Welcome to the Spring 2018 issue of FullFlow, the flow chemistry newsletter from Vapourtec, a must-read for all Scientists interested in continuous processing applications and technology.

Product News

The new SF-10 pump has a gas delivery mode

The delivery of reactive gases is precisely controlled from 0.5 scc/min to 99 scc/min at pressures up to 10 bar. No need to set up mass flow controllers or continually adjust metering valves!

Electrochemical reactor coming

Vapourtec has linked up with Professor Thomas Wirth, one of the leading experts in continuous flow electrochemical reactors, for their latest project; to develop a Versatile Continuous Flow Laboratory Scale Electrochemical Reactor.
Sp3 rich library synthesis via Photoredox

A group at Vertex Pharmaceuticals Inc. have shown that flow chemistry can vastly improve the yields of sp3-sp2 cross-coupled compounds, during a library photoredox synthesis.

2017, a momentous year

2017 was a momentous twelve months in the 15-year history of Suffolk-based specialist flow chemistry firm Vapourtec.
Vapourtec installation team expanded

At Vapourtec we strive to offer the best possible standards of installation, training and customer support. A significant step towards this objective has been the appointment of Sek Choong Tan in January 2018 as Installation Engineer.

Vapourtec deliver Seoul seminar

Vapourtec and their distributor Marktech hosted a successful seminar in Seoul, South Korea on the latest developments in flow chemistry with eminent scientist Dr Marcus Baumann.
Automated Library Synthesis

In this application note we demonstrate:

- The efficient automated synthesis of a library under continuous flow conditions.
- The safe and rapid screening using volatile reagents such as ammonia and dimethyl amine.
- The potential to identify new synthetic pathways which may be difficult to achieve using conventional techniques.

Singlet Oxygen Generation using Heterogeneous Photosensitisers

In this application note we describe:

- Production of singlet oxygen in continuous flow
- The use of the UV-150 photochemical reactor for heterogeneous dispersions
- Use of heterogeneous photocatalysts as slurries and packed beds in continuous flow
- Easy handling of a complex flow stream of solid, liquid and gas
**FACS: Orléans, 3-7 June 2018**

The Symposium associated with the 17th meeting of the French-American Chemical Society will take place in Orléans. For the 17th edition of the FACS symposium, 15 lecturers from France and 15 lecturers from USA and Canada are invited to share with the audience the latest developments of their research in Organic Synthesis in its broadest sense.

**Achema: Frankfurt, Germany 11-15 June 2018**

At ACHEMA 2018 (11-15th June, Frankfurt am Main, Germany) the new Flow Chemistry Pavilion will host the most advanced, innovative companies & knowledge institutes in the continuous manufacturing market, presenting an opportunity for visitors to learn more about this increasingly important topic.

**Dial a Molecule: London, 9-10 June 2018**

The agenda will include sessions specifically related to ROAR as well as sessions on each of the 3 main Dial-a-Molecule themes – Data-Driven Chemistry, Enabling Technologies and Synthesis College.

**ACS Fall: Boston, 19-23 August 2018**

Benefit from the expert knowledge of academic and industry leaders who are pushing the boundaries of this rapidly evolving field and learn how you can transform your organic synthesis processes into a more streamlined, continuous set of synthesis operations.
Generation of Diversity Sets with High sp3 Fraction Using the Photoredox Coupling of Organotrifluoroborates and Organosilicates with Heteroaryl/Aryl Bromides in Continuous Flow

Kevin D Raynor, Gregory D May, Upul K. Bandarage, and Michael J. Boyd

Vertex Pharmaceuticals Inc., 50 Northern Avenue, Boston, Massachusetts 02210, United States

Targeting a mirabegron precursor by BH3-mediated continuous flow reduction process

Sonia De Angelis(a), Claudia Carlucci(a), Modesto de Candia(a), Gabriele Rebuzzini(b), Paolo Celestini(b), Massimiliano Riscazzi(b), Renzo Luisi(a), Leonardo Degennaro(a)

(a) FLAME-Lab – Flow Chemistry and Microreactor Technology Laboratory, Department of Pharmacy — Drug Sciences, University of Bari "A. Moro" Via E. Orabona 4, Bari 70125, Italy

(b) COSMA S.p.A, Via Colleoni 15/17, Ciserano, BG 24040, Italy
Auto-Tandem Catalysis: Pd(II)-Catalysed Dehydrogenation/Oxidative Heck of Cyclopentane-1,3-diones

Claire J C Lamb, Bryan G Nderitu, Gemma McMurdo, John M Tobin, Filipe Vilela, and Ai-Lan Lee

Institute of Chemical Sciences, Heriot-Watt University, Edinburgh EH14 4AS, United Kingdom

Continuous flow multistep synthesis of α-functionalized esters via lithium enolate intermediates

Timo von Keutz(a,b), Franz J. Strauss(b), David Cantillo(a,b), C. Oliver Kappe(a,b)

(a) Center for Continuous Flow Synthesis and Processing (CC FLOW), Research Center Pharmaceutical Engineering GmbH (RCPE), Inffeldgasse 13, 8010 Graz, Austria

(b) Institute of Chemistry, NAWI Graz, University of Graz, Heinrichstrasse 28, 8010 Graz, Austria
Selective N-monomethylation of primary anilines with dimethyl carbonate in continuous flow

Hyowon Seo, Anne-Catherine Bédard, Willie P. Chen, Robert W. Hicklin, Alexander Alabugin, Timothy F. Jamison

Department of Chemistry, Massachusetts Institute of Technology, 77 Massachusetts Ave.,
Cambridge, MA 02139, USA