NExTMEMS 연구실 주요연구 소개

2019. 11. 18

고정상 교수

부산대학교 기계공학부

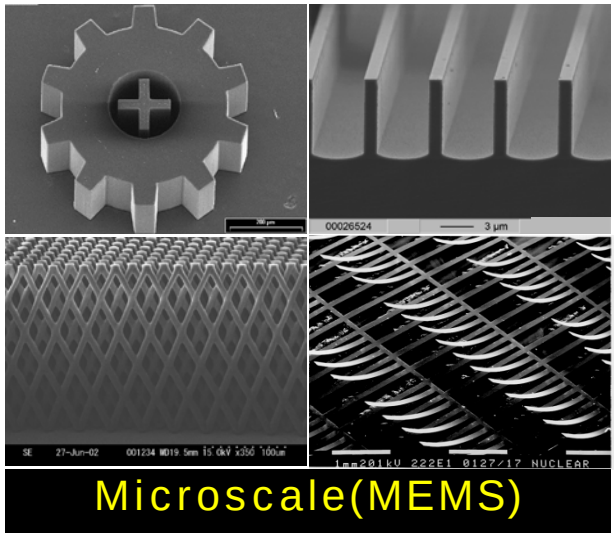
NEXT Laboratory

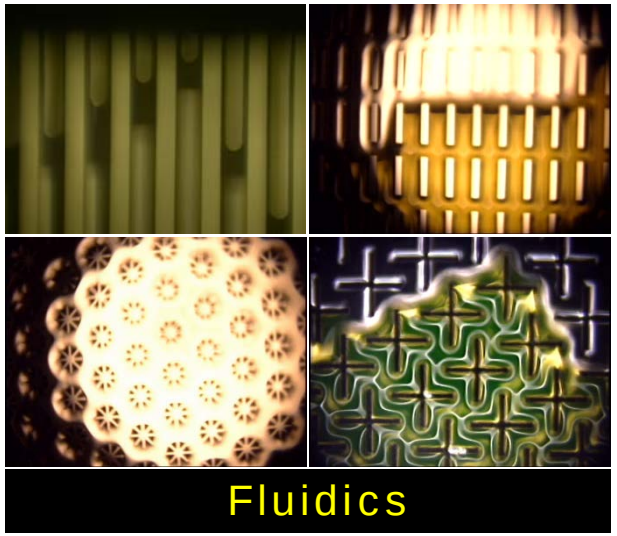
- Members
  - Post-doc. candidate: 2
  - Ph.D. candidates: 4
  - M.S. candidates: 3
  - 4th year students: 2

- Where?
  - 기계기술연구원 208호실
  - Web: nextmems.pusan.ac.kr/Tel: 3221

- Research Interests in Microfluidics
  - Production of micro/nano particles and capsules
  - Microfluidic separation technology of particles
  - Frictional drag reduction by using air bubbles
  - Sensing technology for harsh heat and mass transfer

Definition of Microfluidics

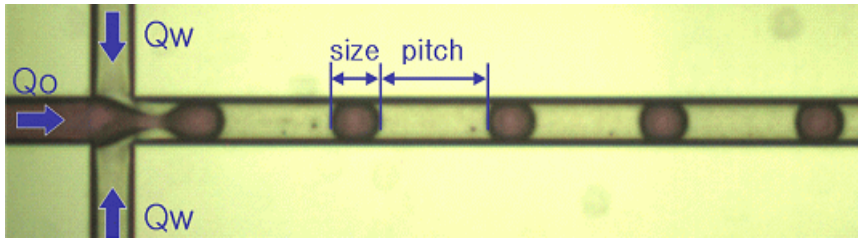


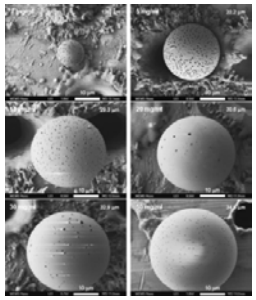


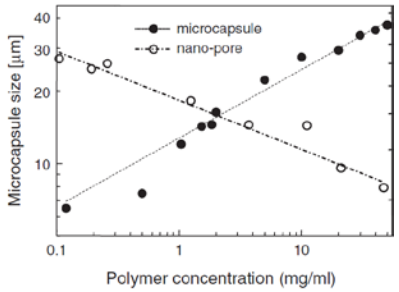
- Microfluidics is to expect and describe the behavior of a fluid in microscale under physical laws. It uses scale effect but continuum hypothesis is still available.

