

# Michael J. Gollner

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## CURRICULUM VITAE

### 1. PERSONAL INFORMATION

#### Education

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| 2010 – 2012 | Ph.D. in Mechanical Engineering from the University of California, San Diego<br>Thesis: <i>Studies on Upward Flame Spread</i><br>Advisor: Prof. Forman A. Williams                                 |
| 2008 – 2010 | M.S. in Mechanical Engineering from the University of California, San Diego<br>Thesis: <i>A Fundamental Approach towards Storage Commodity Classification</i><br>Advisor: Prof. Forman A. Williams |
| 2003 – 2008 | B.S. in Mechanical Engineering from the University of California, San Diego  |

#### Professional Experience

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|----------------|----------------------------------|---|
| 2015 – present | Affiliate Assistant Professor    | Department of Aerospace Engineering   |
| 2013 – present | Affiliate Assistant Professor    | Department of Mechanical Engineering  |
| 2012 – present | Assistant Professor              | Department of Fire Protection Engineering<br>University of Maryland, College Park, MD |
| 2011 – 2012    | Graduate Research Assistant      | UC San Diego, CA  |
| 2008 – 2011    | Teaching Assistant               | MAE Department, UC San Diego, CA  |
| 2008           | Visiting Researcher              | Worcester Polytechnic Institute, Worcester, MA  |
| 2006 – 2008    | Consulting Engineer              | Schirmer Engineering, CA  |
| 2006–2007      | Undergraduate Research Assistant | Center for Energy Research, UC San Diego, CA  |

### 2. RESEARCH, SCHOLARLY AND CREATIVE ACTIVITIES

*Bold and italic names indicate advised students*

#### Articles Submitted

#### Articles in Referred Journals

13. **Miller, C.** and Gollner, M.J., **Upward Flame Spread over Discrete Fuels**, *Fire Safety Journal*, Volume 77, 2015, pp. 36-45.
12. Finney, M., Cohen, J., Forthofer, J., McAllister, S., Gollner, M.J., **Gorham, D.**, Saito, K., Adam, B. and English, J., **The Influence of Buoyant Dynamics on Wildfire Spread**, *Proceedings of the National Academy of Sciences*, 2015.
11. **Singh, A.V.** and Gollner, M.J. **Local Burning Rates and Heat Flux for Boundary Layer Diffusion Flames Under Forced Flow**, In press, *AIAA Journal*.
10. **Singh, A.V.** and Gollner, M.J., **A methodology for Estimation of Local Heat Fluxes in Steady Laminar Boundary Layer Diffusion Flames**, *Combustion and Flame*, Volume 162, 2015, pp. 2214-2230.

9. **Singh, A.V.** and Gollner, M.J., **Estimation of local mass burning rates for steady laminar boundary layer diffusion flames**, *Proceedings of the Combustion Institute*, Volume 35, Issue 3, 2015, pp. 2527-2534. **Selected Distinguished Paper, 35th International Symposium on Combustion.**
8. **Huang, X.** and Gollner, M.J., **Correlations for Evaluation of Flame Spread over an Inclined Fuel Surface**, *accepted to the 11<sup>th</sup> International Symposium on Fire Safety Science.*
7. Zhang, Y., Bustamante, M.J., Gollner, M.J., Sunderland, P.B., Quintiere, J.G., **Burning on Flat Wicks at Various Orientations**, *Journal of Fire Sciences*, Volume 32, Issue 1, 2014, Pages 51–71.
6. Gollner, M. J., Sanchez, A. L., and Williams, F. A., **On the heat transferred to the air surrounding a semi-infinite inclined hot plate**. *Journal of Fluid Mechanics*, Issue 732, 2013, Pages 304–315.
5. Gollner, M. J., **Huang, X., Cobian, J.,** Rangwala, A. S. and Williams, F. A., **Experimental Study of Upward Flame Spread of an Inclined Fuel Surface**, *Proceedings of the Combustion Institute*, Volume 34, Issue 2, 2013, Pages 2531–2538.
4. Gollner, M. J., Xie, Y., Lee, M., Nakamura, Y., Rangwala, A.S., **Burning behavior of vertical matchstick arrays**, *Combustion Science and Technology*, Volume 184, Issue 5, 2012, Pages 585–607.
3. Overholt, K., Gollner, M. J., Williams, F. A., Rangwala, A. S. and Perricone, J., **Warehouse commodity classification from fundamental principles. Part II: flame height prediction**, *Fire Safety Journal*, Volume 46, Issue 6, August 2011, Pages 317–329.
2. Gollner, M. J., Overholt, K., Williams, F. A., Rangwala, A. S. and Perricone, J., **Warehouse commodity classification from fundamental principles. Part I: commodity and burning rates**, *Fire Safety Journal*, Volume 46, Issue 6, August 2011, Pages 305–316.
1. Gollner, M. J., Williams, F. A. and Rangwala, A. S. **Upward flame spread over corrugated cardboard**. *Combustion and Flame*, Volume 158, Issue 7, 2011, Pages 1401–1412.

