Monday, July 13, 2020

Energy Systems – Overview Achievements and Improvements of Current Renewable Energy Resources and Technologies
11:00 AM – 12:00 PM EDT
Moderator: Hongjian Lin, Zhejiang University

2001665 An Energy-Neutral Feedstock Handling System to Produce Lignocellulosic Fuels and Chemicals
Presenting: Wei Liao, Michigan State University

2001667 Large Scale Hydrogen Production from Alternative Sources for Hydrogen Economy: A Comprehensive Assessment
Presenting: Amit Kumar, University of Alberta

2001668 Integrated energy and biochar manufacturing
Presenting: Wenqiao Yuan, North Carolina State University

NRES Community Wide Update
12:00 PM – 1:00 PM EDT
Moderator: Srinivasulu Ale, Texas A&M University

The NRES Community Update session focusses on providing community wide updates to NRES members. These updates include reports by i) NRES representatives for Meetings, Membership Development, Publications, and Standards & Technical Councils, and ii) Chairs of NRES Forward Planning, Program, and Nomenclature Committees. In addition, updates about the recently held and upcoming ASABE-sponsored specialty conferences related NRES will be provided. Furthermore, important updates from eight NRES Groups such as publication of special collections in ASABE journals and review articles, and revisions to ASABE standards will be shared with the NRES members. At the end of the session, feedback from NRES members will be obtained for improving the NRES technical community and the NRES program at the Annual International Meetings.
Machinery Systems – A Look Back on 100 Years of Tractor Performance Testing
1:00 PM – 2:00 PM EDT
Moderator: Tom Way, USDA-ARS

2001662 Tractor Performance Testing
Presenting: Roger Hoy, University of Nebraska-Lincoln

2001663 Soil/Vehicle/Implement Systems and Management
Presenting: Richard John Godwin, Harper Adams University

2001664 Off-Road Multi-Wheel Vehicles: Dynamics, Energy Efficiency and Mobility
Presenting: Vladimir V. Vantsevich, University of Alabama at Birmingham

Plant, Animal, & Facility Systems Community Showcase
2:00 PM – 3:00 PM EDT
Moderators: Mindy Spiehs, USDA-ARS; Tim Shephard, Iowa State University

2000135 Effects of Piglet Creep Floor Area on Sow Behavior and Litter Productivity in Farrowing Stalls
Presenting: Suzanne Leonard, Iowa State University

2001556 IoT and Machine Learning Applications to Monitor Heat Stress of Dairy Cows
Presenting: Christopher Choi, University of Wisconsin

2001437 Evaluate the Representativeness of the NAEMS Air Emission Data for Swine Operations
Presenting: Zifei Liu, Kansas State University

Education, Outreach, & Professional Development – Establishing and Maintaining Ethics in the Engineering Workplace
3:00 PM – 4:00 PM EDT
Moderator: Dr. Robert Gustafson

Keynote:
Dennis A. Bowman, Engineering Fellow, John Deere’s Product Engineering Center

Panelists:
Jerry Wille, Curry-Wille & Associates
Ruth Book, USDA NRCS
Robert Gustafson, Ohio State University

This session will begin with a keynote address setting the stage for better understanding of the issues and challenges as well as approaches that can be used to establish and maintain ethics in an engineering workplace. A panel, made up of ASABE members from a variety of types and sizes of engineering enterprises, will continue to a discussion of the topic.

E-2050 - Modernizing African Agriculture
4:00 PM – 5:00 PM EDT
Moderators: Klein Ileleji, Purdue University; Margaret Gitau, Purdue University; Ajit Srivastava, Michigan State University

Keynote:
Dr. Soji Adelaja, Michigan State University
Tuesday, July 14, 2020

Processing Systems – PRS Community Showcase
9:00 AM – 10:00 AM EDT
Moderator: Akinbode Adeledeji, University of Kentucky; Sarah Wu, University of Idaho

2000471 Numerical Simulation of Phosphine Movement in Bulk-Stored Grain
Presenting: Sherif Elsayed, Element AI

2000969 Opportunities and Challenges of Cold Plasma in Food Processing
Presenting: Kasiviswanathan Muthukumarappan, South Dakota University

2001299 Dynamic Cell Wall Structure and Composition Variability in Corn Stover Fractions as Functions of Biological Degradation in Storage
Presenting: Chenlin Li, Idaho National Laboratory

2000272 Characterization of Recombinant Glutelin Type-B 5-Like Protein from Proso Millet
Presenting: Felix Akharume, University of Kentucky

Information Technology, Sensors & Control Systems – ITSC Paper Award Presentations
10:00 AM – 11:00 AM EDT
Moderator: Seung-Chul Yoon, USDA

2000090 Yield Estimation of Soybean Breeding Lines using UAV Multispectral Imagery and Convolutional Neuron Network
Presenting: Jing Zhou, University of Missouri

2000374 Application of Improved NSGA-II Algorithm in Matching Optimization for Tractor Powertrain
Presenting: Lian Wang, China Agricultural University

2000495 A New Spectral Pretreatment Method for Detecting Soluble Solids Content of Pears using Vis/ NIR Spectroscopy
Presenting: Long Li, China Agricultural University

