



# 2015 International Chemical Congress of Pacific Basin Societies

DECEMBER 15–20, 2015 • HONOLULU, HAWAII



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## Organic

### Prospects for Flow Chemistry (#29)

Jun-ichi Yoshida | Timothy Jamison | Dong-Pyo Kim | Michael Organ

In flow chemistry, a chemical reaction is conducted in a continuous flow system rather than in a batch system like a flask. Although flow chemistry is a well-established technique for large scale production of bulk chemicals, the term has only been coined recently for its application in laboratory synthesis and production of fine chemicals and pharmaceuticals. Benefits of flow chemistry include better control of the reaction environment, use of unstable intermediates, increased safety, easy integration of reactions for multi-step synthesis, and it lends itself to the possibility of streamlined automation. In addition, use of continuous flow microreactors enables the chemistry that cannot be done in batch and introduces a new paradigm in chemical science.

The objective of this symposium will be to overview ongoing work in flow chemistry and to stimulate further progress for the benefit and progress of chemistry community. The main focus of the symposium will be flow chemistry in the academic research as well as in applied research and development in the pharmaceutical, agrochemical, fine-chemical, petrochemical, polymer, inorganic, and fragrance industry. However, the symposium should not be limited to the above but also include relevant flow chemistry aspects of material science, catalysis, green chemistry, nanotechnology, biotechnology, and latest development on flow instruments and engineering.

Last update: Dec 28, 2015

## ORGN

### Area 4 – Organic

Hilton Hawaiian Village  
Mid-Pacific Center, South Pacific Ballrm 1  
**Prospects for Flow Chemistry (#29)**

*Organized by:* J. Yoshida, T. Jamison,  
D. Kim, M. Organ  
*Presiding:* C. Kappe, J. Yoshida

#### Tuesday, December 15, 2015

- 8:00 – 1.** Use of continuous flow technology to harness hazardous chemistries and process conditions. **C. Kappe\***
- 8:25 – 2.** Flowing safely: Synthesis with hazardous chemicals. **T. Wirth**
- 8:50 – 3.** On-demand diazo reagents: In-flow generation and purification. **E. Levesque\***, S.T. Laporte, S. Vanier, A.B. Charette
- 9:05 – 4.** Generation of anhydrous diazomethane using a Teflon AF-2400 membrane. **B. Gutmann**, C. Kappe
- 9:20 – 5.** Monophasic generation and reaction of diazomethane for in-flow cyclopropanation. **A. Evans\***, C. Ayoub
- 9:35 – 6.** Flash chemistry enables chemoselective reactions of difunctional electrophiles with functionalized aryllithiums. **A. Nagaki**, S. Ishiuchi, K. Imai, J. Yoshida\*
- 9:50 – 7.** Liquid-liquid microflow for the Beckmann rearrangement of cyclohexanone oxime. J. Zhang, K. Wang, Y. Lu, **G. Luo\***
- 10:15 – 8.** Nucleophilic addition to nitrones using flow microreactors. **Y. Arakawa**, S. Ueta, K. Minagawa, Y. Imada\*
- 10:30 – 9.** Integrated reactions based on sequential additions to conjugated imines. **M. Shimizu\***, I. Mizota

- 10:45 – 10.** Flow synthesis of (*E*)-(*S*)-3-hydroxy-7-tritylthio-4-heptanoic acid, a key component of the natural product cyclodepsipeptide HDAC inhibitors. **M. Yoshida**, H. Otaka, K. Umeda, T. Doi\*
- 11:00 – 11.** [2+2+1] Cocyclization using allenones, diketones, and bis(iodozincio)methane. **R. Haraguchi**, S. Matsubara\*
- 11:15 – 12.** Study of scaled continuous flow production of metal-organic frameworks. **M. Rubio Martinez\***, T. Hadley, K. Constanti, M. Batten, A. Polyzoz, K. Lim, M.R. Hill
- 11:30 – 13.** Synthetic study of glycans using integrated reaction systems. **F. Koichi\***, Y. Manabe
- 11:45 – 14.** Controlling differentiation of mesenchymal stem cells with microfluidic flows. **H. Shum\***, W. Lai

#### Wednesday, December 16, 2015

- 13:00 – 102.** Continuous flow multistep synthesis. **T.F. Jamison\***
- 13:25 – 103.** Utilization of microflow technology for the site-selective modification of multifunctionalized molecules. **S. Fuse**, Y. Mifune, N. Tanabe, H. Nakamura, T. Takahashi
- 13:40 – 104.** Synthesis of diisobutyl aluminum borohydride for the reduction of tertiary amides at ambient temperatures with the potential for continuous flow chemistry. **R. Snelling**, B. Singaram\*
- 13:55 – 105.** Bond expandability of the ultralong C-C bond in unsymmetrically substituted tetraarylpyracenes prepared by a flow microreactor method. **T. Suzuki\***, Y. Uchimura, T. Takeda, R. Katoono, H. Kawai, K. Fujiwara, A. Nagaki, J. Yoshida
- 14:10 – 106.** Three-component coupling of benzyne based on flash chemistry. **T. Kitamura**, D. Ichinari, A. Nagaki, J. Yoshida\*
- 14:25 – 107.** Microfluidic approach to integrated synthesis of thioquinazolinone derivatives. **H. Kim**, H. Lee, d. kim\*, J. Yoshida\*
- 14:40 – 108.** Synthesis and reactions of ynolates using flow microreactors. **M. Shindo\***
- 14:55 – 109.** Synthesis and application of hexafluoropropyl methyl ether. **D. Lokhat\***, K. Padayachee, A.K. Domah, N. Sunthpaul, N. Seocharan, D. Ramjugernath
- 15:10 – 110.** Highly selective synthesis of organofluorine compounds using flow microreactors. **H. Amii\***
- 15:25 – 111.** Generation and reactions of perfluoroalkyl-substituted organolithiums using flow microreactors. **K. Hirose**, K. Akahori, S. Tokuoka, A. Nagaki, J. Yoshida\*
- 15:40 – 112.** Flow carbonylation based on reactive acyl intermediates. **I. Ryu\***
- 6:05 – 113.** Various applications of bacteriogenic iron oxide in a tube reactor and other systems for organic synthesis. **K. Mandai**, T. Fukuda, Y. Miyazaki, N. Hanata, H. Mandai, H. Hashimoto, T. Ema, J. Takada, S. Suga\*
- 6:20 – 114.** Toward development of chemo-enzymatic reactions under continuous-flow conditions. **R.M. de Souza\***