

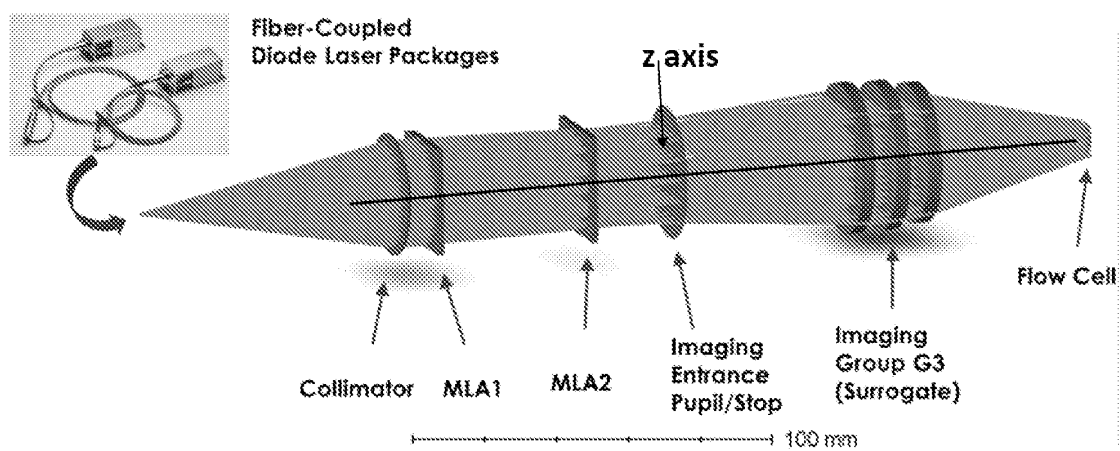


FIG. 1

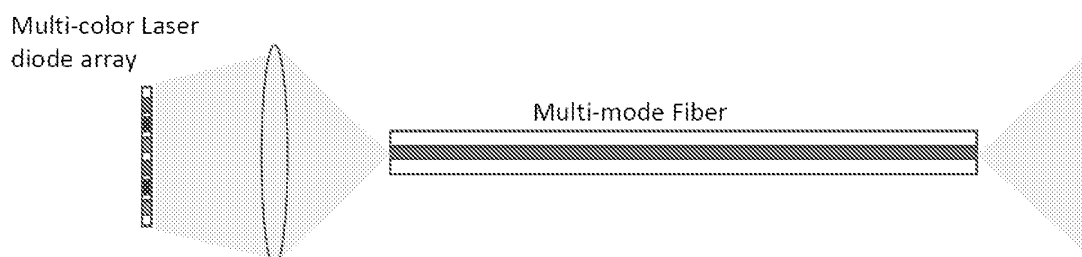


FIG. 2

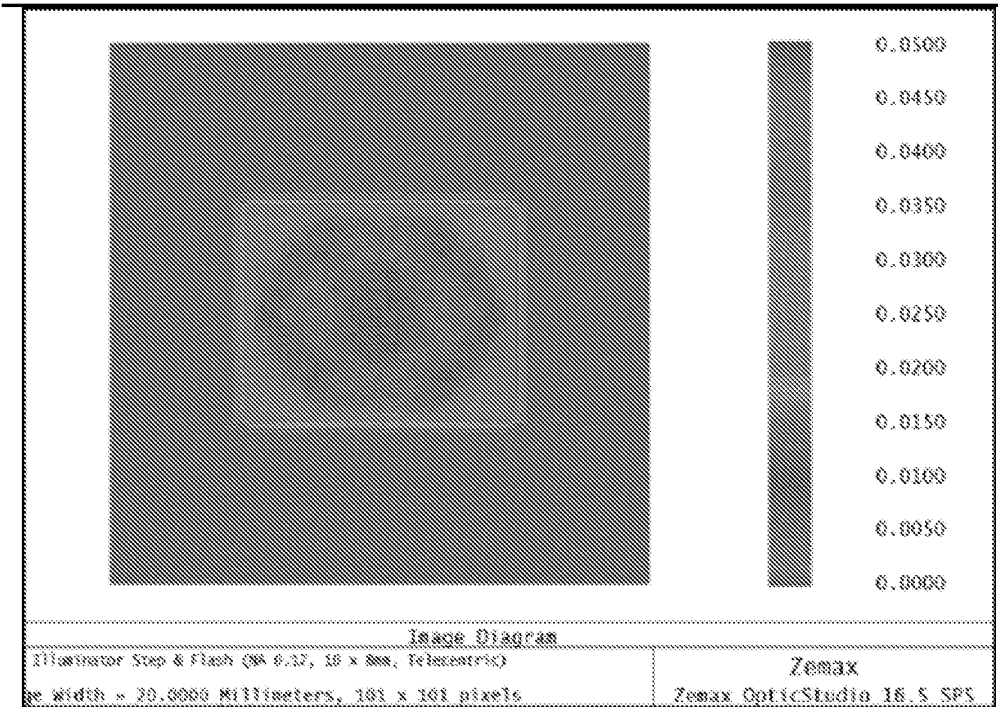


FIG. 3A

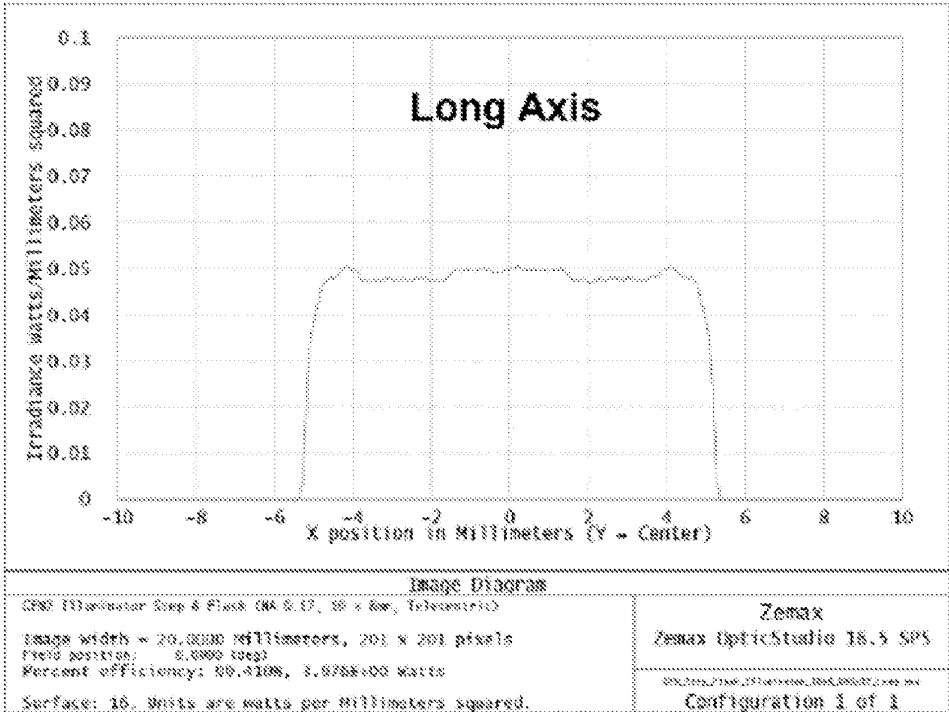


FIG. 3B

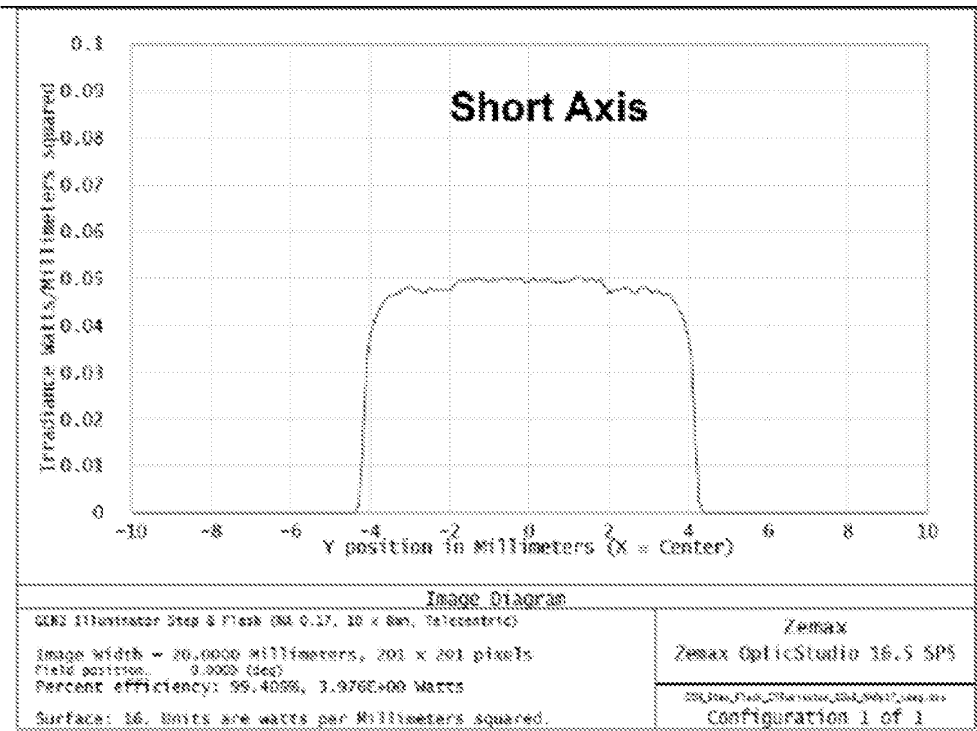


FIG. 3C

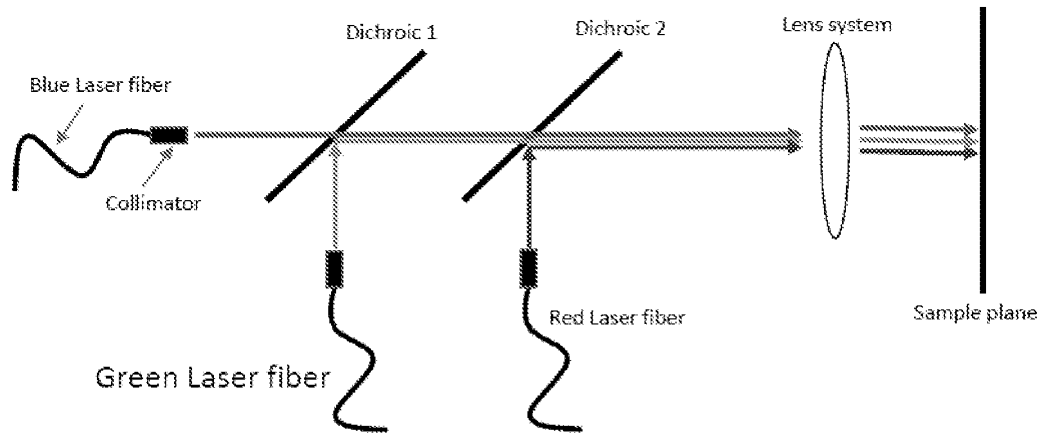


FIG. 4

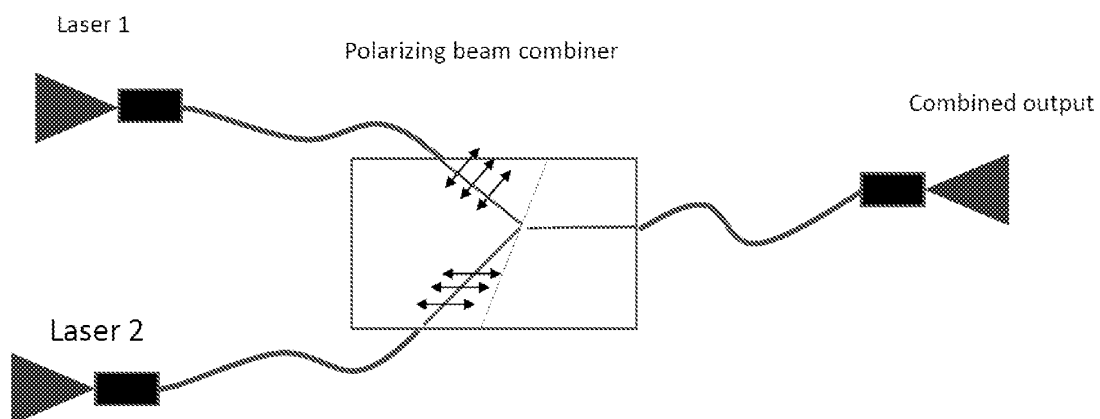


FIG. 5

Large Beam despeckler

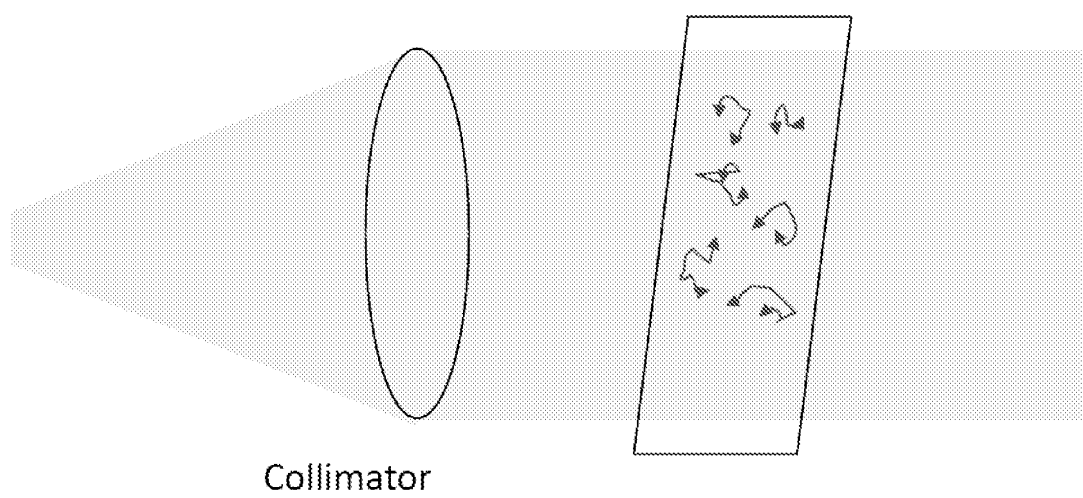


FIG. 6

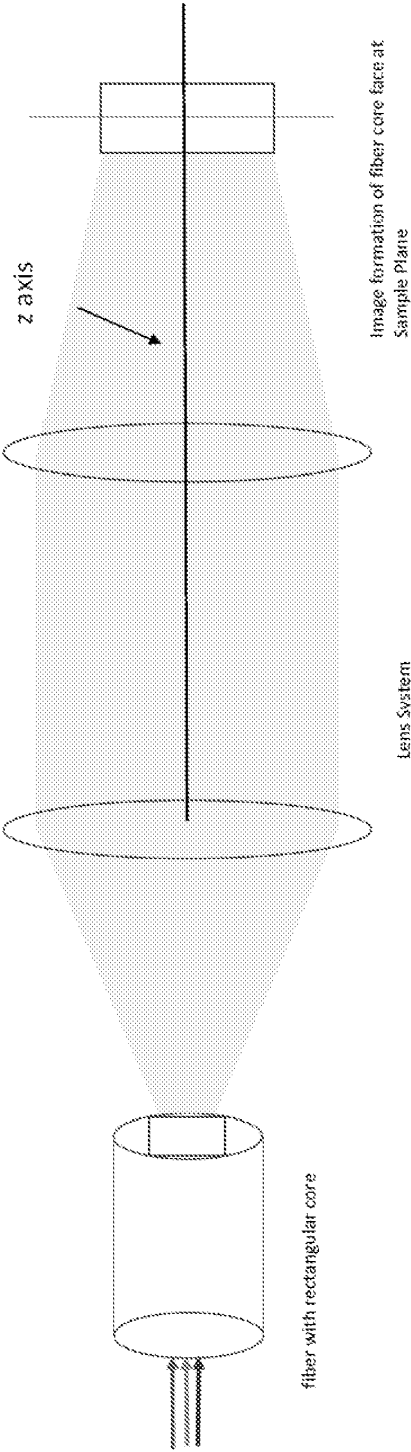


FIG. 7

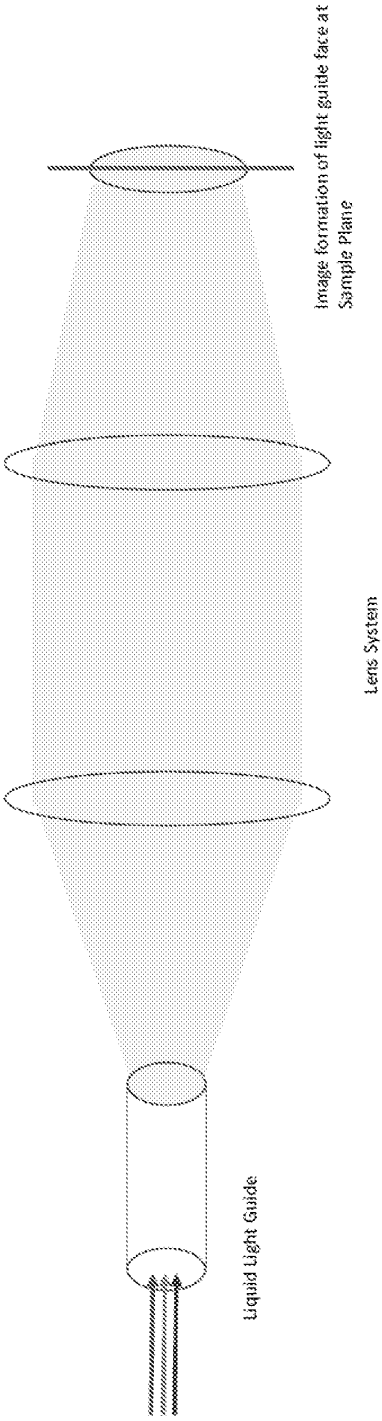


FIG. 8



FIG. 9A

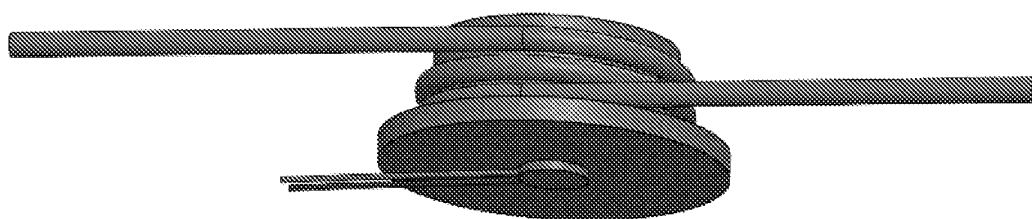


FIG. 9B



FIG. 9C



7/33 G. 9D

Table 1. Despeckler effect on the speckle noise

Optical fibers	Green		Red		# of trials
	speckle noise (%)	standard deviation (%)	speckle noise (%)	standard deviation (%)	
No winding, no vibration	6.53	0.17	6.32	0.33	8
winding, no vibration	6.85	0.25	6.46	0.19	8
No winding, vibration	5.60 (laid down)	0.33 (laid down)	5.7 (laid down)	0.29 (laid down)	10
	4.88 (standing)	0.22 (standing)	4.66 (stand)	0.18 (standing)	7
winding, vibration	4.49 (laid down)	0.41 (laid down)	4.48 (laid down)	0.59 (laid down)	7
	3.88 (standing)	0.37 (standing)	3.74 (standing)	0.49 (standing)	16

