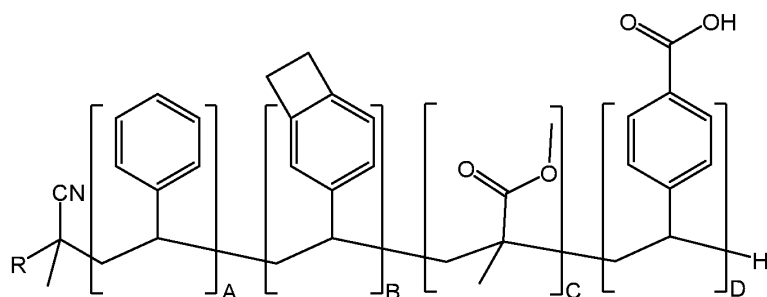
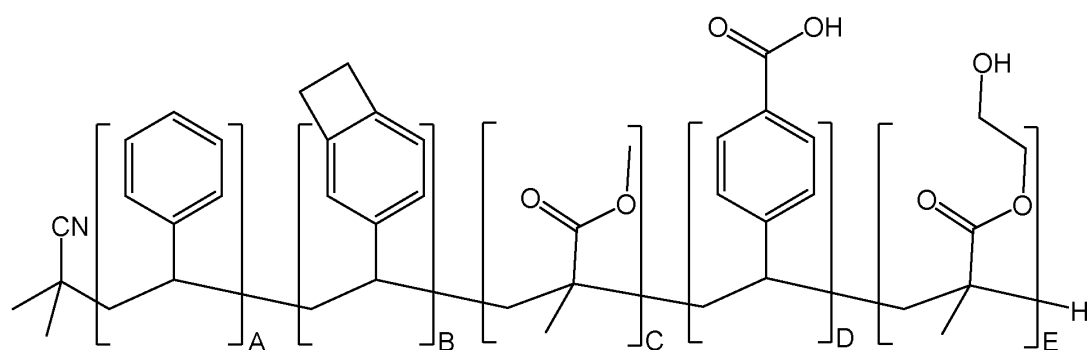


DRAWINGS



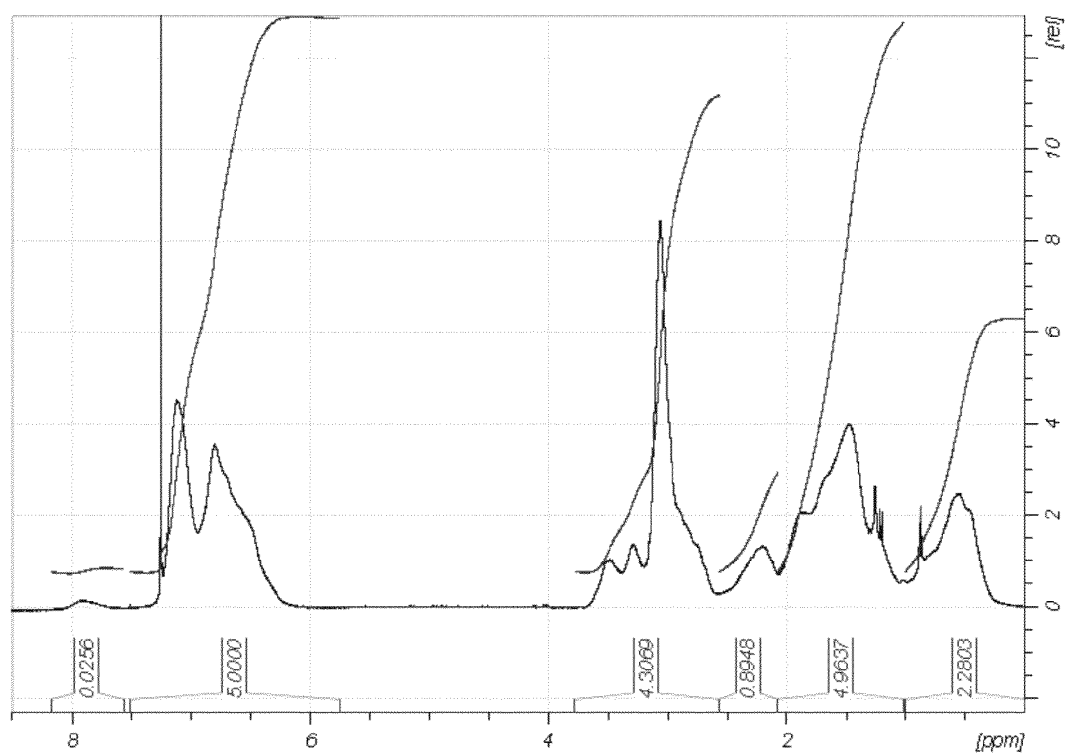
where R = $-\text{CH}_3$, $-(\text{CH}_2)_3-\text{OH}$, $-(\text{CH}_2)_2\text{COOH}$
and A = 0.30-0.60, B = 0.15-0.35, C = 0.15-0.45, D = 0.01-0.05