#### Invited Talks

1. **The Dynamics of Wind-Blown Flames**, Invited Seminar, BRE Center for Fire Safety Engineering, Edinburgh, Scotland, August, 2015.
2. **The Dynamics of Wind-Blown Flames**, Invited Thermofluids Seminar, Imperial College, London, UK, July, 2015.
3. **Pathways to Fire Spread in the Wildland-Urban Interface: A Literature Review and Gap Analysis**, Invited Seminar, National Institute for Standards and Technology, Gaithersburg, MD, April, 2015.
4. **Pathways to Fire Spread in the Wildland-Urban Interface: Research Summary**, Invited Talk, National Fire Protection Association, Fire Protection Research Foundation Wildfire and WUI Research Planning Workshop, Denver, CO, July, 2015.
5. **Pathways to Fire Spread in the Wildland-Urban Interface**, Invited Online Webinar, National Fire Protection Association, Quincy, MA, April, 2015.
6. **Fire Protection Engineering - A Unique Program in the American Educational System**, Invited Talk, Toyohashi University of Technology, Toyohashi, Japan, March, 2015.
7. **International Exchange Programs at the University of Maryland**, Invited Talk, Toyohashi University of Technology, Toyohashi, Japan, March, 2015.
8. **Modeling Wildfires: Past, Present and Future**, Invited Talk, Engineering Colloquium and Safety Week, NASA Goddard Space Flight Center, Greenbelt, MD, April, 2014.
9. **Hybrid Water Mist Fire Protection Systems**, Invited Talk, NFPA Fire Protection Research Foundation Suppression and Detection Conference, Orlando, FL, March, 2014.
10. **Exploring the Dynamics of Laminar and Turbulent Boundary Layer Diffusion Flames**, Invited Talk, Hokkaido University, Japan. December, 2013.
11. **Exploring the Dynamics of Laminar and Turbulent Boundary Layer Diffusion Flames**, Invited Talk, Muroran Institute of Technology, Japan. December, 2013.
12. **Flammability Characterization of Warehouse Commodities**, Invited Talk, Chesapeake Chapter of the Society of Fire Protection Engineers, Columbia, MD. October, 2013.

