**CLAIMS**

1. A hybrid carrier head for holding a substrate in a polishing system, the hybrid carrier head comprising:

(a) a housing including a carrier plate;

(b) a first flexible membrane secured to the housing,

(i) wherein the first flexible membrane includes an upper surface and a lower surface;

(ii) wherein the lower surface of the first flexible membrane provides a substrate mounting surface for the substrate; and

(iii) wherein the substrate mounting surface includes:

(1) a center mounting portion for positioning over a substrate center portion of the substrate; and

(2) an edge mounting portion located radially outward of the center mounting portion for positioning over a substrate edge portion of the substrate;

(c) a second flexible membrane,

(i) wherein the second flexible membrane is secured to the housing to form a pressurizable chamber;

(ii) wherein the second flexible membrane includes an outer surface configured to contact the upper surface of the first flexible membrane over the center mounting portion; and

(iii) wherein the pressurizable chamber is configured to apply pressure to the substrate center portion through the center mounting portion; and

(d) a plurality of independently operable piezoelectric actuators secured to the carrier plate and positioned above the first flexible membrane,

(i) wherein the plurality of independently operable piezoelectric actuators are configured to be positioned over the edge mounting portion; and

(ii) wherein the plurality of independently operable piezoelectric actuators provide independently adjustable compressive pressure to the substrate edge portion through the upper surface of the first flexible membrane positioned above the edge mounting portion.

2. The hybrid carrier head of claim 1, wherein the plurality of piezoelectric actuators are arranged at different angular positions around a center axis of the carrier head.

3. The hybrid carrier head of claim 2, wherein the plurality of piezoelectric actuators are arranged in a plurality of arcuate zones.

4. The hybrid carrier head of claim 1, wherein the plurality of piezoelectric actuators comprise at least one piezoelectric actuator per 30º sector around a center axis of the carrier head.