



HOTLINE

FIRE PROTECTION ENGINEERING
A. JAMES CLARK SCHOOL of ENGINEERING

fpe.umd.edu

A Message from the Chair



JIM MILKE, PH.D., P.E., FSFPE, B.S. '76
PHOTO BY AL SANTOS

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HOTLINE IS PUBLISHED FOR ALUMNI AND FRIENDS OF THE DEPARTMENT OF FIRE PROTECTION ENGINEERING AT THE A. JAMES CLARK SCHOOL OF ENGINEERING, UNIVERSITY OF MARYLAND. YOUR ALUMNI NEWS AND COMMENTS ARE WELCOME. PLEASE SEND THEM TO:

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JIM MILKE
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One of the largest first year cohorts in Fire Protection Engineering (FPE) will start this fall, with 16 new students. As of early July, there are 24 transfer students coming into FPE from other majors at UMD or other institutions. We are excited to work with our incoming students in the fall term (recruitment will remain a priority, with continued focus on outreach to local community colleges and improving our NFPA Ambassador Program outreach initiatives).

Regarding other department developments, the search for a new person for the John L. Bryan Professorship successfully concluded with the addition of Jose Torero to the faculty in January 2017. The second significant development was reaching the \$2.5 million milestone for the Legacy Campaign that supports the FPE Clinical Professor position, currently held by Ken Isman. This level was established as the minimum level needed to support the position. For reasons of financial stability, continued growth of the Legacy Campaign is needed, with the next milestone being \$3 million.

The 2017 class of Distinguished Alumni was recognized at the Alumni Dinner in June at the NFPA Conference

in Boston. This year's class included John McCormick, ('68), Joe Simone ('84) and Greg Jakubowski ('85), bringing the total of recognized alumni to 19. Nominations for the 2018 class of Distinguished Alumni are now being sought. Please contact Chris Dubay (cdubay@nfpa.org) for more info.

FPE's 60th Anniversary event was held the weekend of March 11 - the banquet was attended by more than 300 alumni and guests. FPE co-hosted the 10th U.S. National Combustion Meeting, a premier meeting in combustion science. Having hosted the IAFSS Conference in 2011, this is the second major collection of researchers that have come to campus, recognition of our strong reputation in fire safety and combustion research.

In May, the Department graduated over 30 B.S., M.S. and MEng students. One Ph.D. was granted to Dr. Eric Link who studied under the direction of Andre Marshall.

The 3rd Annual FPE Design Challenge expanded to a record of 5 high schools this last spring. In this competition, students compete to develop innovative detection and suppression solutions for a small-scale residence. This year, the final competition was held at the ATF Fire Research Laboratory. The first place team was from Elizabeth Seton High School in Bladensburg, Maryland.

FPE and Sponsor Jensen Hughes Offer Holistic 'Think Tank' Course

On May 11, 2017, six students in Fire Protection Engineering (FPE) presented their ideas for a fire protection industry product to a panel of judges at Jensen Hughes (JH). For the second year in a row, JH hosted students enrolled in ENFP 429, an independent study option, also known as the 'Think Tank' course. The students - Rachel Bourassa, Andrew Klein, Grant Millenburg, Porscha Silva, Connor Van Scyoc, and Nicholas Zielinski - all FPE majors, competed for the Richard G. Gewain Scholarship, which comes with a \$5k cash prize and the possibility of JH developing the winner's product.

In 2015, JH approached Jim Milke, FPE Professor and Chair, about the possibility of a 'Think Tank' course, similar to ABC's Shark Tank television show, and selected Clinical Professor Ken Isman to teach it. "This course is different from the other FPE classes because it incorporates the business side of the industry," Isman said. "Students must develop a product, and then a business and marketing plan to promote their product. This is the only FPE class where the students consider the

financial, business and marketing implications of advancements in fire protection."

Isman, who joined FPE in 2014, said he enjoys teaching the class for a number of reasons. "It's fun to help the students exercise their creative side and think about advancements that would help the industry," he said. "I also enjoy putting my business skills to good use. My Master's degree is in Business Management, so I help the students see how companies look at the financial side of the business and determine what projects they are going to pursue."

Indeed, the point of the course is to not only come up with an innovative way to save lives and property, but to show that there is profit to be made, enticing companies to invest.

Rachel Bourassa took first place for her FireBot project: an autonomous mobile fire detection and communication device that could be used to replace humans for a fire watch. "FireBot will be able to perform roving and continuous fire watches within a nuclear power plant," she said. "FireBot will create a safer environment for per-

sonnel by eliminating work in high heat or radioactive areas, along with decreasing the likelihood of unreliable or falsified information. A mixed application of human interaction and learning technology offers safety and economic benefits."