FIG. 10

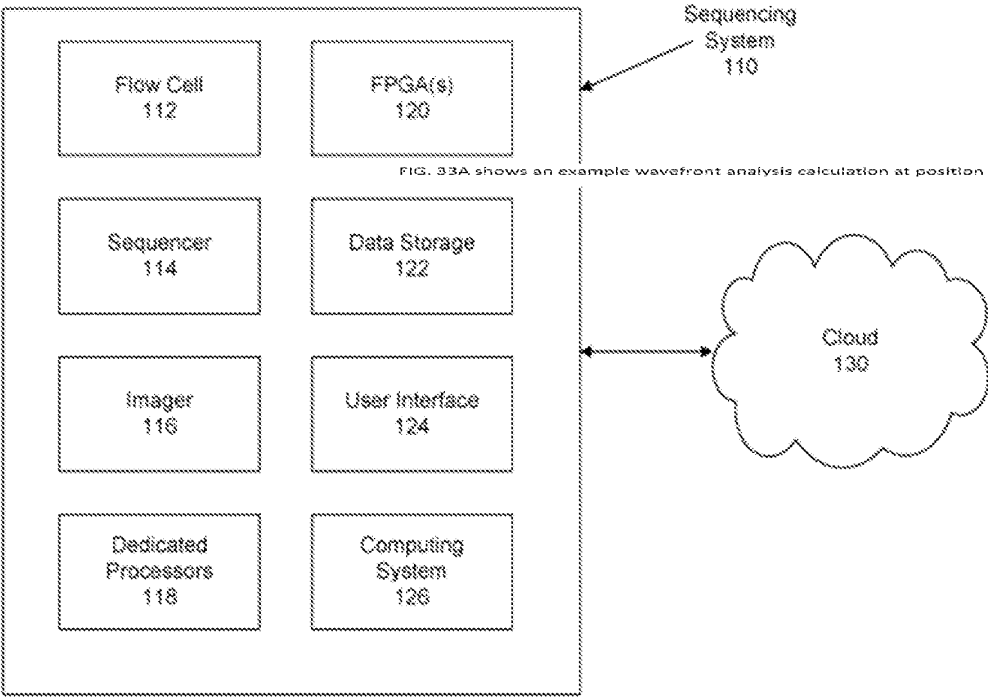


FIG. 11

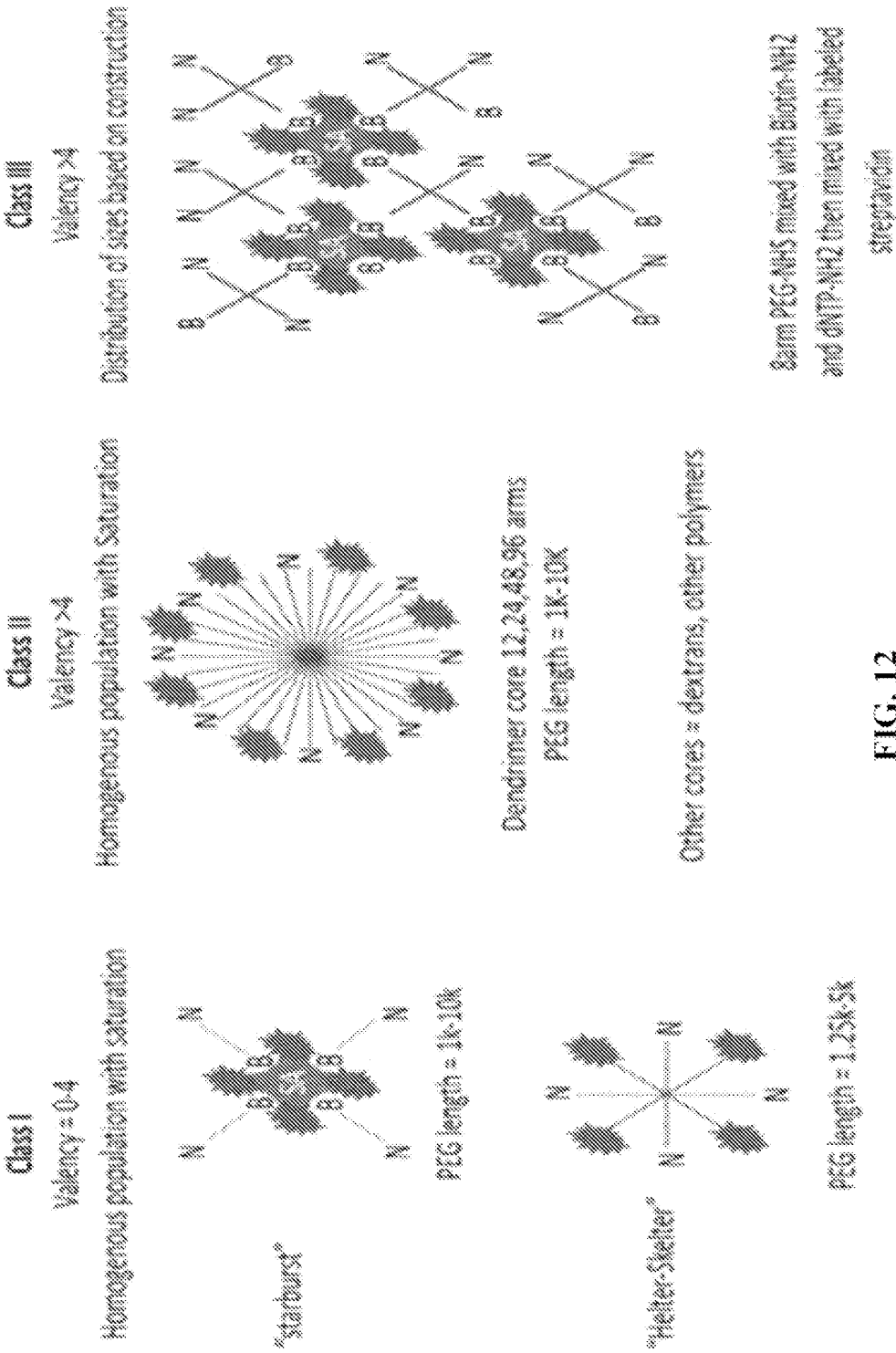


FIG. 12

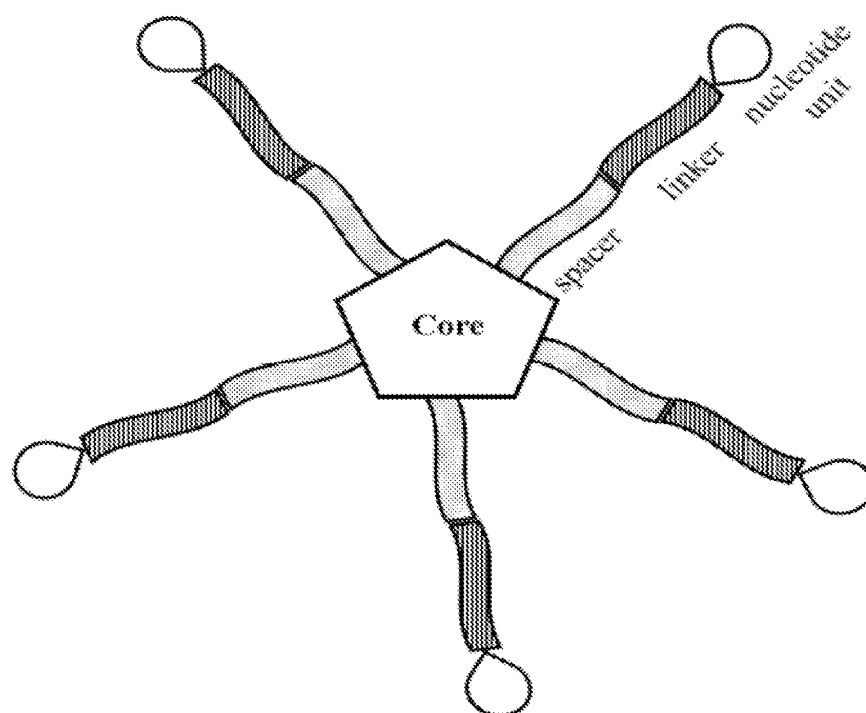


FIG. 13

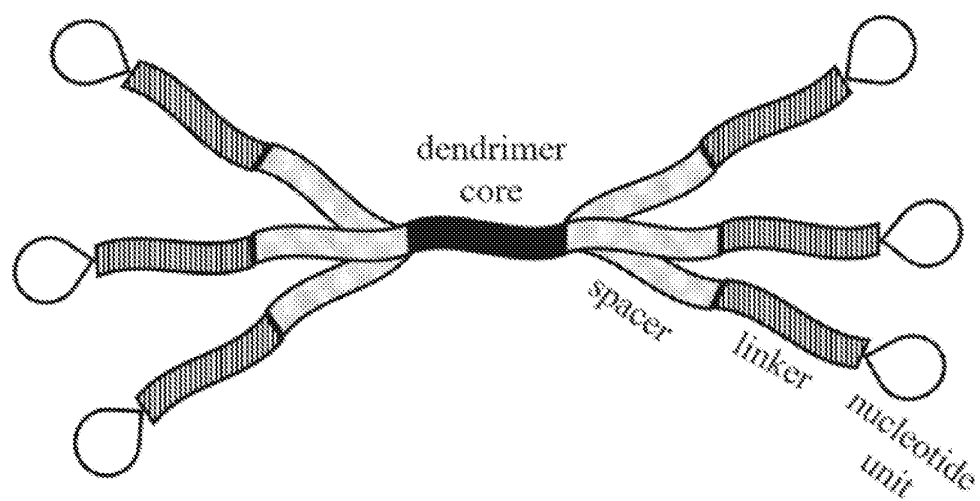


FIG. 14

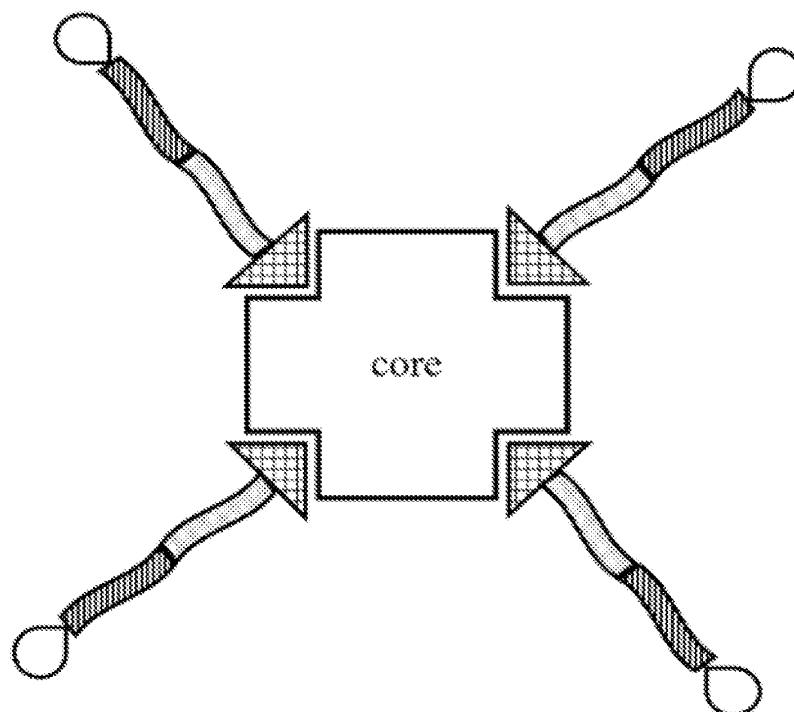


FIG. 15

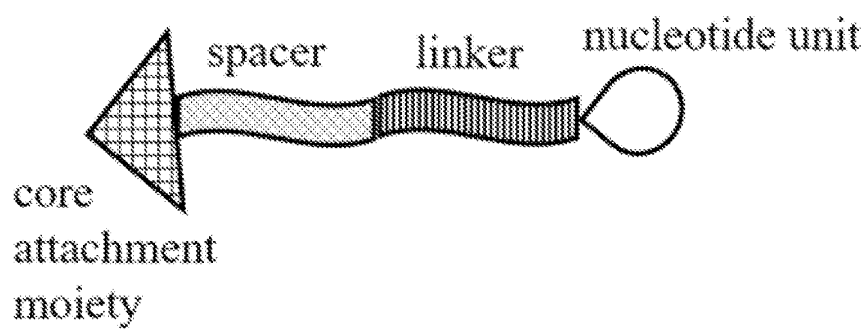
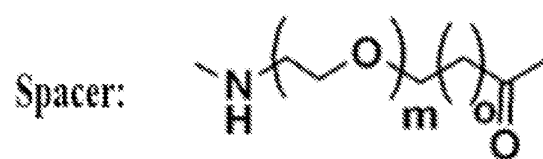


FIG. 16

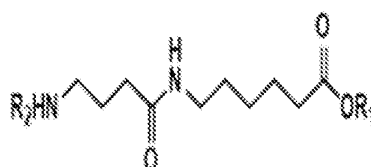


Linkers:

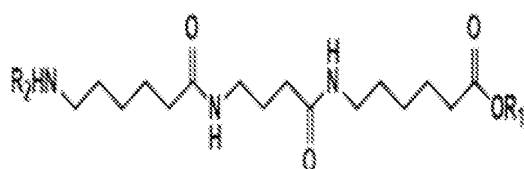
11 atom Linker:



16 atom Linker:



23 atom Linker:



N3 Linker:

