

# FOCAPO / CPC 2023

## Grand Challenges

Digitalization ♦ Sustainability ♦ Innovation Speed ♦ Future of PSE

January 8 – January 12, 2023

Hilton San Antonio Hill Country ♦ San Antonio, Texas

### FINAL PROGRAM

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#### Sunday, January 8

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| 2:00 p.m. to 8:30 p.m.  | Conference Registration ( <i>Grand Hallway</i> )   |
| 7:30 p.m. to 8:30 p.m.  | OPENING SESSION ( <i>Red Oak, Monterey Oak &amp; Live Oak</i> )  |
| 7:30 p.m. to 7:45 p.m.  | <b>Opening Remarks</b><br><i>Michael Baldea (University of Texas at Austin)</i><br><i>Rahul Bindlish (The Dow Chemical Company)</i><br><i>Iiro Harjunkoski (Hitachi Energy)</i><br><i>Victor Zavala (University of Wisconsin – Madison &amp; Argonne National Lab)</i> |
| 7:45 p.m. to 8:30 p.m.  | <b>Opening Plenary</b><br>The Quest Towards the Integration of Process Control, Process Operations and Process Operability – Industrial Need or Academic Curiosity?<br><i>Stratos Pistikopoulos (Texas A&amp;M University)</i>   |
| 8:30 p.m. to 10:00 p.m. | Welcome Reception ( <i>Spanish Oaks</i> )  |

## **Monday, January 9 – Joint Session** (*Red Oak, Monterey Oak & Live Oak*)

- 7:00 a.m. to 5:00 p.m.**      **Conference Registration** (*Grand Hallway*)
- 7:30 a.m. to 8:30 a.m.**      **Continental Breakfast** (*The Spurs or Spanish Oaks*)
- 8:30 a.m. to 9:30 a.m.**      **PLENARY SESSION – DIGITALIZATION**  
*Chair: Iiro Harjunkoski (Hitachi Energy)*  
  
Power Systems of the Future  
*Ernst Scholtz and Alexandre Oudalov (Hitachi Energy)*
- 9:30 a.m. to 10:00 a.m.**      **Refreshment Break**
- 10:00 a.m. to 12:30 p.m.**      **KEYNOTE SESSION – DIGITALIZATION**  
*Chair: Ignacio Grossmann (Carnegie Mellon University)*  
*Chair: Cristiana Lara (Amazon)*
- 10:00 a.m. to 10:30 a.m.      Cybersecurity in Process Control, Operations and Supply Chains  
*Panagiotis Christofides (University of California – Los Angeles)*  
*Sandra Parker (The Dow Chemical Company)*
- 10:30 a.m. to 11:00 a.m.      Formulating Data-driven Surrogate Models for Process Optimization  
*Ruth Misener (Imperial College London)*  
*Larry Biegler (Carnegie Mellon University)*
- 11:00 a.m. to 11:30 a.m.      Resilient Manufacturing Ecosystems through Artificial Intelligence  
*James Davis (University of California – Los Angeles)*
- 11:30 a.m. to 12:00 p.m.      Impact of Emerging Computing Architectures and Opportunities for  
Process Systems Engineering Application  
*Carl Laird (Carnegie Mellon University)*  
*Stuart Harwood (ExxonMobil)*  
*David Bernal (NASA)*  
*Dimitar Trenev (ExxonMobil)*  
*Davide Venturelli (NASA)*
- 12:00 p.m. to 12:30 p.m.      Digital Transformation and Expanding the Capabilities of Industrial  
Process Control and Optimization  
*Whit McConnell (ExxonMobil)*  
*Dimitrios Georgis (ExxonMobil)*  
*Tyler Soderstrom (ExxonMobil)*  
*Jitendra Kadam (ExxonMobil)*
- 12:30 p.m. to 2:00 p.m.**      **Lunch** (*Hill Country Café & The Spurs*)

