



SUMMER 2022

# HOTLINE

FIRE PROTECTION ENGINEERING  
A. JAMES CLARK SCHOOL of ENGINEERING



Jim Milke, Ph.D., P.E., FSFPE, B.S. '76  
FPE Professor and Chair  
Photo: Al Santos for UMD

## A MESSAGE FROM THE CHAIR

With a return to in-person classes, the 2021-22 academic year was a welcome change. In this last academic year, 48 students received BS degrees and 9 received MS degrees. Next year, I expect the total number of FPE degrees awarded over the history of the department will surpass 2,000.

We open the 2022-23 academic year with the addition of two new assistant professors, Drs. Shuna Ni and Fernando Raffan-Montoya, and a lecturer, Dr. Paul Anderson, who is also part of the Keystone program.

I'm excited to share that of the 15 entering first year students this fall, 10 identify as women! That makes 67% of the fall entering class which is the greatest proportion ever of women who entered FPE in a fall term. FPE tied for the greatest proportion of entering women students of all engineering majors.

The Department of Fire Protection Engineering has teamed with NFPA to provide a symposium on the NFPA Fire and Life Safety Ecosystem September 28-29, 2022 at The Hotel at the University of Maryland. The multidisciplinary nature of the ecosystem will bring together individuals from a broad range of disciplines to discuss how fire safety can be provided in buildings and communities. With the department being the lead unit at the university organizing this event, we expect a unique opportunity for FPE to take a leadership role on a multi-disciplinary

initiative. This development comes at an opportune time as the current dean of the Clark School, Dr. Samuel Graham, is emphasizing the benefits of multi-disciplinary initiatives. An essential first step of this initiative is to have a strong attendance at the symposium. Please consider registering and share the information with your network, including and particularly anyone from outside of the FPE community. For further information and to register, **follow this link** ([meetings.umd.edu/ecosystem22/](https://meetings.umd.edu/ecosystem22/)).

Discussions about offering online versions of our undergraduate courses are underway. We've been interacting with alumni lately to get feedback on that possibility, including one special session at the NFPA Conference and Expo in Boston. Nicole Hollywood and I will be recording a version of that discussion in order to get more widespread input from alumni.

I am now entering my last year as department chair, with plans to retire in the summer of 2023. One of the items of "unfinished business" is the Legacy Campaign that supports the Clinical Professor position. After reaching the initial \$2.5M milestone of support for the position, I suggested a revised goal of \$3M to provide financial security to the position. Total donations and pledges received are approximately \$2.8M. We are very close to reaching that final goal, so please consider making a contribution to help us reach the targeted amount by next summer!

### IN THIS ISSUE:

- **STAFF PROFILE**
- **RESEARCH NEWS**
- **SYMPOSIUM**
- **FPE DESIGN CHALLENGE**
- **CAREER FAIR**

Fire Protection Engineering  
3106 JM Patterson Bldg  
College Park, MD 20742  
[enfp@umd.edu](mailto:enfp@umd.edu) | 301-405-3992



## ANNOUNCEMENTS

### The FPE Department Annual Career Fair is Moving!

For this academic year, the Department of Fire Protection Engineering will hold its career fair in the fall on November 3, 2022. The event will run from 10:00 am - 4:00 pm at the Grand Ballroom, Stamp Student Union. The cost for the Fair is \$550.00 for up to 4 representatives from the company. We will provide a 6-foot table, tablecloth, parking, lunch, and a resume book. We hope to keep this new timing for future years.

Interested in attending? Register using this link: [go.umd.edu/FPEFair22](https://go.umd.edu/FPEFair22).

### FPE Design Challenge

The department has begun planning for the 2022-2023 FPE Design Challenge, which will be our 8th year of competition. The Design Challenge is a competition-based program for high school students from participating schools in the Baltimore-Washington area. The 'Challenge' is to design, construct and test an innovative detection, notification and suppression system for a small-scale, two-room suite. The purpose of the competition is to introduce students to the field of fire protection engineering and the engineering design process. In this last year, there were five participating high schools involving about 100 students.

We would like to acknowledge and thank an SFPE Chesapeake Chapter group, led by Kristin Weniger, who were instrumental in helping to organize a set of mentors for the student teams and provided assistance with curriculum changes this past summer and year.

