ber, a soft polymer, a soft elastomer (gel), soft polymer foam, or a polymer/gel hybrid, for example. The relative elasticity and thickness of the passive layer(s) and dielectric layer are selected to achieve a desired output (e.g., the net thickness or thinness of the intended surface features), where that output response may be designed to be linear (e.g., the passive layer thickness is amplified proportionally to the that of the dielectric layer when activated) or non-linear (e.g., the passive and dielectric layers get thinner or thicker at varying rates).

[0076] Regarding methodology, the subject methods may include each of the mechanical and/or activities associated with use of the devices described. As such, methodology implicit to the use of the devices described forms part of the invention. Other methods may focus on fabrication of such devices.

[0077] As for other details of the present invention, materials and alternate related configurations may be employed as within the level of those with skill in the relevant art. The same may hold true with respect to method-based aspects of the invention in terms of additional acts as commonly or logically employed. In addition, though the invention has been described in reference to several examples, optionally incorporating various features, the invention is not to be limited to that which is described or indicated as contemplated with respect to each variation of the invention. Various changes may be made to the invention described and equivalents (whether recited herein or not included for the sake of some brevity) may be substituted without departing from the true spirit and scope of the invention. Any number of the individual parts or subassemblies shown may be integrated in their design. Such changes or others may be undertaken or guided by the principles of design for assembly.

[0078] Also, it is contemplated that any optional feature of the inventive variations described may be set forth and claimed independently, or in combination with any one or more of the features described herein. Reference to a singular item, includes the possibility that there are plural of the same items present. More specifically, as used herein and in the appended claims, tile singular forms "a," "an," "said," and "the" include plural referents unless the specifically stated otherwise. In other words, use of the articles allow for "at least one" of the subject item in the description above as well as the claims below. It is further noted that tile claims may be drafted to exclude any optional element. As such, this statement is intended to serve as antecedent basis for use of such exclusive terminology as "solely," "only" and the like in connection with the recitation of claim elements, or use of a "negative" limitation. Without the use of such exclusive terminology, the term "comprising" in tile claims shall allow for the inclusion of any additional element—irrespective of whether a given number of elements are enumerated in the claim, or the addition of a feature could be regarded as transforming the nature of an element set forth n the claims. Stated otherwise, unless specifically defined herein, all technical and scientific terms used herein are to be given as broad a commonly understood meaning as possible while maintaining claim validity.

[0079] In all, the breadth of the present invention is not to be limited by the examples provided. That being said, we claim:

What is claimed is:

1. A transducer comprising:

an electroactive polymer film comprising a thin dielectric elastomer layer, wherein a portion of the dielectric elastomer layer is sandwiched between first and second electrodes wherein the overlapping portions of the electrodes define an active film region with the remaining portion of film defining an inactive film region;

a first conductive layer disposed on at least a portion of the inactive film region and electrically coupled to the first electrode, and a second conductive layer disposed on at least a portion of the inactive film region and electrically coupled to the second electrode; and

at least one passive polymer layer, the polymer layer extending over at least a portion of one side of the electroactive polymer film, wherein activation of the active region changes a thickness dimension of the passive polymer layer.

2. The transducer of claim **1** further comprising a first conductive via extending through the transducer at a location which includes the first electrode and a second conductive via extending through the transducer at a location which includes the second electrode.

3. The transducer of claim **1** further comprising at least one rigid output structure mounted to a passive polymer layer.

4. The transducer of claim **3** further comprising a rigid output structure mounted to each passive polymer layer.

5. The transducer of claim **1** comprising two passive polymer layers, one on each side of the electroactive polymer film.

6. The transducer of claim **1**, wherein the transducer is used to provide haptic feedback.

7. The transducer of claim **6** wherein the haptic feedback is provided for a touch screen device, a touch panel, a button, a key or a pointing device.

8. The transducer of claim **1**, wherein the transducer controls the opening and closing of a valve mechanism.

9. The transducer of claim **1**, wherein the transducer controls the flow of fluid through a chamber.

10. The transducer of claim **1**, wherein the transducer controls a linear braking system.

11. The transducer of claim **1**, wherein the transducer controls a rotary braking system.

12. The transducer of claim **1**, wherein the active region is central to the inactive region.

13. The transducer of claim **12**, wherein the passive layer extends over the active and the inactive regions.

14. The transducer of claim **12**, wherein the transducer is used to provide haptic feedback.

15. The transducer of claim **1**, wherein the inactive region is central to the active region.

16. The transducer of claim **12**, wherein the transducer is used to provide haptic feedback.

17. The transducer of claim **15**, wherein the passive layer extends over only the inactive region.

18. A transducer assembly comprising;

at least two stacked layers of electroactive polymer film, each electroactive polymer film comprising a thin dielectric elastomer layer, wherein a portion of the dielectric elastomer layer is sandwiched between first and second electrodes wherein the overlapping portions of the electrodes define an active film region with the remaining portion of film defining an inactive film region, wherein the active film regions of the respective layers of electroactive polymer film are in stacked alignment and the inactive active film regions of the respective layers of electroactive polymer film are in stacked alignment; and

a first conductive layer disposed on at least a portion of the inactive film region of each electroactive polymer film and electrically coupled to tile first electrode thereof, and a second conductive layer disposed on at least a