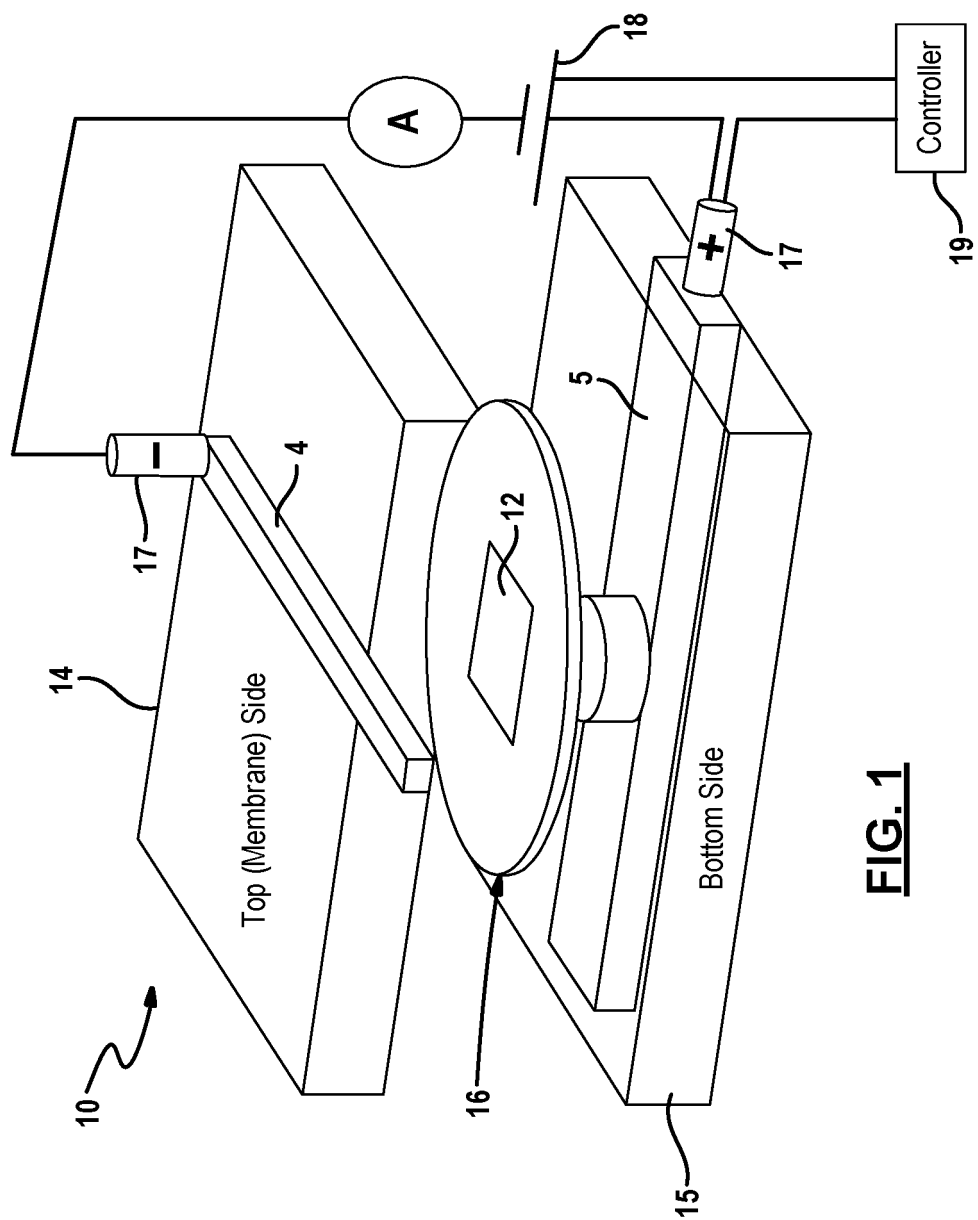




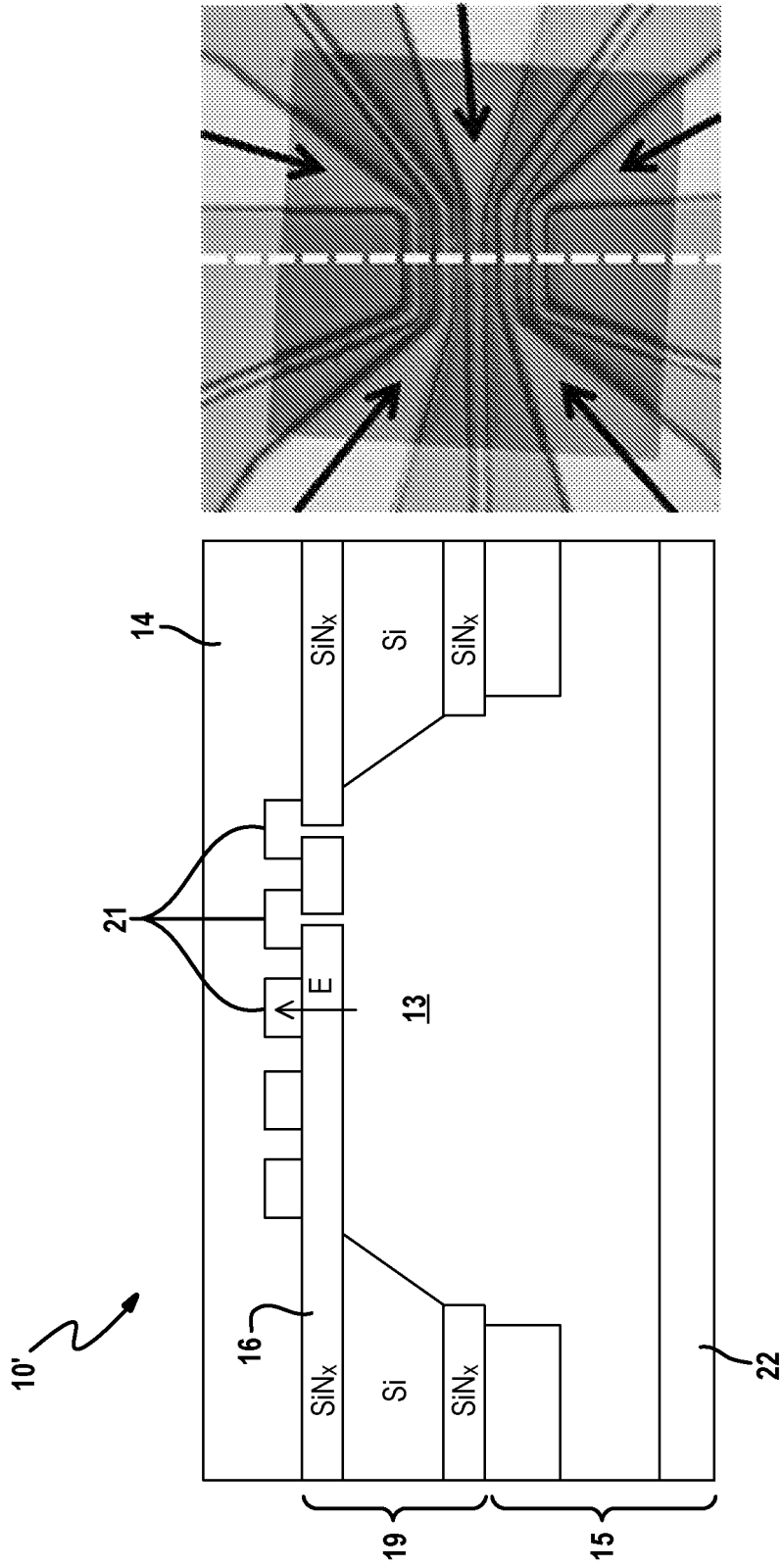
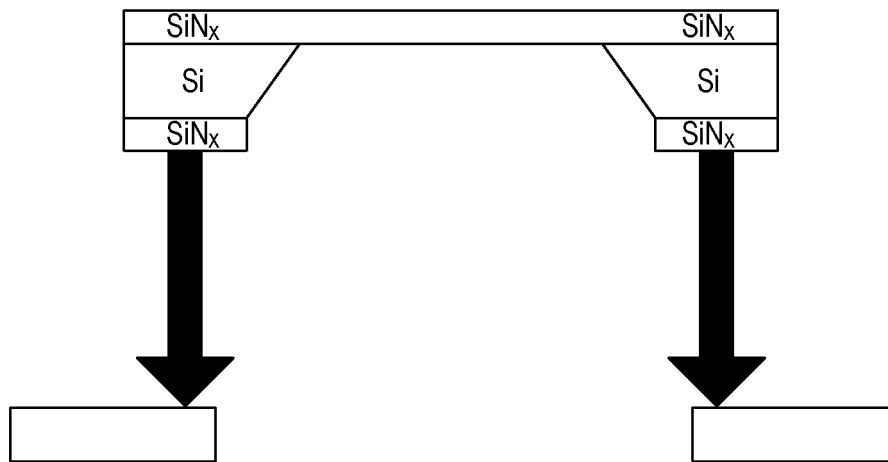