I. Production of Micro/Nano Particles/Capsules

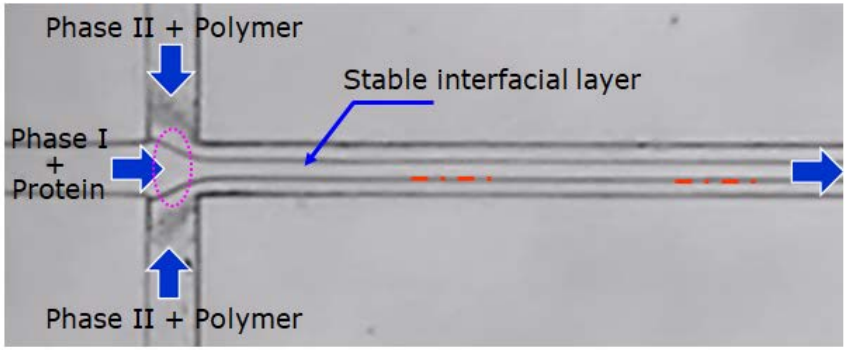
- Immiscible droplet phase flow in microchannel

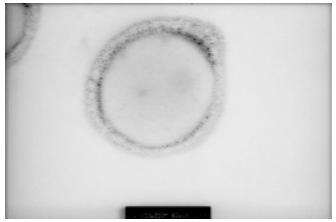


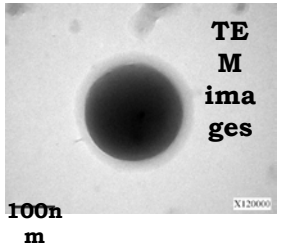


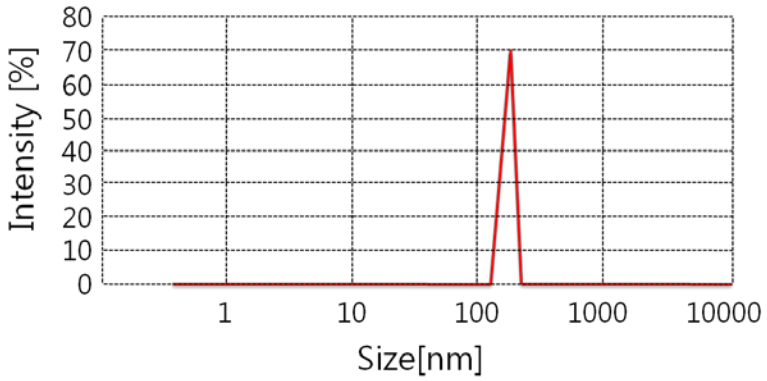


- Multi-laminated flow in microchannel



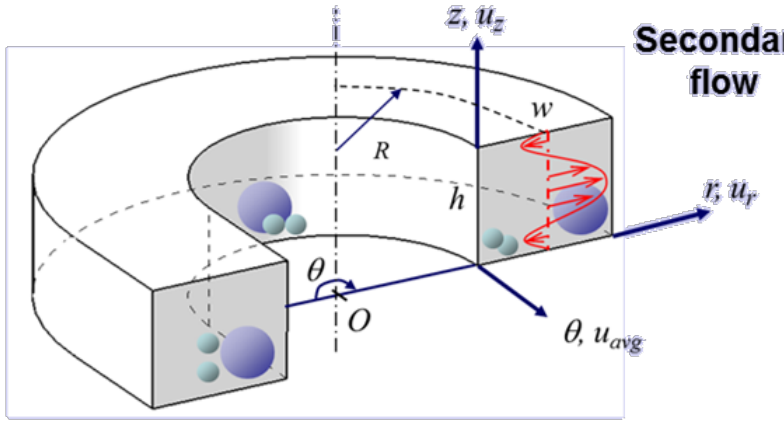




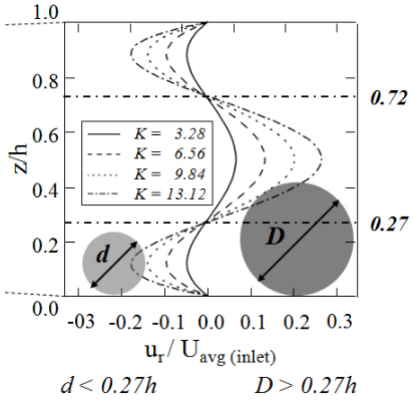


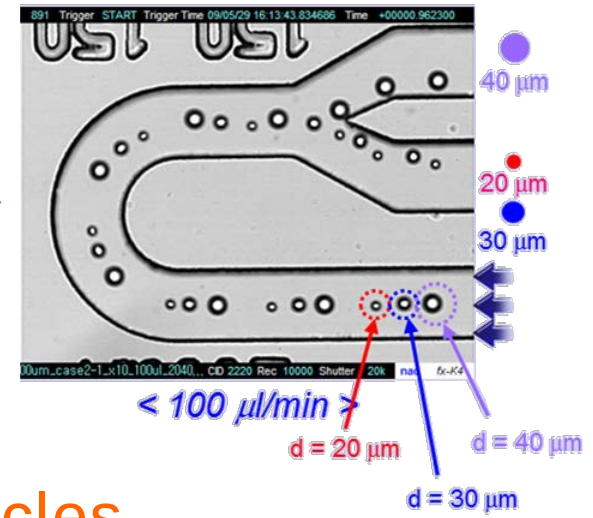
II. Microfluidic Separation of Particles

