



## CPAC Rome Workshop – March 23-25, 2015

### *Technology Innovations that Enhance Processing Efficiency & Enable Lower Cost Operation*

*Benefactor:* MARQMETRIX

*Sponsors: APL, CPAC, Nano Coordinates, Rollo Agro Enterprises, UOP*

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**Is your organization interested in the topics below - to bridge the gap between basic research and process/product development?**

- Continuous Flow Manufacturing Practices – leading to lower CAPEX and OPEX
- Novel operating windows – significantly reduced cycle times
- Mass transfer optimization – providing higher quality and better yields
- End-to-End Intensified Process Design - enabling process Sustainability
- Smart Manufacturing (Molecule Management) – leading to higher margins
- Big data and data fusion – enhanced process control
- Increased Process Monitoring and Product Assessment- higher quality and reduced off spec material

Join us to sustain CPAC's (Center for Process Analysis and Control – University of Washington) legacy of catalyzing international collaborations among key technology leaders to advance research in these important fields of networked information-based technologies throughout the manufacturing and supply chain enterprise.

For more information and to register for the workshop go to: <http://mkcontrol.com/rome-meeting-2015.html> or contact Mel Koch ([kochm@uw.edu](mailto:kochm@uw.edu)) or Nan Holmes ([nsh@uw.edu](mailto:nsh@uw.edu)). The registration fee will be \$650 USD (575 €).



## CPAC Rome Workshop 2015

March 23-25, 2015, University of Washington Rome Center  
Piazza del Biscione 95, Rome, Italy 00186

**Benefactor: MarqMetrix**

**Sponsored by:**

**Applied Physics Laboratory (APL), art photonics,  
Center for Process Analysis and Control (CPAC),  
MK Optimization and Control, Nano Coordinates,  
Rollo Agro Enterprises, and UOP-Honeywell**

**Monday, March 23, Conference Room, 1<sup>st</sup> Floor**

12:30	Registration Opens
	<b>Introduction</b>
13:15	Mel Koch, CPAC/APL, University of Washington, USA
13:30	Welcome from the US Embassy in Rome, Italy
<b>Day One: Intensified Process Design and Sustainability via Technology Developments</b>	
13:45	<b>Chemical and Process-Design Intensification in Flow - seen Holistically</b> Kurt vandenBussche, UOP Honeywell, USA (presented by Ray Chrisman, MK Optimization and Control, USA)
14:25	<b>Novel Process Windows and End-to-End Process Design for Intensified Continuous Reactions - Ask for Leaving Common Grounds</b> Volker Hessel, Eindhoven University, Netherlands
	<b>The Changing Face of Flow Chemistry: From Micro Reactors to Continuous Production</b>

15:05	Paul Watts, Nelson Mandela University, South Africa
15:35	Break
	<b>University of Washington Rome Center Welcome</b>
15:55	Sheryl Brandalik, Director, UWRC, Italy
16:10	<b>Introduction of Participants</b>
	<b>Pilot Scale Non-Conventional Reactors for Chemical Process Intensification: Recent Advances and Case Studies</b>
16:30	Prof. Giancarlo Cravotto, DSTF Director (Dept Drug Science and Technology, U Turin) and ESS President (European Society of Sonochemistry), Italy
17:00	<b>Discussion:</b> Ray Chrisman, USA
17:30	<b>Con Apertivo, UW Rome Center, Apartment 422, 4th Floor</b>

**Tuesday, March 24, Conference Room, 1<sup>st</sup> Floor**

**Day Two AM: Utilizing Developments in Continuous Process Units -  
Process Control, Sampling, and Sensing**

	<b>Introduction</b>
9:15	Mel Koch, CPAC/APL, University of Washington, USA
	<b>Developing Multi-Step Chemical Synthesis Using Micro-Reactors</b>
9:20	Frank Gupton, Virginia Commonwealth University, and Tyler McQuade, Florida State University, USA
	<b>Developing Process Control for Flow Chemical Reactions – Using Unique Approaches to Sampling, Sensing, and Data Handling</b>
10:00	Brian Marquardt CPAC/APL University of Washington, USA
10:35	<b>Break</b>
	<b>Choosing the Right Reactors for the Right Reactions: Implementing Flow Processes in Production Environments</b>
11:05	Peter Poechlauer and Kai Dombach, DPx Fine Chemicals Austria GmbH & Co., KG, Austria
	<b>Following Successful Reactions There is a Need for Separation and Purification</b>
11:35	Ray Chrisman, USA
12:05	<b>Lunch, Da Pancrazio, Palazzo Pio, Ground Floor</b>

**Day Two PM: Process Unit Operations – Reaction, Separation, and Purification**

	<b>Micro-structured Flow Reactors as a Versatile Lab-Tool for Two and Three- Phase Reactions</b>
13:45	Claude de Bellefon, University of Lyon, France
	<b>Micro-Extruder Technology Developments for Solids Handling</b>
14:05	Simone Maccagnan, GIMAC, Italy
	<b>Process Intensification via Integrated Separation Technology</b>
14:35	Ludo Diels, VITO, Belgium

15:15	<b>Break</b>
15:40	<b>Flow Chemistry using Micro-chemical Systems for Sustainable Fine Chemicals, Materials, Natural Products, and Pharmaceuticals</b> Ryan Hartman, University of Alabama, USA
16:05	<b>Corning® Advanced-Flow™ Reactors: The Tool for Intensifying Chemical Processes and Boosting the Productivity</b> Daniela Lavric, Corning SAS, France
16:30	<b>Recent Advances in the Generation and Purification of Compound Libraries in Continuous-Flow</b> Vincenzo Fusillo, Germany
17:30	<b>Reception Con Apertivo, UW Rome Center, Apartment 422</b>

Wednesday, March 25, Conference Room, 1<sup>st</sup> Floor

**Day Three: Solution Providers**

9:00	Introduction, Mel Koch, CPAC/APL, University of Washington, USA
9:10	<b>Nonequilibrium Processing of Gases and Materials to Improve Energy Efficiency and Selectivity</b> Richard van de Sanden, Dutch Institute for Fundamental Energy Research (DIFFER), Netherlands
9:40	<b>Online MS for Optimizing Flow Reactors</b> Richard Bourne and Nicholas Holmes, Institute for Process Research and Development, U Leeds, UK
10:05	<b>Spectral Fiber Sensors to Enable Industrial Solutions for Customized Process-Control</b> Slava Artyushenko, ART Photonics, Germany
10:30	<b>Break</b>
11:00	<b>Microfluidics and Chemistry</b> Valentina Arima, Nanotechnology Center, Lecce, Italy
11:25	<b>Advances in Magnetic Resonance Imaging for Process and Product Monitoring</b> Michael McCarthy, U California - Davis, USA
11:50	<b>Final Discussion and Action Plans</b>
12:30	<b>Conclusion of Rome Workshop</b>