Micro-pump

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Technology Transfer Office

MEMS Micro Pump

Keywords

- Micro Pump
- Membrane
- Electromagnetic
- Flow reversibility
- MEMS technology

Intellectual Property

Priority Patent FR 1360387
applied 24/10/2013
PCT/FR2014/052712
Applied 24/10/2014
Procedures in course EP US CA

Development Status

Proof of Concept in laboratory environment.

Technical development underway to assess and optimize the device performances.

Partnership

Start up creation or licensing

Technology

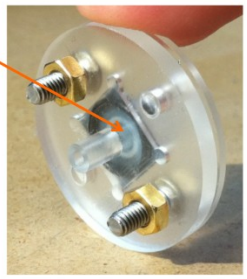
Innovation

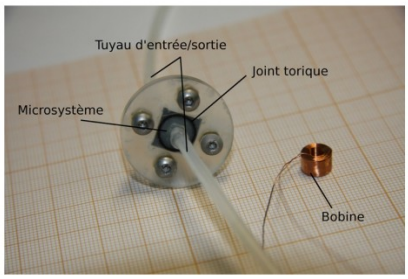
- Flow generation without pumping chamber nor valves, with throughput and flow direction being controlled by a device without any mechanical moving parts,

Results

- The micro device creates a flow without pumping chamber nor valves,
- The flow issues of the movement of a flexible polymer membrane slotted to force the fluid flow
- Oscillations are driven by an electronically controlled micro solenoid.

MEMS pump
5 x 5 mm^2
(Size is easy to adjust)





Benefits

- Compactness and simplicity hence reliability (no chamber, no moving mechanical parts),
- No friction, low vibration level, low noise,
- No wear nor particles produced by mechanical parts friction,
- Throughput and flow direction by electronic direct control,
- Low production cost,
- Pumps network easily packed in a complex shape and individually controlled,
- Building materials adaptable to the fluid chemistry and viscosity.

Performances :

- For typical dimensions (10 x 10 mm) typical values : 15 ml/mn @ 0.75 kPa, power consumption 450 mW,
- Other values : 28 ml/mn @ 0.9 kPa, power consumption 800 mW,
- Series / Parallel pump arrangement possible to add pressure and throughput of multiple pumps.

Applications

- **Medical Devices :**
  - Insulin or analgesics implantable pump,
  - Sprays, nebulization,
- **Others :**
  - Low noise or low vibration level applications
  - Applications requiring high reliability, low wear, no particles generation,
  - Dosing, pipeting?

contact

Business Developer

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