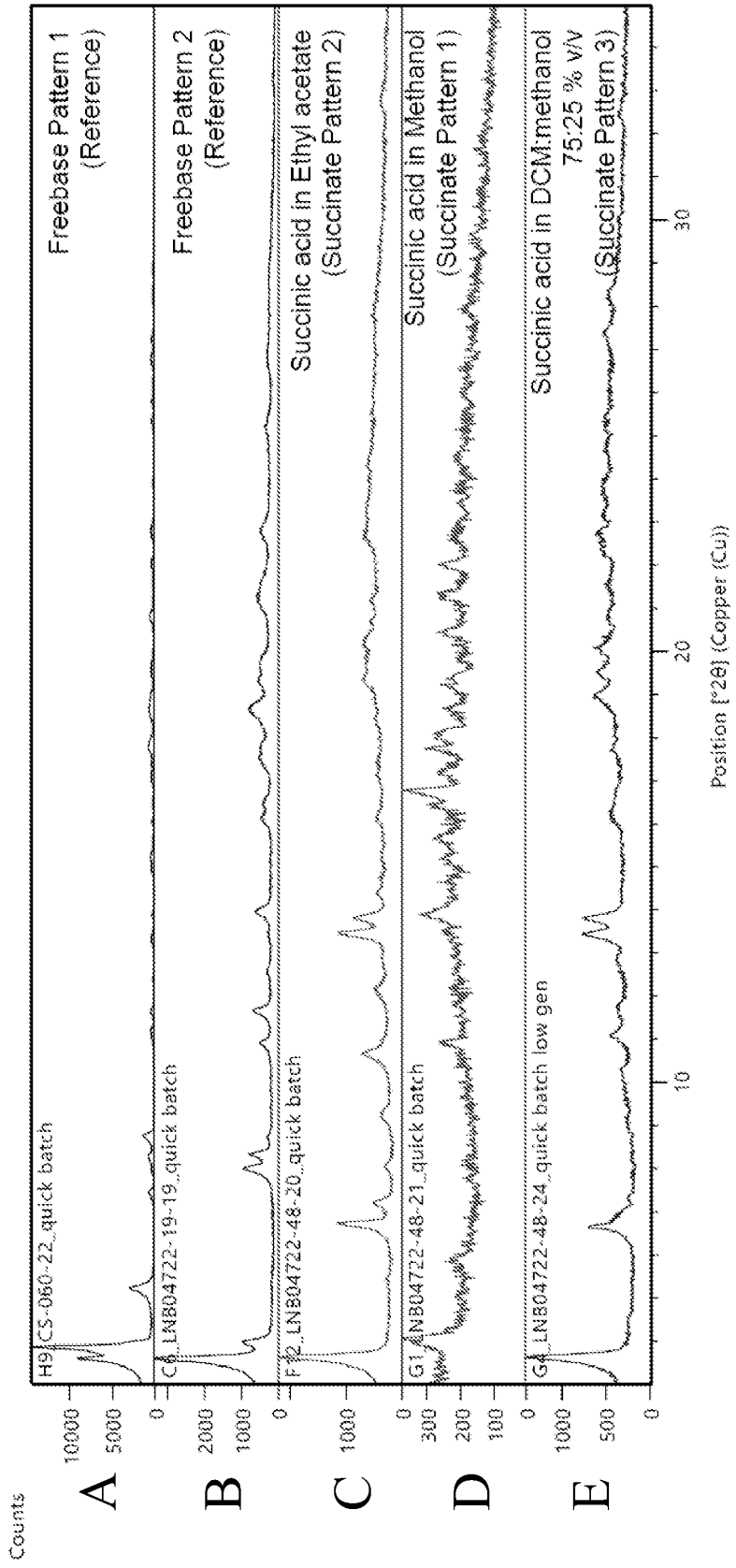

Counts
A
B
C
D
E
H9_C5-060-22_quick batch
Freebase Pattern 1
(Reference)
C6_LNB04722-19-19_quick batch
Freebase Pattern 2
(Reference)
F12_LNB04722-48-20_quick batch
Succinic acid in Ethyl acetate
(Succinate Pattern 2)
G1_LNB04722-48-21_quick batch
Succinic acid in Methanol
(Succinate Pattern 1)
G4_LNB04722-48-24_quick batch low gen
Succinic acid in DCM:methanol
75:25 % v/v
(Succinate Pattern 3)
Position [°2θ] (Copper (Cu))

FIG 87

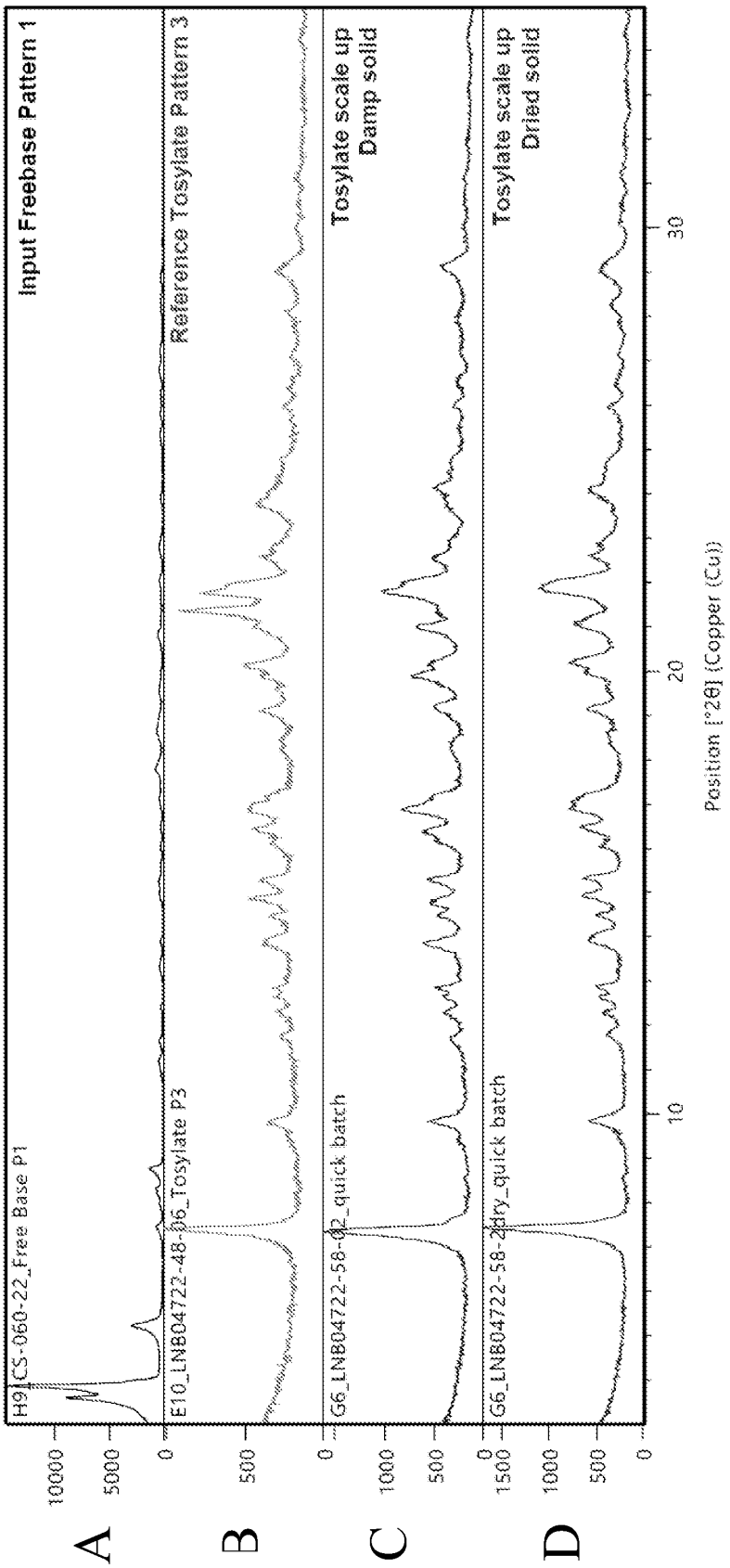

A
B
C
D
H9_CS-060-22_Free Base P1
Input Freebase Pattern 1
E10_LNB04722-48-06_Tosylate P3
Reference Tosylate Pattern 3
G6_LNB04722-58-02_quick batch
Tosylate scale up
Damp solid
G6_LNB04722-58-2dry_quick batch
Tosylate scale up
Dried solid
10000
5000
0
500
0
1000
500
0
1500
1000
500
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 88

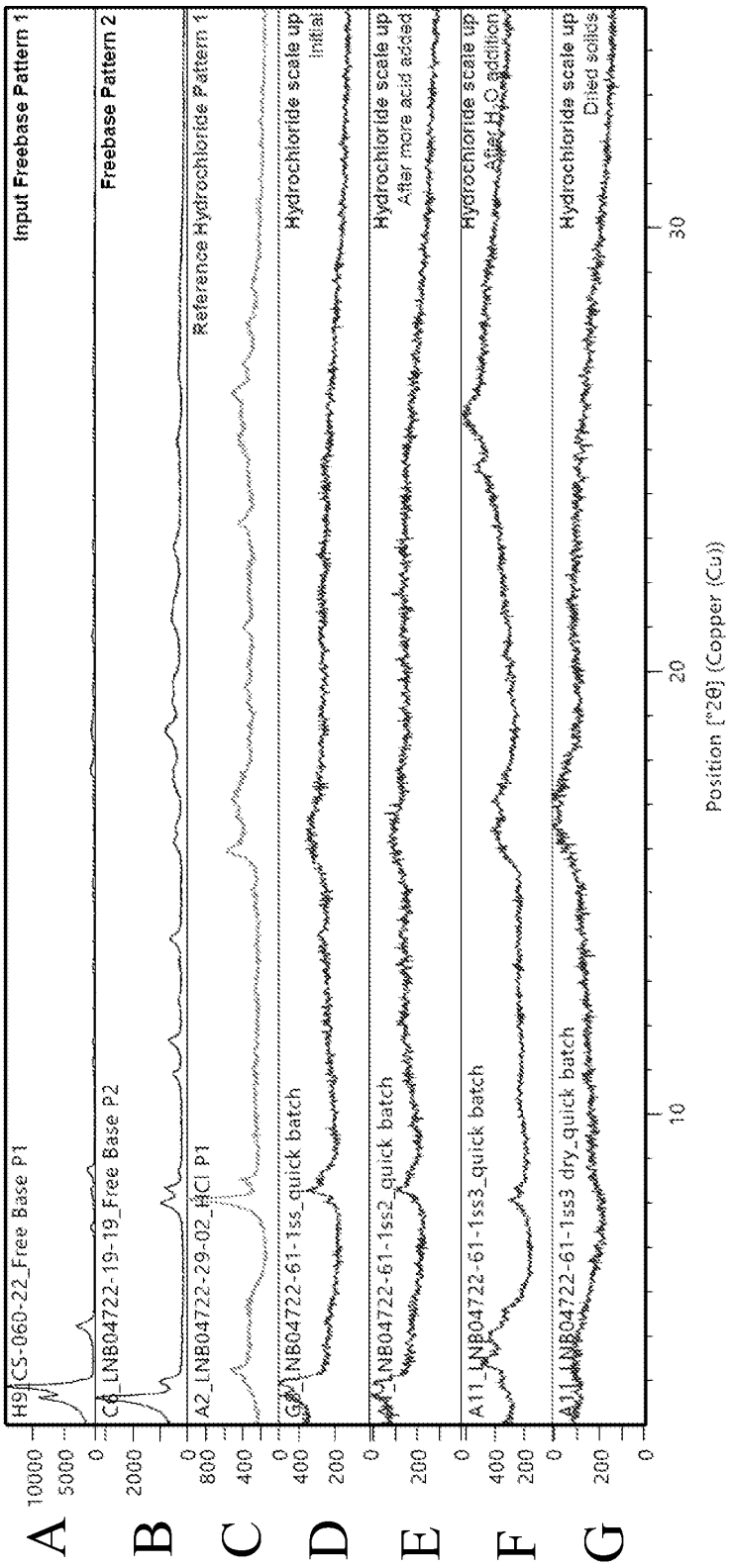

A
B
C
D
E
F
G
H9_CS-060-22_Free Base P1
Input Freebase Pattern 1
C8_LNB04722-19-19_Free Base P2
Freebase Pattern 2
A2_LNB04722-29-02_HCl P1
Reference Hydrochloride Pattern 1
G8_LNB04722-61-1ss_quick batch
Hydrochloride scale up
Initial
A1_LNB04722-61-1ss2_quick batch
Hydrochloride scale up
After more acid added
A11_LNB04722-61-1ss3_quick batch
Hydrochloride scale up
After H2O addition
A11_LNB04722-61-1ss3 dry_quick batch
Hydrochloride scale up
Dried solids
10000
5000
0
2000
0
800
400
0
400
200
0
200
0
400
200
0
200
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 89

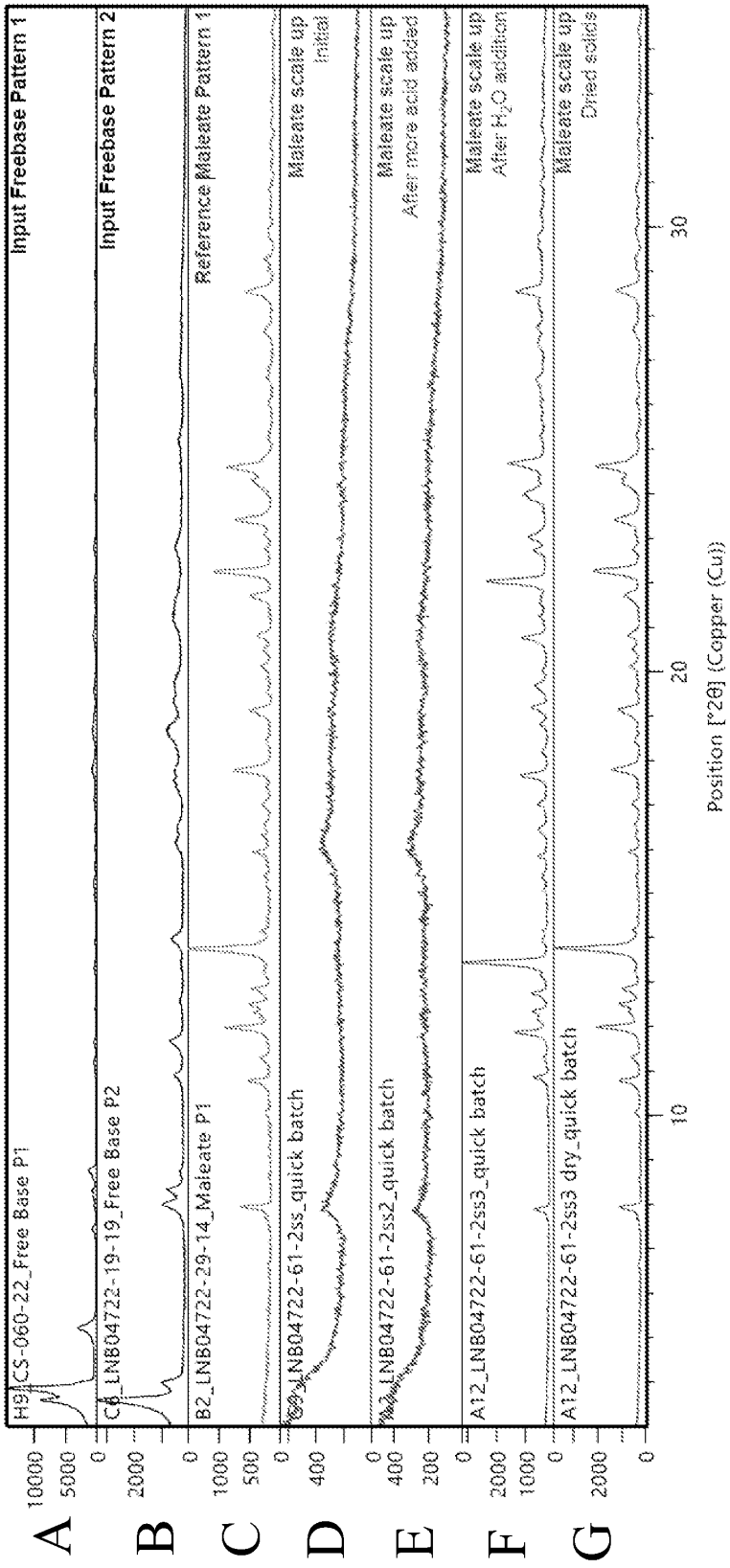

A
B
C
D
E
F
G
H9ACS-060-22_Free Base P1
Input Freebase Pattern 1
C6_LNB04722-19-19_Free Base P2
Input Freebase Pattern 2
B2_LNB04722-29-14_Maleate P1
Reference Maleate Pattern 1
B9_LNB04722-61-2ss_quick batch
Maleate scale up
Initial
A3_LNB04722-61-2ss2_quick batch
Maleate scale up
After more acid added
A12_LNB04722-61-2ss3_quick batch
Maleate scale up
After H2O addition
A12_LNB04722-61-2ss3 dry_quick batch
Maleate scale up
Dried solids
Position [°2θ] (Copper (Cu))

