

7. A display apparatus comprising a plurality of pixels, wherein each of the plurality of pixels comprises:

an electroactive polymer layer, of which shape and/or size is displaced when a voltage is applied;

a diffraction grating, of which a pitch changes according to a displacement of the electroactive polymer layer; and
a liquid crystal layer which is disposed on the diffraction grating and controls gradation according to a voltage applied thereto by a thin film transistor (TFT) electrode.

8. The display apparatus of claim 7, wherein the diffraction grating is formed of a flexible conductive material.

9. The display apparatus of claim 7, wherein the diffraction grating is used as a top electrode of the TFT electrode.

10. The display apparatus of claim 7, wherein the electroactive polymer layer has a thickness ranging from 0.001 μm to 100 μm .

11. A display pixel comprising:

a backlight unit emitting light;

a liquid crystal layer controlling transmittance of the light emitted by the backlight unit according to a voltage applied to the liquid crystal layer;

a thin film transistor (TFT) electrode which applies the voltage to the liquid crystal;

a reflective color unit, which comprises:

an electroactive polymer layer, of which shape and/or size is displaced when a voltage is applied thereto; and

a diffraction grating, of which a pitch changes according to a displacement of the electroactive polymer layer; and

a transmissive color unit including a color filter transmitting light having a predetermined wavelength among the light emitted by the backlight unit.

12. The display pixel of claim 11, wherein the diffraction grating is formed of a flexible conductive material.

13. The display pixel of claim 11, wherein the diffraction grating is used as a top electrode of the TFT electrode.

14. The display pixel of claim 11, further comprising a first and a second electrodes which each are formed of a flexible material and apply a voltage to the electroactive polymer layer.

15. The display pixel of claim 11, wherein the electroactive polymer layer has a thickness ranging from 0.001 μm to 100 μm .

16. A display apparatus comprising a plurality of pixels, wherein each of the plurality of pixels comprises:

a backlight unit emitting light;

a liquid crystal layer controlling transmittance of the light emitted by the backlight unit according to a voltage applied to the liquid crystal layer;

a thin film transistor (TFT) electrode which applies the voltage to the liquid crystal;

a reflective color unit, which comprises:

an electroactive polymer layer, of which shape and/or size is displaced when a voltage is applied thereto; and
a diffraction grating, of which a pitch changes according to a displacement of the electroactive polymer layer; and

a transmissive color unit including a color filter transmitting light having a specific wavelength among the light emitted by the backlight unit.

17. The display apparatus of claim 16, wherein the diffraction grating is formed of a flexible conductive material.

18. The display apparatus of claim 16, wherein the diffraction grating is used as a top electrode of the TFT electrode.

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