Grant Millenburg won first runner up, which came with a \$2k prize for his project, a mobile phone application called EZgress whose goal is to improve the speed at which patrons of assembly occupancies, such as movie theatres or dance clubs, receive emergency notification and efficient venue-exiting information.

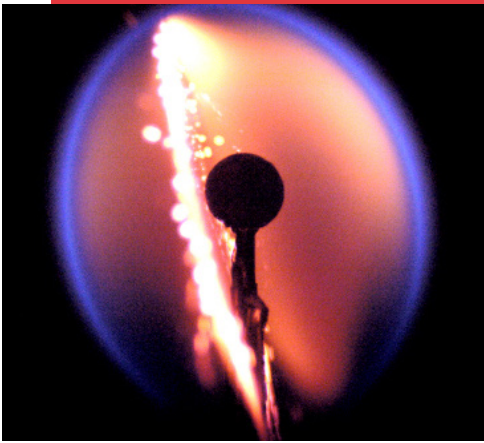
Porscha Silva took second runner up, which came with a \$1k prize for her CAE project: Code Access Efficiency is intended to familiarize users with the Life Safety Code (LSC) and International Building Code (IBC) via a digital platform. CAE will offer an online database, which users can access to locate the specific section of the LSC or IBC their projects require. The idea of CAE is to make reviewing diagrams, reports, etc. by engineers and architects more efficient, saving time and money.

Jensen Hughes provided a mentor for each student. The duo met multiple times during the semester to review project development and discuss methods of improvement. JH staff members Jason Sutula helped Professor Isman to teach the class, while Christine Sauer dealt with class details including organizing tours of the Jensen Hughes offices, and arranging the final pitch session to the panel.

The student mentors were Josh Dinaburg (for R. Bourassa), Scott Golly (for A. Klein), Chris Moran (for G. Millenburg), Tony Jondo (for P. Silva), Eleni Rotjas (for C. Van Scyoc), and Mike Love (for N. Zielinski). The judging panel consisted of Paul Orzeske (JH CEO), Joe Scheffey (JH Senior Vice President), Heather Stickler (JH Vice President of Marketing), and Ken Isman.



'Fire' Experiments Launched into Orbit via SpaceX Capsule



On June 3, 2017, two University of Maryland experiments, led by researchers in the Department of Fire Protection Engineering (FPE), were launched into Earth's orbit on a SpaceX Dragon capsule from the Kennedy Space Center in Ft. Lauderdale, Florida.

The first experiment, called the Burning Rate Emulator (BRE), is focused on spacecraft fire protection. BRE uses gaseous fuels to determine the flammability of liquids and solids in microgravity. The BRE burners – flat, round and porous with embedded heat-flux sensors – will allow measurements of burning rate, extinction characteristics, and radiative environments for a broad range of solids and liquids. The

tests are expected to reveal valuable information about how materials such as paper, plastic, and oil burn in microgravity.

The second experiment is called Flame Design (pictured left). Flame Design seeks to improve our understanding of soot – a major pollutant – and how it can be controlled in combustion processes. The project will be useful for designing flames that are both strong and soot free. The approach employed is relevant to oxy-combustion technologies, which are being developed for mitigating greenhouse gas emission from power plants through carbon capture and storage. In microgravity, the Flame Design burners produce spherical diffusion flames (pictured above), which are unique in their simplicity. The microgravity environment experienced on the Space Station allows for controlled studies that are not possible on earth. The results of these experiments will offer further understanding of combustion, which will help to control pollutants in terrestrial

combustion processes.

"Access to microgravity has been a game changer in several areas of combustion research," said FPE Professor and Co-Investigator Peter Sunderland. "By removing gravity, we can explore combustion physics in novel ways that will enable dramatic breakthroughs."

These experiments will be performed on the International Space Station in 2019 and 2020. They are part of NASA's ACME suite of experiments that will be performed in the Combustion Integrated Rack.

The next launch is scheduled for August 1, 2017, in Orlando, Florida.

Additional project participants include FPE Professor Emeritus James Quintiere (PI), Akshit Markan (FPE PhD student), and Zhengyang Wang (FPE PhD student).

PHOTOS COURTESY OF NASA: (below) A SPACEX FALCON 9 ROCKET CARRYING A DRAGON CARGO CRAFT BLASTS OFF FROM KENNEDY SPACE CENTER IN FLORIDA ON JUNE 3, 2017.



FPE Leads 3rd Design Challenge, ATF Fire Research Lab Hosts

On May 15, 2017, for the third year in a row, the Department of Fire Protection Engineering (FPE) at the University of Maryland (UMD) presented its annual Design Challenge this year hosted by the U.S. Bureau of Alcohol, Tobacco, Firearms (ATF) and Explosives Fire Research Laboratory. A fact that many people are unaware of is that in addition to alcohol, tobacco and firearms, the organization also offers forensic expertise in bomb and arson investigations, making the ATF Fire Research Laboratory (FRL) an ideal place to hold a burn event.