- Size-selective separation of microparticles

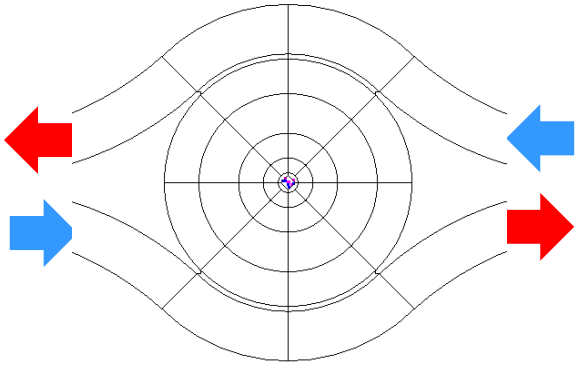


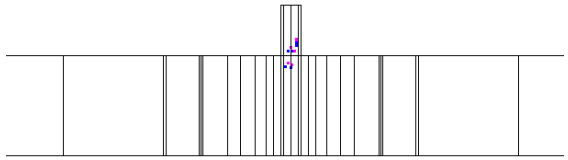
Secondary flow

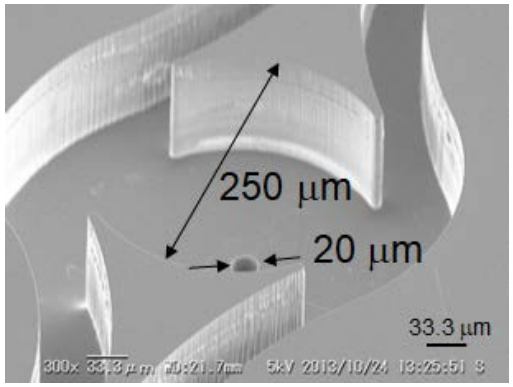




- Microfluidic centrifuge of nanoparticles

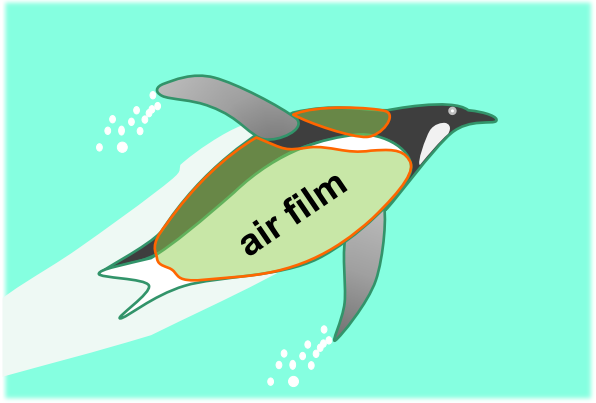


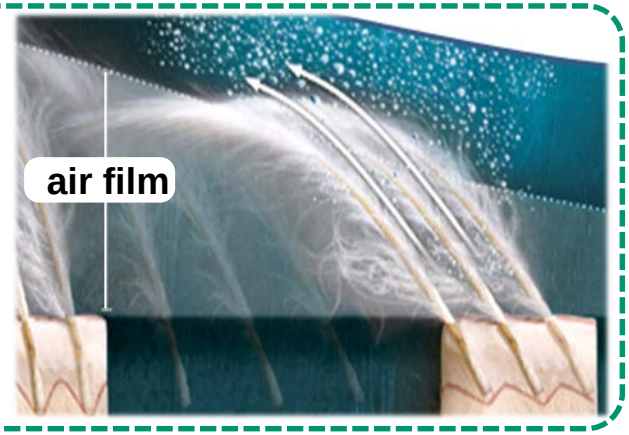


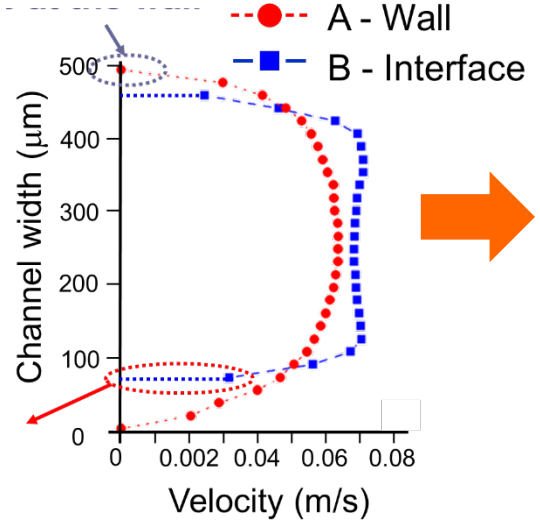


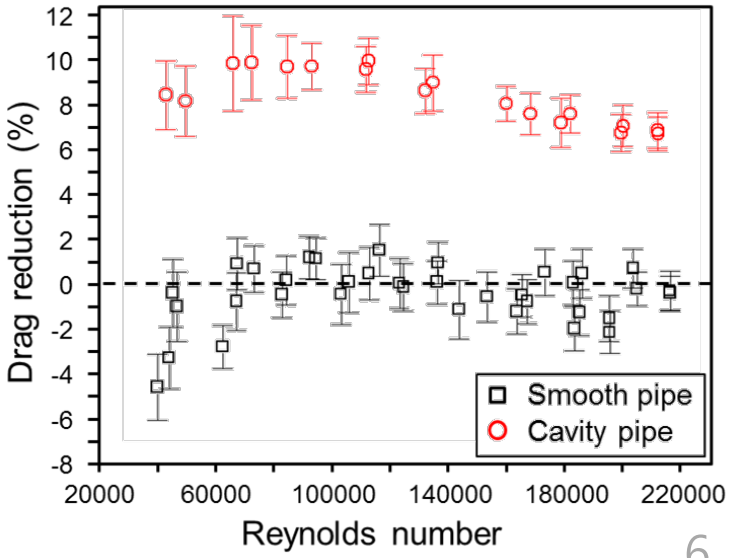
