



Microfluidic Compartmentalization Workshop (OIST)

“Fundamentals and Applications of Microfluidic Compartmentalization”

DATE: Tuesday, June 13, 2017 – Friday, June 16, 2017

LOCATION: OIST Seaside House and OIST Main Campus (Day 1 only)

Program

Day 1 (Tuesday, June 13) Venue: B250 (Level B, Center bldg, Main Campus)

8:45—9:10 Welcome and introduction by Prof. Amy Shen and Prof. Robert Baughman
(executive vice president/OIST)

Single-cell Biology and Chemistry (I) – Chair: Darren Link

9:10—10:00 Droplet microfluidics for single cell studies (Prof. David Weitz)

10:00—10:50 From single-cell to 3D cultures in droplet arrays (Prof. Charles Baroud)

10:50—11:00 Coffee break

11:00—11:50 Droplet Microfluidics for Cell-in-Cell Compartmentalization (Prof. Abe Lee)

11:50—12:10 Droplet based functional assay for detecting protease secretion from circulating tumor cells (Ms. Manjima Dhar)

Lunch (Closed) + Lab Tour + Poster setup

Single-cell Biology and Chemistry (II) – Chair: Amy Shen

13:30—14:20 Precision Quantitation of Proteins and Nucleic Acids with Droplet Systems
(Prof. Darren Link)

14:20—15:10 Droplet microfluidics for single-cell microbiology (Prof. Haruko Takeyama)

15:10—15:30 Single Cell Enzyme Activity Analysis by Using Continuous Flow Microfluidics
(Prof. Chia-Hung Chen)

15:30—15:45 Coffee break

15:45—16:35 Hydrogel microencapsulation for 3D cell culture (Prof. Takeuchi Shoji)

16:35—16:55 3D Heterogeneous Hydrogel Formation and Assembly on Electromicrofluidic Platform (Prof. Scott Shih-Kang Fan)

17:15—18:40 Poster session (Venue: Grano Restaurant, Level B)

18:45— Dinner (Closed)



Day 2 (Wednesday, June 14) Venue: Seaside house

Biosensors – Chair: Nikhil Bhalla

- 9:00—9:50 Integration of Bio/Nano/CMOS interfaces with Fluidics for Remote Monitoring of Human Metabolism (Prof. Sandro Carrara)
- 9:50—10:40 Integrated circuits for addressable biosensing (Prof. David Cumming)
- 10:40—10:50 [Coffee break](#)
- 10:50—11:20 Centrifugation assisted platforms for cell surface receptor profiling and for thermal convective PCR (Dr. Wilfred Villariza Espulgar)
- 11:20—11:40 Nanoplasmonic biosensors: From innovative materials to multimode sensing (Dr. Nikhil Bhalla)
- 11:40—14:30 [Lunch \(Closed\) + Poster Set up > Poster Session \(Venue: Seaside House Lobby\)](#)
- 14:30—18:30 [Excursion \(Closed\)](#)
- 18:45— [Dinner \(Closed\)](#)

Evening Session – Chair: Takeuchi Shoji

- 20:00—20:50 Electrical fractionation of cytoplasmic and nuclear nucleic acids of single cells (Prof. Shintaku Hirofumi)
- 20:50—21:30 Integrated microfluidic systems for analyzing single entities (Prof. Dino Di Carlo)

Day 3 (Thursday, June 15) Venue: Seaside house

Bioassays and Point-of-care microfluidics (I), Chair: Polly Fordyce

- 9:00—9:50 Engineering Platforms of Micro- and Extended Nano-fluidics (Prof. Takehiko Kitamori)
- 9:50—10:40 Profiling cellular-to-molecular diversity using electrophoretic cytometry (Prof. Amy Herr)
- 10:40—10:50 [Coffee break](#)
- 10:50—11:40 Femtoliter chamber technology toward artificial cell reactor (Prof. Noji Hiroyuki)
- 11:40—14:00 [Lunch \(Closed\) + Poster Session \(Venue: Seaside House Lobby\)](#)

Bioassays and Point-of-care microfluidics (II) – Chair: Amy Herr

- 14:00—14:50 Microfluidics for global health (Prof. Rustem Isamgilov)
- 14:50—15:40 New microfluidic technologies for high-throughput, quantitative enzymology (Prof. Polly Fordyce)



15:40—15:50 Coffee break

15:50—16:10 Decoding and Analysis of the Crown-of-Thorns Starfish (COTS) *Acanthaster planci* Genome (Mr. Kenneth Baughman)

16:10—17:00 Microfluidics Applied to Synthetic and Systems Biology (Prof. Sebastian Maerkl)

17:00—17:20 Spectrally encoded beads for multiplexed bioassays via programmable, fully automated microfluidic synthesis (Ms. Kara Brower)

17:20—17:40 A single virus digital bioassay using smart phone fluorescence microscopy (Dr. Yoshihiro Minagawa)

17:40-18:45 Poster Session (Venue: Seaside House Lobby)

18:45— Dinner (Closed)

Day 4 (Friday, June 16) Venue: Seaside house

Particle/cell manipulation in microfluidics – Chair: Dino Di Carlo

9:00—9:20 How to add tuning knobs to Inertial microfluidics and beyond (Prof. Wonhee Lee)

9:20—9:40 Particle/cell manipulation in viscoelastic liquids (Dr. Francesco Del Giudice)

9:40—10:30 Label-Free Sorting and Analysis of Cells Mediated by Weak Molecular Interactions in Microfluidic Devices (Prof. Rohit N. Karnik)

10:30—10:50 Ghost Cytometry (Dr. Sadao Ota)

10:50—11:00 Coffee break

11:00—11:20 Integrating Microenvironmental Cues into Single-Cell Targeted Protein Cytology (Ms. Elaine Su)

11:20—12:10 Microfluidics for single cell sequencing (Prof. Yanyi Huang)

12:10—14:00 Lunch (Closed)

Nanofluidics – Chair: Casey J. Galvin

14:00—14:30 X-ray Diffractometry for Structural Analysis of Water in Extended-nano Channel (Prof. Kazuma Mawatari)

14:30—14:50 Surface Binding Site Density Determined in a Total Capture Nanofluidic Immunoassay Device (Dr. Casey J. Galvin)

14:50—15:00 Coffee break

15:00—17:00 Panel discussion

18:45— Dinner (Closed)