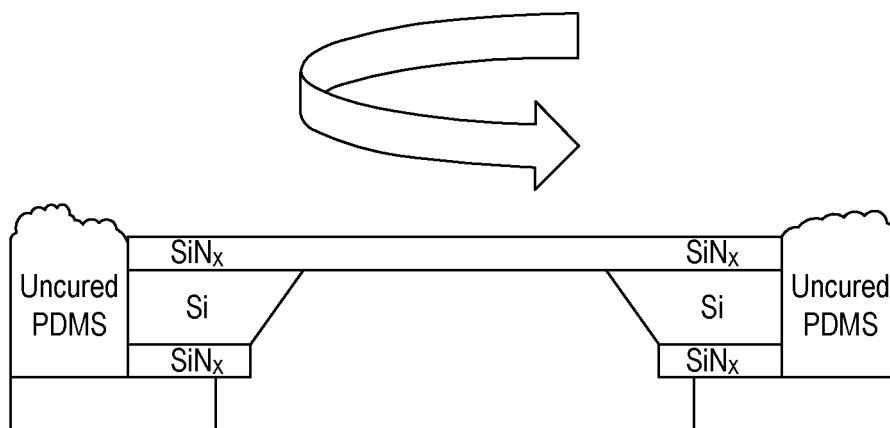
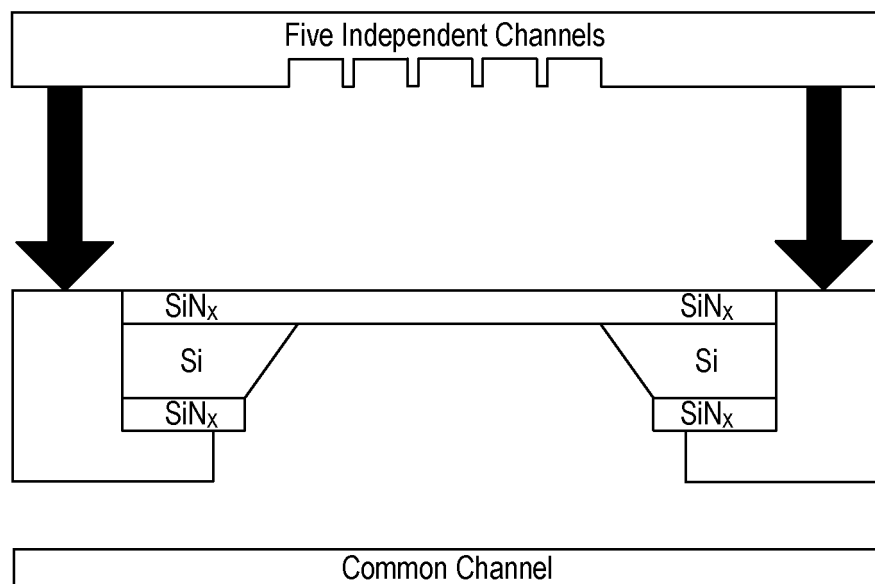
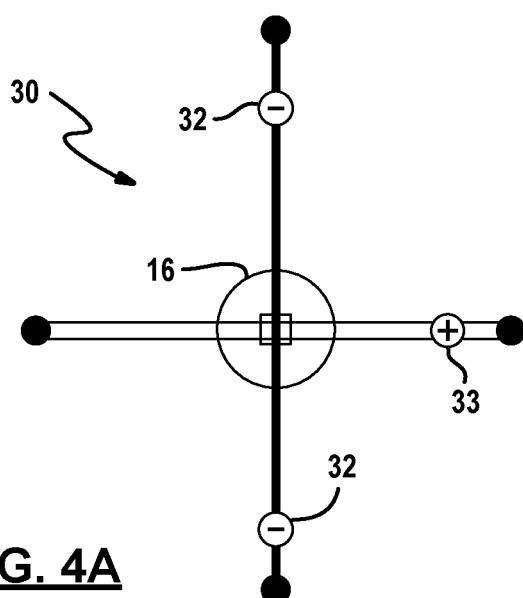
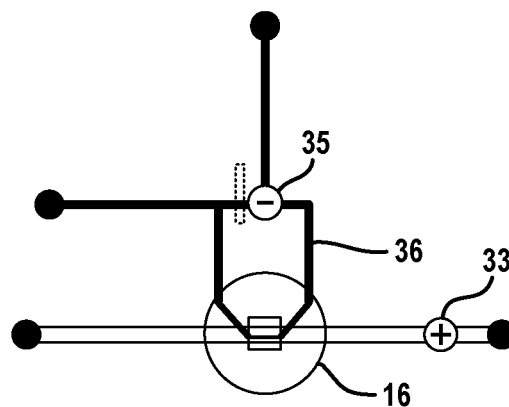