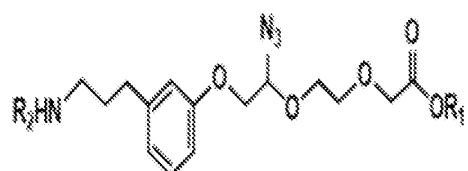


FIG. 17

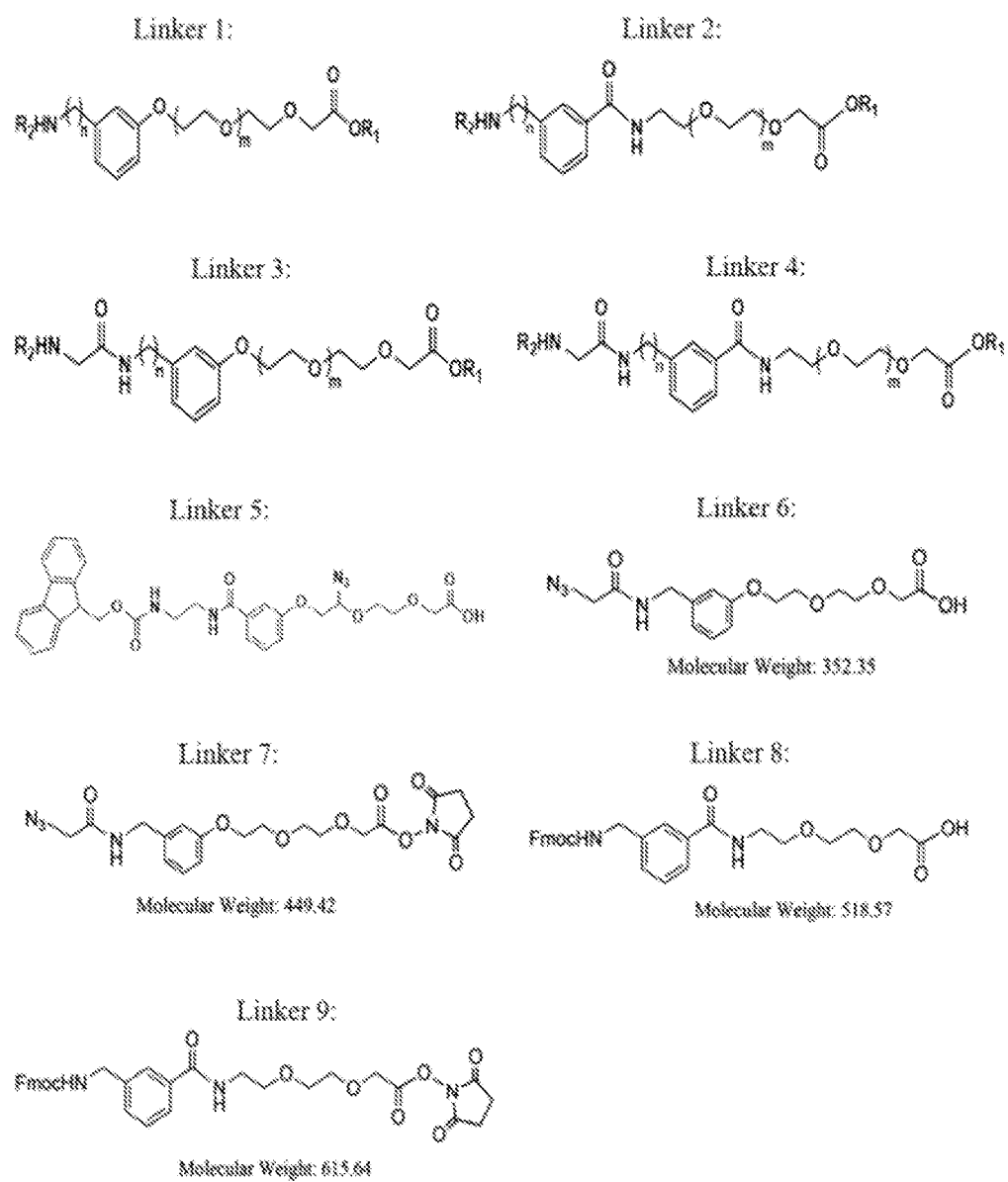
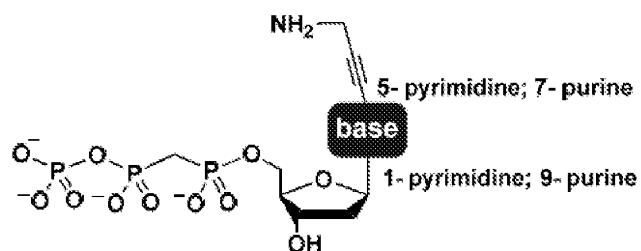
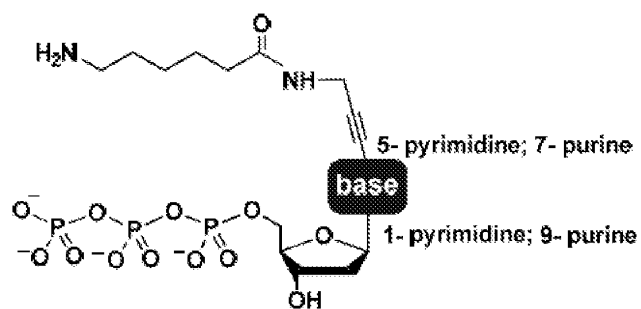
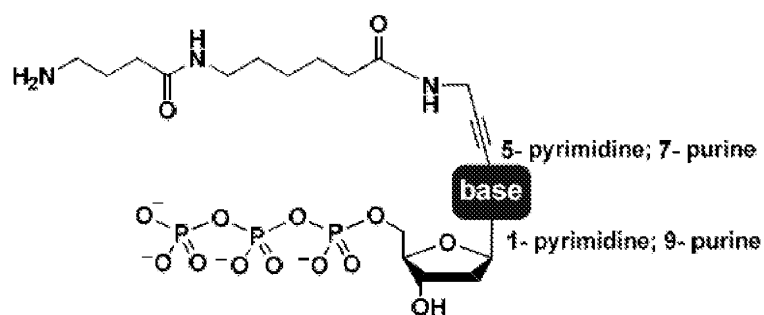
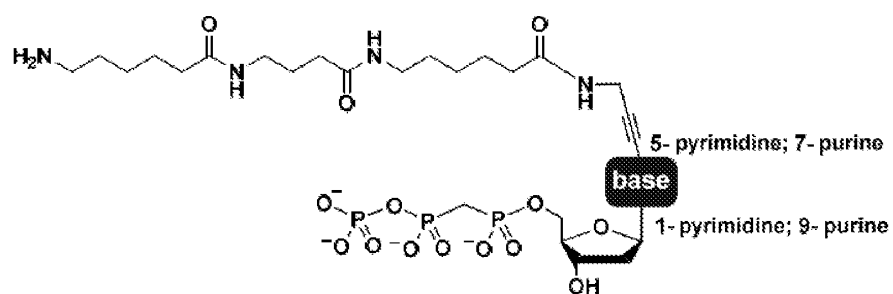
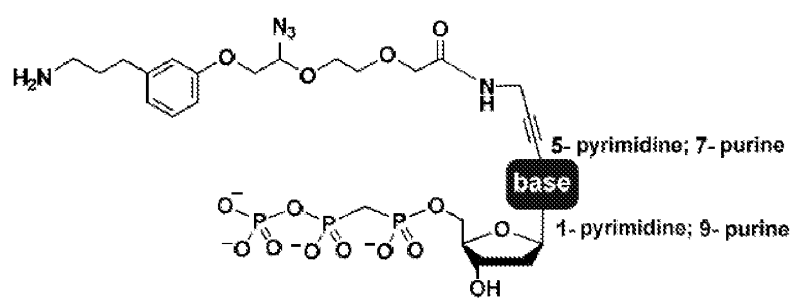
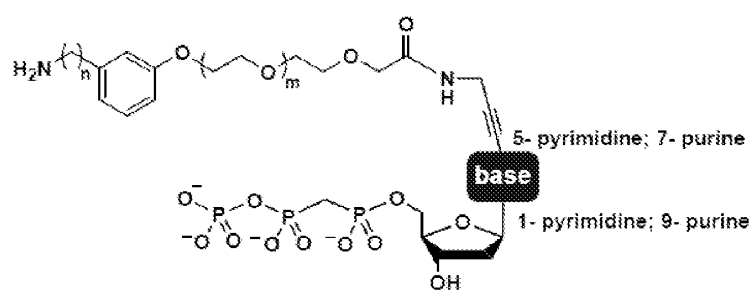
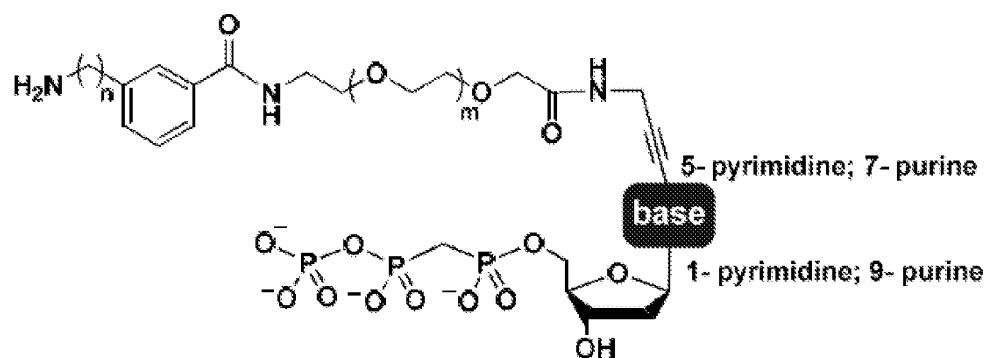
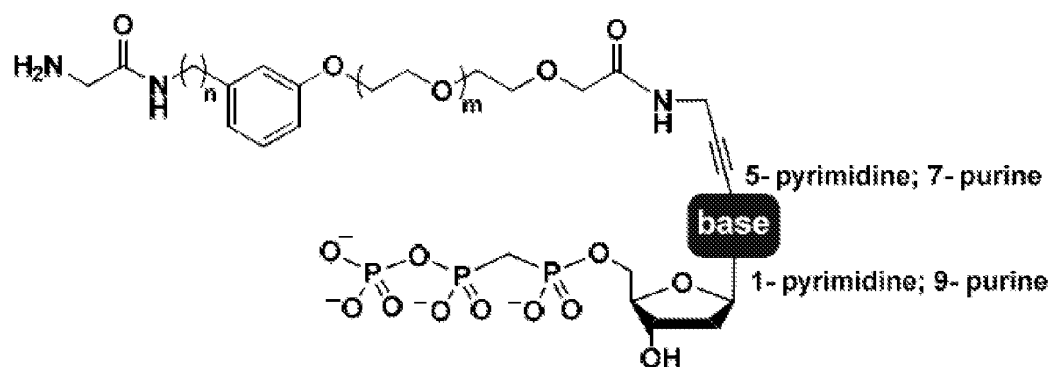
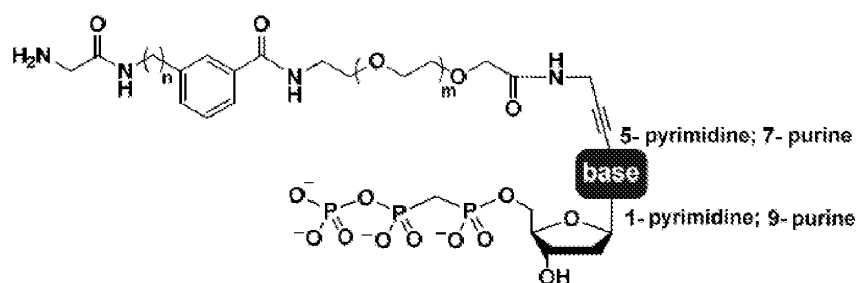
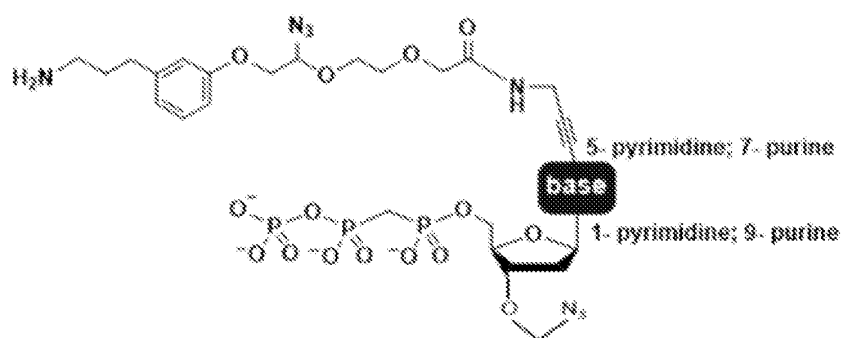


