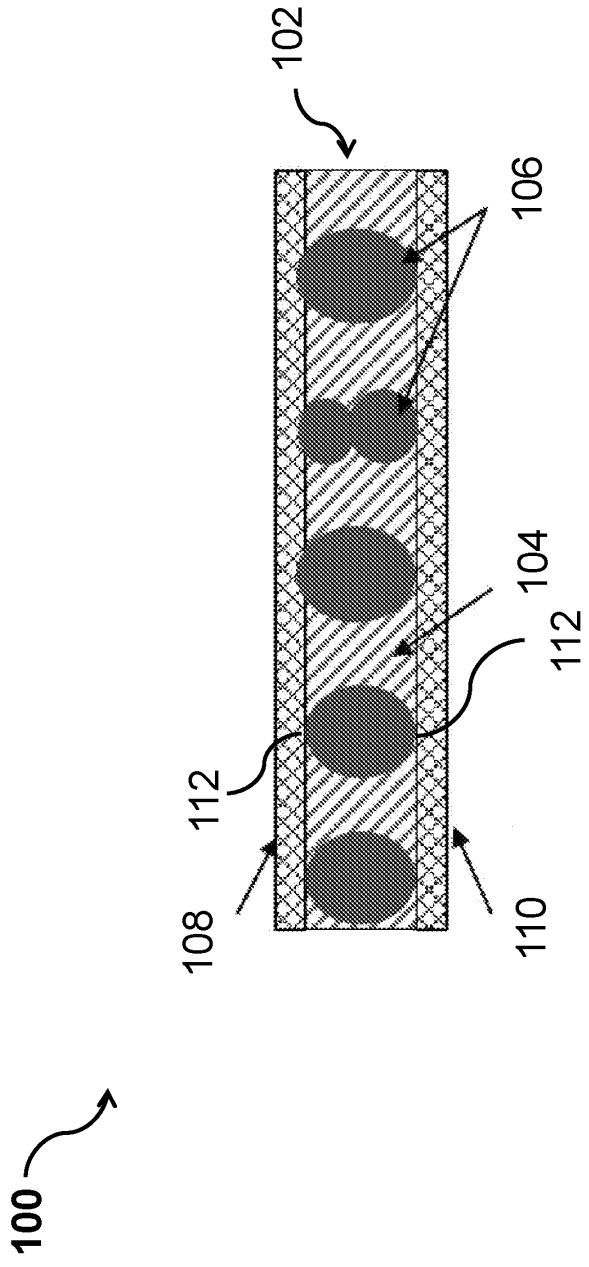


FIG. 1A

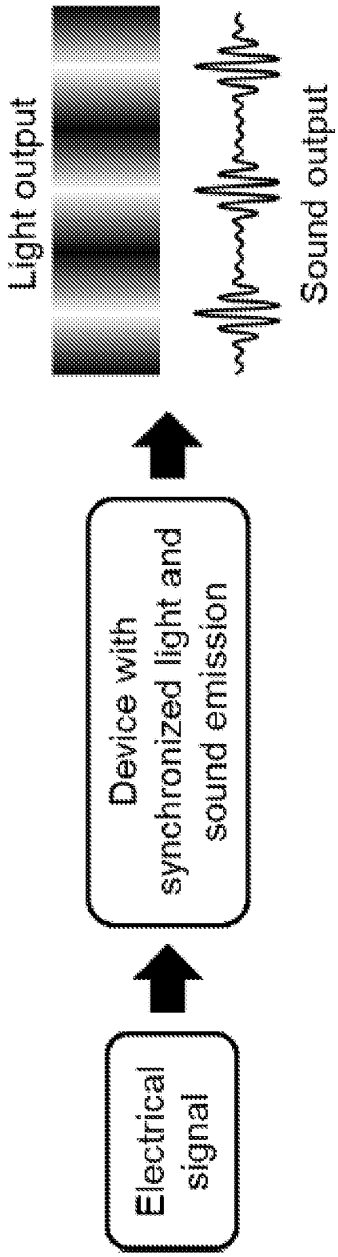

Electrical signal
Device with synchronized light and sound emission
Light output
Sound output

