



# FLASH POINTS

FIRE PROTECTION ENGINEERING

## Department Achievements Highlight A Successful Year and Great Things to Come



I am happy to announce that during my first year as chair, we collectively made several accomplishments. The Alumni Club was formed; we initiated work to pursue endowment of a second chair in the department; added a new full-time faculty member; once again received accreditation by ABET; and received approval for a substantial revision and update of the undergraduate program.

In just the first few months of this academic year, already there have been some interesting developments. As a group, the faculty has been successful in numerous significant research proposals indicating an increase in our level of activity in that area. With the addition of Dr. Michael Gollner as a new assistant professor in the department came the need for additional laboratory space. Dean Pines has approved our request for an additional 800 ft. of laboratory space, which will include space for Michael as well as Dr. Peter Sunderland. We will also free some space in the existing laboratory for others to expand their activities. We hope to start renovation of the space to make it suitable for a laboratory in early 2013.

Undergraduate enrollment remains steady at 125 students this fall. The cubicles for graduate students have very few vacancies, making us consider an expansion of this space. Enrollment in the distance program has increased appreciably this year. Considering all of our degree programs, there are about 225 total students enrolled in our classes this fall.

In short, I want to thank our alumni and friends for their support. The support of our FIRE Center is highly appreciated and provides teaching assistantships and scholarships. Initial contributions to the new endowed chair campaign have provided an excellent start for that endeavor and again are highly appreciated. This campaign seeks to fund a clinical professorship that will be focused on teaching many of the applied courses in the undergraduate program, assisting in applied research projects and otherwise ensuring that the department remains well-connected to the profession. Membership in the Alumni Club continues to grow. The club is key to keeping the department-alumni bond strong, following the tradition started by Dr. John L. Bryan.

Please enjoy this inaugural issue of *Flash Points*, which highlights just some of the recent achievements and ongoing activities of our highly talented and dedicated faculty and staff.

James A. Milke,  
Professor and Chair

## Recent Accomplishments and Activities In Our Spray Research Lab



Dr. André Marshall

**DR. ANDRÉ MARSHALL**, associate professor of fire protection engineering and aerospace engineering, and director, Fire TEC, was recently featured in an International Innovation periodical ([www.researchmedia.eu](http://www.researchmedia.eu)) featuring cutting edge research and researchers from around the world.

**DR. MARSHALL** and **DR. SHERYL EHRMAN** from the Department of Chemical and Biomolecular Engineering, were recently

awarded a \$550K Major Research Instrumentation (MRI) grant from the National Science Foundation (NSF) for an innovative Spatially-resolved Spray Scanning System. The system also has been submitted as an invention disclosure and will be submitted for a patent. This device is closely related to a recently awarded NSF Grant Opportunities for Academic Liaison with Industry (GOALI) research and a tech start-up that they have formed.

**DRS. MARSHALL, TROUVÉ**, and **SUNDERLAND** were recently awarded a \$1.2M NSF GOALI collaborating with FM Global and UTRC. The winning proposal is entitled *GOALI: Towards Predicting Fire Suppression Performance: Quantifying Fire-Spray Interactions*.

As part of the NSF Innovation Corps program, **DR. MARSHALL** just formed a tech start-up called Custom Spray Solutions with **NOAH RYDER**, lecturer, visiting research associate, alumnus and entrepreneur. The technology company came out of a software invention from Dr. Marshall's NSF Presidential Early Career Award for Scientists and Engineers from 2007-2012 and will also rely heavily on the NSF MRI grant.

## Taking On The Challenge To Design A Cleaner Wood-burning Stove



Dr. Stanislav Stoliarov

The FPE department has entered a Next Generation Wood Stove Design Challenge, sponsored by the Alliance for Green Heat. Mentored by **DR. STANISLAV STOLIAROV**, a number of fire protection engineering students, including team captain **TAYLOR MYERS**, have begun to design and test a smart wood stove that will improve efficiency, emissions and user experience. Winners advance to participate in a Wood

Stove Decathlon, modeled after the Solar Decathlon, to take place on the National Mall in November of 2013. Eminent stove, technology, air quality and combustion experts will judge this public exhibition of next generation wood stove designs. Stoves will be judged on emissions, efficiency, affordability, innovation and ease of use. The winning design will receive \$25,000 and coverage in Popular Mechanics magazine. Second prizes will share a \$10,000 award.