FIG. 1



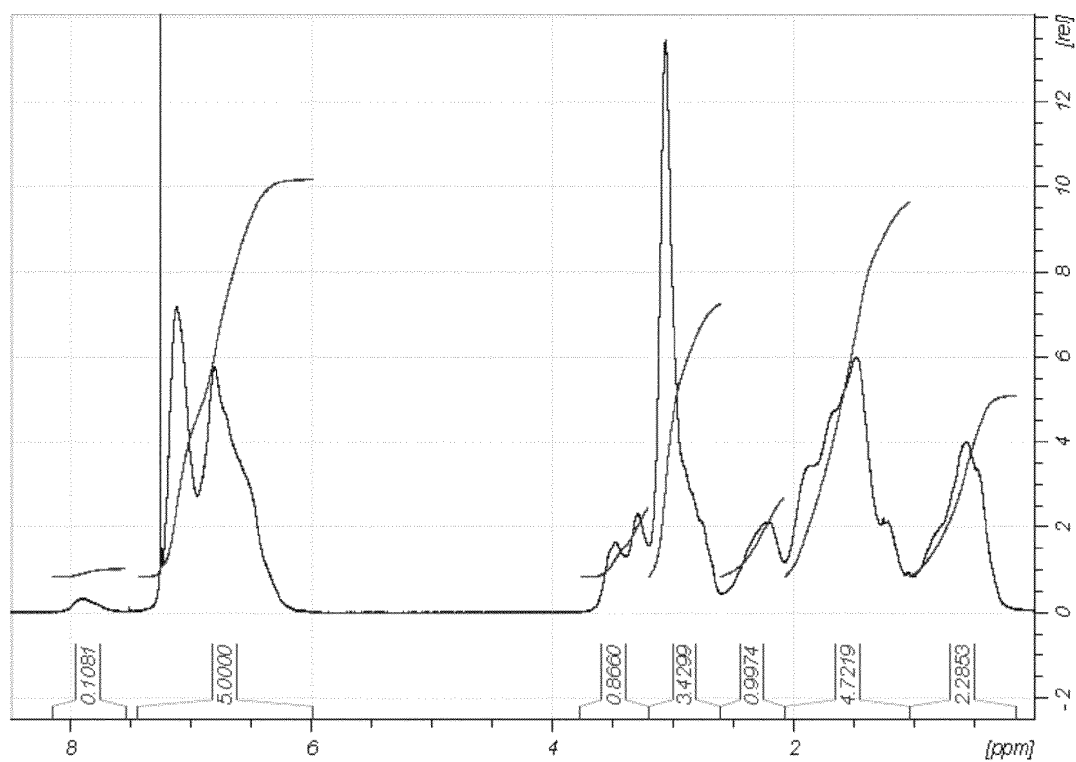
where A = 0.30-0.60, B = 0.15-0.35, C = 0.15-0.45, D = 0.01-0.05, E = 0.01-0.03