FIG 90

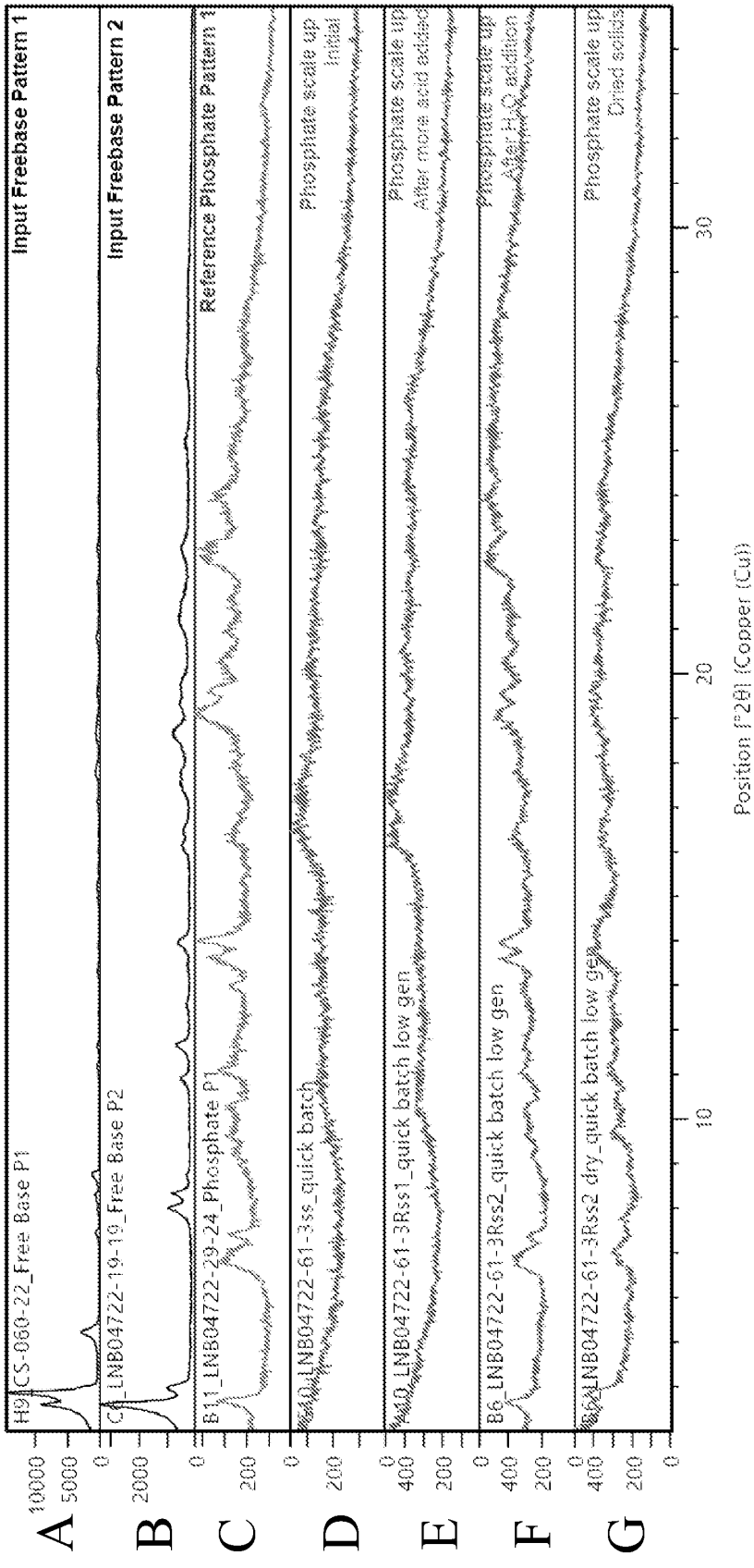

A
B
C
D
E
F
G
Input Freebase Pattern 1
Input Freebase Pattern 2
Reference Phosphate Pattern 1
Phosphate scale up
Initial
Phosphate scale up
After more acid added
Phosphate scale up
After H2O addition
Phosphate scale up
Dried solids
Position [°2θ] (Copper (Cu))

FIG 91

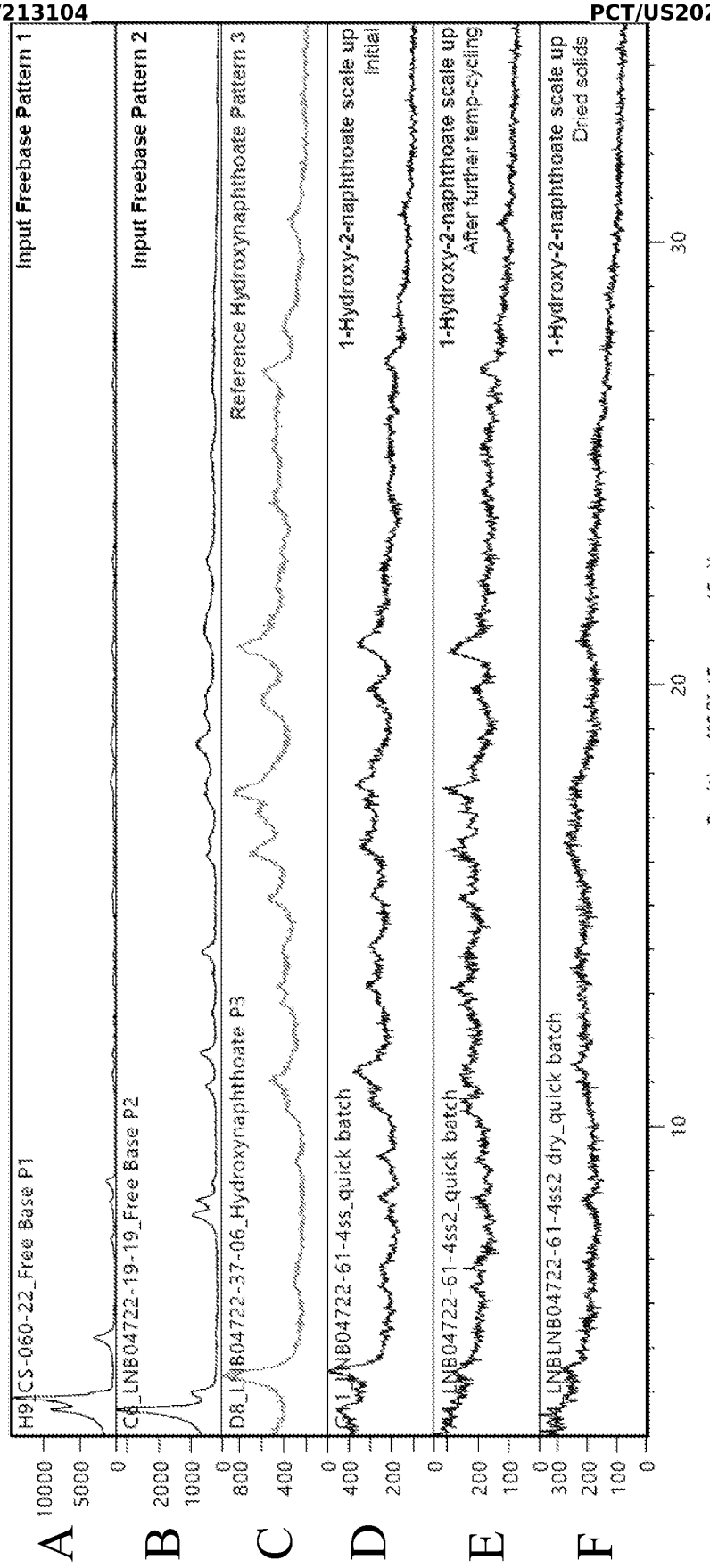

A
B
C
D
E
F
H9_CS-060-22_Free Base P1
Input Freebase Pattern 1
C9_LNB04722-19-19_Free Base P2
Input Freebase Pattern 2
D8_LNB04722-37-06_Hydroxynaphthoate P3
Reference Hydroxynaphthoate Pattern 3
G11_LNB04722-61-4ss_quick batch
1-Hydroxy-2-naphthoate scale up
Initial
A4_LNB04722-61-4ss2_quick batch
1-Hydroxy-2-naphthoate scale up
After further temp-cycling
A4_LNBLNB04722-61-4ss2 dry_quick batch
1-Hydroxy-2-naphthoate scale up
Dried solids
Position [°2θ] (Copper (Cu))

FIG 92

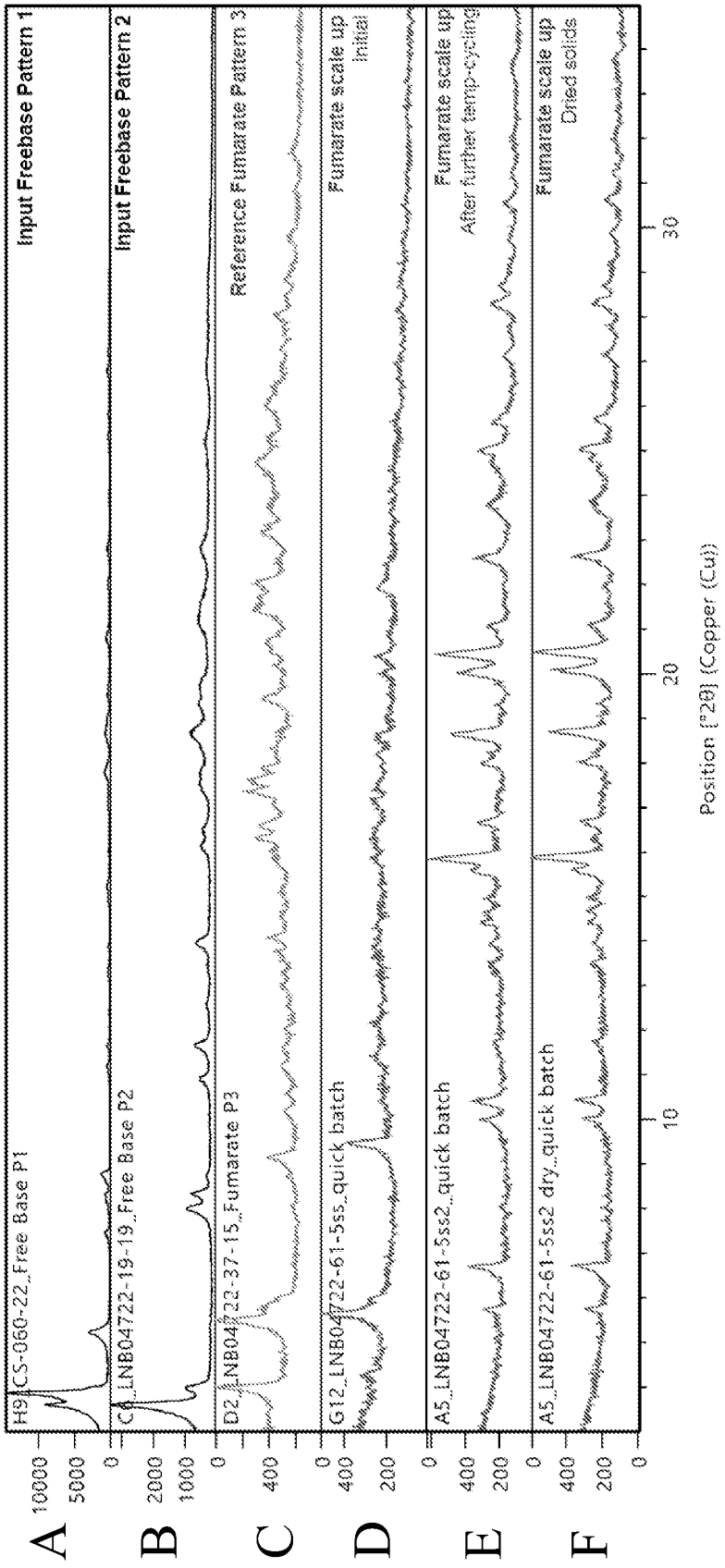

A
B
C
D
E
F
H9_CS-060-22_Free Base P1
Input Freebase Pattern 1
C9_LNB04722-19-19_Free Base P2
Input Freebase Pattern 2
D2_LNB04722-37-15_Fumarate P3
Reference Fumarate Pattern 3
G12_LNB04722-61-5ss_quick batch
Fumarate scale up
Initial
A5_LNB04722-61-5ss2_quick batch
Fumarate scale up
After further temp-cycling
A5_LNB04722-61-5ss2 dry_quick batch
Fumarate scale up
Dried solids
10000
5000
0
2000
1000
400
200
10
20
30
Position [°2θ] (Copper (Cu))

FIG 93

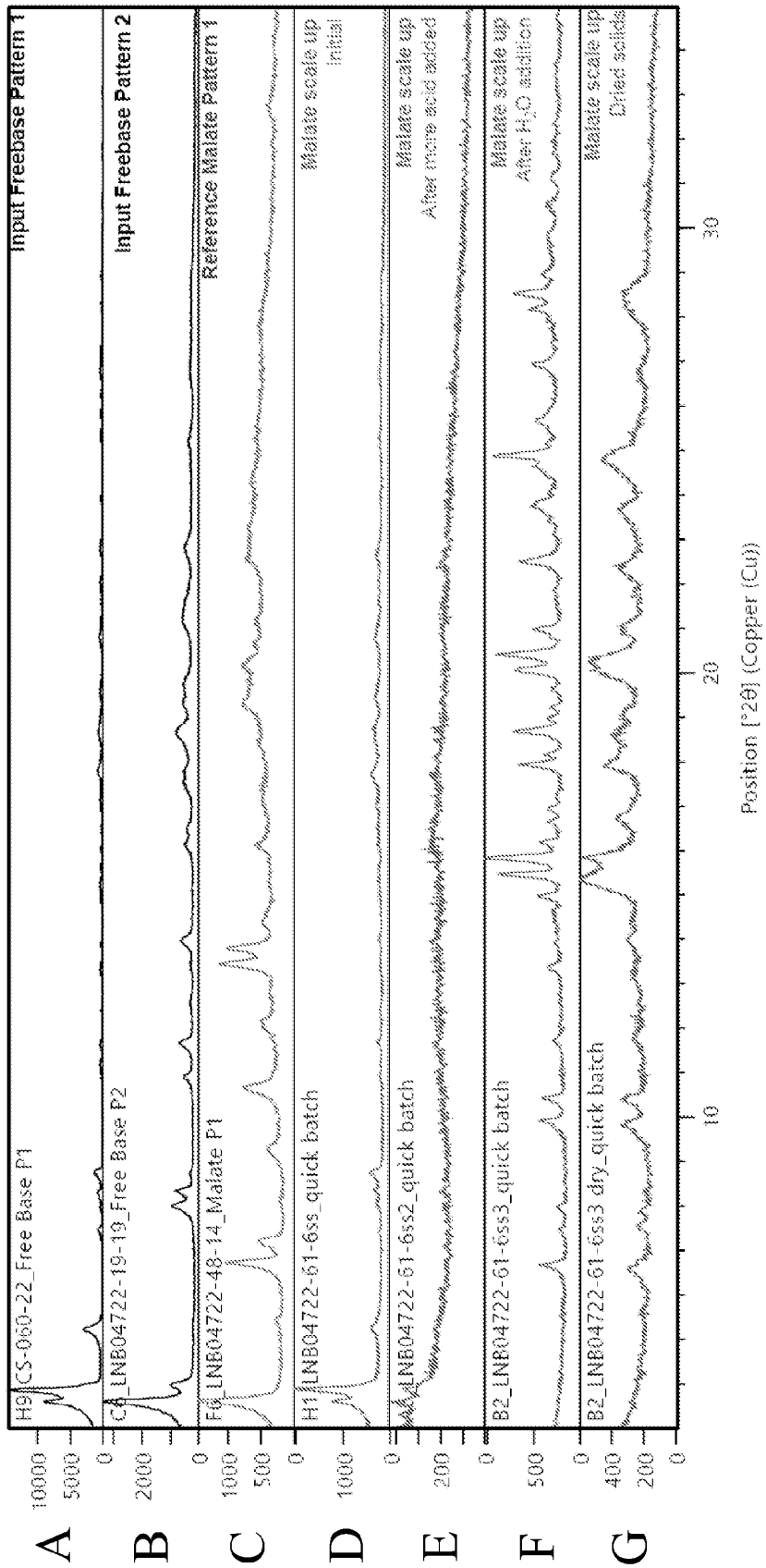

A
B
C
D
E
F
G
H9_CS-060-22_Free Base P1
Input Freebase Pattern 1
C8_LNB04722-19-19_Free Base P2
Input Freebase Pattern 2
F6_LNB04722-48-14_Malate P1
Reference Malate Pattern 1
H11_LNB04722-61-6ss_quick batch
Malate scale up
Initial
A4_LNB04722-61-6ss2_quick batch
Malate scale up
After more acid added
B2_LNB04722-61-6ss3_quick batch
Malate scale up
After H2O addition
B2_LNB04722-61-6ss3 dry_quick batch
Malate scale up
Dried solids
10000
5000
0
2000
0
1000
500
0
1000
0
200
0
500
0
400
200
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 94

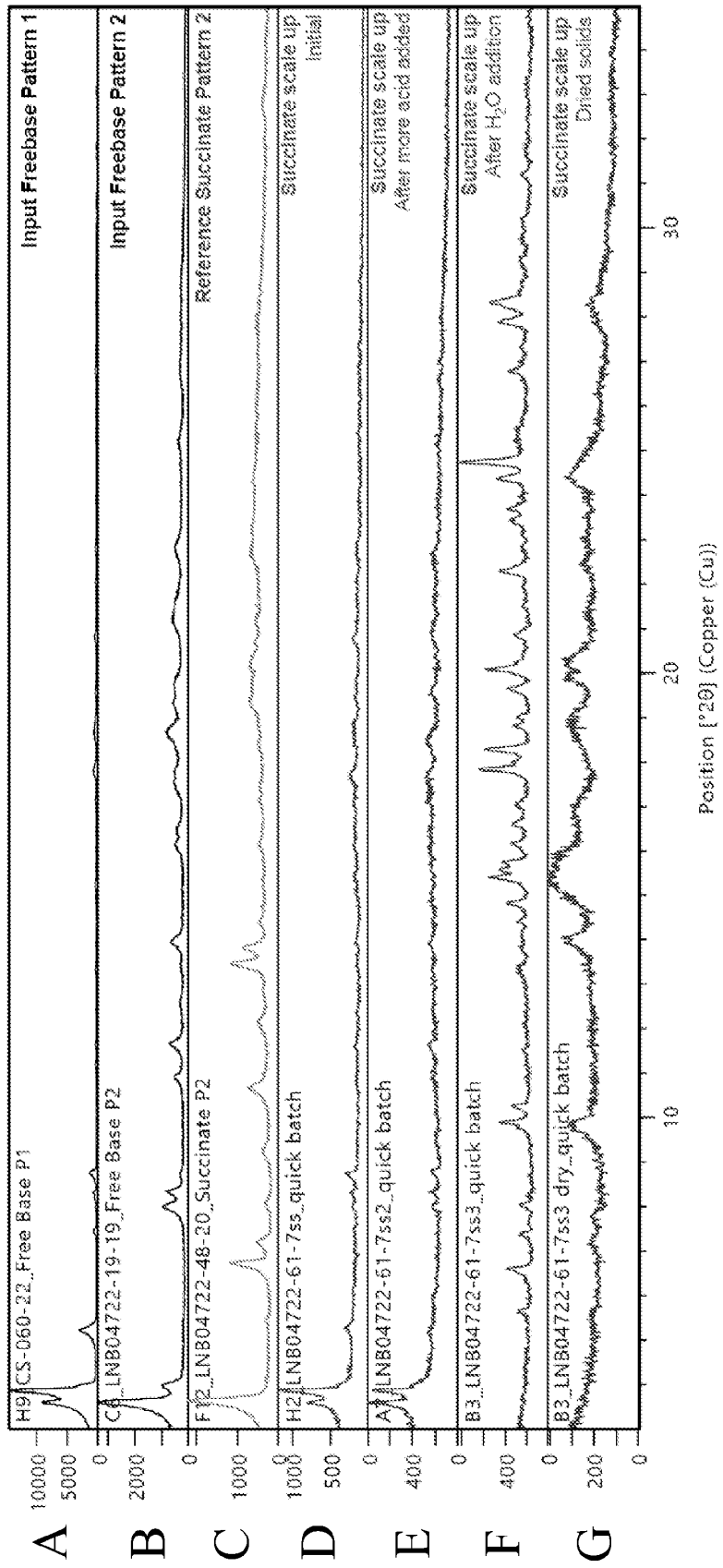

A
B
C
D
E
F
G
H9_CS-060-22_Free Base P1
Input Freebase Pattern 1
C9_LNB04722-19-19_Free Base P2
Input Freebase Pattern 2
F12_LNB04722-48-20_Succinate P2
Reference Succinate Pattern 2
H2_LNB04722-61-7ss_quick batch
Succinate scale up
Initial
A1_LNB04722-61-7ss2_quick batch
Succinate scale up
After more acid added
B3_LNB04722-61-7ss3_quick batch
Succinate scale up
After H_2O addition
B3_LNB04722-61-7ss3 dry_quick batch
Succinate scale up
Dried solids
Position [°2θ] (Copper (Cu))