13. **Overview of Fire Research**, Invited Talk, University of Maryland, College Park Chapter of the Society of Fire Protection Engineers, College Park, MD. April, 2013.
14. **Buoyancy Effects on Burning Behavior and Flame Spread**, Invited Talk, Missoula Fire Sciences Laboratory, Missoula, Montana, United States Forest Service. January, 2013.
15. **Flame Spread and Commodity Behavior in Warehouse Fires**. Invited Talk, Underwriter Laboratories, Inc. Deerfield, IL. November, 2012.
16. **Buoyancy Effects on Burning Behavior and Flame Spread**, Invited Talk, University of Maryland, College Park, Department of Fire Protection Engineering. May, 2012.
17. **Buoyancy Effects on Burning Behavior and Flame Spread**. Invited Talk, University of California, Merced, Department of Mechanical Engineering and Applied Mechanics. May, 2012.
18. **An Experimental Study of Inclined Flame Spread**. Invited Talk, Worcester Polytechnic Institute, Department of Fire Protection Engineering. May, 2011, MA.
19. **Warehouse Commodity Classification and Upward Flame Spread**. Invited Talk, University of Edinburgh, Department of Fire Safety Engineering. June, Edinburgh, UK. 2010.
20. **High Challenge Warehouse Workshop at the SUPDET 2010 Conference**. Co-Chair, National Fire Protection Association. February 2010
21. **A Fundamental Approach towards Fire Hazard Classification**. Invited Talk, San Diego Chapter of the Society of Fire Protection Engineers. April, 2009

#### Conference Papers: Refereed Abstracts

1. Gollner, M.J., *Tang, W., Gorham, D.J.*, Finney, M.A., McAllister, S., Cohen, J. and Forthofer, J., **Dynamic Behavior and Structure of Wind Blown Flames**, 25th International Colloquium on the Dynamics of Explosions and Reacting Systems, August 2-7, Leeds, UK, 2015.
2. Altintas, I., Block, J., de Callafon, R., Crawl, D., Cowart, C., Gupta, A., Gollner, M.J., Trouve, A., Smarr, L., **Towards an Integrated Cyberinfrastructure for Scalable Data-Driven Monitoring, Dynamic Prediction and Resilience of Wildfires**, International Conference On Computational Science, Reykjavik, Iceland, June, 2015. **Awarded Best Conference Paper**.
3. Finney, M.A., Cohen, J., Forthofer, J., McAllister, S., Saito, K., Akafuah, N., Gollner, M.J., *Gorham, D.J.*, **Buoyant Instabilities and Flame Spread in Wildland Fires: Implication of the Need for Scaling Instability Analysis**, 25th Canadian Congress of Applied Mechanics (CANCAM 2015), London, Ontario, Canada, May 31 to June 4, 2015.
4. *A.V. Singh*, M.J. Gollner, **Boundary Layer Combustion Under Forced Flow**, 9th U. S. National Combustion Meeting, May 17-20, 2015, Cincinnati, Ohio.
5. *M.F. Maisto*, T. Layton, M. J. Gollner, A. W. Marshall, **Salt-Water Modeling to Probe Sub-Grid Scale Turbulent Mixing of Fire Plumes**, 9th U. S. National Combustion Meeting, May 17-20, 2015, Cincinnati, Ohio.
6. *C.H. Miller*, M.J. Gollner, M.A. Finney, *D.J. Gorham*, **An Investigation of Wildfire Dynamics via Fixed Inclined Burners**, 9th U. S. National Combustion Meeting, May 17-20, 2015, Cincinnati, Ohio.
7. *C.H. Miller*, M.J. Gollner, **Upward Flame Spread over Discrete Fuels**, 9th U. S. National Combustion Meeting, May 17-20, 2015, Cincinnati, Ohio.
8. *Tang, D.J., Gorham, M.J.* Gollner, J. Forthofer, M.A. Finney, **Forward pulsation behavior of wind-driven line fires**, 9th U. S. National Combustion Meeting, May 17-20, 2015, Cincinnati, Ohio.
9. Zhang, C., Durand, M., *Tang, W.*, Gollner, M., Trounev, A., Rochoux, M.C., Ricci, S., Cuenot, B., Filippi, J.-B., and Clements, C.B., **Evaluation of a Sensor-Driven Wildland Fire Spread Modeling Strategy Using the FireFlux Experiment**, 15th International Conference on Numerical Combustion, Avignon, France, April 19-22, 2015
10. *A.V. Singh* and M.J. Gollner, **Local Burning Rates and Heat Flux for Boundary Layer Diffusion Flames Under Forced Flow**, 53rd AIAA Aerospace Sciences Meeting, January, 2015
11. You, Y-G., Yin, M., Martin, D., Meacham, B., Dembsey, N., Gollner, M., Marshall, A., *Maisto, P.*, Ahrens, M., Grant, C. and Rodrigue, T., **Quantification of Green Building Features on Firefighter Safety: Problem Definition, Data Collection, Preliminary Analysis and Experimental Plan**, SFPE 10th International Conference on Performance-Based Codes and Fire Safety Design Methods, Queensland, Australia, 2014.
12. M.A. Finney, J. Cohen, J. Forthofer, S. McAllister, B. Adam, N. Akafuah, J. English, K. Saito, M.J. Gollner and *D. Gorham*, **Experimental Evidence of Buoyancy Controlled Flame Spread in Wildland Fires**. VII International Conference on Forest Fire Research, Coimbra, Portugal, 14 to 20 Nov, 2014.

