

1 / 53

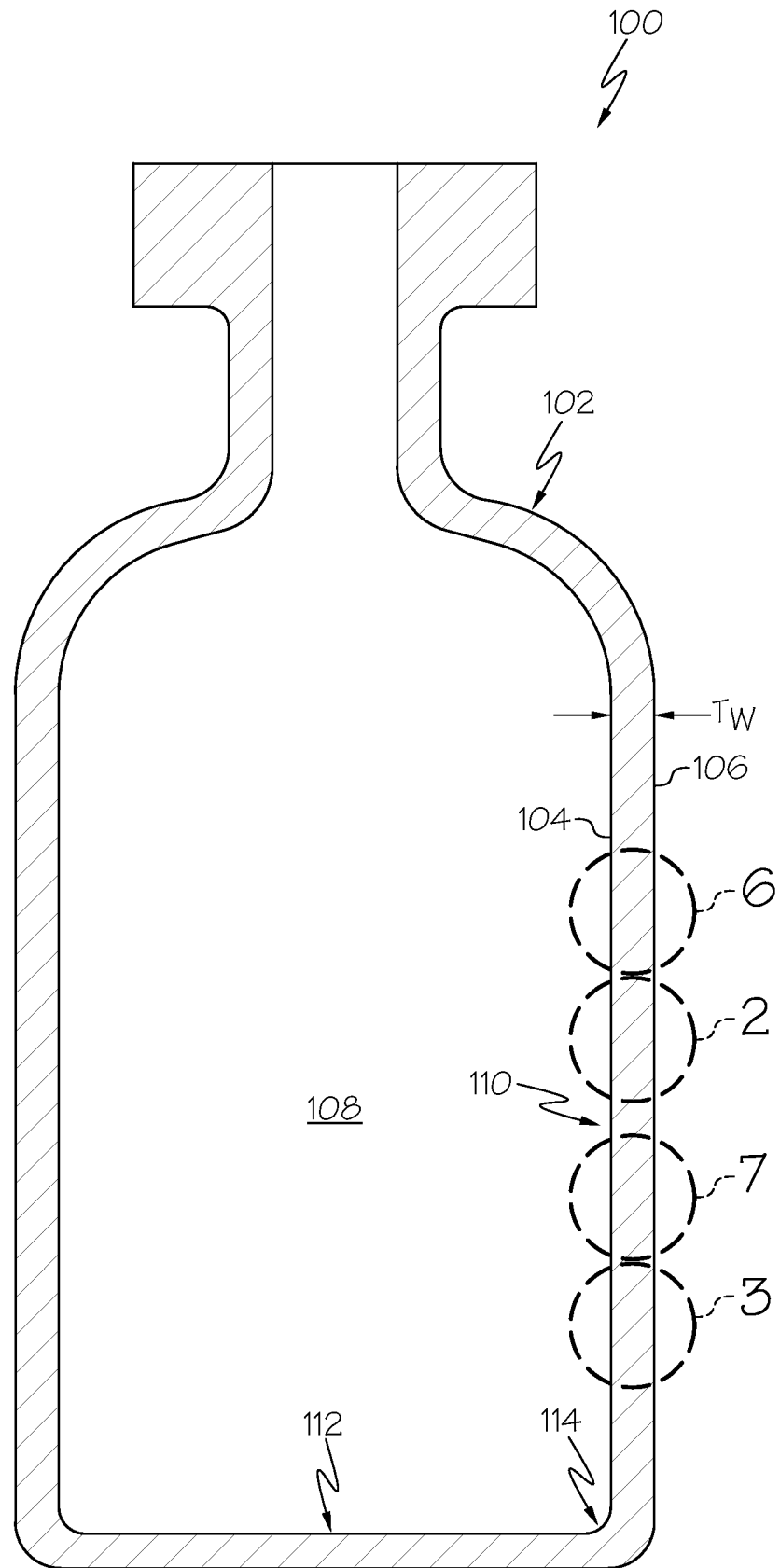


FIG. 1

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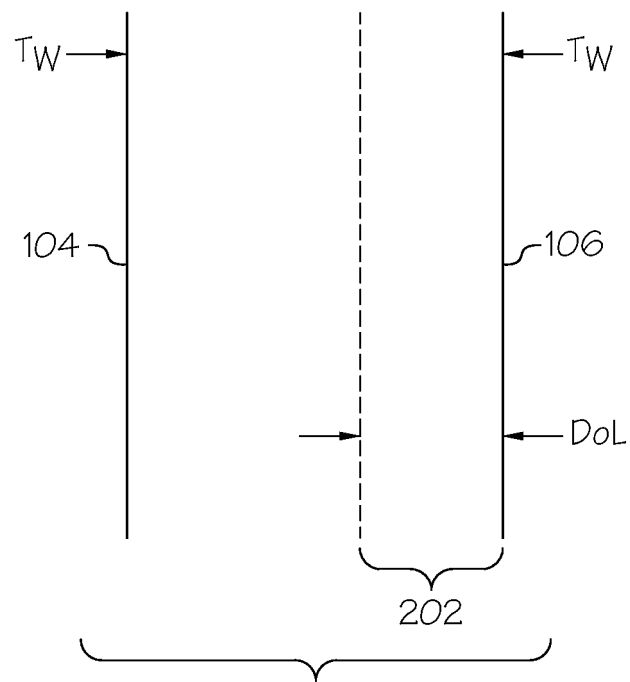


FIG. 2

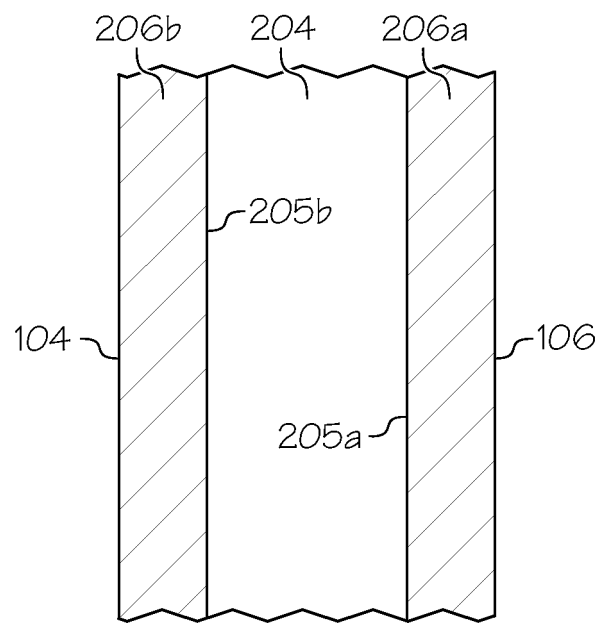


FIG. 3

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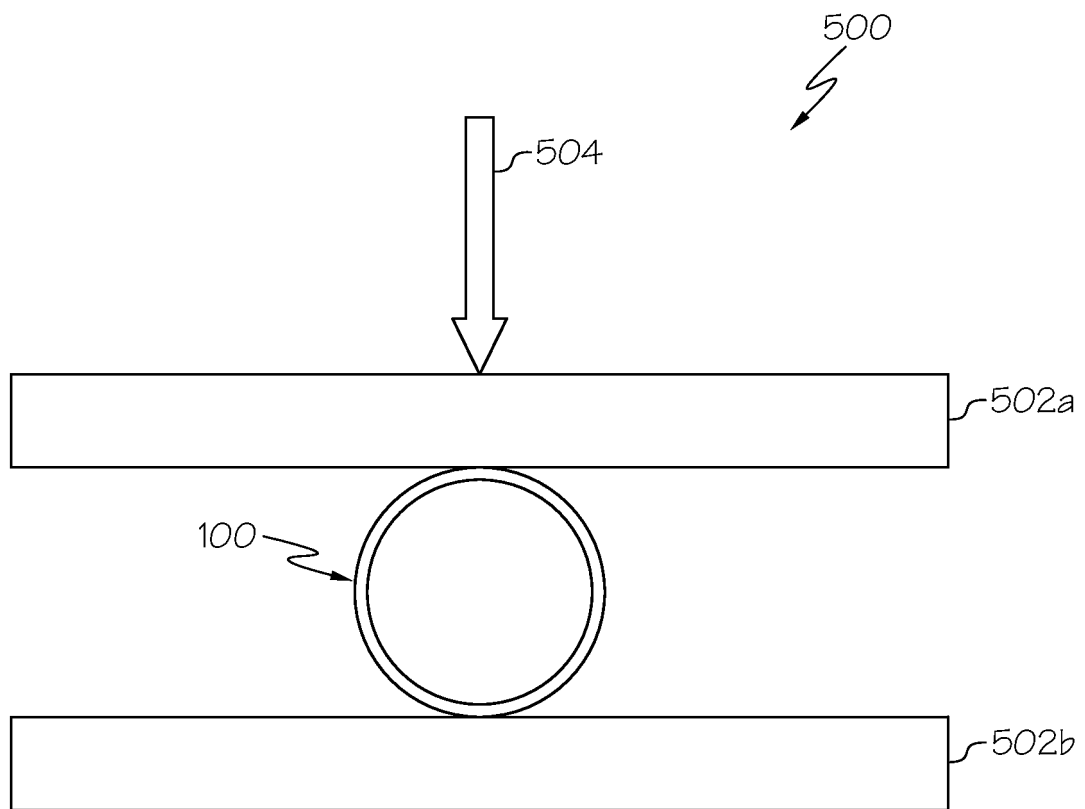


FIG. 4

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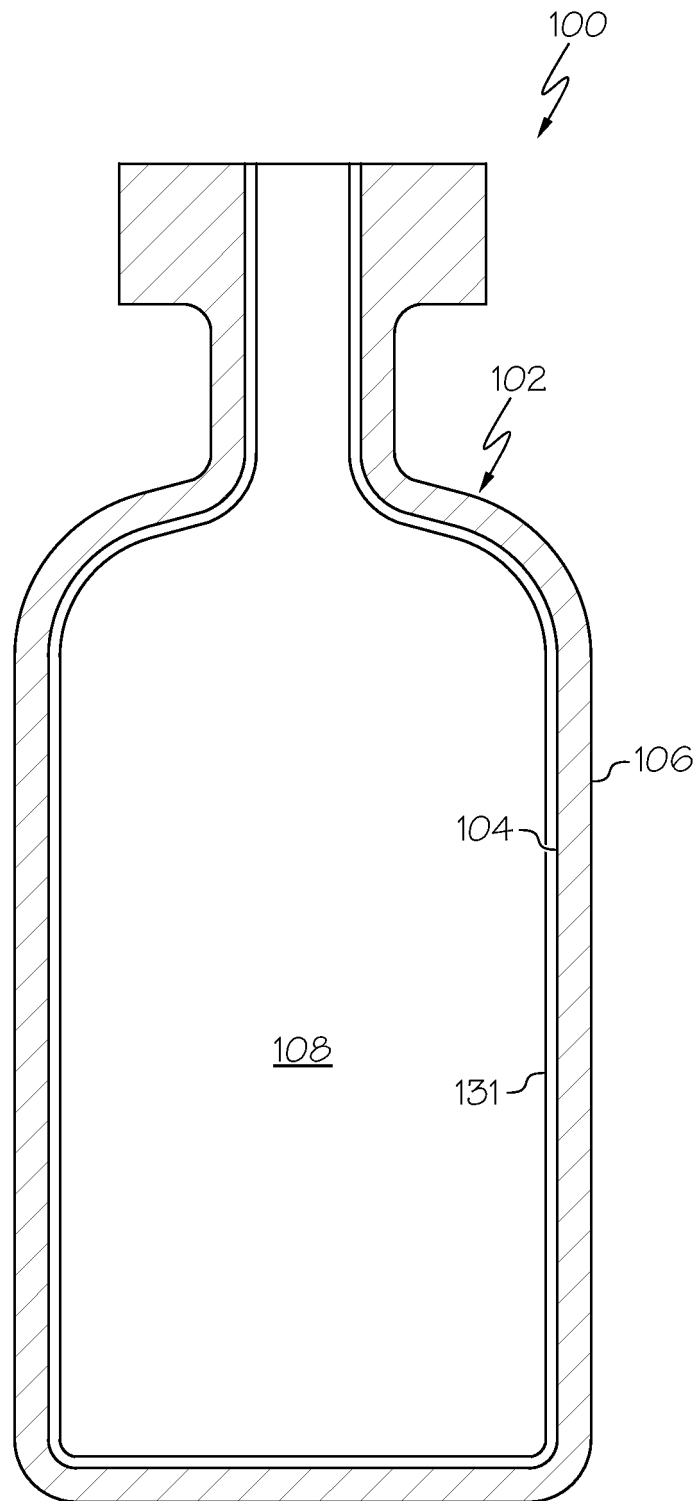


FIG. 5

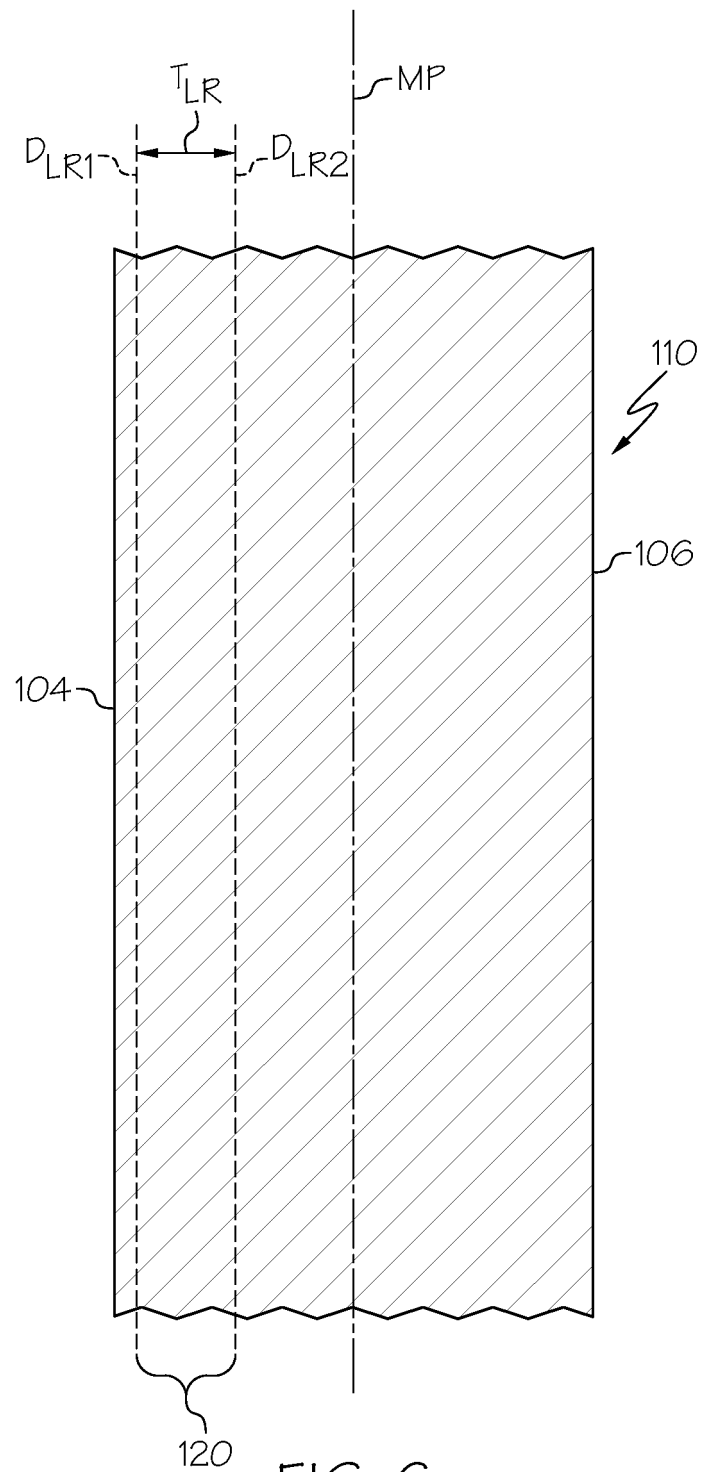


FIG. 6

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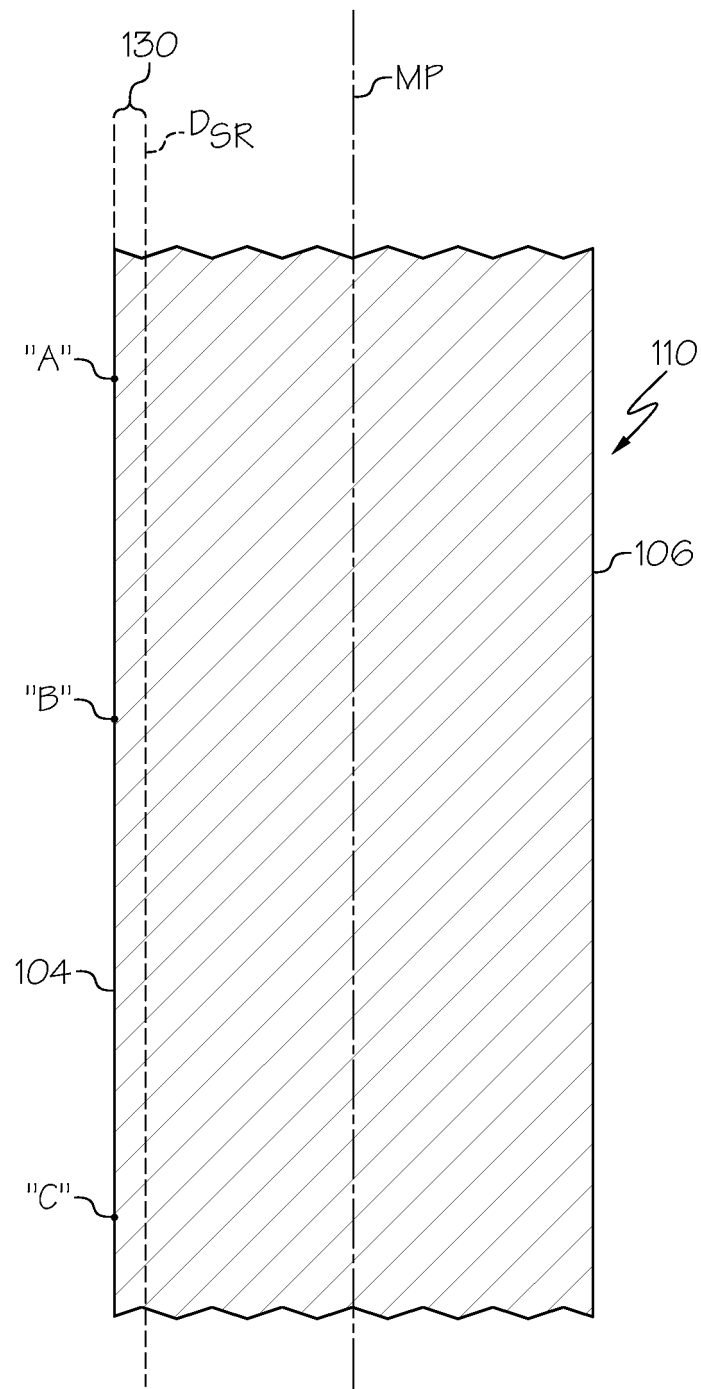


FIG. 7

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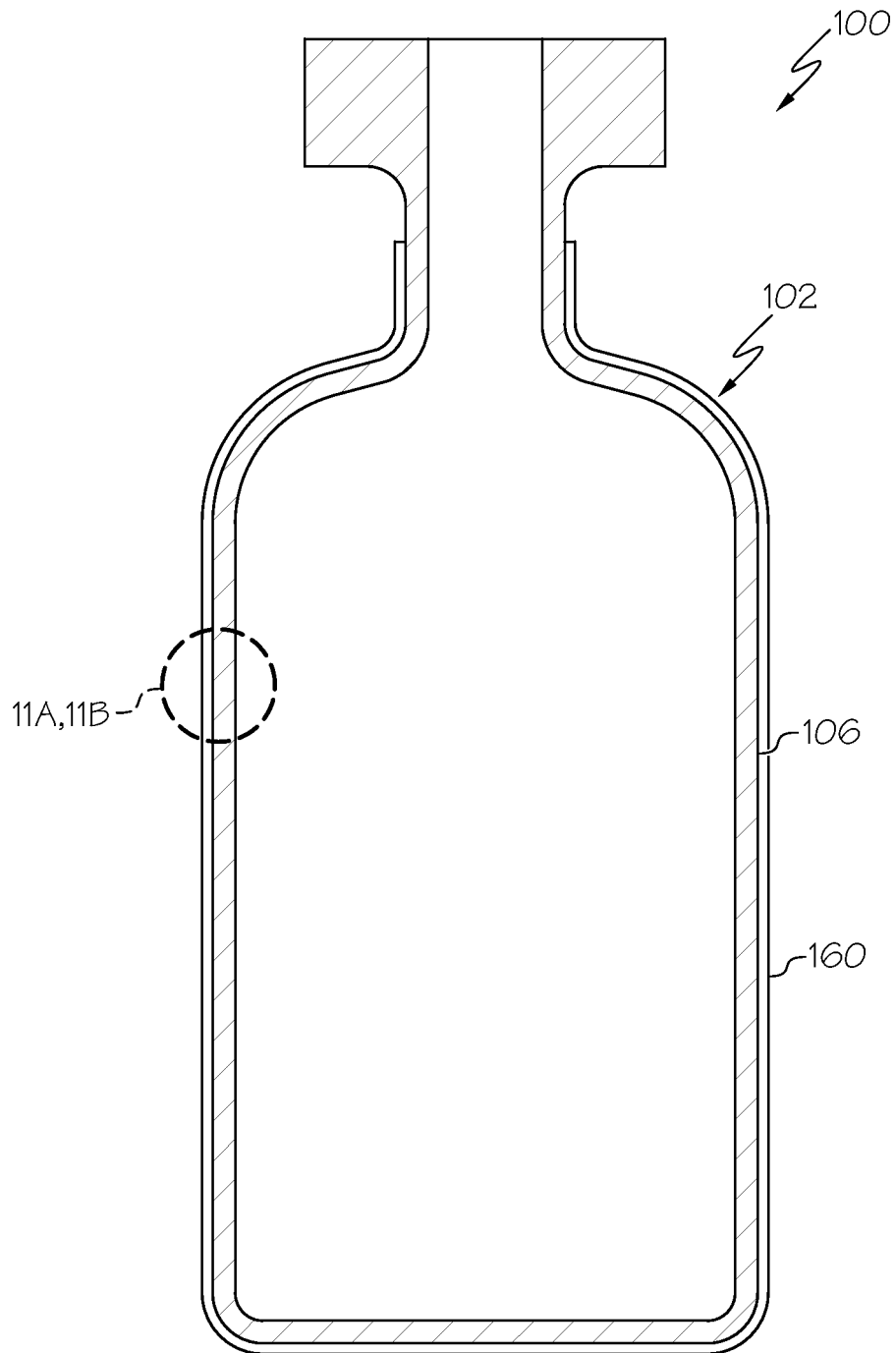