## Monday, January 9 – Parallel Sessions

### ORAL SESSIONS – (Red Oak & Monterey Oak)

- 2:00 p.m. to 3:40 p.m.**      **EMERGING TRENDS IN DIGITALIZATION**  
*Chair: Carl Laird (Carnegie Mellon University)*  
*Chair: Bethany Nicholson (Sandia National Laboratories)*
- 2:00 p.m. to 2:25 p.m.      Towards a Digital Twin for Analytical HPLC  
*Monica Tirapelle (University College London)*
- 2:25 p.m. to 2:50 p.m.      Enhanced CNN with Global Features for Fault Diagnosis of Complex  
Chemical Processes  
*Qiugang (Jay) Lu (Texas Tech University)*
- 2:50 p.m. to 3:15 p.m.      Perspectives on Design Considerations Inspired by Security and Quantum  
Technology in Cyberphysical Systems for Process Engineering  
*Helen Durand (Wayne State University)*
- 3:15 p.m. to 3:40 p.m.      Automatic Source Code Generation of Complicated Models for Deterministic  
Global Optimization with Parallel Architectures  
*Matthew Stuber (University of Connecticut)*

### ORAL SESSIONS – (Live Oak)

- 2:00 p.m. to 3:40 p.m.**      **ADVANCES IN MACHINE LEARNING**  
*Chair: Zheyu Jiang (Oklahoma State University)*  
*Chair: Alexander Smith (University of Minnesota)*
- 2:00 p.m. to 2:25 p.m.      Learning to Initialize Generalized Benders Decomposition via Active Learning  
*Ilias Mitrai (University of Minnesota)*
- 2:25 p.m. to 2:50 p.m.      Optimization-based Approaches for Design of Chemical Process Families using  
ReLU Surrogates  
*Georgia Stinchfield (Carnegie Mellon University)*
- 2:50 p.m. to 3:15 p.m.      Safe Deployment of Reinforcement Learning Using Deterministic Optimization of  
Trained Neural Networks  
*Calvin Tsay (Imperial College London)*
- 3:15 p.m. to 3:40 p.m.      A Gaussian Process Embedded Feature Selection Method Based on Automatic  
Relevance Determination  
*Yushi Deng (Auburn University)*
- 3:40 p.m. to 4:10 p.m.**      **Refreshment Break**

## Monday, January 9 – Parallel Sessions (Continued)

### ORAL SESSIONS Continued – (Red Oak & Monterey Oak)

- 4:10 p.m. to 5:50 p.m.**      **ENERGY SYSTEMS & INFRASTRUCTURE**  
*Chair: Qi Zhang (University of Minnesota)*  
*Chair: Calvin Tsay (Imperial College London)*
- 4:10 p.m. to 4:35 p.m.      Towards Optimal Energy-water Supply System Operation for Agricultural and Metropolitan Ecosystems  
*Marcello Di Martino (Texas A&M University)*
- 4:35 p.m. to 5:00 p.m.      A Conditional Value-at-Risk Framework for Optimal Microgrid Day-ahead Market Bidding  
*Robert Herding (University College London)*
- 5:00 p.m. to 5:25 p.m.      Stochastic Programming of Energy System Operations Considering Terminal Energy Storage Levels  
*Teemu Ikonen (Aalto University)*
- 5:25 p.m. to 5:50 p.m.      Opportunities for Industrial Demand Response: A Survey of Grid-responsive Smart Manufacturing Applications  
*Blake Billings (University of Utah)*

### ORAL SESSIONS Continued – (Live Oak)

- 4:10 p.m. to 5:50 p.m.**      **ADVANCES IN DATA SCIENCE**  
*Chair: Aaron Liu (Georgia Tech University)*  
*Chair: Wentao Tang (North Carolina State University)*
- 4:10 p.m. to 4:35 p.m.      Applied Topology and Geometry in Process Monitoring and Fault Detection  
*Alexander Smith (University of Minnesota)*
- 4:35 p.m. to 5:00 p.m.      Application of Grey-box Modeling for System Health Monitoring in Manufacturing  
*Utsav Awasthi (University of Connecticut)*
- 5:00 p.m. to 5:25 p.m.      Data-based Modeling and Control of Nonlinear Process Systems Using Sparse Identification: An Overview of Recent Results  
*Panagiotis Christofides (University of California – Los Angeles)*
- 5:25 p.m. to 5:50 p.m.      Improving Moving Horizon Estimation Using Parametric Nonlinear Programming Sensitivities  
*Simen Bjorvand (NTNU)*
- 5:50 p.m. to 8:00 p.m.**      **Free Time & Dinner on Your Own**
- 8:00 p.m. to 10:00 p.m.**      **Poster Session A – Digitalization & Innovation Speed (Rotunda)**  
*Chair: Salvador Garcia Muñoz (Eli Lilly)*  
*Chair: Mona Bavarian (University of Nebraska – Lincoln)*

## **Tuesday, January 10 – Joint Session** *(Red Oak, Monterey Oak & Live Oak)*

- 7:00 a.m. to 5:00 p.m.**      **Conference Registration** *(Grand Hallway)*
- 7:30 a.m. to 8:30 a.m.**      **Continental Breakfast** *(The Spurs or Spanish Oaks)*
- 8:30 a.m. to 9:30 a.m.**      **PLENARY SESSION – SUSTAINABILITY**  
*Chair: Michael Baldea (University of Texas at Austin)*
- Continuous Monitoring for Measuring and Mitigating Methane Emissions from Oil and Gas Production Operations  
*David Allen (University of Texas at Austin)*
- 9:30 a.m. to 10:00 a.m.**      **Refreshment Break**
- 10:00 a.m. to 12:00 p.m.**      **KEYNOTE SESSION – SUSTAINABILITY**  
*Chair: Marianthi Ierapetritou (University of Delaware)*  
*Chair: Panagiotis Christofides (University of California – Los Angeles)*
- 10:00 a.m. to 10:30 a.m.      Future of CO<sub>2</sub> Management Systems: Design and Operations  
*David Miller (NETL)*  
*Jaffer Ghouse (NETL)*  
*Radhakrishna Gooty (NETL)*  
*Ben Omell (NETL)*  
*Joshua Morgan (NETL)*  
*Daison Caballero (NETL)*  
*Miguel Zamarripa (NETL)*  
*Sally Homsy (NETL)*  
*Brandon Paul (NETL)*  
*Anuja Deshpande (NETL)*
- 10:30 a.m. to 11:00 a.m.      Integration of Chemical Process Operation with Energy and Systems Infrastructure  
*Jesus Flores-Cerrilo (Linde)*  
*Christopher Swartz (McMaster University)*
- 11:00 a.m. to 11:30 a.m.      Circular Economy Definitions, Challenges and Opportunities  
*Styliani Avraamidou (University of Wisconsin – Madison)*  
*Ana Torres (Carnegie Mellon University)*
- 11:30 a.m. to 12:00 p.m.      Systems Engineering for Sustainability in a Globalized World: Resources, Ecosystems, Boundaries  
*Bhavik Bakshi (The Ohio State University)*  
*Christos Maravelias (Princeton University)*
- 12:00 p.m. to 2:00 p.m.**      **Lunch** *(Hill Country Café & The Spurs)*

## Tuesday, January 10 – Parallel Sessions

### ORAL SESSIONS – (Red Oak & Monterey Oak)

- 2:00 p.m. to 3:40 p.m.**      **MODELING FOR SUSTAINABILITY**  
*Chair: Styliana Avraamidou (University of Wisconsin – Madison)*  
*Chair: Matthew Stuber (University of Connecticut)*
- 2:00 p.m. to 2:25 p.m.      Real-time Characterization of Mixed Plastic Waste Using Machine Learning and Infrared Spectroscopy  
*Shengli Jiang (University of Wisconsin – Madison)*
- 2:25 p.m. to 2:50 p.m.      Bridging the Scales from Catalyst Synthesis to Sustainable Process: CO<sub>2</sub> Hydrogenation to Methanol  
*Lukas Spiekermann (ETH – Zurich)*
- 2:50 p.m. to 3:15 p.m.      Absolute Life Cycle Optimization of the CDR-Power Nexus  
*Valentina Negri (ETH – Zurich)*
- 3:15 p.m. to 3:40 p.m.      A Data-driven Random Walk Approach for Solving Water Flow Dynamics in Soil Systems  
*Zeyuan Song (Oklahoma State University)*

### ORAL SESSIONS – (Live Oak)

- 2:00 p.m. to 3:40 p.m.**      **ADVANCES IN CONTROL**  
*Chair: Qiugang (Jay) Lu (Texas Tech University)*  
*Chair: Tyler Soderstrom (ExxonMobil)*
- 2:00 p.m. to 2:25 p.m.      Data-driven Model Reduction and Nonlinear Model Predictive Control of an Air Separation Unit by Applied Koopman Theory  
*Jan Schulze (RWTH Aachen University)*
- 2:25 p.m. to 2:50 p.m.      An Industrial Case Study on the Combined Identification and Offset-free Model Predictive Control of a Chemical Process  
*Steven Kuntz (University of California – Santa Barbara)*
- 2:50 p.m. to 3:15 p.m.      Automatic Decomposition of Large-scale Industrial Processes for Distributed MPC on the Shell-Yokogawa Platform for Advanced Control and Estimation (PACE)  
*Wentao Tang (Shell Global Solutions (U.S.) Inc. & NCSU)*
- 3:15 p.m. to 3:40 p.m.      Handling Interactive Systems in Primal-dual Feedback-optimizing Control  
*Risvan Dirza (NTNU)*
- 3:40 p.m. to 4:10 p.m.**      **Refreshment Break**

## Tuesday, January 10 – Parallel Sessions (Continued)

### ORAL SESSIONS Continued – (Red Oak & Monterey Oak)

- 4:10 p.m. to 5:50 p.m.**      **DECARBONIZATION**  
*Chair: David Miller (NETL)*  
*Chair: George Bollas (University of Connecticut)*
- 4:10 p.m. to 4:35 p.m.      Co-optimizing Design and Operation Strategy of Solid Oxide Fuel Cell-based Hydrogen-electricity Coproduction Systems  
*Nicole Cortes (University of Notre Dame)*
- 4:35 p.m. to 5:00 p.m.      Carbon Emission Trading on The Blockchain: A Game-theoretic Framework  
*M.M. Faruque Hasan (Texas A&M University)*
- 5:00 p.m. to 5:25 p.m.      A Multiperiod Model for Portfolio Optimization of Carbon Capture and Utilization  
*Pooja Zen Santhamoorthy (Auburn University)*
- 5:25 p.m. to 5:50 p.m.      Simultaneous Design and Operational Optimization Under Uncertainty for Flexible Carbon Capture Plants  
*Michael Baldea (University of Texas at Austin)*

### ORAL SESSIONS Continued – (Live Oak)

- 4:10 p.m. to 5:50 p.m.**      **DYNAMICS & CONTROL FOR SUSTAINABILITY**  
*Chair: Helen Durand (Wayne University)*  
*Chair: Yuhe Tian (West Virginia University)*
- 4:10 p.m. to 4:35 p.m.      An Application of the Dulmage-Mendelsohn Partition to the Analysis of a Discretized Dynamic Chemical Looping Reactor Model  
*Robert Parker (Carnegie Mellon University)*
- 4:35 p.m. to 5:00 p.m.      NMPC for Setpoint Tracking Operation of a Solid Oxide Electrolysis Cell System  
*Douglas Allan (NETL)*
- 5:00 p.m. to 5:25 p.m.      Dynamic Objective Correlation in Many-objective Optimal Operation: An Ammonia Production Case Study  
*Andrew Allman (University of Michigan)*
- 5:25 p.m. to 5:50 p.m.      A Modeling and Closed-loop Planning Strategy to Achieve Net-zero Energy Use in Buildings  
*Michael Risbeck (Johnson Controls)*
- 5:50 p.m. to 6:45 p.m.**      **Free Time**
- 6:45 p.m. to 7:30 p.m.**      **Conference Reception**
- 7:30 p.m. to 10:30 p.m.**      **Plenary and Conference Banquet (Red Oak, Monterey Oak & Live Oak)**
- 7:30 p.m. to 7:44 p.m.      **Opening Remarks**  
*Victor Zavala (University of Wisconsin – Madison & Argonne National Lab)*
- 7:40 p.m. to 8:30 p.m.      **Plenary Presentation**  
Harmonizing the Use of Optimization and Feedback in Process Operations and Control  
*James Rawlings (University of California – Santa Barbara)*
- 8:30 p.m. to 10:00 p.m.**      **Conference Banquet**

## **Wednesday, January 11 – Joint Session** *(Red Oak, Monterey Oak & Live Oak)*

- 7:00 a.m. to 5:00 p.m.**      **Conference Registration** *(Grand Hallway)*
- 7:30 a.m. to 8:30 a.m.**      **Continental Breakfast** *(The Spurs or Spanish Oaks)*
- 8:30 a.m. to 9:30 a.m.**      **PLENARY SESSION – INNOVATION SPEED**  
*Chair: Rahul Bindlish (The Dow Chemical Company)*
- Innovating for Speed, Complexity and Sustainability in Pharmaceutical Development and Manufacturing  
*Celia Cruz (Eli Lilly)*
- 9:30 a.m. to 10:00 a.m.**      **Refreshment Break**
- 10:00 a.m. to 12:00 p.m.**      **KEYNOTE SESSION – INNOVATION SPEED**  
*Chair: Ruth Misener (Imperial College London)*  
*Chair: Dimitri Papageorgiou (ExxonMobil)*
- 10:00 a.m. to 10:30 a.m.      Digital Innovation Challenges in the Pharmaceutical Industry  
*Cleo Kontoravdi (Imperial College London)*  
*Salvador García Muñoz (Eli Lilly)*
- 10:30 a.m. to 11:00 a.m.      Open-Source Modeling Platforms  
*John Hedengren (Brigham Young University)*  
*Bethany Nicholson (Sandia National Laboratories)*
- 11:00 a.m. to 11:30 a.m.      Resilient Supply Chains – Robustness and Dynamics in Global Supply Chains  
*Jose Pinto (Linde Digital)*  
*Ana Barbosa-Povoa (University of Lisbon)*
- 11:30 a.m. to 12:00 p.m.      Feasibility/Flexibility-based Optimization for Process Design and Operations  
*Marianthi Ierapetrirou (University of Delaware)*  
*Huayu Tian (University of Delaware)*  
*Jnana Sai Jagana (University of Minnesota)*  
*Qi Zhang (University of Minnesota)*
- 12:00 p.m. to 2:00 p.m.**      **Lunch** *(Hill Country Café and The Spurs)*



## Wednesday, January 11 – Parallel Sessions

### ORAL SESSIONS – (Red Oak & Monterey Oak)

- 2:00 p.m. to 3:40 p.m.**      **MARKETS & LONG-TERM PLANNING**  
*Chair: Christopher Swartz (McMaster University)*  
*Chair: Andrew Allman (University of Michigan)*
- 2:00 p.m. to 2:25 p.m.      Data-driven Distributionally Robust Optimization for Long-term Contract vs. Spot Allocation Decisions  
*Dimitri Papageorgiou (ExxonMobil)*
- 2:25 p.m. to 2:50 p.m.      Multi-period Fair Customer Allocation in Oligopolies  
*Asimina Marousi (University College London)*
- 2:50 p.m. to 3:15 p.m.      Efficient Multi-echelon Inventory Optimization Models for Industrial Practice  
*Victoria Achkar (Universidad Nacional del Litoral)*
- 3:15 p.m. to 3:40 p.m.      Bilevel Optimization of Energy System Transition Pathways Considering Competition in Markets  
*David Yang Shu (ETH Zurich)*

### ORAL SESSIONS – (Live Oak)

- 2:00 p.m. to 3:40 p.m.**      **DATA-DRIVEN CONTROL**  
*Chair: Joel Paulson (The Ohio State University)*  
*Chair: Michael Risbeck (Johnson Controls)*
- 2:00 p.m. to 2:25 p.m.      Shared Parameter Network: An Efficient Process Monitoring Model  
*Lucky Yerimah (Rensselaer Polytechnic Institute)*
- 2:25 p.m. to 2:50 p.m.      A Risk-Based Reinforcement Learning Algorithm to Improve Acute Renal Replacement Therapy  
*Robert Parker (University of Pittsburgh)*
- 2:50 p.m. to 3:15 p.m.      Dynamic Risk-based Design and Explicit Model Predictive Control via Multi-parametric Programming  
*Yuhe Tian (West Virginia University)*
- 3:15 p.m. to 3:40 p.m.      Seamless Implementation of a Novel Valves Stiction Detection Algorithm Using Seeq Data Lab  
*Ashwin Venkat (Seeq Corporation)*
- 3:40 p.m. to 4:10 p.m.**      **Refreshment Break**