FIG 95

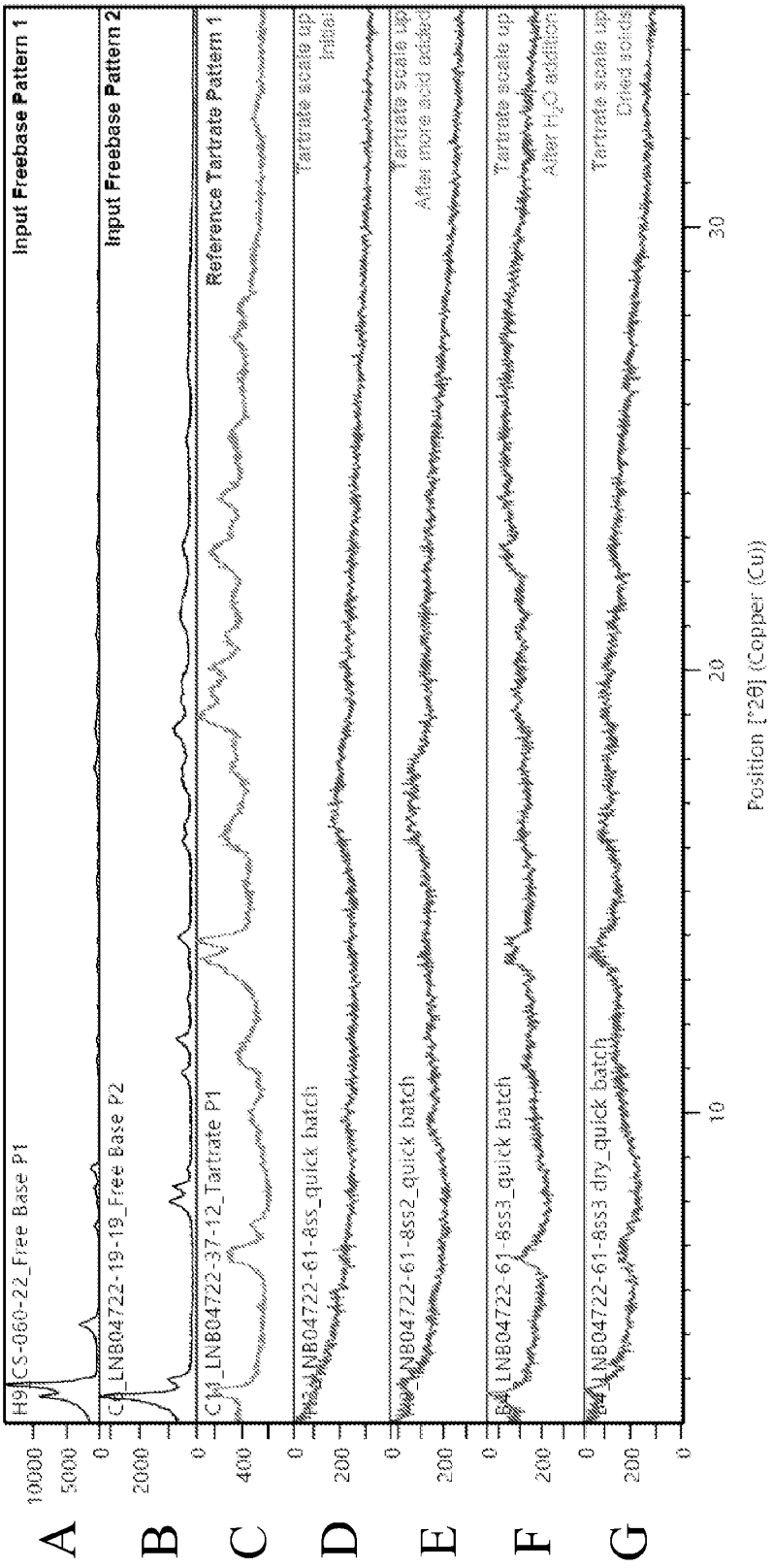

A
B
C
D
E
F
G
H9_CS-060-22_Free Base P1
Input Freebase Pattern 1
C8_LNB04722-19-19_Free Base P2
Input Freebase Pattern 2
C9_LNB04722-37-12_Tartrate P1
Reference Tartrate Pattern 1
F3_LNB04722-61-8ss_quick batch
Tartrate scale up
Initial
F4_LNB04722-61-8ss2_quick batch
Tartrate scale up
After more acid adjust
B4_LNB04722-61-8ss3_quick batch
Tartrate scale up
After H2O addition
E4_LNB04722-61-8ss3 dry_quick batch
Tartrate scale up
Dried solids
10000
5000
0
2000
0
400
0
200
0
200
0
200
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 96

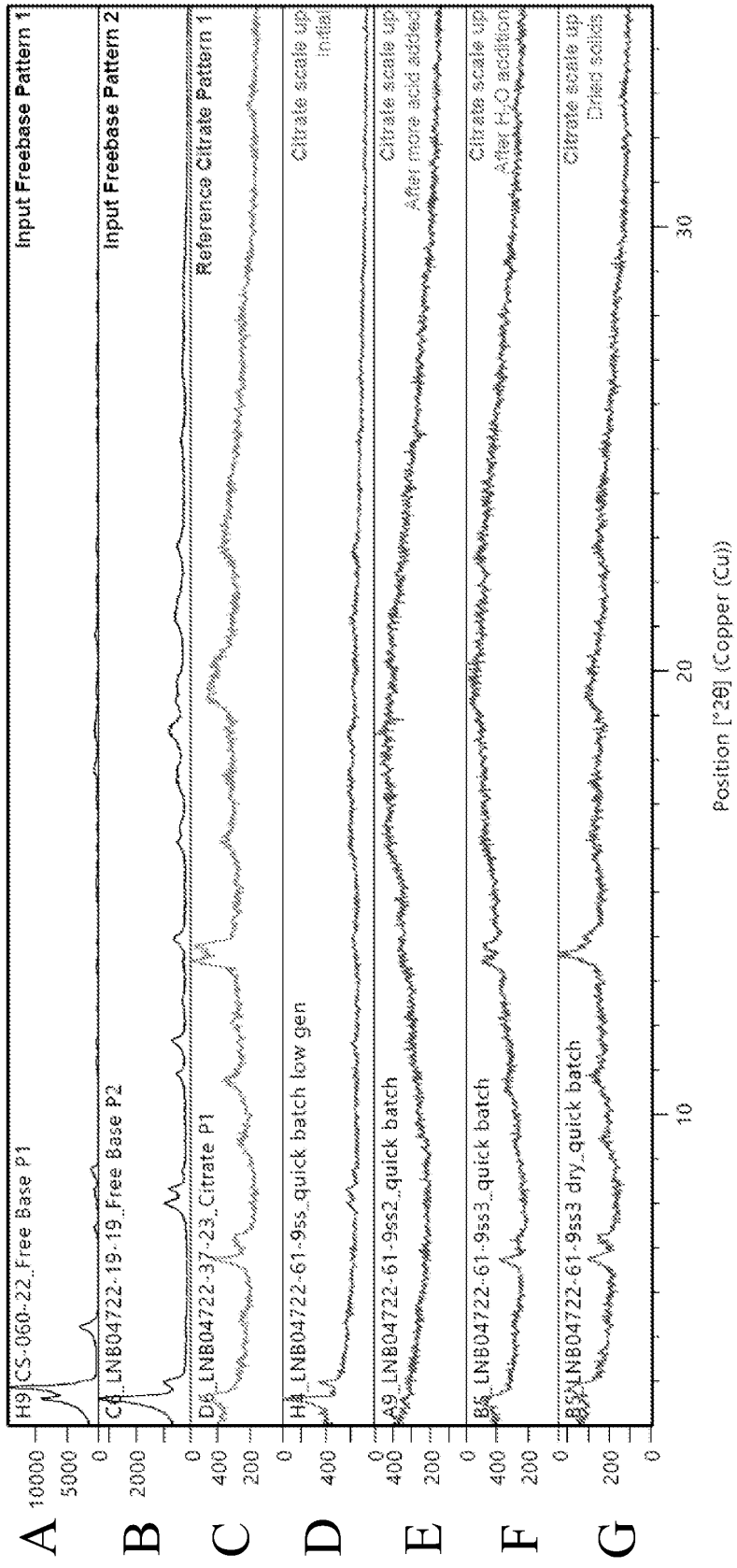

Input Freebase Pattern 1
H9 CS-060-22_Free Base P1
Input Freebase Pattern 2
C8 LNB04722-19-19_Free Base P2
Reference Citrate Pattern 1
D8 LNB04722-37-23_Citrate P1
Citrate scale up
Initial
H8 LNB04722-61-9ss_quick batch low gen
Citrate scale up
After more acid added
A9 LNB04722-61-9ss2_quick batch
Citrate scale up
After H2O addition
B6 LNB04722-61-9ss3_quick batch
Citrate scale up
Dried solids
B5 LNB04722-61-9ss3 dry_quick batch
A
B
C
D
E
F
G
10000
5000
0
2000
0
400
200
0
400
0
400
200
0
400
200
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 97

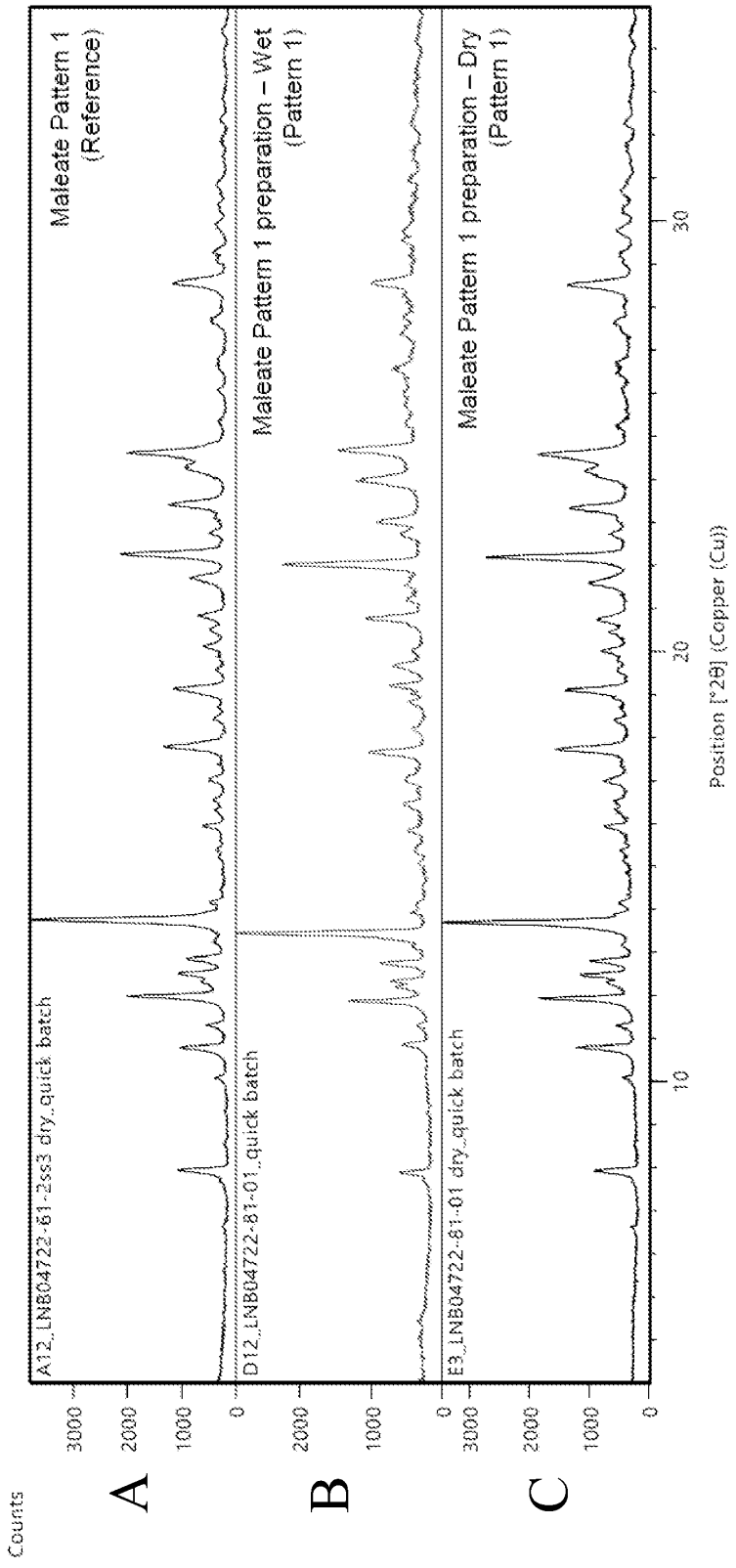

A
B
C
Counts
3000
2000
1000
0
A12_LNB04722-61-2ss3 dry_quick batch
Maleate Pattern 1
(Reference)
D12_LNB04722-81-01_quick batch
Maleate Pattern 1 preparation – Wet
(Pattern 1)
E3_LNB04722-81-01 dry_quick batch
Maleate Pattern 1 preparation – Dry
(Pattern 1)
10
20
30
Position [°2θ] (Copper (Cu))

FIG 98

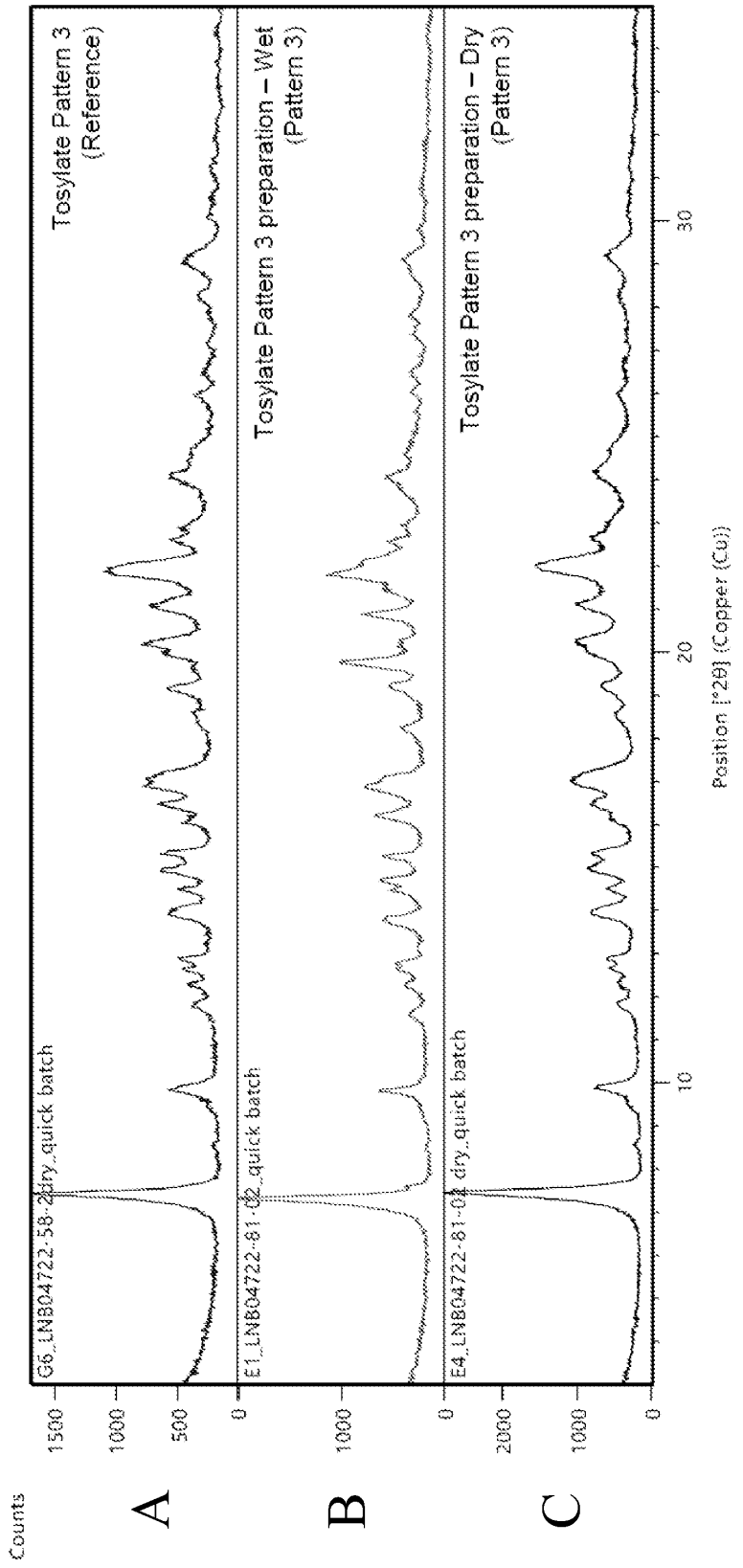

Tosylate Pattern 3
(Reference)
G6_LN804722-58-2dry_quick batch
Tosylate Pattern 3 preparation – Wet
(Pattern 3)
E1_LN804722-81-02_quick batch
Tosylate Pattern 3 preparation – Dry
(Pattern 3)
E4_LN804722-81-04 dry_quick batch
A
B
C
Counts
1500
1000
500
0
1000
0
2000
1000
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 99