FIG. 2B

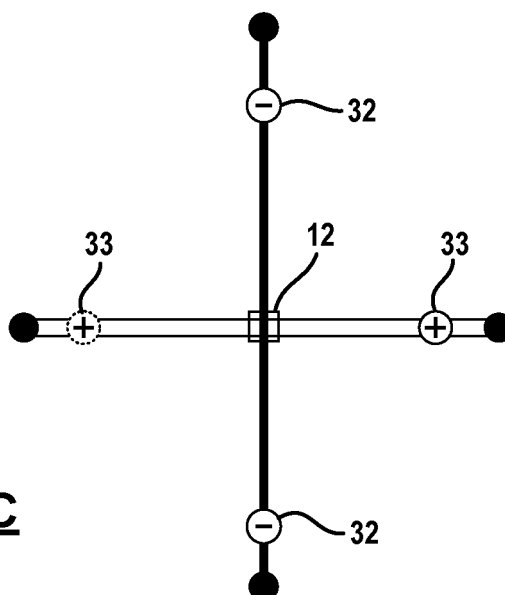
FIG. 2A

**FIG. 3A****FIG. 3B****FIG. 3C**

- Fluidic Ports
- ⊖ Anode Electrode
- ⊕ Cathode Electrode
- Flow Channel
- - - Control (Valve) Channel
- SiNx Membrane Window

**FIG. 4A****FIG. 4B**

- Fluidic Ports
- ⊖ Anode Electrode
- ⊕ Cathode Electrode
- Flow Channel
- - - Control (Valve) Channel
- Free-Standing Silicon Nitride Membrane

**FIG. 4C**

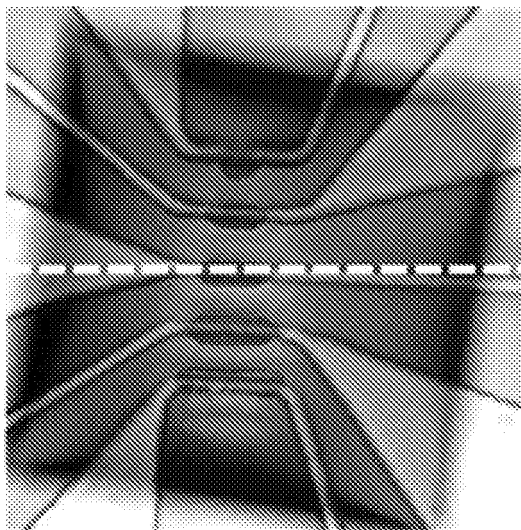


FIG. 5B

FIG. 5A

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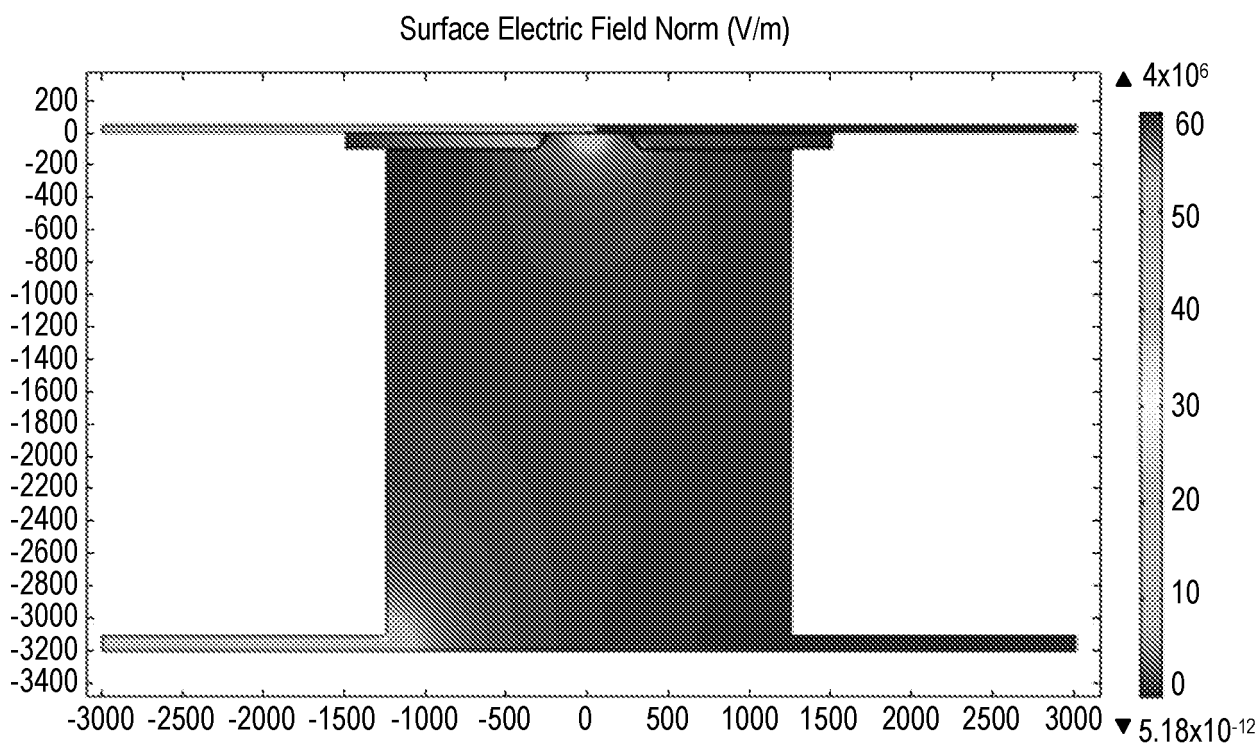


