Claims

1. A charge isolated ejector mechanism for generating droplets of a fluid comprising:

   a generator plate (1632) having a plurality of openings (1626) formed through its thickness;
   a first conducting layer; and
   a second conducting layer;
   characterized by a piezoelectric actuator (1604) operable to directly or indirectly oscillate the generator plate (1632) upon application of a voltage; and
   a dielectric layer (1662);
   wherein the first conducting layer separates the piezoelectric actuator (1604) from the dielectric layer (1662), the dielectric layer (1662) separates the first conducting layer from the second conducting layer, and the second conducting layer separates the dielectric (1662) from the generator plate (1632), thereby charge isolating and grounding the generator plate (1632).

2. The ejector mechanism of claim 1, wherein said ejector mechanism further comprises an ejector plate (1602) coupled to the generator plate (1632); the piezoelectric actuator (1604) being operable to oscillate the ejector plate (1602), and thereby the generator plate (1632), and the dielectric layer (1662) separating the ejector plate (1632) from the conducting layer.

3. The ejector mechanism of claim 2, wherein the ejector plate (1602) has a central open region aligned with the generator plate (1632), and the piezoelectric actuator (1604) is coupled to a peripheral region of the ejector plate (1602) so as to not obstruct the plurality of openings of the generator plate (1632).

4. The ejector mechanism of claim 3, wherein the plurality of openings of the generator plate are disposed in a center region of the generator plate (1632) that is uncovered by the piezoelectric actuator (1604) and aligned with the central open region of the ejector plate (1602).

5. The ejector mechanism of claim 3, wherein the generator plate (1632) has a reduced size relative to the ejector plate (1602), and the size of the generator plate (1632) is determined, at least in part, by the area occupied by the center region and the arrangement of the plurality of openings (1626).

6. The ejector mechanism according to claim 1, wherein the dielectric layer (1662) and conducting layers are configured as a flexible printed circuit construction.

7. The ejector mechanism according to claim 1, further comprising one or more adhesive layers.

8. The ejector mechanism according to claim 1, further comprising at least one additional metalized layer.