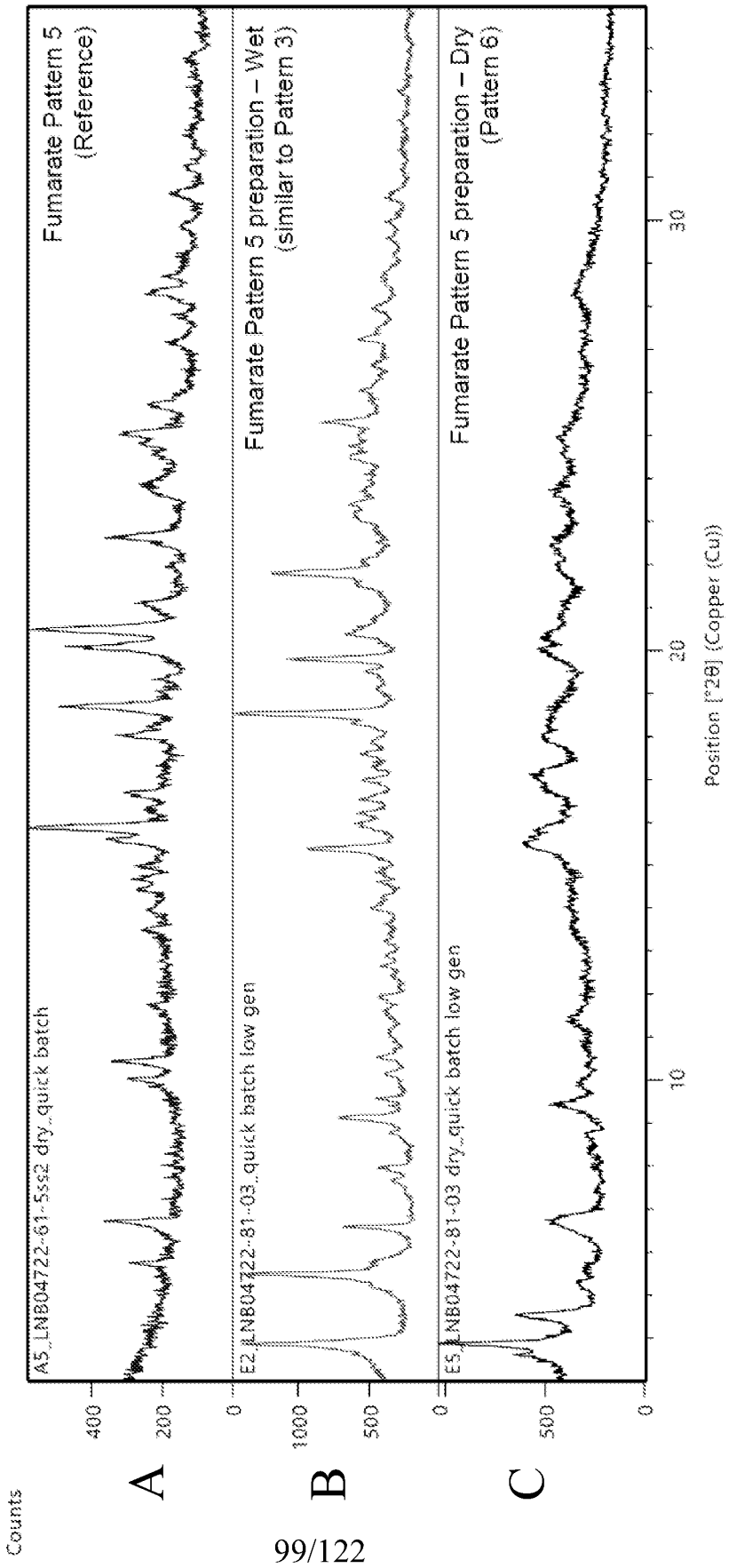

A
B
C
Counts
A5_LNB04722-61-5ss2 dry_quick batch
Fumarate Pattern 5
(Reference)
E2_LNB04722-81-03_quick batch low gen
Fumarate Pattern 5 preparation – Wet
(similar to Pattern 3)
E5_LNB04722-81-03 dry_quick batch low gen
Fumarate Pattern 5 preparation – Dry
(Pattern 6)
Position [°2θ] (Copper (Cu))

FIG 100

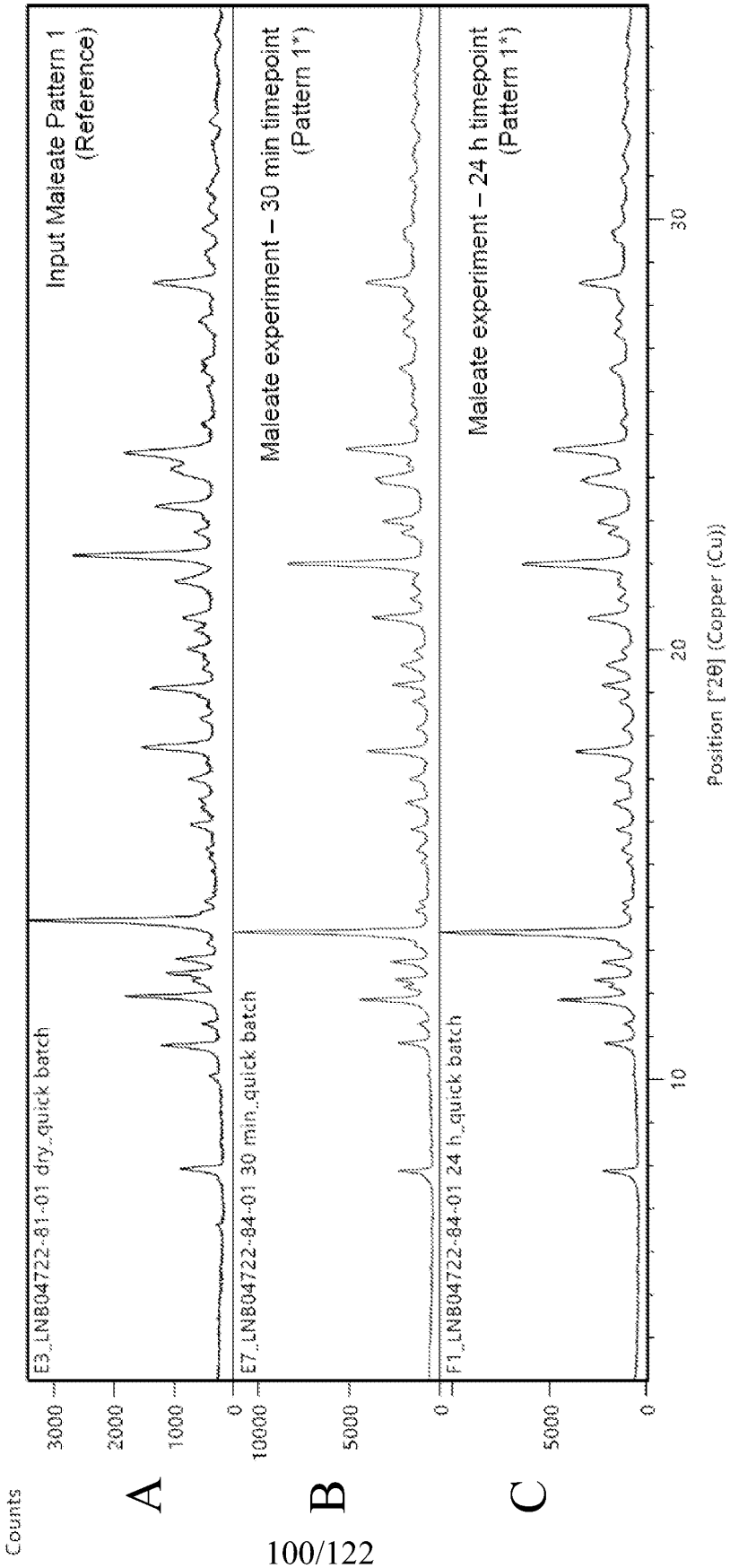

Input Maleate Pattern 1 (Reference)
E3_LN804722-81-01 dry_quick batch
Maleate experiment – 30 min timepoint (Pattern 1*)
E7_LN804722-84-01 30 min_quick batch
Maleate experiment – 24 h timepoint (Pattern 1*)
F1_LN804722-84-01 24 h_quick batch
A
B
C
Counts
3000
2000
1000
0
10000
5000
0
5000
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 101

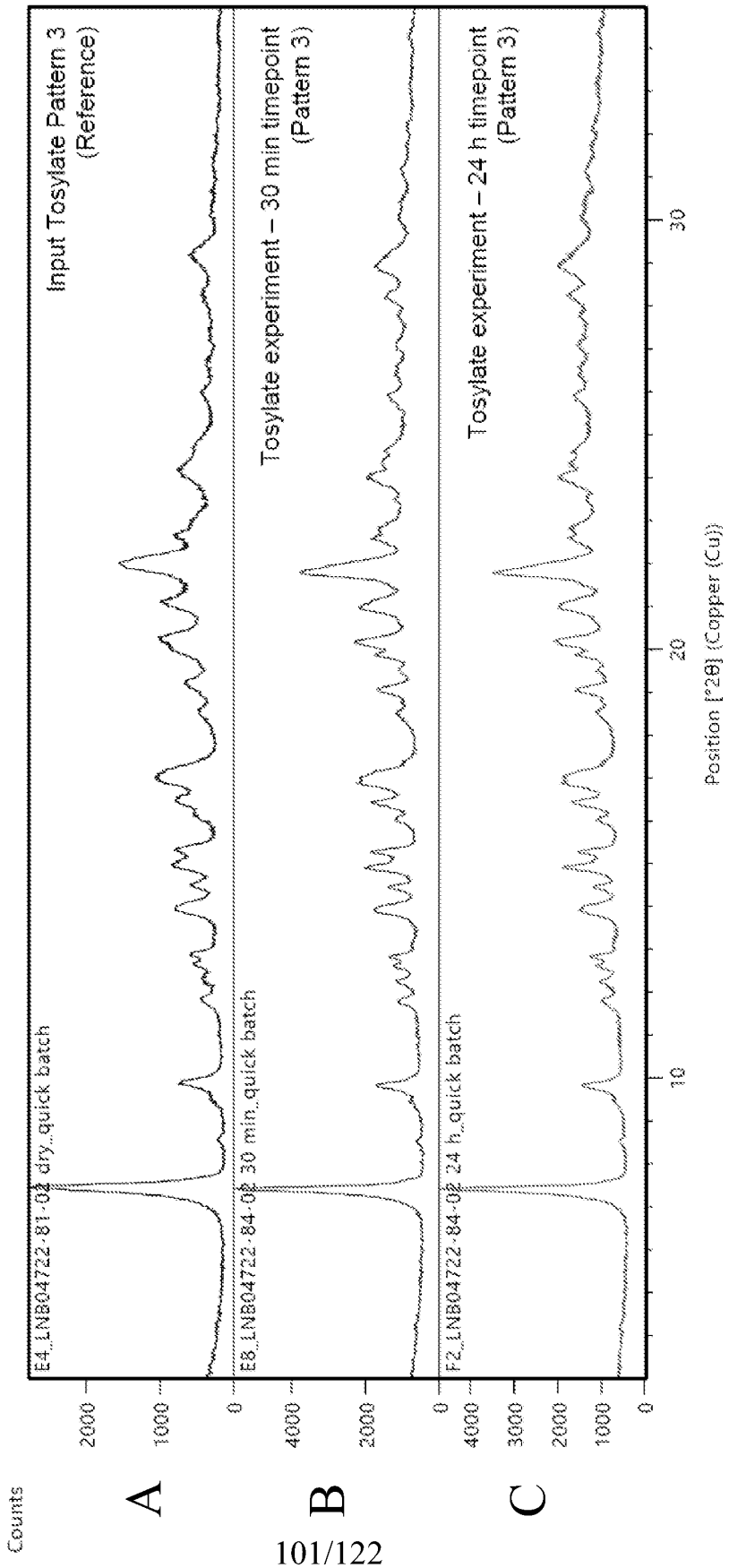

Input Tosylate Pattern 3
(Reference)
E4_LNB04722-81-02 dry_quick batch
Tosylate experiment – 30 min timepoint
(Pattern 3)
E8_LNB04722-84-02 30 min_quick batch
Tosylate experiment – 24 h timepoint
(Pattern 3)
F2_LNB04722-84-02 24 h_quick batch
Counts
A
B
C
2000
1000
0
4000
2000
0
4000
3000
2000
1000
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 102

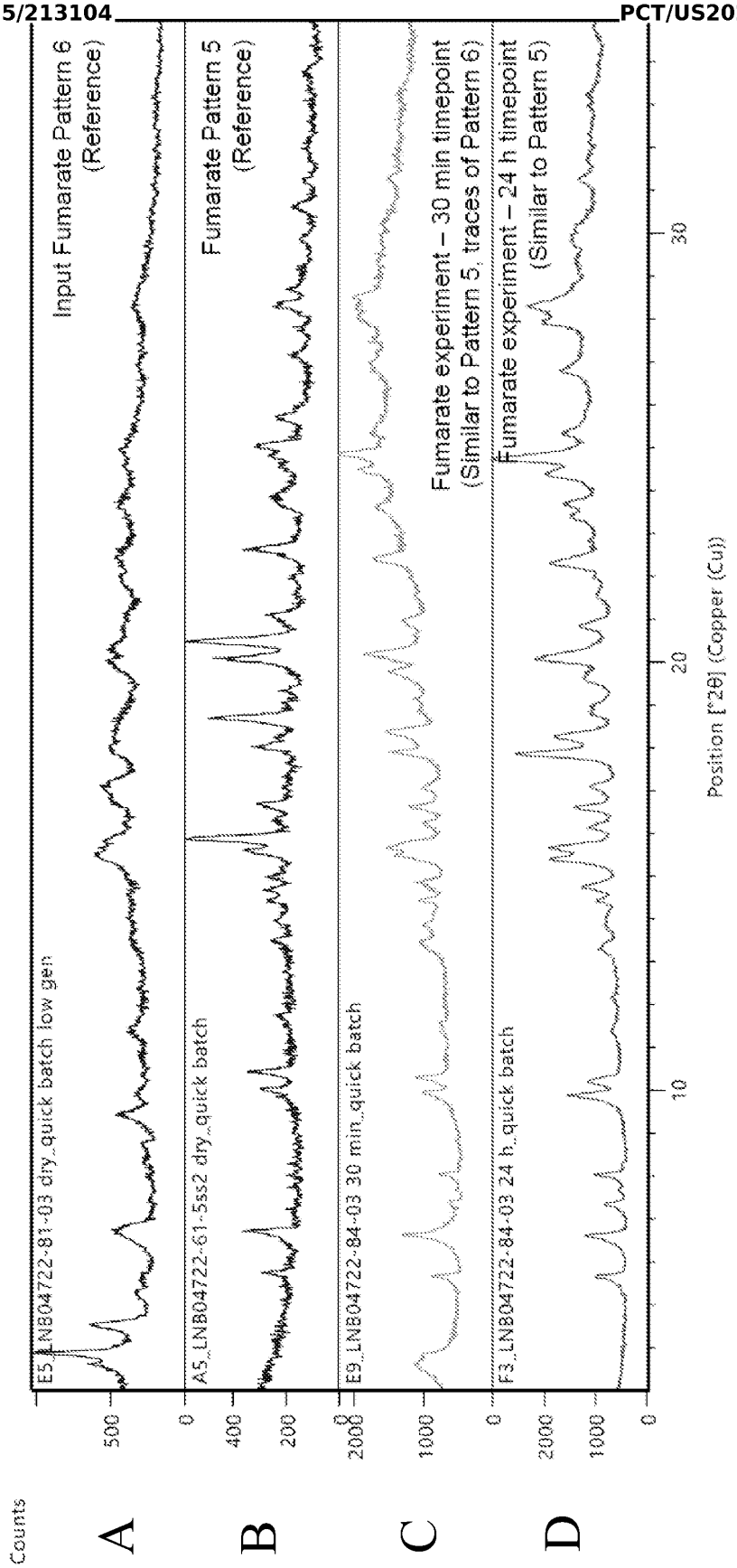

Counts
A
B
C
D
E5_LNB04722-81-03 dry_quick batch low gen
Input Fumarate Pattern 6
(Reference)
A5_LNB04722-61-5ss2 dry_quick batch
Fumarate Pattern 5
(Reference)
E9_LNB04722-84-03 30 min_quick batch
Fumarate experiment – 30 min timepoint
(Similar to Pattern 5, traces of Pattern 6)
F3_LNB04722-84-03 24 h_quick batch
Fumarate experiment – 24 h timepoint
(Similar to Pattern 5)
500
0
400
200
0
2000
1000
0
2000
1000
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 103