FIG. 6A

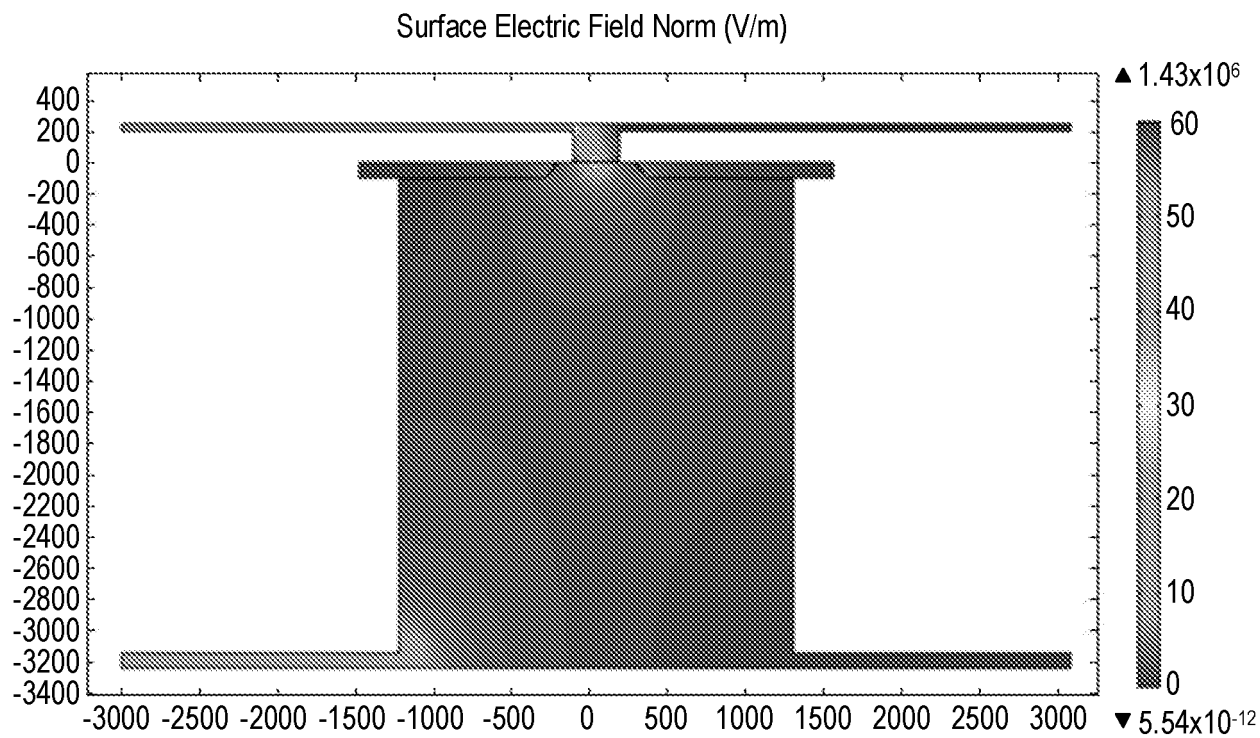
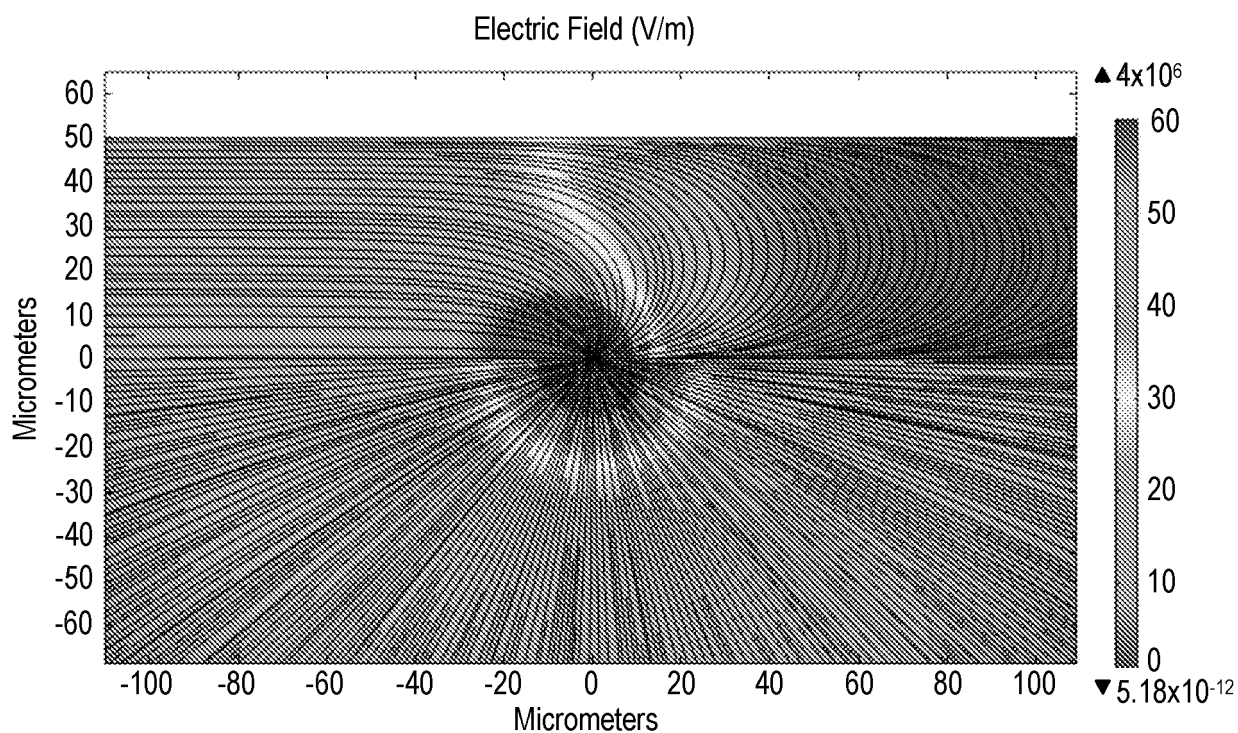
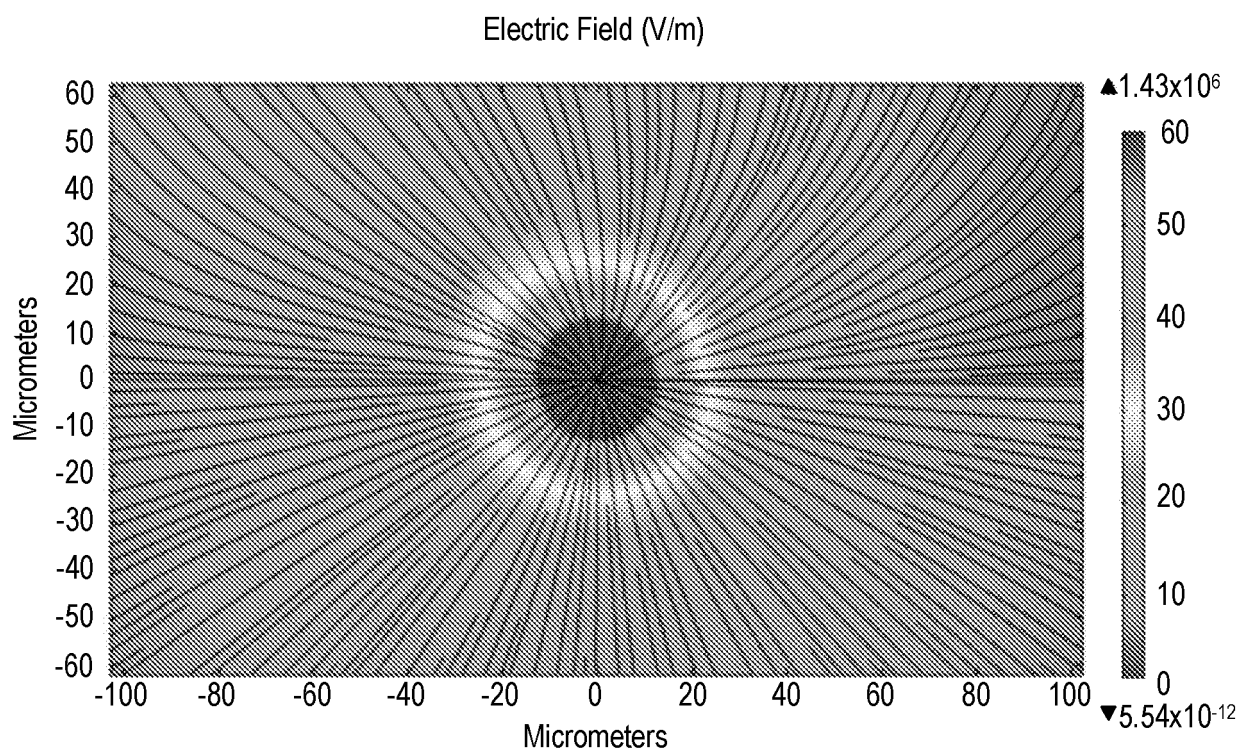
