The Southern California Chapter of SFPE is hosting the 2019 Fire Protection Engineering Symposium. Invited speakers will present hot topics in the fire protection industry. Also, the newest fire safety technologies will be exhibited. Proceeds benefit the Chapter Scholarship Fund. Come learn about fire protection engineering and support students.

AGENDA

7:00 – 8:00 Registration (continental breakfast)
8:00 – 8:15 Welcome
8:15 – 8:30 Cal Poly Fire Protection Engineering Program Update
   Dr. Rick Emberley, Cal Poly SLO
8:30 – 8:45 California State Fire Marshal’s Programs Update
   Chief Mike Richwine, Acting State Fire Marshal
8:45 – 9:45 Energy Storage Systems
   Howard Hopper, Underwriters Laboratories
9:45 – 10:00 Break with Exhibitors (refreshments)
10:00 – 11:00 Automated Retrieval System Protection
   Wes Baker, FM Global Research
11:00 – 12:00 New Technologies in Fire Alarms
   Dr. Shane Clary, Bay Alarm
12:00 – 1:00 Lunch with Exhibitors (lunch)
1:00 – 1:45 3D Printed Building Construction
   Howard Hopper, Underwriters Laboratories
1:45 – 2:45 New NFPA 13 Code Change – ESFR Sprinkler Obstruction Criteria
   Garner Palenske, WJE
2:45 – 3:00 Break with Exhibitors (refreshments)
3:00 – 3:15 Fire Protection Engineering as a Career
   Nicole Testa Boston, Society of Fire Protection Engineers
   Paul Armstrong, TRB and Associates
4:15 – 4:30 Final Thoughts
4:30 – 5:00 Last Chance with Exhibitors
Cal Poly Fire Protection Engineering Program Update  
− Dr. Richard Emberley, Ph.D.

California Polytechnic State University (Cal Poly) is one of three universities in the United States that offers a Master’s Degree in Fire Protection Engineering (FPE) but is the only FPE program located west of the Appalachian Mountains.

Cal Poly FPE is currently beginning its tenth year as a graduate program. In 2018 the program reached a milestone of having over 100 graduates.

This presentation will provide an update on academic and research activities being conducted by the faculty and students at Cal Poly and provide information about the two different opportunities offered - the MS (Master of Science) Degree and Graduate Certificate Programs.

The MS degree is a traditional Master of Science degree program in fire protection engineering. Alternatively, a Graduate Certificate program is offered, with two focus options:

- The Science Certificate focuses on the science of fire behavior and its effect on materials and structures, thermal and fluid dynamics, and fire simulation modeling.
- The Applications Certificate focuses on codes, human behavior in fires, egress analyses, fire protection systems, and structural fire protection.

Dr. Richard Emberley, Ph.D.  
California Polytechnic State University - San Luis Obispo

Dr. Emberley is an assistant professor in the Mechanical Engineering Department and Fire Protection Engineering Program at California Polytechnic State University (Cal Poly). Richard recently completed his PhD under the supervision of Professor Jose L. Torero at the University of Queensland in Brisbane, Australia.

Richard holds two MS degrees in Civil and Fire Protection Engineering from Worcester Polytechnic Institute as well as a BS in Civil Engineering with a focus on Structural Engineering.

His research focuses on fire safety engineering, structural mechanics, combustion, and heat transfer. His PhD research focused on structural debonding of cross laminated timber (CLT) under fire conditions as well as self-extinction of timber and the fundamentals for designing tall timber buildings for fire exposure.

California State Fire Marshal’s Programs Update
– Chief Michael Richwine

The Mission of the Office of the State Fire Marshal (OSFM) is to protect life and property through the development and the application of fire prevention, engineering, education, enforcement and regulations. The office has a budget of over $46 million that funds over 200 personnel including 127 peace officers assigned to 20 different administrative, regulatory and enforcement programs. Chief Richwine will provide an update of the latest OSFM program improvements, regulations, codes and issues impacting the fire service today.

Chief Michael J. Richwine
Acting State Fire Marshal

Chief Richwine was appointed Acting State Fire Marshal by Governor Edmund G. Brown on December 28, 2018. Chief Richwine’s career includes 31 years with the CAL FIRE / Office of the State Fire Marshal, including serving as Assistant State Fire Marshal from 2012 to 2018. Prior to OSFM he was a firefighter with the Hanford Fire Department.

During Chief Richwine’s career he has held a variety of positions including Chief of State Fire Training, responsible for administering the California Fire Service Training and Education System; Chief of the Fire Engineering Division where he chaired several OSFM regulatory advisory committees; Deputy State Fire Marshal within Fire and Life Safety, Hazardous Materials and Pipeline Safety Divisions; and as a Fire Service Training Specialist in the State Fire Training Division.

