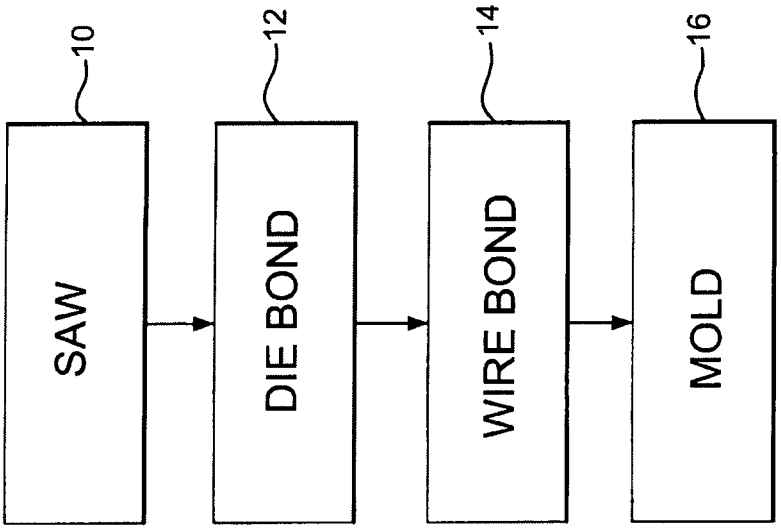


FIG. 1
(Prior Art)