FIG. 2



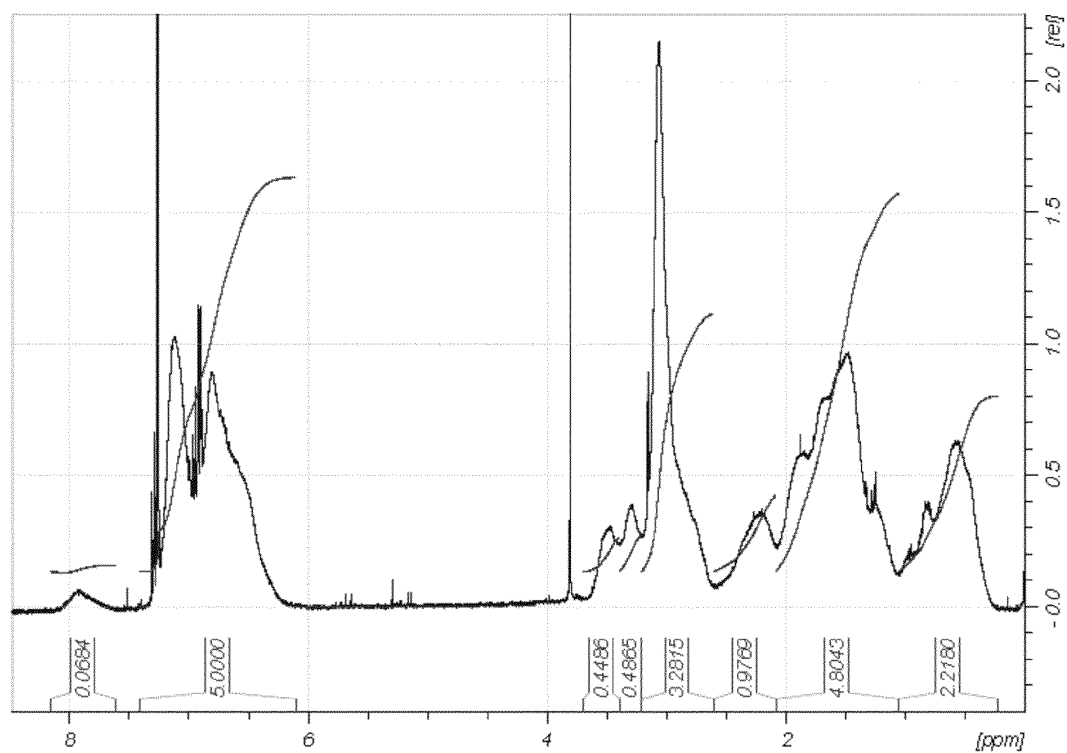
Representative ^1H NMR spectra of P(S-r-VBCB-r-MMA-r-VBA)-OH

FIG. 3



Representative ^1H NMR spectra of P(S-r-VBCB-r-MMA-r-VBA)-COOH

FIG. 4



Representative ^1H NMR spectra of P(S-r-VBCB-r-MMA-r-HEMA-r-VBA)