Chief Richwine served for six years as a member of CAL FIRE Incident Management Teams and holds numerous professional certifications. He currently serves as ex-officio member of the Statewide Training and Education Advisory Committee and the State Board of Fire Services.
Energy Storage Systems
Concepts for Mitigating Fire and Explosion Hazards
– Howard Hopper, PE

Energy storage systems (ESS) are being installed in ever increasing numbers to meet the energy needs of electric utilities, businesses and individuals. The use of modern battery technologies, including lithium-ion stationary battery systems, creates challenges for fire officials who must address a new generation of fire safety concerns. This session provides an overview of these systems, potential fire and explosion hazards, and fire protection concepts in the 2018 IFC, 2021 IFC, and NFPA 855 used to mitigate these hazards.

Howard Hopper, PE
Underwriters Laboratories, Global Regulatory Services Manager

Howard Hopper is a fire protection engineer with over 30 years of experience at UL where he coordinates UL’s code development activity. He graduated with a degree in electrical engineering from University of the Pacific.

In 2017 Howard was awarded the Excellence in Fire & Life Safety Award by the International Code Council (ICC) and the Fire & Life Safety Section (FLSS) of the International Association of Fire Chiefs (IAFC) for his dedication to saving lives and property through the development of codes, fire-prevention practices and leadership techniques.

Howard’s passion and devotion are evidenced by the myriad of activities he is and has been involved with, including: principal contributor on the California State Fire Marshal's smoke alarm and building insulation flammability working groups; chaired an IAFC working group on cooktop safety which produced a much referenced report of findings; helped develop and update the IAFC smoke alarm position paper; chaired the Fire Code Action Committee’s working groups that developed IFC code requirements on critical fire safety topics including CO₂ and simple asphyxiant protection requirements, door locking arrangements for classrooms, carbon monoxide and smoke detection requirements, development of a comprehensive set of gas detection system requirements, 3D printed building construction evaluations, and maintenance of fire resistive construction. Howard has been an active participant in several ESS (Energy Storage Systems) initiatives, including chairing the Fire Code Action Committee ESS working group that developed the 2018 IFC and IRC ESS requirements; member of the NFPA 855 ESS standard technical committee and chaired many NFPA 855 working groups.

Howard served on the initial International Fire Code drafting committee, three cycles on the IBC Fire Safety Committee, and two cycles on the International Fire Code committee; he serves on several NFPA 101 Technical Committees, and was an active participant on the Joint Fire Service Review Committee and the Fire Code Action Committee, served on the IAFC’s FLSS Board of Directors since 2003, and devotes considerable personal time to fire safety initiatives and mentoring fire prevention personnel.
Automated Retrieval System Protection

– Wes Baker

Material handling in warehouse facilities is increasingly changing from traditional pallet loads in storage racks to individual parts maintained in automated storage and retrieval systems (ASRS) in an effort to maximize warehouse storage capacity. A “mini-load” ASRS arrangement is a common storage system found in general warehousing where individual parts are maintained in either plastic totes or plastic trays and placed in a storage array having closely spaced rack uprights as well as low tier heights where the tote containers and/or trays are supported on angle irons.

This presentation will address what mini-load ASRS arrangements are, why they are a unique fire challenge, recent full-scale fire testing conducted on them and the subsequent design guidelines outlined in FM Global Property Loss Prevention Data Sheet 8-34, Automatic Storage and Retrieval Systems, as a result of the full-scale testing.

Weston C. Baker, Jr.
Senior Engineering Technical Specialist, FM Global Research, Norwood, MA

Mr. Baker has been with FM Global for 34 years and is currently a Senior Engineering Technical Specialist in the Engineering Standards division in Norwood, MA, responsible for the Property Loss Prevention Data Sheets related to the protection of storage and sprinkler installation guidelines for storage applications.

Wes serves on two NFPA 13 technical committees – Installation and Discharge, is a member of the Society of Fire Protection Engineers, and holds a degree in chemical engineering from Tufts University.

Wes was awarded the William M. Carey award in 2011 by the NFPA’s Fire Protection Research Foundation for his technical paper, “Storage Sprinkler Design Criteria” which became the basis behind FM Global’s recently released Property Loss Prevention Data Sheet 8-9, Storage of Class 1, 2, 3, 4 and Plastic Commodities. Wes also received a Special Achievement Award from NFPA in 2015 for the contributions he provided on updating the 2016 Edition of NFPA 13 regarding guidelines for commodity classification.
New Technologies in Fire Alarms
– Dr. Shane Clary, Ph. D.