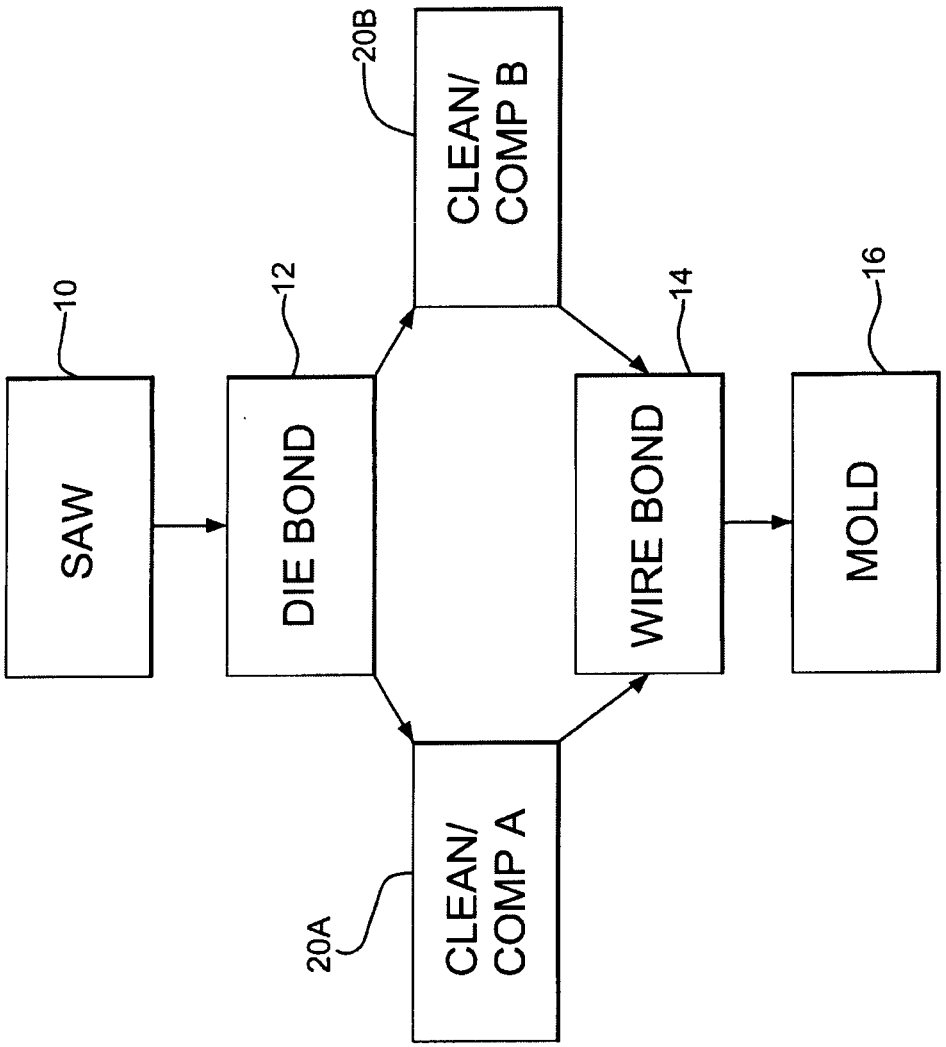

SAW
10
DIE BOND
12
CLEAN/
COMP B
20B
CLEAN/
COMP A
20A
WIRE BOND
14
MOLD
16

FIG. 2

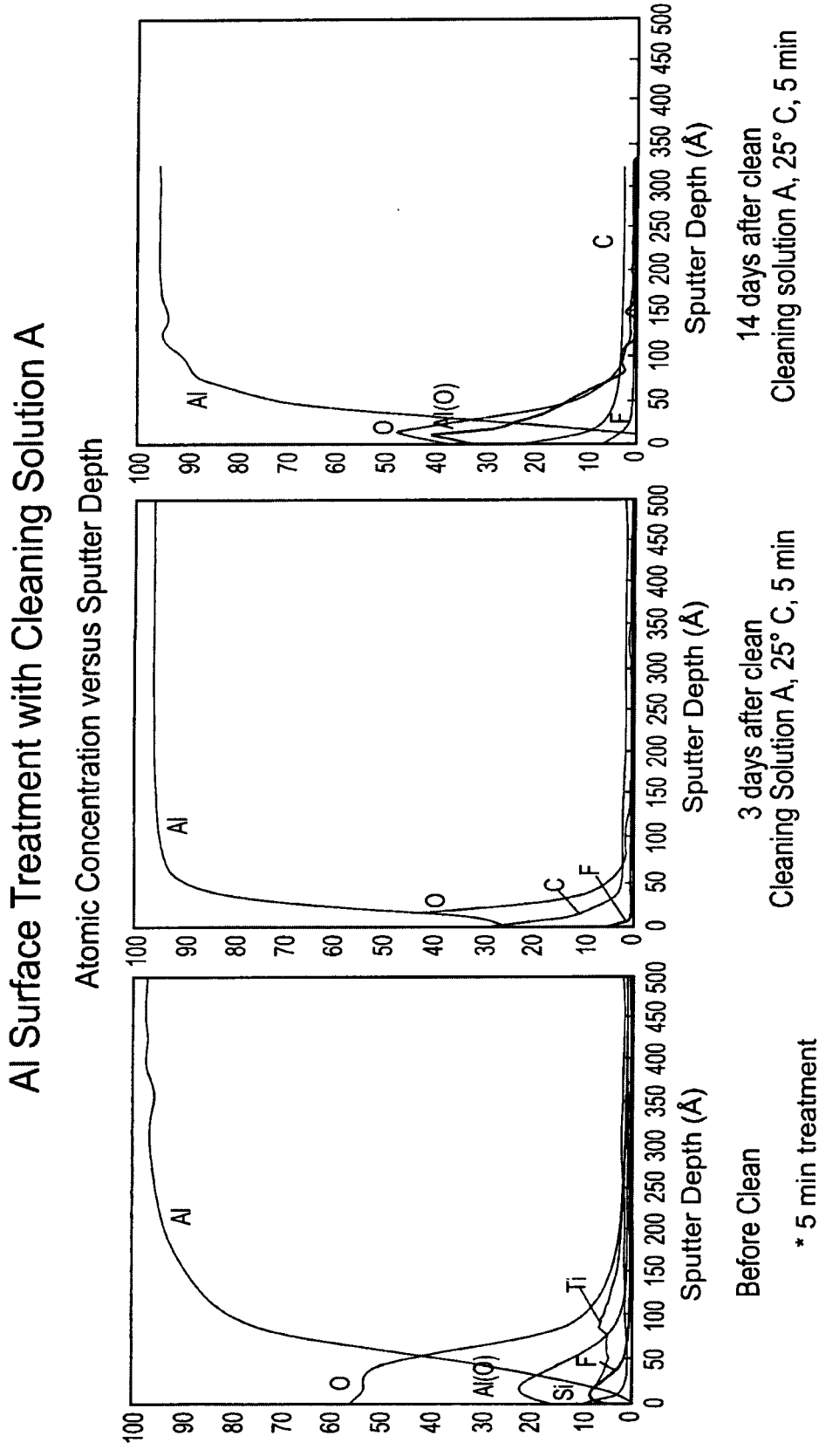

Al Surface Treatment with Cleaning Solution A
Atomic Concentration versus Sputter Depth
Al
O
Al(O)
Si
Ti
F
C
Sputter Depth (Å)
Before Clean
* 5 min treatment
3 days after clean
Cleaning Solution A, 25° C, 5 min
14 days after clean
Cleaning solution A, 25° C, 5 min