## ABC World News Interview and First Place At An Art Image Competition

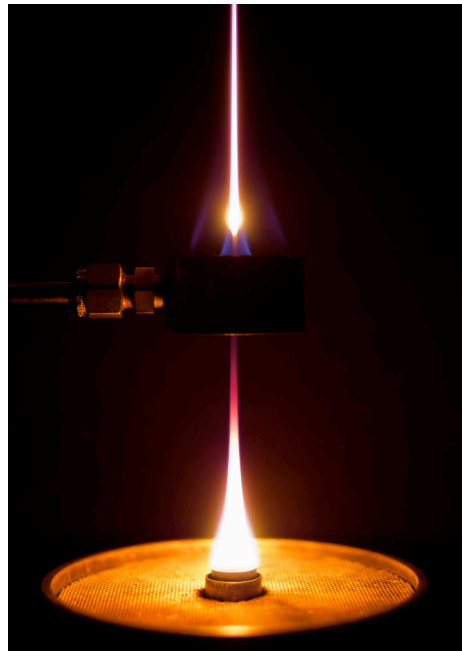


**Dr. Peter Sunderland**

**DR. PETER SUNDERLAND,** associate professor and director of undergraduate studies, fire protection engineering, and Keystone Professor, was interviewed for the

Oct. 31, 2012, national television broadcast of ABC World News with Diane Sawyer. The topic was explosion hazards of natural gas leaks following Hurricane Sandy. In case you missed it the video can be viewed at [www.abcn.ws/T8OHQV](http://www.abcn.ws/T8OHQV).

In other news, Ph.D. students **HAIQING GUO** and **PAUL M. ANDERSON**, along with their advisor Dr. Sunderland, were awarded first place for their poster in the Art Image Competition at the Central States Section of the Combustion Institute in Dayton, Ohio. The image, at right, is entitled Ternary Flame Art Image and shows a ternary flame system with a Santoro burner below a ring burner. The steady soot column generated by the acetylene diffusion flame passes into the hydrogen ring flame, where it is oxidized. This allows soot oxidation to be studied in the



**Ternary Flame Art Image**

absence of soot formation. The camera is a Nikon D100 digital still camera at 6.1 megapixels. This research is being supported by the National Science Foundation. To view all winning photos, view the Awards Section at [www.cssc.org/](http://www.cssc.org/).

## Dr. Michael J. Gollner Joins Department as Assistant Professor



**DR. MICHAEL GOLLNER** recently joined the department as assistant professor (see full story at [www.fpe.umd.edu/html/news/news\\_story.php?id=6646](http://www.fpe.umd.edu/html/news/news_story.php?id=6646)) and has begun two new research projects aimed at understanding the influence of mixed fuels and complex topography on forest fire propagation. He is advising two masters students working on these projects, as well as an undergraduate student working on flame spread in the built environment. A new laboratory to incorporate these and many new projects begins construction in January 2013, expanding the research capabilities of the department.

## Baker Receives Board of Regents Staff Award and President's Distinguished Service Award



**PATRICIA C. BAKER,** Program Management Specialist in fire protection engineering, was honored by the University System of Maryland (USM) as a recipient of the 2011-2012 USM

Board of Regents' (BOR) Staff Award in the category of Outstanding Service to Students in an Academic or Residential Environment-Nonexempt Staff. The award is the highest honor bestowed by the Regents to recognize

exemplary staff achievement and Baker was the only staff member from the College Park campus to be recognized.

In addition to the Regents' honor, Baker was recognized with the President's Distinguished Service Award on October 9th at the 29th Annual Faculty and Staff Convocation, held in the campus Memorial Chapel. The award is one of the most prestigious for staff on campus and recognizes exceptional performance, leadership, and service.

## Summering and Dreaming in California and More...

**DR. ARNAUD TROUVÉ,** associate professor and director of graduate studies, was invited to participate to the 2012 Summer Program of the Center for Turbulence Research (CTR) at Stanford University. The CTR Summer Program is a 4 weeks long research workshop focused on different aspects of turbulence physics, physical modeling and numerical simulation; the program hosted more than 90 participants from more than 15 countries. While at Stanford, Arnaud worked on two projects: a new numerical study of the deposition of combustion-generated soot particles on cold wall surfaces; and a continued development project aimed at applying data assimilation techniques for predictive simulations of wildfire spread. Arnaud was also asked to present a tutorial on fire modeling to the participants of the Summer Program.



**Dr. Arnaud Trouvé**

While Arnaud was spending a significant chunk of his Summer time in California, his research group was working actively at UMD and making significant progress in the area of wall fire modeling. Luis Bravo and Andrew Voegelé (both Ph.D. students) reached a significant milestone by successfully simulating turbulent wall flames using a new in-house software called les3d-mp. Meanwhile, Dr. Ning Ren (Ph.D. '10), formerly a post-doctoral fellow in the department, and now a research engineer at FM Global, and Sébastien Vilfayeu, doctoral student, reached a similar milestone by performing turbulent wall fire simulations using a software called FireFOAM (a fire modeling software developed by FM Global) and comparing their numerical results to an experimental database. Both studies use a high-fidelity approach called wall-resolved large eddy simulation and open the door to high-quality studies of turbulent wall fires.