FIG. 5

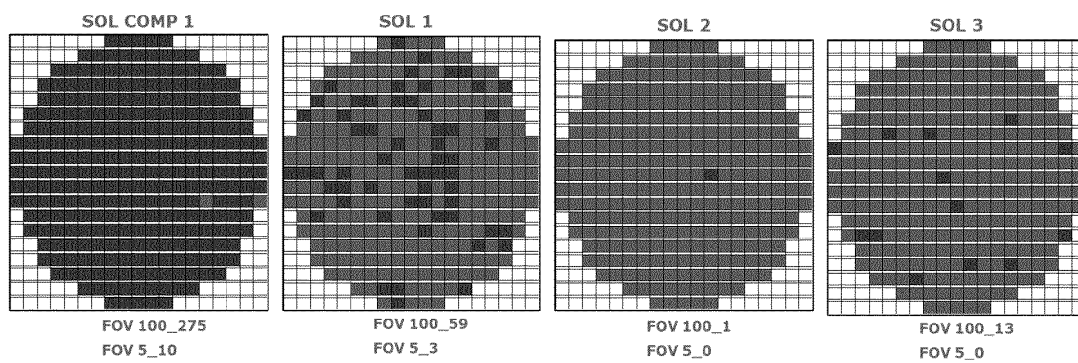
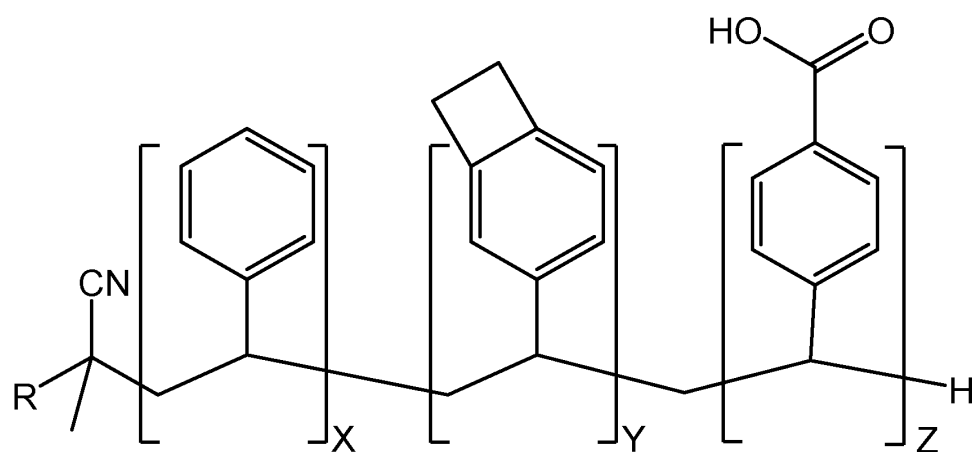
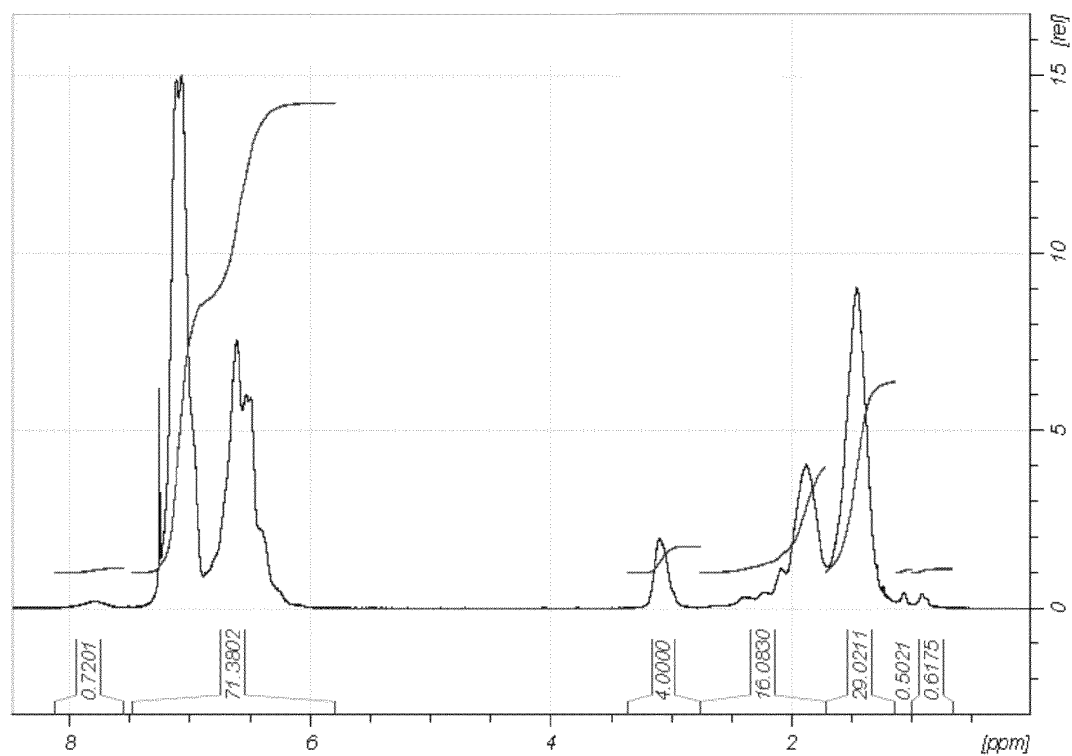