While the concepts of detecting products of combustion and then notifying occupants and emergency forces is not new, the means of how these are accomplished is changing. New methods of more rapid detection while at the same time eliminating unwanted alarm are being introduced. Changes in the means of alerting occupants such as the requirement for low frequency sounders, development of wireless sounders and strobes, and more power-efficient devices are some examples. How signals are transmitted from the protected premises is also going through transitions. One change is the possible use of the new FirstNet network that is being deployed across the country. This presentation will discuss these new technologies as well as how the Internet of Things (IoT) will come into play.

Dr. Shane Clary, Ph.D.
Bay Alarm, Vice President, Codes and Standards

Dr. Shane Clary has been in the alarm industry for 45 years. Since 2002 he has been the Vice President of Codes and Standards for the Bay Alarm Company and prior to that he was Director of Codes and Standards Compliance since 1992.

Shane received his undergraduate and graduate degrees from UCLA and Certification in Fire Protection from UC Davis. He has been and remains a very active advocate for fire / life safety, particularly in the fire alarm arena. Shane is the past chair of the NFPA 72 Technical Committee – Fundamentals, and a past member of the NFPA Standards Council. He is also a member of a number of Technical Committees that cover fire protection, life safety, electrical safety and security. In addition Shane is a member of several UL Standard Technical Panels. He is vice chair of the Electronic Security Association (ESA) Standards Committee and past chair of the Automatic Fire Alarm Association (AFAA) and he served as President of the California Automatic Fire Alarm Association (CAFAA).

In 2011 Shane was recognized with the California Alarm Association’s (CAA) George A. Weinstock Award for Lifetime Achievement and Service to the Industry. He is proud of being the founding vice president of the Western Burglar & Fire Alarm Association’s Unilateral Apprenticeship & Training Committee (UATC) apprentice training program, and is currently Secretary of the organization, having served as chair of the organization which operates the largest fire/life safety training program in the United States. He developed the six semesters of online apprentice training, the first in the nation, and oversees the expansion of the online continuing education component of the program.
PRESENTATION DESCRIPTIONS AND PRESENTERS’ BIOGRAPHIES

3D Printed Building Construction
An Innovative Approach for Evaluating this Cutting-Edge Construction Method
– Howard Hopper, PE

3D printed building construction is quickly moving from the experimental stage to a viable construction technique. However, this new technology creates challenges for verifying that the building meets specified structural, fire, and other performance requirements. In this session Howard will review how this new construction technique works, important factors to consider in how to verify the 3D printed building construction meets building regulations, codes and standards, and how UL 3401 can be used to provide a complete, systematic evaluation of the 3D printed building construction process.

Howard Hopper, PE
Underwriters Laboratories, Global Regulatory Services Manager

Howard Hopper is a fire protection engineer with over 30 years of experience at UL where he coordinates UL’s code development activity. He graduated with a degree in electrical engineering from University of the Pacific.

In 2017 Howard was awarded the Excellence in Fire & Life Safety Award by the International Code Council (ICC) and the Fire & Life Safety Section (FLSS) of the International Association of Fire Chiefs (IAFC) for his dedication to saving lives and property through the development of codes, fire-prevention practices and leadership techniques.

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New NFPA 13 Code Change
ESFR Sprinkler Obstruction Criteria
– Garner Palenske, PE

Obstructions have long been considered the Achilles heel of ESFR sprinklers. Recent research has shown a more benign relationship. To better understand this issue, the NFPA Research Foundation embarked on a multiple year research project which included both Actual Delivered Density and full-scale fire testing.

The recent completion of the 4TH phase of this project has answered many questions and led to a proposed change to NFPA 13. This presentation will review the data acquired by this recent testing, and the specifics of the proposed code change.

Garner A. Palenske, PE
Associate Principal, Wiss, Janney, Elstner Associates, Inc.

Mr. Palenske brings more than 32 years of experience in the fire protection and life safety consulting field. His experience includes building and fire code analysis, performance-based design (smoke control, fire sprinkler / standpipe / fire pump / fire alarm), fire modeling, fire testing, wildland fire analysis, origin and cause, and other forensic work.

Projects Garner has been involved with run a wide range, including high rise residential, high rise offices, large box retail and retail complexes, airports, libraries, hazardous materials for pharmaceutical manufacturing and warehousing; forensic work such as high-rise façade fire investigation. He has worked for FM Global, the City of San Diego, Aon, and Jensen Hughes.

Garner is a long-time member of the NFPA 13 Committee. His publications include numerous projects exploring ESFR sprinkler performance, high-piled storage fire behavior, and lithium-ion Energy Storage System fire hazard analysis.

Garner’s education includes a Master of Science in Fire Protection Engineering from California Polytechnic State University San Luis Obispo, and Bachelor of Science in Civil-Structural Engineering from California State University Fullerton.