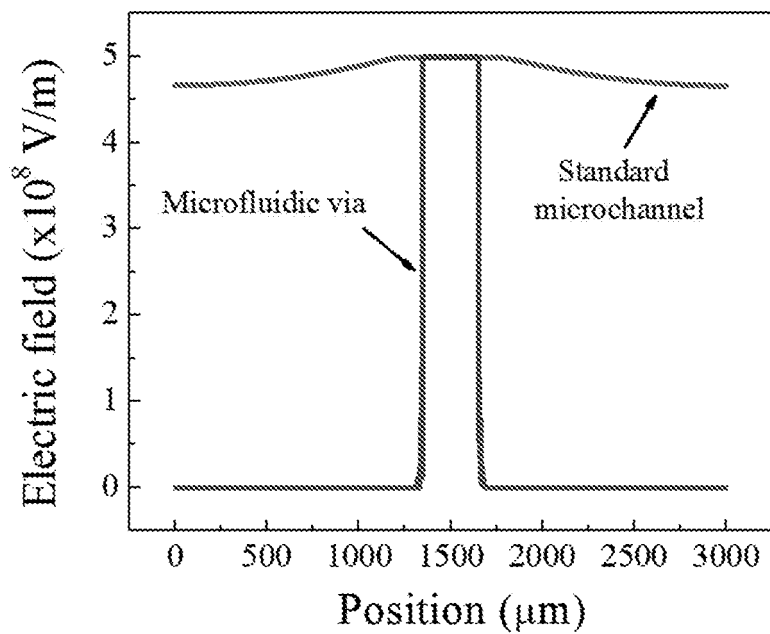
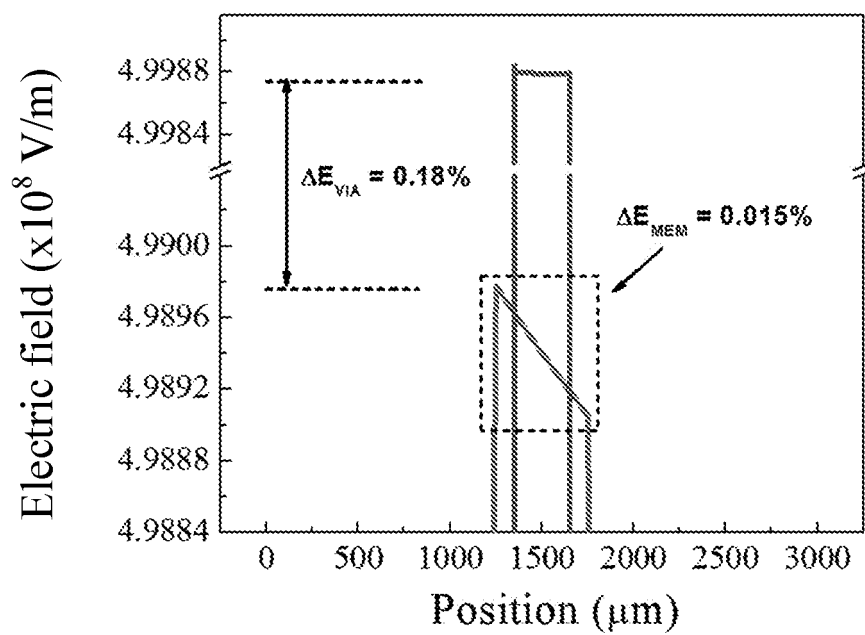
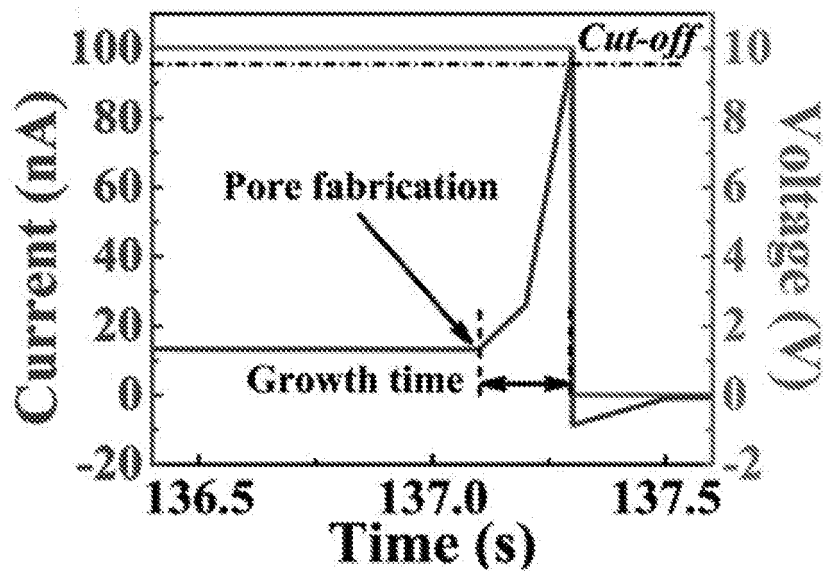
