

## Daniel J. Gorham, P.E.

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### Education

M.S. Fire Protection Engineering, University of Maryland College Park, 2014

*Thesis: Studying Wildfire Spread Using Stationary Burners*

B.S. Fire Protection Engineering, University of Maryland College Park, 2012

A.A. General Studies, Community College of Baltimore County, 2010

### Professional Experience

Research Engineer

July 2018 - Present

**Insurance Institute for Business & Home Safety**

Richburg, SC

Plan, conduct, and communicate research projects related to wildfire-hazards to the built environment. Conduct laboratory and field experiments on mitigation techniques from firebrands (embers) and other wildfire hazards. Communicate research findings and outcomes to insurance industry stakeholders and public.

Research Project Manager

October 2015 - June 2018

**Fire Protection Research Foundation**

Quincy, MA

Manage the technical and logistical conducting of research projects. Develop technical and financial support for Foundation projects. Facilitate research program planning in conjunction with Foundation stakeholders in order to develop research agendas and development of projects.

Associate Engineer

September 2014 - October 2015

**National Fire Protection Association**

Quincy, MA

Managed technical committee activities and projects throughout document development processing. Provided technical services to support the adoption and use of NFPA documents. Answered advisory service questions related to assigned standards.

Guest Researcher

June 2013 - August 2013

**US Forest Service Missoula Fire Sciences Laboratory**

Missoula, MT

Developed and performed experimental methods to study fire spread via flame intermittency. Assisted in performance of wind-tunnel fire spread experiments. Performed analytical and statistical analysis of experimental data. Contributed in the performance of additional large-scale experiments to study the intermittent heating from stationary fires.

Graduate Research Assistant

January 2013 - August 2014

**University of Maryland, College Park**

College Park, MD

Responsible for the technical and personnel management of multiple undergraduate research projects. Designed, developed, and used several experimental apparatus including a uniform-velocity wind blower for studying fire dynamics and multiple controlled heat release rate burners. Established safety protocols and operating procedures including fire safety considerations for multiple fire laboratories.

Laboratory Technician

October 2011 - January 2013

**Fire Testing and Evaluation Center (FireTEC)**

College Park, MD

Performed standard fire performance tests including: ASTM E1354, ASTM D92, ASTM E1321, ASTM E162. Designed, developed and performed custom fire performance testing (e.g. performance

evaluation of wood-frame fire blocker device). Maintained laboratory equipment database. Organized and managed laboratory maintenance.

## Certifications

Professional Fire Protection Engineer, California Certificate No. FP1943

## Publications

1. Hedayati, F., Bahrani, B., Zhou, A., Quarles, S.L., **Gorham, D.**, A Framework to Facilitate Firebrand Characterization, *Frontiers in Mechanical Engineering* (2019)
2. Manzello, M., Blanchi, R., Gollner, M., **Gorham, D.**, McAllister, S., Pastor, E., Planas, E., Reszka, P., Suzuki, S., Summary of workshop large outdoor fires and the built environment, *Fire Safety Journal* (2018): 76-92
3. Tang, W., **Gorham, D.**, Finney, M., McAllister, S., Cohen, J., Forthofer, J., Gollner, M. An experimental study on intermittent extension of flames in wind-driven fires, *Fire Safety Journal* (2017): 742-748
4. Hakes, R., Caton, S., **Gorham, D.**, and Gollner, M. A Review of Pathways for Building Fire Spread in the Wildland Urban Interface Part II: Response of Components and Systems and Mitigation Strategies in the United States. *Fire Technology* (2017)
5. Caton S., Hakes, R., **Gorham D.**, Zhou, A., and Gollner, M. A Review of Pathways for Building Fire Spread in the Wildland Urban Interface Part I: Exposure Conditions. *Fire Technology*
6. Finney, M., Cohen, J., Forthofer, J., McAllister, S., Gollner, M., **Gorham, D.**, Saito, K., Akafuah, N., Adams, B., English, J. The Influence of Buoyant Dynamics on Wildfire Spread, *Proceedings of the National Academy of Science* (2015): 9833-9838

