



## 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, Center for Process Analysis and Control (CPAC)/Applied Physics Laboratory (APL), University of Washington 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, Adelaide U; Simone Maccagnan, Gimac Microextruders;  
Brian Marquardt, CPAC/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	<b>Registration Opens</b>
13:00	<b>Introduction</b> Mel Koch, CPAC/APL, University of Washington, and MK Optimization and Control LLC, USA
13:10	<b>University of Washington Rome Center Welcome</b> Amity Neumeister, Director, UWRC, Italy
13:25	<b>Review of the Summary and Charts from the 2018 Rome Workshop and the Plan for this Year's Event</b> Ray Chrisman, MK Optimization and Control LLC, USA
<b>Concept One</b>	<b>Examples of New Concepts to Facilitate Next Generation Processes</b>
13:40	<b>The Challenge of the Circular Economy, New Thinking in Product Purpose, Their Development and New Ways of Production</b> Harald Sverdrup, University of Iceland and Norsemetal, Norway

14:10	<b>Honeywell Connected Plant Applications</b> Linda Shi Cheng, Honeywell UOP / Honeywell, USA
<b>Concept Two</b>	<b>Enabling Process Understanding to Enable the Integration of Multiple Unit Operations for Continuous Processing</b>
14:40	<b>Optimal Partial Least Squares Models and Predictions of Properties using Monte Carlo Resampling Strategies</b> Olav Kvalheim and Tarja Rajalahti, University of Bergen, Norway
15:10	<b>Break</b>
15:40	<b>Introduction of Participants</b>
16:10	<b>An Integrated Product Design and Control Framework Applied to Polymer Nanocomposites</b> Babatunde A. Ogunnaike, University of Delaware, USA
16:40	<b>Could We Do More With Segmented Flow?</b> Claude de Bellefon, University of Lyon, France
17:10	<b>Discussion</b> Ray Chrisman, MK Optimization and Control LLC, USA
17:30	<b>Con Apertivo, UW Rome Center, Apartment 422, 4th Floor</b>

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

<b>Concept Three</b>	<b>Continuous Production for the Efficient Production of Complex Molecules</b>
9:00	<b>Introduction</b> Mel Koch, CPAC, University of Washington, USA
9:10	<b>Integrated Continuous Flow Processing of Fine Chemical and Pharmaceutical Products</b> Paul Watts, Nelson Mandela University, South Africa
9:40	<b>The Medicines for All Institute – Program Overview</b> Frank Gupton, Virginia Commonwealth University, USA
10:10	<b>Medicines for All Institute – Selected Projects</b> Frank Gupton, Virginia Commonwealth University, USA
10:30	<b>Break</b>
10:50	<b>Continuous Biocatalytic Manufacturing Approaches for the Synthesis of Drugs and Fuels</b> Amanda Evans, Los Alamos National Laboratory, USA
11:20	<b>Flow Crystallization Including Integration of Online Structural Characterization and Flow Synthesis Units</b> Karen Robertson, Nottingham University, UK
11:50	<b>Lunch, Da Pancrazio, Palazzo Pio, Ground Floor</b>

<b>Concept Four</b>	<b>Process Automation of Coupled Multiple Unit Operations for Continuous Processing</b>
13:30	<b>Portable, Single-Sided NMR for Industrial Applications</b> Matt Augustine and Michael McCarthy, University of California, Davis, USA
14:00	<b>Flow Chemistry as a Tool for the Synthesis of Pharmaceuticals</b> C. Oliver Kappe, University of Graz and Research Center for Pharmaceutical Engineering GmbH (RCPE), Austria
14:30	<b>Modular Flow Platforms with Multiple Integrated PAT Tools for a Multistep Reaction</b> Peter Sagmeister, University of Graz and Research Center for Pharmaceutical Engineering GmbH (RCPE), Austria
15:00	<b>Break</b>
<b>Concept Five</b>	<b>Bio-based Projects to Pursue a Circular Economy</b>
15:30	<b>Welcome from the US Embassy in Rome</b> Caron de Mars, Environment, Science, Technology & Health Counselor, US Embassy, Rome, Italy
15:45	<b>Early Stage Process Design and Optimization to Boost Green Industry: The Case Study of Bio-based Adipic Acid</b> Alessandro Rosengart, VTU Engineering Italia, Italy
16:15	<b>Innovative Chemicals from Bio-sourced C3 and C6 Building Blocks</b> Maurizio Galimberti, Politecnico University, Milan, Italy
16:45	<b>The Case for Achieving Circular BioEconomy; What Technology is Needed for the Valorization of Lignin</b> Ray Chrisman, MK Optimization and Control LLC, USA
17:15	<b>Discussion</b> Ray Chrisman, MK Optimization and Control LLC, USA
17:40	<b>Reception Con Apertivo, UW Rome Center, Apartment 422</b>

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

<b>Concept Six</b>	<b>Advances in Process Unit Operations and Solution Providers</b>
9:00	<b>Introduction</b> Mel Koch, CPAC, University of Washington, USA
9:10	<b>Secondary metabolites in Xylem Sap and Tissues as an Early Indicator of the Infection by <i>Xylella Fastidiosa</i> in Olive Trees</b> Giuseppe Ciccarella 1, 2; V. Vergaro 1.,2; F. Baldassarre 1, 2; F. De Castro 1; C. Medana 3; F. Dal Bello 3: 1.Biological and Environmental Sciences and Technologies, University of Salento & UdR INSTM Salento, Italy

2. CNR NANOTEC-Nanotechnology Institute of the National Research Council-  
Lecce, Italy

3. Universita' degli Studi di Torino, Department of Molecular Biotechnology and  
Health Sciences, Italy

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9:40	<b>Real Time PAT Based Knowledge Management and Control in Continuous Processes</b> Paul Gillham, Optimal Industrial Automation Ltd., UK
10:10	<b>Microfluidics for Lab-on-Chip applications</b> Valentina Arima, CNR Nanotec, Lecce, Italy
10:40	<b>Break</b>
11:00	<b>Advances in Micro-Extruders</b> Simone Maccagnan, Gimac, Italy
11:30	<b>The Development of a Ball Lens Based Multi-Purpose Fluorometer</b> Bill Nelson, Tetracore, USA
12:00	<b>Lunch</b> (on your own)
14:00	<b>Data Analytics for Governing Big Data in Continuous Process Operations in a Digital Factory</b> Marco Banti, ABB Industrial Automation Division, Control Technologies, Pharmaceutical Industry, Italy
14:30	<b>Recent Advances in Valve-Based Two-Dimensional Gas Chromatography and Gas Chromatographic Sensing</b> Derrick Gough and Robert E. Synovec, University of Washington, USA
15:00	<b>Automated Reactors for Rapid Understanding of Reaction Kinetics and Mass Transfer</b> Ilias Stamatiou, University of Leeds, UK
15:30	<b>Summary and Final Discussion leading to 2018 Chart Preparation and Action Plans</b> Ray Chrisman, MK Optimization and Control LLC, USA
16:00	<b>Conclusion of Rome Workshop</b>

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