As a result of sponsorship from ADT Commercial, the costs for each team model was covered along with a prize for the winning team from Elizabeth Seton High School. In this next year, the American Fire Sprinkler Association has agreed to be a sponsor.

We would **WELCOME** any other sponsors for this program. If you or your company are interested, please contact Nicole Hollywood via email ([nlholly@umd.edu](mailto:nlholly@umd.edu)).

## DEPARTMENT PROFILE: NICOLE HOLLYWOOD

**Nicole Hollywood** – FPE's Associate Director for Undergraduate and Graduate Programs – has been an integral part of the department for just under a decade. Originally from Norfolk, Virginia, Nicole attended The College of William and Mary where she focused on Secondary Education and English, obtaining a B.A. in 2000.

"I liked helping people and I thought that I would like to teach," said Hollywood. "But, while pursuing my secondary education double degree, I taught at a local high school and quickly realized that wasn't the right fit. I felt completely out of place."

"A colleague at the time suggested I work with college kids instead and the idea took root." After a late change in future focus senior year, she quickly took the GRE, met with the Director, and was admitted to the Master's of Higher Education program at William and Mary.

After completing her master's degree, Nicole took a position at Miami University of Ohio where she worked for the Women in Engineering (WIE) living and learning program as the academic advisor and director for the residence hall that housed the program. The position set a precedence in Nicole's career in that she has worked for and with engineers ever since.

"At Miami, I found and honed a few things that I love to do: sharing knowledge, assisting others along their pathways, and helping people find a good opportunity through recruitment and outreach programs," she said. "Later, I realized those skills made me an excellent fit for the Fire Protection Engineering program here at UMD."

After four years in Ohio, Nicole and her husband relocated back to the east coast. Nicole was selected for a position as an academic advisor in the Clark School of Engineering. She was promoted within a year to assistant director, and then associate director shortly thereafter.

After several years of fostering relationships with the engineering faculty and administration, she approached Jim Milke about bringing an advisor into FPE.

"Jim and I have always had a fantastic working relationship and after realizing many great things about the program, I

decided I wanted to work directly for FPE," Nicole said. "Specifically, I wanted to work for Dr. Milke!"

Since joining FPE in 2013, Nicole has started the **FPE High**

**School Design Challenge**, created the **FPE Ambassador Program**, and initiated the department DEI Committee on which she serves as the chair. Nicole also advises the UMD SFPE Student Chapter and Salamander Honorary Society. This year, she partnered with a local high school and the SFPE Chesapeake Chapter to turn the FPE Design Challenge into a week-long summer camp. Indeed, Nicole has received several awards over the years in honor of her achievements, including Engineering Advisor of the Year and the Marilyn Berman Pollans Outstanding Staff Service Award.

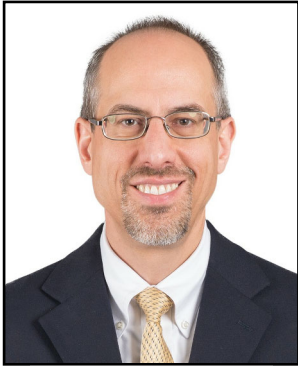
"As we transition over the next year, and start to look for a new chair, we'll need to redefine our goals and revamp some of the department's programs," Nicole said. "It won't be the same without Jim. He's done wonders not only for this department and the culture we've promoted, but for me personally – I'll always be thankful that he took a chance on me, and helped shape the person professionally that I am today. I will work hard to help the department continue his, and Prof. Bryan's, legacy of connecting with the alumni, fostering community across the department, and being open, available and willing to serve anyone who comes to our suite."

With co-chair Bill Koffel, President of Koffel Associates, Inc., Nicole will chair a committee dedicated to celebrating Dr. Milke's legacy at the end of this upcoming academic year. If you have any questions, or would like to volunteer your time, please send an email to [nlholly@umd.edu](mailto:nlholly@umd.edu).