FIG. 18

dNTP-PA-NH₂:**dNTP-PA-11 Atom Linker-NH₂:****dNTP-PA-16 Atom Linker-NH₂:****FIG. 19**

dNTP-PA-23 Atom Linker-NH₂:**dNTP-PA-N3 Linker-NH₂:****dNTP-PA-Linker 1-NH₂:****FIG. 20**

dNTP-PA-Linker 2-NH₂:**dNTP-PA-Linker 3-NH₂:****FIG. 21**

dNTP-PA-Linker 4-NH₂:**dNTP-PA-N3 Linker-NH₂:****FIG. 22**

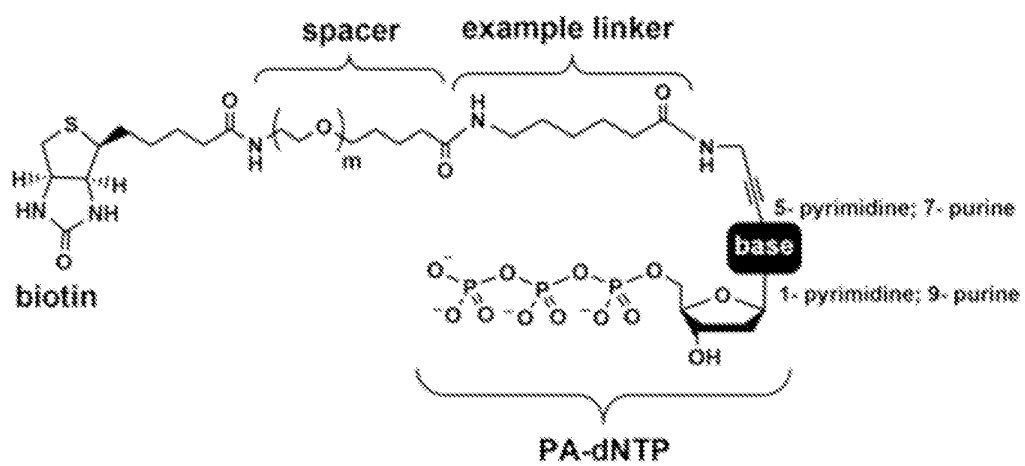
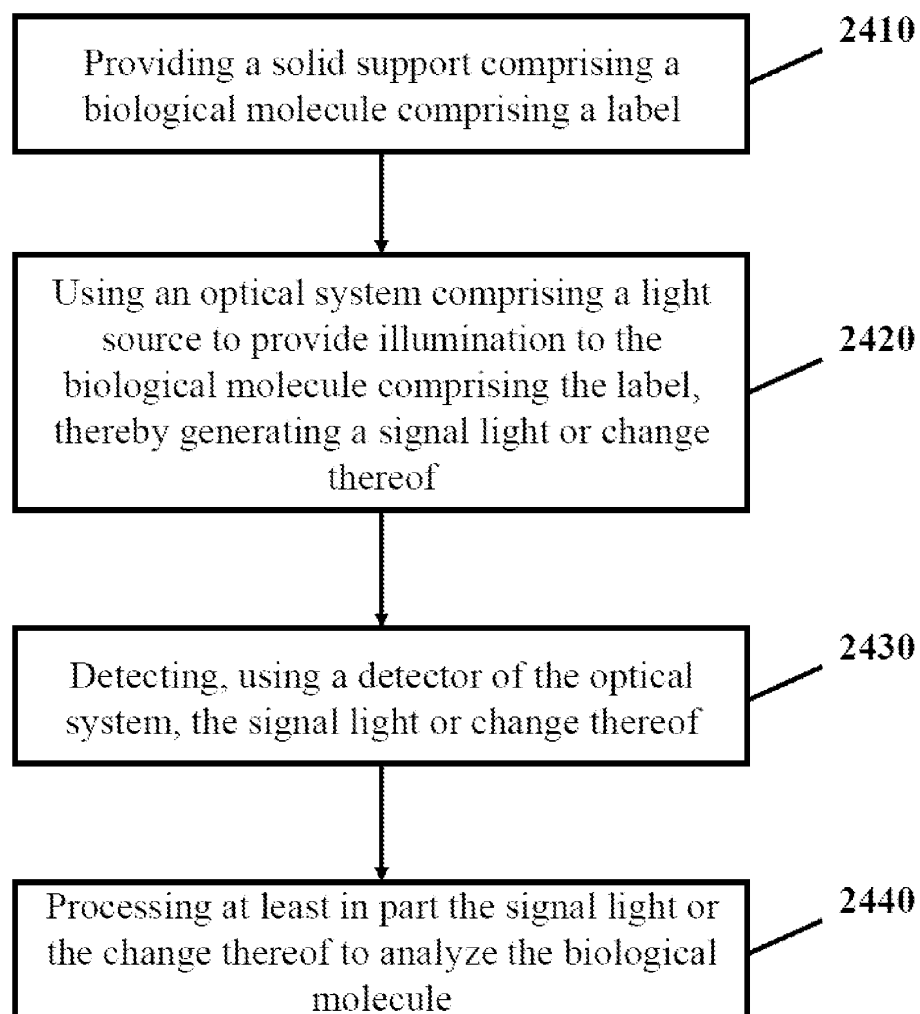