FIG. 1B

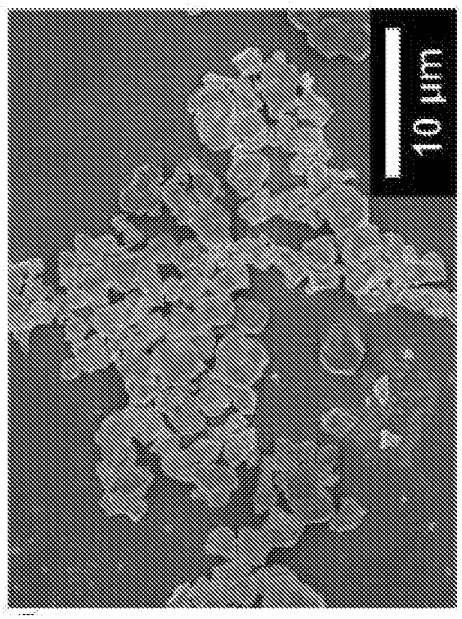


FIG. 2B

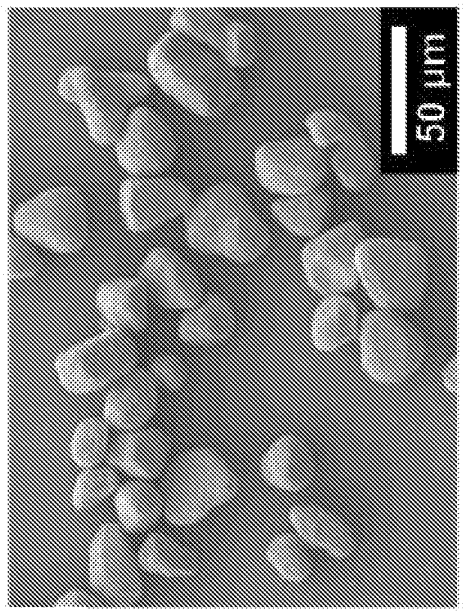


FIG. 2A

200

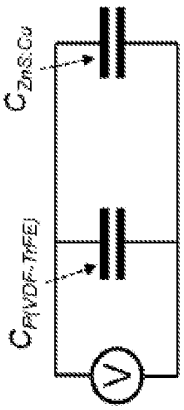


FIG. 3B

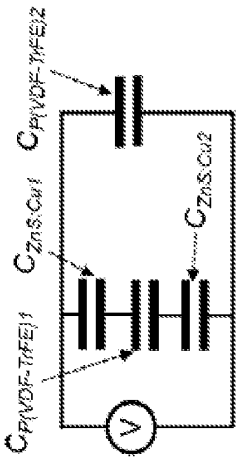


FIG. 3D

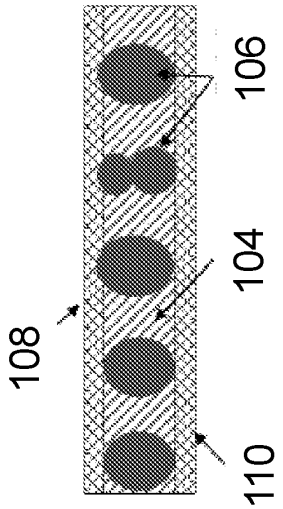