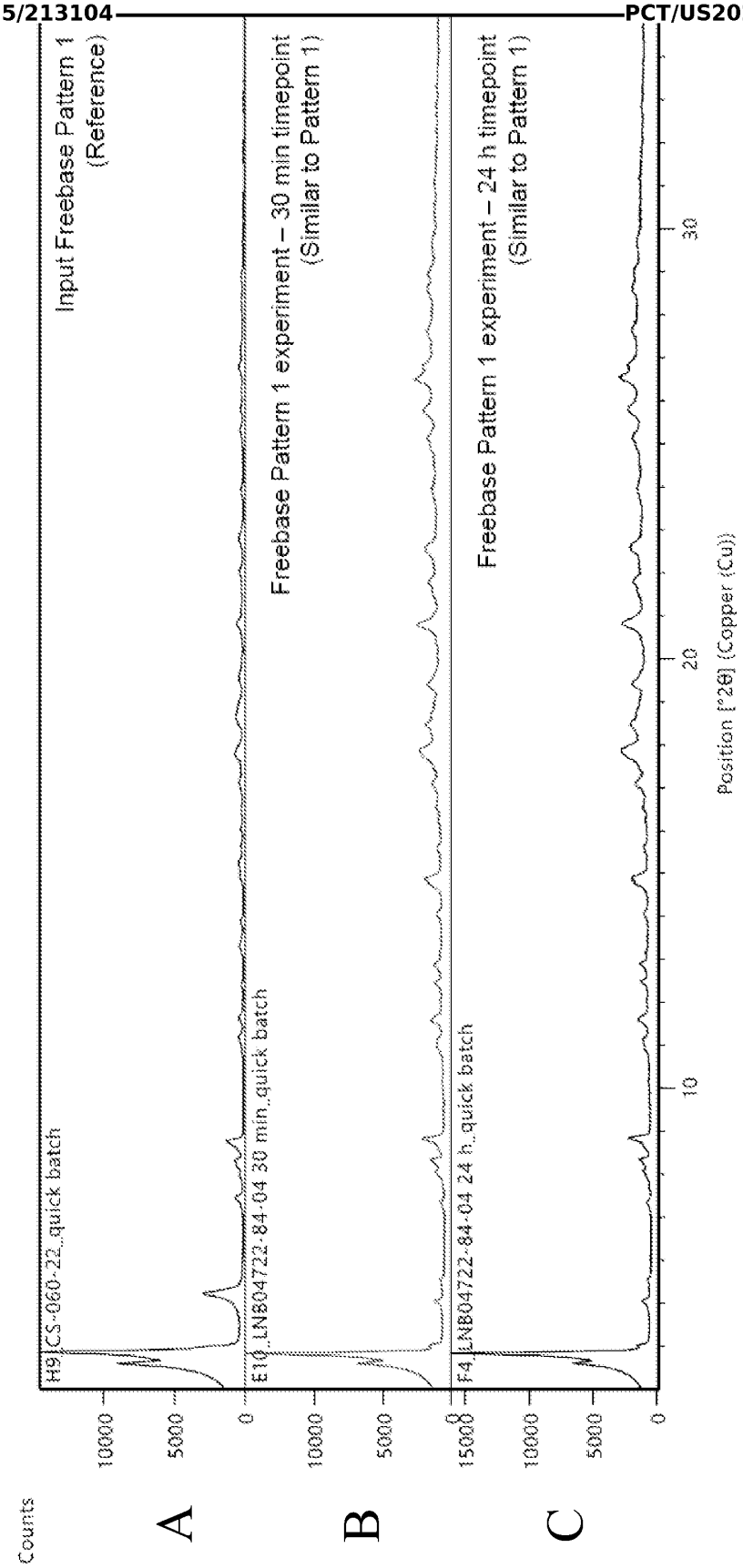

Input Freebase Pattern 1
(Reference)
H9 CS-060-22_quick batch
Freebase Pattern 1 experiment – 30 min timepoint
(Similar to Pattern 1)
E10 LNB04722-84-04 30 min_quick batch
Freebase Pattern 1 experiment – 24 h timepoint
(Similar to Pattern 1)
F4 LNB04722-84-04 24 h_quick batch
Counts
A
B
C
Position [°2θ] (Copper (Cu))

FIG 104

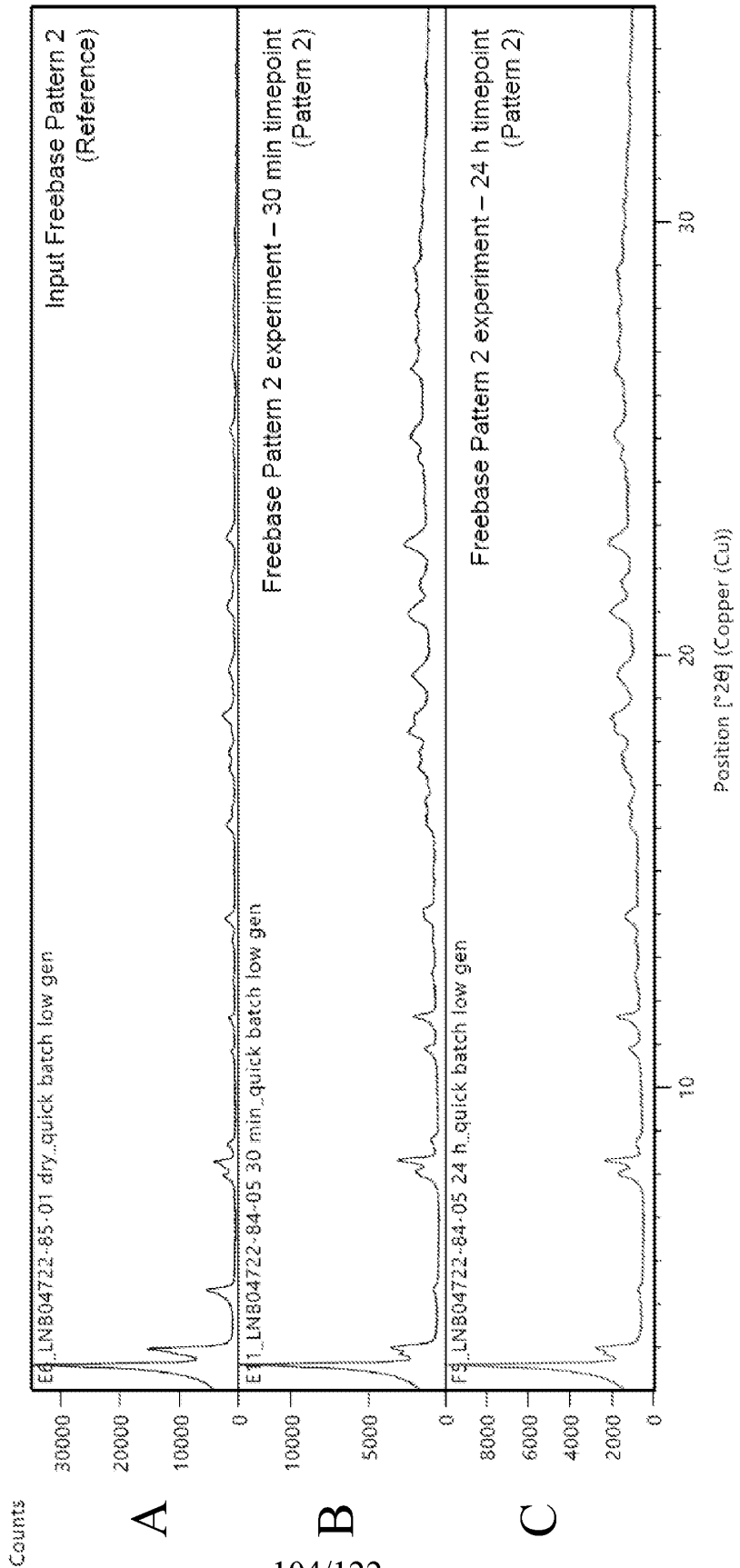

Input Freebase Pattern 2
(Reference)
E4_LNB04722-85-01 dry_quick batch low gen
Freebase Pattern 2 experiment – 30 min timepoint
(Pattern 2)
E11_LNB04722-84-05 30 min_quick batch low gen
Freebase Pattern 2 experiment – 24 h timepoint
(Pattern 2)
F9_LNB04722-84-05 24 h_quick batch low gen
A
B
C
Counts
30000
20000
10000
0
10000
5000
0
8000
6000
4000
2000
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 105

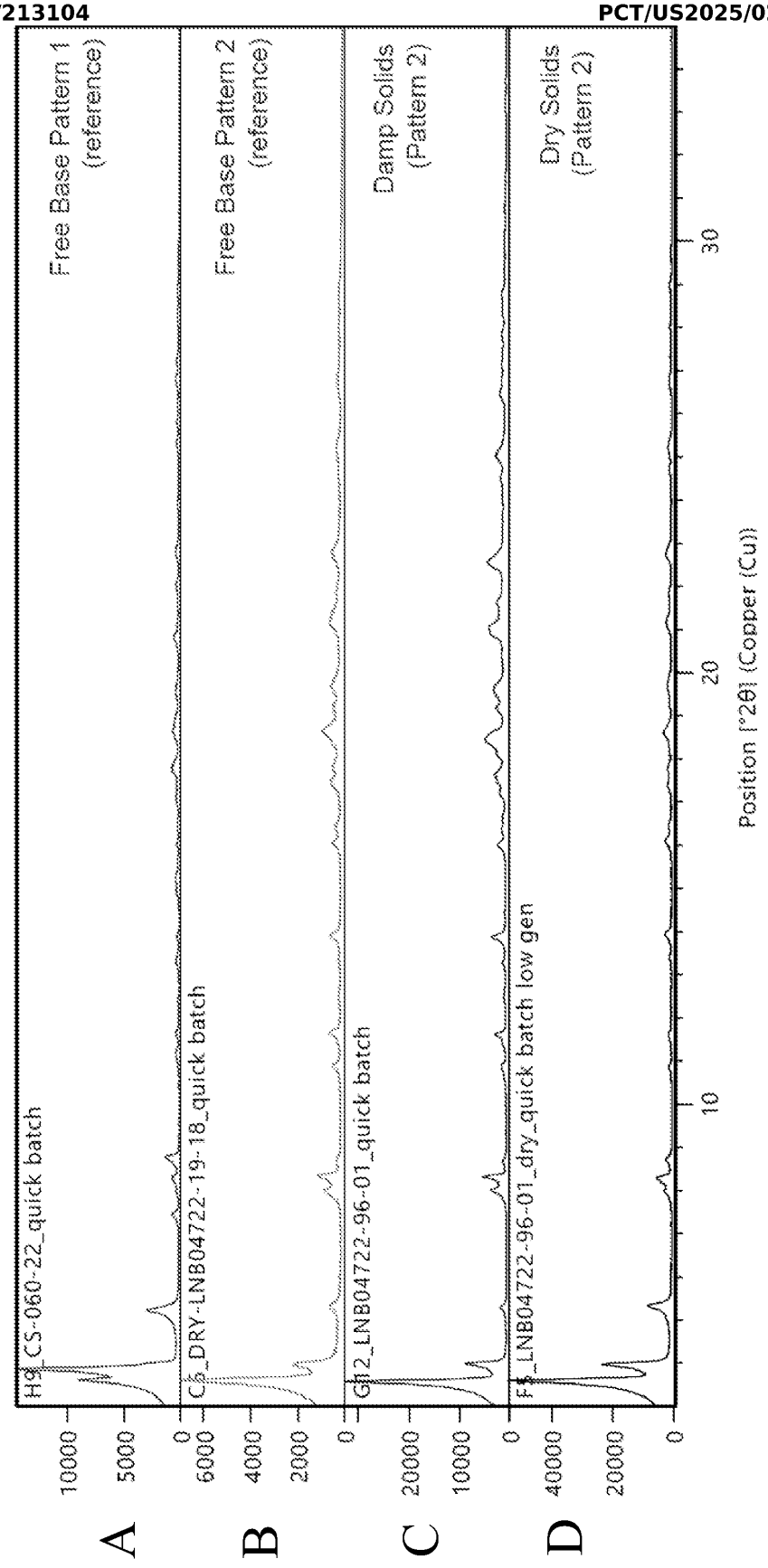

A
B
C
D
Free Base Pattern 1 (reference)
Free Base Pattern 2 (reference)
Damp Solids (Pattern 2)
Dry Solids (Pattern 2)
H9_CS-060-22_quick batch
C9_DRY-LNB04722-19-18_quick batch
G12_LNB04722-96-01_quick batch
F1_LNB04722-96-01_dry_quick batch low gen
10000
5000
0
6000
4000
2000
0
20000
10000
0
40000
20000
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 106

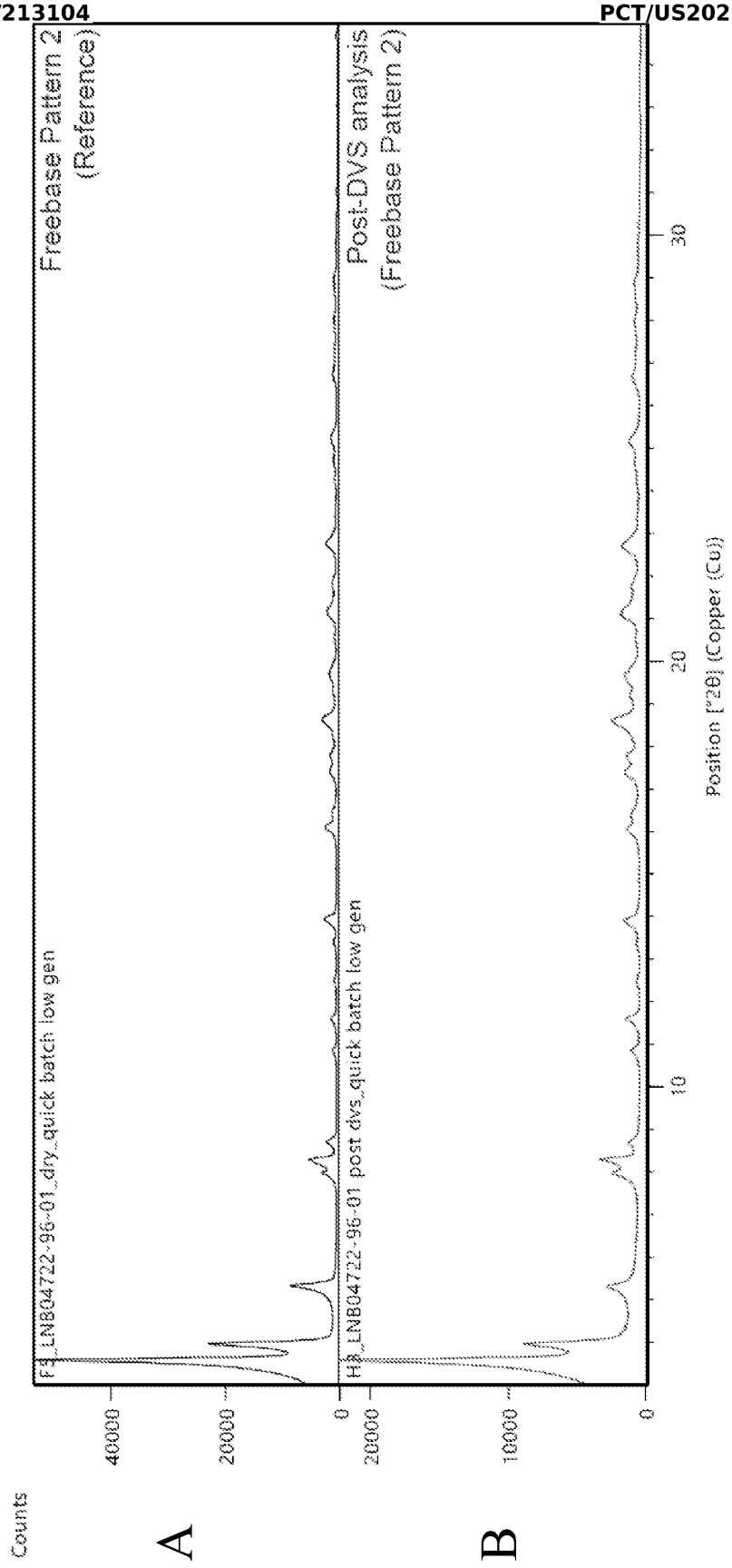

Freebase Pattern 2
(Reference)
F4_LNB04722-96-01_dry_quick batch low gen
Post-DVS analysis
(Freebase Pattern 2)
H3_LNB04722-96-01 post dvs_quick batch low gen
Counts
40000
20000
0
20000
10000
0
10
20
30
Position [°2θ] (Copper (Cu))
A
B

FIG 107

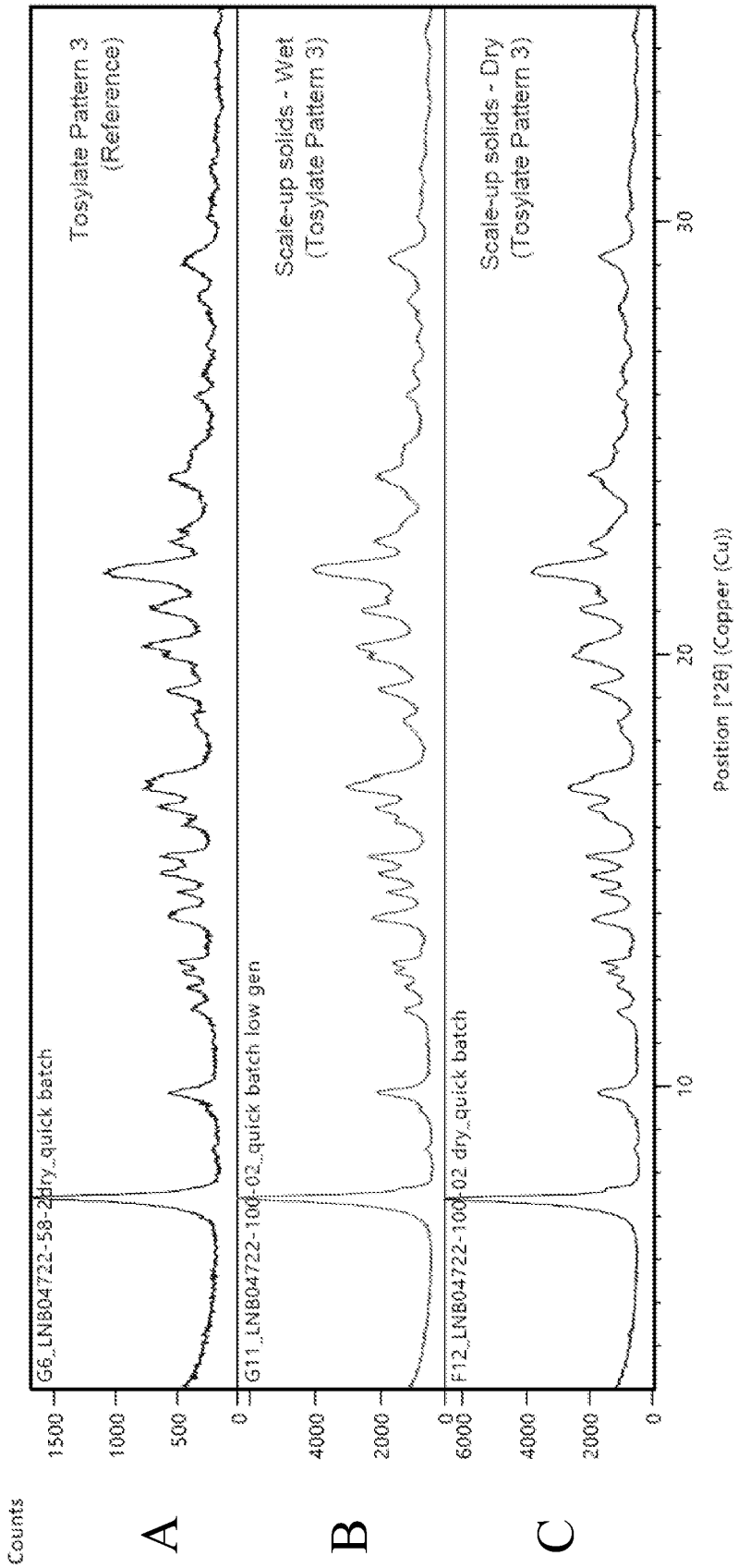

Tosylate Pattern 3
(Reference)
G6_LNB04722-58-2dry_quick batch
Scale-up solids - Wet
(Tosylate Pattern 3)
G11_LNB04722-100-02_quick batch low gen
Scale-up solids - Dry
(Tosylate Pattern 3)
F12_LNB04722-100-02 dry_quick batch
Counts
A
B
C
Position [°2θ] (Copper (Cu))