FIG. 3

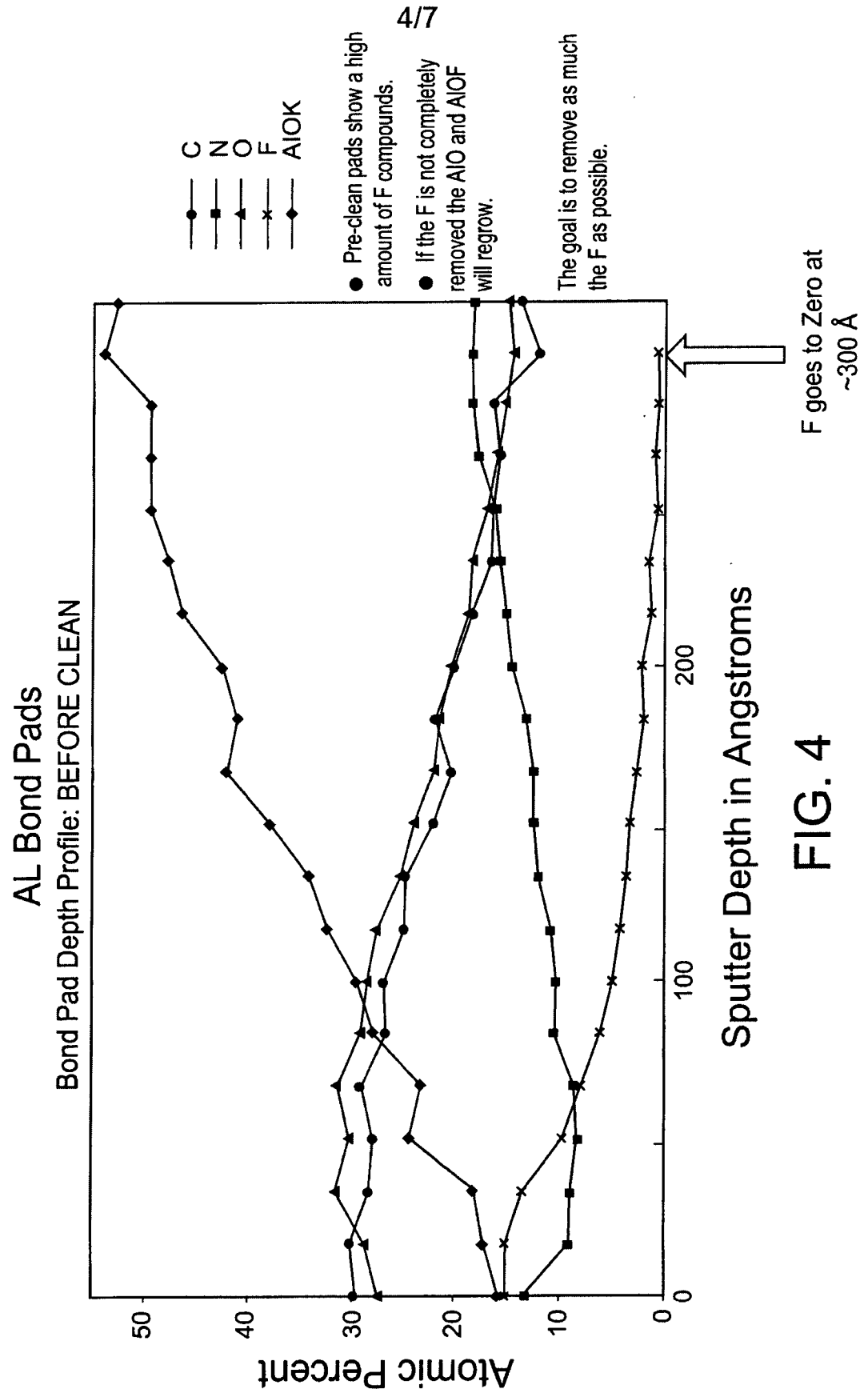

AL Bond Pads
Bond Pad Depth Profile: BEFORE CLEAN
C
N
O
F
AlOK
Pre-clean pads show a high amount of F compounds.
If the F is not completely removed the AlO and AlOF will regrow.
The goal is to remove as much the F as possible.
F goes to Zero at ~300 Å
Atomic Percent
0
10
20
30
40
50
0
100
200
Sputter Depth in Angstroms