FIG. 3A

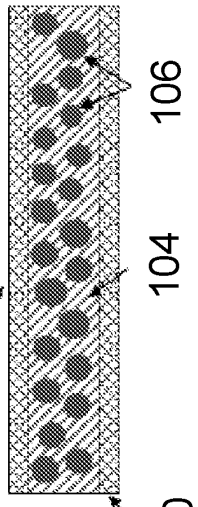


FIG. 3C

300

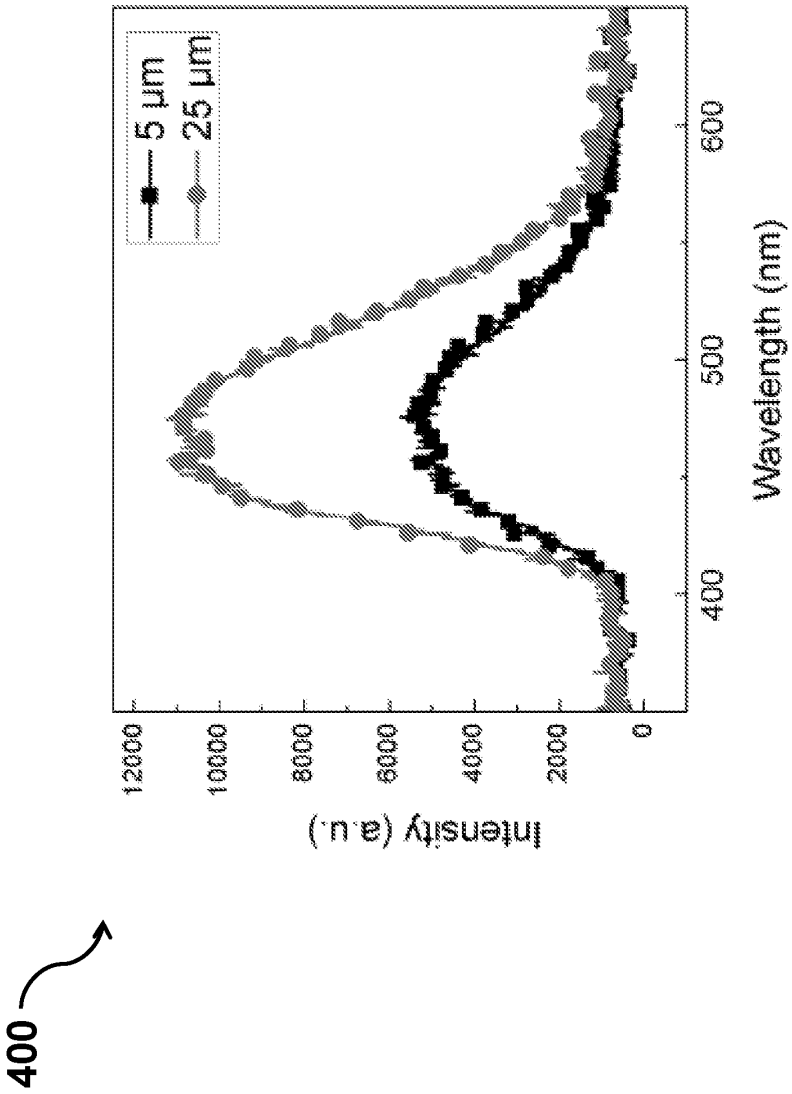

400
Intensity (a.u.)
12000
10000
8000
6000
4000
2000
0
400
500
600
Wavelength (nm)
5 µm
25 µm

FIG. 4

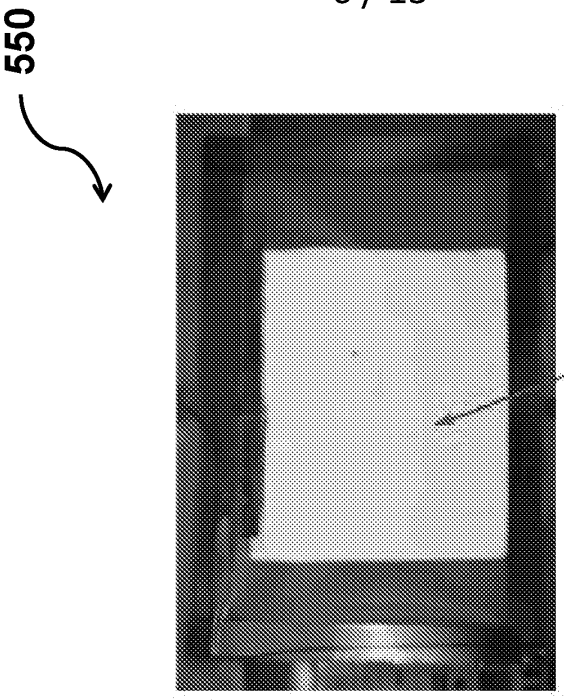


