

2018 HOTLIN FIRE PROTECTION ENGINEERING A. JAMES CLARK SCHOOL of ENGINEERING

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IIM MILKE, PH.D, P.E., FSFPE, B.S. '76 FPE PROFESSOR AND CHAIR PHOTO BY AL SANTOS

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FIRE PROTECTION ENGINEERING 3106 J.M. PATTERSON BUILDING UNIVERSITY OF MARYLAND COLLEGE PARK, MD 20742 (301) 405-3992 | ENFP@UMD.EDU A Message from the Chair

The past academic year included several newsworthy items. Our ABET site visit was last fall. We addressed the comments offered by the evaluation team and plan to provide an update to ABET early next year.

As mentioned in the February e-newsletter, our undergraduate enrollment grew by 40% from Spring 2017 to Spring 2018, and we welcomed 20 new freshmen this fall – the largest entering freshmen class we've had in many years. This growth is concurrent with our recruiting activities made possible by support from NFPA and the FPE Alumni Club.

NFPA provides support to a group of our undergraduates who serve as Department ambassadors, while the Alumni Club sponsors a graduate assistant, Jessica Doermann, whose sole responsibility is recruiting and outreach. Jessica organizes the ambassador activities including high school visits, laboratory tours, public demonstrations, and participation in our information sessions, among other activities. Jessica received the UMD 2018 Outstanding Graduate Assistant Award from the A. James Clark School of Engineering for her service to the Department. Also, Nicole Hollywood, our assistant director of student services, was the recipient of the 2018 Clark School Student Advising Award.

The Department's level of participation in the 2018 Maryland Day – which took place on April 28 -

increased significantly. This year, we offered a typical set of demonstrations headlined by the large fire whirl in our lab. In addition, we provided a live side-by-side 'burn' demonstration - attended by more than 300 people coupled with our sophomore research experience. Top FPE sophomores were tasked with conducting FDS simulations of the experiments, one involving an unsprinklered dorm room and one with a sprinkler. This activity was led by Professors Arnaud Trouve and Ken Isman. The side-byside demonstration was assisted by AFSA, Strickland Fire Protection, The Maryland State Firemen's Association, the Maryland State Fire Marshal's Office and the Office of the Fire Marshal University of Maryland.

Department faculty continue to be involved in a high level of research. Recently, these activities have included batteries, wildfires, flammable refrigerants, material flammability, fire whirls and improved CFD models.

Renovation of new laboratory space on the 2nd floor of J.M. Patterson is expected to begin this fall. When completed, about half of the new space will be used as a teaching laboratory, while the other half will be used for fire dynamics research.

Our alumni club will host a tailgating party on Saturday, October 13th - everyone is welcome to attend! To join the alumni club, or attend an event, visit www.terpfpe.com.

researchn≡ws

Gollner Recieves Funding to Further Study Fire 'Whirls'

Accidental oil spills are responsible for some of the worst man-made environmental disasters in our history. The largest spill – the Deepwater Horizon blowout – released almost 210 million gallons of crude oil into

the Gulf of Mexico. This event severely damaged the Gulf ecosystem, played havoc with the local economy, and presented enormous challenges to cleanup crews.

There are currently three common methods of cleaning up oil spills over water: skimming, dispersion, and in-situ burning. Skimming uses a boat to tow a collection boom that corrals the oil, which is then picked up by a skimmer and transferred to a collection tank. Dispersion is achieved by applying chemicals into the spilled oil that break it up into small droplets. *In-situ* burning gathers freshly spilled oil between booms and sets it on fire. The effectiveness of each method depends on environmental factors (e.g., wind, rain, temperature) and coastline proximity. researchers Now, in the UMD Departments

of Fire Protection (FPE) and Aerospace Engineering (AE) are working to create a more efficient means of oil-spill cleanup.

Inspired by the phenomenon known as the 'blue whirl,' FPE Associate Professor **Michael Gollner**, Aerospace Engineering Professor **Elaine Oran**, and FPE Postdoctoral Scholar **Ali Tohidi** will study fundamentals of fire whirls to make *in-situ* burning more efficient by encouraging their formation over the resulting fires.

"Current in-situ burning techniques are incredibly useful for oil recovery because they can burn skimmed oil without the effort of collection and transport," said Dr. Gollner. "However, it can take many hours to 'burn' a spill, and in the meantime, harmful chemicals are released into the atmosphere. Our research on fire whirls has shown that they burn hotter, remove fuels faster, and may reduce overall emissions, which could drastically improve in-situ burning practices."