FIG. 4

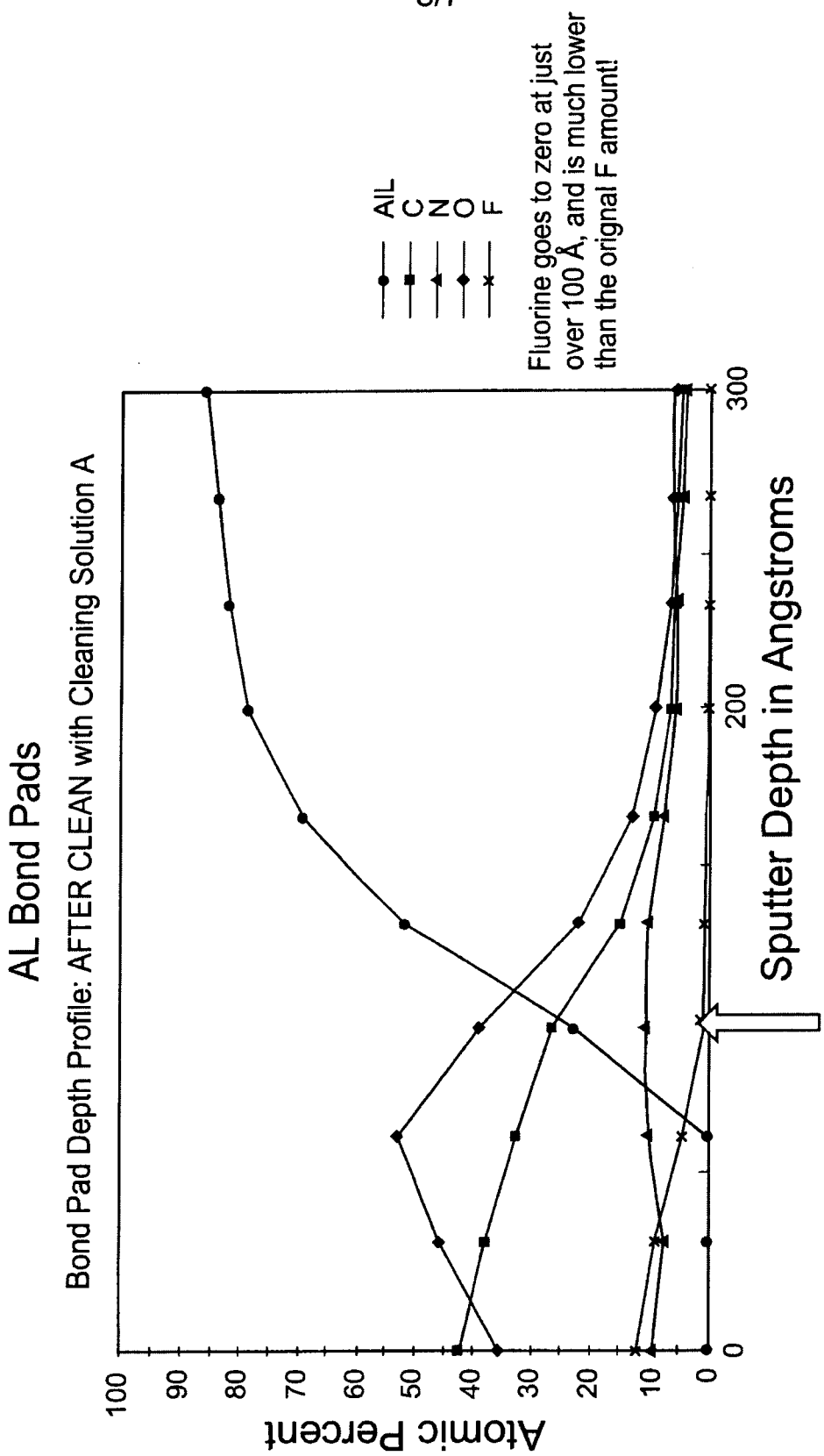

AL Bond Pads
Bond Pad Depth Profile: AFTER CLEAN with Cleaning Solution A
Atomic Percent
Sputter Depth in Angstroms
AlL
C
N
O
F
Fluorine goes to zero at just over 100 Å, and is much lower than the orignal F amount!