FIG. 5B

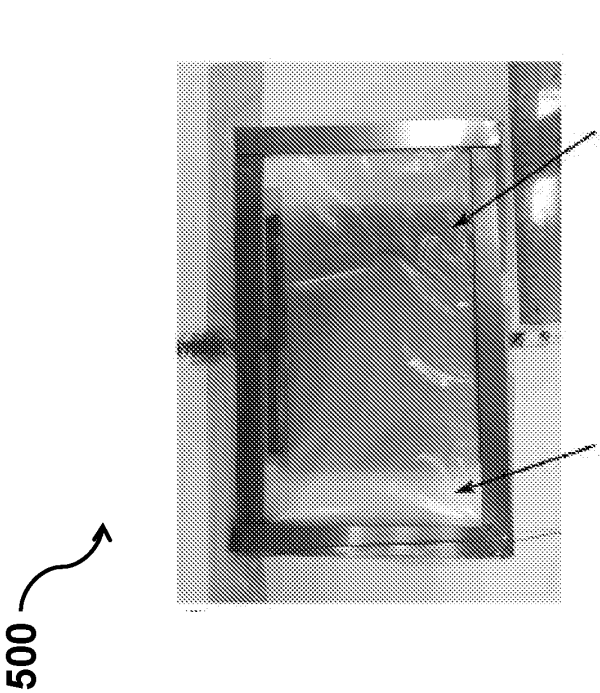


FIG. 5A

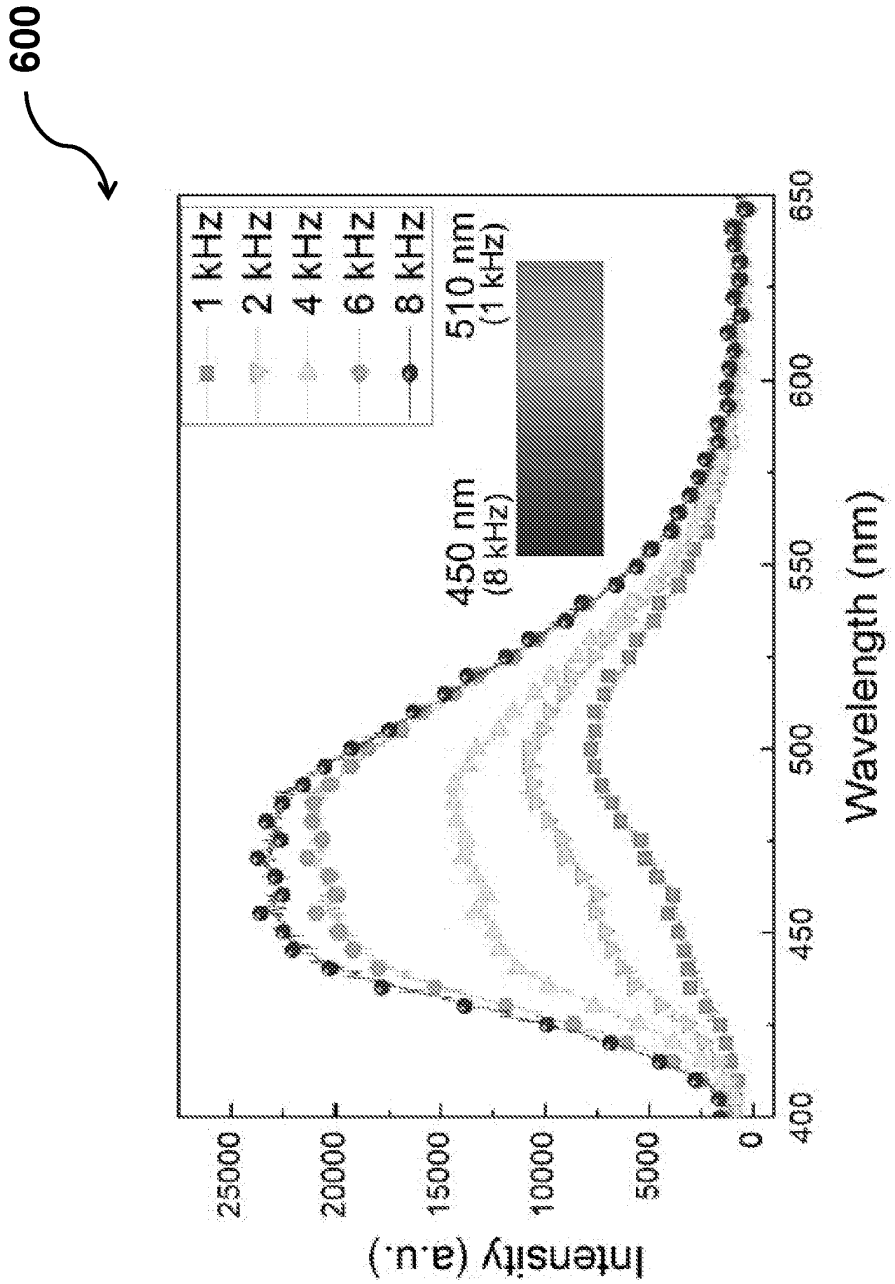

600
Intensity (a.u.)
Wavelength (nm)
1 kHz
2 kHz
4 kHz
6 kHz
8 kHz
450 nm
(8 kHz)
510 nm
(1 kHz)
0
5000
10000
15000
20000
25000
400
450
500
550
600
650