If you have been to the NFPA national conferences, you may have seen his presentations, Storage in the Presence of Horizontal Barriers or Solid Shelves (Las Vegas, 2018), Obstructions and ESFR Sprinklers Phase 1 (Chicago, 2015, and Phase 2 in Las Vegas, 2016). In 2016 he addressed the NFPA Fire Protection Research Foundation in Orlando on Use of Actual Delivered Density to Predict ESFR Sprinkler Performance, in 2010 on High Challenge Warehouses, and in 2009 on HVLS Fan and Sprinkler Operation. His publications include being a contributing editor to the (2013) NFPA 13 Handbook, and articles he’s published in NFPA Magazine and Fire Protection Engineering Magazine.

Fire Protection Engineering as a Career  

Nicole Testa Boston, CAE  

How much money do fire protection engineers earn?  
What types of industries and jobs do FPEs work in?  
Are FPEs in demand?  
Where can I get a degree in fire protection engineering?  
Why should I join SFPE?  
What if I’m not an FPE major?  
The answers to these and an update on the activities, accomplishments, and benefits of the Society of Fire Protection Engineers will be addressed.  

SFPE is a global professional society whose mission is to define, develop, and advance the use of engineering best practices, expand the scientific and technical knowledge base; and educate the global fire safety community, to reduce fire risk. The Society has over 100 chapters worldwide including 21 student chapters. SFPE develops resources to become an FPE, technical standards and guidelines, engineering seminars, webinars, a journal, magazine and much more!  

Nicole Testa Boston, CAE  

CEO, SFPE Headquarters, Gaithersburg, MD  

Nicole Testa Boston, CAE is the CEO of SFPE (Society of Fire Protection Engineers) since October 2013, responsible for the Society’s wide-ranging and expanding technical and educational programs, strategic initiatives, finance, operations, and staff. Nicole is based at SFPE’s global headquarters outside Washington, DC, and we are very pleased (and honored!) she travelled all the way here to be with us!  

During her tenure, Nicole has initiated and overseen a dramatic transformation of the Society including creation of a new governance model, chapter restructuring, strategic planning, office relocation, and enhancing the Society’s research activities and Foundation. A key tenet of SFPE’s vision is to be the leaders in engineering a fire safe world. As such, under Nicole’s leadership, SFPE has significantly expanded its global reach, developing many new services and products for markets around the world.  

Nicole has over 25 years of experience in the engineering industry, having previously served 11 years as deputy director of Fiatech, a research consortium in the Cockrell School of Engineering at The University of Texas at Austin, focused on deploying new technologies to improve capital projects. Prior to that she served as executive director of the Building Futures Council and served in senior management positions at the Civil Engineering Research Foundation at the American Society of Civil Engineers. Currently she is serving as Secretary-Treasurer of the Board of the Council of Engineering and Scientific Society Executives (CESSE).  

Nicole is a certified association executive (CAE) and received her bachelor's degree in international studies from American University's School of International Service and a Certificate in Fund Raising Management from Indiana University-Purdue University Indianapolis.
2019 California Building Code Update
– Paul Armstrong, PE, CBO

This class will update you on the significant code changes between the 2016 and the 2019 California Building Code. The course will also include some important “tricks of the trade”, including how to differentiate between the Model Code vs. the State Code, and how to properly apply the codes for given occupancies.

Paul D. Armstrong, PE, CBO
TRB & Associates, Director of Code Compliance

Paul Armstrong spent the first 6 years of his career with the County of Los Angeles as a Civil Engineering Associate, then the City of Los Angeles. The next 14 years he worked for the ICC (International Code Council) and prior to that with the ICBO (International Conference of Building Officials), culminating his career there as the initial ICC Vice President of Architectural and Engineering Services. While there he also served as the drafting secretariat for the 2000 International Residential Code. He represented the model code organizations to many federal, state and local agencies and is a recognized lecturer on many code related topics.

Paul graduated from California State University at Long Beach with a BS in Civil Engineering, as well as a Technical Certificate in Fire Protection Engineering from Cal Poly San Luis Obispo. He is a Professional Engineer in the State of California and a Certified Building Official (CBO). Currently, Paul is the Director of Code Compliance for TRB & Associates, Inc. He has also worked for a number of private third party municipal consulting firms including Bureau Veritas, InterWest Consulting Group, JAS Pacific, CSG Consultants, HR Green Pacific, where among other things he has served in the capacity of the Building Official for the Cities of Palos Verdes Estates, El Monte, Signal Hill and Whittier. Paul also served in a contract capacity with the City of Anaheim for major projects such as ARTIC, the Anaheim Convention Center Expansion, and the Disneyland Resort projects including the Star Wars expansion.

Paul is passionate about teaching and sharing knowledge. He is a sought after instructor on many code related topics, and was an author of the 2013 and 2016 Significant Changes to the CBC (California Building Code) and CRC (California Residential Code) books in addition to many articles in professional journals. He serves currently as the President of the ICC Orange Empire chapter.