FIG 108

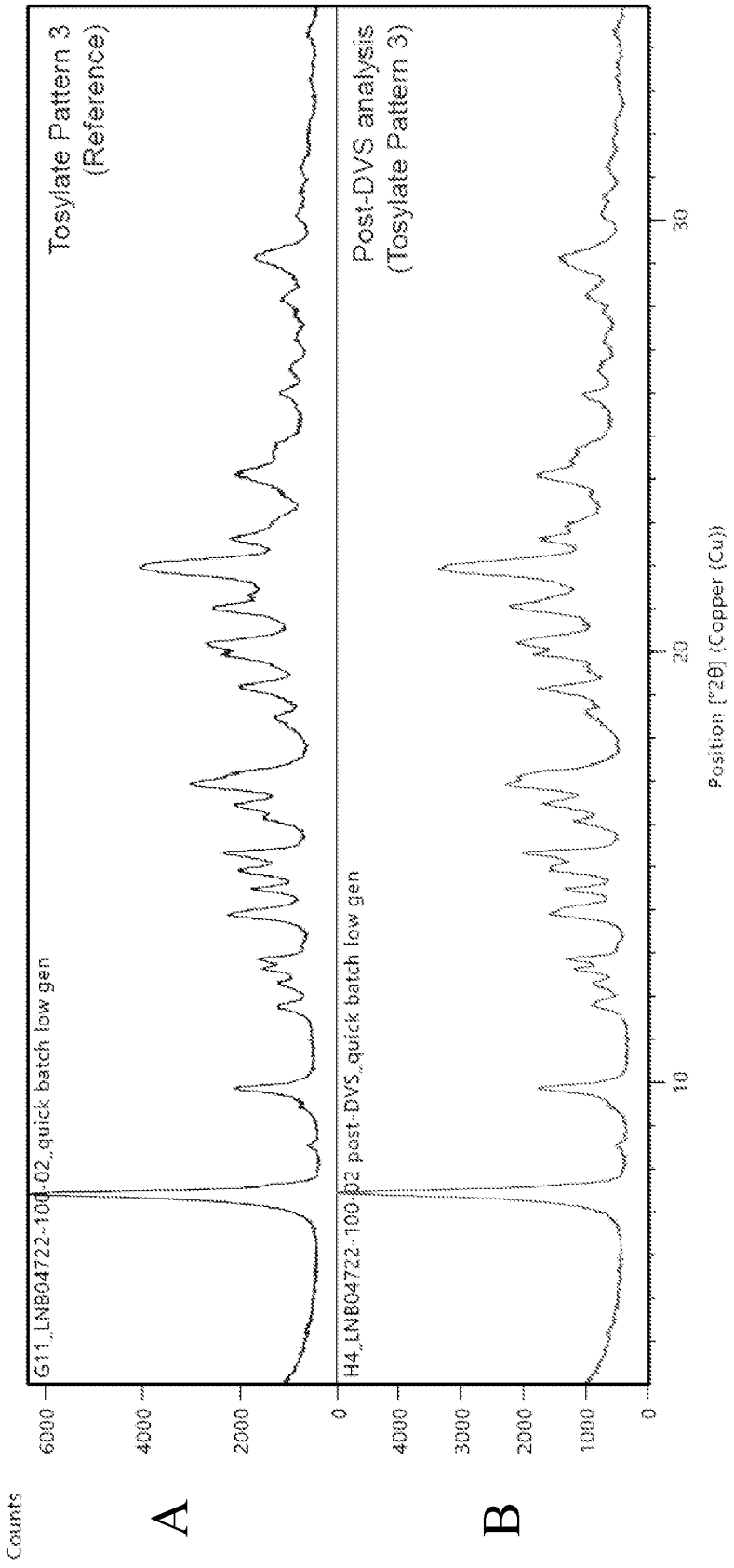

Tosylate Pattern 3
(Reference)
G11_LNB04722-100-02_quick batch low gen
Post-DVS analysis
(Tosylate Pattern 3)
H4_LNB04722-100-02 post-DVS_quick batch low gen
Counts
A
B
Position [°2θ] (Copper (Cu))

FIG 109

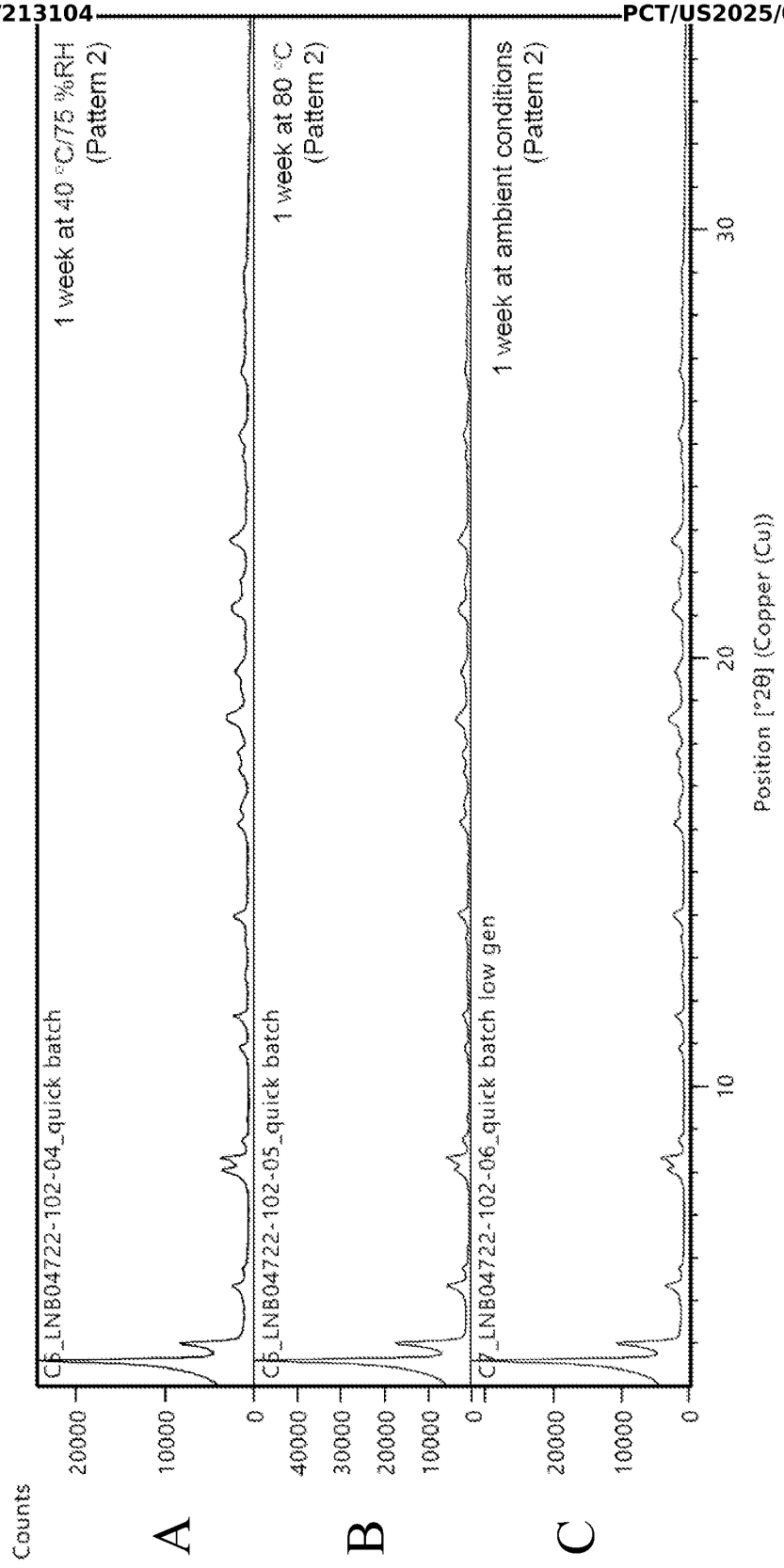

A
B
C
Counts
20000
10000
0
40000
30000
20000
10000
0
20000
10000
0
CP_LNB04722-102-04_quick batch
1 week at 40 °C/75 %RH
(Pattern 2)
CP_LNB04722-102-05_quick batch
1 week at 80 °C
(Pattern 2)
CP_LNB04722-102-06_quick batch low gen
1 week at ambient conditions
(Pattern 2)
10
20
30
Position [°2θ] (Copper (Cu))

FIG 110

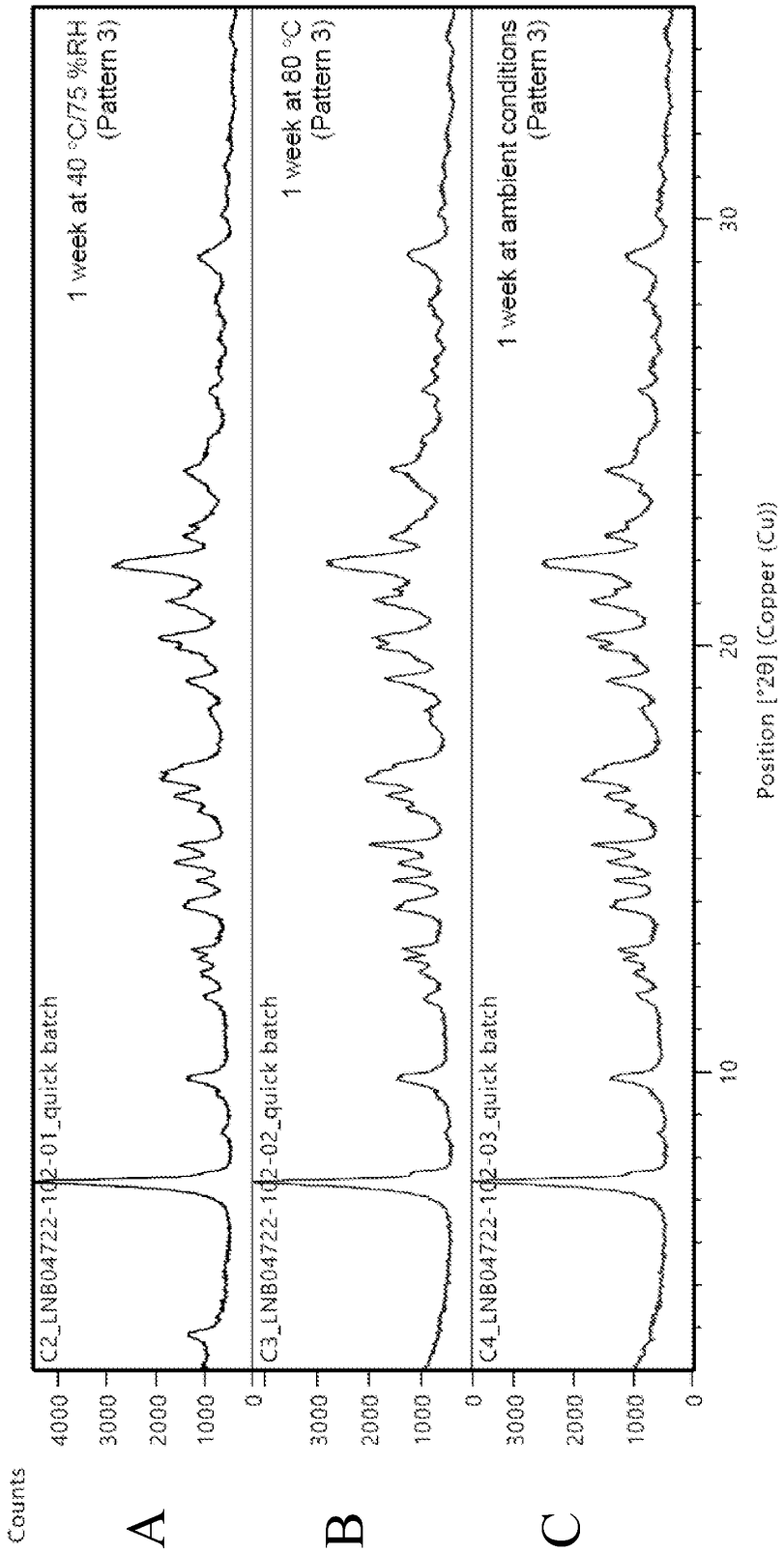

A
B
C
Counts
4000
3000
2000
1000
0
C2_LNB04722-102-01_quick batch
1 week at 40 °C/75 %RH
(Pattern 3)
C3_LNB04722-102-02_quick batch
1 week at 80 °C
(Pattern 3)
C4_LNB04722-102-03_quick batch
1 week at ambient conditions
(Pattern 3)
10
20
30
Position [°2θ] (Copper (Cu))

FIG 111

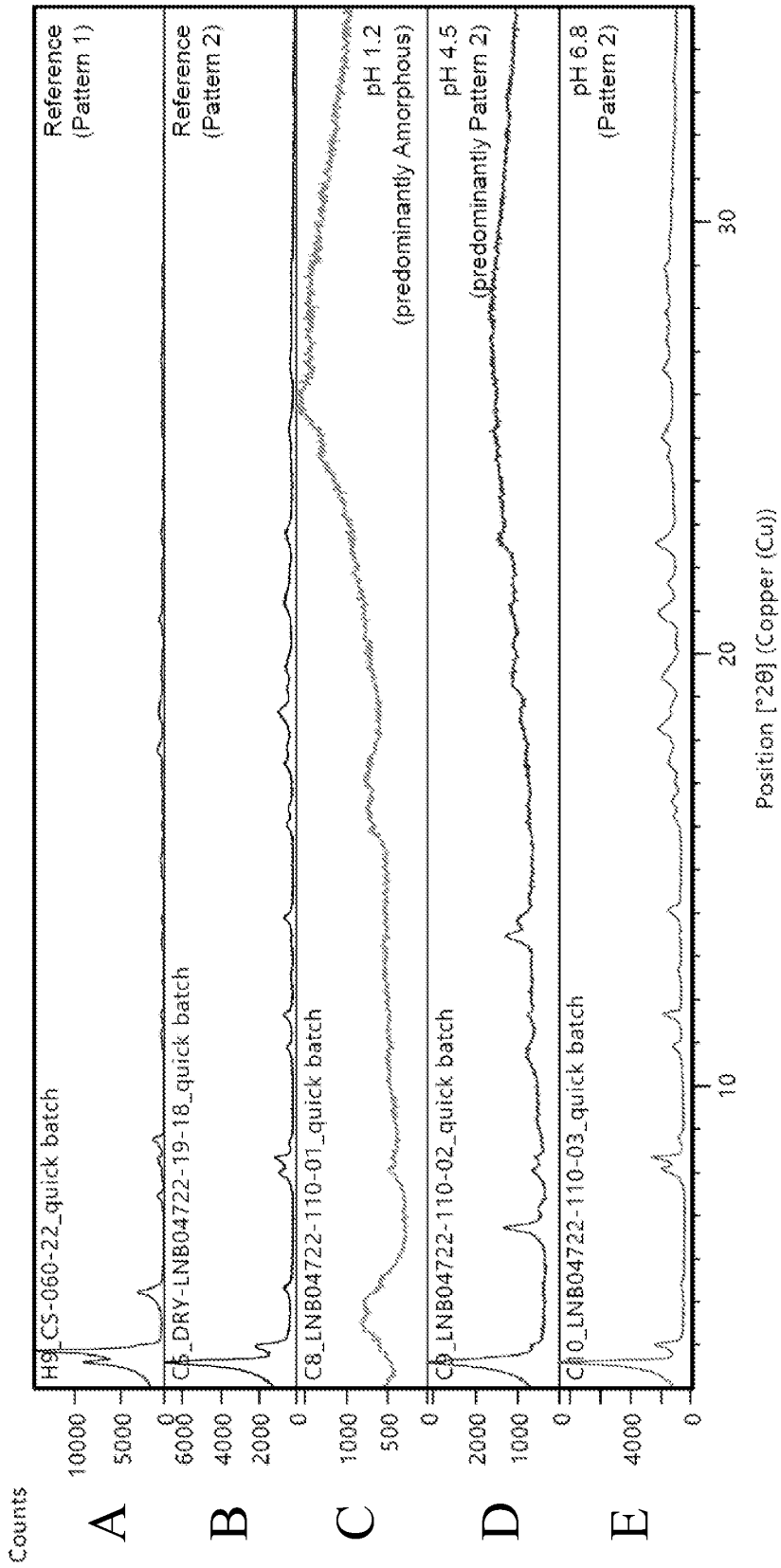

Counts
A
H9_CS-060-22_quick batch
Reference
(Pattern 1)
10000
5000
0
B
C8_DRY-LNB04722-19-18_quick batch
Reference
(Pattern 2)
6000
4000
2000
0
C
C8_LNB04722-110-01_quick batch
pH 1.2
(predominantly Amorphous)
1000
500
0
D
C8_LNB04722-110-02_quick batch
pH 4.5
(predominantly Pattern 2)
2000
1000
0
E
C8_LNB04722-110-03_quick batch
pH 6.8
(Pattern 2)
4000
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 112