In a lab unlike any other in the world, five high school teams from various parts of Maryland – DeMatha, Mount St. Joseph's, Mount de Sales, Elizabeth Seton and Maryvale Prep – gathered in Beltsville to test their skills at fire protection engineering. A total of about 30 teams from the schools competed against each other to build miniature model homes, adorned with innovative detection and suppression systems, which were set ablaze. Six UMD judges recorded the time it took for each model system to 1) detect the fire, and 2) put the fire out. Detection methods ranged from water balloons, to Pop Rocks, to battery-powered alarms, and one group from Mount de Sales creatively utilized melted chocolate as a means of initiating suppression.

Prior to the event, the students attended a series of short lectures, taught not only by their teachers, but by volunteer FPE graduate students, faculty and alumni, too. Mentoring by FPE affiliates was also available to the students throughout the spring semester.

Upon arrival at the lab, fire protection engineer Adam St. John, an FPE alumnus, offered students a tour and insight into the work of the ATF forensics team. St. John explained that the lab investigates arson cases from all over the world, but primarily at the local and national level. ATF forensic analysts rebuild arson scenes and then burn them down, sometimes multiple times to analyze variables that help determine the origin and cause of the fire. Each 'burn' is video-recorded and shown to juries in criminal cases. In fact, because of the extensive testing that the ATF scientists conduct and document, most criminal cases are settled before trial.

St. John explained to the high-school students that "each full-scale fire experiment at the ATF FRL is a custom test. It requires extensive STEM knowledge of heat transfer, chemistry, physics and fire dynamics to design a valid fire test and interpret the results," he said. "UMD's Engineering School, particularly the FPE program, provides a solid foundation for this knowledge and allowed me to begin



this career right of college."

After the tour, the student teams took turns explaining their model/detection and suppression method. An ATF employee then set the models aflame and UMD undergraduate and graduate assistants kept track of the time it took for each method to activate. Although a few of the students had participated in similar school assignments, most had never been involved with such a dynamic project.

FPE Professor and Chair, James Milke, was impressed with the "variety of unique and creative detection and suppression system designs. Some of the designs were relatively sophisticated and included an autonomous means of initiating suppression activities following detection," he said. The creative skills to develop innovative fire protection solutions are utilized by many practicing fire protection engineers. "The hope," Milke continued, "is that this project will motivate these students to consider studying fire protection engineering at UMD!"

The cost of the program is funded by each school. The department would like to thank its current students, alumni and affiliates - from Koffel Associates, Reliance, Jensen Hughes and AECOM - for their help with this project. To inquire about next year's event, please contact Nicole Hollywood (nlholly@umd.edu).



The Value of International Collaboration: FPE Continues to Put People First

The Department of Fire Protection Engineering (FPE) at the University of Maryland (UMD), the only accredited fire safety program in the U.S., provided an intensive short training course for six faculty members from the Bangladesh University of Engineering and Technology (BUET). The course, which was conducted

and insufficient smoke alarms, in addition to electrical safety risks.

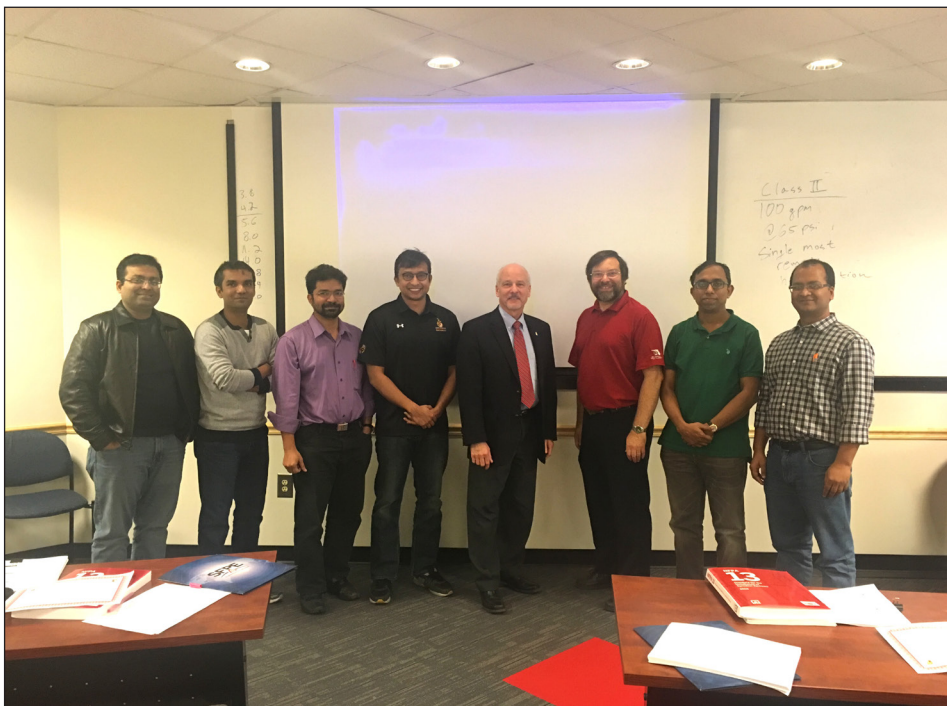
“This training program is a continuation of research we’ve been conducting in Bangladesh since 2015. Representatives from UMD, NFPA, and the Fire and Risk Alliance reviewed Bangladeshi building code and the