2001338 Blueberry Traits Extraction Based on 3D Reconstruction and Deep Learning
Presenting: Xueping Ni, University of Georgia

Plant, Animal, & Facility Systems Community Showcase
12:00 PM – 1:00 PM EDT
Moderator: Mark Lefsrud, McGill University; Tim Shephard, Iowa State University

2001514 Using Fertilizers to Power and Irrigate Controlled Plant Environments
Presenting: Jonathan Maisonneuve, Oakland University

2000970 Characterization of Indoor Arenas Through an Anonymous Survey
Presenting: Staci McGill, University of Kentucky

2000859 Effects of UV-A Light Treatment on Ammonia in Lab-Scale
Presenting: Jacek Koziel, Iowa State University
**Education Outreach, & Professional Development**

**Becoming an Extension Engineer: How and Why the Profession Matters**

1:00 PM – 2:00 PM EDT  
**Moderator:** Dr. Gary Hawkins, University of Georgia

**Panelists:**  
Dana Porter, Texas A&M  
John Fulton, The Ohio State University  
Amy Schmidt, University of Nebraska

Many YPC members may not understand or are not aware of the professional opportunities as an Extension Engineer. This session allows YPC to mingle and discuss with members of the EOPD 208 communities about what, how, and why extension engineering operates with the society. The general agenda will include presentations by blue ribbon award winners about how information is transferred, with a panel of extension engineers regarding professional duties and interactions.

**PRS Food Processing, Handling, and Consumption in the Current Global Health Pandemic**

2:00 PM – 3:00 PM EDT  
**Moderator:** Igathinathane Cannayen and Subhashree N. Srinivasagan, North Dakota State University

**Panelists:**  
Dr. Kenneth Hellevang, North Dakota State University  
Dr. Digvir Jayas, University of Manitoba  
Dr. Klein Ileleji, Purdue University  
Dr. Dirk Maier, Iowa State University  
Dr. Kumar Mallikarjunan, University of Minnesota

Panelists who are experts in this field will share their thoughts on a set of questions and discuss the issues as well as answer any questions from the audience.

**Applied Science & Engineering Community Showcase**

3:00 PM – 4:00 PM EDT  
**Moderator:** David Lanning, Forest Concepts

- **2001272 Development of Nanocellulose Based Gas Barrier Composite Films for Sustainable Packaging**  
  Presenting: Sudhagar Mani, University of Georgia

- **2000886 A Universal and Long-Life Biochar Catalyst for the Conversion of Waste Plastics into Valuable Transportation Fuels and H2-Enriched Gases**  
  Presenting: Chenxi Wang, Washington State University

- **2000339 Hydrogen Storage in Superactivated Hydrochars**  
  Presenting: Toufiq Reza, Florida Institute of Technology

**Natural Resources & Environmental Systems**

**NRES Career Paths: Research, Teaching, Extension, Government, and Industry**

4:00 PM – 5:00 PM EDT  
**Moderator:** Debabrata Sahoo, Clemson University

- **2001620 Research and Teaching in Academia – Is this the Right Career Path for Me?**  
  Presenting: Carmen Agouridis, University of Kentucky
Natural Resources Engineering offers variety of career options, each with different areas of emphasis. Each career path includes different roles requiring varying levels of education. Positions offers unique roles with different challenges and responsibilities. A clear understanding of career options can aid members in selecting the appropriate education for a chosen career path. The panel discussion with panelists from academia, agencies, and industry will share their experiences to inform attendees about opportunities, and will highlight the strengths and challenges for each career path.

Wednesday, July 15, 2020

**Information Technology, Sensors & Control Systems – Instructional Case Studies with Data Sets for YOUR Instruction**
9:00 AM – 11:00 AM EDT
Moderator: Sierra Young, North Carolina University; Dennis Buckmaster, Purdue University

2001669 Analyzing Air Quality Index Trends in NC during the Peat Bog Fires of 2008
Presenting: Natalie Nelson, North Carolina State University

2001671 A Survey of Problems of Image and Video Analyses for Agricultural Systems
Presenting: Joshua Peschel, Iowa State University

2001672 Projections for Biomass Availability
Presenting: Tasmin Hossain, North Carolina State University; Daniella Gonzales Jones, Duke University

This session will give attendees an understanding of how to use presented case studies with accompanying data sets in their instruction. Each presenter will post/publish data sets, sample lesson plans, and code for others to replicate in teaching data science for digital agriculture. Application areas will be broad and cover data science from introductory level through moderately advanced techniques.

**Natural Resources & Environmental Systems Distinguished Lecture Series**
Emerging Technological Innovations in Water Resource Engineering
12:00 PM – 2:00 PM EDT
Moderator: Debabrata Sahoo, Clemson University

Agricultural Applications of the High-Resolution Microwave Observations from the NASA Current and Upcoming Missions
Presenting: Dr. Narendra N. Das, NASA-JPL

The USDA Partnerships for Data Innovations
Presenting: Dr. Michael Buser, USDA

FarmBeats: Empowering Farmers with Affordable Digital Agriculture Techniques
Presenting: Dr. Ranveer Chandra, Microsoft
Improved engineering data and methods are needed to support the design and operation of reliable, cost-effective, continuous feeding of biomass feedstocks into process equipment at biorefineries and other bio-products facilities.