F goes to Zero at ~100 Å
0
10
20
30
40
50
60
70
80
90
100
0
200
300

FIG. 5

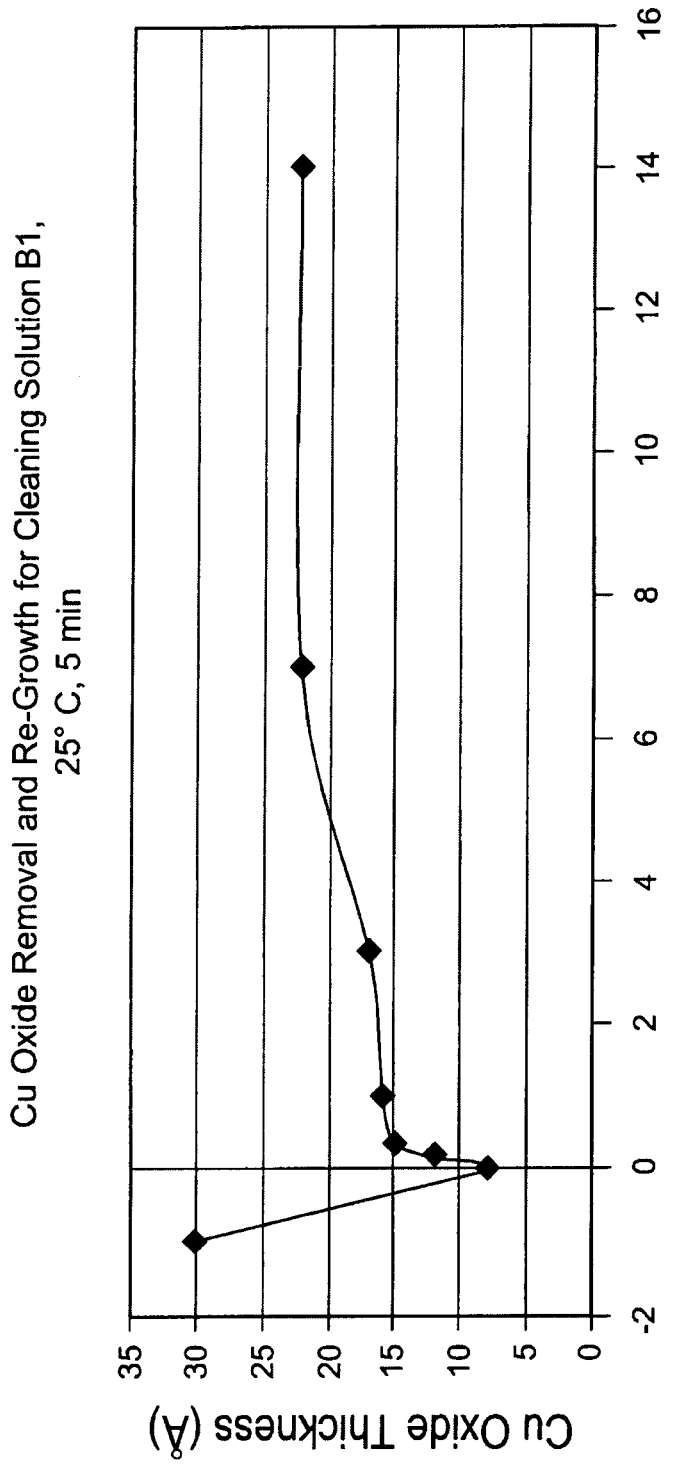

Cu Oxide Removal and Re-Growth for Cleaning Solution B1,
25° C, 5 min
Cu Oxide Thickness (Å)
35
30
25
20
15
10
5
0
-2
0
2
4
6
8
10
12
14
16
Time (days)

