

Monday, October 7

8:30 AM - 9:00 AM

Welcome and Opening Remarks

Room: Odyssey

9:00 AM - 10:00 AM

Keynote Address

Room: Odyssey

"Implementation of Wireless Technologies Across Luminant's Power Plant Fleet in Texas"

Clinton Carter (Luminant, USA)

10:00 AM **Morning Break**

10:00 AM - 11:00 AM

Session 1: Harsh Environment Sensors and Networks

Room: Odyssey

Session Chair: James Smith (Idaho National Laboratory, USA)

10:00 **Wireless Battery-free Harsh Environment Sensor System for Energy Sector Applications**

Mauricio Pereira da Cunha (University of Maine & Laboratory for Surface Science and Technology, USA)

Robert Lad (University of Maine, USA)

David Frankel (University of Maine, USA)

Scott Moulzolf (University of Maine, USA)

Michael Call (University of Maine, USA)

George Bernhardt (University of Maine, USA)

Donald McCann (Environetix Technologies Corporation, USA)

Thomas Pollard (Environetix Technologies Corporation, USA)

Erik McCarthy (Environetix Technologies Corporation, USA)

10:30 **Au-Nanoparticle Incorporated Plasmonic Nanocomposite Films for High Temperature Sensing**

Paul Ohodnicki (National Energy Technology Laboratory / DOE & Carnegie Mellon University, USA)

Thomas Brown (National Energy Technology Laboratory, USA)

11:15 AM - 12:15 PM

Working Lunch

Room: Atlantis

"Wireless SAW Sensor System Design and Operation"

Donald Malocha (University of Central Florida, USA)

12:30 PM - 2:00 PM

Session 2: Biomedical Sensing and Analysis

Room: Odyssey

Session Chair: James Smith (Idaho National Laboratory, USA)

12:30 **Flow meter using Impedance Plethysmography Technique**

Dhurjati Sreeram Bhargav (National Institute of Technology, Jalandhar, India)

Atul Uttam (National Institute of Technology, Jalandhar, India)

Abhishek Singh (National Institute of Technology, Jalandhar, India)

Ashish Ranjan (National Institute of Technology, Jalandhar, India)

Shravan Pahuja (National Institute of Technology, Jalandhar, India)

1:00 Improving Snake Method Using Canny Approach Implementation for Fast Cancer Cells Detection

Ahmad Chaddad (Ecole Polytechnique de Montreal, Canada)

Camel Tanougast (University Paul Verlaine - Metz, France)

Abbas Dandache (University of Lorraine, France)

1:30 Presenting a model to prediction a Modified Face Recognition after Surgery

Mohammadreza Banan (Islamic Azad University, Iran)

12:30 PM - 2:00 PM

Tutorial

Room: Atlantis

Safety and Mission-Assurance

Kim Fowler (Kansas State University, USA)

This tutorial will cover the traditional forms of analyses for safety and the newest techniques being researched and developed. It will present several case studies, from military, medical, and appliance industries, as examples of dependable and safe systems, which illustrate some aspects of mission-assurance and safety.

- Traditional analyses: HAZOP, FMECA, FTA, ETA, worst case and margin analysis
- Safety cases
- System Theoretic Process Analysis (STPA)

2:15 PM - 3:15 PM

Session 3: Sensors and Controls in Oil and Gas

Room: Odyssey

Session Chair: Kim Fowler (Kansas State University, USA)

2:15 A High Spatial and Temporal Resolution Film Thickness Sensor in Oil - Water Flows

Adriana Bonilla Riaño (University of Campinas, Brazil)

Antonio Carlos Bannwart (University of Campinas, Brazil)

Oscar Rodriguez (University of Sao Paulo, Brazil)

Iara Hernandez Rodriguez (University of São Paulo, Brazil)

Horst-Michael Prasser (ETH Zurich, Switzerland)

Julien Dupont (ETH Zurich, Switzerland)

2:45 Capacitive wire-mesh sensor measurements in oil-water flow

Iara Hernandez Rodriguez (University of São Paulo, Brazil)

Oscar Rodriguez (University of Sao Paulo, Brazil)

Adriana Bonilla Riaño (University of Campinas, Brazil)

Hugo F. Velasco Peña (Universidade de Sao Paulo, Brazil)

3:15 PM Afternoon Break

3:30 PM - 5:00 PM

Panel Discussion: "Implementation for Industrial Wireless for Conditioned Base Monitoring - What Works / What Doesn't?"