Gollner and Oran received word last

fall that the Bureau of Safety and Environmental Enforcement (BSEE) Oil Spill Preparedness Division will fund their study of fire whirls entitled, "Efficient Remediation of Oil Spills over Water Using Fire Whirls," over an 18 month period. Gollner and his team, which also includes FPE Graduate Student Sriram Bharath Hariharan, will use the nearly \$500K allotted to study the behavior of fire whirls over open water "including the flow structure. thermal composition, and emissions" various scales. at Gollner is the study lead, which will include smalland mediumscale experiments at UMD, and large-scale experiments at Worcester Polytechnic Institute led by Ali S. Rangwala, a UMD FPE Alumni

(MS, '04). Preliminary work on this topic was supported by the National Science Foundation through an EAGER award, and by UMD via Minta Martin Endowment Funds in the A. James Clark School of Engineering.

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FPE Recognizes 2018 Class of Distinguished Alumni

On June 12, four colleagues were recognized at the 2018 Alumni dinner in Las Vegas as this year's Class of Distinguished Alumni. The four alumni are: • Daniel L. Arnold (B.S. '80), founding partner of Seneca Fire Engineering, LLC. Dan assisted with creating the FPE Alumni Club and has served as chair. Dan's a fellow and member of the SFPE Board of Directors, and is well known for his role as a primary originator of the Great Atlanta SFPE Chapter Annual Fire Safety Conference.

• Roland J. Huggins (B.S., '85), Senior Vice President of Engineering and Technical Services at AFSA. Roland is a SFPE fellow, has held a leadership role in the sprinkler industry and on professional committees, and made contributions to field literature.

• Eric Rosenbaum (B.S., '85; M.S. '97), Vice President of Jensen Hughes. Eric has been an adjunct faculty member involved with the FPE online program since its inception, and has been a principal point of contact for Jensen Hughes interactions with the Department. Eric has received multiple awards from SFPE for his role with various committees, and is a member of the NFPA Board of Directors.

• Stacy N. Welch (B.S., '97), vice President of Marriott International, Inc. Stacy is a leader in the field, and has been a long-time member of the FPE Curriculum Advisory Committee, serving as co-chair of the Committee for four years. Stacy is a member of the NFPA Board of Directors and the Maryland State Fire Prevention Commission.

UMD Leading the Way for International Collaboration via MaCFP

The first workshop on Measurement and Computation of Fire Phenomena (MaCFP) was held June 10 – 11, 2018 as a pre-event to the 12th Symposium on Fire Safety Science in Lund, Sweden. The Proceedings of this first workshop have just been published in the Fire Safety Journal (DOI: 10.1016/j.firesaf.2018.08.009).

MaCFP is led by UMD Professor Arnaud Trouvé and Ghent University Professor Bart Merci, which also largely benefits from the participation of Profs. Michael Gollner, Andre Masrshall, Stanislav Stoliarov and **Jose Torero**. The initiative is supported by the International Association for Fire Safety Science (IAFSS). The general objective of MaCFP, also known as the IAFSS MaCFP Working Group, is to establish a structured effort in the fire research community as a means of making significant and systematic progress in fire modeling through a fundamental understanding of fire phenomena. The technical objectives are to develop the scientific foundations for the application of fire models to current or new challenging areas, for example, flame spread, fire suppression and smoke toxicity. This is to be achieved as a joint effort between experimentalists and modelers on the general topic of the investigational validation of fire models based on a Computational Fluid Dynamics (CFD) approach. The MaCFP Working Group is intended as an open, communitywide, international collaboration between fire scientists, with data and information posted on a dedicated website (https://iafss.org/macfp/)

and a GitHub repository (https:// github.com/MaCFP/macfp-db). It is also intended as a regular series of workshops, with workshops held every two or three years.

"The first MaCFP workshop was well attended with 120 participants and the first general lesson from the workshop is that MaCFP successfully responds to a need for greater levels of integration and coordination in fire research," said Trouvé. "The workshop provided a review of the state of the art in modeling of both gas phase phenomena, primarily flow and combustion phenomena, and solid phase phenomena, primarily pyrolysis phenomena. I am delighted that the lengthy process of writing the Proceedings is now behind us. The Proceedings present new validation results, a discussion of current limitations in model validation efforts, as well as a list of recommendations to help MaCFP overcome these limitations. In short, the Proceedings provide a roadmap for MaCFP."

