

Microscale Electromechanical Flow Actuation

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OBJECTIVE

Couple electric field to flow field to achieve microscale flow actuation and control

IMPACT

- Dielectrophoresis-based microscale flow actuation can:
- Accurately tune forces exerted on fluid via micro/nanoparticles
 - Provide flexible flow control by varying signal frequency and non-uniformity in electric field

APPROACH

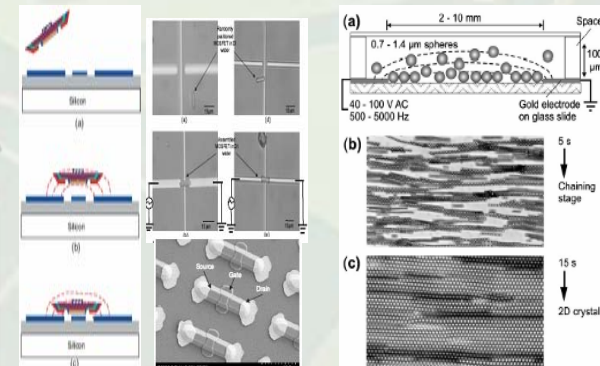
Generate microscale flow through interaction between dielectrophoretic motion of particle and surrounding liquid

APPLICATIONS

DEP-based micropumping of nanofluids



Directed fluidic self-assembly



Lee and Bashir, APL, 2003

Lumsdon et al., Langmuir, 2004