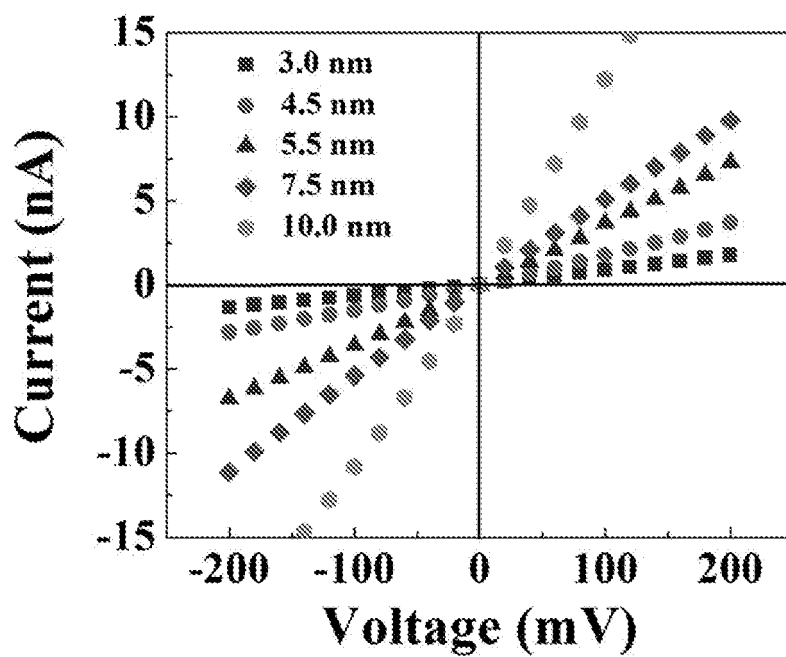
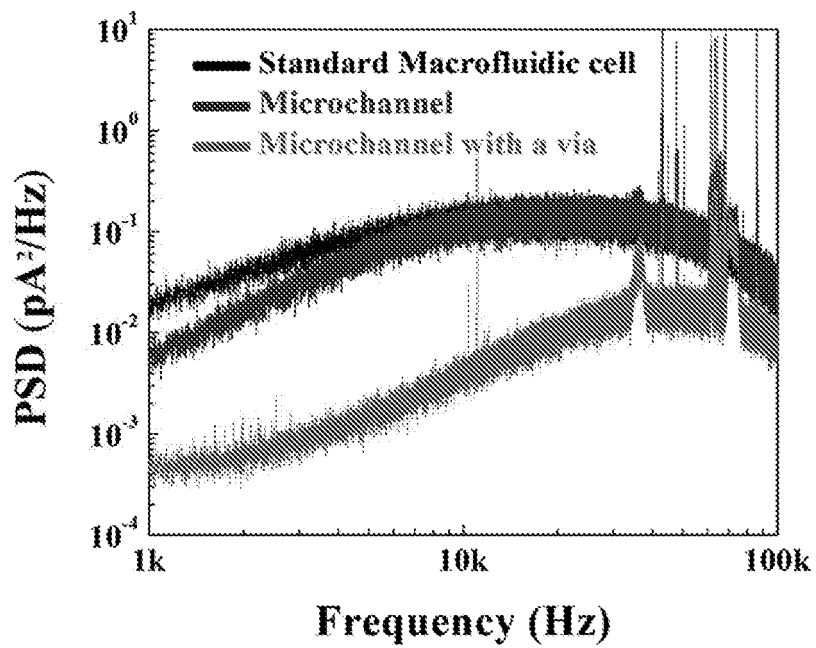
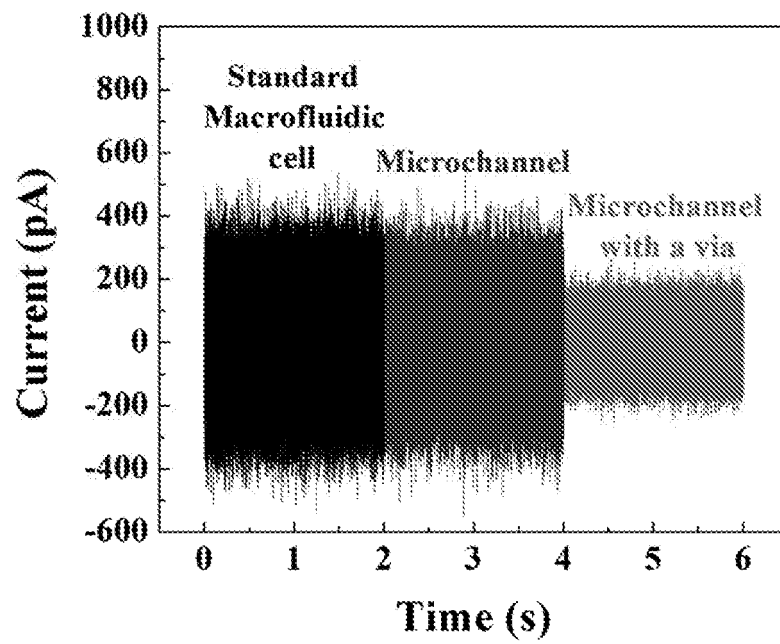