Planning of the second MaCFP workshop is currently underway, and is scheduled to take place in April of 2020 as a pre-event to the 13th Symposium on Fire Safety Science in



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FPE Engineers Conduct Fire-Safety Program in Israel

Alumni of the UMD Department of Fire Protection Engineering (FPE) are teaching a series of fire protection courses in Tel Aviv, Israel, which started in April and run through November. Ken Isman (FPE Clinical Professor, FPE '86), Isaac Leventon (NIST Research Scientist, ME/FPE Ph.D. '16), and William Koffel (Principal at Koffel Associates, FPE '79) are each scheduled

to teach two subjects in the curriculum, including Fire Dynamics and Structural Fire Protection Engineering (Leventon), Fire Suppression Systems and Life Safety (Isman), and Fire Alarm and Smoke Control Systems (Koffel).

The idea for the program began three years ago when engineers asked Israeli Isman to design six seminars for their professional development, similar to the subjects currently taught to FPE majors at UMD. The entire program was organized in association with the Israeli Association of Construction & Infrastructure Engineers and S Netanel Engineers & Consultants. Ideal program participants are those who already have an engineering degree and understand fluid flow, physics, calculus and chemistry. FPE instructors build on this background

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by providing specific, fire protection information and how to apply problem-solving techniques, primarily to construction projects.

"I was impressed with the effort of these students," said Leventon, who taught the first two courses. "They absolutely did their best to keep up with the material despite how much we covered, the steep learning curve, new (or unused) math, a second language, and still working full-time jobs in the three weeks between lectures."

Each subject comprises 40 hours of instruction and four to six weeks of homework (via distance learning), followed by an additional two weeks of training on Israeli building and fire



SAAC LEVENTON EXPLAINS FIRE DYNAMICS.

codes by S. Netanel Engineers, the program host and sponsor. Participants who complete all eight subjects will receive a certificate of completion from UMD.

"The hope," said Isman, "is that this certificate will be used by the Israeli governmental body that licenses engineers as a way to limit people who practice fire protection engineering without having a degree in the subject, thereby giving legitimacy to certified FPE practitioners, and our program."

Isman continued, "The courses are going well, although it's been uniquely stressful and busy - one week lecturing eight hours a day (four for distance of

full day lectures. The logistics of pulling this off have been significant – just figuring out what we had to do in order to get the work visas that we needed was a challenge!"

Leventon echoes that assessment. "For my two classes at least, we simply need more time to pull this off. Learning this material takes time - to let lectures sink in, to work on practice problems, to remember old math from university, to process the material in a second language. Preparation and student effort were both there but, more than anything, additional time together would have helped." "This program is just one more way we can have a positive impact on the field improving the competency and proficiency of FPEs is a good, regardless of where they live and work," said Leventon. "It feels good to be involved in something that has a positive impact, in the U.S. and abroad,

too - UMD continues to advance as a leader in the fire protection field." , regardless of where they live and work," said Leventon. "It feels good to be involved in something that has a positive impact, in the U.S. and abroad, too - UMD continues to advance as a leader in the fire protection field."

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Holmes Fire Sponsors Fall 2017 High School Program, Annual Xmas Tree Safety Burn

The Introduction to Math and Physics through Fire Dynamics course, offered by the UMD Department of Fire Protection Engineering (FPE), is designed to introduce high school students to the fundamental concepts in mathematics, physics and chemistry needed to understand and solve engineering problems, as well as spark their interest in further developing STEM knowledge. Concepts are studied directly through various fire protection engineering applications via a series of lectures and related laboratory experiments. In addition to contextualizing these core concepts, this program introduces fire protection engineering as a field of study and professional opportunity. Such an exposure allows students, often for the first time, to understand how and why the profession exists and what career roles are possible for them.

The course, formally initiated in the fall of 2013, has welcomed over 100 applicants – two of whom are currently FPE students – and will continue thanks to the support of Holmes Fire, a fire engineering and safety consulting firm based in San Francisco. Last fall, the program was taught by FPE Graduate Student, **Julie Bryant**, with assistance from FPE Undergraduate Student **Matthew Weston-Dawkes.** A total of 16 high school student were accepted into the program, including one who tuned-in remotely via Dubai.