FIG. 8

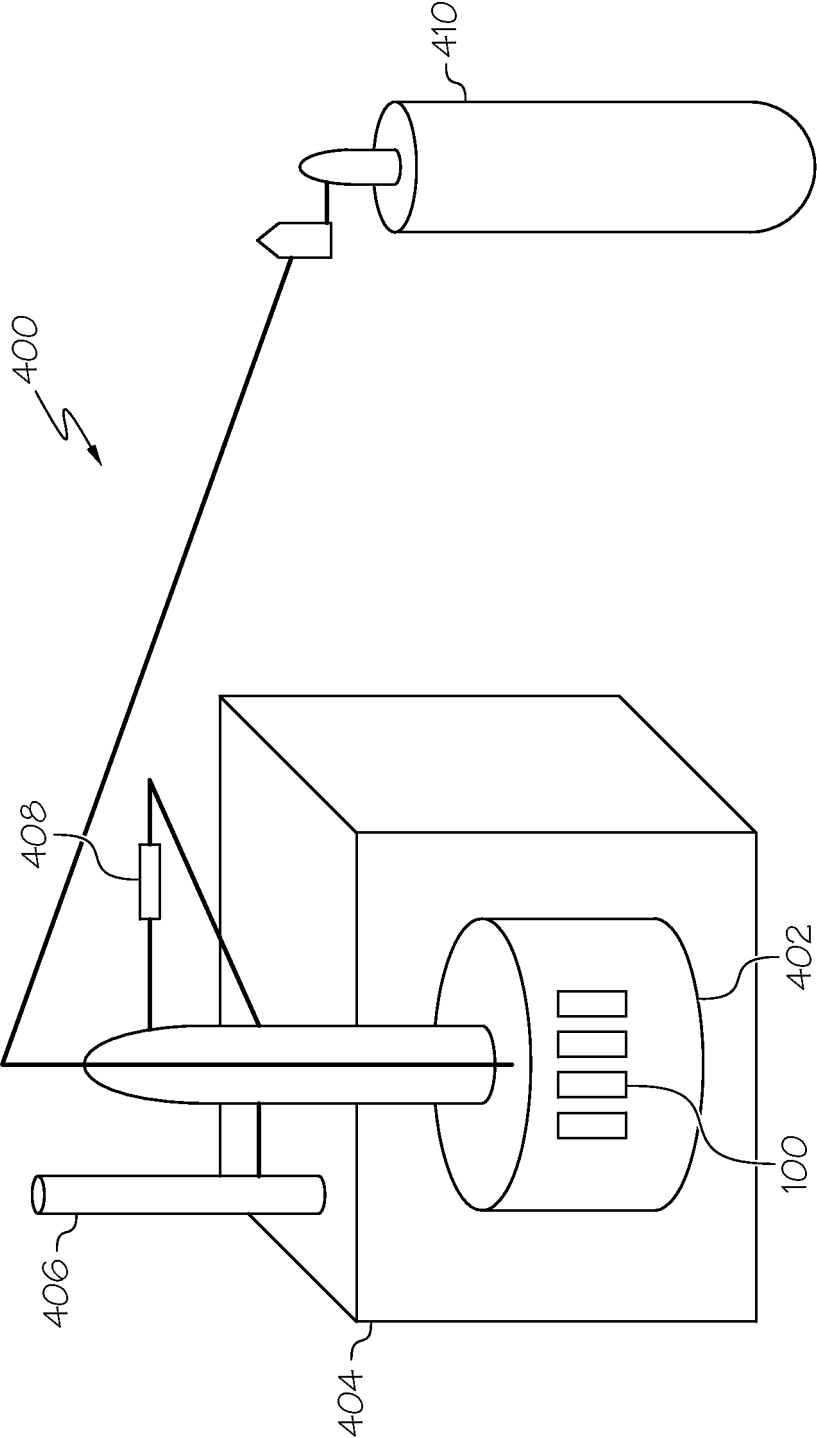


FIG. 10

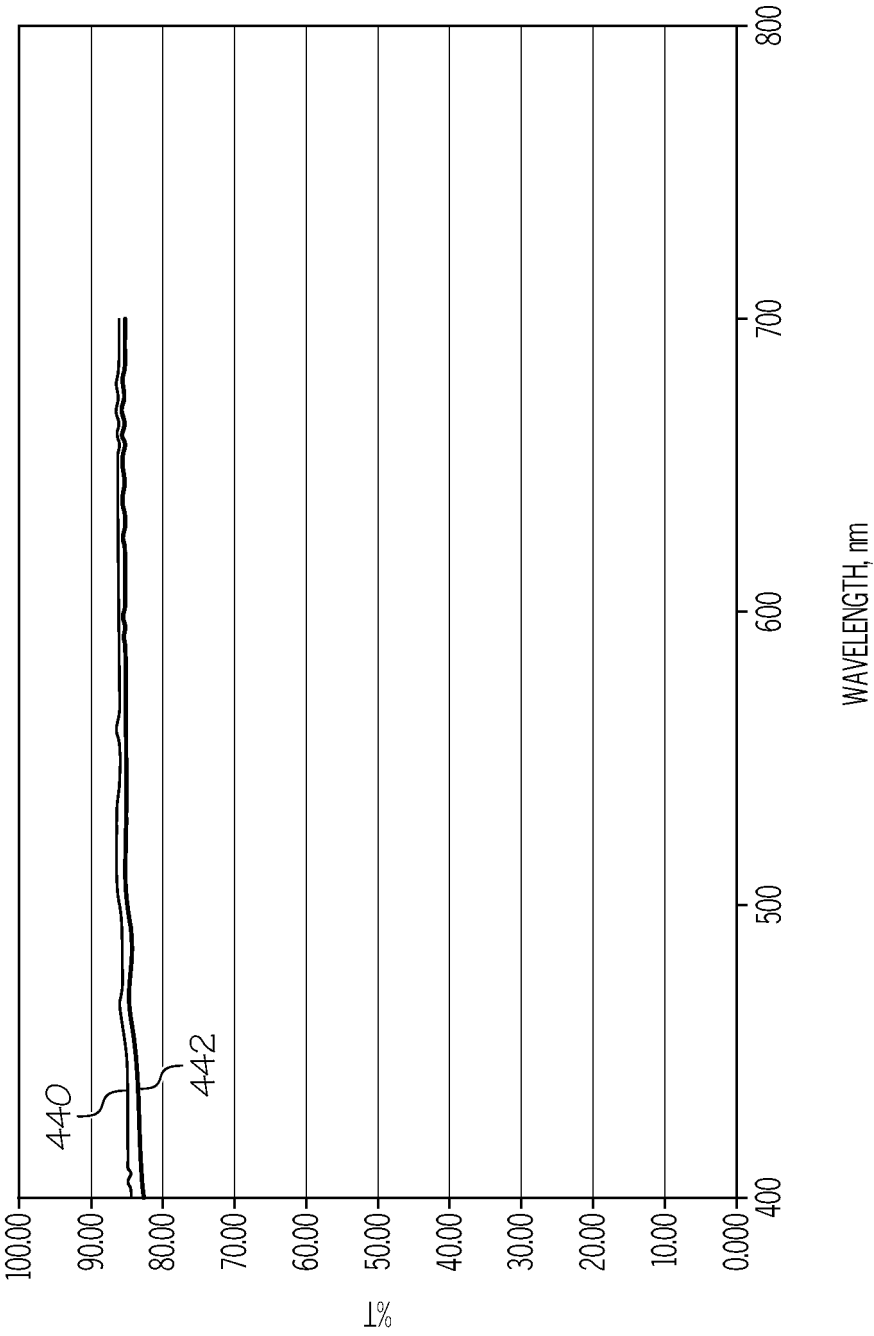


FIG. 11

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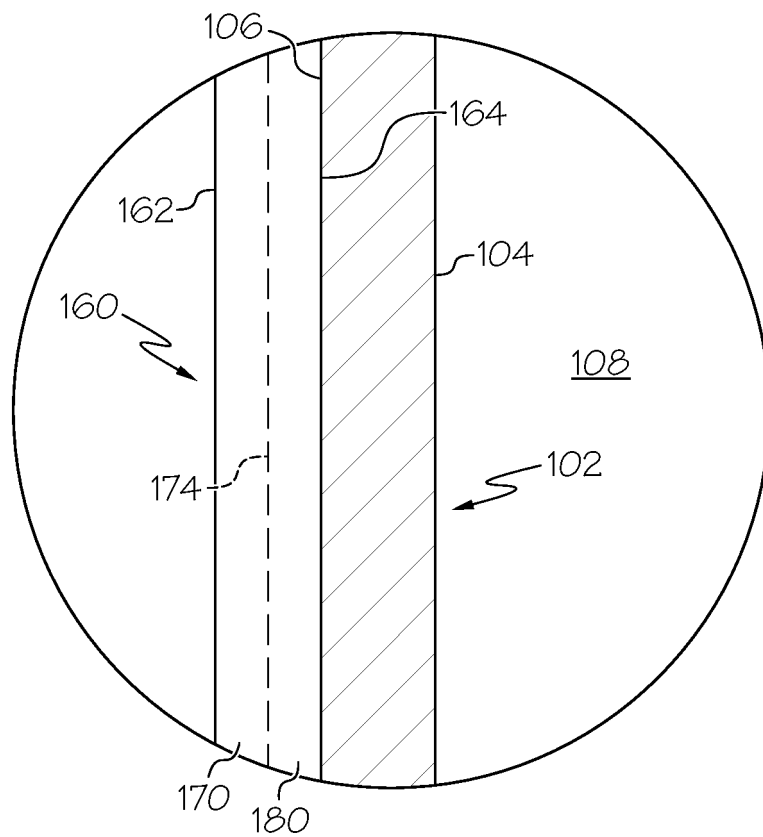


FIG. 12A

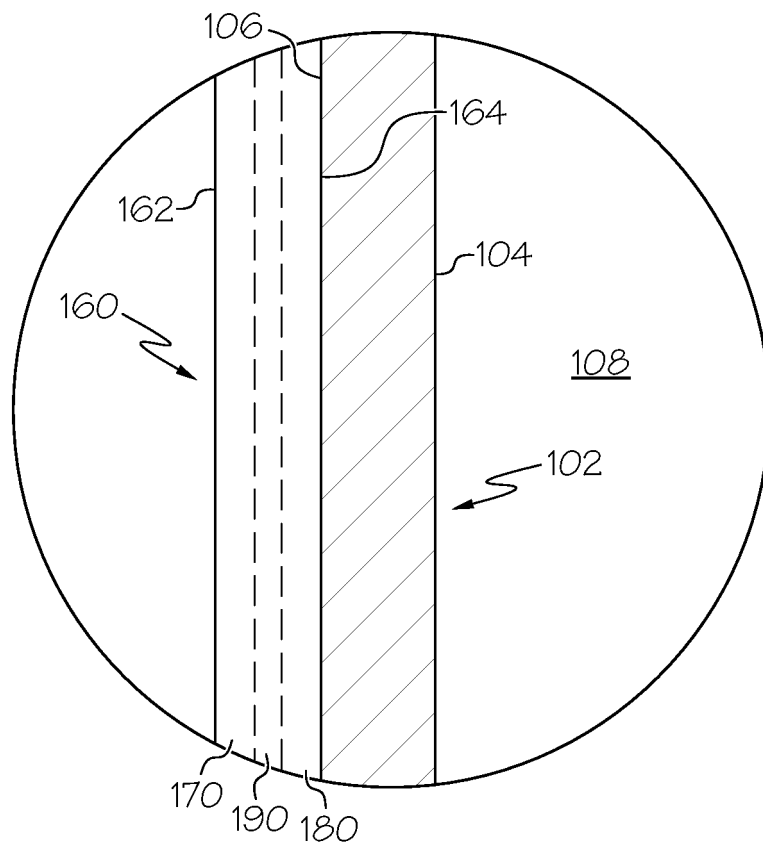


FIG. 12B

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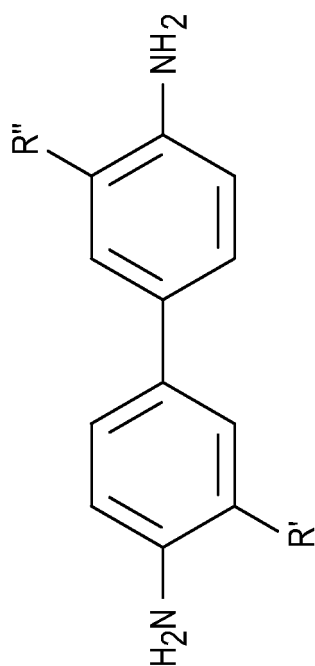


FIG. 13

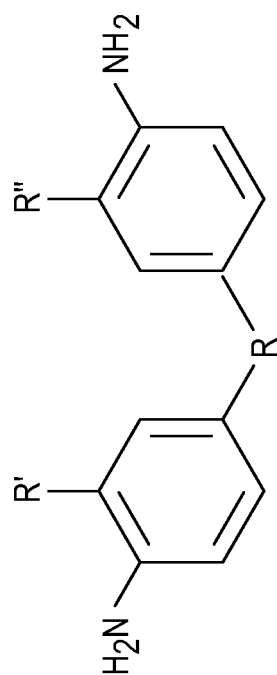


FIG. 14

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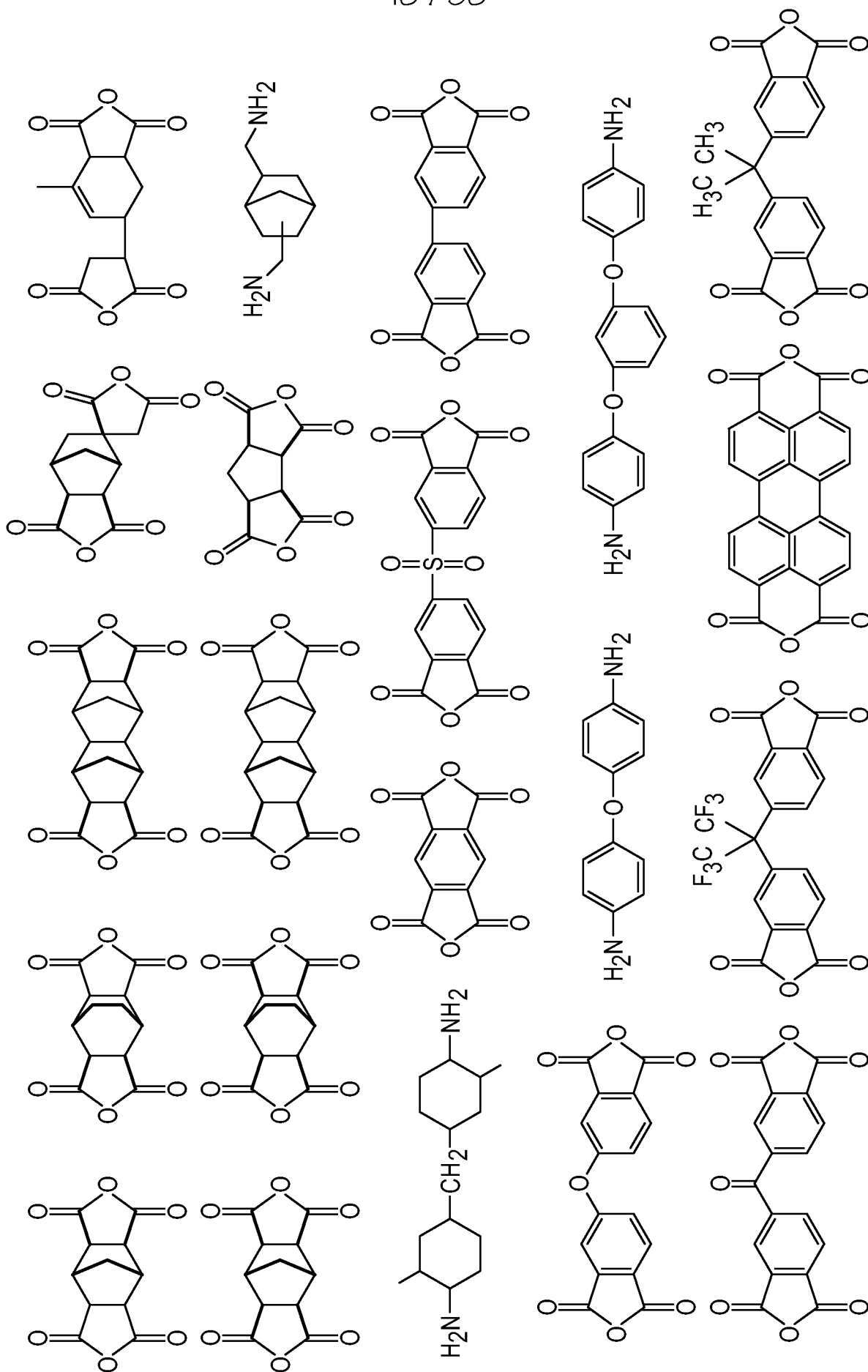