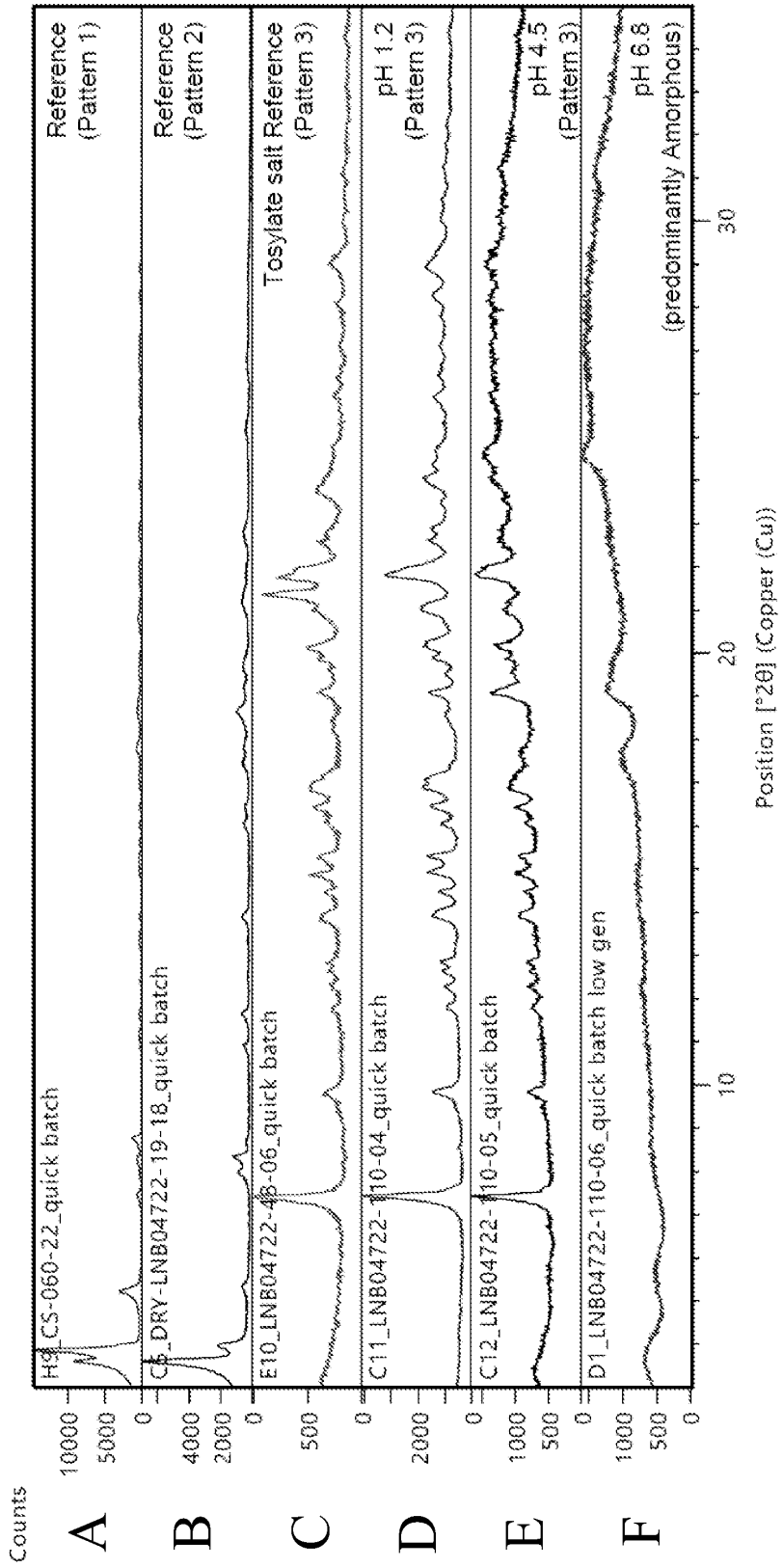

Counts
A
B
C
D
E
F
H3_CS-060-22_quick batch
Reference (Pattern 1)
C4_DRY-LNB04722-19-18_quick batch
Reference (Pattern 2)
E10_LNB04722-48-06_quick batch
Tosylate salt Reference (Pattern 3)
C11_LNB04722-110-04_quick batch
pH 1.2 (Pattern 3)
C12_LNB04722-110-05_quick batch
pH 4.5 (Pattern 3)
D1_LNB04722-110-06_quick batch low gen
pH 6.8 (predominantly Amorphous)
Position [°2θ] (Copper (Cu))

FIG 113

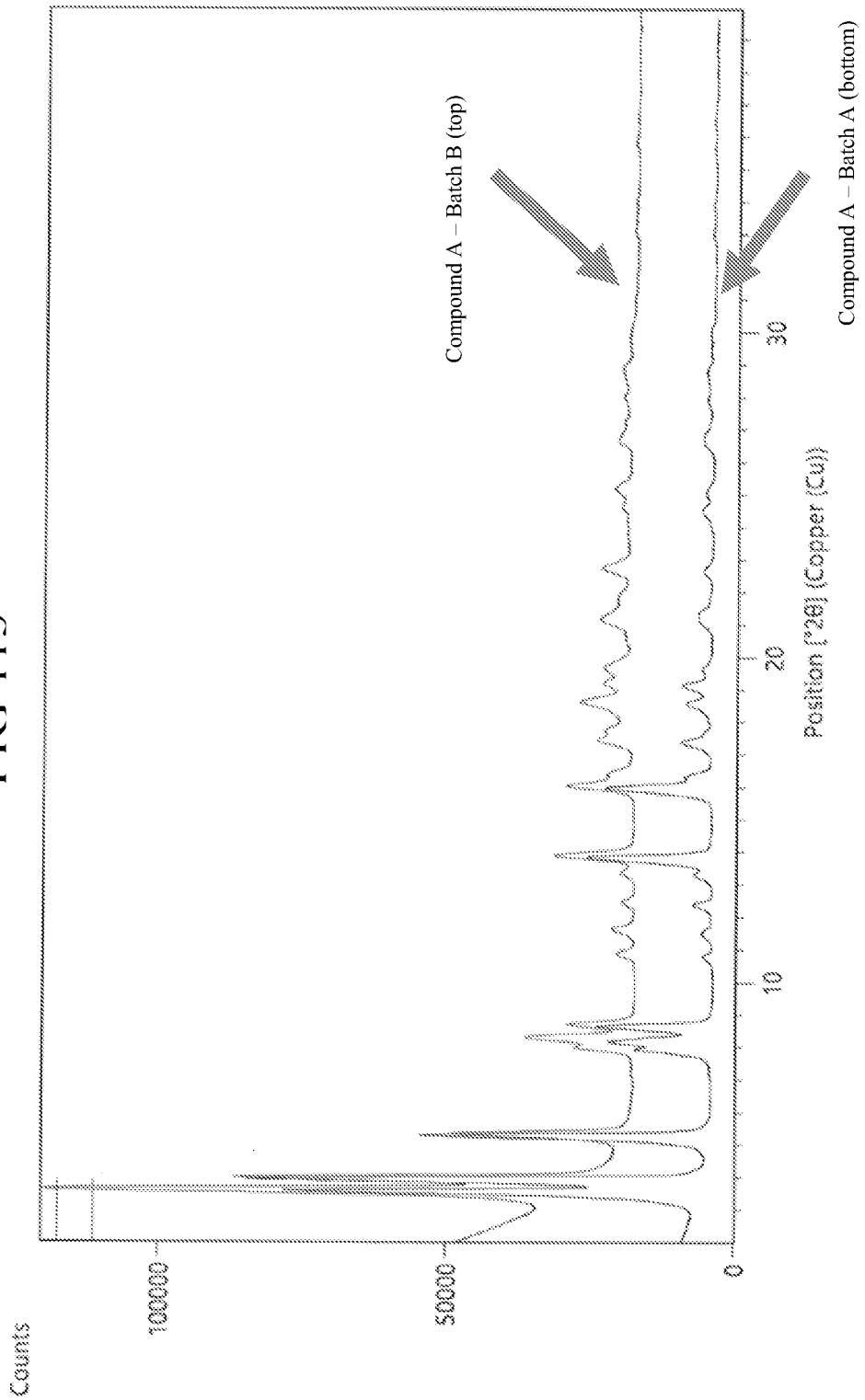

Compound A – Batch B (top)
Compound A – Batch A (bottom)
Counts
100000
50000
0
10
20
30
Position [°2θ] (Copper (Cu))

FIG 114

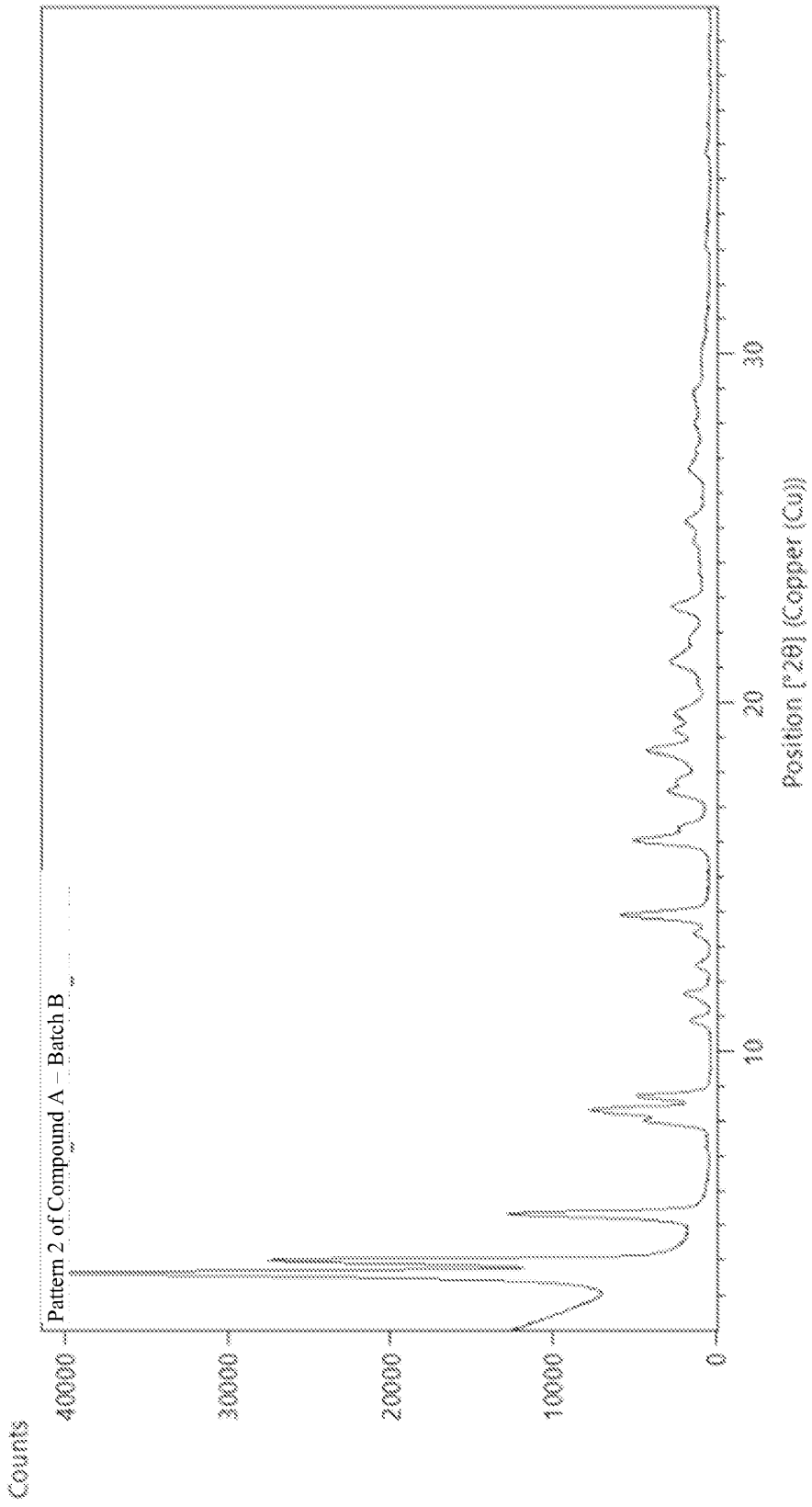

Counts
40000
30000
20000
10000
0
Pattern 2 of Compound A – Batch B
10
20
30
Position [°2θ] (Copper (Cu))

FIG 115

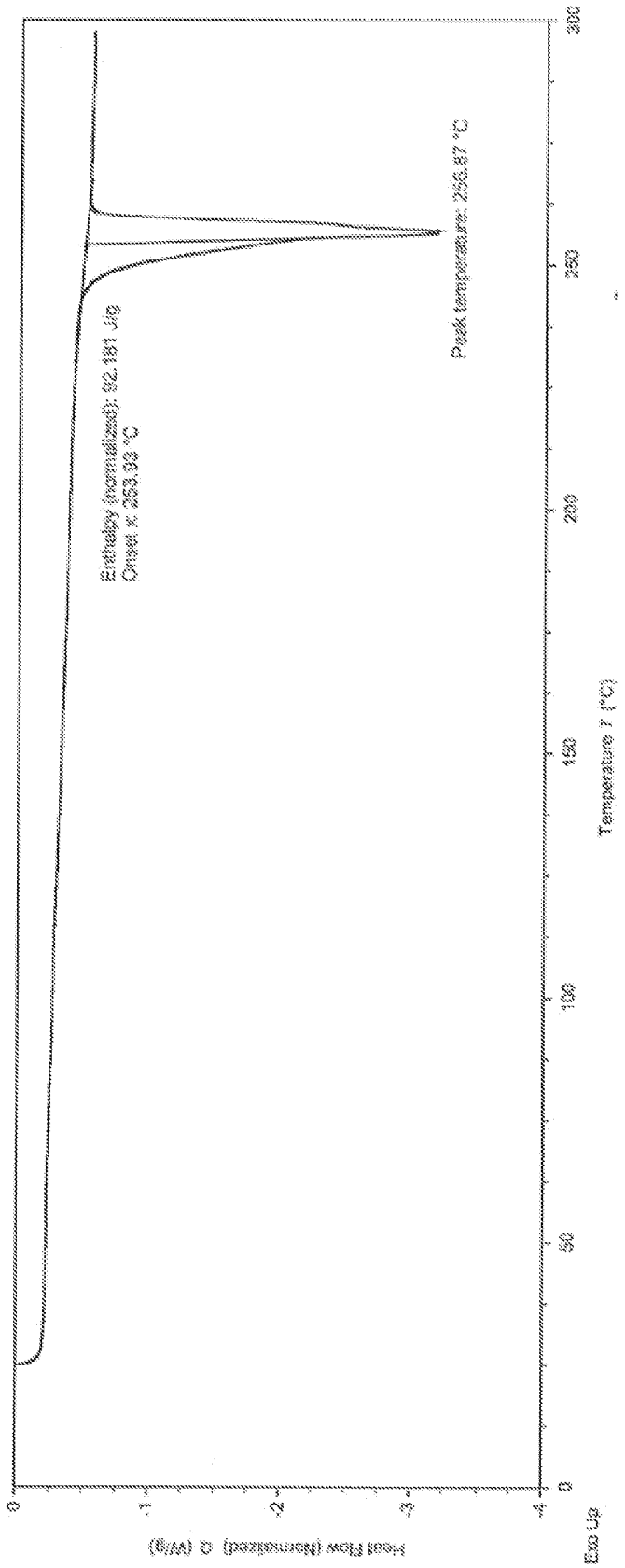

Peak temperature: 256.67 °C
Enthalpy (normalized): 82.181 J/g
Onset: x: 253.93 °C
Temperature T (°C)
Heat Flow (Normalized) Q (W/g)
Exo Up

FIG 116

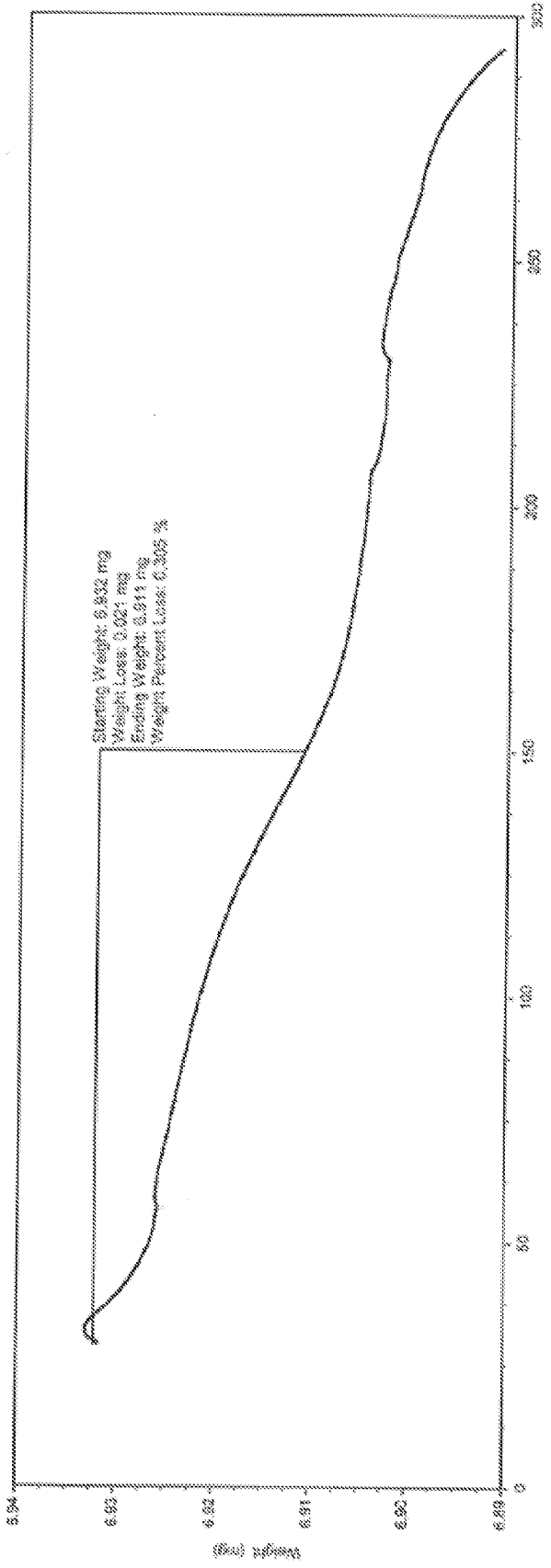

Starting Weight: 6.933 mg
Weight Loss: 0.021 mg
Ending Weight: 6.911 mg
Weight Percent Loss: 0.305 %
6.94
6.93
6.92
6.91
6.90
6.89
Weight (mg)
0
50
100
150
200
250
300