FIG. 23

2400**FIG. 24**

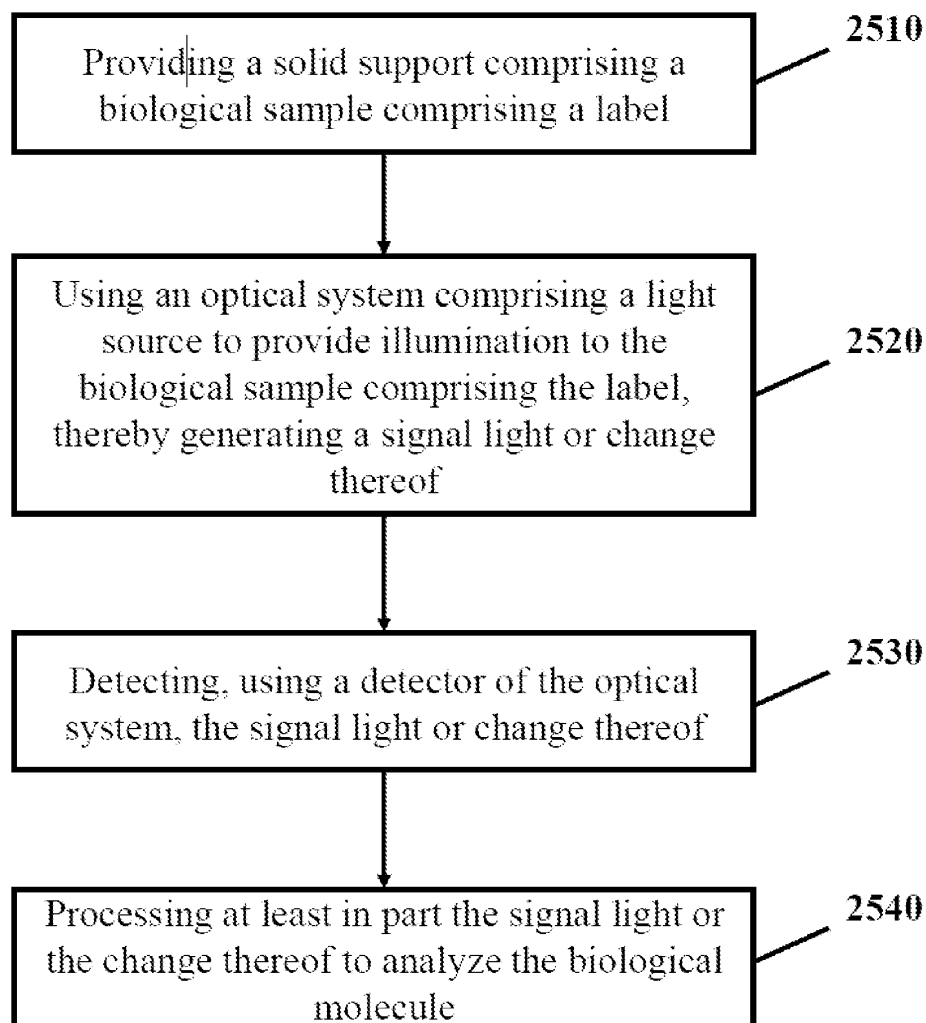
2500

FIG. 25

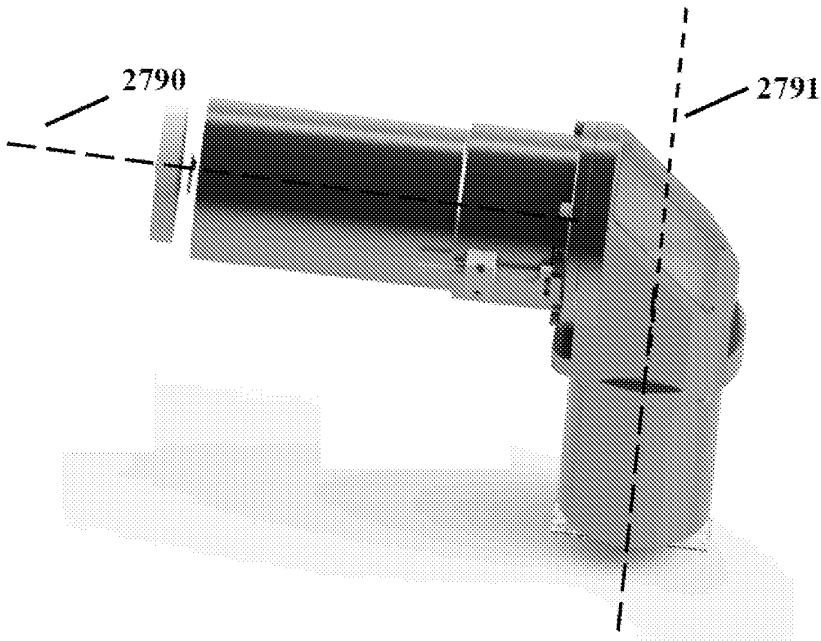


FIG. 26

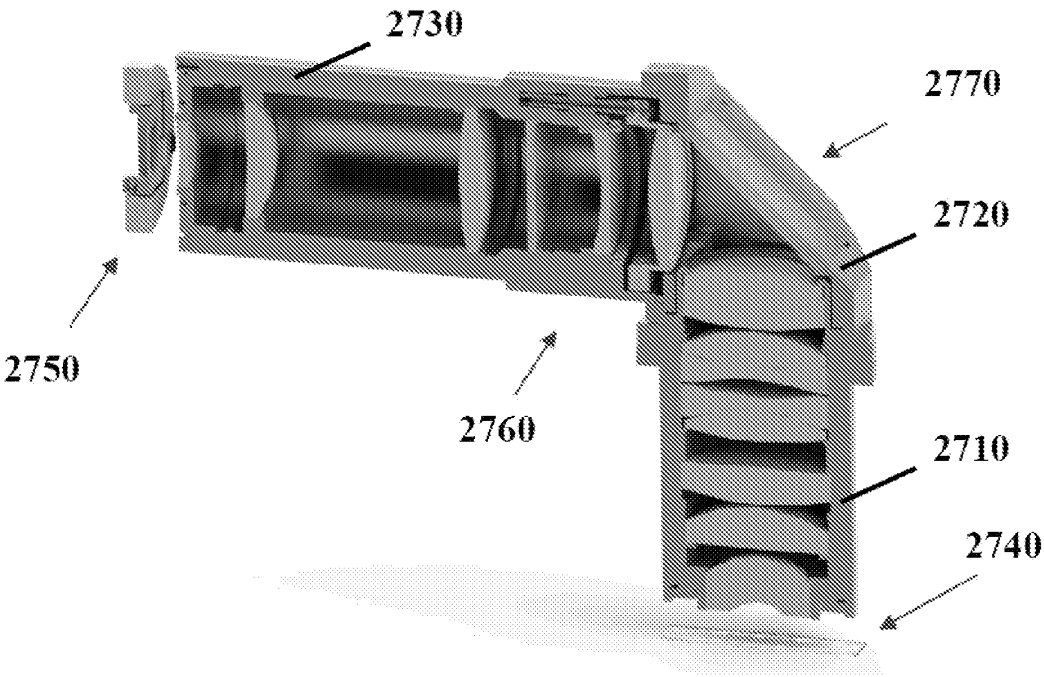


FIG. 27

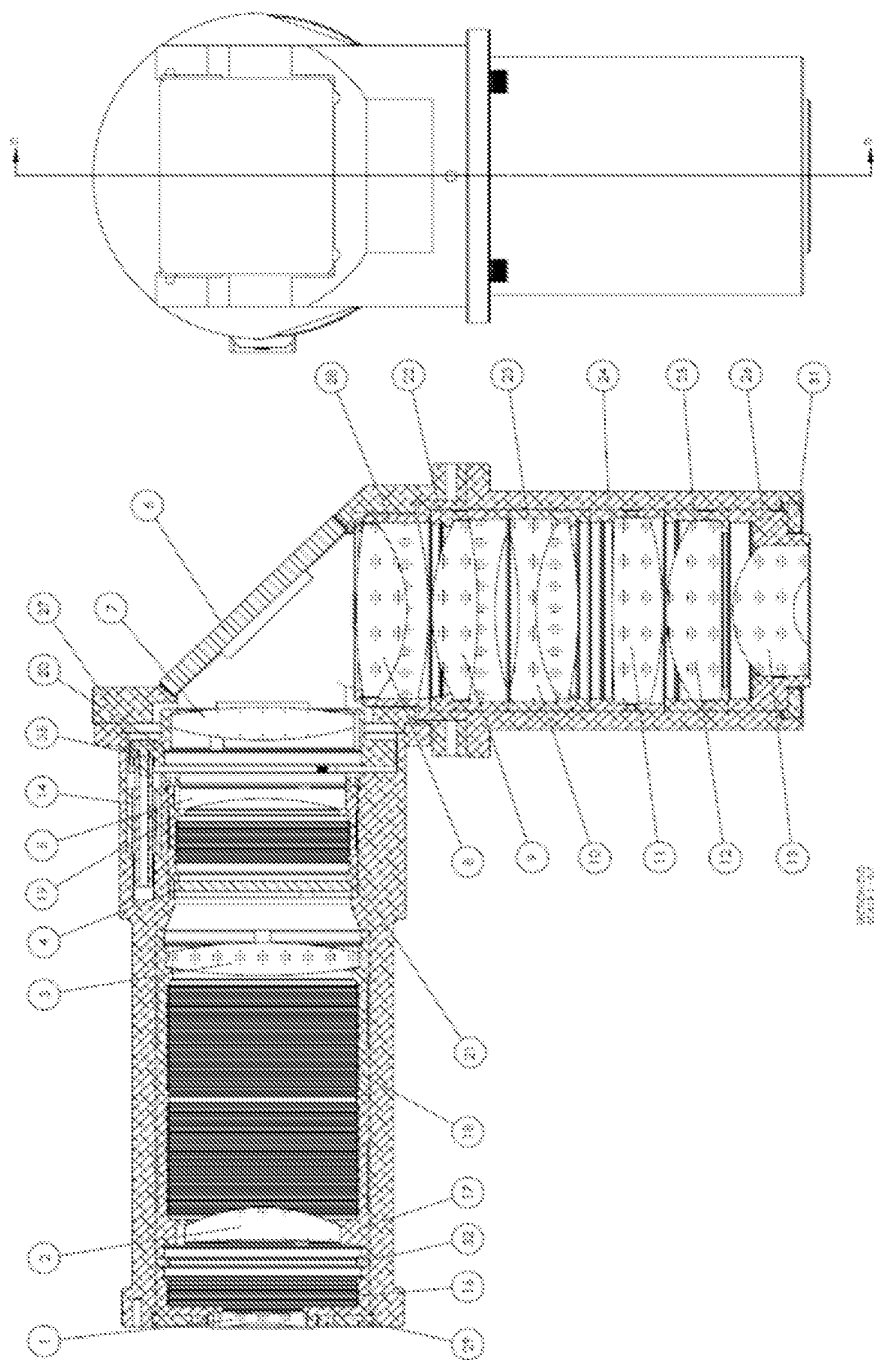
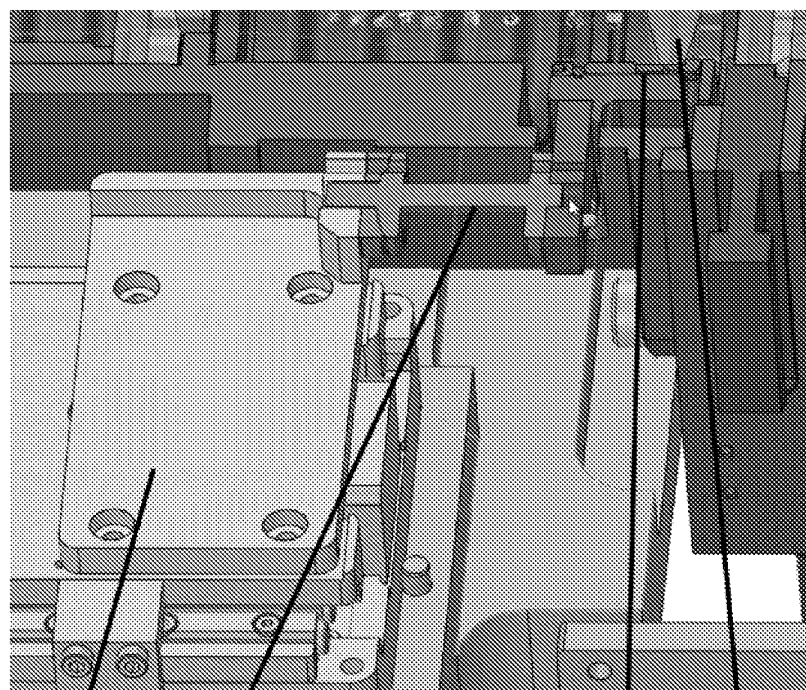
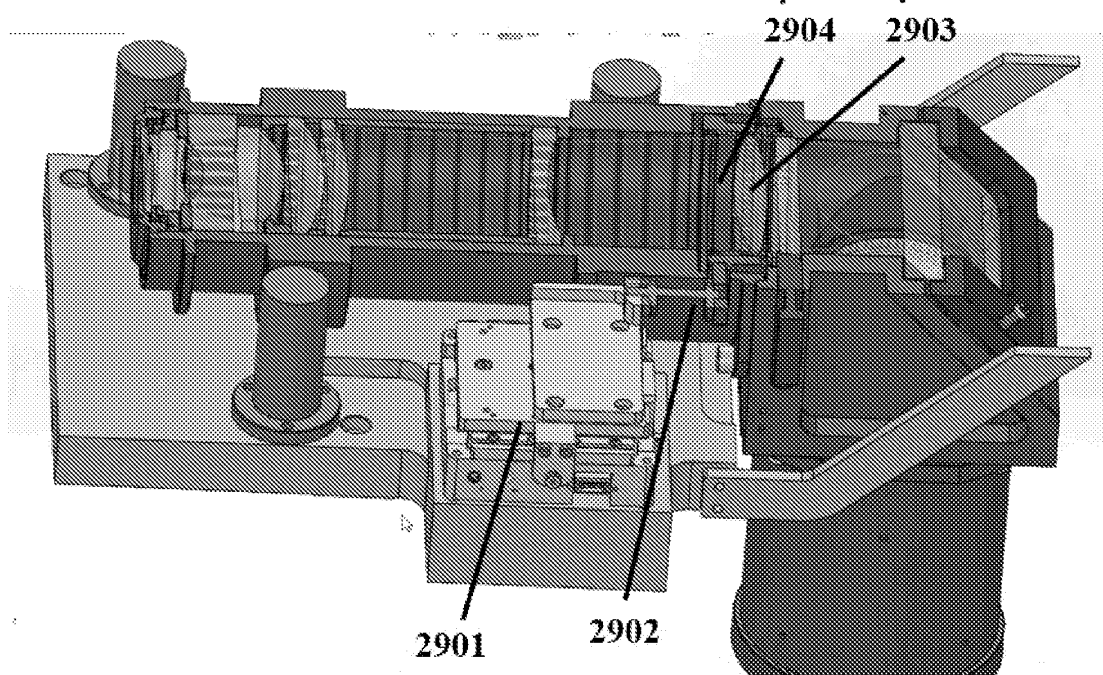