FIG. 6



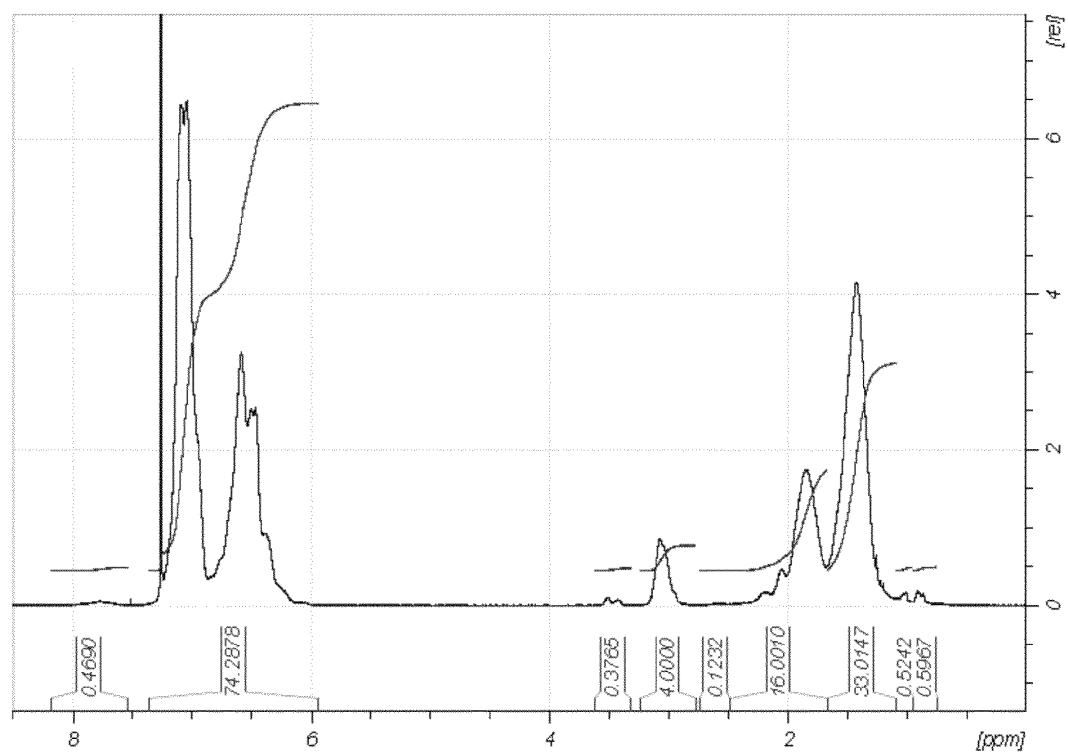
Where $R = -CH_3$, $-(CH_2)_3-OH$, $-(CH_2)_2-COOH$
And $X = 0.90 - 0.95$, $Y = 0.05 - 0.10$, $Z = 0.01 - 0.05$

FIG. 7



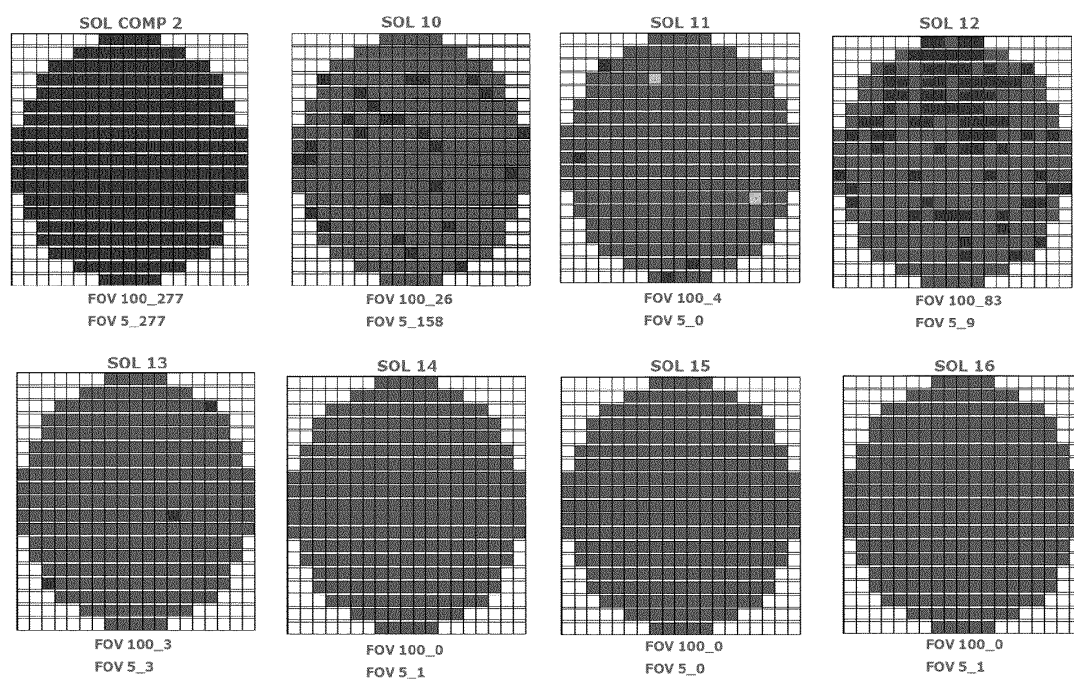
Representative ^1H NMR spectra of P(S-r-VBCB-r-VBA)-COOH