## OUR DISTINGUISHED ALUMNI: 2022 INDUCTEES

The Fire Protection Engineering Distinguished Alumni Award, which started in 2015, honors those graduates who have made a contribution to the mission and ideals of the Department, such as providing service to the department or profession; enhancing the student experience, or offered significant accomplishments to the theory and practice of fire safety. This year's inductees, who were honored at the 2022 Alumni Dinner in Boston, are:



Morgan Hurley  
(B.S. '90, M.S. '00)



Alwin Kelly  
(B.S. '99, M.S. '01)



Steve Kerber  
(B.S. '03, M.S. '05)



Jamie McAllister  
(B.S. '00, M.S. '02)

The deadline for nominations of this award is January 15 of each year. The recipient(s) is/are typically announced at the annual FPE Alumni Dinner, in association with the NFPA conference, each spring. To learn how you can submit a nomination, send an email to Chris Dubay ([cdubay@NFPA.org](mailto:cdubay@NFPA.org)), or follow this link <https://fpe.umd.edu/alumni-industry/distinguished-alumni>.

## 2022 ALUMNI DINNER, BOSTON



# COOL POOL FLAMES: PH.D. STUDENT DISCOVERS NEW FIELD OF COMBUSTION

**Kendyl Waddell**, a University of Maryland (UMD) Ph.D. Student, has always enjoyed finding solutions to the most difficult problems and approaches life in an analytical way, which made engineering a natural choice for him when it came time to attend college. Hailing from Madison, Alabama, it was important to Waddell's parents that he attend a HBCU (historically black college or university).

"My folks wanted me to have the unique experience of being in an environment where being Black wasn't a big deal since most of the other students are Black, too," said Waddell. "That's one reason why diversity is so important – it's harder to feel comfortable in a community where no one else looks like you, or can understand your perspective."

After completing his bachelor's degree in chemical engineering at Howard University, Waddell knew he wanted to earn a Ph.D., but where to go and what to study was unclear. He had experience working in a University of Alabama lab and also interned at Northrop Grumman for a few summers in Baltimore. Then, while researching a proposal for the NSF GRFP, he became curious about fire resistant materials and suppression systems, and discovered the fire protection engineering (FPE) program at Maryland. Waddell applied to mechanical engineering, with a focus in fire protection, and was contacted by FPE Professor **Peter Sunderland** shortly thereafter.

"Kendyl's application jumped out at me – he had excellent grades, excellent letters of recommendation and an enthusiasm for thermodynamics – I couldn't wait to talk to him!" said Sunderland.

Waddell came to Maryland in 2019 and set to work in Sunderland's lab, researching cool flames and flame behavior in microgravity environments. It wasn't long before he discovered what they're calling 'cool pool flames.'

'Cool flames' are a form of low temperature combustion, producing temperatures of only 500 – 1000 K (440 – 1340 F), less than half the temperature of a car's engine. By way of comparison, candles typically produce temperatures around 1600 K. Cool flames produce very little light and are impossible to see with the naked eye under normal lighting conditions.

Cool diffusion flames were thought impossible until 2012 when they were experimentally observed for the first time aboard the International Space Station (ISS). They have **subsequently been observed aboard the ISS**, using liquid or

gaseous fuels, as well as on Earth using a counterflow burner configuration. This research has potential applications in cleaner, more efficient engine technology, but cool flames are difficult to produce and study.

To that end, Waddell, under the guidance of Sunderland, seeks to create a simple, inexpensive system to study cool diffusion flames, thus making it easier for researchers to study and expanding access to a novel field of combustion.

"We've done that using a parallel heater setup and pools of liquid fuel," said Waddell. "The fuel, contained in a beaker, is placed on a hot plate and another hot plate is mounted facing downwards above the beaker. As the fuel evaporates, it comes in contact with the surface of the upper heater, forming a cool pool flame. The flame stabilizes at the opening of the beaker allowing us to measure properties such as its temperature."

With more advanced diagnostics, other properties can be studied in greater detail, which facilitates the development of detailed chemical kinetics models of these flames – this will aid in the design of more advanced engines, which, hopefully, will reduce greenhouse gas emissions thus creating a cleaner Earth.

"At the end of the day, I just want to help people and make a positive contribution to this planet," Waddell said.

Indeed, he's well on his way.



## CONNECT WITH US!

[twitter.com/FPEUMD](https://twitter.com/FPEUMD)

[instagram.com/fpeumd](https://www.instagram.com/fpeumd)

[facebook.com/umdfire](https://www.facebook.com/umdfire)

[linkedin.com/groups/5093031](https://www.linkedin.com/groups/5093031)