month of training. The idea being that the team would return to Bangladesh and run training programs for larger numbers of people based on what they learned at UMD. Tanvir Manzur, a professor with BUET’s Department of Civil Engineering who attended the training, said the ultimate goal of the workshop is to “build a state-of-the-art Fire Safety Institute at BUET, which will act as a center of excellence for fire safety related training, education, and research in Bangladesh.” Additionally, the BUET team plans to develop a post-graduate curriculum on fire protection and safety designed to accommodate local needs.

“This extensive training program is anticipated to be the first of many areas of collaboration between UMD and BUET. As BUET develops their own FPE program, I expect that UMD faculty will stay engaged to provide assistance in course development and identifying equipment for a laboratory,” said FPE Professor and Chair, Dr. James Milke. “There is also the prospect for faculty and graduate student exchanges between the two institutions.”

The Alliance for Bangladesh Worker Safety, which was formed in 2013 to improve safety in Bangladeshi textile factories, sponsored UMD’s initial visit to, and subsequent research in, Bangladesh. UMD, USAID, and NFPA are partners of the Alliance.

Course instructors include James Milke (FPE Professor & Chair, pictured above), Arnaud Trouvé (FPE Professor), Kenneth Isman (FPE Clinical Professor, pictured above), Bill Koffel (Principal at Koffel Associates), Justin Geiman (Fire and Risk Alliance), Noah Ryder (Fire and Risk Alliance), and Morgan Hurley (Jensen Hughes) – all, except for Dr. Trouvé, are FPE alumni.



January 3-25, 2017, was designed to give BUET engineers basic information on fire safety and train them on where to find additional information and resources independently.

The idea for the training was in response to a series of factory fires that have occurred in Bangladesh over the last seven years, many of them fatal (e.g. a 2013 fire claimed over 1,000 lives). These factories – which make textiles for corporations such as Walmart, Target, H&M and Gap, Inc., to name a few – contain numerous safety hazards such as lack of fire exits, fire doors and sprinkler systems;

additional manufacturer’s standards in order to provide opinions on whether they were achieving a minimum level of life safety and fire protection,” said FPE Clinical Professor, Ken Isman, an expert on water-based fire protection systems. “We also sent a team out to evaluate conditions in some of the factories. These activities identified a fundamental gap in knowledge regarding the design of buildings (and systems within the buildings) for life safety and fire protection.”

Shortly after the initial evaluation, an agreement was reached to send a team of BUET professors to UMD for a

Jose Torero Returns to UMD

Dr. Jose Torero, an internationally renowned expert in the fields of fire safety and resilience, has returned to the Department of Fire Protection Engineering (FPE) to serve as FPE's John L. Bryan Chair and the Director of the Center for Disaster Resilience (CDR) within the University of Maryland (UMD) Department of Civil and Environmental Engineering. He served as a FPE Associate Professor perviously.

Originally from Peru, Torero was most recently Head of the School of Civil Engineering at the University of Queensland, in Australia. Torero is the only person in the fire safety field holding fellowships in the Royal Society of Edinburgh (UK), the Royal Academy of Engineering (UK), the Australian Academy of Technology and Engineering, the Queensland Academy of Arts and Sciences, the Society of Fire Protection Engineers (USA), the Building Research Establishment (UK) and the

Institution of Civil Engineers (UK).

His extensive background and expertise make him uniquely qualified to coordinate ongoing research activities in resilience, incorporate fire-related expertise, and administer an integrated resiliency center at the Clark School.

As the CDR Director, Torero will help elevate the research staff's existing efforts, and develop new collaborations with faculty across campus to develop a world-class research program. His focus on education-driven research offers a new dimension to UMD.

"We are enthusiastic about the addition of such a prominent, internationally-renowned individual," said FPE Chair, James Milke. "Our students will learn a great deal from this accomplished individual. As the Bryan Chair, Dr. Torero will have an opportunity to enhance our reputation as a recognized leader in the fire safety field."

