Nisisako Lab

Micro-Nano Fluidic Engineering

Industrial Mechano-System Research Core, FIRST

http://www.nis.first.iir.titech.ac.jp

- Droplet microfluidics
- Preparation of novel nano/micro particles
- Microfluidic large-scale integration
- Particles separation

Our group is working on the development of new micro-nanofluidic devices and their applications. For examples, our recent research topics include large-scale integration of droplet makers on a chip for industrial applications, an actively-tunable step-emulsification device, synthesis of hydrogel microspheres carrying anti-biofouling drugs, and micro-pillar devices for separation of particles.
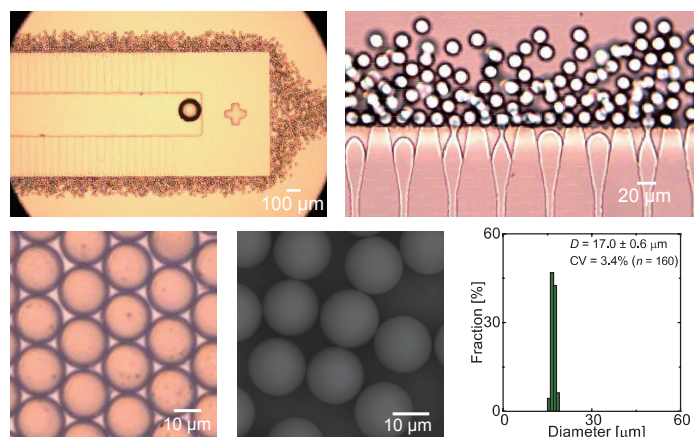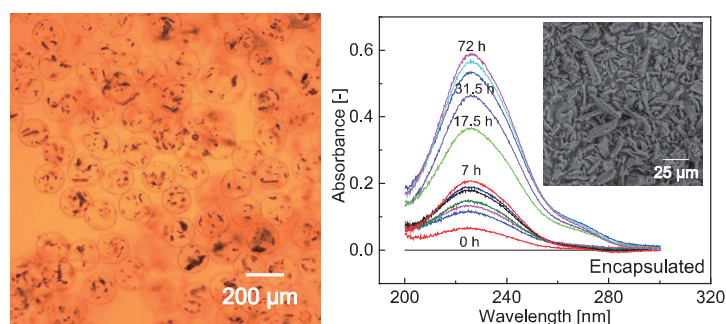

Generation of monodisperse emulsion drops
· Development of novel microfluidic droplet generators
· Numbering-up technology for mass production
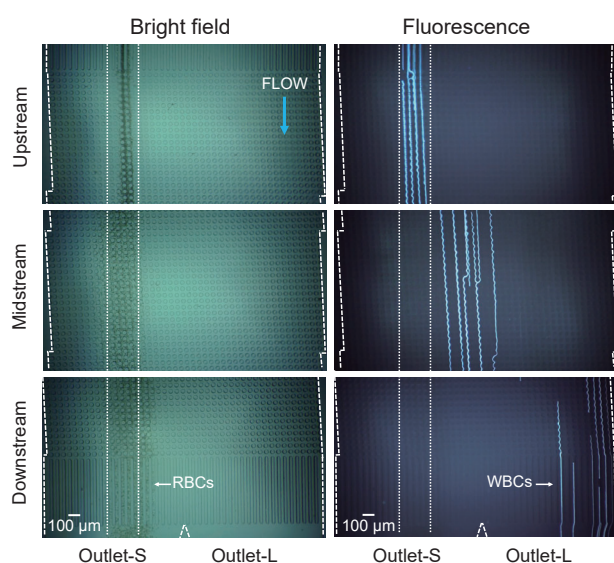
Particles separation via micro-pillar arrays
· Continuous separation of bioparticles（blood subtypes, tumor cells, etc.）in a microfluidic device
· Development of novel separation technologies

Synthesis of functional nano/micro particles
· Hydrogel microspheres carrying anti-biofouling drugs
· Biodegradable particles carrying active pharmaceutical ingredients (APIs)