13. **D.J. Gorham**, R. Hakes, A. Singh, J. Forthofer, M.A. Finney and M.J. Gollner, **Studying Wildland Fire Spread Using Stationary Fires**. VII International Conference on Forest Fire Research, Coimbra, Portugal, 14 to 20 Nov, 2014.
14. Altintas, I., Block, J., Braun, H.W., de Callafon, R. Gollner, M.J., Smarr, L. and Trouve, A., **WIFIRE: A Real-Time Cyberinfrastructure for Wildfire Sensing and Prediction**. Large Wildland Fires Conference, Missoula, MT, May 19-22, 2014
15. **Singh, A.V.** and Gollner, M.J., **Thermal and burning rate characteristics of laminar boundary layer diffusion flames**. Fall Technical Meeting of the Eastern States Section of the Combustion Institute, Clemson, SC, October, 2013.
16. **Gorham, D.** and Gollner, M. J., **Buoyancy-enhanced flame spread over continuous surfaces**, Eighth U.S. National Meeting of the Combustion Institute, Park City, UT, May, 2013.
17. **Zhao, Z., Gorham, D.** and Gollner, M. J., **Flame Spread through Arrays of Wooden Dowels**, Eighth U.S. National Meeting of the Combustion Institute, Park City, UT, May, 2013.
18. Zhang, Y., Bustamante, M.J., Gollner, M.J., Sunderland, P.B., Quintiere, J.G., **Burning on Flat Wicks at Various Orientations**, 7th International Seminar on Fire and Explosion Hazards, May, 2013.
19. Gollner, M. J., **Huang, X., Cobian, J.,** Rangwala, A. S. and Williams, F. A., **Burning of Inclined Fuel Surfaces**, Western States Section of the Combustion Institute, Spring Technical Meeting, Tempe, AZ, March 2012.
20. Gollner, M. J., Huang, X., Rangwala, A. S. and Williams, F. A., **Effects of Inclination on Upward Flame Spread**, Western States Section of the Combustion Institute, Fall Technical Meeting, Riverside, CA, October 2011.
21. Gollner, M. J., Xie, Y., Lee, M., Nakamura, Y. and Rangwala, A.S., **Flame spread on vertical matchstick arrays**, Western States Section of the Combustion Institute, Fall Technical Meeting, Riverside, CA, October 2011.
22. Gollner, M. J., **Huang, X.,** Williams, F. A. and Rangwala, A. S., **Buoyancy-enhanced flame spread over continuous surfaces**, Seventh U.S. National Meeting of the Combustion Institute, Atlanta, GA, March 2011.
23. Gollner, M. J., Williams, F. A., Overholt, K., Rangwala, A. S. and Perricone, J., **Nondimensional Commodity Classification and an Analysis of Upward Spread**. InterFlam, Nottingham, UK. July, 2010.
24. Gollner, M. J., Overholt, K., Rangwala, A. S., Williams, F. A. and Perricone, J., **The B-number as a Criterion for Commodity Classification**. Combustion Institute Western States Fall Meeting, Irvine, CA, October 2009.
25. Overholt, K., Gollner, M.J. and Rangwala, A.S., **Characterizing the Flammability of Corrugated Cardboard Using a Cone Calorimeter**. Sixth U.S. National Meeting of the Combustion Institute, Ann Arbor, MI, May 2009.
26. Gollner, M.J., Hetrick, T., Rangwala, A.S., Perricone, J. and Williams, F. A., **Controlling parameters involved in the burning of standard storage commodities: a fundamental approach towards fire hazard classification**. Sixth U.S. National Meeting of the Combustion Institute, Ann Arbor, MI, May 2009.

