



CPAC Rome Workshop 2019

March 25-27, 2019, University of Washington Rome
Center Piazza del Biscione 95, Rome, Italy 00186

Utilization of New Concepts in Developing Next Generation Materials, as well as Exploring New Reaction Routes that Benefit from the Growing Use of Continuous Flow Technology

Rome Workshop Organizers: Ray Chrisman and Mel Koch, CPAC and MK Optimization and Control LLC

Rome Workshop Advisory Steering Committee: Giancarlo Cravotto, U Turin; Claude De Bellefon, U Lyon; Ludo Diels, VITO; Frank Gupton, VCU, Volker Hessel, Eindhoven U Technology; Simone Maccagnan, Gimac Microextruders; Brian Marquardt, U Washington and MarqMetrix, Peter Poechlauer, Patheon; Kurt VandenBussche, UOP; Paul Watts, Nelson Mandela U

Sponsorship: Mk Optimization and Control LLC, Nano Coordinates, Optimal Industrial Automation Ltd, Virginia Commonwealth University

Monday, March 25, UWRC Conference Room, 1st Floor

12:00	Registration Opens
13:00	Introduction Mel Koch, CPAC/APL, University of Washington, and MK Optimization and Control LLC, USA
13:10	Review of the Summary and Charts from the 2018 Rome Workshop and the Plan for this Year's Event Ray Chrisman, MK Optimization and Control LLC, USA
Concept One	Examples of New Concepts to Facilitate Next Generation Processes
13:25	The Challenge of The Circular Economy, New Thinking in Product purpose, their Development and New Ways of Production Harald Sverdrup, University of Iceland and Norsemetal, Norway
13:55	Connected Performance Service – A New Platform for Knowledge Delivery Linda Shi Cheng, Honeywell UOP, USA

Concept Two **Enabling Process Understanding to Enable the Integration of Multiple Unit Operations for Continuous Processing**

14:25 **Optimal Partial Least Squares models and predictions of properties using Monte Carlo resampling strategies**
Olav Kvalheim and Tarja Rajalahti, University of Bergen, Norway

15:00 **Break**

15:20 **University of Washington Rome Center Welcome**
Amity Neumeister, Director, UWRC, Italy

15:30 **Welcome from Caron de Mars of the US Embassy in Rome, Italy**

15:40 **Introduction of Participants**

16:00 **An Integrated Product Design and Control Framework Applied to Polymer Nanocomposites**
Ogunnaike, Babatunde A., University of Delaware, USA

16:30 **Could We Do More With Segmented Flow?**
Claude de Bellefon, University of Lyon, France

17:00 **Discussion**
Ray Chrisman, MK Optimization and Control LLC, USA

17:15 **Con Apertivo, UW Rome Center, Apartment 422, 4th Floor**

Tuesday, March 26, UWRC Conference Room, 1st Floor

Concept Three **Continuous Production for the Efficient Production of Complex Molecules**

9:00 **Introduction**
Mel Koch, CPAC, University of Washington, USA

9:10 **Integrated Continuous Flow Processing of Fine Chemical and Pharmaceutical Products**
Paul Watts, Nelson Mandela University, South Africa

9:40 **The Medicines for All Institute – Program Overview**
Frank Gupton, Virginia Commonwealth University, USA

10:10 **Medicines for All Institute – Selected Projects**
Frank Gupton, Virginia Commonwealth University, USA

10:30 **Break**

10:50 **Continuous Biocatalytic Manufacturing Approaches for the Synthesis of Drugs and Fuels**
Amanda Evans, Los Alamos National Laboratory, USA

11:20 **Flow Crystallization Including Integration of Online Structural Characterization and Flow Synthesis Units**
Karen Robertson, Nottingham University, England

11:50 **Lunch, Da Pancrazio, Palazzo Pio, Ground Floor**

Concept Four	Process Automation of Coupled Multiple Unit Operations for Continuous Processing
13:30	Portable, Single-Sided NMR for Industrial Applications Matt Augustine, and Michael McCarthy, University of California at Davis, USA
14:00	Flow Chemistry as a Tool for the Synthesis of Pharmaceuticals C. Oliver Kappe, University of Graz and Research Center for Pharmaceutical Engineering GmbH (RCPE), Austria
14:30	Modular Flow Platforms with Multiple Integrated PAT Tools for a Multistep Reaction Peter Sagmeister, University of Graz and Research Center for Pharmaceutical Engineering GmbH (RCPE), Austria
Concept Five	Bio-based Projects to Pursue a Circular Economy
15:00	Break
15:30	Process Intensification in Bio-based Industries – Particularly to Achieve Efficient Lignin Processing Ludo Diels, VITO, Belgium
16:00	Early Stage Process Design and Optimization to Boost Green Industry: The Case Study of Bio-based Adipic Acid Alessandro Rosengart, VTU Engineering Italia, Italy
16:30	Innovative Chemicals from Bio-sourced C3 and C6 Building Blocks Maurizio Galimberti, Politecnico University, Milan, Italy
17:00	The Case for achieving Circular BioEconomy; What Technology is Needed for the Valorization of Lignin Ray Chrisman, MK Optimization and Control LLC, USA
17:30	Discussion Ray Chrisman, MK Optimization and Control LLC, USA
17:40	Reception Con Apertivo, UW Rome Center, Apartment 422

Wednesday, March 27, UWRC Conference Room, 1st Floor

Concept Six	Advances in Process Unit Operations and Solution Providers
9:00	Introduction Mel Koch, CPAC, University of Washington, USA
9:10	Microfluidics for Lab-on-Chip applications Valentina Arima, Nanotechnology Center, Lecce, Italy
9:40	Real Time PAT Based Knowledge Management and Control in Continuous Processes Paul Gillham, Optimal Industrial Automation Ltd., UK Secondary metabolites in

10:10	Xylem Sap and Tissues as an Early Indicator of the Infection by <i>Xylella Fastidiosa</i> in Olive Trees Giuseppe Ciccarella, University of Salento, Lecce, Italy
10:40	Break
11:00	Advances in Micro-Extruders Simone Maccagnan, Gimac, Italy
11:30	Active Pharmaceutical Ingredients: Why increasing interest in the solid state? Marino Nebuloni, U of Parma, Italy
12:00	Lunch (on your own)
14:00	Data Analytics for Governing Big Data in Continuous Process Operations in a Digital Factory Marco Banti, ABB Industrial Automation Division, Control Technologies, Pharmaceutical Industry, Italy - TBC
14:30	The Development of a Ball Lens Based Multi-Purpose Fluorometer Bill Nelson, Tetracore, USA
15:00	Recent Advances in Valve-Based Two-Dimensional Gas Chromatography and Gas Chromatographic Sensing Derrick Gough and Robert E. Synovec, University of Washington, USA
15:30	Automated Reactors for Rapid Understanding of Reaction Kinetics and Mass Transfer Ilias Stamatiou, University of Leeds, England
16:00	Summary and Final Discussion leading to 2018 Chart Preparation and Action Plans Ray Chrisman, MK Opt and Control LLC, USA
16:30	Conclusion of Rome Workshop