III. Research on Frictional Drag Reduction

- Drag reduction by using slip on air bubbles





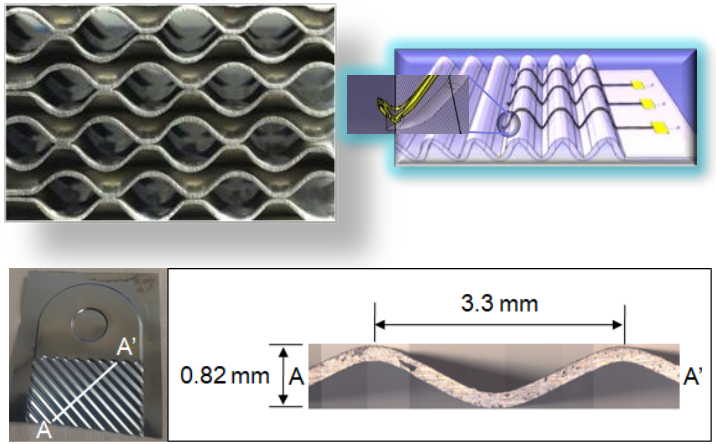




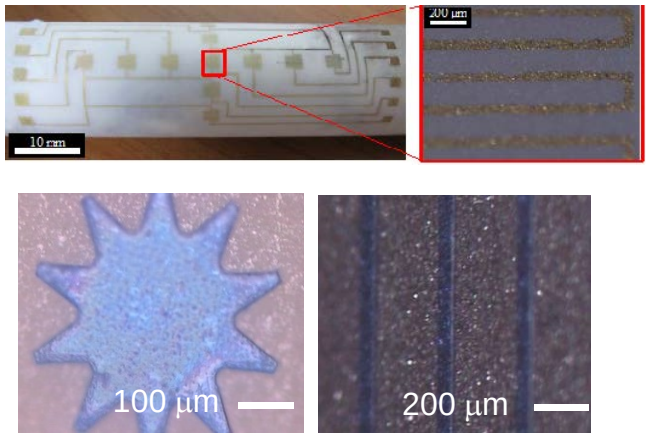
IV. High Temperature / Pressure & Ice Sensor

- Temperature up to 1200K
- Pressure up to 50bar
- Extreme fluid flow up to 8 kg/s
- Large thermal stress

P. sensor



T. sensor



Ice sensor