Room: Odyssey

Session Chair: Hash Hashemian (Analysis and Measurement Services Corp., USA)

Tuesday, October 8

8:00 AM - 8:15 AM

Welcome and Opening Remarks

Room: Odyssey

8:15 AM - 9:15 AM

Keynote Address

Room: Odyssey

"Overview of the North American SynchroPhasor Initiative"

Jeff Dagle (Pacific Northwest National Laboratory, USA)

9:15 AM - 11:30 AM

Session 4: Sensors and Controls in Nuclear Power

Room: Odyssey

Session Chair: Dwight Clayton (Oak Ridge National Laboratory, USA)

9:15 **Designing A TAC Thermometer From A VHTR Graphite Structure**

James Smith (Idaho National Laboratory, USA)

Dale Kotter (INL, USA)

Steven Garrett (Penn State University, USA)

Randall Ali (Penn State University, USA)

9:45 **Nondestructive Evaluation of Concrete in Nuclear Power Plants**

Dwight Clayton (Oak Ridge National Laboratory, USA)

Cyrus Smith (Oak Ridge National Laboratory, USA)

10:15 **Session Break**

10:30 **EMC Testing to Facilitate Cellular Phone Use in Industrial Settings**

Hash M Hashemian (Analysis and Measurement Services Corp., USA)

11:00 **Acoustic Emission Signal Processing Technique to Characterize Reactor In-Pile Phenomena**

Vivek Agarwal (Idaho National Laboratory, USA)

Magdy Tawfik (Idaho National Laboratory, USA)

James Smith (Idaho National Laboratory, USA)

11:45 AM - 12:45 PM

Working Lunch

Room: Atlantis

"A SAW Temperature Sensor with On-Wafer Integrated Antenna"

Mark Gallagher (University of Central Florida, USA)

1:00 PM - 5:00 PM

Session 5: Wireless Sensor Networks

Room: Odyssey

Session Chair: Peter Fuhr (Oak Ridge National Laboratory, USA)

- 1:00** **Design and execution of a "Plant Wide ISA100 Wireless" network for optimisation of complex process industries**
Toshi Hasegawa (Yokogawa Electric Corporation, Japan)
Masaaki Matsuzaki (Yokogawa Electric Corporation, Japan)
- 1:30** **Biologically-inspired Distributed Power Plant Control using Annealed Disorder**
Richard Kolacinski (Case Western Reserve University, USA)
Kenneth Loparo (Case Western Reserve University, USA)
- 2:00** **Evaluating the Security of 6LoWPAN in Wireless Sensor Networks**
Richard Willems (Oak Ridge National Laboratory, USA)
Dwight Clayton (Oak Ridge National Laboratory, USA)
- 2:30** **Implementation of Wireless Technology for Predictive Maintenance of Industrial Equipment**
Hash M Hashemian (Analysis and Measurement Services Corp., USA)
Adam Caswell (Analysis and Measurement Services Corp., USA)
- 3:00** **Wireless Instrumentation for Dense Deployments Using Shared Spectrum**
Peter Fuhr (Oak Ridge National Laboratory, USA)
Paul Ewing (Oak Ridge National Laboratory, USA)
Simon Forge (SCF Associates Ltd, USA)
- 3:30** **Session Break**
- 4:00** **Distributed Sensor Network Control with Evolutionary Algorithms**
Mitch Colby (Oregon State University, USA)
Kagan Tumer (Oregon State University, USA)
- 4:30** **Economical RFID Systems by Plugging Sensor Tags into WSNs**
Wei Ding (New York Institute of Technology, USA)
Ricardo Cabret (New York Institute of Technology, USA)

5:00 PM - 6:15 PM

Panel Discussion: "Intersection of Advanced Sensors and the Internet of Things (IoT). What's Next?"

Room: Odyssey

Session Chair: Peter Fuhr (Oak Ridge National Laboratory, USA)

Wednesday, October 9

8:00 AM - 8:15 AM

Welcome and Opening Remarks

Room: Odyssey

8:15 AM - 9:15 AM

Keynote Address

Room: Odyssey

"Advances in Sensing and Process Control to Support a New Paradigm in power System Management"

Robie Lewis and Susan Maley, National Energy Technology Laboratory

9:15 AM - 10:45 AM

Session 6: Methods and Analysis for Sensors and Controls

Room: Odyssey

Session Chair: Panos Datskos (Oak Ridge National Laboratory, USA)

9:15 Anticipatory Monitoring and Control of Complex Systems using a Fuzzy based Fusion of Support Vector Regressors

Miltiadis Alamaniotis (University of Utah & Nuclear Engineering Program, USA)

Vivek Agarwal (Idaho National Laboratory, USA)

9:45 Large Area Transparent Superhydrophobic Coatings

Panos Datskos (Oak Ridge National Laboratory, USA)

Scott Hunter (Oak Ridge National Laboratory, USA)

Slobodan Rajc (Oak Ridge National Laboratory, USA)

Georgios Polyzos (Oak Ridge National Laboratory, USA)

Daniel Schaeffer (Oak Ridge National Laboratory, USA)

JaswinderSharma (Oak Ridge National Laboratory, USA)

10:30 AM - 12:00 PM

Conference Wrap-up

Room: Odyssey