

1st International Symposium on Flow Science and Technology (ISFST-1)

Monday, March 7, 2022 - Tuesday, March 8, 2022

Program

■ Monday, March 7, 2022

13:10 - Opening Remarks

Shū Kobayashi (*The University of Tokyo, National Institute of Advanced Industrial Science and Technology (AIST)*)

13:20 - Invited lecture (IL-1)

“One-flow, Short Step Sequential Continuous-flow Synthesis of Valuable Small Molecules with Heterogeneous Catalysts”

Haruro Ishitani (*The University of Tokyo*)

14:00 - Oral presentation (OP-01)

“Second Generation Phenolsulfonic Acid-Formaldehyde Resin Catalyst (PAFR II) for Continuous Flow Esterification of Carboxylic Acids and Alcohols”

Yoichi M. A. Yamada (*RIKEN Center for Sustainable Resource Science*)

14:20 - Oral presentation (OP-02)

“Continuous-Flow Reactions over Highly Durable Heterogeneous Catalysts”

○Koichiro Masuda,¹ Rashed Nurnobi,¹ Shū Kobayashi,^{1,2} and Kazuhiko Sato¹
(¹*National Institute of Advanced Industrial Science and Technology (AIST)*, ²*The University of Tokyo*)

14:40 - Oral presentation (OP-03)

“Development of Heterogeneous Metal Nanoparticle Catalysts for Continuous Flow Synthesis of Chiral Molecules”

○Tomohiro Yasukawai,¹ Shū Kobayashi^{1,2} (¹*The University of Tokyo*, ²*National Institute of Advanced Industrial Science and Technology (AIST)*)

15:00 - Break

15:20 - **Invited lecture (IL-2)**

Aaron B. Beeler

16:00 - **Oral presentation (OP-04)**

“Development of continuous-flow hydrogenation methods of nitriles into tertiary, secondary, and primary amine”

Kwihwan Kobayashi, Tsuyoshi Yamada, Hironao Sajiki (*Gifu Pharmaceutical University*)

16:20 - **Oral presentation (OP-05)**

“A Novel and Versatile Immobilization Method of Chiral Metal Catalysts Utilizing Non-covalent Interactions for Continuous-Flow Enantioselective Catalysis”

○Yuki Saito,¹ Shū Kobayashi² (¹*The University of Tokyo*) (²*National Institute of Advanced Industrial Science and Technology (AIST)*)

16:40 - **Exhibition and poster session**

18:20 End

■ **Tuesday, March 8, 2022**

10:30 - **Invited lecture (IL-3)**

“API Continuous Cooling and Antisolvent Crystallization for Kinetic Impurity Rejection in cGMP Manufacturing”

○Martin D. Johnson,¹ Christopher L. Burcham,¹ Scott A. May,¹ Joel R. Calvin,¹ Jennifer McClary Groh,¹ Steven S Myers,¹ Luke P. Webster,¹ Jeffrey C. Roberts,¹ Carla V. Luciani,¹ Aoife P. Corrigan,² Richard D. Spencer,² Robert Moylan,² Raymond Boyse,² John D. Murphy,² James R. Stout³ (¹*Eli Lilly and Company*, ²*Eli Lilly Kinsale*, ³*D&M Continuous Solutions*)

11:10 - **Oral presentation (OP-06)**

“Proposal for Energy Efficient Strategy toward Carbon Recycle Society: Aerobic Oxidations of Alkanes in Flow”

Tetsuo Nakajo (*National Institute of Advanced Industrial Science and Technology (AIST)*)

11:30 - **Oral presentation (OP-07)**

“Roadmap for Practical Use of Continuous Manufacturing System iFactory® by 2030”

○Joji Tsurumoto,¹ ○Yousuke Maezawa,² Takao Saito^{1,3} (¹*Takasago Chemical Corporation*, ²*Yokogawa Solution Service Corporation*, ³*iFactory Inc.*)

12:00 - Lunch

12:40 - **Exhibition and poster session**

14:20 - **Invited lecture (IL-4)**

“Scalable Flow Synthesis of Drug Scaffolds and Emulsion by Numbering-up Microreactor Systems”

Dong-Pyo Kim (*Pohang University of Science and Technology (POSTECH)*)

15:00 - **Oral presentation (OP-08)**

“Scale-up of Flow Fine Synthesis”

(¹*National Institute of Advanced Industrial Science and Technology (AIST)*, ²*TOKYO RIKAKIKAI CO, LTD (EYELA)*, ³*The University of Tokyo*)

○Yasukazu Kobayashi,¹ Yasuharu Morii,² Teruhiko Tanaka,¹ Nagatoshi Koumura,¹ Hajime Kawanami,¹ Koichiro Masuda,¹ Shun-ya Onozawa,¹ Kazuhiko Sato,¹ and, Shū Kobayashi^{1,3}

15:20 - **Oral presentation (OP-09)**

“Development of flow membrane reactor for esterification of acetic acid by zeolite membrane”

○Motomu Sakai, Yuma Sekine, Masahiko Matsukata (*Waseda University*)

15:40 - Break

16:00 - **Oral presentation (OP-10)**

“Pore-size tuned organosilica membranes for improved pervaporation separation of organic solvent mixtures”

○Toshinori Tsuru, Ufafa Anggarini, Hiroki Nagasawa, Masakoto Kanezashi (*Hiroshima University*)

16:20 - **Oral presentation (OP-11)**

“Development of a continuous flow process for biaryls based on sequential Suzuki-Miyaura coupling and supercritical carbon dioxide extraction”

○Tomohiro Ichitsuka, Tatsuya Fujii, Marina Kobune, Takashi Makino, Shin-ichiro Kawasaki (*National Institute of Advanced Industrial Science and Technology (AIST)*)

16:40 - **Invited lecture (IL-5)**

Andreas Kirschning

17:20 Closing