## Conference Proceedings

1. Tang, W., **Gorham, D.**, Gollner, M., Forthofer, J., Finney, M., Forward pulsation behavior of wind-driven line fires, 9<sup>th</sup> U.S. National Combustion Meeting, May 2015
2. Miller, C., Gollner, M., Finney, M., **Gorham, D.**, An Investigation of Wildfire Dynamics via Fixed Inclined Burners, 9<sup>th</sup> U.S. National Combustion Meeting, May 2015
3. **Gorham, D.**, Hakes, R., Singh, A., Forthofer, J., Finney, M., Gollner, M., Studying Wildland Fire Spread Using Stationary Fires, VII International Conference on Forest Fire Research, November 2014
4. Finney, M., Cohen, J., Forthofer, J., McAllister, S., Adam, B., Akafuah, N., English, J., Saito, K., **Gorham, D.**, Gollner, M., Experimental evidence of buoyancy-controlled flame spread in wildland fires, VII International Conference on Forest Fire Research, November 2014
5. **Gorham, D.**, and Gollner, M., Buoyancy-enhanced Flame Spread over Continuous Surfaces, 8<sup>th</sup> U.S. Meeting of the Combustion Institute, May 2013
6. Zhao, Z., **Gorham D.**, Gollner M., Flame Spread through Arrays of Wooden Dowels, 8<sup>th</sup> U.S. National Meeting of the Combustion Institute, May 2013

## Conference Talks

1. IAFC WUI Conference, February 2018, Reno, NV, *Evacuation Form and Function – How much is Art, and How Much is Science?*
2. SFPE North America Conference, October 2017, Montreal, Canada, *NFPA Standards and FPRF Research Projects on Energy Storage Systems*

3. 12<sup>th</sup> International Symposium on Fire Safety Science, June 2017, Lund, Sweden, *An experimental study on intermittent extension of flames in wind-driven fires*
4. NFPA Conference, June 2017, Boston, MA, *Status Report – NFPA 1961 & Fire Hose Research*
5. NFPA Conference, June 2017, Boston, MA, *LNG Model Evaluation Protocol & Validation Database Update*
6. NFPA Conference, June 2016, Las Vegas, NV, *Fire Protection Design of Wildland-Urban Interface Communities*
7. Backyards & Beyond, October 2015, Myrtle Beach, SC, *Studying Wildland Fire Spread Using Stationary Burners*
8. Backyards & Beyond, October 2015, Myrtle Beach, SC, *Pathways to Fire Spread in the Wildland Urban Interface (WUI)*
9. The Battery Show Conference, September 2015, Novi, Michigan, *Improving the Safety of Stationary Storage Systems*
10. NFPA Conference, June 2015, Chicago, IL, *Application of Fire Protection in Wildland-Urban Interface Design*
11. NFPA Conference, June 2015, Chicago, IL, *What you need to know about NFPA & Energy Storage Systems*
12. Conference on Fire Suppression Detection and Signaling (SUPDET), March 2015, *Application of Fire Protection in Wildland Urban Interface (WUI) Design: Hazard Definition and Current Practices*
13. VII International Conference on Forest Fire Research, November 2014, Coimbra, Portugal, *Studying Wildland Fire Spread Using Stationary Fires*

## Professional Associations

Society of Fire Protection Engineers, *Professional Member*

- Member, Committee on Continuing Professional Development
- Member, Committee on Research, Tools and Methods

National Fire Protection Association

- Member, Committee on Wildland and Rural Fire Protection

International Association of Fire Safety Science

- Member, Committee on Large Outdoor Fires and the Built Environment (LOF&BE)
- Member, Subcommittee on Ignition Resistance Communities (IRC)

International Association of Wildland Fire

## Experience

Richburg (South Carolina) Fire-Rescue, *Firefighter, 2019 - present*

Massachusetts Wildland Fire Crew, *Firefighter Type 2, 2015 - 2018*

Boston Youth Wrestling, *Assistant Coach, 2014 - 2017*

Maryland Wildland Fire Crew, *Firefighter Type 2, 2009 - 2013*

Kingsville Volunteer Fire Company, *Firefighter/EMT, 2008 - 2013*

## Skills

Project management

Research planning and communication

Small-scale and Large-scale fire experiments – planning, instrumenting, and implementing

Data collection, interpretation, analysis, and communication

## Research Interests

Firefighter and emergency responder safety; Fire behavior and fire dynamics; Fire modeling/simulation; Wildland and wildland-urban fire spread; Data science & data visualization