FIG. 8



Representative ^1H NMR spectra of P(S-r-VBCB-r-VBA)-OH

FIG. 9



Defect Analysis SOL COMP 2 versus SOL 10 to SOL 16 coated on SiARC

FIG. 10

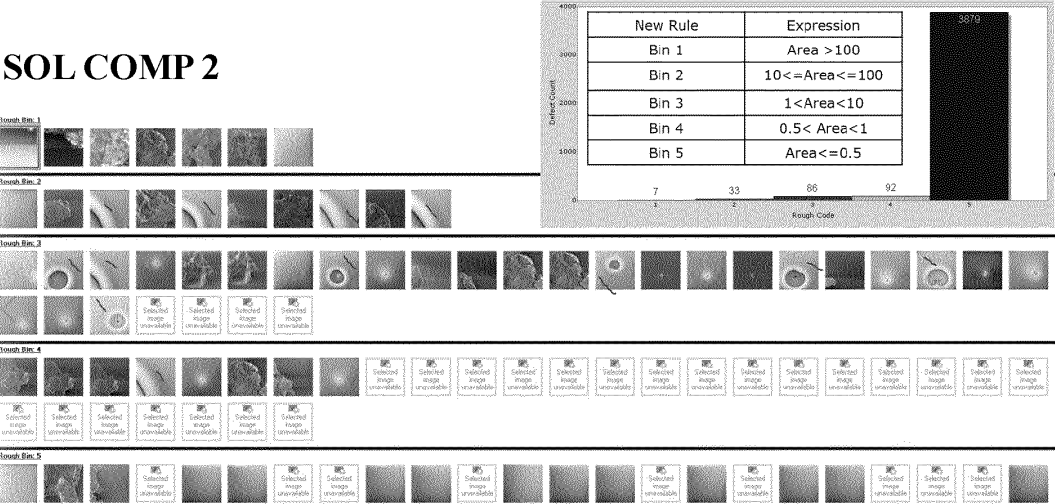


FIG. 11

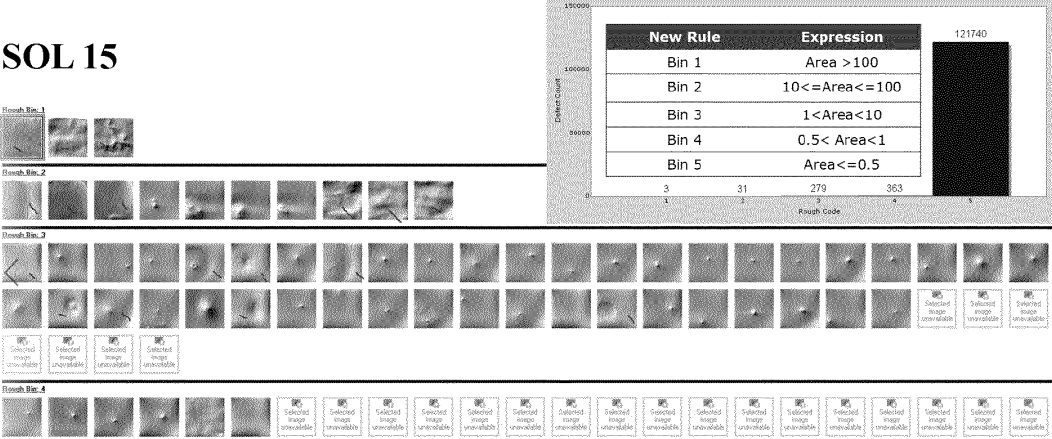


FIG. 12

SOL 14

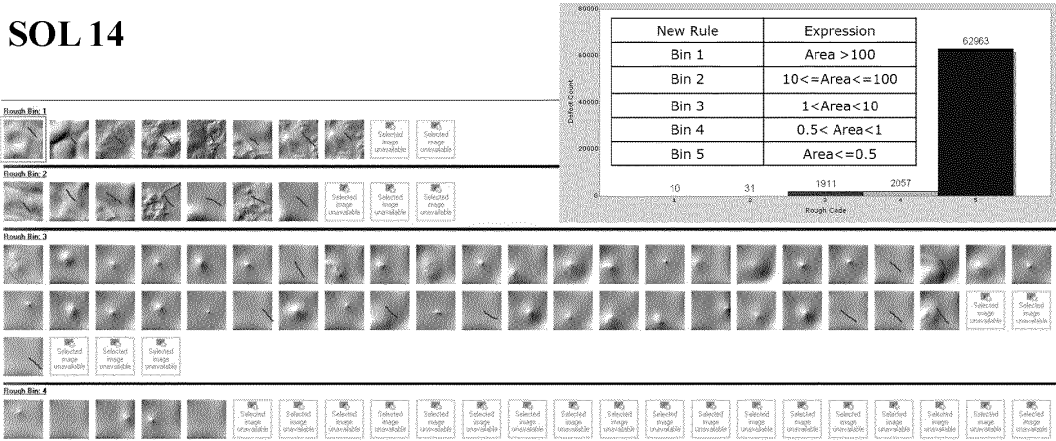
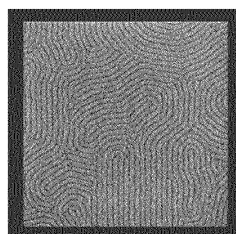
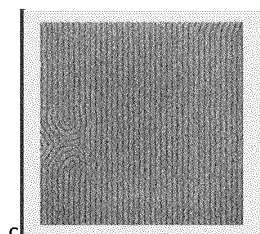


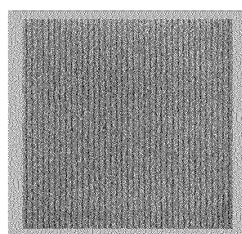
FIG. 13



Black: No alignment



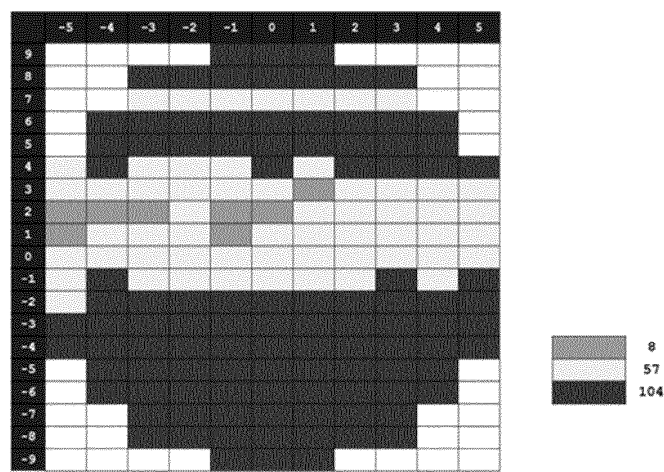
Light Grey: Mostly aligned



Grey: Completely aligned

FIG. 14