FIG 117

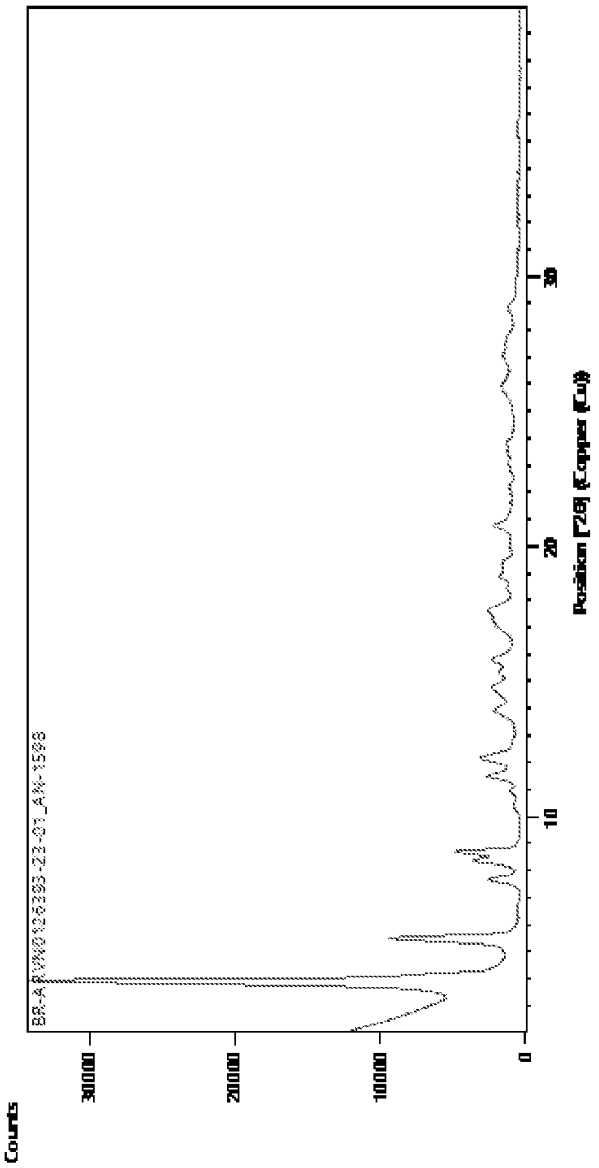


FIG 118

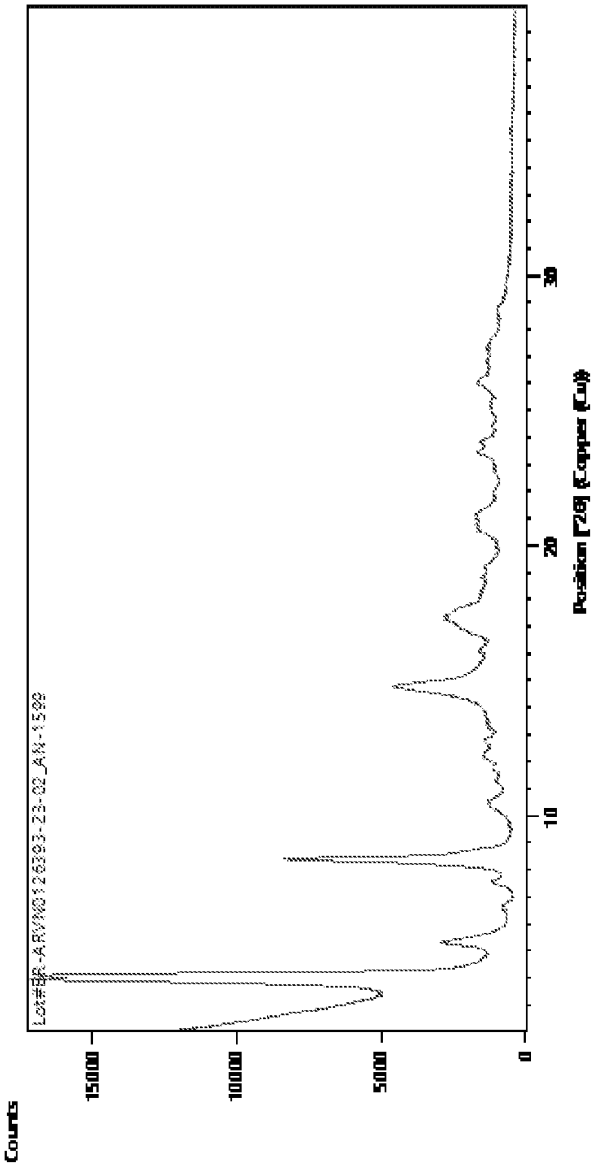


FIG 119

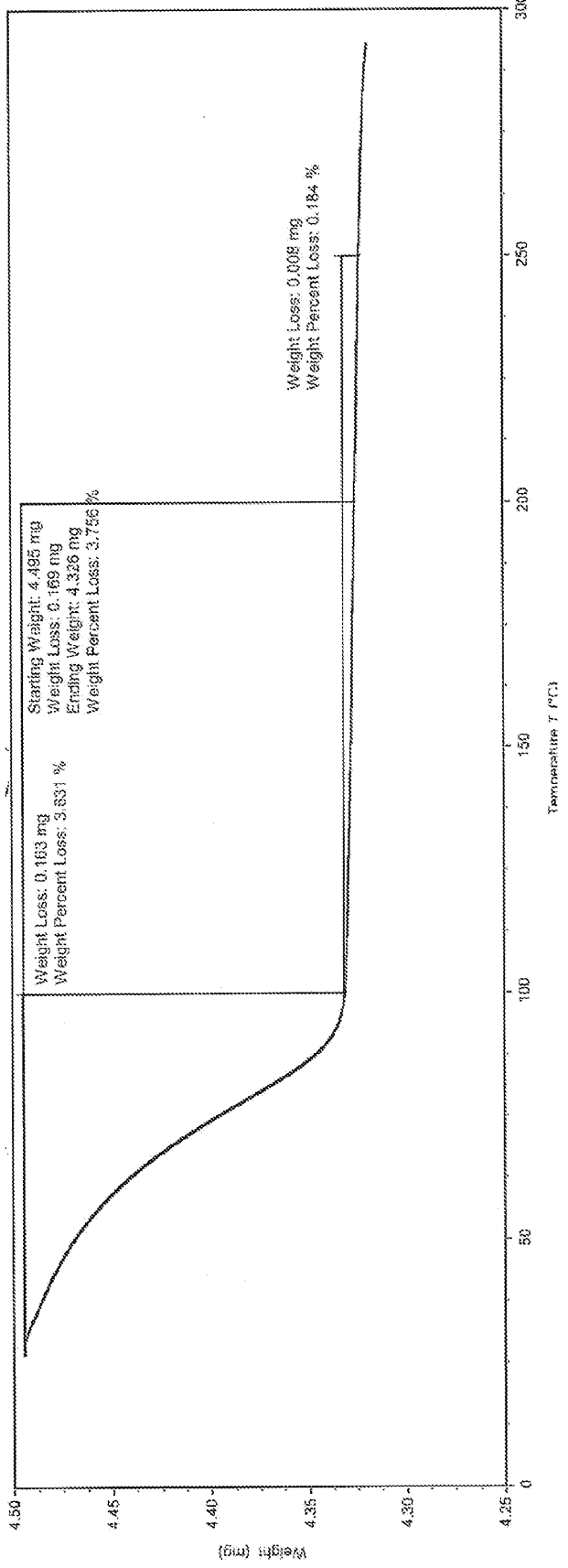

Starting Weight: 4.495 mg
Weight Loss: 0.169 mg
Ending Weight: 4.326 mg
Weight Percent Loss: 3.756 %
Weight Loss: 0.163 mg
Weight Percent Loss: 3.631 %
Weight Loss: 0.008 mg
Weight Percent Loss: 0.184 %
Weight (mg)
4.50
4.45
4.40
4.35
4.30
4.25
0
50
100
150
200
250
300

FIG 120

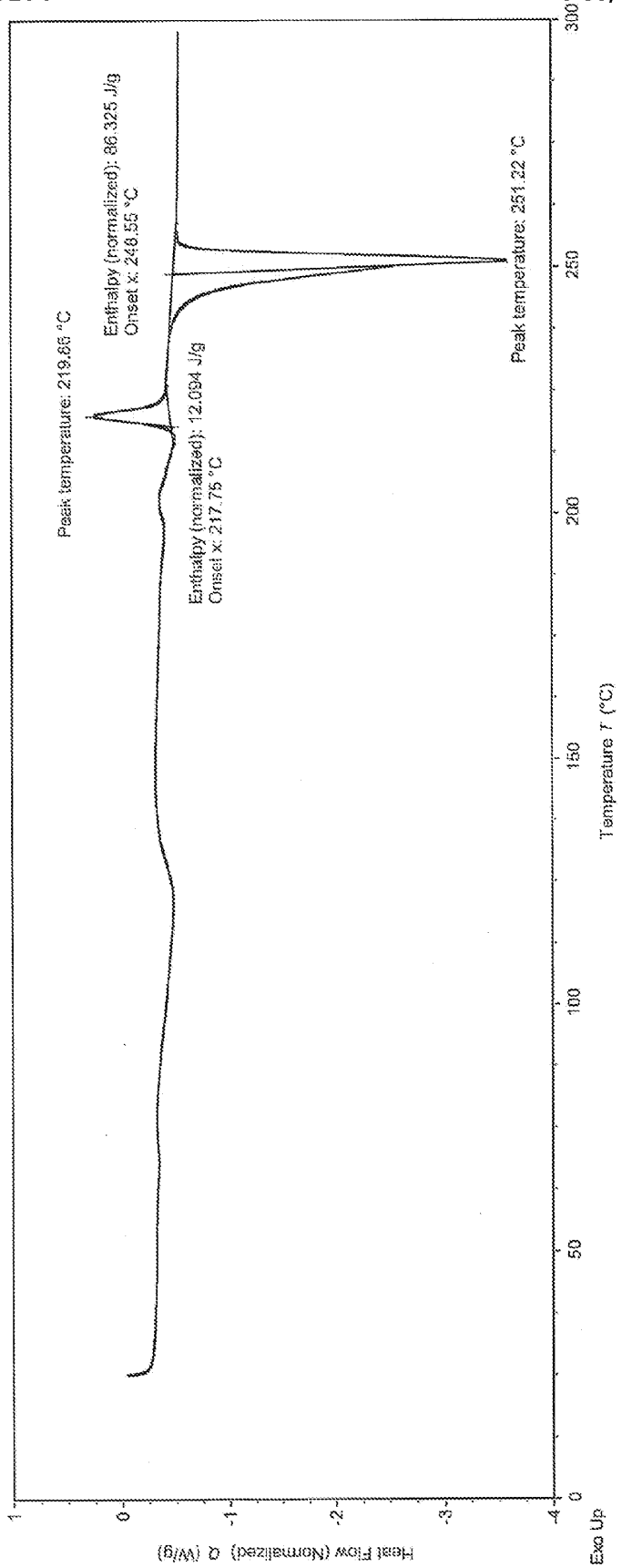

Peak temperature: 219.65 °C
Enthalpy (normalized): 86.325 J/g
Onset x: 248.55 °C
Enthalpy (normalized): 12.094 J/g
Onset x: 217.75 °C
Peak temperature: 251.22 °C
Heat Flow (Normalized) Q (W/g)
Exo Up
Temperature T (°C)
1
0
-1
-2
-3
-4
0
50
100
150
200
250
300

FIG 121

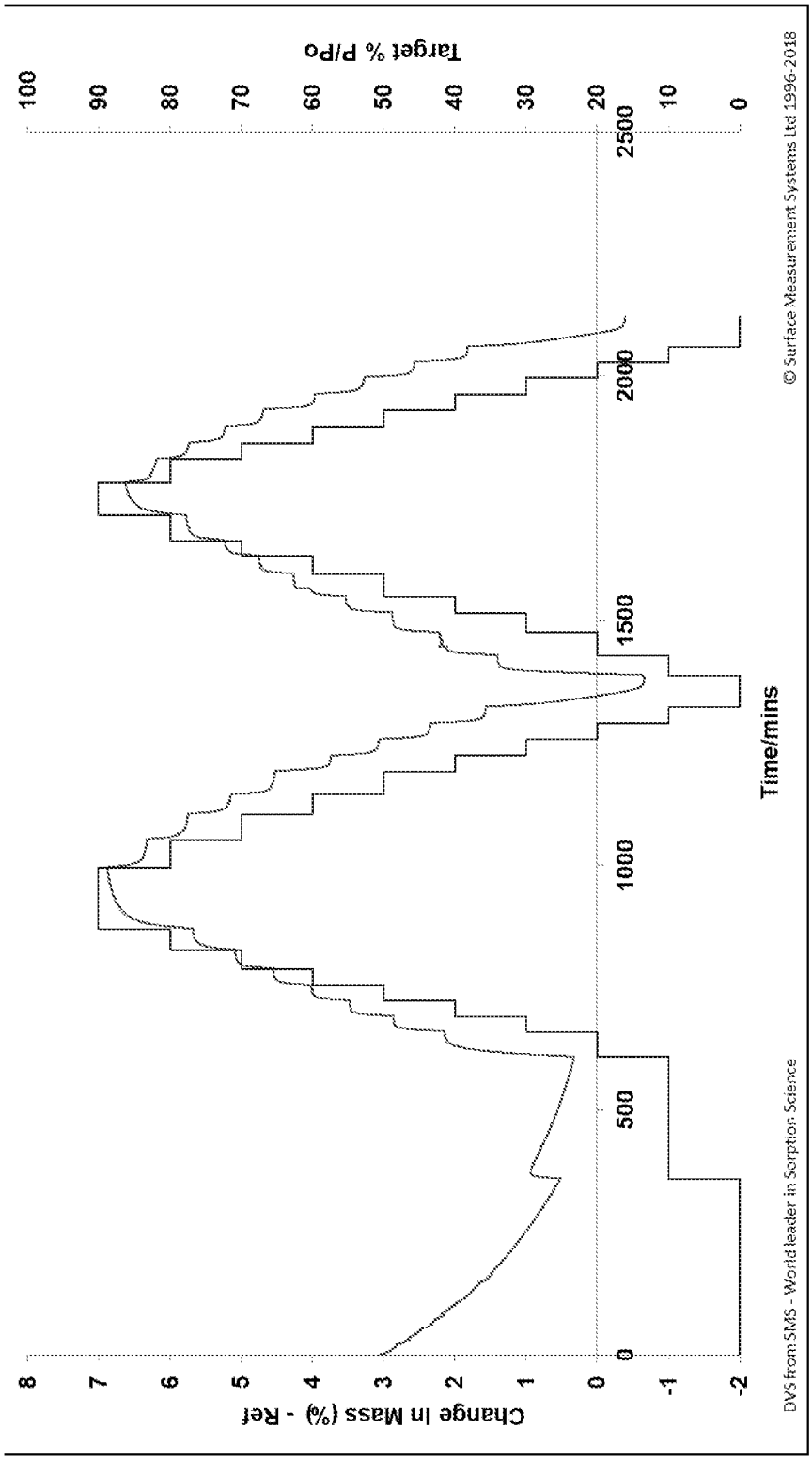
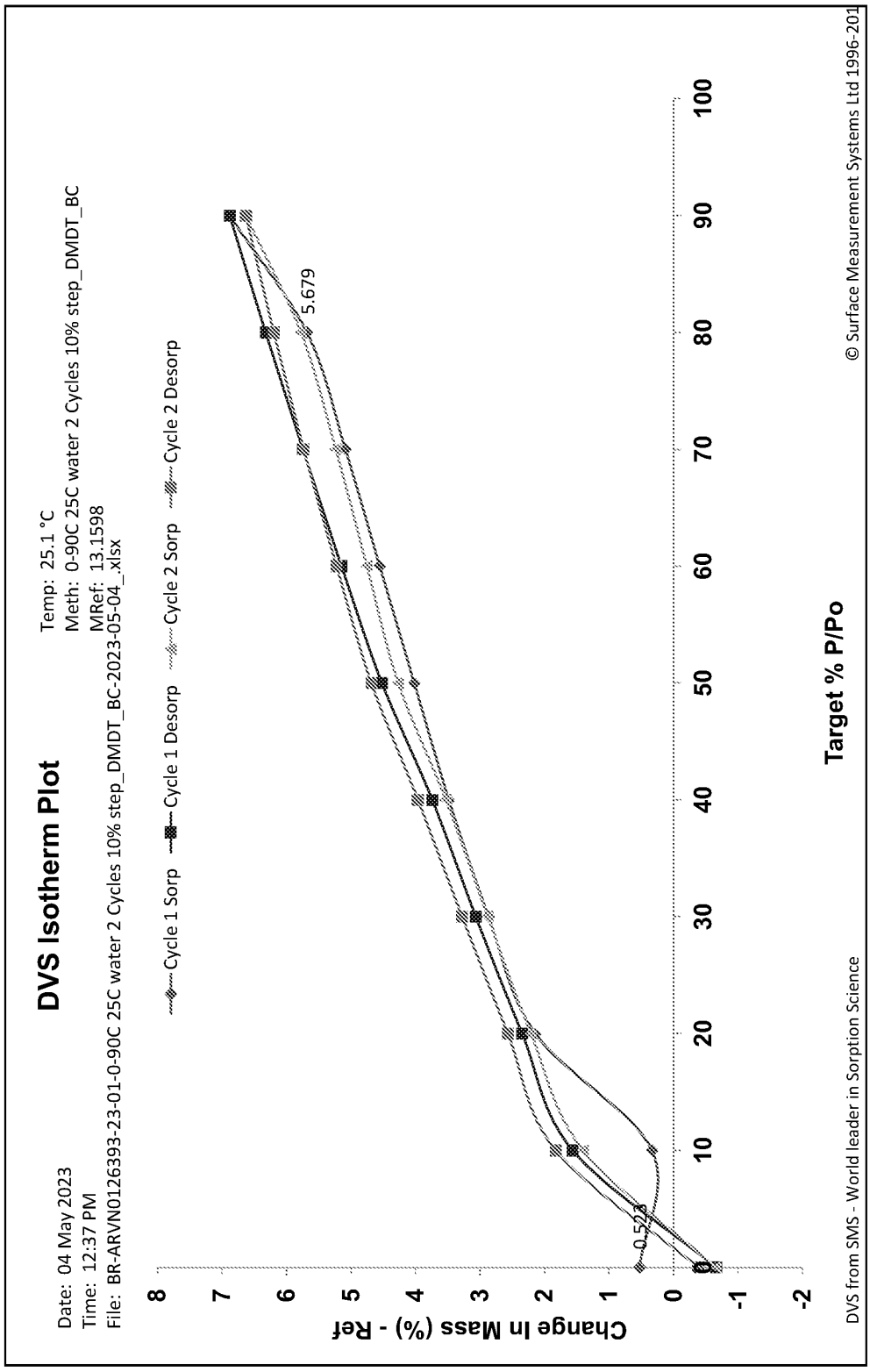

Change in Mass (%) - Ref
Target % P/Po
Time/mins
DVS from SMS - World leader in Sorption Science
© Surface Measurement Systems Ltd 1996-2018

FIG 122


DVS Isotherm Plot
Temp: 25.1 °C
Meth: 0-90C 25C water 2 Cycles 10% step_DMDT_BC
MRef: 13.1598
Date: 04 May 2023
Time: 12:37 PM
File: BR-ARVN0126393-23-01-0-90C 25C water 2 Cycles 10% step_DMDT_BC-2023-05-04_.xlsx
Cycle 1 Sorp
Cycle 1 Desorp
Cycle 2 Sorp
Cycle 2 Desorp
5.679
-0.523
Change In Mass (%) - Ref
Target % P/Po
DVS from SMS - World leader in Sorption Science
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