

wherein the electroactive polymer is configured to include a polymer surface feature above the undeflected thickness after deflection of an active area and the first electrode is configured to include an electrode surface feature below the undeflected thickness after deflection of the active area.

2. The transducer of claim 1 wherein the polymer surface feature is outside the first electrode on the first surface.

3. The transducer of claim 1 further comprising a third electrode disposed on the first or second surface.

4. The transducer of claim 2 wherein the first electrode or the second electrode is a common electrode.

5. The transducer of claim 1 wherein the first electrode or the second electrode comprises a non-compliant electrode.

6. The transducer of claim 5 wherein the first electrode or the second electrode comprises a metal.

7. The transducer of claim 5 wherein the first electrode or second electrode comprises a rigid or semi-flexible electrode.

8. The transducer of claim 1 wherein the first electrode or second electrode comprises a compliant electrode.

9. The transducer of claim 1 wherein the first electrode or second electrode is configured in surface area to affect a surface shape for the polymer surface feature or the electrode surface feature.

10. The transducer of claim 1 wherein the first surface is substantially flat before the deflection.

11. The transducer of claim 1 wherein the polymer surface feature or electrode surface feature resembles a geometric shape.

12. The transducer of claim 1 wherein the polymer surface feature or electrode surface feature resembles a letter.

13. The transducer of claim 12 wherein the first electrode includes a shape on the first surface that resembles the surface shape of the letter.

14. The transducer of claim 1 wherein the transducer is included in one of an actuator or a sensor.

15. The transducer of claim 1 wherein the active area is arranged in a manner which causes a portion of the electroactive polymer to deflect in response to a change in electric field provided by the first and second electrodes.

16. The transducer of claim 1 wherein the active area is arranged in a manner which causes a change in electric field in a portion of the electroactive polymer in response to a deflection applied to the portion.

17. The transducer of claim 1 further comprising a rigid layer attached to the second surface.

18. The transducer of claim 1 wherein the undeflected thickness is measured from the second surface to the first surface.

19. An electroactive polymer transducer, the transducer comprising:

an electroactive polymer including an undeflected thickness for a surface region on a first surface of the polymer;

a first electrode disposed on a portion of the first surface of the electroactive polymer;

a second electrode disposed on a portion of a second surface of the electroactive polymer; and

wherein the electroactive polymer and first electrode are configured to produce a set of surface features on the first surface after deflection of an active area, the set of

features including a) a polymer surface feature that is elevated above the undeflected thickness and outside the first electrode on the first surface or b) an electrode surface feature that is depressed below the undeflected thickness.

20. The transducer of claim 19 wherein the first or second electrode comprises a compliant electrode.

21. The transducer of claim 19 wherein the first electrode or the second electrode comprises a non-compliant electrode.

22. The transducer of claim 21 wherein the first electrode or the second electrode comprises a metal.

23. The transducer of claim 21 wherein the first electrode or second electrode comprises a rigid or semi-flexible electrode.

24. The transducer of claim 19 wherein the surface feature is included in a geometric shape on the first surface.

25. The transducer of claim 19 wherein the first electrode includes a shape on the first surface that contributes to the surface shape of the letter.

26. An electroactive polymer device, the device comprising:

an electroactive polymer including an undeflected thickness for a surface region on a first surface of the polymer;

a first electrode disposed on a portion of the first surface of the electroactive polymer;

a second electrode disposed on a portion of a second surface of the electroactive polymer; and

wherein the electroactive polymer and first electrode are configured to produce a set of surface features on the first surface after deflection of an active area, the set of surface features including a polymer surface feature above the undeflected thickness on the first surface or an electrode surface feature below the undeflected thickness; and

a passive layer that neighbors the first surface and is configured to deflect with the deflection of the electroactive polymer such that a surface of the passive layer opposite to the electroactive polymer forms a set of passive layer surface features that resembles the set of surface features on the first surface.

27. The device of claim 26 wherein the passive layer comprises a modulus of elasticity less than a modulus of elasticity for the electroactive polymer.

28. The device of claim 27 wherein the passive layer comprises a modulus of elasticity less than one tenth the electroactive polymer modulus of elasticity.

29. The device of claim 26 wherein the passive layer comprises a thickness greater than a thickness for the electroactive polymer.

30. The device of claim 29 wherein the passive layer comprises a thickness greater than double the thickness for the electroactive polymer.

31. The device of claim 26 wherein the passive layer contacts a substantially flat surface.

32. The device of claim 26 wherein the first surface comprises a substantially flat surface before the deflection.

33. The device of claim 32 further comprising a second passive layer that neighbors the second polymer surface.

34. The device of claim 33 wherein the second passive layer is configured to deflect with deflection of the electro-