FIG. 15

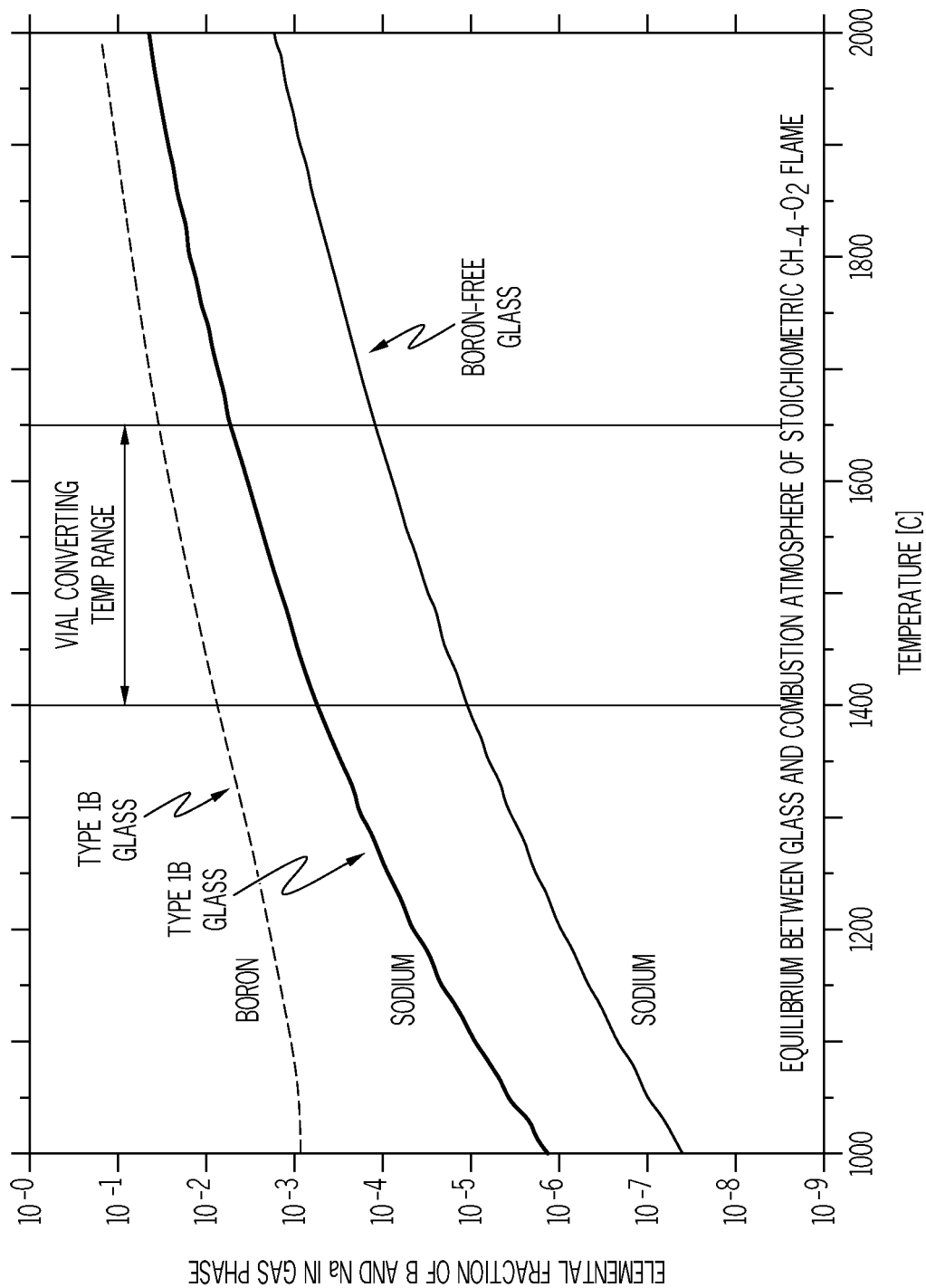


FIG. 16

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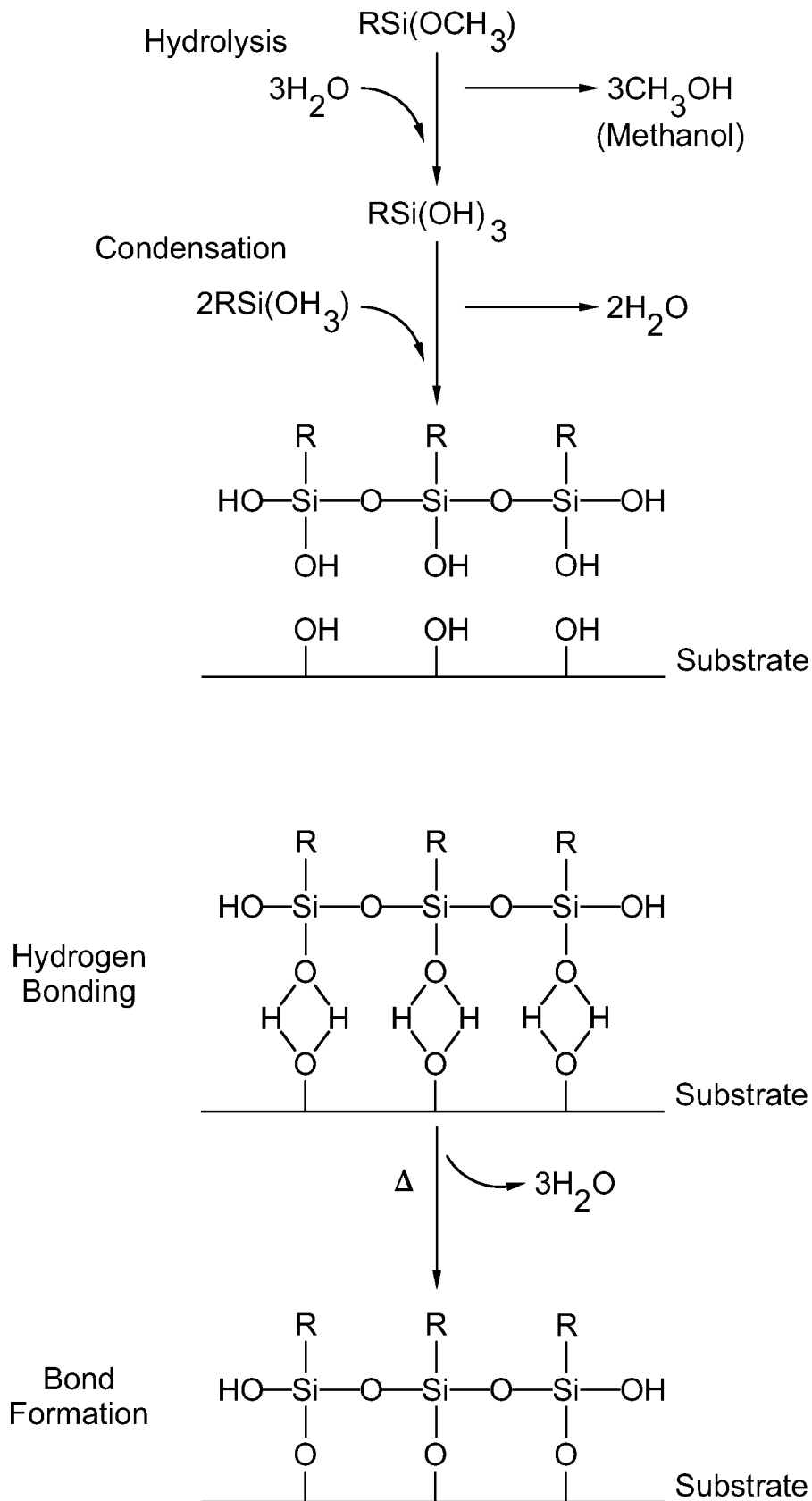


FIG. 17

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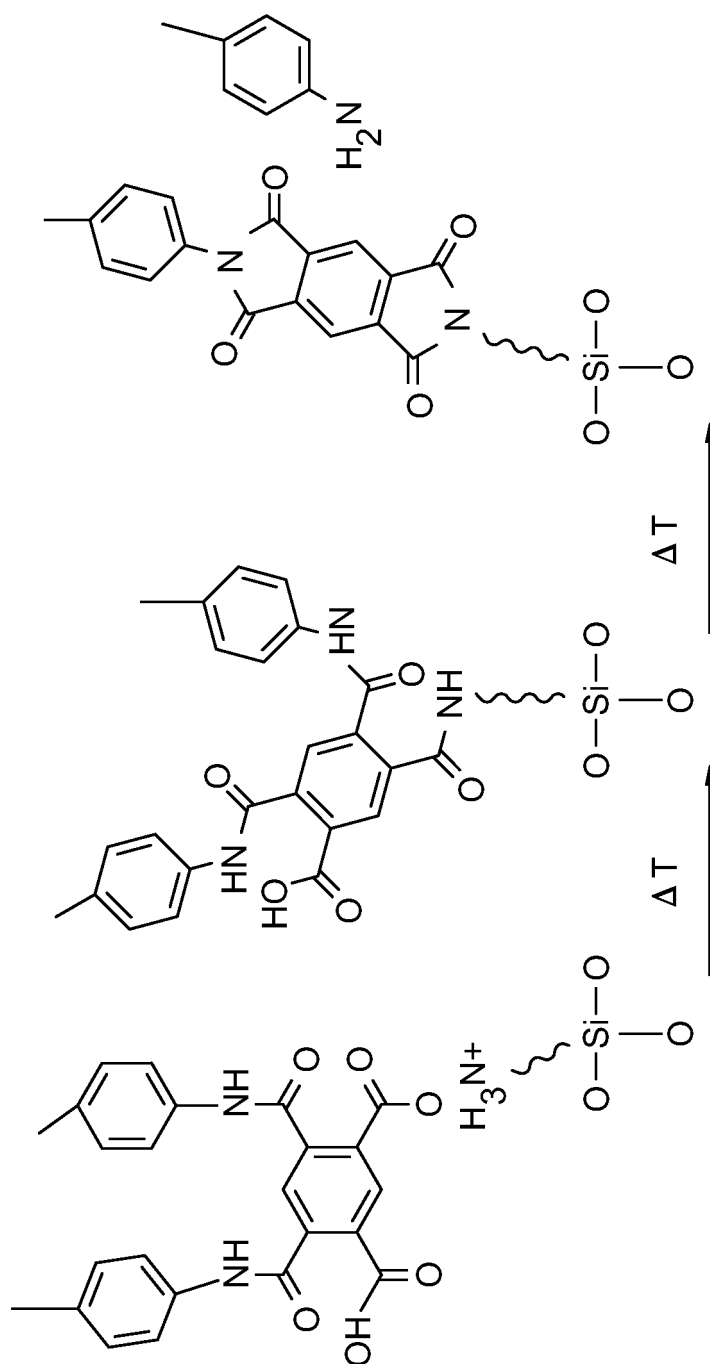


FIG. 18

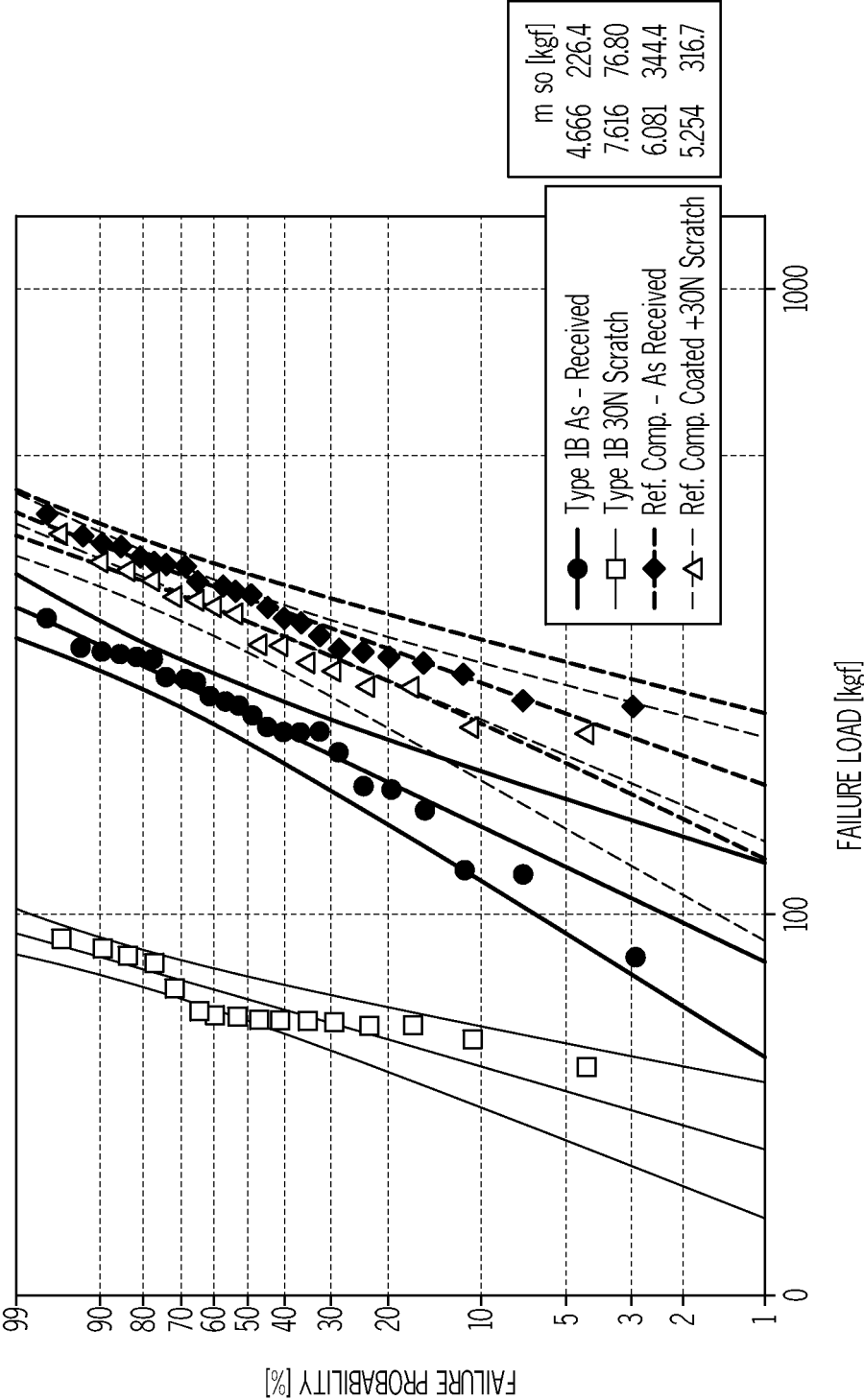


FIG. 19

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30N SCRATCH ON TWO VIAL TYPES

SAMPLE TYPE	VIAL #S	NORMAL LOAD (N)		COF		
		AVG	MIN	MAX	AVG	ST. DEV. MAX
UNCOATED TYPE IB	1&2	31	28	34	0.42	0.18 0.66
	3&4	31	29	36	0.45	0.18 0.7
	5&6	30	28	34	0.45	0.11 0.64
	7&8	29	26	32	0.33	0.14 0.54
	9&10	30	28	33	0.16	0.15 0.59
	11&12	28	25	33	0.16	0.09 0.6
	12&14	30	29	33	0.22	0.16 0.61
	15&16	31	28	35	0.53	0.11 0.71
	AVERAGE	30	28	34	0.38	0.14 0.63
REF. COMP. IX@450 COATED 0.1/0.1 APS/NOV800	1&2	30	28	31	0.12	0.04 0.34
	3&4	28	24	31	0.16	0.08 0.34
	5&6	40	30	44	0.08	0.02 0.19
	7&8	30	27	31	0.08	0.05 0.38
	9&10	30	28	30	0.08	0.03 0.22
	11&12	31	30	33	0.12	0.04 0.23
	12&14	30	29	32	0.15	0.07 0.41
	15&16	30	28	32	0.09	0.02 0.19
	AVERAGE	31	28	33	0.11	0.04 0.29

FIG. 20

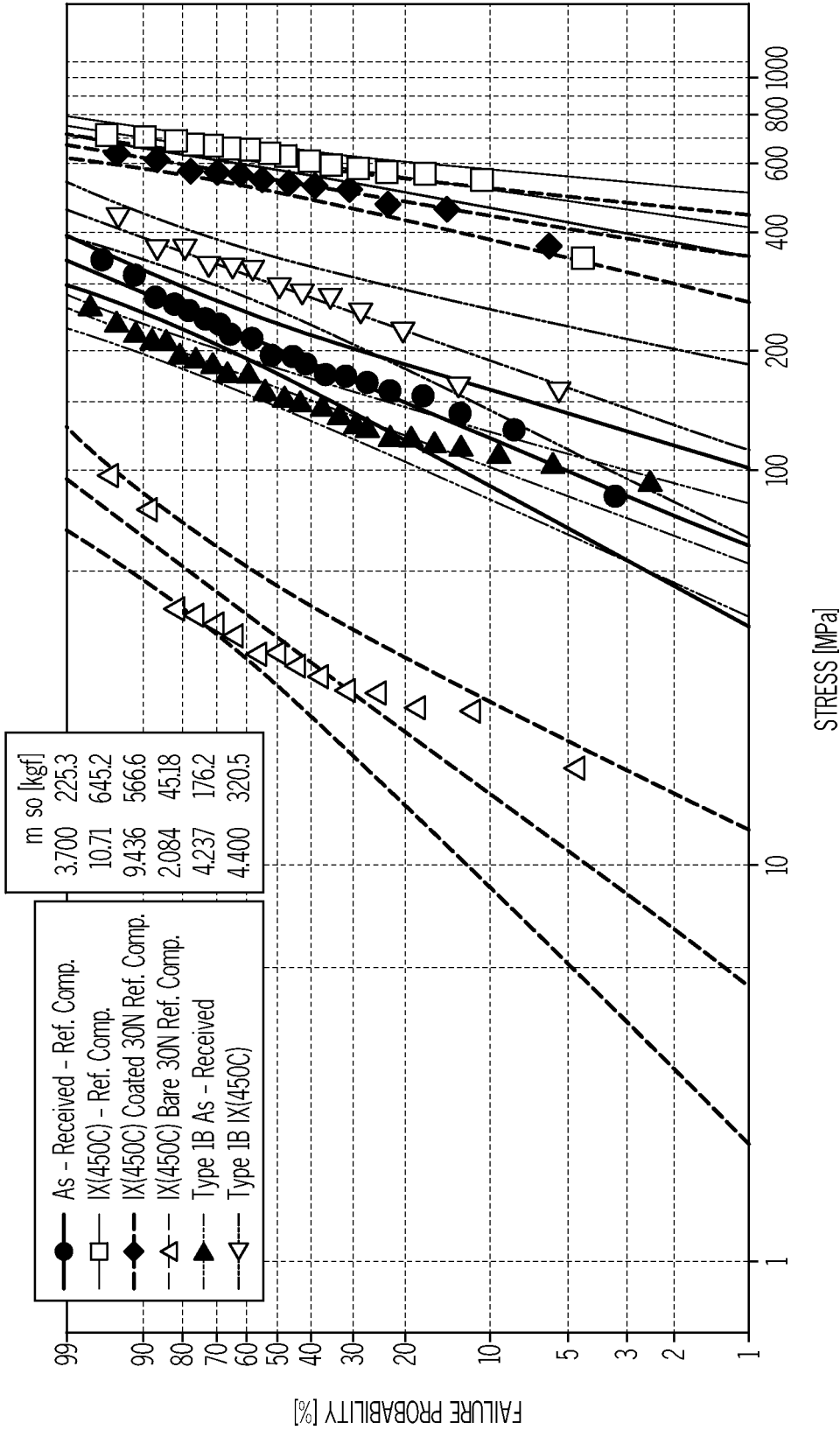


FIG. 21

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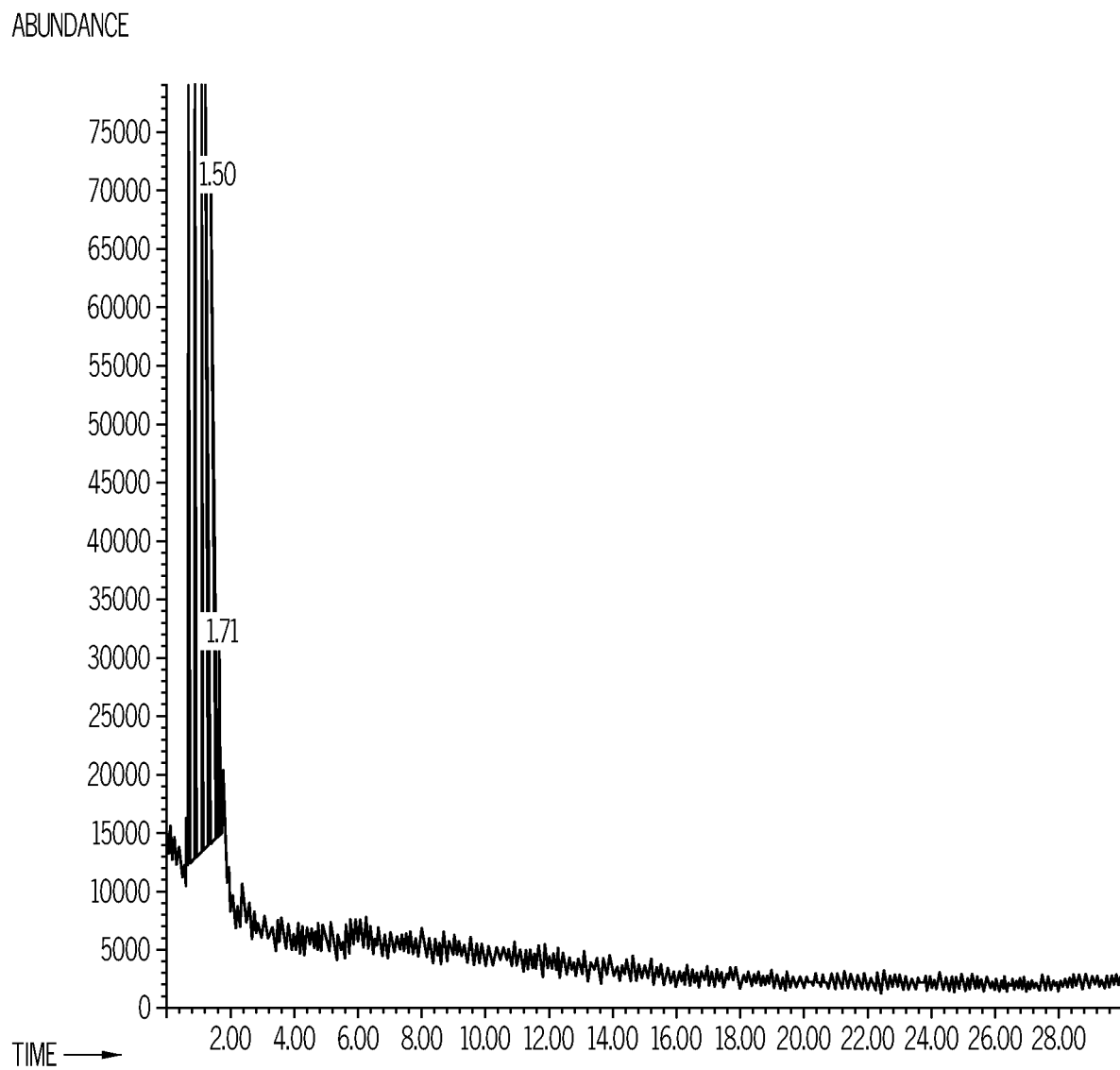


