[0025] In an embodiment, applying an electrical input signal comprises applying an alternating current (AC) electric field across the composite material layer.

[0026] In an embodiment, applying the electrical input signal comprises selecting an amplitude and a frequency of the electrical input signal to control a sound level and a frequency of the sound output.

[0027] In an embodiment, applying the electrical input signal further comprises selecting the amplitude and the frequency of the electrical input signal to control a luminance and a wavelength of the light output.

[0028] There is also disclosed a method of fabricating a device for synchronized light and sound emission, comprising: 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.

[0029] In an embodiment, the method further comprises patterning at least one of the electrode layers to form a multi-element array.

[0030] In an embodiment, the method further comprises disposing a transparent substrate adjacent to the first electrode layer or the second electrode layer.

[0031] In an embodiment, the method further comprises disposing an opaque substrate adjacent to the first electrode layer or the second electrode layer.

BRIEF DESCRIPTION OF THE DRAWINGS

[0032] Embodiments of the invention will be better understood and readily apparent to one of ordinary skill in the art from the following written description, by way of example only, and in conjunction with the drawings, in which: