



# SFPE22

## Annual Conference & Expo

# Conference Program

All Times are in Eastern Time (ET) Program is subject to change

### Registration *Renaissance Foyer (Level 4)*

Monday, October 10, 2022	7:30a - 12:00p
Tuesday, October 11, 2022	8:00a - 12:00p
Wednesday, October 12, 2022	8:00a - 5:00p
Thursday, October 13, 2022	7:00a - 5:00p
Friday, October 14, 2022	7:00a - 3:00p

### Expo Hours *Ontario (Level 3)*

Monday, October 10, 2022	closed
Tuesday, October 11, 2022	closed
Wednesday, October 12, 2022	5:00p - 7:00p
Thursday, October 13, 2022	7:00a - 4:30p
Friday, October 14, 2022	7:00a - 3:00p

Expo Hall offers multiple opportunities for unopposed time with conference participants. All meals are served in expo hall during the conference days.

## Pre- Conference Activities

### Monday, October 10, 2022

8:30 – 5:00p Marquette A	Pre-conference Seminar: Introduction to Fire Dynamics Simulator and Smokeview Instructor: Bryan Klein
8:30 – 5:00p Greco	Pre-conference Seminar: Advanced Fire Alarm System Design Instructor: John M. Cholin
8:30 – 5:00p LaSalle B	Pre-conference Seminar: Principles of Fire Protection Engineering Instructors: William Koffel & Christine Pongratz
8:30 – 5:00p LaSalle A	Pre-conference Seminar: Sprinkler Design for Engineers Instructors: Scott Futrell & Kevin Hall

### Tuesday, October 11, 2022

8:30 – 5:00p Marquette A	Pre-conference Seminar: Introduction to Fire Dynamics Simulator Instructor: Bryan Klein
8:30 – 5:00p Greco	Pre-conference Seminar: Advanced Fire Alarm System Design Instructor: John M. Cholin
8:30 – 5:00p LaSalle B	Pre-conference Seminar: Principles of Fire Protection Engineering Instructors: William Koffel & Christine Pongratz
8:30 – 5:00p LaSalle A	Pre-conference Seminar: Sprinkler Design for Engineers Instructors: Scott Futrell & Kevin Hall

### Wednesday, October 12, 2022

8:30a – 11:30a	Tour of Stellantis Detroit Assembly Complex – Mack Tour supported by SFPE Michigan Chapter	
8:30a – 11:30a LaSalle B	Pre-conference Seminar: Principles of Fire Protection Engineering Instructors: William Koffel & Christine Pongratz	
8:30a – 11:30a LaSalle A	Pre-conference Seminar: Sprinkler Design for Engineers Instructors: Scott Futrell & Kevin Hall	
12:30p – 2:30p Mackinac	<b>Chapter Leadership Forum</b> Chapter Resources & Support	
2:30p – 3:00p Mackinac Foyer	Ice Cream Social Networking Break	
3:00p – 5:00p Mackinac	<b>Annual Business Meeting (all invited)</b> <ul style="list-style-type: none"> <li>• President's Report, Beth Tubbs</li> <li>• CEO's Report, Nicole Boston</li> <li>• Treasurer's Report, Amanda Kimball</li> <li>• RTM Committee Report, Greg Baker</li> <li>• CPQ Committee Report, Doug Fisher</li> </ul>	<ul style="list-style-type: none"> <li>• CPD Committee Report, Mark Fessenden</li> <li>• CMC Committee Report, Craig Vesely</li> <li>• Hat's Off Award: Stanis Yu, UL Solutions</li> <li>• ACE Awards Presentation</li> <li>• Foundation's Report &amp; Chapter Donations, Peter Senez</li> </ul>
5:00p – 7:00p Ontario	President's Welcome Reception and Expo Opening – All Invited to Expo Hall	






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### SFPE 2022 Annual Conference – Day 1

#### Thursday, October 13, 2022

6:30a	Sunrise Walk/Run on the Riverwalk (meet in hotel Motor Lobby)
7:00 – 7:55a Ontario	<b>Networking Breakfast in Expo Hall</b> Sponsored by Hydratec Inc 
7:00 – 7:55a	Women in Fire Protection Engineering Networking Breakfast Sponsored by FM Global 
8:00 – 8:15a Columbus	<b>Opening &amp; Welcome Remarks</b> Beth Tubbs, 2022 SFPE President
8:15 – 9:00a Columbus	<b>Opening Keynote</b> <b>Systems &amp; Safety: An Equity Perspective</b> Adam K. Thiel, Fire Commissioner, Philadelphia Fire Department
9:00 – 9:30a Columbus	<b>General Session</b> <b>Today's Challenges &amp; Tomorrow's Triumphs – Exploring our Role as Individuals, as a Profession, and as a Global Society</b> Nicole Boston, SFPE CEO; Chris Jelenewicz, SFPE Chief Engineer <i>In this era of constant change and constant challenges – where environmental unease and an ever-present focus on sustainability drive our focus toward new ideas, collaboration, and performance – there is a role for each of us as individuals, for our fire protection engineering profession, and for SFPE as our global professional society. With a healthy dose of reality and future-focused outcomes, this talk will explore how you, how our profession, and how SFPE can champion triumphs for tomorrow.</i>
9:30 – 10:05a Columbus	<b>General Session</b> <b>Need for Structural Resilience to Mitigate Fire Hazard in Modern Structures</b> Venkatesh Kodur, Centre on Structural Fire Engineering and Diagnostics, MSU <i>Fire is one of the extreme loading events that a building may experience during its service life and such an event can have severe consequences on the safety of its occupants, first responders, and the structure and ensuring resilient structural system is critical for mitigating fire hazard in modern buildings The emerging trend in construction sector is to design critical structures for resiliency to ensure safety and mitigate progressive collapse under extreme loading events. The performance problems associated with high performing materials and modern structures under fire conditions will be discussed at this session and through case studies it will be demonstrated that by adopting proper strategies, both at material and structural levels, fire resistance and resiliency of modern structures can be enhanced.</i>
10:05 – 10:30a Columbus	<b>IGNITE® Session</b> 5 Under 35 Award Recipients <ul style="list-style-type: none"> <li>Spence R. Carter, PE, Idaho National Laboratory</li> <li>Will Clay, PE, Burns &amp; McDonnell</li> <li>Jessica L. Doermann, ARUP</li> <li>Ruggiero Lovreglio, PhD, Massey University</li> <li>Yu Wang, PhD, State Key Laboratory of Fire Science</li> </ul>
10:30 – 11:00a Ontario	<b>Networking Break in Expo Hall</b> Sponsored by ICC 

#### Breakout Tracks

	Track A	Track B	Track C	Track D
11:00 – 12:30p	<b>Fire Dynamics</b> Location: Cabot	<b>Building Fire / Building Design</b> Location: Columbus	<b>Resiliency / Sustainability</b> Location: Mackinac	<b>Sponsored</b> Location: Cartier
11:00 – 11:30a	<b>Sensitivity of Explosion Vent Sizing to Fundamental Burning Velocity and Maximum Deflagration Pressure Measurement</b> Veronica Kimmerly	<b>A Holistic Approach to Fire Safety for Guggenheim Abu Dhabi</b> Susan Lamont	<b>Water Supply and Climate Change: The Impact of Water Stress on Fire Protection Systems</b> Virginia Charter and Justin Fletcher <i>*SFPE Foundation-supported project</i>	<b>Low Oxygen Fire Protection for Cold Storage Warehouses</b> Chris Wesner 




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## Thursday, October 13, 2022 (cont.)

	Track A	Track B	Track C	Track D
11:30a – Noon	<b>Development and Validation of a Material Property Database for Fire Models</b> Mark Mckinnon	<b>Thermal Response of Curtain Wall Systems Exposed to Fire</b> Francesca Lugaesi *SFPE Foundation-supported project	<b>Environmental and Health Impacts of Fire and Fire-Suppression Activities During Large-scale Fire Events</b> Jamie McAllister and Zelda Zhao *SFPE Foundation-supported project	<b>Benefits of Industrialization and Digitalization in Improving Fire Safety Objectives of Mission Critical Facilities Case Study</b> Alejandro Uribe 
Noon – 12:30p	<b>An Engineering Model for the Pyrolysis of Materials</b> Jonathan Hodges	<b>Existing Buildings Performance-based Design</b> Fang Li	<b>A New Way to Spray: Seeking a Greener Alternative to Spray-Applied Fire-Resistive Material</b> Kevin Black	Jesse Baker 
12:30 – 2:00p Ontario	<b>Networking Lunch in Expo Hall</b> Sponsored by Protectowire Fire Systems 			
1:00 – 2:00p Ontario	<b>Student Poster Presentations in Expo Hall</b> Mechanical Failure of Glazed Curtain Walls Exposed to Fire: Francesca Lugaesi Human Physiological Response to Fire Exposure: A Comprehensive Model: Bronwyn Forrest			
2:00 – 2:15p Columbus	<b>Awards Presentations - Beth Tubbs, 2022 SFPE President</b> <ul style="list-style-type: none"> <li>The Harold E. Nelson Service Award: Sean S. Donohue, PE, PEng, FSFPE, Jensen Hughes</li> <li>The D. Peter Lund Award: Jack Poole, PE, FSFPE Poole Fire Protection</li> <li>The John J. Ahern President's Award: Daniel L. Arnold, PE, FSFPE, Seneca Fire Engineering, LLC</li> </ul>			
2:15 – 2:55p Columbus	<b>General Session</b> <b>The Use of Research and Forensics in Developing Industry Best Fire Protection Practices for Lithium-Ion Applications</b> Jason Sutula, Forensic Expert, Jensen Hughes Clear guidance on the method and means to protect products, applications, and storage involving lithium-ion cells, modules, and batteries does not exist in the currently available codes and standards. As such, the fire protection of a facility that contains lithium ion cells, modules, or batteries must rely on available fire protection research and overall industry best practices. The goal of these best practices is to lower the chances of a thermal runaway event occurring and, if a thermal runaway event does occur, to promote early discovery, personnel safety, and the mitigation of potential business interruption. This presentation will cover the codes and standards gap associated with lithium-ion battery formation and storage, provide a lithium-ion forensic failure example, and demonstrate how research and lessons learned can lead to a set of best practices that should be considered when engaged in fire protection design for these applications.			

## Lightning Talks Breakout Track

	Track A	Track B	Track C	Track D
3:00 – 5:00p	<b>Building Fire Design / Fire Dynamics</b> Location: Cabot	<b>Forensic/Human Behavior/Fire Safety</b> Location: Columbus	<b>Fire Safety Systems</b> Location: Mackinac	<b>Sponsored</b> Location: Cartier
3:00 – 3:15p	<b>Numerical Simulations of the Fire in Mass Timber Compartments</b> Ranjith Nandish	<b>Classification of the Fire-Damage Degree to Gypsum Wallboards Using Data-Driven Image Analysis</b> Shuna Ni (presenting for David Unobe)	<b>Effect of Inert Gas Discharge Time on Wood Crib Fires Used in Extinguishing Approval Testing</b> Jonathan Zimak	<b>No More Charlie Brown's Teacher! Voice Intelligibility, A Deeper Dive</b> Eric Lenhof 
3:15 – 3:30p	<b>External Flaming from a Large Open-plan Compartment with Exposed Timber: CodeRed#</b> Rikesh Amin	<b>Opportunity Knocks...A Refresher on a Critical Passive Fire Protection Feature - Fire Doors</b> Michael Rzeznik	<b>Lessons Learned from the Use of Automatic Water Cannons in Warehouse and Chemical Plant Applications</b> Andy Lynch and John Frank	





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### Thursday, October 13, 2022 (cont.)

	Track A	Track B	Track C	Track D
3:30 – 3:45p	<b>Ensuring Fire Safety of Hybrid Meeting Pods for Open Offices through Full-scale Fire Testing</b> David Rich	<b>Validation of Computer-based Evacuation Model for Simulating Non-emergency and Emergency Evacuations from Rail Car</b> Mishuk Datta	<b>Diesel Fire Pump Systems – Required Calculations Engineers Often Miss</b> John Denhardt	<b>Technology and Code Updates Impacting Designs and Specifications</b> Jeff Merwin
3:45 – 4:00p	<b>Company-wide Fire Risk Assessment of Hydraulic Jet-Spray Fires in a Heavy Manufacturing Environment</b> David Harvey	<b>Effects of Randomness in Occupant Loading in High-density Areas on Evacuation Time Using Pathfinder</b> Karli Steranka	<b>Seismic Shakes It Up Again</b> Victoria Valentine	
4:00 – 4:30p	Networking Break in Expo Hall			
4:30 – 4:45p	<b>Bringing Fire Protection to the Forefront of Architectural Design</b> Steven Barrett	<b>Implications of Li-ion Technology for Structural Design of Buildings</b> Ali Ashrafi	<b>New Fluorine Free Foams and their efficacy through various proportioning methods</b> Joe Stonecypher	<b>IBC Spill Containment</b> Shaun Kramer 
4:45 – 5:00p	<b>Toxicity Test and Performance Criteria for Passenger Railcar Materials</b> Stefan Kraft	<b>Advancements in Corrosion Mitigation Technology for Dry Pipe and Preaction Sprinkler Systems</b> Mark Hopkins	<b>Performance Based Design in Mega-Warehouses</b> Tom Gardner	
5:00 – 6:00p Columbus	<b>Delegated Fire Protection Engineering – A Panel Discussion on Expectations and Practice</b> SFPE Engineering Practice Subcommittee Moderator: Brandon Wilkerson, Founder and Principal, Rated Engineering Panelists: John Denhardt, VP Engineering, AFSA; Jonathan Lund, Fire Marshal, Des Moines Fire Dept.; Mark Hopkins, Regional Director, TERP Consulting; and Mike Stone, Field Sales Engineer, Johnson Controls <i>Excess liability shedding, inconsistent practice, and misunderstanding of stakeholder roles can each devalue the practice of fire protection engineering. Alignment of terms and practice is an essential step in establishing fire protection engineers as a valuable member of the AEC industry. This panel will address issues such as regional variability, risks, and lessons learned from the perspective of engineers, contractors, and other industry stakeholders. This panel discussion has been organized by the SFPE Engineering Practice subcommittee, whose mission is to help develop efforts to improve relationships and policies impacting fire protection engineering.</i>			
6:00 – 6:30p Columbus	<b>SFPE 2022 Fellows Presentation</b> - Beth Tubbs, 2022 SFPE President • Warren D. Bonisch, PE, SFPE, Wiss, Janney, Elstner Associates • Dale C. Hansen, PE, FSFPE Harrington Group Inc • Gavin Horn, PhD, FSFPE, UL Fire Safety Research Institute • Peter L. Senez, PEng, FSFPE, Senez Consulting Ltd • Victoria B. Valentine, PE, FSFPE America Fire Sprinkler Association • Steven D. Wolin, PE, FSFPE, The Reliable Automatic Sprinkler Co.			
6:30 – 8:00p Wintergarden	<b>SFPE Fellows’ Reception</b> (Open to All Attendees) In the GM Renaissance Center			







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### SFPE 2022 Annual Conference – Day 2

Friday, October 14, 2022				
6:30a	Sunrise Walk/Run on the Riverwalk (meet in hotel Motor Lobby)			
7:00 – 7:55a Ontario	Networking Breakfast in Expo Hall    Sponsored by Peerless Pump 			
8:00 – 8:20a Columbus	<b>Welcome &amp; SFPE Foundation Awards</b> - Peter Senez, SFPE Foundation Chair <ul style="list-style-type: none"><li>The Jack Bono Award:<ul style="list-style-type: none"><li>Haavard Boehmer, PE, Sr. Engineer, Banksia Fire and Resilience, USA</li><li>Michael S. Klassen, PhD, PE, Principal Research Engineer, Combustion Science &amp; Engineering, Inc., USA</li><li>Stephen M. Olenick, MSFPE, PE, Principal Engineer, Combustion Science &amp; Engineering, Inc., USA</li></ul></li><li>The Dr. Guylène Proulx, OC Scholarship: Erik Smedberg, PhD student, Lund University, Sweden</li><li>The Student Scholar Award: Iffah Umairah Zulmajdi, PhD candidate, Universiti Putra Malaysia</li><li>The Frederick W. Mowrer Global Scholar Award: Hafizha Mulyasih, S.T., M.T., PhD student, Universitas Indonesia</li><li>The Arthur B. Guise Medal: Albert Simeoni, PhD, Professor, Department of Fire Protection Engineering, Worcester Polytechnic Institute</li></ul>			
8:20 – 9:00a Columbus	<b>Guise Medalist Keynote</b> <b>WUI Fire Research for Fire Protection Engineering</b> Albert Simeoni, PhD, Professor, Department of Fire Protection Engineering, Worcester Polytechnic Institute <i>Wildland-Urban Interface (WUI) fire is a new frontier in Fire Protection Engineering, and it is a topic that has not been fully integrated into our practice. There are still a lot of unknowns about WUI fires, how they spread and how to assess vulnerabilities, of the build environment, but also of first responders and the population. This talk will look at what research has been done in this field that can support the work of FPEs and will also discuss some of the needs for future research.</i>			
9:00 – 9:30a Columbus	<b>Your SFPE Foundation: Updates and Opportunities to Engage</b> Peter Senez, SFPE Foundation Chair Leslie Marshall, SFPE Foundation Director			
9:30 – 10:00a Ontario	Networking Break in Expo Hall    Sponsored by Jensen Hughes  JENSEN HUGHES			
Breakout Tracks				
	Track A	Track B	Track C	Track D
10:00 – Noon	<b>Fire Service (AHJs)</b> Location: Columbus	<b>Grand Challenges Initiative</b> Location: Mackinac	<b>Fire Safety Systems</b> Location: Cabot	<b>Sponsored</b> Location: Cartier
10:00 – 10:30a	<b>The Impact of Li-Ion Energy Storage Systems on Residential Garage Fire Dynamics and Considerations for Incident Response</b> Adam Barowy	<b>Overview of the Grand Challenges Initiative</b> Leslie Marshall, SFPE Foundation	<b>Large-Scale Testing of Oxygen Reduction Systems for ASRS Applications</b> Stanislav Kostka	<b>Lithium-Ion ESS Enclosure Heat Flux Analysis</b> Jon Reymann and Andrew Taggart 
10:30 – 11:00a	<b>On the Effect of Exposed Timber on the Severity of Structural Fires in a Compartment and Required Firefighting Resources</b> Shuna Ni	<b>Updates from Two GCI Working Groups:</b> <b>Climate Change</b> Ankit Sharma, GCI Fellow <b>Digitalization, Artificial Intelligence &amp; Cybersecurity</b> Tianhang Zhang, GCI Fellow	<b>Aircraft Hangar Fire Protection; Changes to NFPA 409 and Review of FPRF Research Report</b> Brian O'Connor	<b>The Fundamentals of Surge Protection</b> Jason Klein 







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## Friday, October 14, 2022 (cont.)