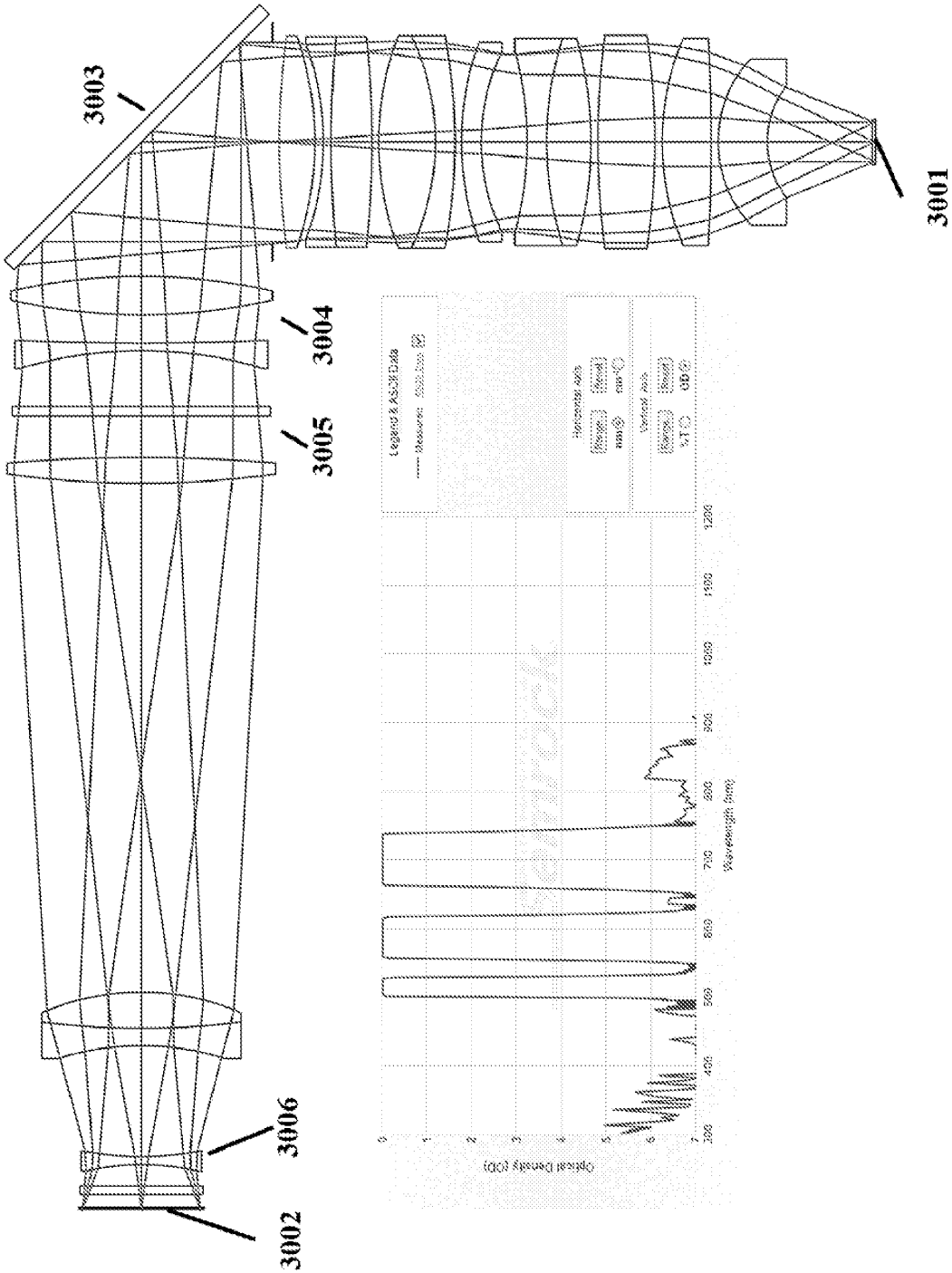
FIG. 28



2901 2902 **FIG. 29A**



2901 2902 2904 2903 **FIG. 29B**



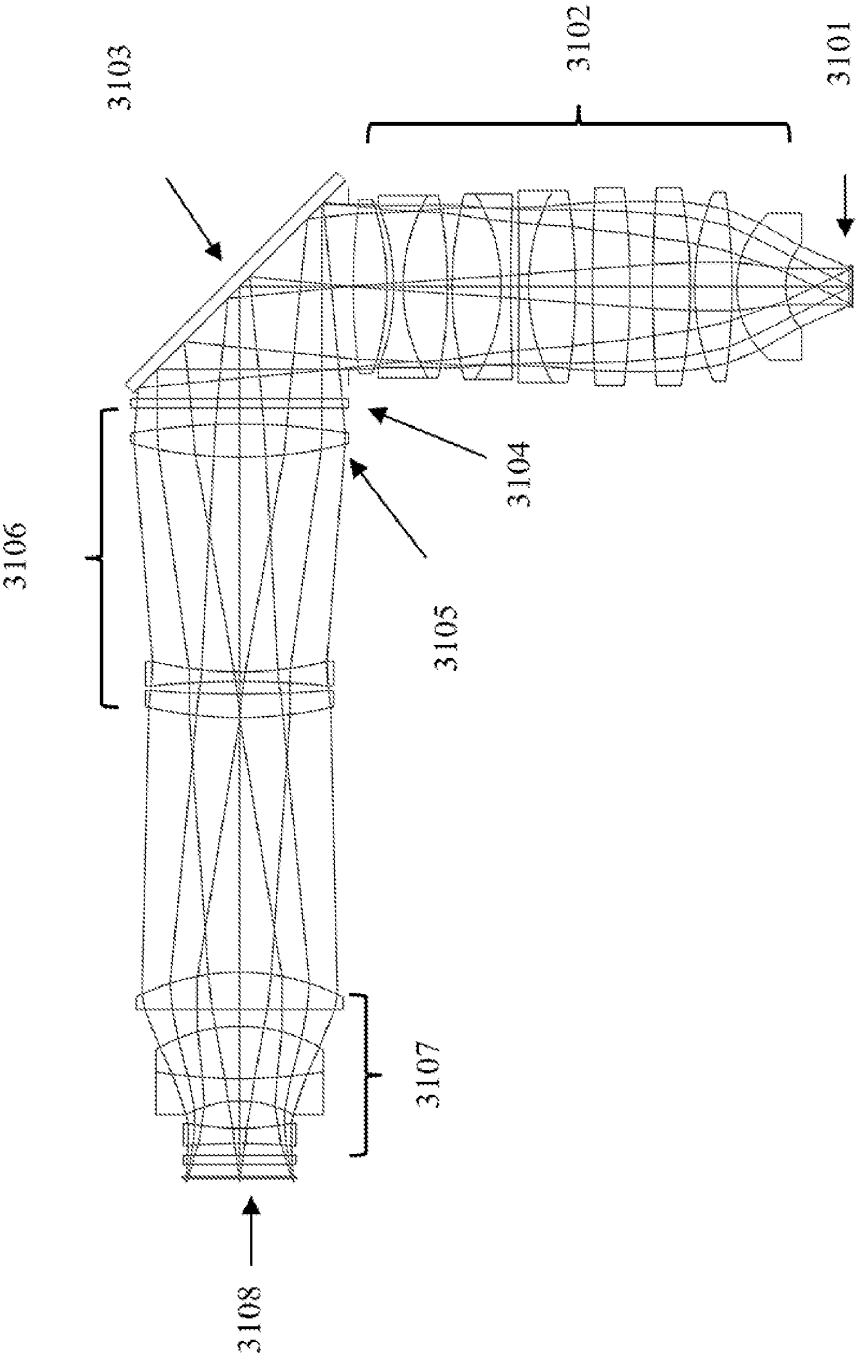


FIG. 31

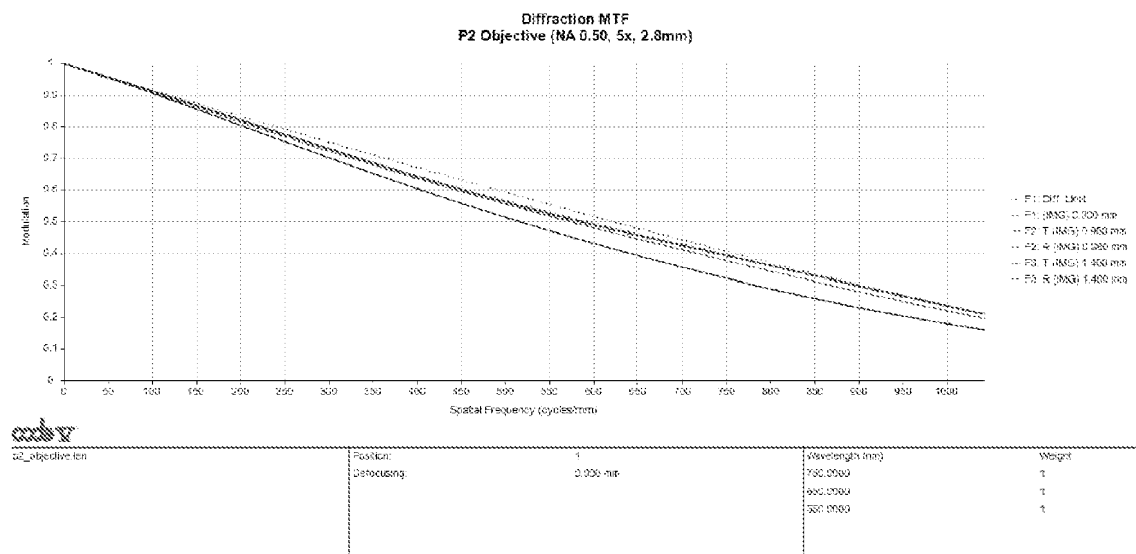


FIG. 32A

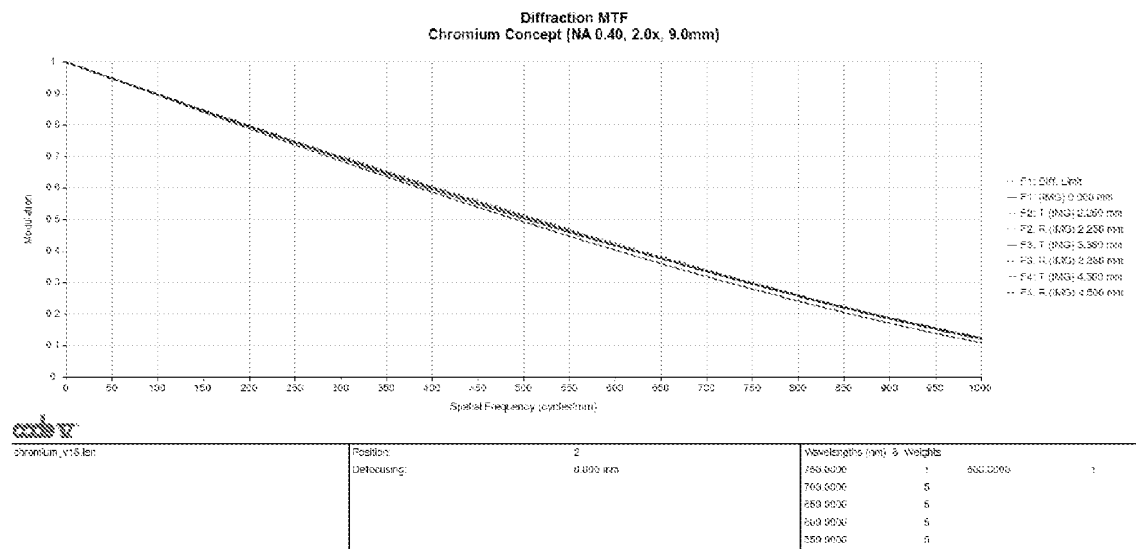


FIG. 32B

WAVEFRONT ANALYSIS										
Chromium Concept (NA 0.40, 2.0x, 9.6mm)							POSITION 1			
			X REL. FIELD	0.00	0.00	0.00	0.00			
			Y REL. FIELD	0.00	0.00	0.75	1.00			
			WEIGHTS	1.00	1.00	1.00	1.00			
			NUMBER OF RAYS	1768	1772	1778	1784			
			WAVELENGTHS	750.0	700.0	650.0	600.0	550.0	500.0	
			WEIGHTS	1	5	5	5	5	1	
			BEST INDIVIDUAL FOCUS				BEST COMPOSITE FOCUS			
	FIELD		PHASE	RMS	SHIFT (MM.)	FOCUS (MM.)	RMS (WAVESS)	STREHL	SHIFT (MM.)	FOCUS (MM.)
X	0.00	0.00	0.000000	-0.000113	0.0000	0.997	0.000000	-0.000023	0.0004	0.937
Y	0.00	0.00	0.000000				0.000000			
X	0.00	0.00	0.000000	-0.000426	0.0100	0.997	0.000000	-0.000028	0.0216	0.980
Y	0.00	1.25	0.000003				0.000002			
X	0.00	0.00	0.000000	-0.000378	0.0200	0.975	0.000000	-0.000029	0.0276	0.970
Y	0.75	1.00	-0.000010				-0.000021			
X	0.00	0.00	0.000000	0.000477	0.0200	0.968	0.000000	-0.000023	0.0003	0.960
Y	1.00	2.35	-0.000101				-0.000008			
COMPOSITE RMS FOR POSITION 1: 0.00419										

FIG. 33A

WAVEFRONT ANALYSIS										
Chromium Concept (NA 0.40, 2.0x, 9.6mm)						POSITION 2				
			X REL. FIELD	0.00	0.00	0.00	0.00			
			Y REL. FIELD	0.00	0.00	0.75	1.00			
			WEIGHTS	1.00	1.00	1.00	1.00			
			NUMBER OF RAYS	1760	1772	1776	1782			
			WAVELENGTHS	750.0	700.0	650.0	600.0	550.0	500.0	
			WEIGHTS	1	5	5	5	5	1	
			FIELD	BEST INDIVIDUAL FOCUS				BEST COMPOSITE FOCUS		
			FRACT	RNG	SHIFT	FOCUS	RMS	STREHL	SHIFT	FOCUS
					(MM.)	(MM.)	(WAVES)		(MM.)	(MM.)