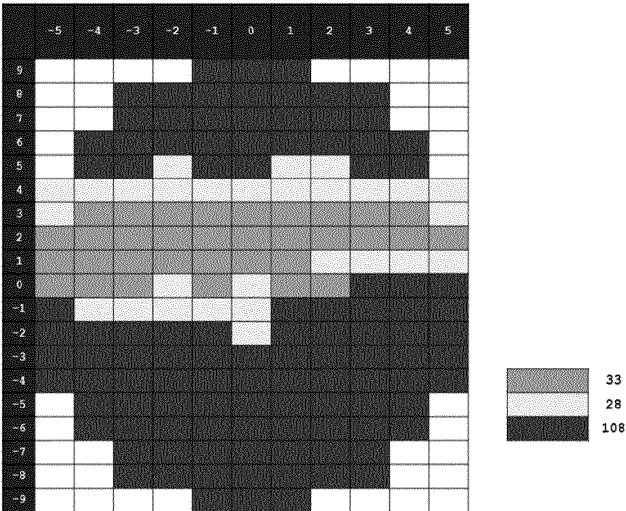
SOL COMP 2



Dose (mj/c m2)	ADI CD	AEI CD	ADI-AEI	W/Lo
7.5		51.14		
8.5		47.85		
9.5		40.41		
10.5	56.6	34.49	22.11	1.15
11.5	52.6	30.95	21.65	1.03
12.5	48.8	28.72	20.08	0.96
13.5	45.8	26.23	19.57	0.87
14.5	43.1	24.39	18.71	0.81
15.5	40.5	22.27	18.23	0.74
16.5	38.8	20.83	17.97	0.69
17.5	36.9	19.22	17.68	0.64
18.5	37.5	17.7	19.8	0.59
19.5	35.6	16.19	19.41	0.54
20.5	34.6	14.89	19.71	0.50
21.5	33.6	13.86	19.74	0.46
22.5	33.4	12.38	21.02	0.41
23.5	32.2	12.98	19.22	0.43
24.5	31.4	11.13	20.27	0.37
25.5	31	11.96	19.04	0.40

