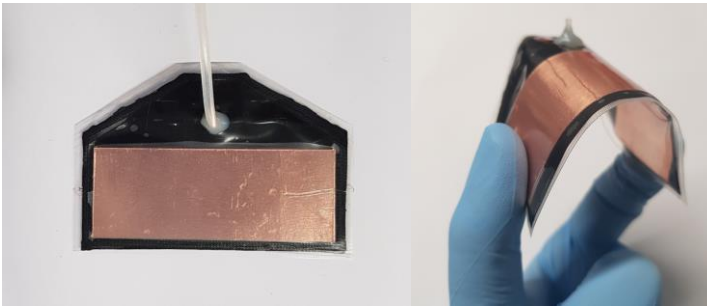


Electro-pneumatic pumps

Silent, lightweight, high performance air pumps the size of a credit card



Electro-pneumatic pumps (EPPs) are micro air pumps that take advantage of recently developed dielectrophoretic liquid zipping technology. They can be made from any combination of insulating and conducting materials, allowing them to be extremely low-cost.

The invention is driven by high-voltage, low-current electricity, similar in amplitude to static electricity. As such, electrical power consumption is very low, less than 0.5 W.

Electro-pneumatic pumps are constructed from several ultra-thin functional layers, resulting in an extremely thin final device. The total thickness of a typical EPP is around 1 mm. The other dimensions of the device can be adjusted to suit the application, targeting either high pressure generation or high flowrate.

EPPs are also flexible and can continue to pump air while bent. Devices the size of a credit card are able to exert pressures up to around 2.5 kPa and deliver flow rates up to around 160 ml/min.

Key Benefits

- Low cost
- Silent actuation
- Low power consumption < 0.5 W
- Extremely low profile (1 mm)
- Pressure generation up to 2.5 kPa
- Flow rate up to 160 l/min

Applications

- Micropumps
- Robotic micropipettes for lab automation
- On-device pressure generation
- On-device pumping

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International patents pending.

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