FIG. 22

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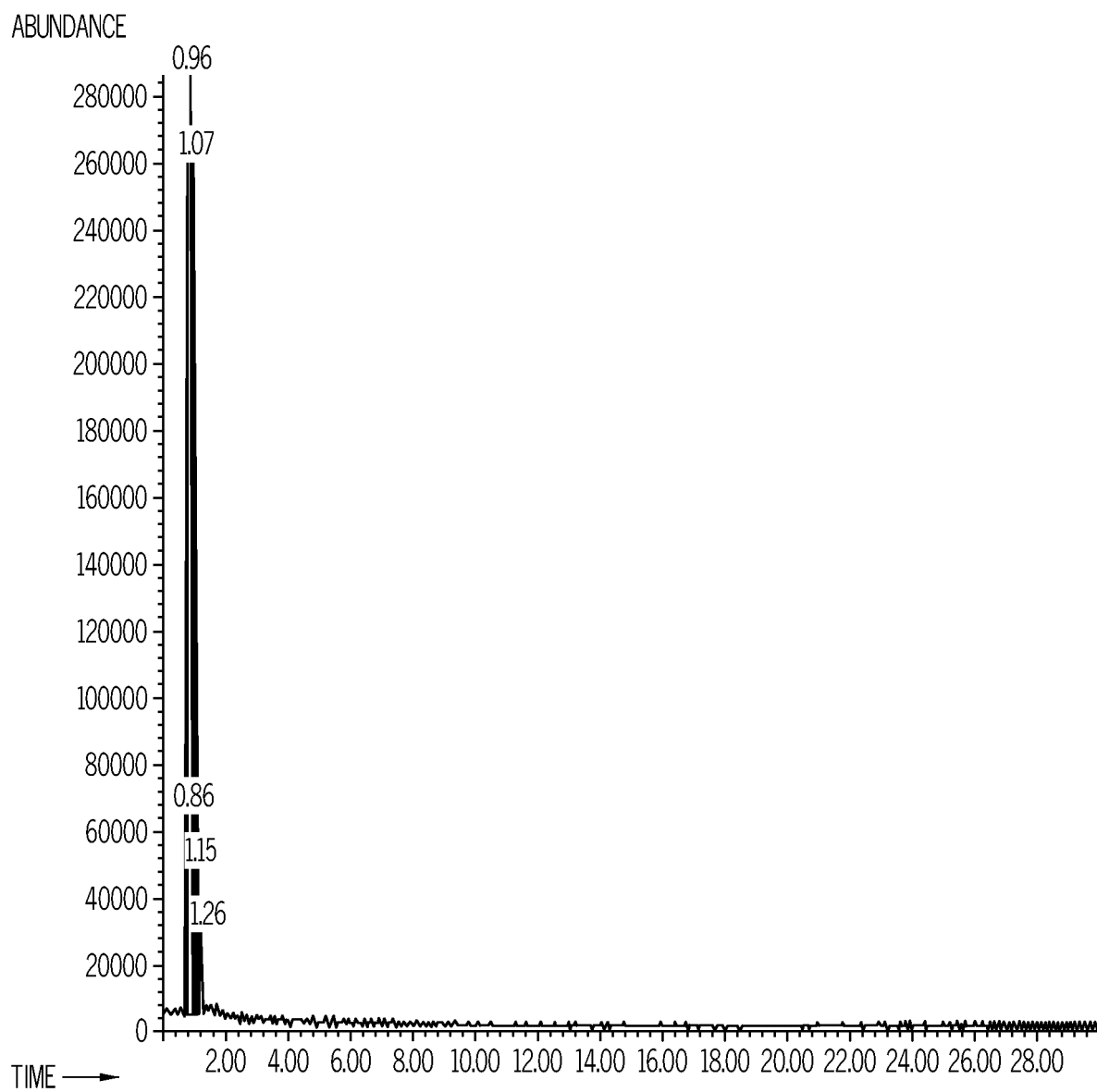


FIG. 23

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FORMULATION	RELATIVE THICKNESS	CONDITION
0.1% APS/1.0% PMDA-ODA	10	AS IS
0.1% APS/0.1% PMDA-ODA	1	AS IS
0.1 APS 0.5 DC806A	5	1 H TUMBLE
0.1 APS 0.1 DC806A	1	1 H TUMBLE
0.1 APS 0.1 PMDA-ODA	1	1 H TUMBLE
0.1 APS 0.5 PMDA-ODA	5	1 H TUMBLE
1.0% DC255	10	0.5 H TUMBLE
1.0% DC255	10	1 H TUMBLE
1.0% DC255	10	2 H TUMBLE
1.0% DC255	10	AS IS
1.0% PMDA-ODA	10	DURHAM FILING LINE
0.1 APS 0.1 NOVA800	1	6 MIN TUMBLE
0.1 APS 0.1 NOVA800	1	15 MIN TUMBLE
1.0 GAPS/1.0 DC806A	10	6 MIN TUMBLE
1.0 GAPS/1.0 DC806A	10	15 MIN TUMBLE
1.0 GAPS/1.0 DC806A	10	AS IS
0.1 APS 0.1 NOVA800	1	AS IS
TYPE 1B BARE	0	30N (3), 50N (1)
1.0 GAPS/1.0 DC806A	10	30N SCRATCH 3
1.0 GAPS/1.0 DC806A	10	50N_SCRATCH 1
0.1 APS 0.1 NOVA800	1	30N SCRATCH 3
0.1 APS 0.1 NOVA800	1	50N_SCRATCH 1

FIG. 24

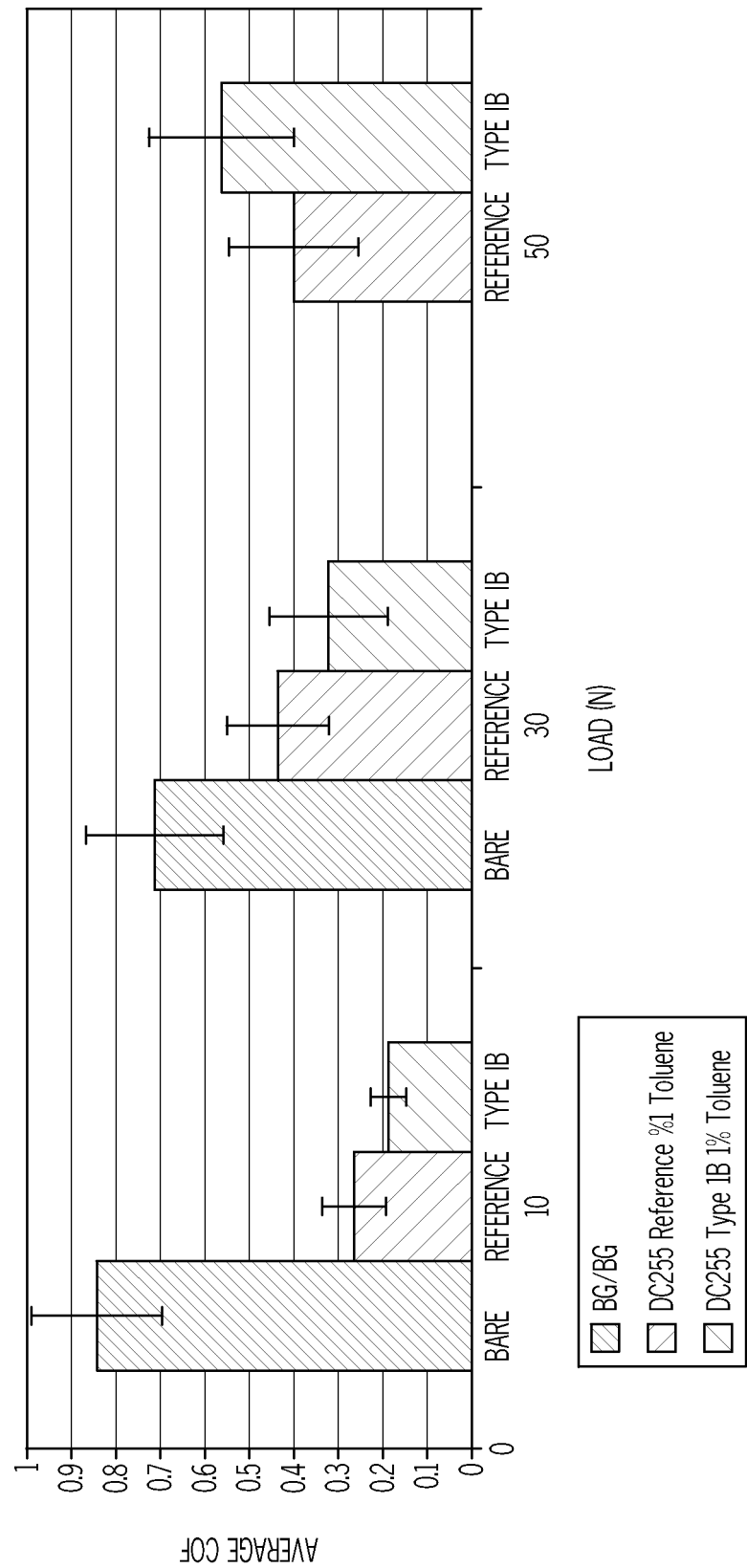


FIG. 25

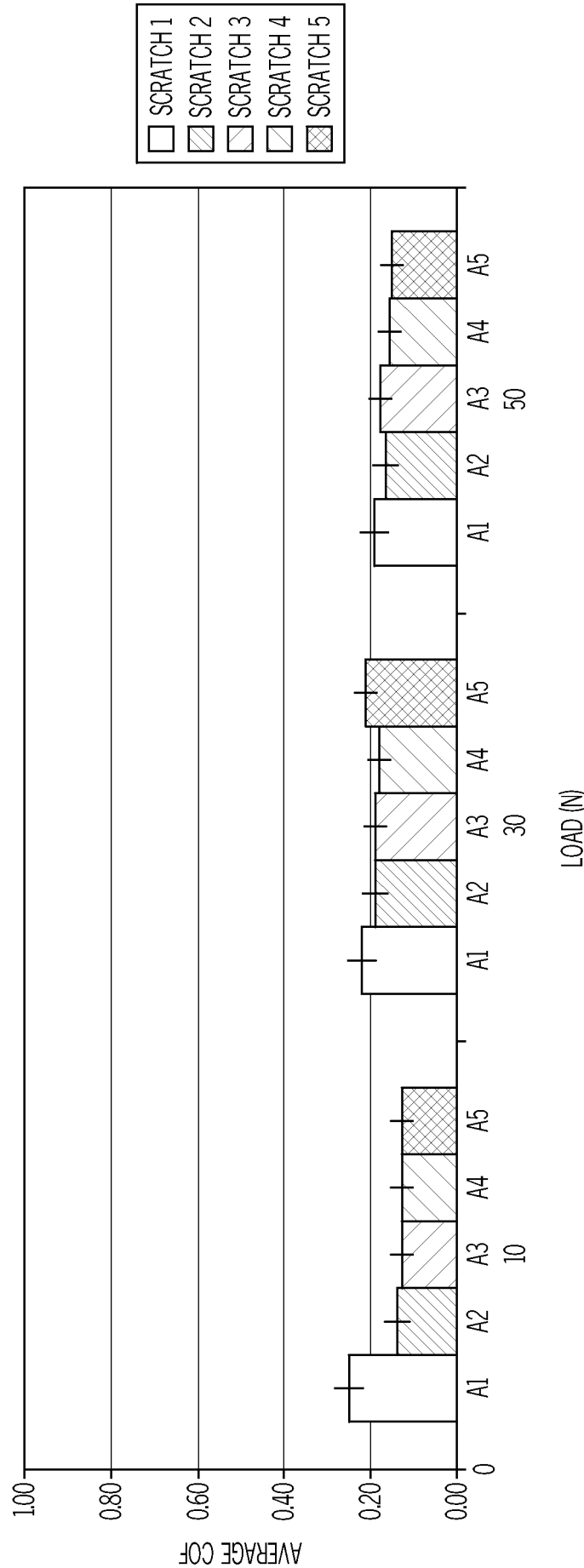


FIG. 26

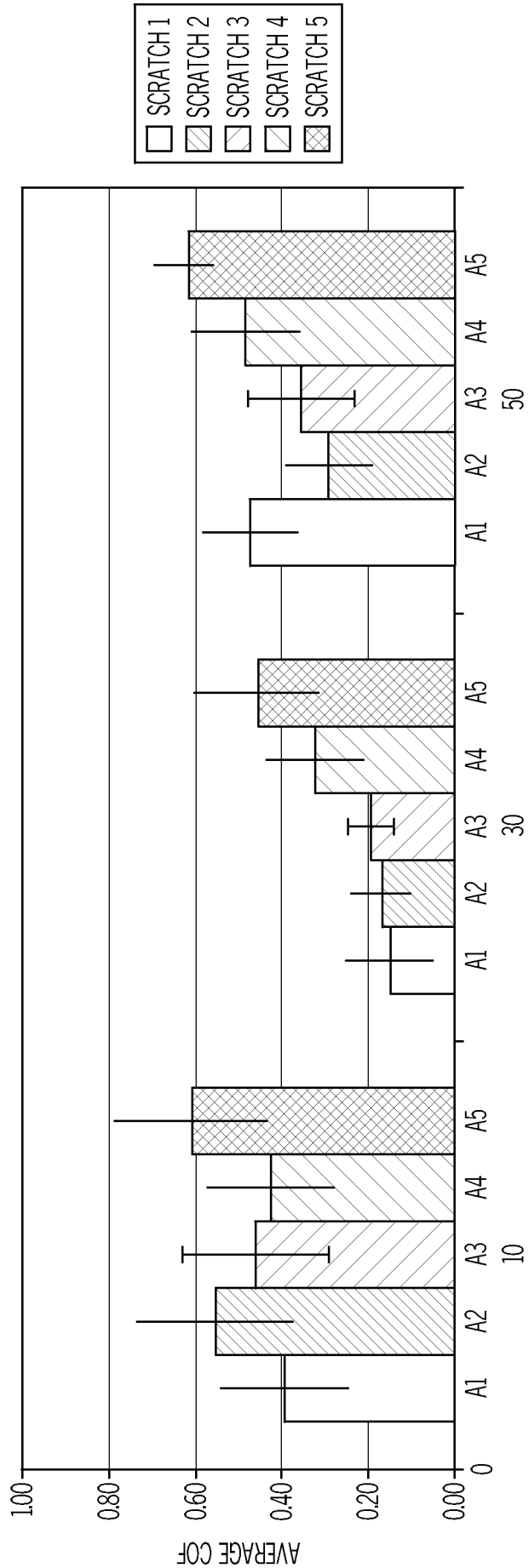


FIG. 27

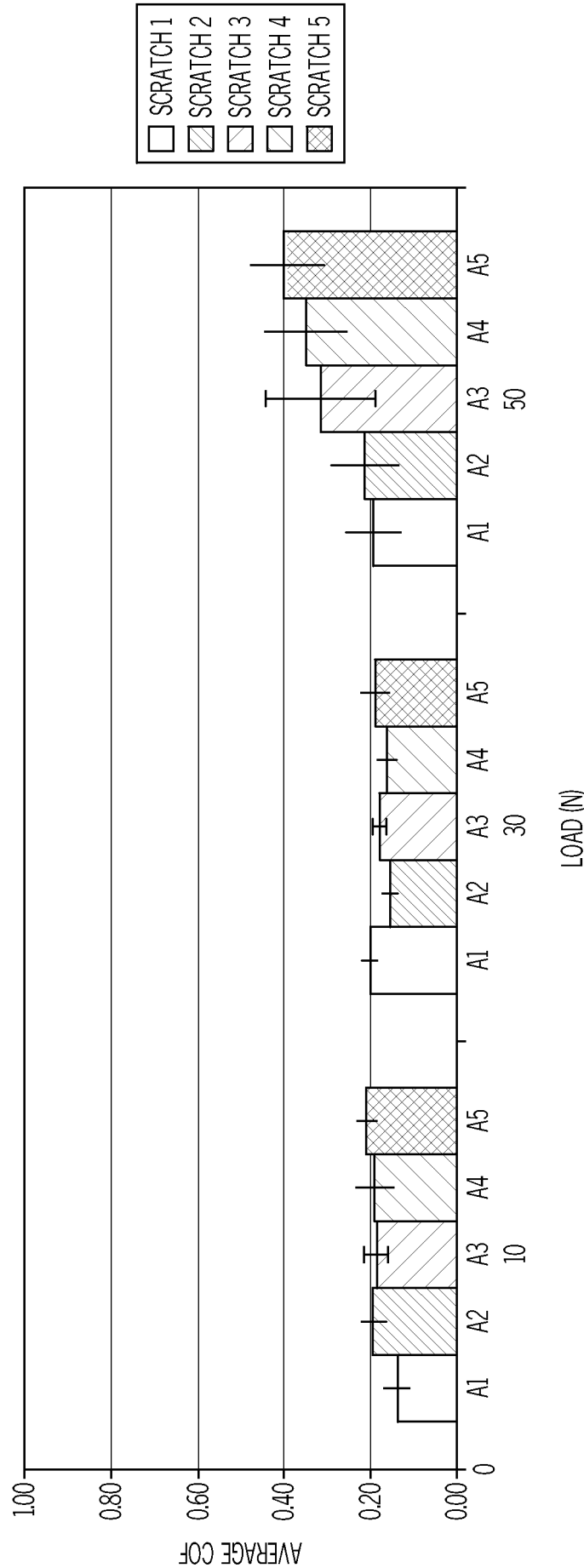


FIG. 28

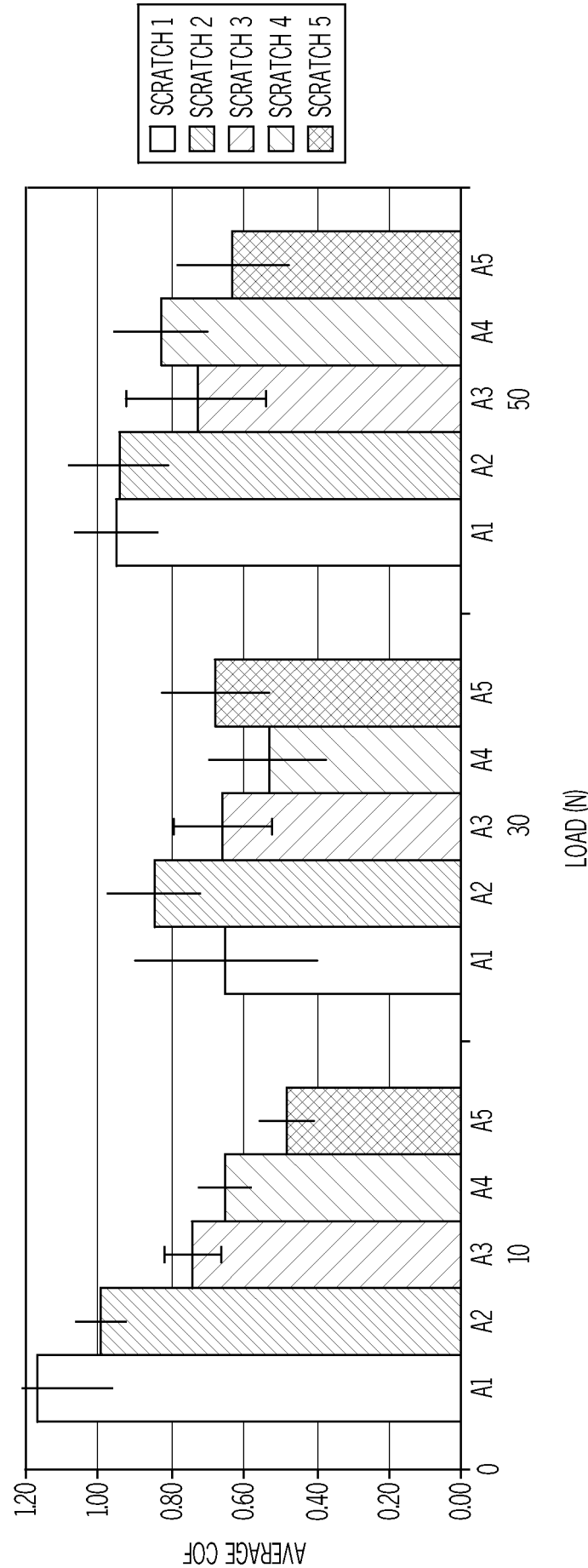


FIG. 29

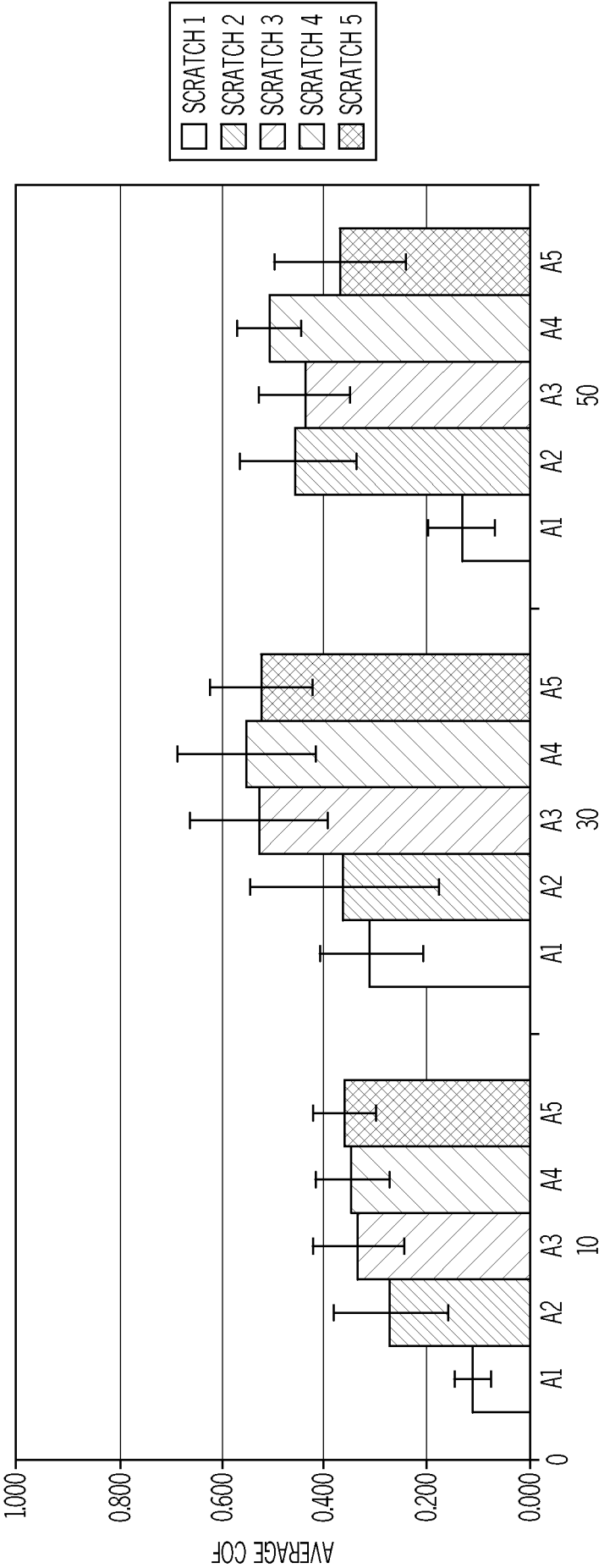


FIG. 30

BEFORE

VIALS	Z-LOAD		COF		FX MAX
	AVG	MAX	AVG	ST. DEV.	MAX
1&2	34	36	0.11	0.03	0.23
3&4	30	32	0.14	0.02	0.18
5&6	34	36	0.09	0.02	0.19
7&8	31	33	0.07	0.01	0.02
9&10	31	33	0.08	0.01	0.14

