## CPAC Summer Institute 2016

Process Characterization leading to Process Optimization

**July 19-21, 2016, University of Washington, Seattle, WA**

## Draft Agenda

### Tuesday, July 19, 2016 - UW Club

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter/Details</th>
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<tr>
<td>8:30</td>
<td><strong>Meeting Registration Desk Opens</strong> – University of Washington Club, UW</td>
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| 9:00-9:05 | **Meeting Welcome**  
Brian Marquardt, CPAC Director, Applied Physics Laboratory, UW |                                                                                  |
| 9:05-9:15 | **Introduction to the Summer Institute Theme**  
Mel Koch, CPAC, APL, UW |                                                                                  |
| 9:15-9:50 | **Advances in Understanding Bio-Fermentation- ‘RAPT (Reversible Acid PreTreatment) for Cellulosic Ethanol Production**  
Paul Weider, Shell Oil Company |                                                                                  |
| 9:50-10:20 | **Expected Technology Directions in the Biomass to Chemicals Markets**  
Ray Chrisman, consultant to the Iowa Corn Board |                                                                                  |
| 10:20-10:35 | **Break** |                                                                                  |
| 10:35-11:15 | **The Use of Multi-Step Continuous Manufacturing to Enable Sustainable Synthesis in Emerging Markets**  
Paul Watts, Nelson Mandela University, South Africa |                                                                                  |
| 11:15-11:45 | **What's Next? The Changing Role of Chemometrics and Instrumentation for Process Analytics**  
Brian Rohrback, InfoMetrix, Inc. |                                                                                  |
| 11:45-12:10 | **Introduction of Meeting Participants and Discussion** |                                                                                  |
| 12:10-1:15 | **Lunch** – (UW Club) |                                                                                  |
| 1:15-1:30 | **Update on CPAC Activities**  
Mel Koch, CPAC, UW |                                                                                  |
| 1:30-2:10 | **Novel Extraction System**  
Andrea Adamo, Zaiput |                                                                                  |
### Optimization of Acetic Acid Production during Conversion of Hybrid Poplar to Jet Fuel by Detoxification of Sugar Streams using Carbon Nanotubes
Renata Bura and Rick Gustafson, UW Forest Resources

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| 2:10-2:45 | **Optimization of Acetic Acid Production during Conversion of Hybrid Poplar to Jet Fuel by Detoxification of Sugar Streams using Carbon Nanotubes**  
Renata Bura and Rick Gustafson, UW Forest Resources |
| 2:45-3:00 | **Break** |
| 3:00-3:25 | **Battery-Free RF Energy Harvesting Gas Sensing Platform**  
Josh Smith, UW Electrical Engineering and Computer Sciences |
| 3:25-3:50 | **Novel Analytical Workflow for Comprehensive 13C-metabolic Flux Analysis using GC–TOFMS and Chemometrics**  
Rob Synovec and Brooke Reaser, UW Chemistry |
| 3:50-4:35 | **Developments in Benchtop NMR Spectroscopy**  
Mark Kemper, Magritek |
| 4:35-5:00 | **High-dimensional Process Monitoring and Change Point Detection using Embedding Distributions in Reproducing Kernel Hilbert Space (RKHS)**  
Shuai Huang, UW Industrial and Systems Engineering |
| 5:00-5:30 | **Discussion** |
| 6:00 | **Dinner at Ivar’s Salmon House** |

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### Wednesday, July 20, 2016 - UW Club

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<tr>
<td>8:30-9:00</td>
<td><strong>Registration</strong></td>
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| 9:00-9:10 | **Daily Overview**  
Mel Koch, CPAC, Applied Physics Laboratory (APL), UW |
| 9:10-9:40 | **Advances in Sampling and the Use of PAT for Developments in Process Control for Bio-Manufacturing**  
Brian Marquardt and Sergey Mozharov, Applied Physics Lab (APL), UW |
| 9:40-10:10 | **Polarization-Sensitive Terahertz Spectroscopic Imaging for Non-destructive Testing Applications**  
Hassan Arbab, Applied Physics Lab (APL), UW |
| 10:10-10:30 | **Break** |
| 10:30-11:05 | **Dielectric Sensors**  
Alex Mamishev, UW Electrical Engineering |
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| 11:05-11:40| **Advances in Separations Technology - How it’s been** incorporated into the PAT Toolkit   
Ernie Hillier, Waters |
| 11:40-12:00| **Discussion**                                                           |
| 12:00-1:15 | **Lunch** (UW Club)                                                     |
| 1:15-1:45  | **Recent Advances in Valve-Based Two-Dimensional Gas Chromatography**    
Chris Freye and Rob Synovec, Chemistry, UW |
| 1:45-2:15  | **SQL-Centric Automated Chemometrics and Distributed Display**           
Michael Roberto, InfoMetrix |
| 2:15-2:45  | **Data Visualization**                                                  
Sandlin Seguin, Tableau |
| 2:45-3:00  | **Break**                                                                |
| 3:00-3:30  | **Novel 3D Chemical Imaging System for Characterization of Tablets, Complex Powders and Liquids** 
Rudy Hofmeister, H2Optx |
| 3:30-4:00  | **Investigation of the Use of Laser Induced Breakdown Spectroscopy (LIBS) as an Effective Process Analysis Tool** 
Brian Marquardt and Sergey Mozharov, Applied Physics Lab UW |
| 4:00-4:30  | **Motor Fuel Property Prediction by Inferential Spectrometry 3. Hard and Soft Realities of Measuring Olefins in Gasoline** 
Marc Trygstad, Yokagawa |

**Thursday, July 21, 2016 - Lake Kachess Clubhouse**

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| 10:15-10:45| **Applications of Advances in Separation Technology**                    
Ludo Diels, VITO, Belgium |
| 10:45-11:15| **Jettisoning Chemometrics to Solve Multivariate Problems in Chemical Analysis** 
Marc Trygstad, Yokagawa |
| 11:15-11:45| **Microfluidics coupled to mass spectrometry for ultra-small volume sample analysis** 
Ryan Kelly, PNNL |
<p>| 11:45-12:30| <strong>Lunch</strong>                                                                |</p>
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| 12:30-1:00 | **Design of Portable Surface Plasmon Resonance (SPR) Based Assays for Small and Large Analytes**  
Clement Furlong and Scott Soelberg, Medical Genetics and Genome Sciences, UW Medicine |
| 1:00-1:30 | **The Impact of Chromatographic Alignment,**  
Brian Rohrback, Infometrix |
| 1:30-2:00 | **Nuclear magnetic resonance for process analysis**  
Michelle Martin, Matt Augustine, Chemistry, U C Davis |
| 2:00-2:30 | **Selected Topics Discussed at the 2016 CPAC Rome Workshop that are Related to the Summer Institute Theme**  
Ray Chrisman, MK Optimization and Control |
| 2:30-3:30 | **Final Discussion, Summary, and Development of Action Plans** |
| 3:30-4:00 | **Reception** at Local Cabin |
| 5:00     | **BBQ Dinner** |