Some examples of topics covered in the program include: Understanding the physics and math behind the fire problem; derivatives, flame spread lab; upward flame spread: scalars vs. vectors; fire kinematics (candle flame lab); flame temperature, color, and fuel controlled fire behaviors; intro to radiation & spectral emission; flame colors lab; intro to fire chemistry; balancing equations; adiabatic flame temperature calculations; writing workshop; final project experiments and student presentations.

"This course gives high school students the opportunity to learn about STEM topics in a fun and engaging way," said Bryant. "The goal of this class is to expose underrepresented student groups to the STEM arena and the endless opportunities available in the field, even beyond fire protection. That said, STEM subjects such as calculus, chemistry and heat transfer are difficult topics to understand – but through lab experiments and real world application, we hope to encourage young students to further study these foci. I would like to personally thanks Holmes Fire Protection for their finical support in this invaluable course."

The final experiment the course members conducted was a Christmas tree fire safety demonstration (pictured **below**) - conducted by the Department annually as a public service - which included a series of live fire experiments on both natural and artificial Christmas trees to show the burning behavior (i.e., size, intensity and growth rate) of typical Christmas tree fires; specifically, those that haven't been sufficiently hydrated. The annual Christmas tree burn demonstration was conducted by FPE alumni Isaac Leventon (ME/FPE Ph.D. '16) now a Postdocoral Research Associate in the Fire Research Division of the National Institute for Standards and Technology (NIST). Visit http:// www.fpe.umd.edu/christmasfiresafety for more information. Planning for the 2018 'burn' is currently under way.



facultyn≡ws

FPE Chair James Milke Recieves Siemens Award

James Milke was presented with the 2018 Fire Industry Leadership Award by Siemens at the National Fire Protection Association (NFPA) Conference in Las Vegas on June 12. Milke - professor and chair of the UMD Department of Fire Protection Engineering (FPE) - received the award for his outstanding leadership and accomplishments that have helped progress codes, regulations, technologies and social awareness of the need for advanced fire and life safety practices.

Said Milke, "Learning about this award was a wonderful surprise. I'm highly honored by this recognition, though I've had many people assist me in those achievements. I treasure the special relationships that I've developed over the years with numerous people associated with Siemens Building Technologies."

Milke's principal areas of expertise involve smoke management, fire detection and evacuation analyses. He has served as a research fire prevention engineer at the Center for Fire Research, National Institute of Standards and Technology (NIST); as the fire protection engineer for Fairfax County, VA; and as a consultant to additional organizations. Dr. Milke is a fellow and past president of the Society of Fire Protection Engineers (SFPE). In addition to the SFPE, he is a member of several professional societies including the NFPA and the International Association for Fire Safety Science (IAFSS). Milke is a member of the Fire Council of Underwriters Laboratories and past member of NFPA Standards Council. He serves on the editorial board of Fire Technology, and is a former chair of the NFPA Technical Committee on Smoke Management Systems and the ASCE/SFPE committee, "Structural Design for Fire Conditions." Milke was also a member of the core group of the FEMA Building Performance Assessment Team for the World Trade Center disaster on September 11, 2001.

Throughout his career, Milke has published a number of articles on the topics of smoke detection, structural fire protection, and detection, and has received a number of industry awards.

"Dr. Milke's impressive resume speaks for itself," said Dan Finnegan, Manager of Industry Affairs – Fire at Siemens Building Technologies Division. "This man has dedicated his career to fire and life safety. Congratulations, Jim, and thank you for keeping fire and life safety top of mind."



FROM LEFT TO RIGHT: MIKE KNOLL (SIEMENS), WAYNE NEWTON, JAMES MILKE AND DAN FINNEGAN (SIEMENS). PHOTO PROVIDED BY SIEMENS.

studentn≡ws

Adam Quiat and Julie Bryant, Recipients of UL Fellowship



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Adam Quiat (pictured left), a graduate student in the UMD Department of Fire Protection Engineering (FPE), is the second recipient of the UL Firefighter Safety Research Institute (FSRI) Fellowship, established in 2017.

"Fires have intrigued since I built my first camp

fire as a child. However, it was not until I began my undergraduate career that I learned I could pursue an engineering profession involving fire," Quiat said. "Fire protection research interests me because it provides me with the opportunity to improve the safety of firefighters around the globe."