FIG. 33B

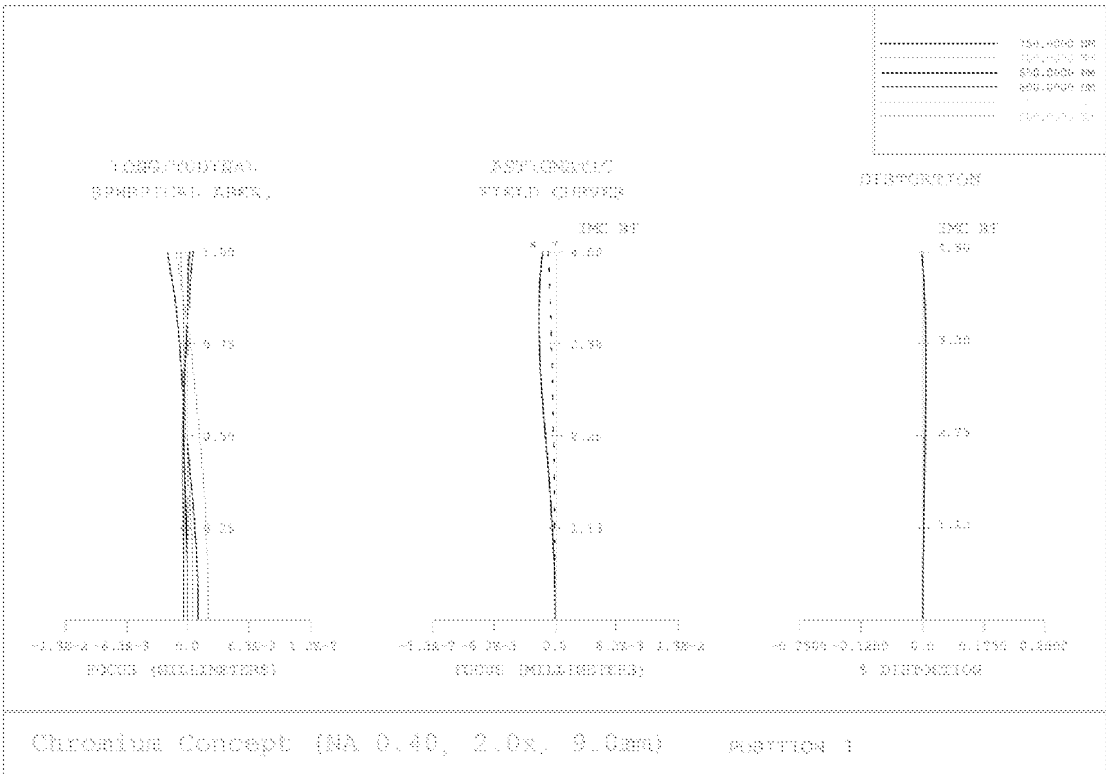


FIG. 34

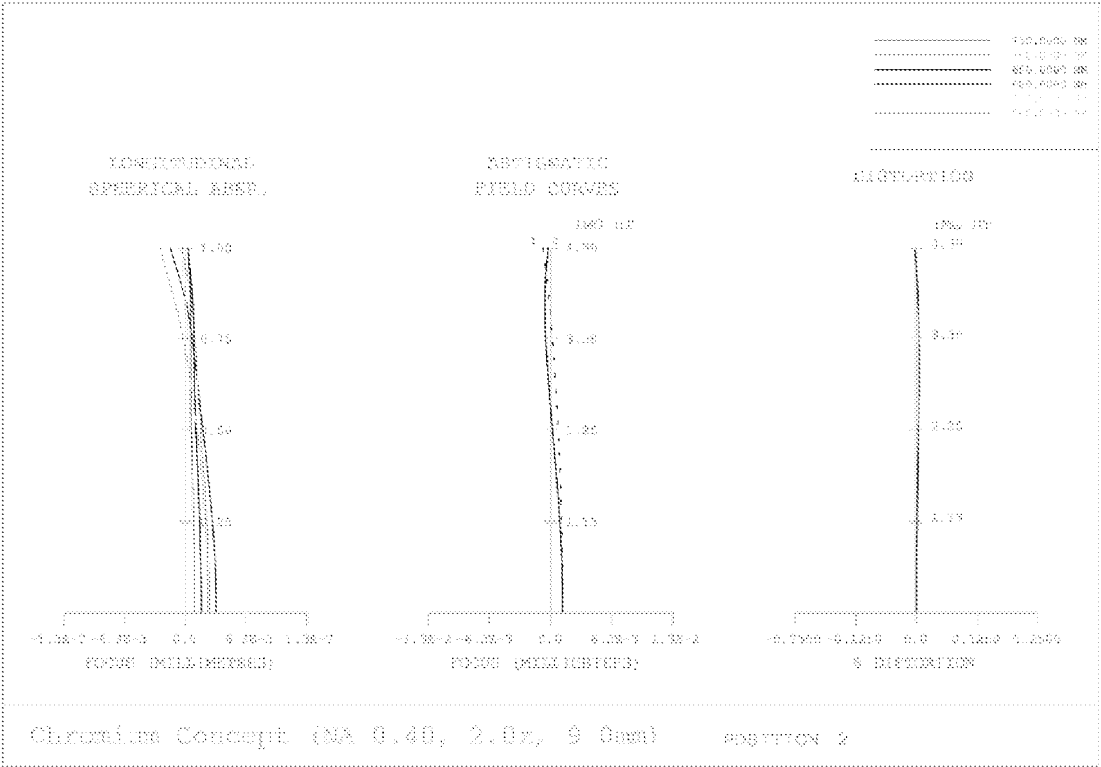


FIG. 35

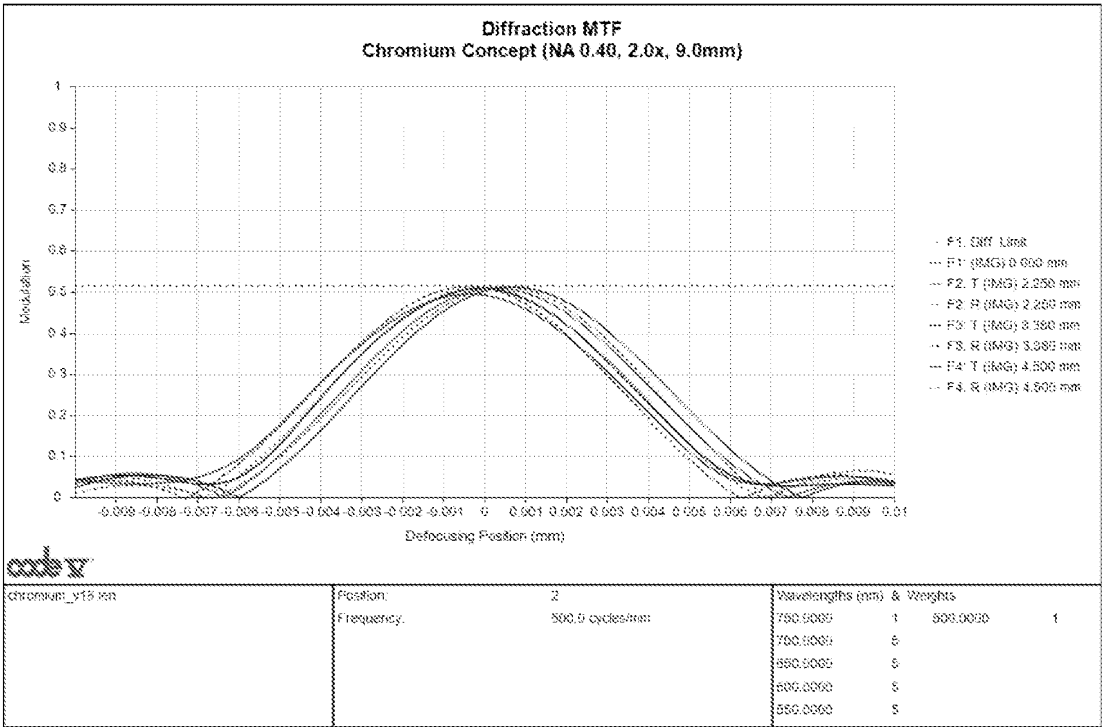


FIG. 36

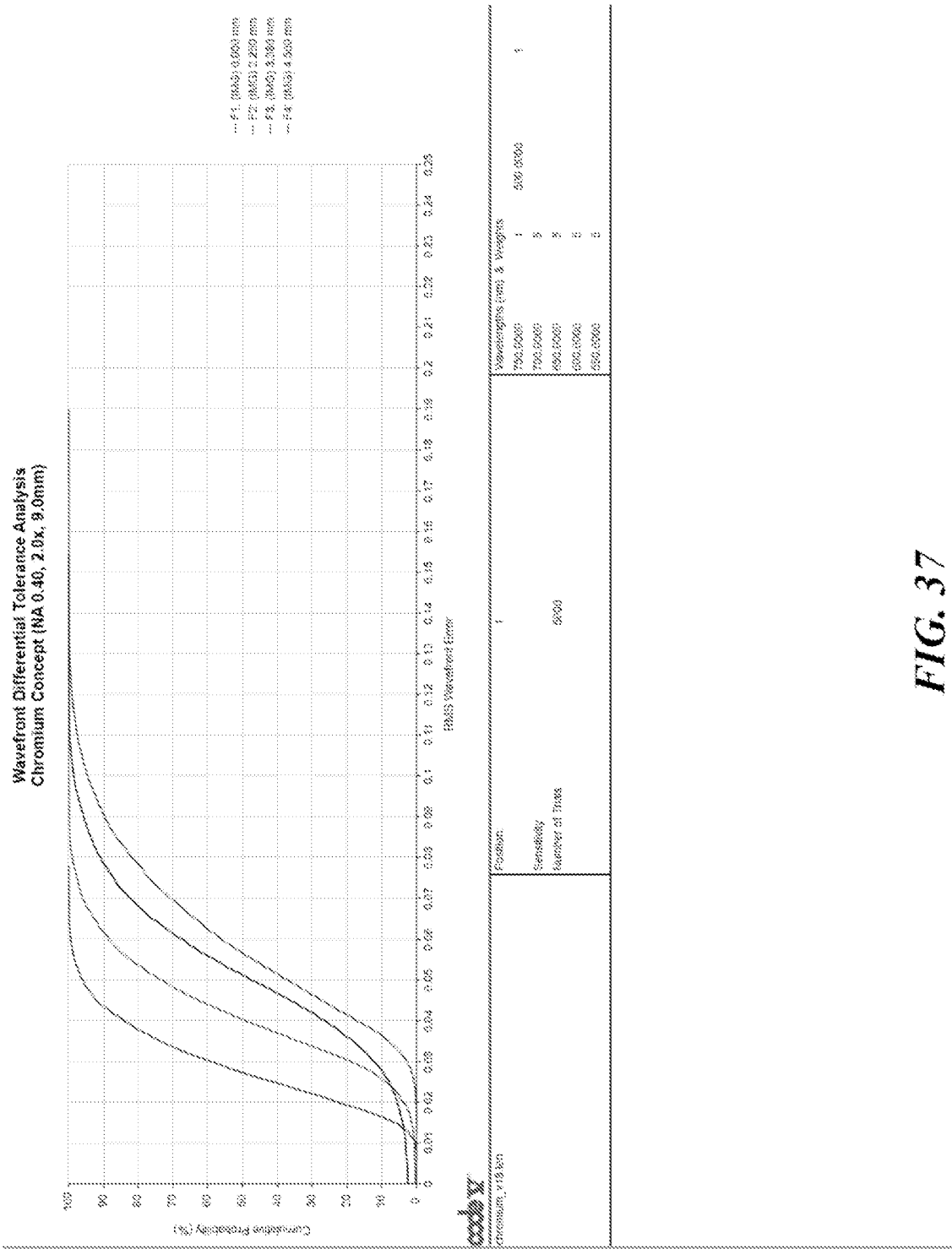


FIG. 37

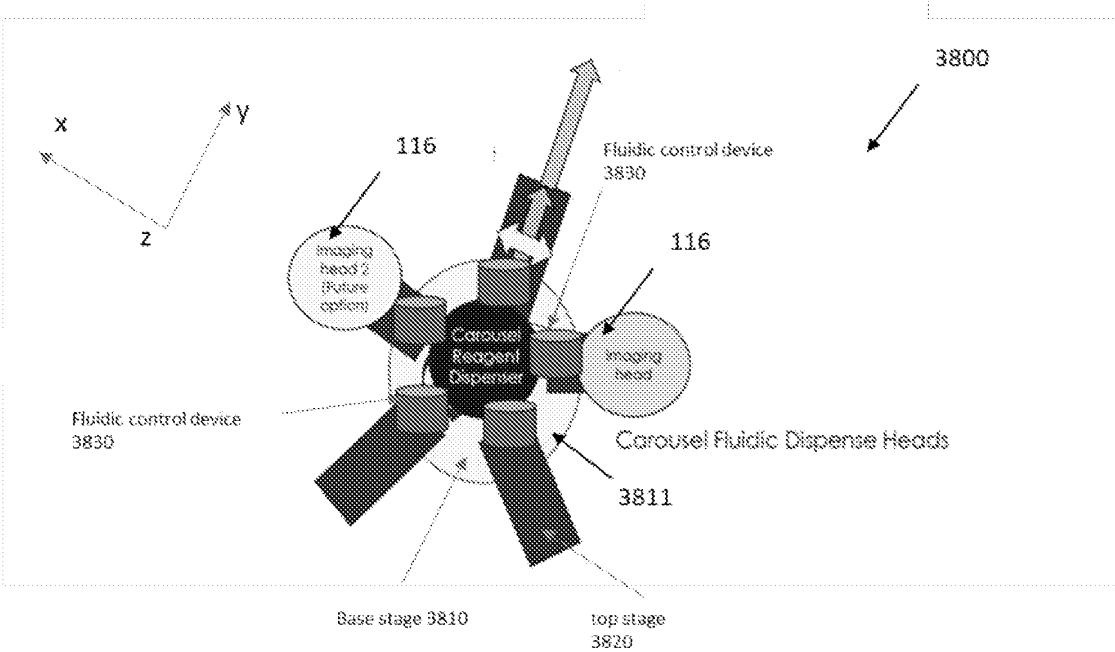


FIG. 38