AFTER

3) APS/NOVA LYOPHILLIZED

VIALS	Z-LOAD		COF		FX MAX
	AVG	MAX	AVG	ST. DEV.	MAX
1&2	37	39	0.06	0.01	0.09
3&4	40	43	0.06	0.01	0.14
5&6	30	31	0.05	0.01	0.09
7&8	30	31	0.05	0.01	0.07
9&10	30	32	0.05	0.01	0.16

FIG. 31

VIALS	Z-LOAD		COF		FX MAX
	AVG	MAX	AVG	ST. DEV.	MAX
1&2	34	36	0.11	0.03	0.23
3&4	30	32	0.14	0.02	0.18
5&6	34	36	0.09	0.02	0.19
7&8	31	33	0.07	0.01	0.02
9&10	31	33	0.08	0.01	0.14

2) APS/NOVA AUTOCLAVED

VIALS	Z-LOAD		COF		FX MAX
	AVG	MAX	AVG	ST. DEV.	MAX
1&2	36	39	0.08	0.02	0.18
3&4	37	40	0.09	0.01	0.16
5&6	30	31	0.06	0.01	0.1
7&8	30	31	0.07	0.01	0.1
9&10	30	31	0.07	0.01	0.14

FIG. 32

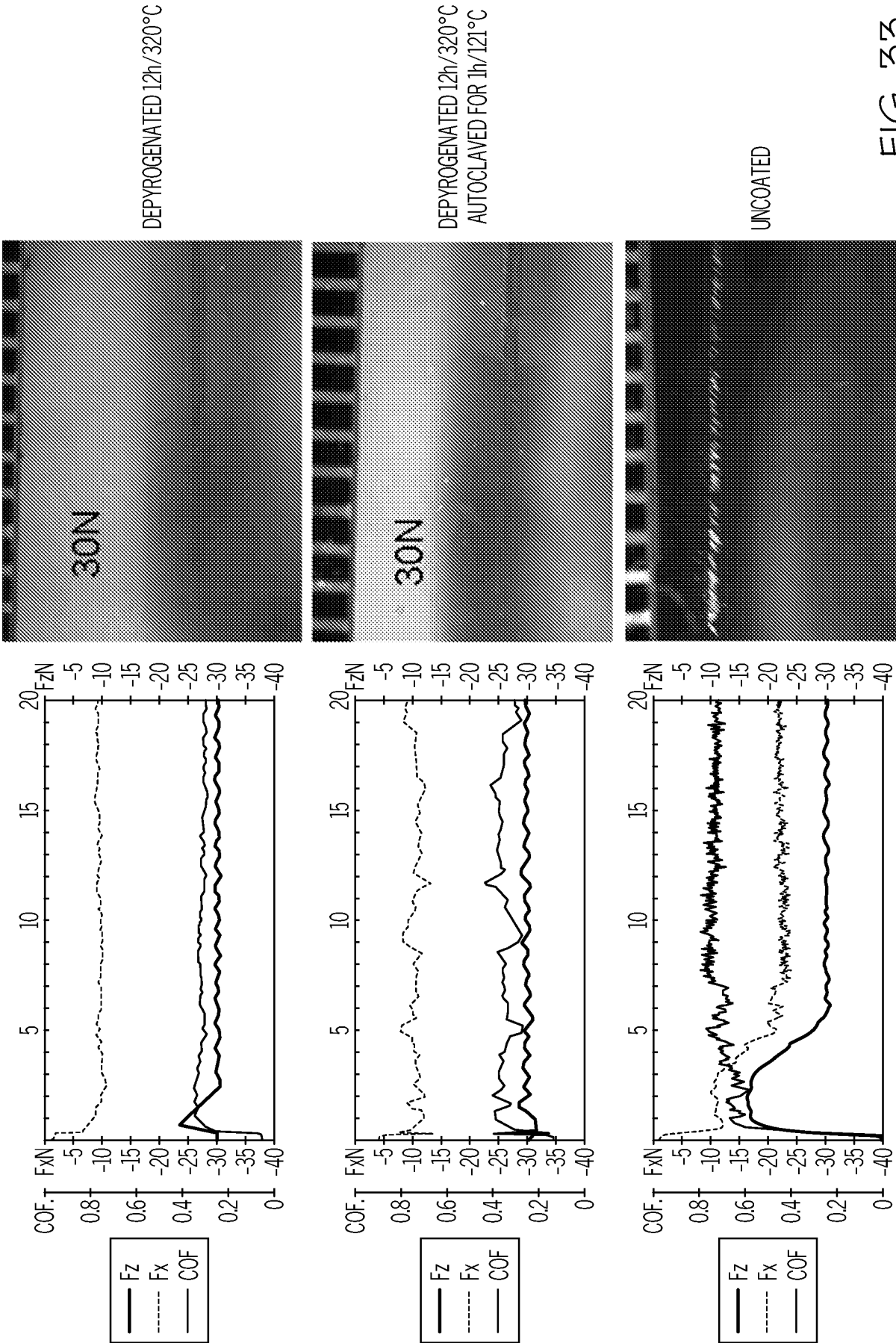


FIG. 33

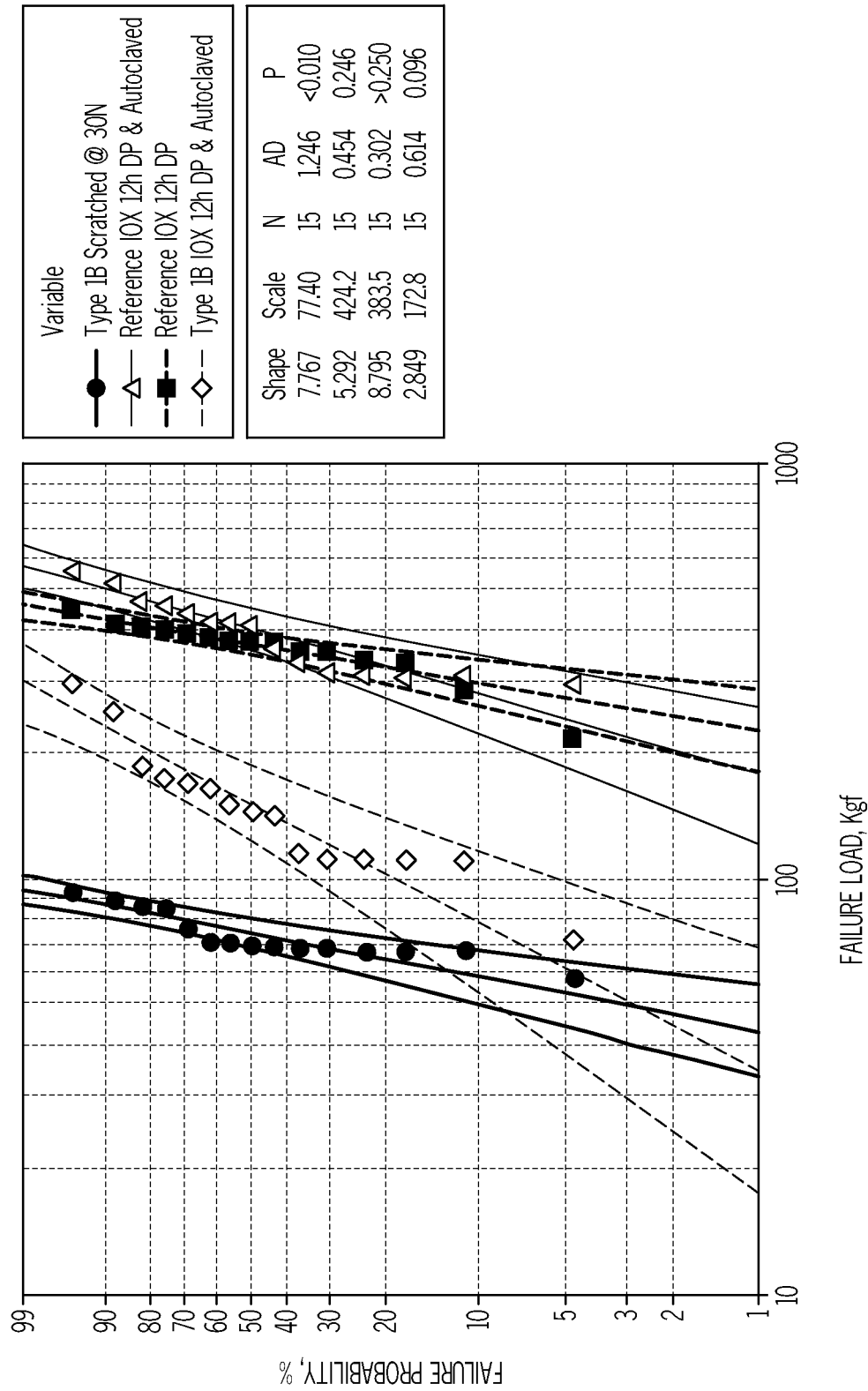


FIG. 34

12h DP Sample	Silanes ratio	Coating composition
540 #1	1:1	0.5 GAP/0.5 Aminophenyltrimethoxysilane + 1.0% Nova
540 #2	1:0.5	0.5 GAP/0.25 Aminophenyltrimethoxysilane + 1.0% Nova
540 #3	1:0.2	0.5 GAP/0.1 Aminophenyltrimethoxysilane + 1.0% Nova

540 Target Load	Vial Set	Fz (N)		COF Std. Dev.	Fx (N)	
		Avg	Max		Avg	Max
30	1	30	32	0.02	0.21	0.26
	2	30	32	0.04	0.21	0.41
	3	30	33	0.1	0.32	0.68
20	1	20	22	0.02	0.21	0.24
	2	20	21	0.02	0.22	0.31
	3	21	23	0.1	0.29	0.61

FIG. 35

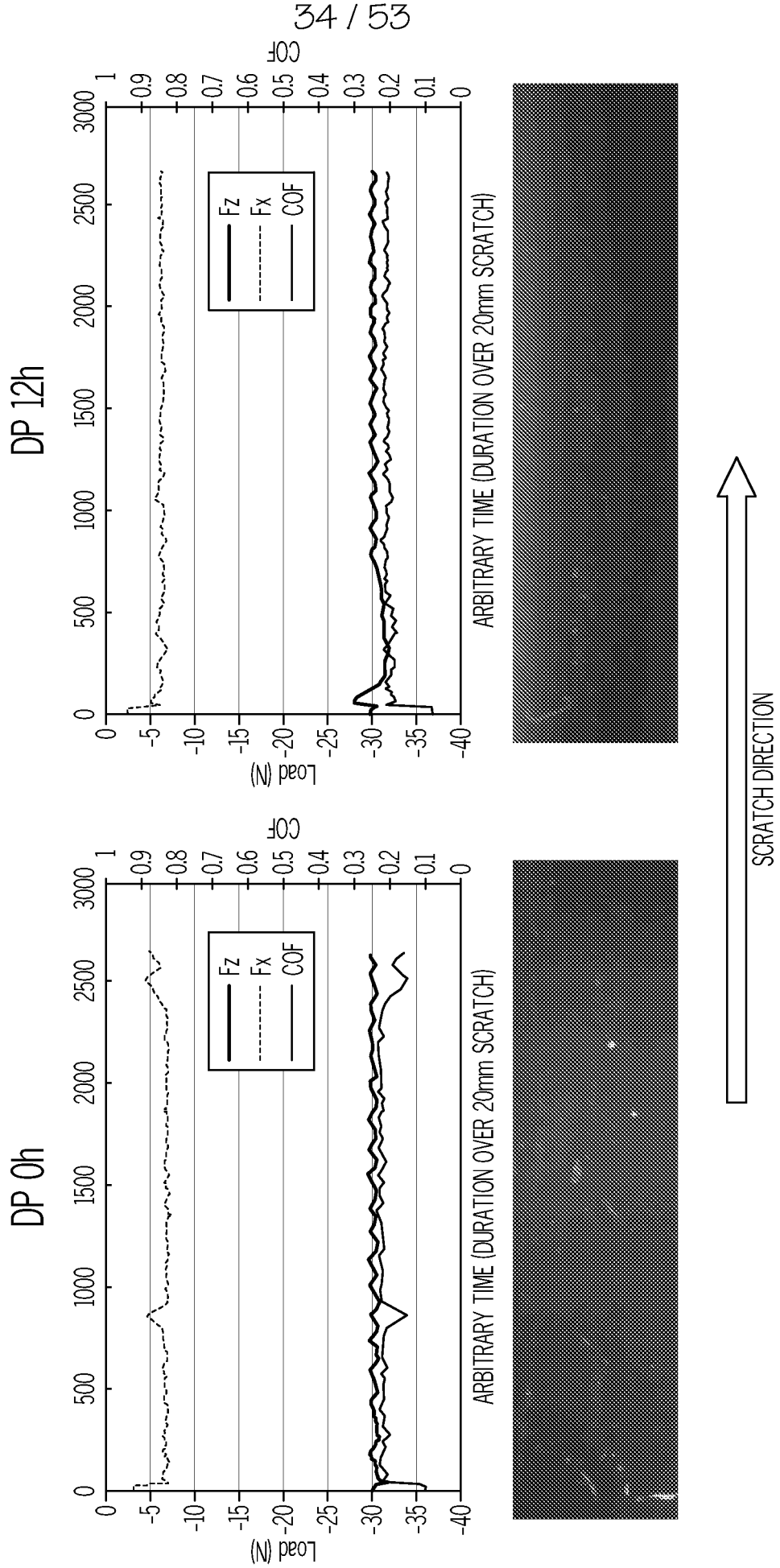


FIG. 36

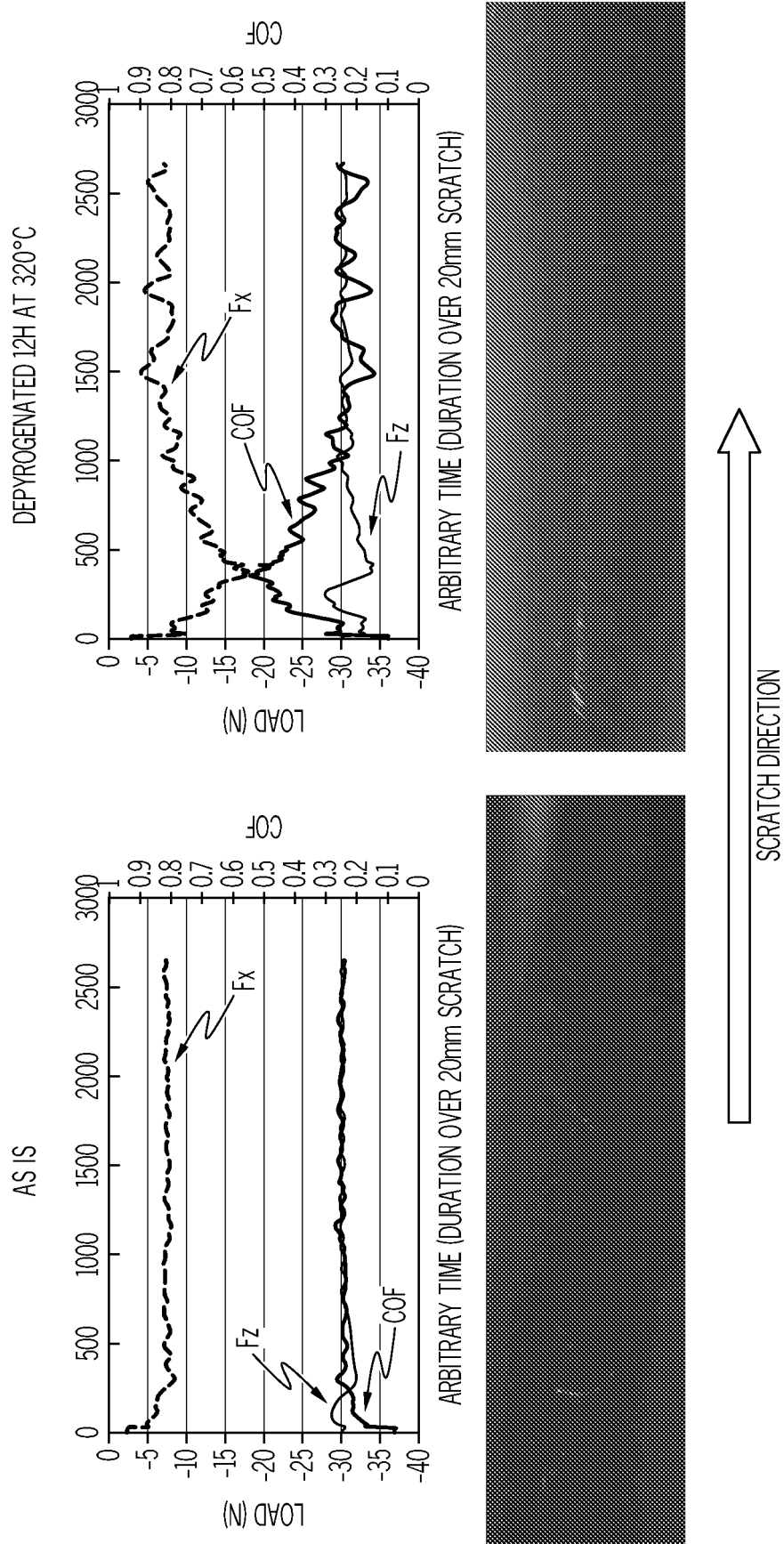


FIG. 37

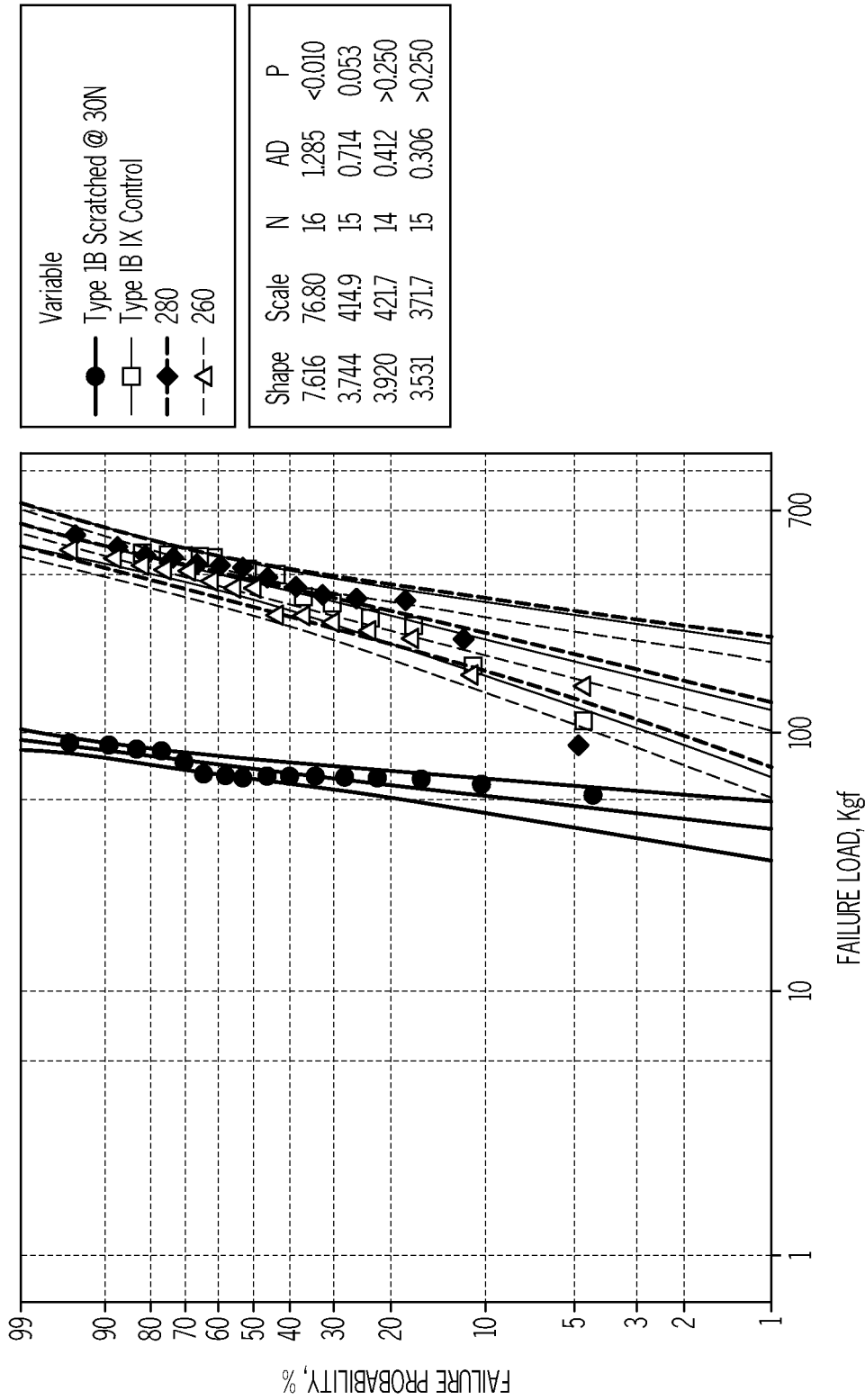
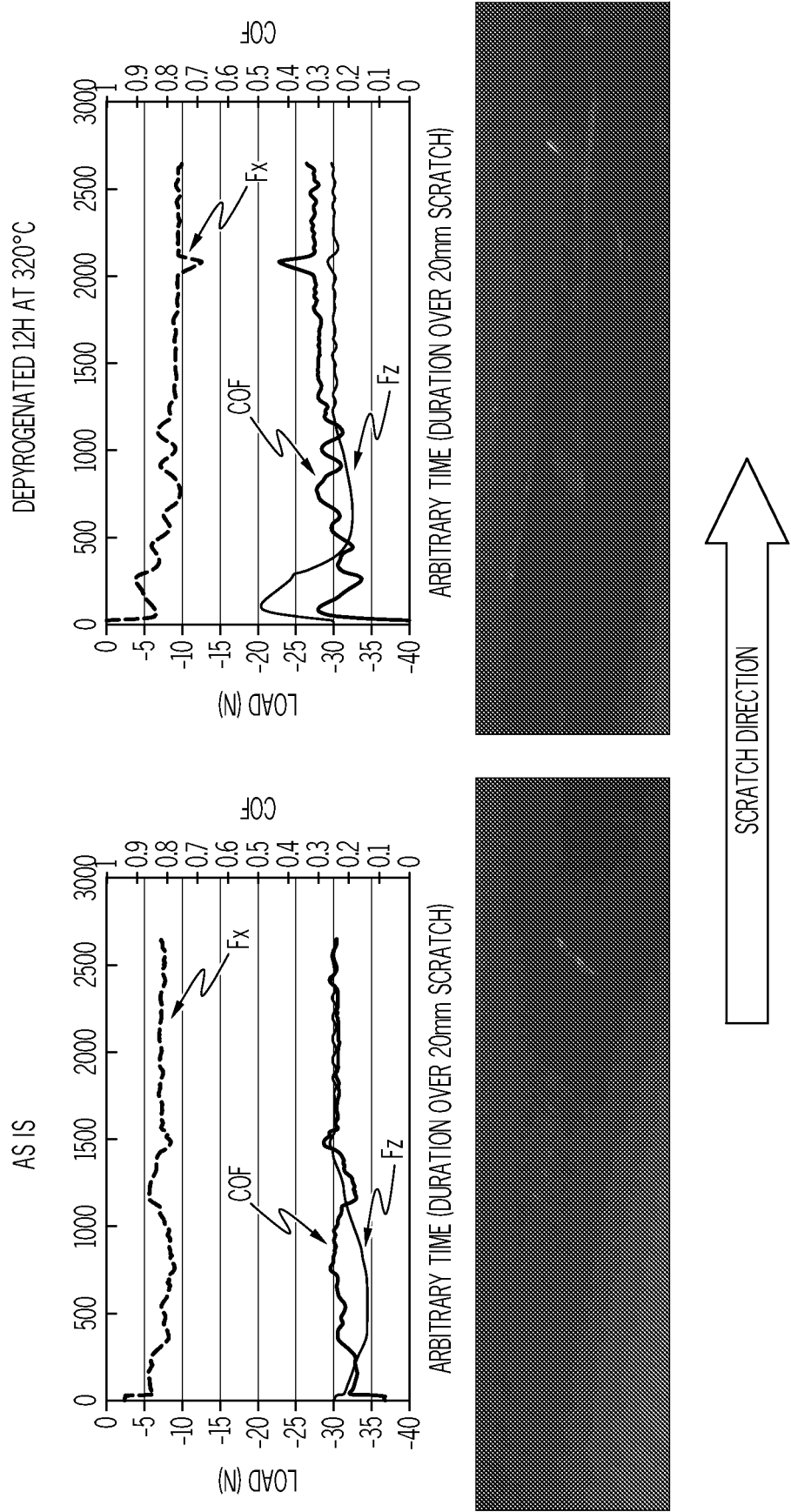