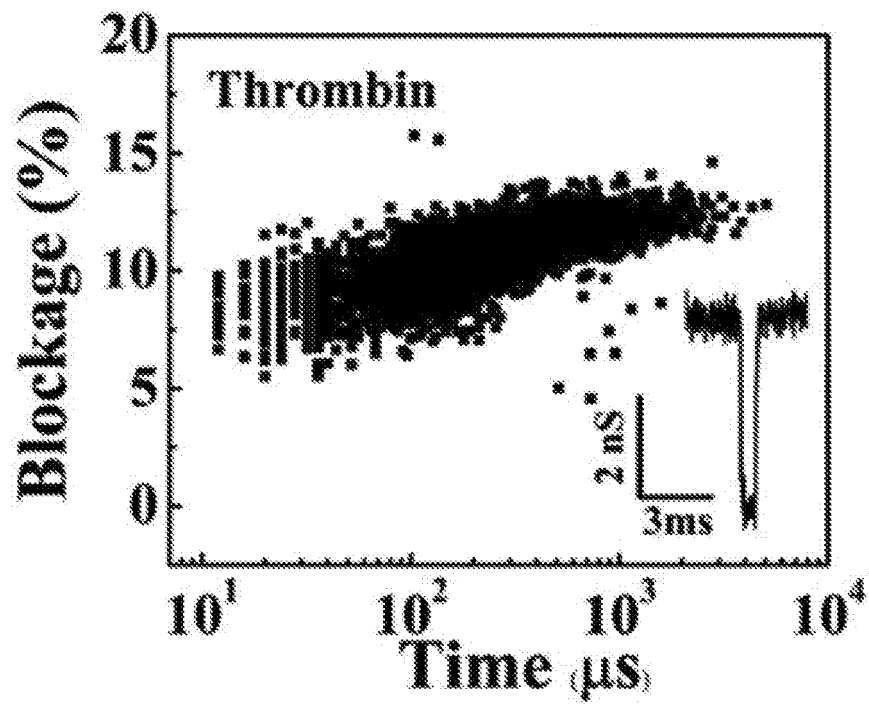
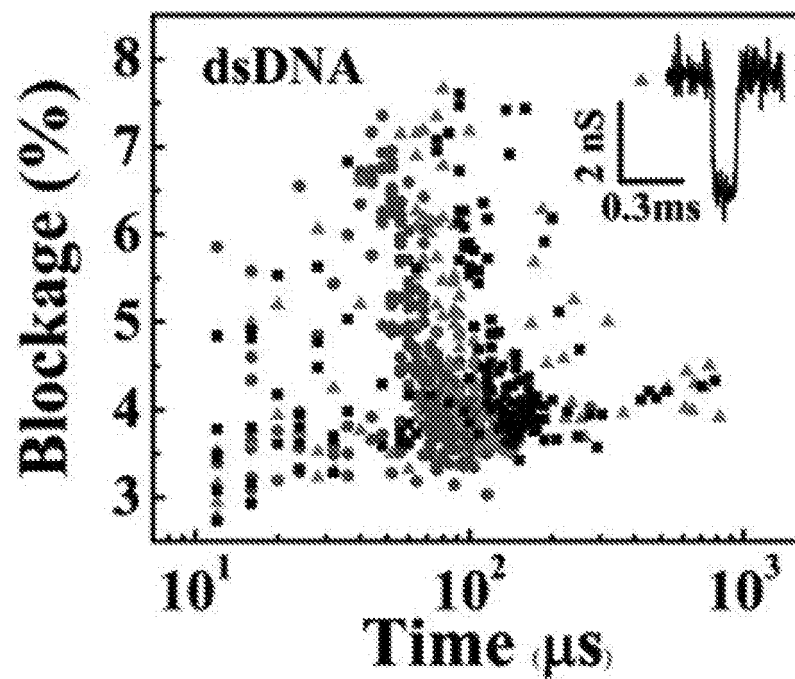
FIG. 6B