Ken Isman Awarded NFPA Standards Medal

On June 4, 2017, the National Fire Protection Association (NFPA) presented their second highest honor, the Standards Medal, to FPE Clinical Professor Ken Isman. The Standards Medal is presented by the NFPA once each year to an individual recognized and honored for their outstanding contributions to fire safety, and the development of NFPA codes and standards.

Isman was recognized for his 30 years of volunteer service on 19 different NFPA committees, including the Committee on Automatic Sprinklers, responsible for NFPA 13 and the Committee on Safety to Life responsible for NFPA 101. Isman also served as a volunteer member of the NFPA Standards Council, a 13 member body that oversees the entire process of the development of more than 275 codes and standards involving fire and life safety.

In the 32 year history of the Standards Medal, it has been presented to 8 UMD graduates or faculty members, including FPE Founding Chair John Bryan whose Standards Medal is on display in the FPE front office.

Isman was extremely surprised when he received word of his award. "It's an amazing honor to be mentioned in the same breath as these incredible leaders in the industry," Isman said. "I've served on NFPA committees with previous recipients, and learned a great deal from each of them," he continues, "especially Dr. Bryan and Phil DiNenno, who served as UMD faculty while I was a student. I'm happy to be

in a position now where I can pass on what I know along with my passion for serving the industry to the next generation of fire protection engineers. I look forward to the day when, 30 years from now, one of my students is presented with the same award."

Left: Ken Isman receiving his NFPA Medal.



Peter Sunderland Wins Prestigious Poole & Kent Teaching Award

Peter Sunderland, recently promoted to FPE Professor, has won the 2017 Poole and Kent Teaching Award, given to senior faculty members for excellence in teaching. Dr. Sunderland was presented with a plaque and a cash prize at the Clark School of Engineering Undergraduate Commencement on May 20, 2017.

Sunderland, who received his Ph.D. from the University of Michigan in 1995, joined the University of Maryland in 2004. He is a Clark School Keystone professor and UMERC (University of Maryland Energy Research Center) affiliate with expertise in combustion, fire safety, and hydrogen; specifically, hydrogen fuel-cell systems, small-scale power systems, next-generation nuclear reactors, and oil recovery, transport, and processing. His current research on microgravity has been launched into orbit via a SpaceX capsule.

Sunderland has published numerous peer-reviewed journal articles and received multiple awards, including the 2010 NSF Early Career Award. His research has been funded by NASA, NIST, and the National Fire Protection Association.

Raquel Hakes Receives NSF Graduate Research Fellowship



Raquel Hakes, a Ph.D. candidate in the Department of Mechanical Engineering, focusing in Fire Protection Engineering (FPE), has received a 2017 National Science Foundation (NSF) Graduate Research Fellowship. This Fellowship provides a full three years of funding, totaling just shy of \$140k, to offset the costs of tuition and Ph.D. research. Fellowship recipients are decided based on a combination of their intellectual merit and broader potential impact of research topic.

Hakes, who will begin her Ph.D. program in the fall, has published multiple papers on highly relevant topics, and spends much of her free time conducting outreach activities and teaching, particularly to women and other underrepresented minorities.

"My research will focus on how firebrands, or burning embers, in wildfires ignite homes via decks, rooftops, etc. and how fluid instabilities contribute to flame-spread in wildfires," said Hakes. "The former is really important because firebrands are the main cause of home loss in wildfires. There's still so much we don't know about how wildfires spread, so learning about it can help us model fires better so we can decide where to send first responders, for example."

Hakes, who is part of the Gollner Fire Research Group, is advised by FPE Associate Professor, Michael Gollner.

Double Scholarship Recipient Katherine McKee Marches Full Steam Ahead into the Fire Protection Arena

Katherine McKee, a Senior in the Fire Protection Engineering (FPE) program, is a busy woman. McKee is the 2017 recipient of both the *Sarah Bryan Scholarship* and the *Philip De Camara Jr. Memorial Award*, offered by the American Fire Sprinkler Association. She was selected not only for her high marks in the classroom, but for her extensive list of extracurricular activities including mentoring incoming freshmen via the UMD Ambassador program, working as a FPE teaching assistant, and collaborating with startup companies through the competitive UMD Hinman CEO's Program.

"I fell in love with problem solving while working in my father's auto shop - that's where I decided that I wanted to be an engineer," said McKee. "I decided to major in FPE because, as cliché as it sounds, I want to leave the world a better place. FPE allows me to protect lives and problem solve at the same time."

McKee dreams of having an international consulting career and began chasing this ambition last summer, while interning at Arup's London office. This summer, she is applying both her business background and FPE experience at Hilti, where she is working as a technical field engineering intern to analyze and advance the firestop market.

In late July, McKee took a break from her work at Hilti to attend the 3rd Global Grand Challenges Summit, held July 18-20, 2017, in Washington D.C. Hundreds of scientists and academics from the U.S.A., the U.K. and China gathered together to address critically important engineering challenges and opportunities facing humanity.