FIG. 15

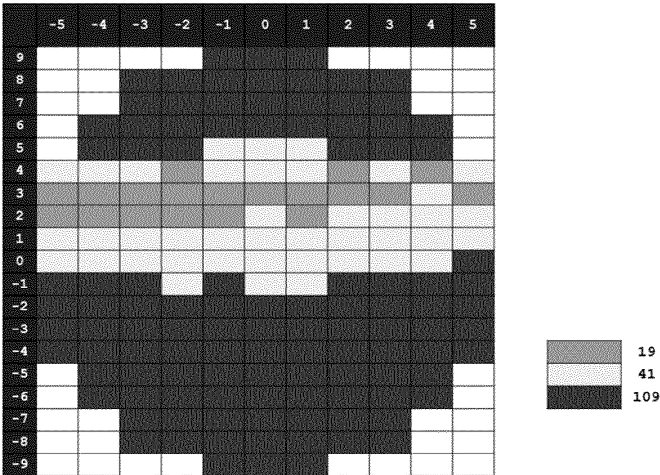
SOL 15



Dose (mj/cm ²)	ADI CD	AEI CD	ADI-AEI	W/Lo
7.5		47.49		
8.5		48.38		
9.5		36.78		
10.5	57.8	32.46	25.34	1.08
11.5	52.3	29.28	23.02	0.98
12.5	49.6	26.31	23.29	0.88
13.5	44.9	24.49	20.41	0.82
14.5	43.2	22.34	20.86	0.74
15.5	39.9	20.47	19.43	0.68
16.5	37.7	18.69	19.01	0.62
17.5	36.7	17.11	19.59	0.57
18.5	35.8	15.93	19.87	0.53
19.5	34.3	14.53	19.77	0.48
20.5	33.7	13.42	20.28	0.45
21.5	32.3	11.98	20.32	0.40
22.5	31.8	11.08	20.72	0.37
23.5	30.6	9.04	21.56	0.30
24.5	29.4	9.81	19.59	0.33
25.5	29	9.19	19.81	0.31

FIG. 16

SOL 14



Dose (mj/cm ²)	ADI CD	AE I CD	ADI-AEI	W/Lo
7.5		48.57		
8.5		43.49		
9.5		36.59		
10.5		31.27		1.04
11.5	52.2	28.12	24.08	0.94
12.5	48.7	25.47	23.23	0.85
13.5	45.1	23.33	21.77	0.78
14.5	42.3	21.29	21.01	0.71
15.5	38.4	19.7	18.7	0.66
16.5	37.2	18.01	19.19	0.60
17.5	36.4	16.57	19.83	0.55
18.5	35.1	14.9	20.2	0.50
19.5	34.5	13.67	20.83	0.46
20.5	32.9	12.14	20.76	0.40
21.5	31.8	10.35	21.45	0.35
22.5	30.5	9.77	20.73	0.33
23.5	29.4	9.14	20.26	0.30
24.5	28.7	9.33	19.37	0.31
25.5	28.6	9.85	18.75	0.33

FIG. 17

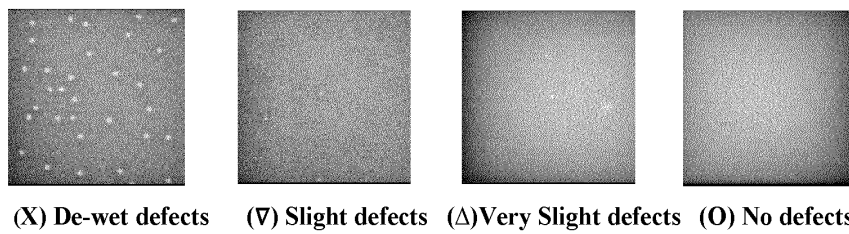


FIG. 18

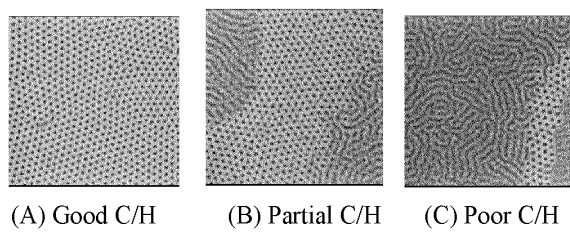


FIG. 19