FIG. 6

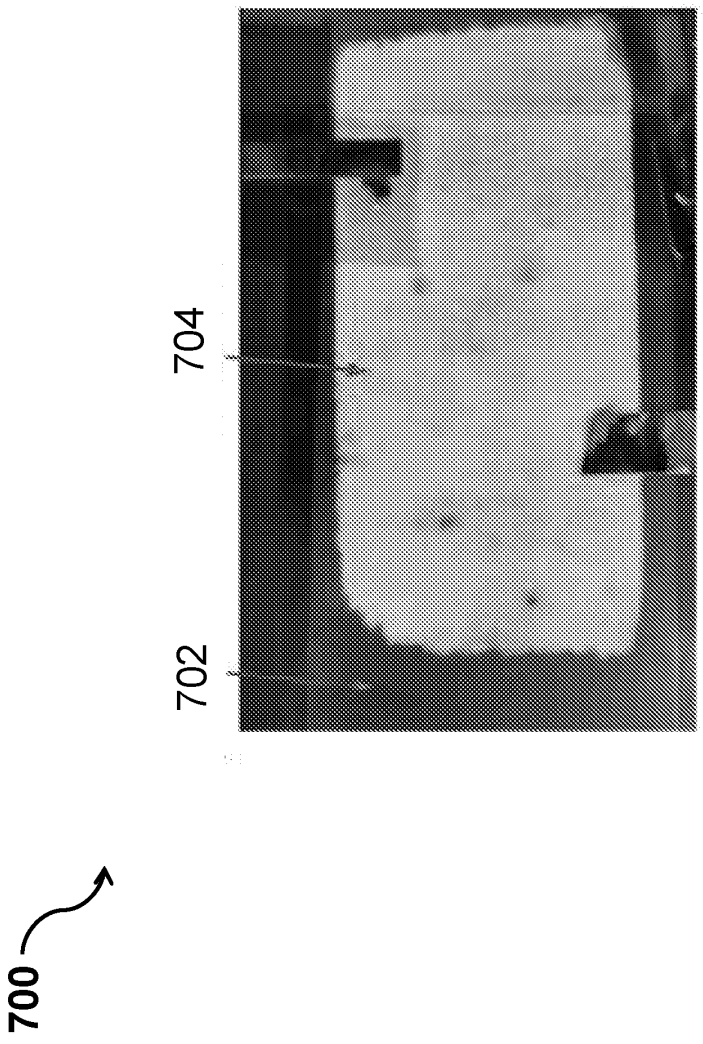


FIG. 7

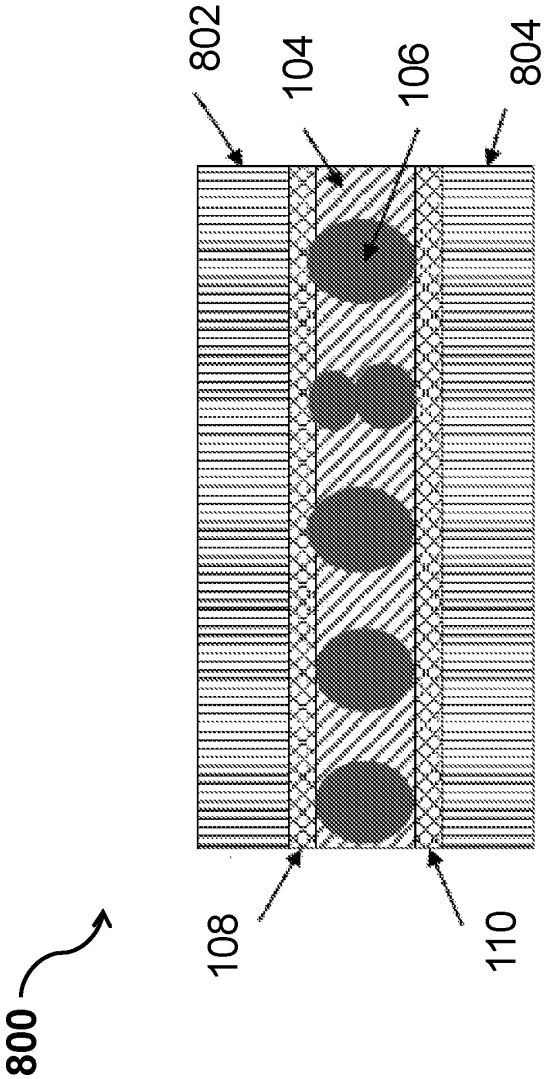


FIG. 8

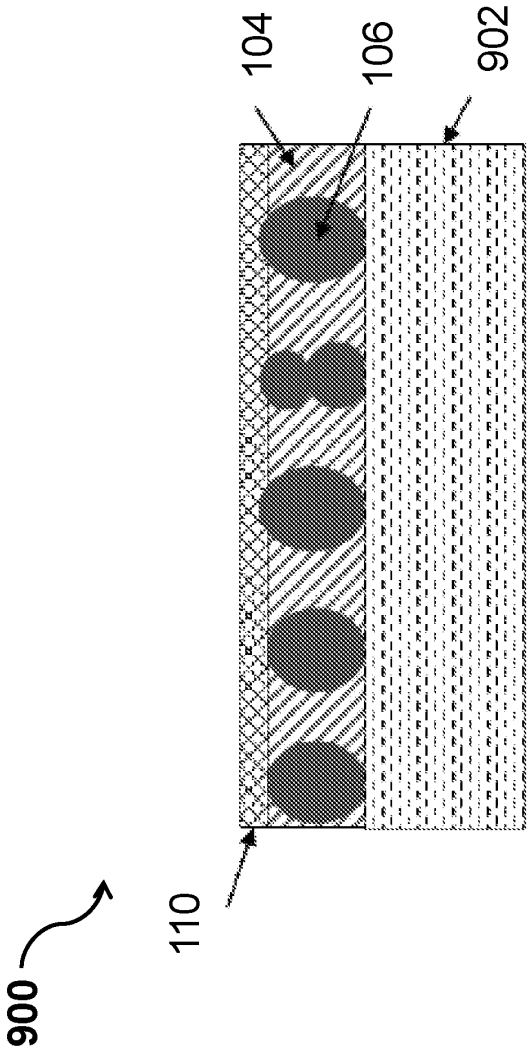


FIG. 9

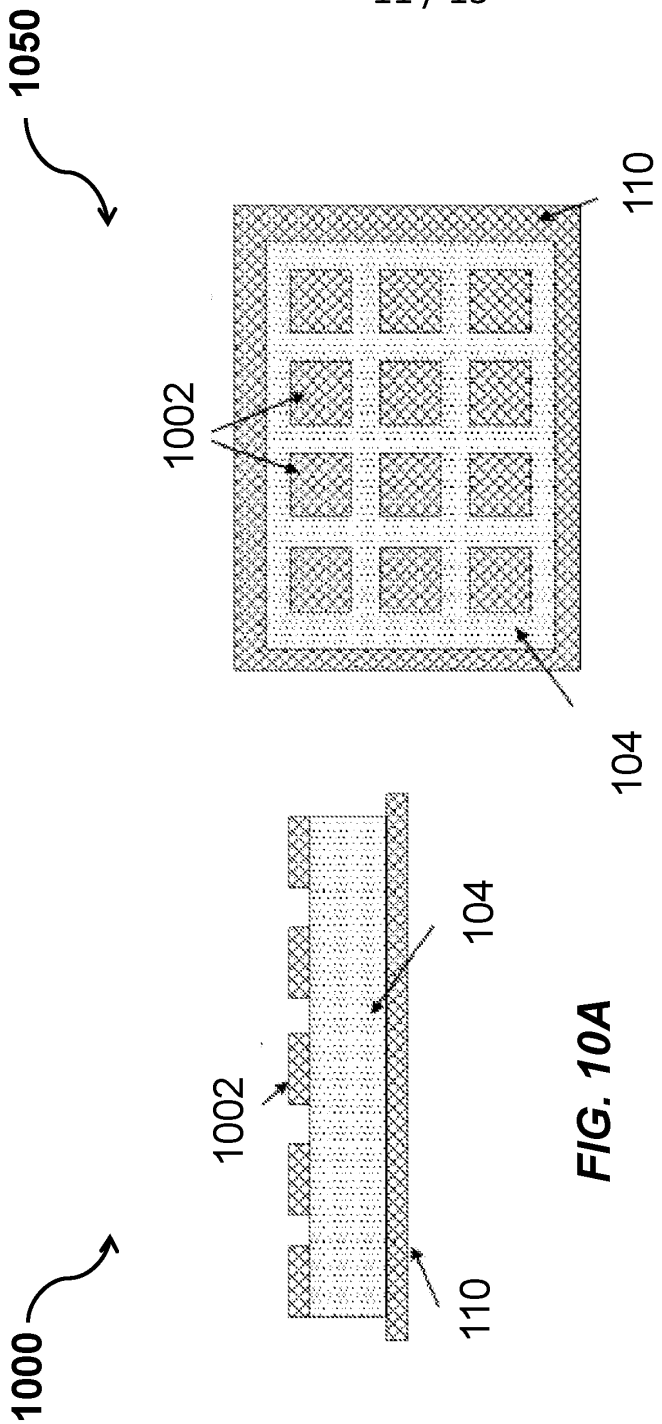


FIG. 10B

FIG. 10A

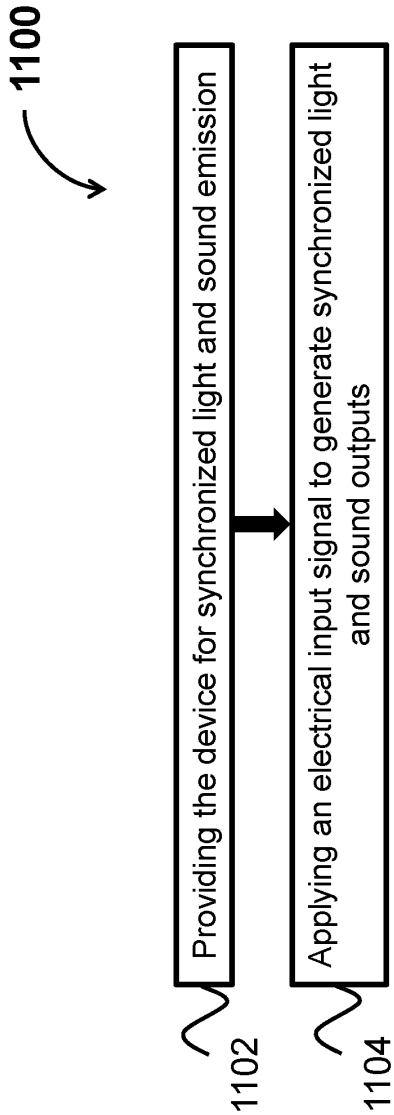

1100