Somehow McKee, originally from Frederick, MD, still finds time to spend with her family, which is usually where she is when not hitting the books, traveling, or volunteering with the FPE Department.

"I am incredibly grateful for all of the support that both my family and FPE 'family' have provided me," she said. "I also want to thank Joan Bryan and Terry DeCamara for seeing potential in my future. It will be challenging to live up to their legacy, but I'm excited to dedicate myself to the advancement of the FPE field!"

FPE Hosts the Premier Combustion Science Meeting in the U.S.

On April 23-26, 2017, the University of Maryland (UMD) hosted the 10th U.S. National Combustion Meeting at the College Park Marriott Hotel & Conference Center. The National Combustion Meeting is the premier combustion science meeting in the U.S. and is organized biennially by the joint U.S. Sections of the Combustion Institute. The two and a half day meeting was attended by a record number of more than 620 participants, half of which were students, and included three invited plenary lectures, two panel discussions (by the National Science Foundation [NSF] and the National Aeronautics and Space Administration [NASA]), oral presentations of 478 papers during ten parallel sessions, and one poster session.

"This event provided a unique opportunity to promote our students and Faculty through the presentation of the many combustion research activities that are taking place at UMD," said Arnaud Trouvé,

Fire Protection Engineering Professor and Chair of the local Host Committee.

On-campus expertise in combustion is prevalent and can be found in four of the eight Departments of the Clark School of Engineering: Aerospace Engineering (AE), Fire Protection Engineering (FPE), Mechanical Engineering (ME), Chemical and Biomolecular Engineering (CHBE). The list of UMD combustion researchers include: Howard Baum (FPE), Chris Cadou (AE), Michael Gollner (FPE), Ashwani Gupta (ME), Ryan Houim (AE), Johan Larsson (ME), André Marshall (FPE), Pino Martin (AE), Elaine Oran (AE), Stas Stolarov (FPE), Peter Sunderland (FPE), Jose Torero (FPE/ECE), Arnaud Trouvé (FPE), Ken Yu (AE), and Michael Zachariah (CHBE). UMD contributed 37 oral presentations to the meeting, almost all of them presented by graduate students.

(Photo credit: Arnaud Trouvé)



**FPE CELEBRATES 60 YEARS:
ALUMNI ANNIVERSARY
BANQUET
MARCH 11, 2017**



FPE in Full Force at 2017 IAFSS Symposium

The 12th IAFSS Symposium was held at Lund University in Sweden June 10-16, 2017. This Symposium, organized triennially by the International Association for Fire Safety Science (IAFSS), is the premier fire safety science meeting in the world. The 2017 program, attended by nearly 500 scientists, featured 6 workshops, 129 oral presentations and 2 poster sessions.

The Department of Fire Protection Engineering (FPE) had an exceptionally strong presence this year, as evidenced by the growing leadership role assumed by the University of Maryland (UMD) in international fire research. Dr. Arnaud Trouvé served as the Symposium Co-Chair along with Dr. Bart Merci from Ghent University in Belgium.

"We were very pleased to note a significant increase in both interest and quality of the papers submitted for presentation at the IAFSS Symposium," said Trouvé. "109 papers were selected out of 266 submissions featuring a wide variety of fire-relevant topics, including Fire Dynamics, Material Behavior in Fires, Wildland Fires, Evacuation and Human Behavior, Fire Suppression and Structures in Fire. For the first time, papers accepted for presentation at the IAFSS Symposium will also be published in a Special Issue of the Fire Safety Journal."

Trouvé is also one of the lead-organizers of a new effort endorsed by IAFSS, entitled, "the IAFSS Working Group on Measurement and Computation of Fire Phenomena," or the MaCFP Working Group. The objective of the Group is to establish a coordinated effort in the fire research community on a broad range of topics related to fire science in order to enable further progress in fire modeling. This is to be achieved as a joint effort between experimentalists and modelers, identifying key research topics of interest as well as knowledge gaps, thereby establishing a common framework for fire modeling research. The MaCFP Working Group

is an open, community-wide, international collaboration between fire scientists, with data and information posted on a dedicated website and a GitHub repository. The first MaCFP Workshop

took place on June 10-11 prior to the start of the Symposium and was attended by 120 participants. Drs. Stanislav Stoliarov, Jose Torero and Arnaud Trouvé represented UMD in the MaCFP leadership team.

Eight papers, co-authored by Drs. Michael Gollner, Andre Marshall, Stanislav Stoliarov and Arnaud Trouvé, were presented by 5 students. Three additional papers were co-authored by Professor Jose Torero. Dr. Gollner was awarded the 2017 IAFSS Proulx Award, which is an Early Career Award recognizing rising stars in the fire science community.