FIG. 38



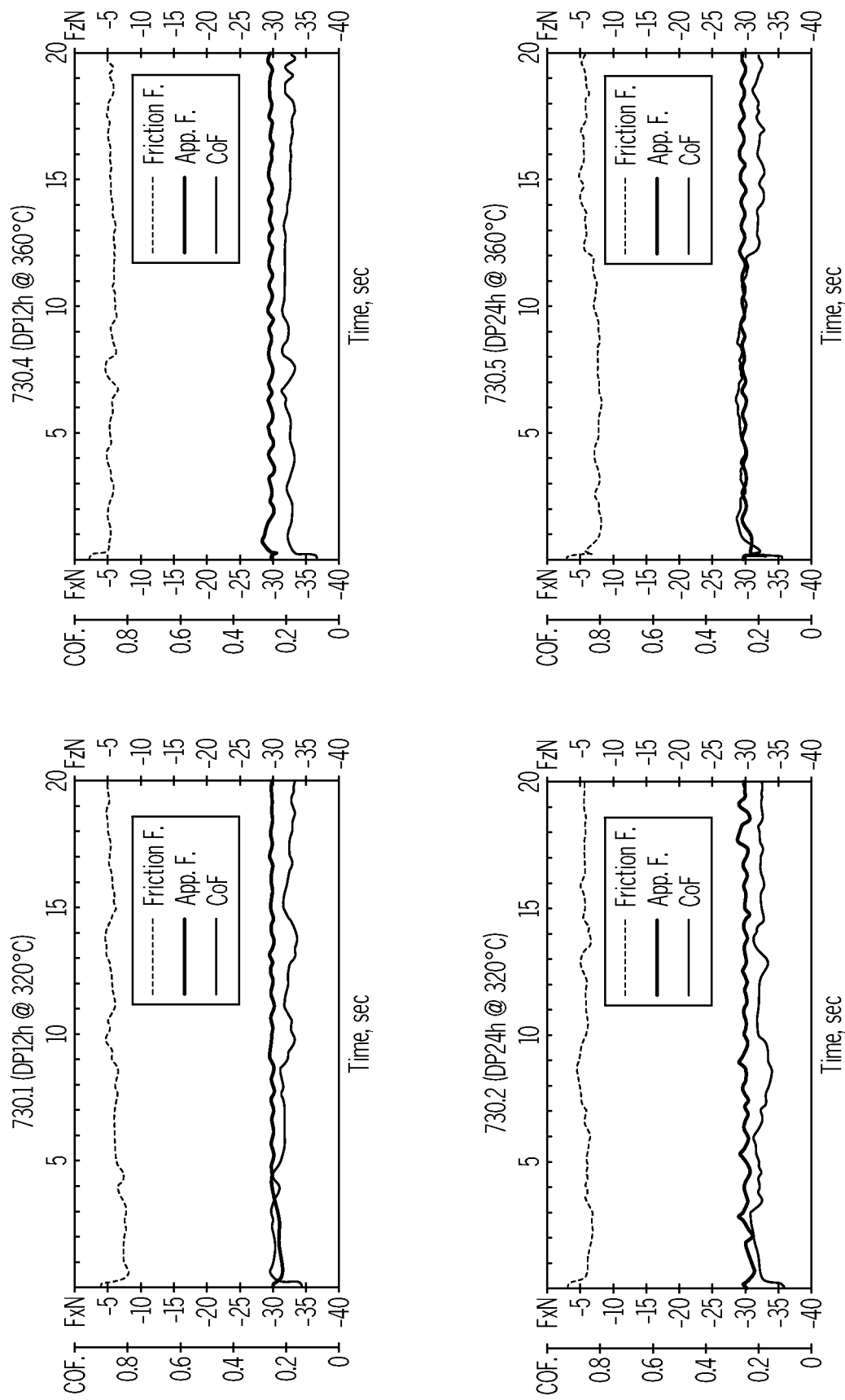


FIG. 40

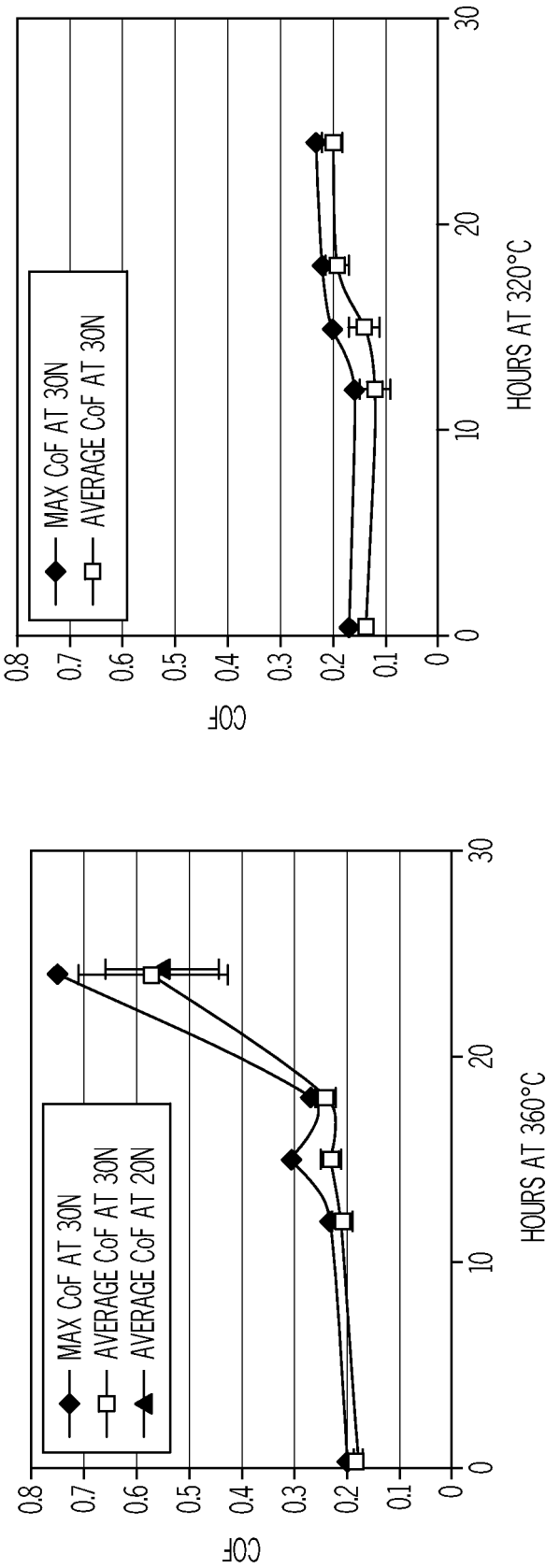


FIG. 41

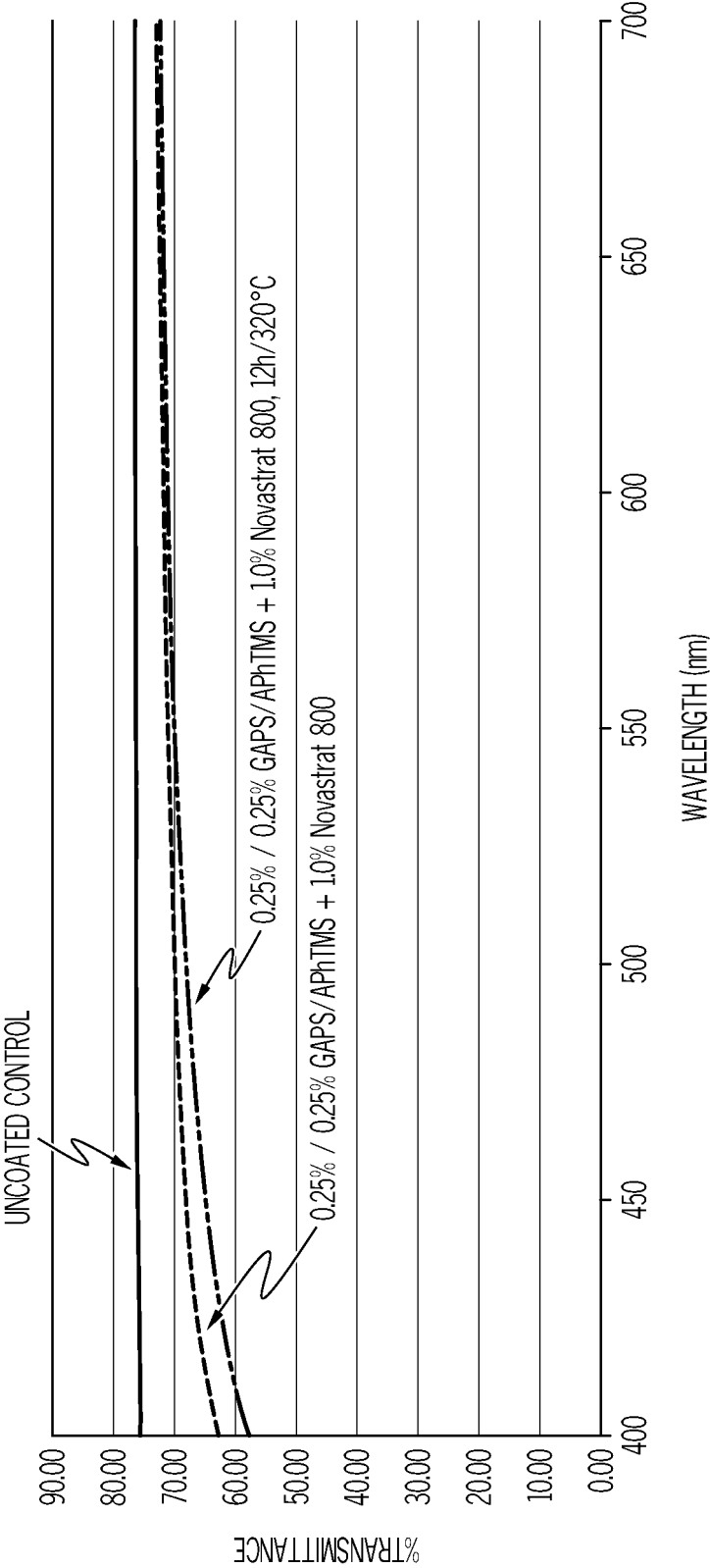


FIG. 42

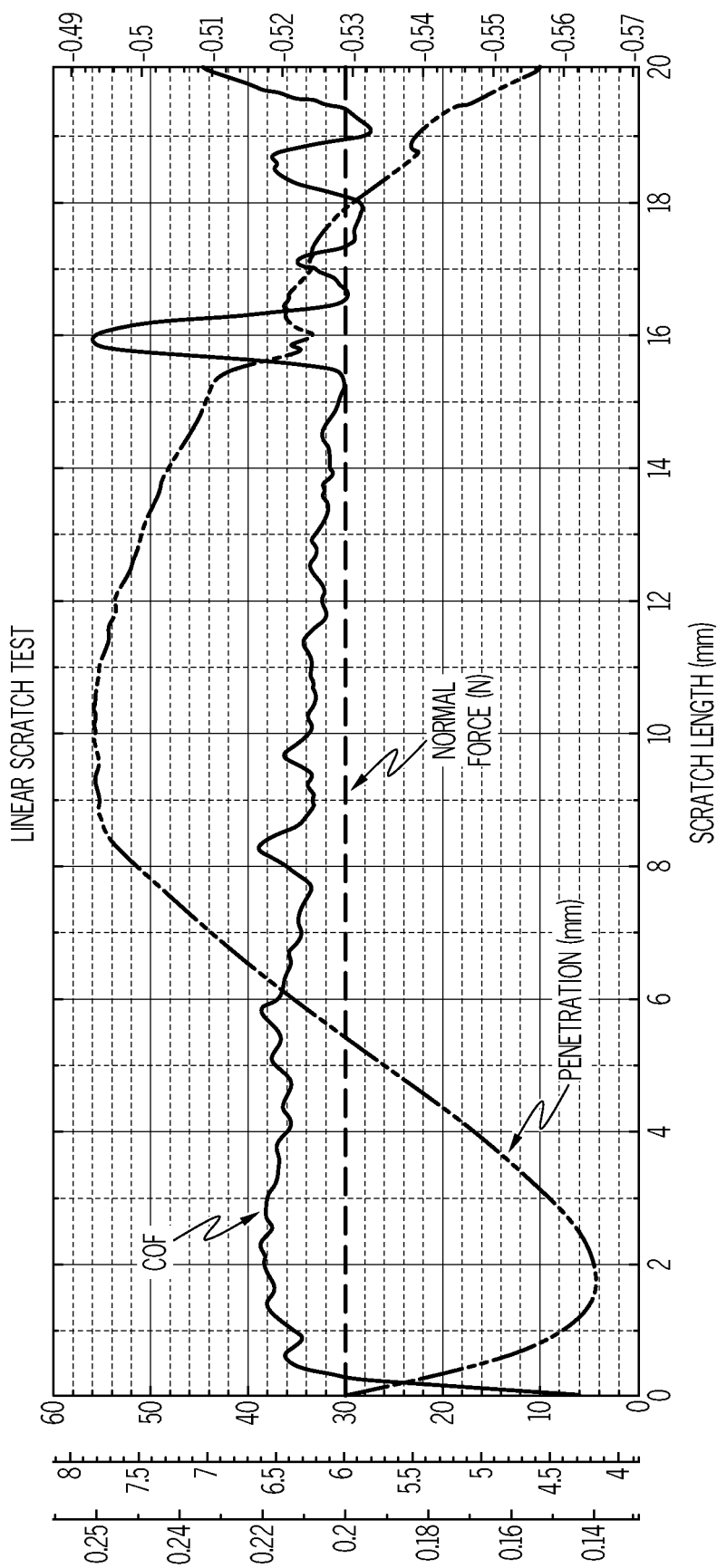


FIG. 43

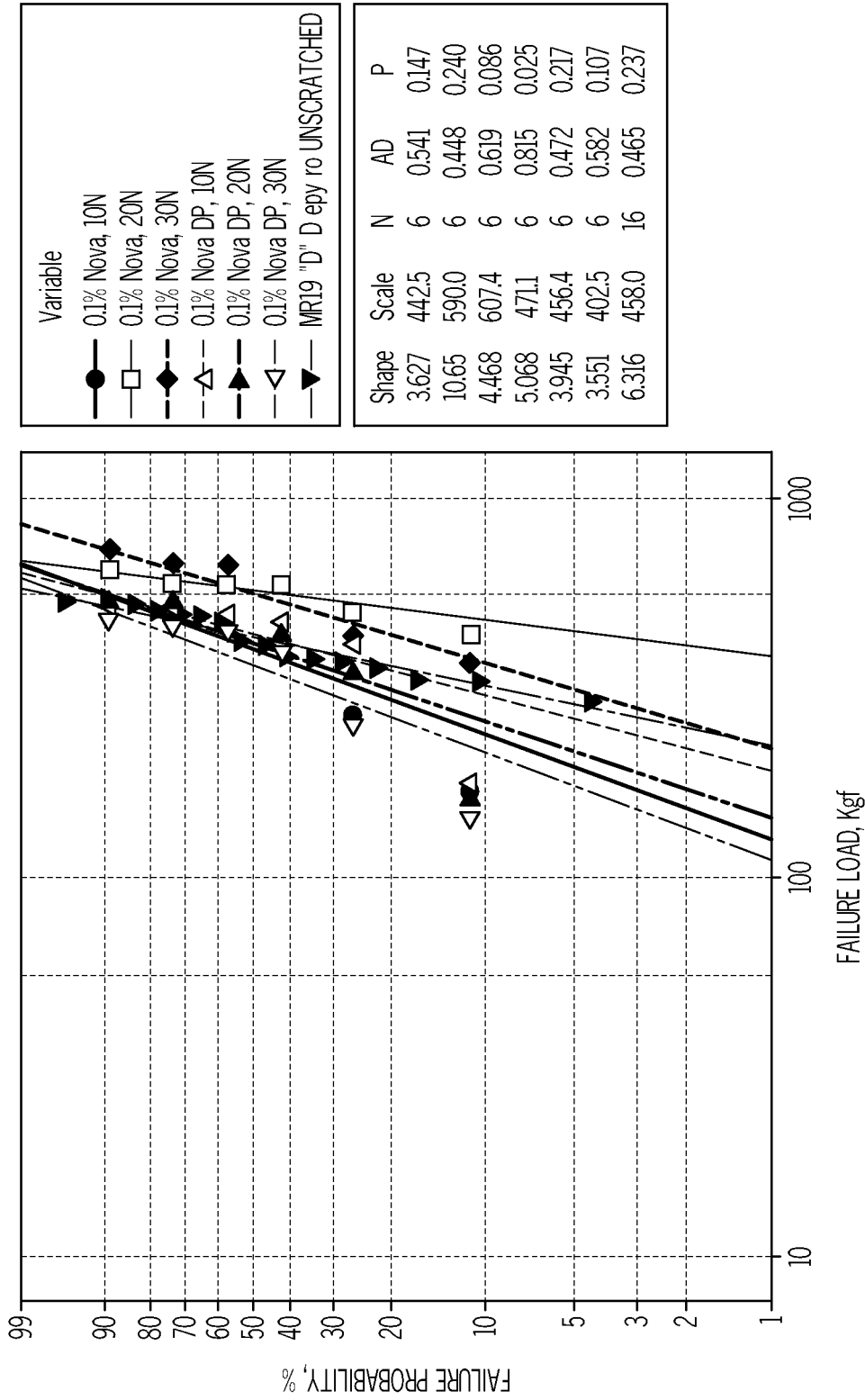


FIG. 44

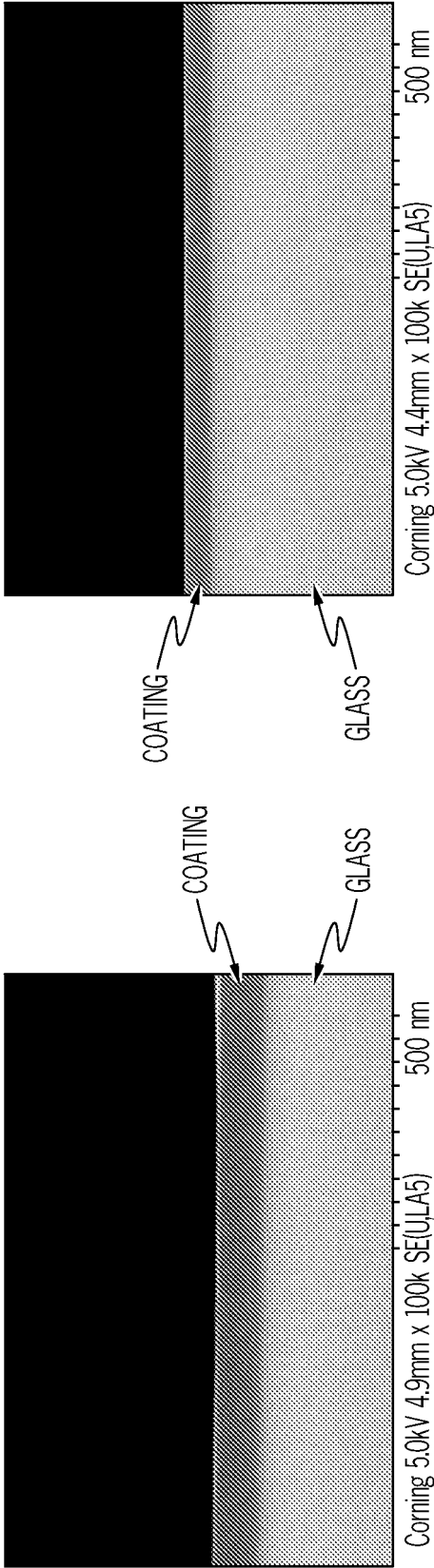


FIG. 45

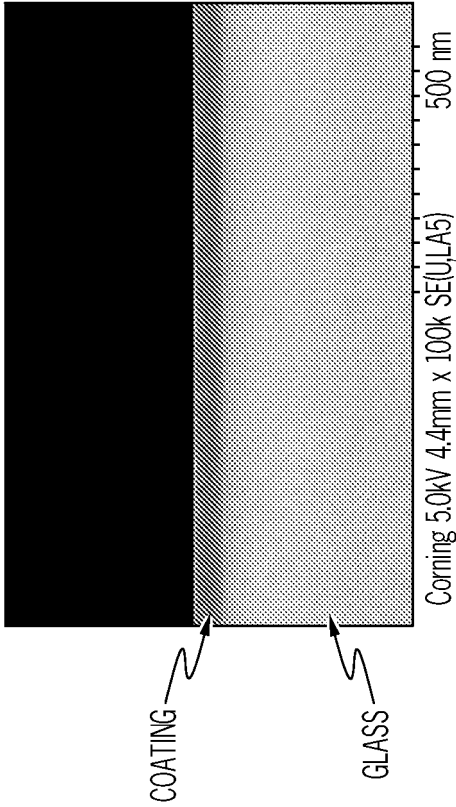


FIG. 46

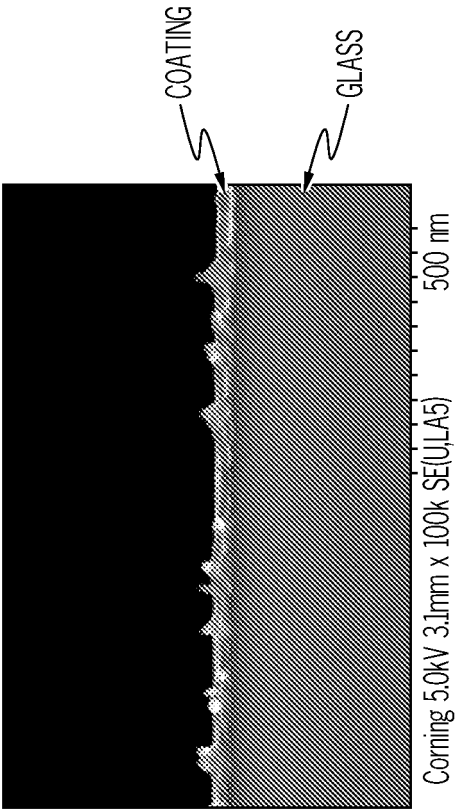


FIG. 47

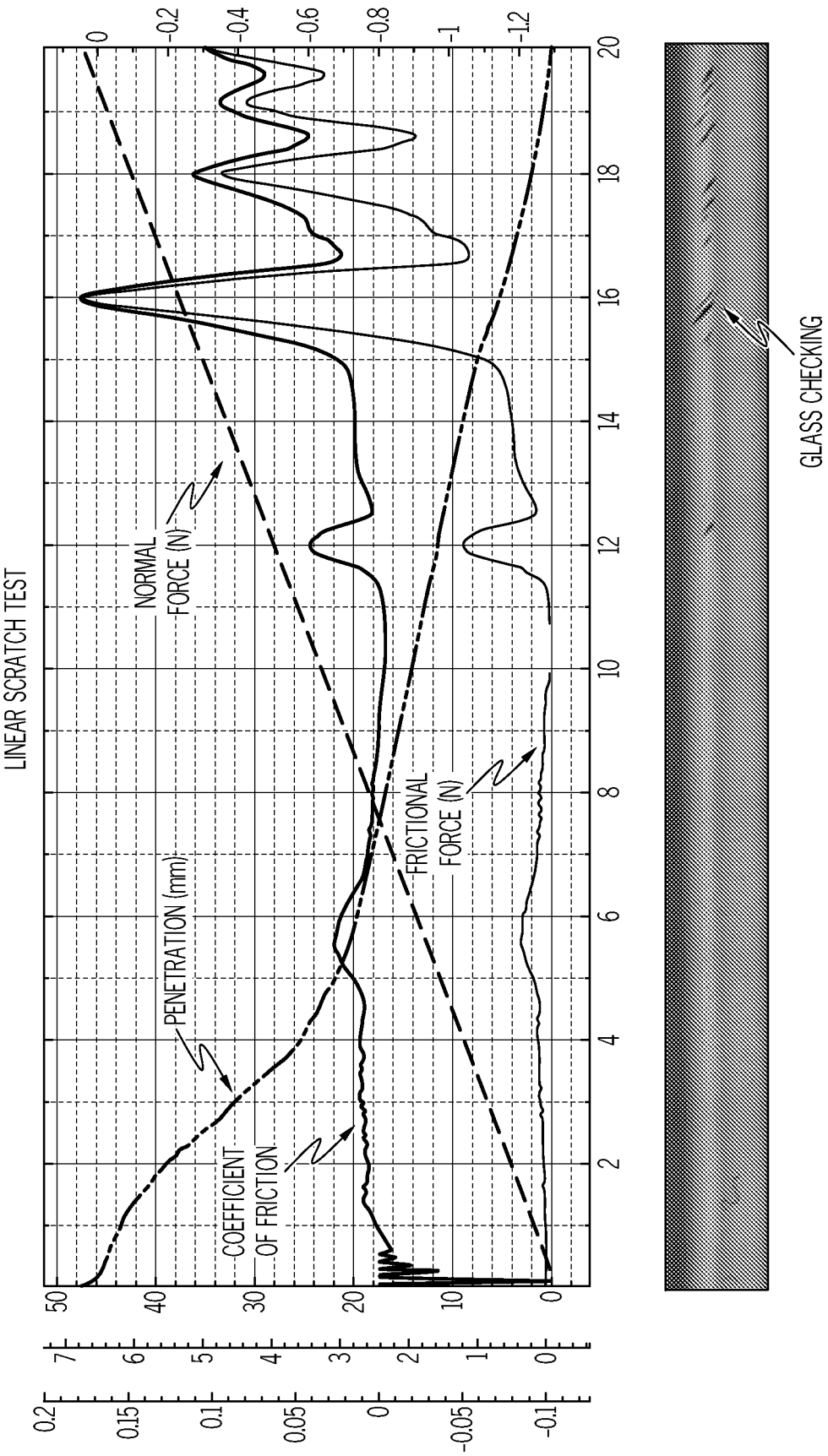


FIG. 48

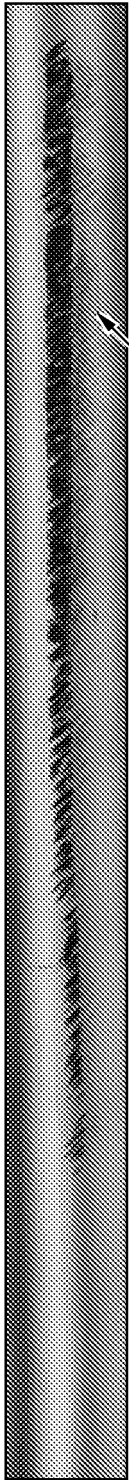
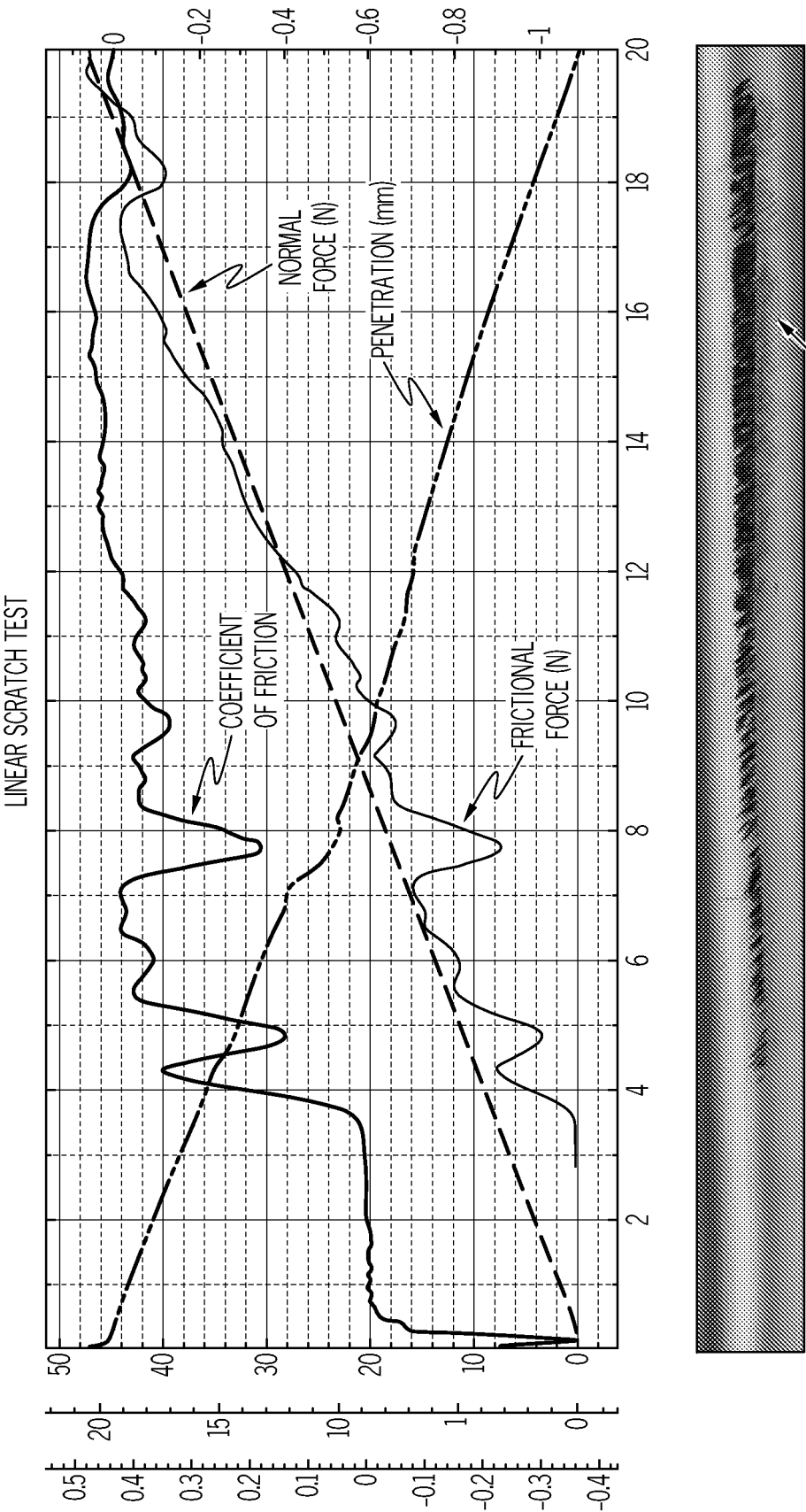