Quiat's undergraduate studies at the Illinois Fire Service Institute included work on a NIST-funded project that will analyze the impact repetitive thermal exposures can have on firefighter Self-Contained Breathing Apparatus (SCBA) face pieces.

"The face piece has been identified as a vulnerable element of the personal protection equipment ensemble and I am proud to be working to characterize the effects of fire environment exposures on the mechanical properties of the mask," Quiat said. "By exposing the masks to a radiant heat panel, specific heat exposures can be replicated for various face pieces. After exposure, the masks are subjected to either a tensile test, an impact test, or NFPA compliance testing."

Since his freshman year, Quiat has been a member of the Illinois Chapter of the Society of Fire Protection Engineers (SFPE), which exposed him to the fire service and public outreach. Serving in various leadership roles such as the society Treasurer, President, and current Vice President, Quiat has taught fire safety to elementary school children, and to attendees at the University of Illinois Engineering Open House. Quiat is a member of the Edge Scott Fire Protection District in Urbana, Ill., and has served as a senior firefighter and apparatus engineer.

As a Maryland resident, "I hope to continue serving the public as a member of the College Park Volunteer Fire Department," Quiat said. "Moving forward in my career I hope to have the opportunity to research fire ground operations to isolate components that can be improved for overall firefighter safety. To better develop, understand, and apply fire ground tactics research I believe that it is important to have experience riding backwards and performing required tasks under strenuous conditions."

Julie Bryant (*pictured below*), another graduate student in the Department, was the first recipient of the UL FSRI Fellowship. (2017/2018 academic year).

Bryant, a Maryland native, was groomed from a young age for the fire safety field. "My dad suggested the FPE program, as it is the only accredited undergraduate program in the country," Bryant said. "He put me in touch with William Koffel, who taught me about the consulting field and invited me to attend a lecture he was giving in ENFP101."

Bryant's decision to major in FPE was solidified at an engineering orientation where she met Nicole Hollywood, FPE's Assistant Director of Student Services. Hollywood's "show of support and kindness embodies the Department's sense of community," she said.

After joining FPE, Bryant interned at Aon Fire Protection Engineering and the SFPE. On campus, Bryant was a member of Salamander, FPE's honor society; the Mortar Board National Honor Society, and Tau Sigma. Currently, she is a volunteer EMT and firefighter for Prince George's County.

When Bryant was offered the opportunity to teach the FPE high school program, (Intro to Math and Physics through Fire Dynamics course), she wasted no time in accepting.

"I had been a teaching fellow for the freshmen ENFP 101 course for three semesters during undergrad, so this new opportunity seemed like a natural progression," Bryant said. "I loved watching the students grow and apply concepts taught in the lecture to the laboratory." Bryant is set to complete her graduate studies in Spring of 2019.

The UL Firefighter Safety Research Institute researches fire dynamics in contemporary environments to ensure victim and firefighter survival and safety. The Fellowship supports a FPE graduate research assistant and will be renewed each semester provided the Fellow remains in good academic standing. Fellows use the funding t o

test a research topic of their choice that will benefit the fire service community.

PHOTO CREDITS: ADAM QUIAT, JESSICA DOERMANN.



departmentevents

Maryland Day: Education and Excitement in a Side-by-Side Burn

On April 28, 2018, the Department of Fire Protection Engineering (FPE) offered a sideby-side sprinkler demonstration (*pictured right*) as part of the 20th annual Maryland Day celebration.

Each year, more than 80,000 people come to campus to enjoy hundreds of free, family-friendly exhibitions, perfor¬mances, and demonstrations that showcase how UMD students and faculty contribute to the world.

"Each of the departments are encouraged to show off a little bit and get people excited about things that are going on at the university," said **Ken Isman**, FPE Clinical Professor at UMD. "[FPE runs] three different areas set up around campus for Maryland Day, and we have our fire protection labs setup with different experiments."

For the first time at Maryland Day, FPE conducted a live side-by-side burn demonstration of a typical house fire: a 40-foot trailer, provided and sponsored by the American Fire Sprinkler Association (AFSA), was split into two small rooms filled with IKEA furniture – one with a sprinkler system, one without.

"We made both rooms like campus dormitories," said Isman. "They were outfitted with a bed, dresser, desk, and chair, and we showed that an incredibly large fire can happen even with such simple furnishings."