Providing the device for synchronized light and sound emission
Applying an electrical input signal to generate synchronized light and sound outputs
1102
1104

FIG. 11

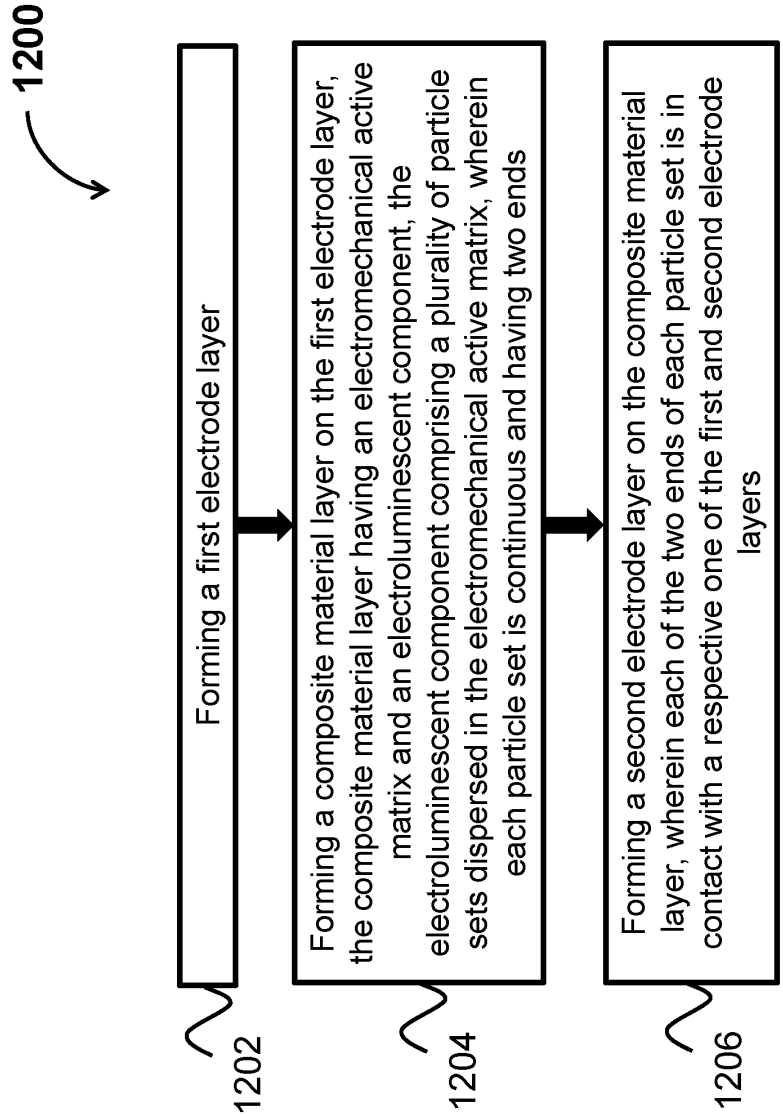

1200
Forming a first electrode layer
Forming a composite material layer on the first electrode layer, the composite material layer having an electromechanical active matrix and an electroluminescent component, the electroluminescent component comprising a plurality of particle sets dispersed in the electromechanical active matrix, wherein each particle set is continuous and having two ends
Forming a second electrode layer on the composite material layer, wherein each of the two ends of each particle set is in contact with a respective one of the first and second electrode layers
1202
1204
1206

FIG. 12