Drs. Stoliarov and Trouvé were awarded the 2016 FORUM Mid-Career Researcher Award and the 2017 FORUM Sjölin Award, respectively. The Mid-Career Researcher Award recognizes exceptional achievement and demonstrated leadership in the fields of fire safety science or fire protection engineering at the mid-career level. The Sjölin Award recognizes outstanding contributions to the science of fire safety or an advance in the state of the art in fire safety engineering practice of extraordinary significance.

Several students were also recognized (photo above provided by Michael Strömgren). The FORUM Sheldon Tieszen



Student Travel Awards were presented to current Ph.D. candidates Joshua Swann and Cong Zhang, as well as recent Ph.D. graduate James White (now a Research Engineer at FM Global). Ph.D. student Sriram Bharath Hariharan was recognized with the Judge's Choice Outstanding Student Poster award for "The Structure of the Blue Whirl: A Soot-free Vortex Phenomenon," and the Delegates Choice Outstanding Image award for "The Blue Whirl in Transition," co-authored by Drs. Elaine Oran and Dr. Huahua Xiao (UMD Aerospace Engineering) and FPE M.S. student Evan Sluder. Postdoctoral Fellow Dr. Ali Tohidi received the best Student Thesis Award for his Ph.D. thesis conferred by Clemson University.

Drs. Gollner and Trouvé were re-elected to the IAFSS Management Committee. Additionally, Trouvé was re-nominated to the positions of Vice-Chair for the Americas and member of the IAFSS Executive Committee. Both Gollner and Trouvé will continue developing the activities of IAFSS for the 13th Symposium (to be held in Waterloo in 2020), for the MaCFP Workshop series and possibly for a new series of IAFSS-supported Summer Schools on fire science.

AFSA Scholarship: The Legacy of Phil DeCamara



Philip L. DeCamara, Jr., respected founder and former president of De Camara Fire Protection Products, believed in the future of the fire protection industry. Recognizing its life-saving importance to people everywhere, Phil worked steadfastly to promote professionalism and reliability at all levels of the industry. He collaborated with sprinkler contractors, manufacturers, and other sprinkler distributors to promote professional excellence, integrity and growth. Indeed, he dedicated much of his life to encouraging the industry to strive toward its full potential.

DeCamara, originally from Philadelphia, earned his B.S. in accounting from the University of Maryland (UMD) in 1962 and went to work as a Certified Public Accountant post-graduation. In 1971 Phil left the world of public accounting to work for the Insurance Company of North America (INA). There he supervised the Protection Division of INA, which included Star Sprinkler of Philadelphia - a company that he became VP of in 1973. Phil was named EVP of Central Sprinkler Corp in 1974, and then in 1978, he established his own company: Central Sprinkler East-Corp, renamed DeCamara Fire Protection Products in 1982.

At that time, there was great concern that more could be done to save lives, due in part to a string of hotel fires across the

U.S. that had been ongoing for decades. As legislators began to mandate fire protection and suppression systems in the construction industry, Phil saw an opportunity to improve the distribution method of fire sprinkler products, making distribution less expensive and more efficient to east-coast contractors. In effect Phil established one-stop shopping where all fire sprinkler products were located under one roof.

Phil encouraged industry unity and was constantly looking to the future. By combining his financial background with basic business principles, and the experience he'd gained over the years, he became an advisor to the newly established American Fire Sprinkler Association (AFSA). Moreover, DeCamara was elected Chairman of the first Manufacturer-Suppliers Council.

Phil also understood the power of imagination and the potential of a quality education. He was especially aware of an education's importance in the fire protection industry, an arena in which the imagination could lead to technical advances that could more effectively prevent loss of life. Indeed, Phil had much to live for.

"His family was the center of his life," said Terry DeCamara, "But the traits that his friends and colleagues remember most were his unwavering integrity, enthusiastic leadership, and his pursuit of excellence."

DeCamara passed away suddenly in 1983. In recognition of his profound contributions, his friends and colleagues insisted on an educational scholarship bearing his name. Accordingly, the Philip L. DeCamara, Jr., Memorial Scholarship was established in 1984 by the AFSA. It has since been awarded to 62 students at UMD. The goal of the scholarships is to stimulate interest in fire safety protection, encourage research and development, and continue Phil De Camara's service to the industry. He is survived by his wife, Terry, and their children: Philip, Andrew, Matthew, Nancy and Joe.

THE TIMELESS BENEFIT OF ENDOWED SCHOLARSHIPS

The department has been fortunate to have received a record number of endowed scholarships over the past two years. Endowed scholarships are of particular value as they live on in perpetuity. In fact, the oldest known endowed scholarship fund is held by Oxford University in England, dating back to the year 1249 and is still making awards to students.

