

CPAC Spring Meeting 2012

This meeting will begin on Monday May 7th, 2012 with a tutorial style workshop featuring the advances in NMR for process optimization and control. There will also be presentations on new wireless sensing technology. Tuesday through Wednesday at Noon will feature progress report presentations of the 2011-12 CPAC Funded Research Projects and proposals for 2012-2013 CPAC Research Funding. There are several new technical areas being presented this year that should be of general interest, including wireless sensing, terahertz spectroscopy, material science, and flow chemistry. Research related to NeSSI will be incorporated in the presentations as appropriate. The talks will be followed by interactive discussion sessions between the attendees and Principal Investigators (PI's).

Spring 2012 Agenda

SUNDAY, May 6

**Informal Reception CPAC Meeting Attendees
Governor's Room, Hotel Deca**

5:30-8:00 Informal Reception for Meeting Attendees - Governor's Room, Hotel Deca

MONDAY, May 7

**CPAC Overview, Tutorial, New Technology Developments, Vendor Display and
Reception with Hors d'oeuvres - Grand Ballroom
Poster Session - Chancellor Room**

7:00 Meeting Registration Desk Opens - Hotel Deca lobby by Grand Ballroom

8:30-8:45 Meeting Welcome and Introduction
Brian Marquardt, CPAC Director, Applied Physics Laboratory, UW
Introduction to the Tutorial/Workshop in NMR in Process Optimization and Control

8:45-9:00 Michael McCarthy, UC-Davis, and Mel Koch, CPAC, UW

9:00-9:30 Overview of Developments in Process Related NMR
Michael McCarthy, UC-Davis

9:30-10:00 Process NMR - Latest Technology Developments, Reaction Monitoring, Process Control
Applications and At-Line Analysis
John Edwards, Process NMR Associates and Aspect Italia

10:00-10:30	Break
10:30-11:00	New NMR Product Introduction Jeff Sherman, PicoSpin
11:00-11:20	Use of NMR Data Fused with other Measurement Tools for Process Understanding Carl Rechsteiner, Chevron
11:20-11:35	Topics in NMR Imaging Oded Sherman, Aspect Imaging
11:35-Noon	Discussion
Noon-1:30	Lunch (Taking a Student Encouraged)
1:30-1:50	Update of CPAC Activities Mel Koch, CPAC, UW
1:50-2:10	Novel Sensors for pH Measurement in Complex Processes Carolyn Kahn, Sensorin
2:10-2:50	Battery-Free RF Energy Harvesting Gas Sensing Platform Joe Stetter, KCJ Engineering and Josh Smith, UW Electrical Engineering, UW
2:50-3:10	New Approaches to Spectroscopic Monitoring Eric Bergies, BaySpec
3:10-3:20	Break
3:20-3:35	Unveiling and Walk-Through of New CPAC Website Wesley Thompson, CPAC, UW
3:35-3:55	Introduction of Vendor Displays and Meeting Participants
4:00-5:30	Poster Session, Chancellor Room
5:30-9:00	Reception with Hors d'oeuvres, Grand Ballroom, Hotel Deca including Vendor Displays

TUESDAY, May 8

CPAC Research Presentations and Proposals - Grand Ballroom

Reception - The District, Hotel Deca

7:00	Meeting Registration Desk Opens - Hotel Deca lobby by Grand Ballroom
8:30-8:45	CPAC Daily Overview Brian Marquardt, Director, CPAC, Applied Physics Laboratory (APL)
8:45-9:10	Non-Destructive Evaluation (NDE) of Multi-Layer Films with Micrometer Resolution Using a Fast, Portable, and Low-Cost Terahertz Spectrometer Hassan Arbab and Dale Winebrenner, APL, UW
9:10-9:35	Development of Protective Sol-gel Coating for Process Sensors Guozhong Cao, Material Sciences, UW
9:35-10:00	Next Generation of RF Powered Wireless Sensor Platforms Josh Smith, Electrical Engineering, UW
10:00-10:30	Break

- 10:30-11:00 Evaluation of a Cost Effective Method for Real Time Determination of Optical Activity in Continuous Flow Reactors
Tyler McQuade, Florida State University, and Frank Gupton, Virginia Commonwealth University
- 11:00-11:30 Process Monitoring with Microdialysis Extraction Interfaced with Various Instruments
Anthony Borgerding, U St. Thomas, MN
- 11:30-11:45 Discussion of Morning Presentations
- 11:45-1:30 Lunch (Taking a Student Encouraged)
- 1:30-2:00 Process Gas Chromatography and Chemometrics
Rob Synovec, Chemistry, UW - Ryan Wilson and Jeremy Nadeau, Chemistry, UW
- 2:00-2:25 Development of an Analytical Sampling System (NeSSI™) for Real-Time Monitoring of Continuous Flow Reactors (CFR)
Brian Marquardt and Michael Roberto, Applied Physics Laboratory (APL), UW
- 2:25-2:50 Evaluating Raman Spectroscopy to Improve Process Monitoring and Materials Characterization:
Brian J. Marquardt and Sergey Mozharov, Applied Physics Laboratory (APL), UW
- 2:50-3:20 Break
- 3:20-3:45 Measurement of Multi-Layer Coatings of FEF Sensor
Alexander Mamishev, Electrical Engineering, UW
- 3:45-4:10 Developing a Bioreactor and Continuous Monitoring System for Production of Engineered Single Chain Antibodies and Their Use in Rapid Analyte Purification and SPR-based Assays
Clement Furlong, Joshua Probert, and Scott Soelberg. Medical Genetics & Genome Sciences, UW
- 4:10-4:35 Combination of PAT (Process Analytical Technology) and Data Fusion for Characterization of Chemical Processes
Brian Marquardt, Applied Physics Laboratory (APL), UW
Tom Dearing, Applied Physics Laboratory (APL), UW
- 4:35-5:00 Discussion of Data Fusion and Related Chemometric Methods (COPA)
Brian Rohrback, InfoMetrix, Inc., Brian Marquardt and Tom Dearing, Applied Physics Laboratory (APL), UW and Carl Rechsteiner, Chevron
- 5:00-7:00 Reception, The District Lounge, Hotel Deca

WEDNESDAY, May 9
Grand Ballroom, Hotel Deca

- 7:00 Meeting Registration Desk Opens - Hotel Deca lobby by Grand Ballroom
- 8:45-9:00 CPAC Daily Overview
Brian Marquardt, Director, CPAC, Applied Physics Laboratory (APL)

9:00-9:30 Vapochromic Detection and Identification of Important Analytes
Kent Mann, Department of Chemistry, U. of Minnesota
Brian J. Marquardt and Charles Branham, Applied Physics Laboratory (APL), UW

9:30-10:00 Nuclear Magnetic Resonance (NMR) for Process Analysis with Potential Applications on NeSSI™
Michael McCarthy and J. H. Walton, University of California, Davis, and John C. Edwards, Process NMR Associates, Danbury, CT. (Collaborator)

10:00-10:30 Break

10:30-11:00 Advanced Biorefinery Processes and Measurements
Renata Bura and Rick Gustafson, Forest Resources, UW

11:00-11:30 Modular Sensing Architecture for Low-Cost Wireless Monitoring
Brian Otis and Babak Parviz, Electrical Engineering, UW

11:30-11:50 Investigating the use of LIBS as an Effective Process Analysis Tool
Brian Marquardt and Wes Thompson, Applied Physics Laboratory (APL), UW

11:50-12:15 Wrap-up Discussion

12:15 General Meeting Concludes

1:30-2:30 IAB Meeting - CPAC Sponsors