

active polymer such that a surface of the second passive layer opposite to the electroactive polymer forms a second set of passive layer surface features that resembles the electroactive polymer surface features on the second surface.

35. The device of claim 33 wherein the first passive layer and the second passive layer provide asymmetric thickness changes.

36. The device of claim 35 wherein the first passive layer includes a greater thickness or greater stiffness than the second passive layer.

37. The device of claim 26 wherein the passive layer surface opposite to the electroactive polymer is substantially flat before the deflection.

38. The device of claim 26 wherein the passive layer comprises a non-linear elastic modulus with strain of the passive layer.

39. The device of claim 26 further comprising an intermediate structure between the passive layer and the electroactive polymer configured to transfer forces from the electroactive polymer to the passive layer.

40. The device of claim 26 further comprising a mechanical output coupled to the passive layer having a first state before the deflection and a second state after the deflection.

41. The device of claim 40 wherein the first state is a first position and the second state is a second position.

42. The device of claim 40 wherein the first state is a first shape and the second state is a second shape.

43. The device of claim 40 wherein the mechanical output includes a mirrored surface.

44. The device of claim 26 wherein the passive layer comprises the first electrode.

45. The device of claim 26 wherein the at least two electrodes comprises a compliant electrode.

46. The device of claim 26 wherein the passive layer surface feature resembles a geometric shape.

47. The device of claim 26 wherein the set of passive layer surface features resembles a letter.

48. The device of claim 26 wherein the transducer is included in one of an actuator or a sensor.

49. The device of claim 26 further comprising a rigid layer disposed adjacent to the second surface of the electroactive polymer.

50. The device of claim 49 wherein the rigid layer comprises the second electrode.

51. A method of actuating an electroactive polymer transducer, the method comprising:

actuating a first portion of the electroactive polymer including an undeflected thickness for a first surface region on a first surface of the polymer before actuation of the first portion to create a first surface feature on the first surface; and

actuating a second portion of the electroactive polymer including an undeflected thickness for a second surface region on the first surface of the polymer before actuation of the second portion to create a second surface feature on the first surface.

52. The method of claim 51 wherein the first surface feature is outside an electrode used in actuating the first portion of the electroactive polymer.

53. The method of claim 51 wherein the electroactive polymer transducer comprises an electrode surface feature below the undeflected thickness for the first surface region after the deflection.

54. The method of claim 51 wherein the second portion is actuated after the first portion finishes actuation.

55. The method of claim 51 wherein the first surface feature comprises a polymer surface feature above the undeflected thickness after the actuation.

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