Randy Shearman (FPE '85, '92) established the *James Shearman Endowed Scholarship* in Fire Protection Engineering to honor his father and has taken great pleasure in meeting his scholarship recipient at the annual engineering scholarship lunch.

The *Roger R. and John M. Cholin Endowed Scholarship* was created by John Cholin, a great friend of the department who "didn't have the presence of mind to attend UMD" (his words), has received great satisfaction from the yearly scholarship support he has given and made the decision to include the Department of Fire Protection Engineering in his estate plans through the creation of this endowed fund.

The *Snowman Memorial Endowed Scholarship* was funded by an anonymous donor in honor of Professor and founding Chair John Bryan who "taught each of us not only the importance of pursuing fire protection, but also the importance of helping others within the department."

The *Society of Fire Protection Engineers (SFPE) Greater Atlanta Endowed Scholarship* in Fire Protection Engineering is a prime example of an affinity group investing in the next generation of fire protection engineers.

For information about how to support the Department, please contact Allison Corbett (acc@umd.edu or 301-405-5841).

FPE Alumni Update:

Pongratz (M.S. '14), Murdock (B.S. '98)



In 2015, FPE alumnus, **Christine Pongratz** (pictured above), joined the Arup Group as a fire engineering consultant. Based in the London office of the multinational firm, Pongratz is tasked with developing insight on the international approach and practices to fire engineering.

Although she has worked on projects in a variety of industries including sports and theatrical venue; rail, education and healthcare, Pongratz's highlight since joining Arup has been assisting in the development of the fire safety strategy for the main stadium of the 2022 Football World Cup located in Lusail, Qatar.

Pongratz said she also enjoys projects that introduce technical engineering challenges, and has recently participated in a unique project with Arup's fire team that commemorated the Great Fire of London (<http://ter.ps/LondonFire>).

"I helped lead the research initiative and technical analysis for the project, which involved a significant qualitative review of academic research papers along with quantitative analysis methods to assess the impact of the burning barge," she said. "It was exciting to utilize what I learned in my FPE program, providing fire and life safety advice to the London event planners and fire brigade, enabling the recreation of a pivotal event in the city's history."

In her spare time, Pongratz invests significant time as a STEM ambassador, acting as a professional mentor for London high school students. She recently participated

as the lead mentor for a 6-month program in which the students applied the concept of adaptive reuse to turn an abandoned underground tube station into a shelter for the homeless.

Pongratz's research led to the development of a technical paper, related to her University of Maryland Master's thesis entitled, "A CFD Study to Identify Methods to Increase Maximum Velocity of Make-up Air for Atrium Smoke Control." Pongratz presented this research at the 2016 ASHRAE Annual Conference, and earlier this year, she received an award for the 2017 ASHRAE Best Technical Paper.



When **Amy Murdock**, Principal at Code Consultants, Inc. (pictured above at Ballpark Village in St. Louis, MO) first started college in the Department of Fire Protection Engineering (FPE) she moved into a nearby firehouse – this housing experience was personally arranged by FPE Professor and Founding Chair, John Bryan. FPE is small, and Murdock found herself within an even smaller cadre of students: women.

"It's tough being a female in this industry," Murdock said. "It's still very male dominated. There have been a lot of challenges that I've overcome."

Men and women communicate differ-

ently, she noted, adding that women tend to excel at verbalizing complex scenarios. But sometimes they don't speak up as much as men, she said.

During school, Murdock "leaned in" by assisting with the management and maintenance of FPE lab equipment, working in the department office, and interning with a local FPE firm.

If it had not been for Bryan personally recruiting her in the mid-90s, Murdock would not have known it was possible for her to obtain in-state tuition due to a reciprocity agreement at that time with her home state of Virginia. The recruitment also entailed FPE Professor and Chair James Milke phoning her father to relate what the program had to offer.

Department administrators and faculty directly engaging on behalf of a student for everything from tuition assistance to housing shows how caring the FPE department is, Murdock noted. "That's the kind of family you have in fire protection," she said.

Subsequently, Murdock is devoted to giving back to the program to pay forward the generosity she received while at UMD. In the industry, there is a running joke about the "Maryland Mafia" of fire protection engineers.

Currently, she serves on FPE's Engineering Board of Visitors and Curriculum Advisory Committee, and is a donor to the department's Legacy Campaign for a Professor of Practice, which brings hands-on field experience to the undergraduate curriculum. Inspired by her professors' open door policy, Murdock herself now offers that openness to other engineers seeking career advice, especially other women.

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MANY THANKS TO OUR CORPORATE FRIENDS FOR THEIR GENEROUS SUPPORT OF THE DEPARTMENT.



Image caption: The 'Blue Whirl' phenomenon, discovered by Dr. Michael Gollner's research team during the summer of 2016, may lead to beneficial new approaches in reduced carbon emissions and improved oil spill cleanup.