Prior to the event, a team of six FPE Undergrads - Nick Gardner, Cameron Horst, Matt Pfarr, Max Scott, Karli Steranka and Maddie West - advised by FPE Professor Arnaud Trouve, worked on a fire modeling research project, demonstrating how computer simulations can assist in the comprehension of fire dynamics, and providing a comparison to the full-scale side-by-side 'burn.'

In addition to the side-byside event, a fire tornado demonstration was created in a room with four specially-located openings which creates a "whirl" when the hood is turned on.





department events

FPE Faculty and Students Offer Expertise at 2018 International Combustion Symposium

Several faculty members and graduate students from the UMD Department of Fire Protection Engineering (FPE) gave oral presentations on their research at the 37th International Symposium on Combustion this summer. The Symposium - hosted by the Ireland Section of the Pittsburgh-based Combustion Institute - took place in Dublin from July 29 to August 3. This

symposium is quickly rising in prominence for fire science and research, and is the premiere venue for combustion research. Paper acceptance is extremely competitive. F Р Е Professor Stanislav Stoliarov served as cochair of the Fire Research Colloquium, which includ-

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sions on aspects of ignition, burning, spread and suppression of fire, as well as applications to urban/wildland fire safety. Professors Peter Sunderland, Arnaud Trouve, Jose Torero and Michael Gollner each served as chair on various sessions on fire and laminar flames. Three work-in-progress posters were presented by the group, in addition to the following:

Y. Ding, K. Kwon, S.I. Stoliarov, R.H. Kraemer - Development of a semi-global

reaction mechanism for thermal decomposition of a polymer containing reactive flame retardant.

A. Guibaud, J.M. Citerne, J.M. Orlac'h, O. Fujita, J.L. Consalvi, J.L. Torero, G. Legros - Broadband modulated absorption/emission technique to probe sooting flames: Implementation, validation and limitations.

S.B. Hariharan, E.T. Sluder, M.J. Gollner, E.S. Oran - Thermal structure of w/ a failure of prismatic L-ion battery.

Z. Wang, P. B. Sunderland, R.L. Axelbaum - Dilution effects on laminar *jet diffusion flame lengths.*

M.A.B. Zanoni, J.L. Torero, J.I. Gerhard - Determining the conditions that lead to self-sustained smoldering combustion by means of numerical modeling.

M.A.B. Zanoni, J.L. Torero, J.I. Gerhard - The



role of local thermal nonequilibrium in modeling smolderina combustion.

C. Zhang, A. Collin. P. Moireau, A. Trouvé, Μ. Rochoux _ Front shape similarity measure for data-driven simulations of wildland spread fire based on state estimation: Application to the RxCADRE



the blue whirl (pictured above).

L. Jiang, Z. Zhao, W. Tang, C. Miller, J.-H. Sun, M.J. Gollner - Flame spread and burning rates through vertical arrays of wooden dowels.

A. Markan, P.B. Sunderland, J.G. Quintiere, J.L. de Ris, H.R. Baum -Measuring heat flux to a porous burner in microgravity.

A.O. Said, C. Lee, X. Liu, Z. Wu, S.I. Stoliarov - Simultaneous measurement of multiple thermal hazards associated

field-scale experiment.

Earlier this year, two FPE faculty members were inducted into the 2018 Class of Combustion Institute Fellows: Professor José Torero, for groundbreaking advances in the understanding of fire dynamics, combustion in microgravity, and protection and supression systems; and Affiliate Professor Elaine Oran. for exceptional advances in the numerical modeling of large-scale complex reacting systems.

alumninews

Alumni Profile: Yi Wang (ME/FPE Ph.D. '05)

Yi Wang came to study fire protection engineering at the University of Maryland (UMD) completely by chance. Born and raised in Jinan, China, Yi was raised in a culture where the study of technical fields, especially engineering, was not only encouraged, but expected.

While studying fluid mechanics at Tianjin University, Yi began searching for programs in the U.S. to complete his Ph.D. research. He applied with multiple universities on the east coast, including the Department of Mechanical Engineering at UMD. **Arnaud Trouvé** – a professor in the Department of Fire Protection Engineering (FPE) – saw his application and approached him about doing combustion research for FPE. In 2002, Yi joined the department with the award of a graduate assistantship funded by the U.S. Department of Energy.