FIG. 6

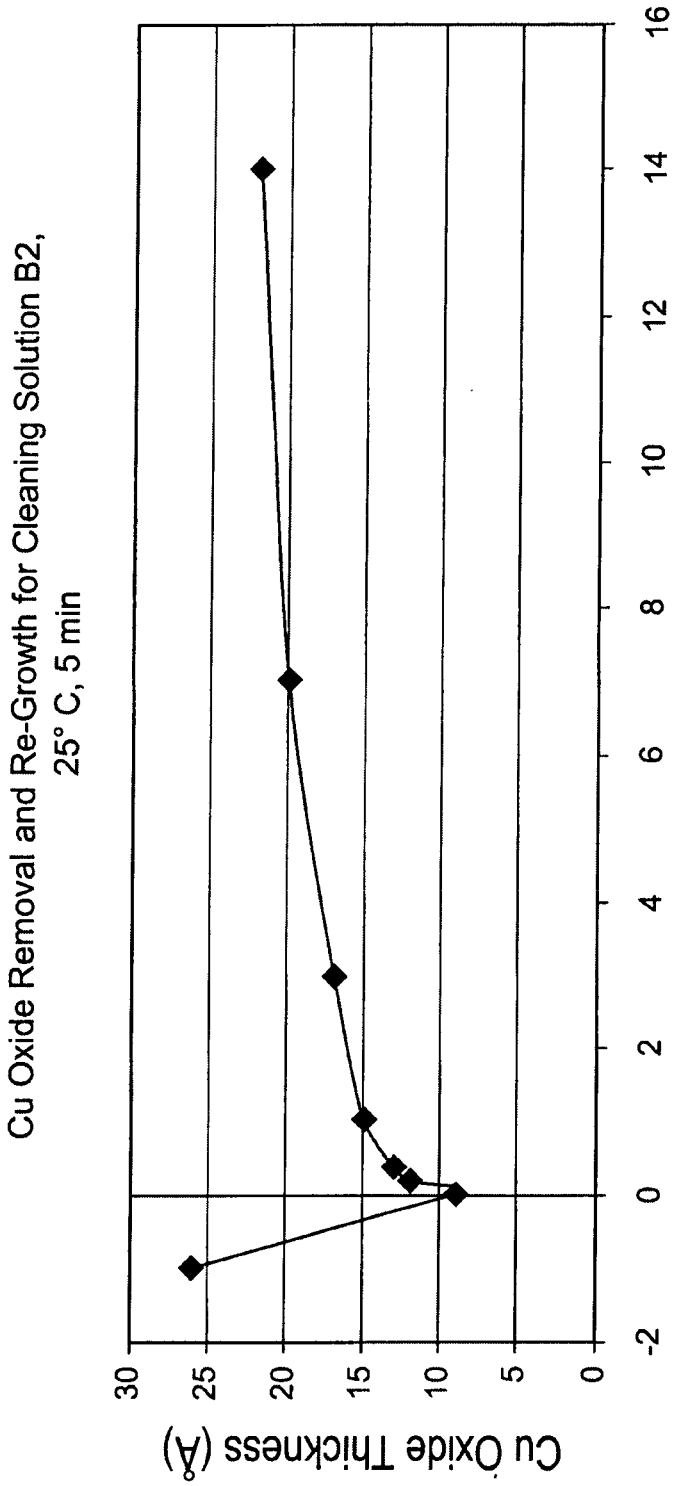

Cu Oxide Removal and Re-Growth for Cleaning Solution B2,
25° C, 5 min
Cu Oxide Thickness (Å)
30
25
20
15
10
5
0
-2
0
2
4
6
8
10
12
14
16
Time (days)

FIG. 7