**FIG. 6C****FIG. 6D**

**FIG. 6E****FIG. 6F**

**FIG. 7A****FIG. 7B**

**FIG. 8A****FIG. 8B**

FIG. 9AFIG. 9B

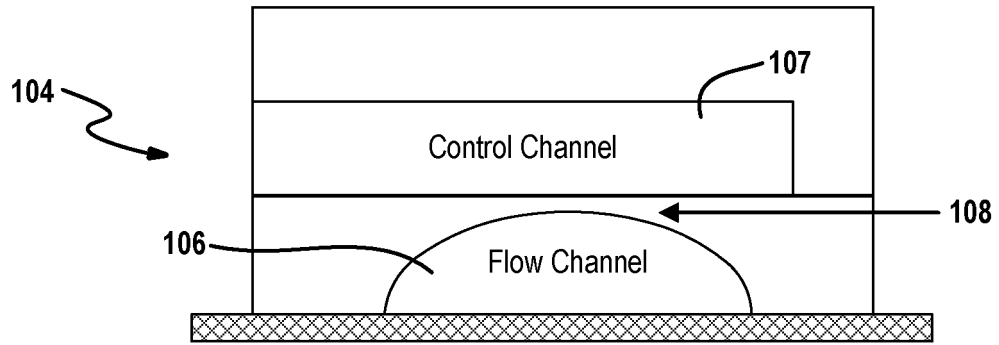


FIG. 10A

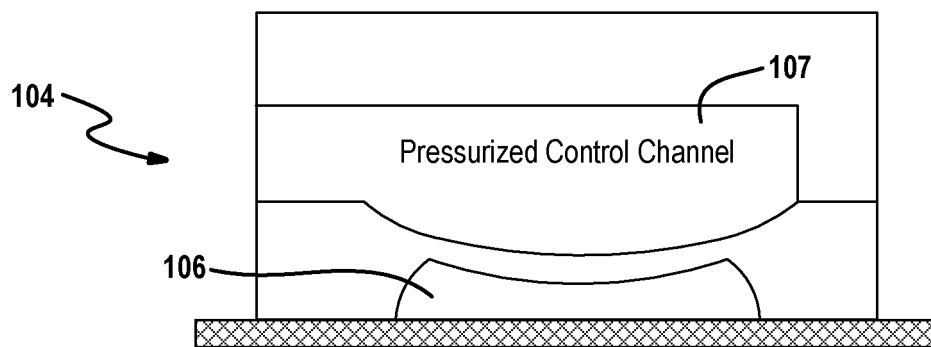
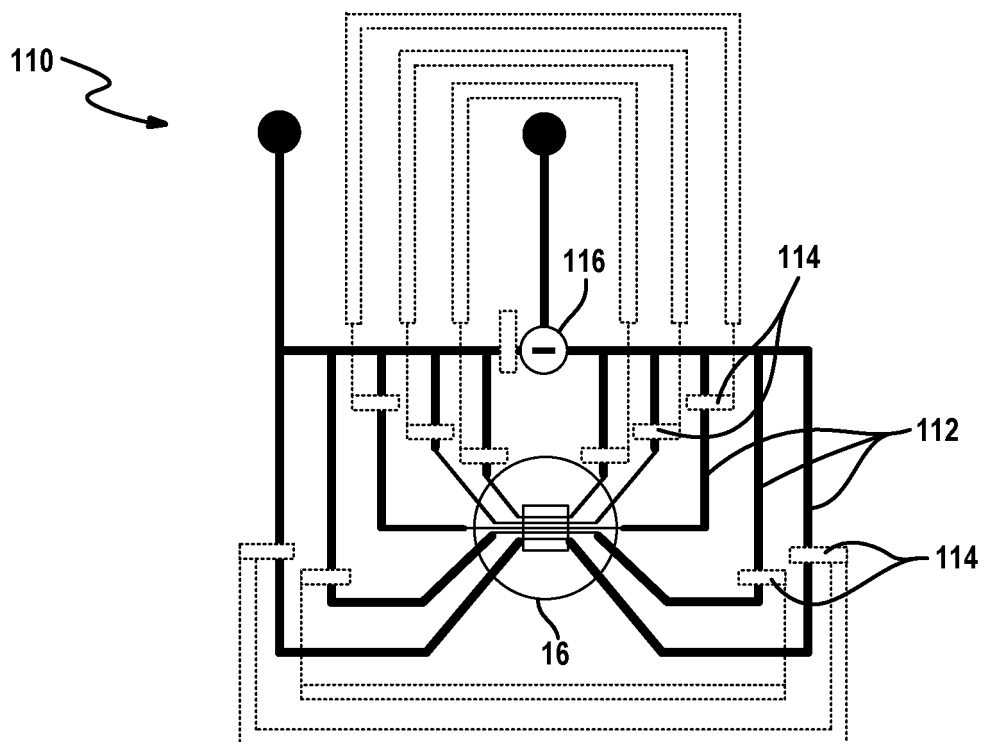
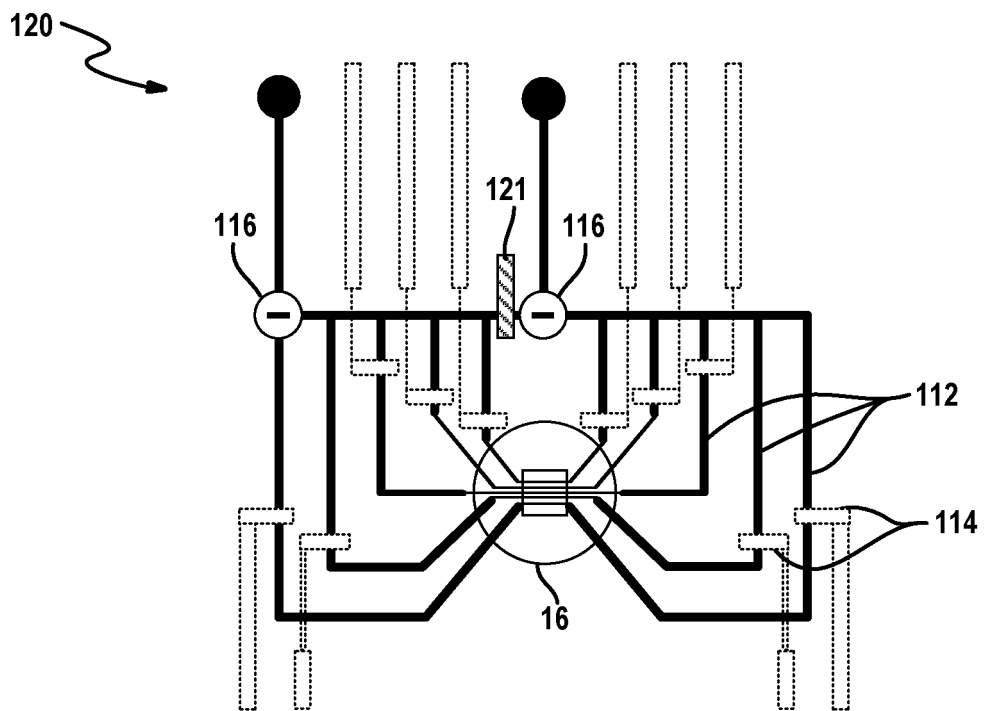
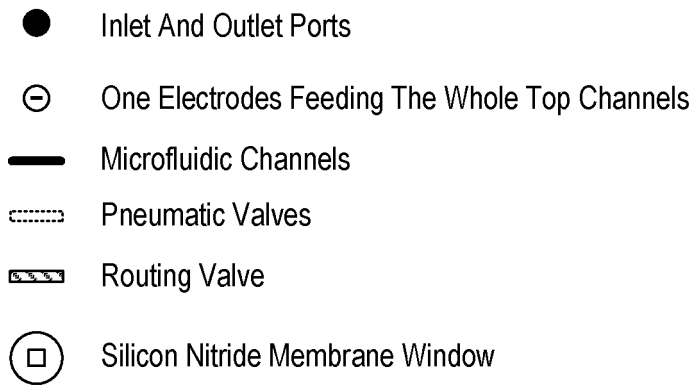
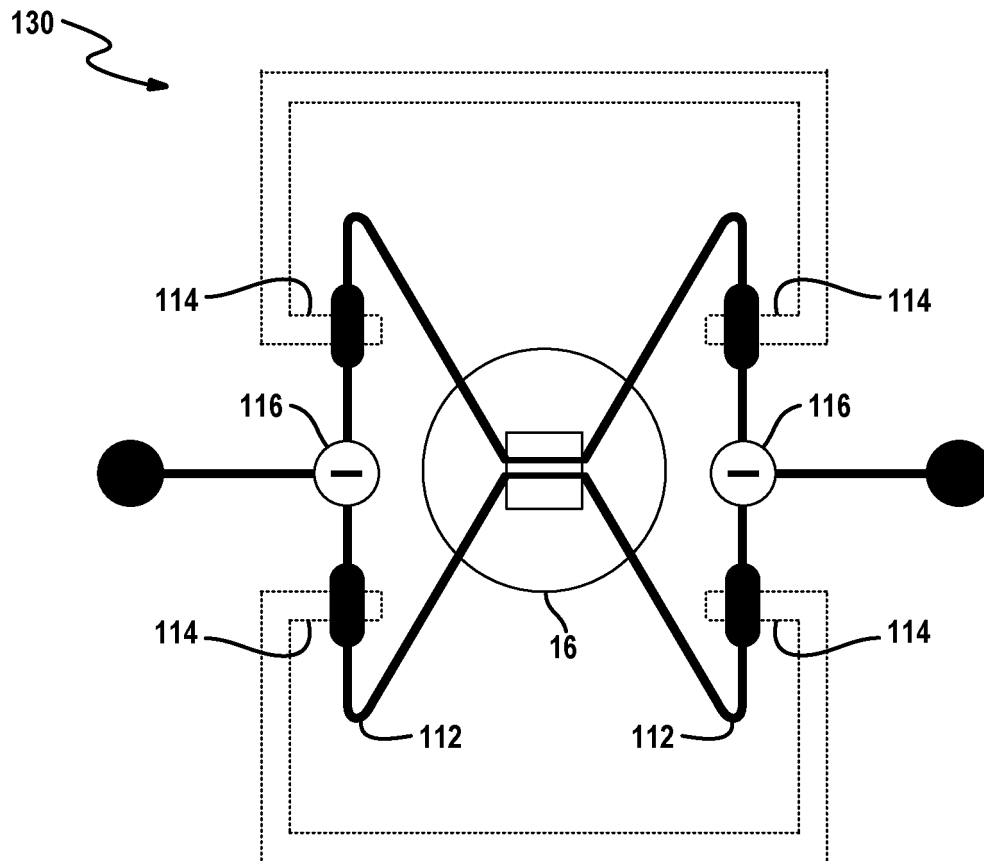
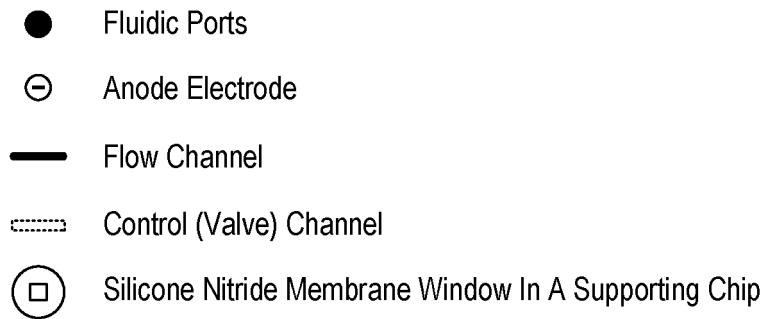


FIG. 10B

- Inlet And Outlet Ports
- ⊖ One Electrodes Feeding The Whole Top Channels
- Microfluidic Channels
- - - Pneumatic Valves
- ⊠ Silicon Nitride Membrane Window

**FIG. 11**

**FIG. 12**

**FIG. 13**