"I was happy to branch out of fluid mechanics, and learn something new and exciting," said Yi. "The prospect of doing computer simulation of fire on the largest super-computer at the time, and producing new knowledge of a very complex engineering problem, was very attractive to me."

Yi focused on high-fidelity numerical simulations of turbulent combustion phenomena relevant to fire dynamics.

"He was an outstanding student and perhaps the best Ph.D. student I have ever advised," said Trouvé. "To me, Yi is the perfect example of the new generation of FPE leaders that the Department has been producing in recent years through the Ph.D. program."

In 2005, Yi received his Ph.D. in mechanical engineering with a specialty in fire protection engineering, and accepted a position with Risk Management Solutions in Silicon Valley; a risk-assessment firm serving insurance companies, financial institutions, government and non-governmental bodies to mitigate risk from different disasters. Working as a fire modeler, Yi was part of a team that developed software products for insurance companies to assess fire risk, which determined insurance pricing. The experience provided a good base for work he would later do at the Fortune-500 company, FM Global; a firm he dreamed of working for while studying at UMD.

"FM Global – a unique company with a strong history of fire research – provides many of the textbook materials that we use in FPE," said Yi. "So, working for them became a dream of mine. Unfortunately, they had no open positions when I completed my studies." Only two years later, however, fate again – in the form of Professor Trouvé – intervened.

"One day Arnaud called me and said that FM Global was hiring, and he encouraged me to apply," said Yi. "This was an opportunity to contribute to bigger fire research programs with CFD [computational fluid dynamics] fire modeling work. FM Global has the best scientists and research facilities in the field, so of course, I was thrilled at the prospect of working for them."

Yi is currently the staff vice president overseeing fire dynamics research



at FM Global in Massachusetts. Said Yi, "UMD provided all the fundamental knowledge for my current work, which is engineering application-driven researh. Being in the FPE program exposed me to different aspects of practical fire protection engineering, detection, suppression, structure fire protection, risk analysis, etc. So I was well prepared in both fundamental and practical applications. The field is constantly evolving, so there's always something new to learn and another way to make more of an impact - it's a technical field, but there's also plenty of freedom to be creative."

Yi encourages current and future students to get involved in the Department and on campus as much as possible: "The engineering major is complex, but also very logical. Students shouldn't be afraid of the challenge, but having an aptitude for mathematics does help. Once your confidence is built, solid-engineering skills will develop gradually, and logically, with the well-designed course work provided by UMD. Also, combining theoretical understanding with practical experience is the best way to absorb the knowledge, and make it stick, so take every opportunity for internships and co-ops!"

Yi is a member of the FPE Board of Visitors, and sits on the Management Committee of the International Association for Fire Safety Science.

givingN≡ws



MANY THANKS TO OUR CORPORATE FRIENDS FOR Their generous support of the Department

The University of Maryland recently launched its largest campaign to date -*Fearless Ideas: The Campaign for Maryland.* This \$1.5 billion campaign - the most ambitious to date - is focused on elevating and expanding our mission of service, enhancing our academic distinction, and increasing our ability to facilitate leading-edge research. The Department of Fire Protection Engineering is focused on several key areas that embody this fearless campaign, including:

- Maintaining our accredited status by increasing support of the Legacy Campaign to \$3 million.
 - Growing our strategic corporate partnerships through increased Fire Education and Research (FIRE) Center membership
- Increasing faculty support through positions such as the esteemed John L. Bryan Chair
- Recruiting and retaining the most talented and diverse students through increased scholarship support.

The support of friends and alumni of the department are vital to our success. If you would like to learn more about supporting the Department of Fire Protection Engineering, please reach out to our development officer, Kyle Zeller, via email (kzeller@umd.edu) or phone (301.405.5841).

Join the FPE Alumni Club for a TAILGATING PARTY! Saturday, October 13 9:00am - 1:00 pm Location: President's Lawn Capital One Field at MD Stadium RSVP to TerpFPEClub@gmail.com Department of Fire Protection Engineering University of Maryland 4356 Stadium Drive College Park, MD 20742

FEARLESS IDEAS THE CAMPAIGN FOR MARYLAND

#FearlessIdeas

Hotline is published for Alumni and Friends of the University of Maryland Department of Fire Protection Engineering. We welcome your comments and ideas! Please send them to enfp@umd.edu To join the FPE Alumni Club, visit www.TerpFPE.com