## Wednesday, January 11 – Parallel Sessions (Continued)

### ORAL SESSIONS Continued – (Red Oak & Monterey Oak)

- 4:10 p.m. to 5:50 p.m.**      **FLEXIBILITY & RESILIENCE**  
*Chair: Ana Torres (Carnegie Mellon University)*  
*Chair: Yankai Cao (University of British Columbia)*
- 4:10 p.m. to 4:35 p.m.      Surrogate-based Optimization of a Flexible Integrated Biorefinery  
*Yuqing Luo (University of Delaware)*
- 4:35 p.m. to 5:00 p.m.      Characterizing Event Constraints with Generalized Disjunctive Programming  
*Joshua Pulsipher (Carnegie Mellon University)*
- 5:00 p.m. to 5:25 p.m.      Operation Optimization of Supply Chain Networks Under Disruptions  
*Daniel Ovalle Varela (Carnegie Mellon University)*
- 5:25 p.m. to 5:50 p.m.      A Bayesian Optimization Approach for Data-efficient Flexibility Analysis of Expensive Black-box Models  
*Joel Paulson (The Ohio State University)*

### ORAL SESSIONS Continued – (Live Oak)

- 4:10 p.m. to 5:50 p.m.**      **ADVANCES IN OPTIMIZATION**  
*Chair: Faruque Hasan (Texas A&M University)*  
*Chair: Kamil Khan (McMaster University)*
- 4:10 p.m. to 4:35 p.m.      Oil Production Under Gas-coning Conditions by Well-cycling and Mixed-integer Programming  
*Jose Santiago Rodriguez (ExxonMobil)*
- 4:35 p.m. to 5:00 p.m.      Computational Performance of Algebraic Modeling Languages with Alternate Solver Interfaces and Advanced Modeling Components  
*Bashar Ammari (Carnegie Mellon University)*
- 5:00 p.m. to 5:25 p.m.      Recent Advances in Discrete Time Chemical Production Scheduling MILP Models  
*Nathan Adalgren (Princeton University)*
- 5:25 p.m. to 5:50 p.m.      Implementing Adjoint Subgradient Evaluation for Use in Global Dynamic Optimization  
*Kamil Khan (McMaster University)*
- 5:50 p.m. to 8:00 p.m.**      **Free Time & Dinner on Your Own**
- 8:00 p.m. to 10:00 p.m.**      **Poster Session B – Energy & Sustainability (Rotunda)**  
*Chair: Kirti Yenkie (Rowan University)*  
*Chair: Jose Santiago Rodriguez (ExxonMobil)*

## Thursday, January 12 – Joint Session *(Red Oak, Monterey Oak & Live Oak)*

- 7:30 a.m. to 8:30 a.m.**      **Continental Breakfast** *(The Spurs or Spanish Oaks)*
- 8:30 a.m. to 9:30 a.m.**      **PLENARY SESSION – FUTURE OF PSE**  
*Chair: Victor Zavala (University of Wisconsin – Madison & Argonne National Lab)*
- Developing Strategies for Polymer Redesign and Recycling Using Reaction Pathway Analysis  
*Linda Broadbelt (Northwestern University)*
- 9:30 a.m. to 10:00 a.m.**      **Refreshment Break**
- 10:00 a.m. to 12:00 p.m.**      **KEYNOTE SESSION – FUTURE OF PSE**  
*Chair: John Hedengren (Brigham Young University)*  
*Chair: Selen Cremaschi (Auburn University)*
- 10:00 a.m. to 10:30 a.m.      Hyperscale Modeling: Molecule, Process, Enterprise  
*Ignacio Grossmann (Carnegie Mellon University)*  
*André Bardow (ETH Zurich)*
- 10:30 a.m. to 11:00 a.m.      Process Operations: From Models and Data to Digital Applications  
*Costas Pantelides (Siemens PSE, Inc. & Imperial College London)*  
*Nina Thornhill (Imperial College London)*  
*Frances Pereira (Siemens PSE, Inc.)*  
*Penelope Stanger (Imperial College London)*
- 11:00 a.m. to 11:30 a.m.      The Future of Control Process Systems  
*Prodromos Daoutidis (University of Minnesota)*  
*Larry Megan (Baldwin Richardson Foods)*  
*Wentao Tang (North Carolina State University)*
- 11:30 a.m. to 12:00 p.m.      Future of Supply Chains: Challenges, Trends and Prospects  
*Cristiana Lara (Amazon)*
- 12:00 p.m. to 1:30 p.m.**      **Lunch** *(Hill Country Café & The Spurs)*
- 1:30 p.m. to 3:30 p.m.**      **Panel Discussion** *(Red Oak, Monterey Oak & Live Oak)*
- 3:30 p.m.**      **Conference Concludes**