FIG. 49

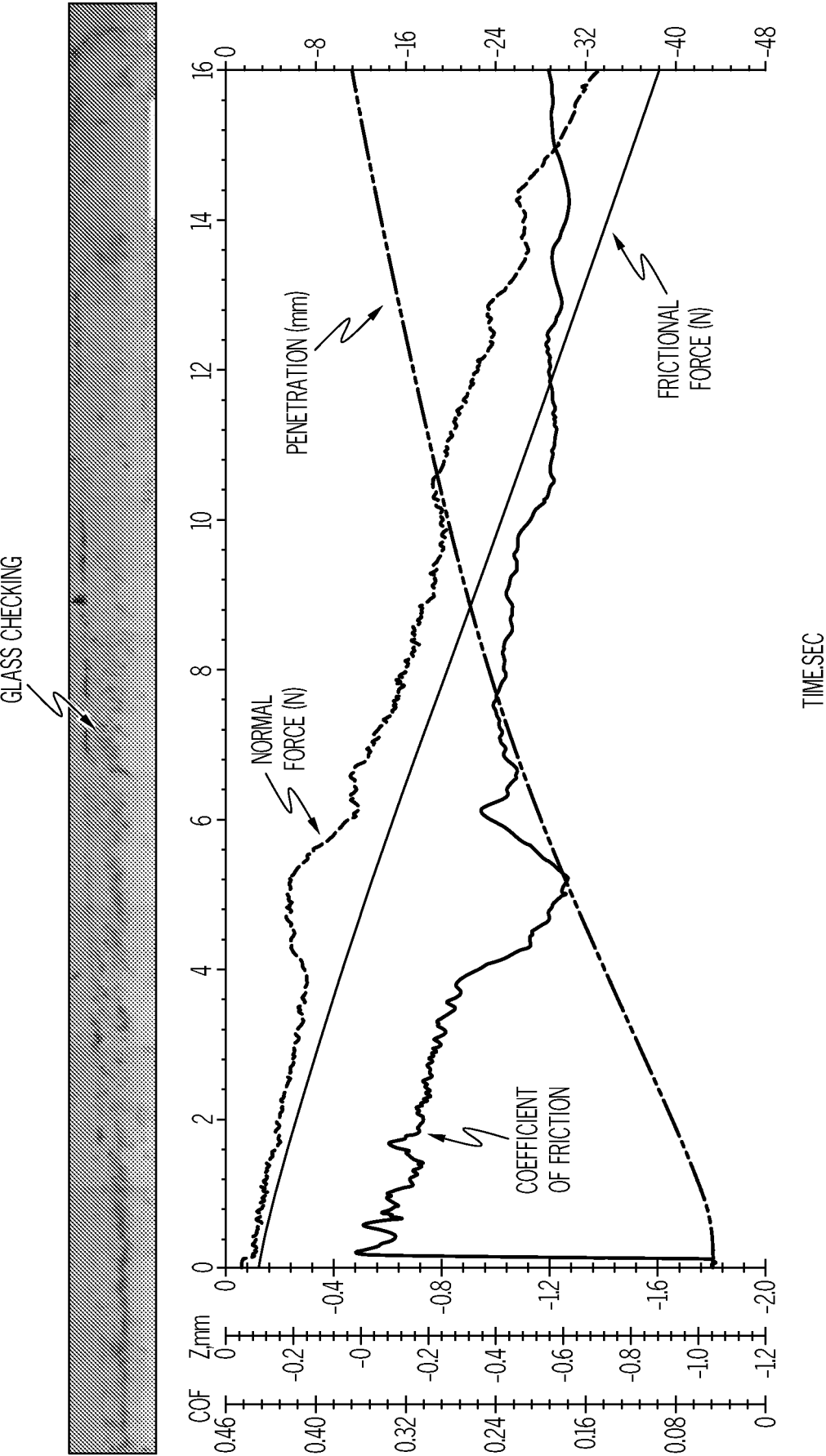


FIG. 50

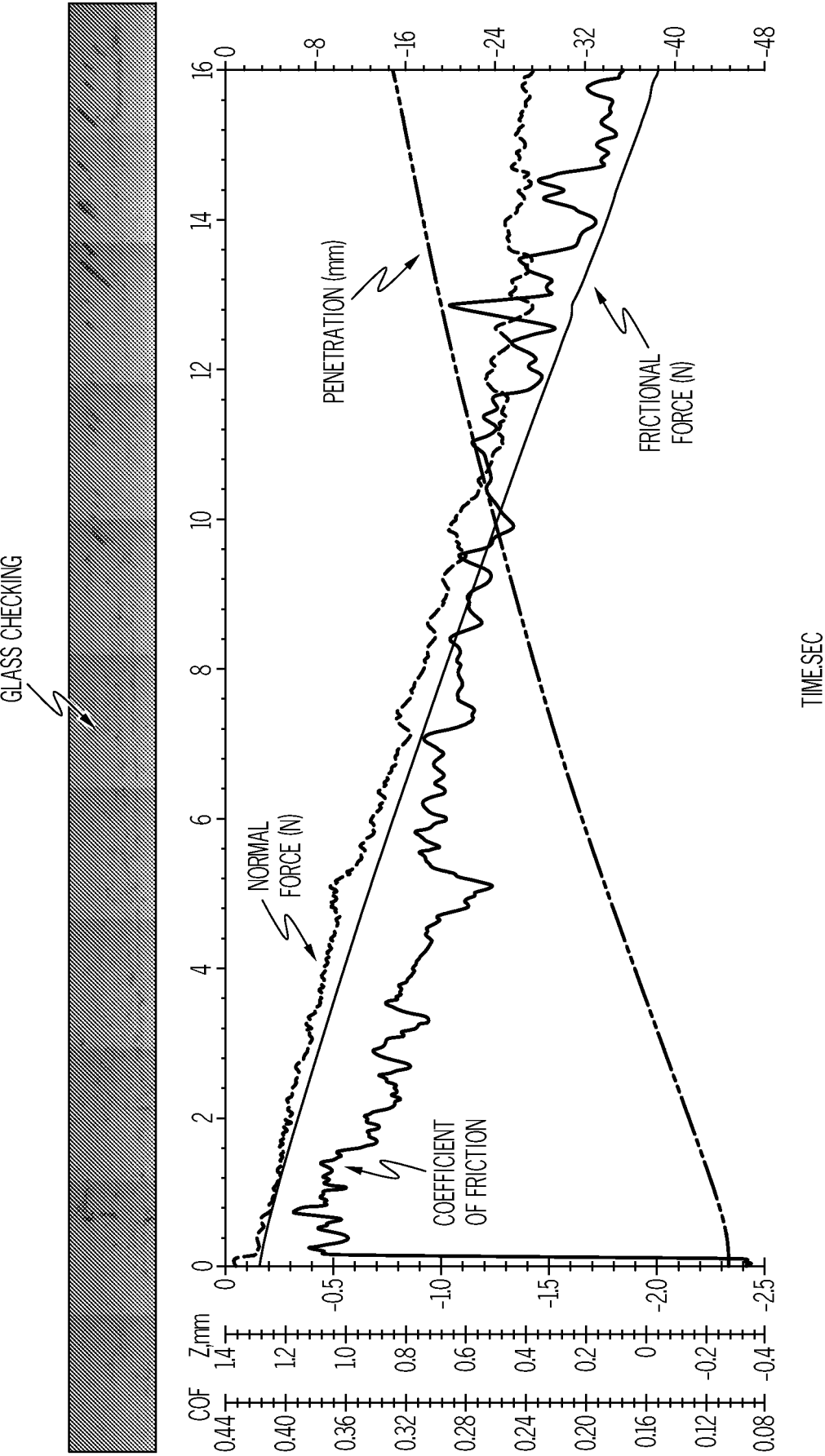
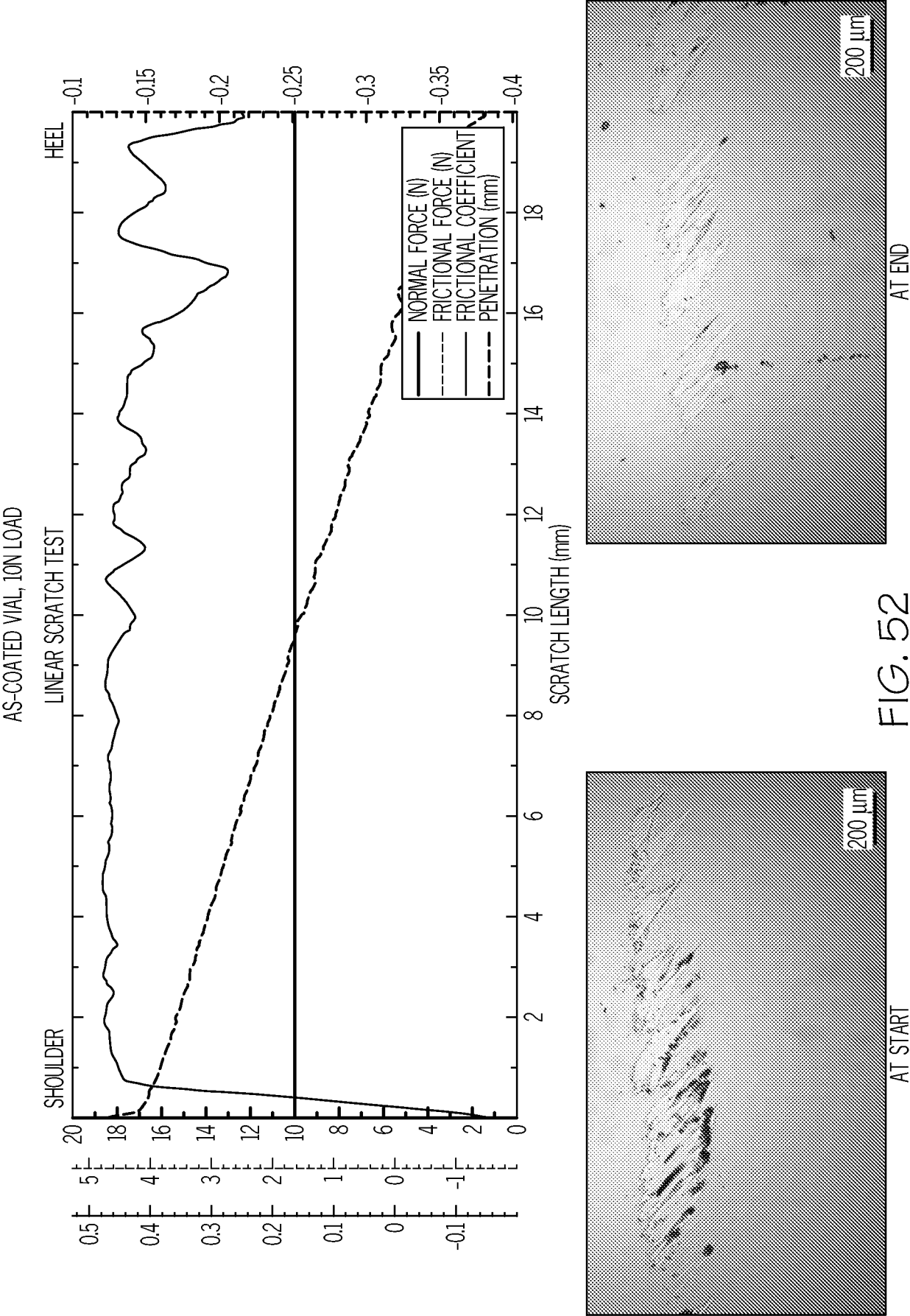
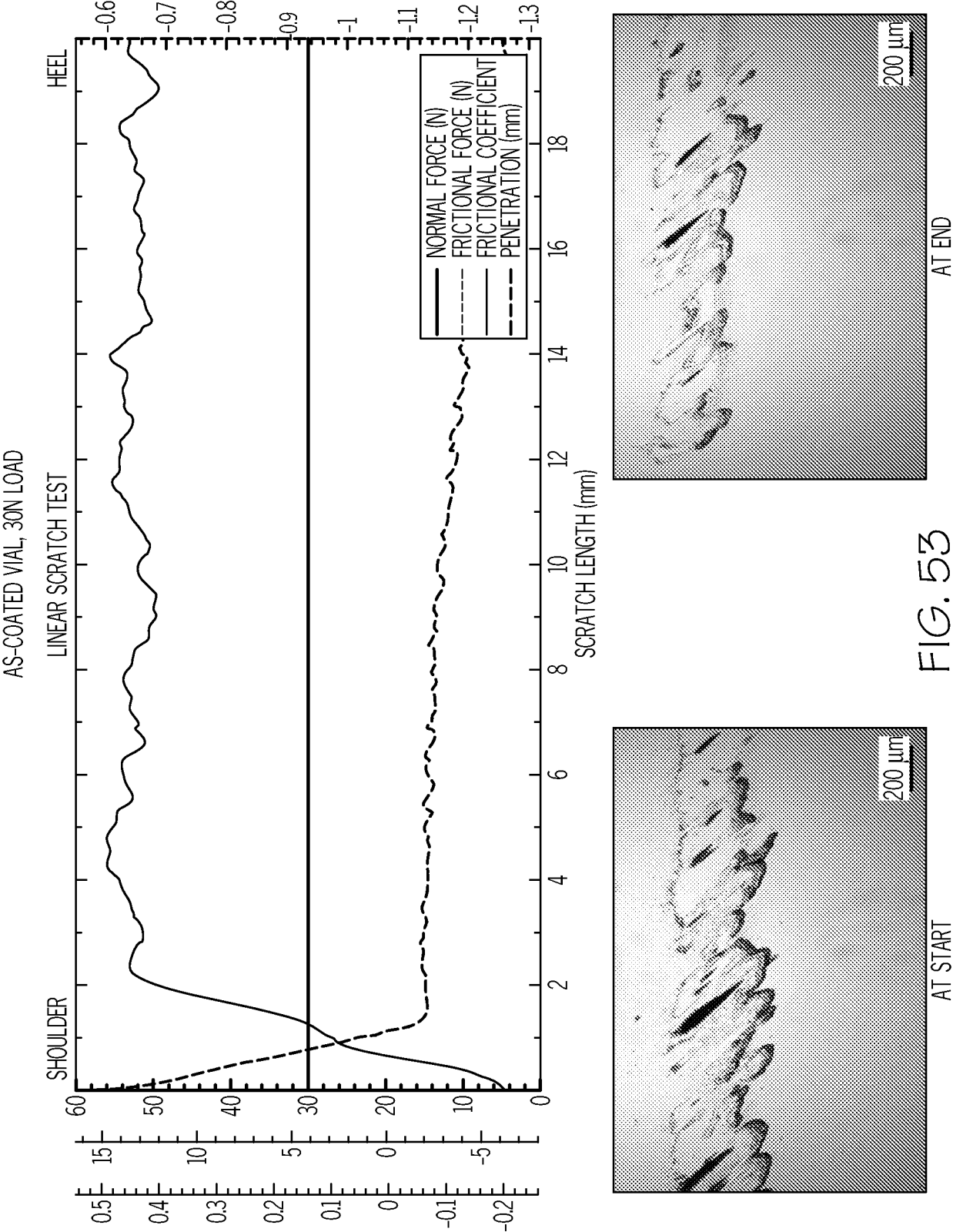
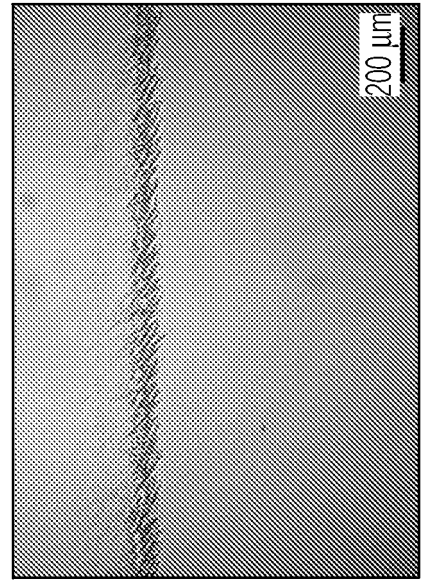
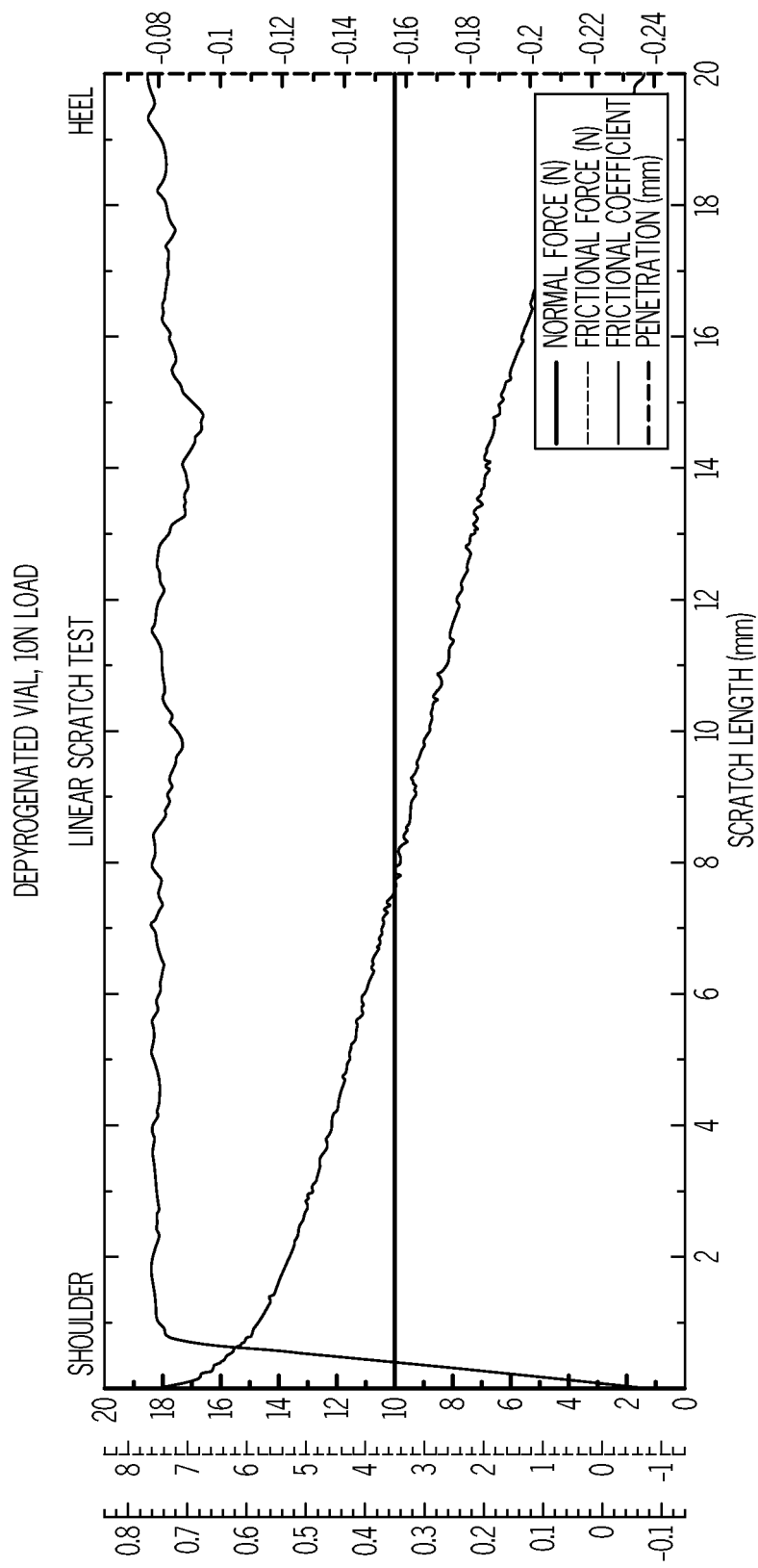


FIG. 51







AT MIDDLE

FIG. 54