	Track A	Track B	Track C	Track D
11:00 – 11:30a	<b>What the WUI Fire Community Can Learn from the Field of Civil Engineering on Resilience</b> Ann Jeffers	<b>GCI Founding Partners Roundtable</b> Raj Arora, CEO, Jensen Hughes Dale C. Hansen, P.E., Principal/Chief Engineer/Director of Quality & Technology, Harrington Group Inc.	<b>Evaluating Data and Voice Signals in Pathway Survivable Cables for Life Safety Systems – A Fire Protection Research Foundation Study</b> Jacqueline Wilmot	<b>Survivability and the addition of Level 4 to NFPA 72</b> Mike Stone
11:30 – Noon	<b>Real-time Mine Fire Classification to Support Firefighter Decision Making</b> Jonathan Hodges (presenting for Manuel Daza)	Steve Kerber, PhD, PE, VP & Executive Director, UL Research Institutes Seth Siekiewicz, Senior Lead Research Engineer, FM Global	<b>Protecting Liquids That Burn: NFPA 30 - Where It Was, Where It Is Now, Where It May Go, and the Value of Change</b> John LeBlanc	<b>Understanding NFPA 4 - Standard for Integrated Fire Protection &amp; Life Safety System Testing</b> Jonathan Sullivan 
Noon – 12:55p Ontario	<b>Networking Lunch in Expo Hall</b> Sponsored by HRS Systems, Inc. 			
1:00 – 1:15p Columbus	<b>Awards Presentations</b> - Beth Tubbs, 2022 SFPE President <ul style="list-style-type: none"> <li>The David A. Lucht Award: Robert Jönsson; Prof. em., FSFPE; SWECO</li> <li>The John L. Bryan Mentoring Award: Guo-Qiang Li, PhD; Tongji University</li> <li>The Rolf H. Jensen Award for Outstanding Committee Service: Jeffrey L. Harrington, PE, FSFPE; Harrington Group (ret.)</li> <li>Fire Protection Person of the Year: Gary Lewis, City of Summit, New Jersey</li> </ul>			
1:15 – 2:15p Columbus	<b>Fire and Life Safety in Today's Rapidly Changing World – What are We Missing?</b> Moderated by Beth Tubbs, 2022 SFPE President Mori Kaplan, Jensen Hughes Gary Lewis, SFPE 2022 Fire Protection Person of the Year Dwayne Sloan, UL Solutions Mike O'Brian, Brighton Area Fire Authority <i>Often fire protection engineers are hired to design engineering solutions that don't fit prescribed building or life safety codes. Unfortunately, many, if not most, AHJs and building officials do not have the experience to approve these designs. During this panel discussion, SFPE President, Beth Tubbs will lead a conversation with designers and building officials to better understand the challenges and what steps SFPE may be able to take to get more designs accepted and approved.</i>			
2:15 – 2:30p Columbus	<b>Invitation to 2023 Annual Conference</b> Beth Tubbs, 2022 SFPE President and Mark Hopkins, SFPE Chesapeake Chapter President			
2:30 – 3:00p Ontario	<b>Networking Break in Expo Hall</b>			



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Friday, October 14, 2022 (cont.)

### Breakout Tracks

	Track A	Track B	Track C	Track D
<b>3:00 – 4:30p</b>	<b>Fire Dynamics</b> Location: Columbus	<b>Wildland-Urban Interface: Practical Applications</b> Location: Mackinac	<b>Energy Storage</b> Location: Cabot	<b>Human Behavior &amp; Evacuation Modelling</b> Location: Cartier
3:00 – 3:30p	<b>Structural Hazards of Smouldering Fire in Timber Buildings</b> Harry Mitchell	<i>Live Demonstration &amp; Workshopping of SFPE &amp; SFPE Foundation's new "Virtual Handbook of Engineering Resources for WUI Property Fire Risk Assessment and Mitigation"</i> Led by Darlene Rini, PE, Jensen Hughes and Alex Cooper, Jensen Hughes Fire service personnel, AHJs, and fire engineers operating in the WUI are especially encouraged to attend.	<b>Landscape of Systems, Hazards, and Mitigation Strategies</b> Noah Ryder	<b>Effectiveness of Alert Tones</b> Brian Hoskins
3:30 – 4:00p	<b>Computational Reconstruction of Heat Transfer Measurements from Firebrands to Surfaces</b> TJ Khambhampati		<b>Updates to Current Codes &amp; Technologies for Large-Scale Battery Storage Systems – 4.0</b> Paul Hayes	<b>Application and Interpretation of Visibility through Smoke in Performance-based Design</b> Mathilde Girault
4:00– 4:30p	<b>Assessing the Impact of Fires within Large Electrical Cabinets</b> Kevin B. McGrattan		<b>Landscape of battery energy storage hazards, mitigation strategies and a roadmap for future research</b> Victoria Hutchison	<b>Using the Latest Findings in Improve Evacuation Strategies, Evacuation Modelling and Code Requirements</b> Chris Campbell

### Networking & Closing Reception

4:30 – 5:30p Renaissance Foyer	<b>Closing Reception</b> (Open to all attendees)
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