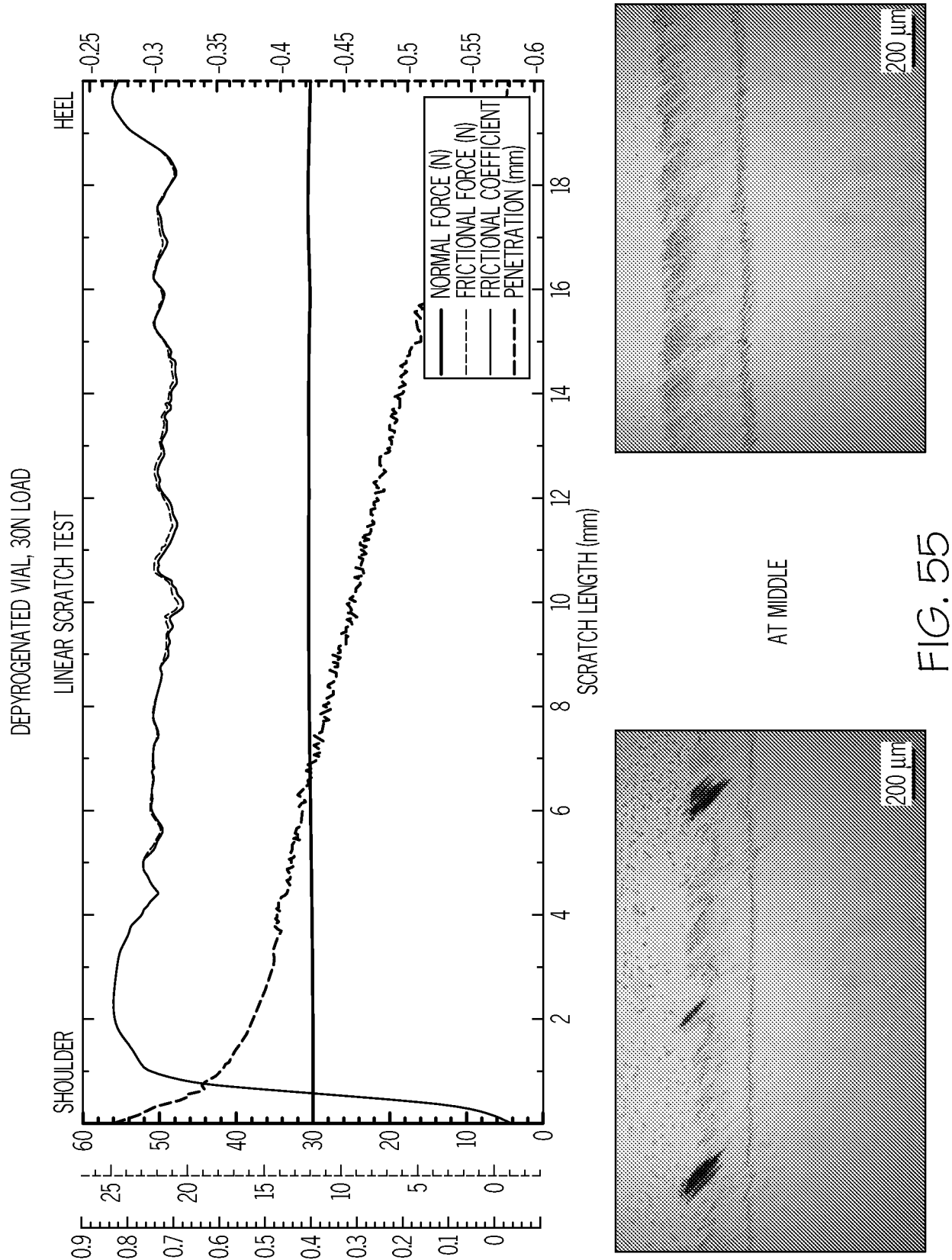


FIG. 55

HORIZONTAL COMPRESSION OF VARIED THICKNESS SILANE VIALS W/ 10N SCRATCH

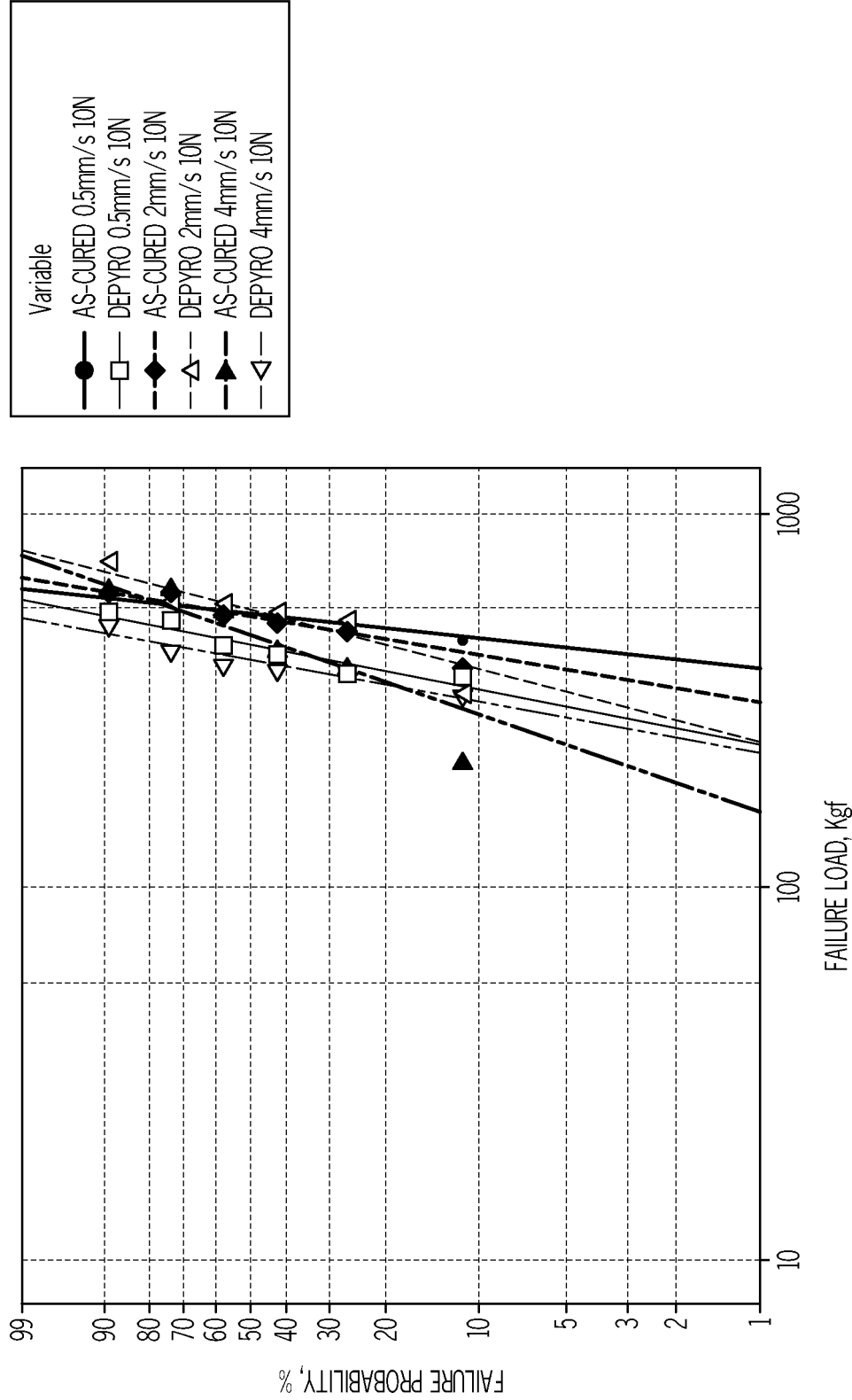


FIG. 56

HORIZONTAL COMPRESSION OF VARIED THICKNESS SILANE VIALS W/ 30N SCRATCH

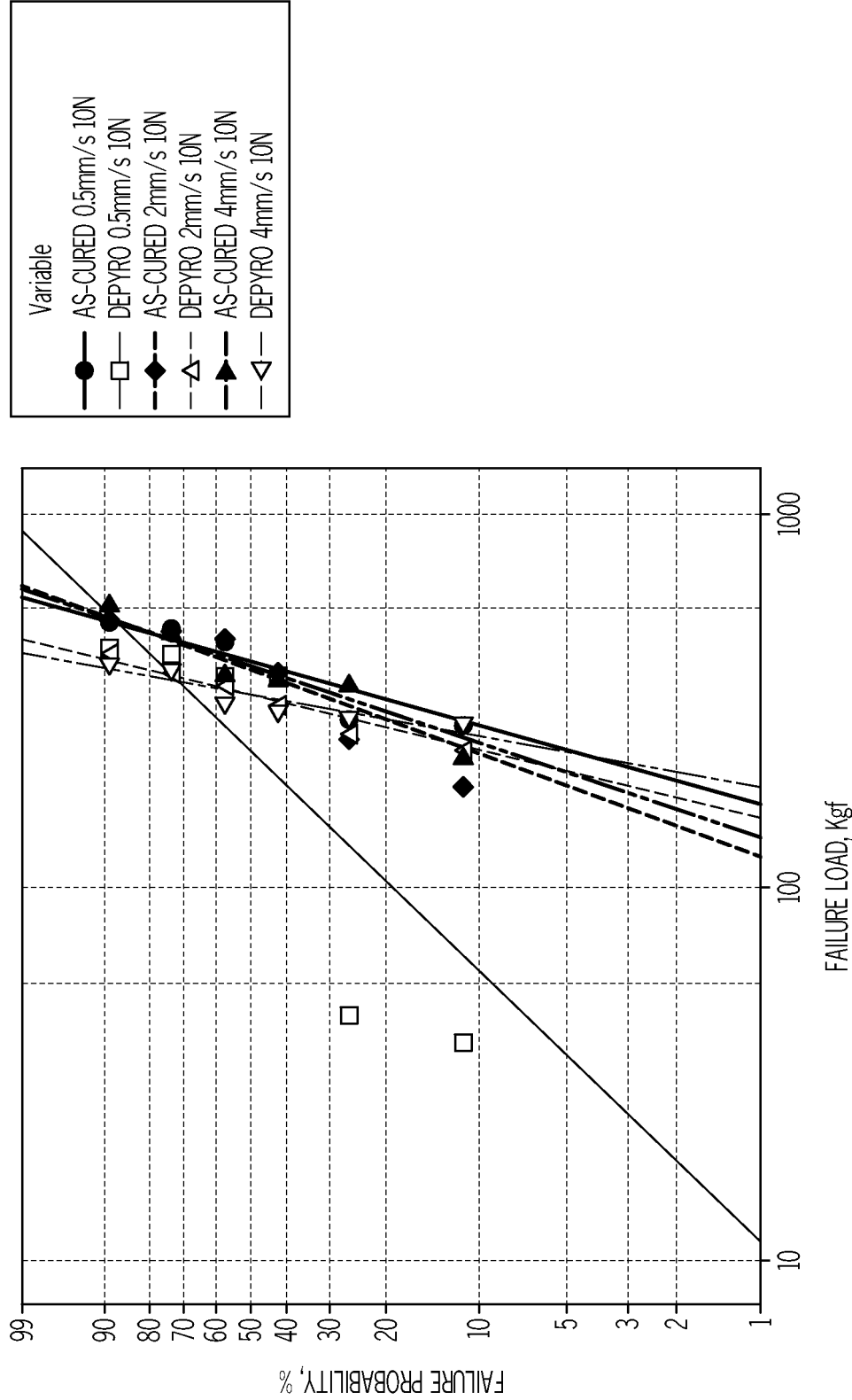


FIG. 57