#### Conference Presentations

1. Gollner, M.J., **Singh, A.S.,** Trouve, A., **Gorham, D.J.,** Verma, S., **Tang, W., Miller, C.,** Forthofer, J. and Finney, M.A., **Probing the Structure of Wall-Bounded Flames**, FM Global Open Source CFD Fire Modeling Workshop, Norwood, MA, May, 2015.
2. Gollner, M.J., **Caton, S., Kohler, K.** and **Hakes, R.** **Pathways for Building Fire Spread at the Wildland Urban Interface**, Workshop on Structure Ignition in Wildland-Urban Interface (WUI) Fires, Sponsored by ASTM International Committee E05, Anaheim, CA, June, 2015.
3. Meacham, B. Martin, D. and Gollner, M.J., **Impact of Green Building Features on Firefighter Safety**, National Fire Protection Association Conference and Expo, Chicago, IL, June, 2015.
4. **Caton, S., Kohler, K., Hakes, R.** and Gollner, M.J., **Pathways for Building Fire Spread at the Wildland Urban Interface**, National Fire Protection Association Conference and Expo, Chicago, IL, June, 2015.
5. Gollner, M.J. and Trouve, A., **Modeling Wildland Fire Propagation: Physical Processes and Real Time Data-Driven Modeling**, Operation Tomodachi - Fire Research, Joint US-Japan workshop for fire-structure interaction and large outdoor fires, National Institute for Standards and Technology, March 16-18, Gaithersburg, MD, 2015.
6. Gollner, M.J. and **Raia, P.,** **Hybrid Water Mist Fire Protection Systems**, National Fire Protection Association Conference and Expo, Las Vegas, NV, June, 2014.
7. Gollner, M.J., **Gorham, D.** and **Zhao, Z.** **Determining the Flammability and Flame Spread Properties Between Discrete Fuels**, Society of Fire Protection Engineers Annual Engineering Technology Conference, Austin, TX, October, 2013.
8. Gollner, M.J., Sanchez, A. S. and Williams, F. A., **Effects of buoyancy on heat transfer under an inclined flat plate**, 65th Annual Meeting of the APS Division of Fluid Dynamics, Volume 57, Number 17, November 18–20,

2012; San Diego, California.

- Gollner, M.J., Williams, F.A., and Rangwala, A.S. **Upward flame spread over corrugated cardboard**, Society of Fire Protection Engineers Annual Engineering Technology Conference, New Orleans, LA, October, 2010.
- Gollner, M.J., Olney, K., Kleissel, J., **Clean Renewable Energy Bonds - A funding case study in San Diego, CA**, 2010 International Conference on Environment and Alternative Energy, San Diego, CA, 2010.
- Redefining Suppression, Presentation at SUPDET 2010 Conference - High Challenge Warehouse Workshop**. National Fire Protection Association, Fire Protection Research Foundation. February, 2010.
- Gollner, M. J., Overholt, K., Rangwala, A. S., Williams, F. A. and Perricone, J., **A Fundamental Approach towards Storage Commodity Classification**, Society of Fire Protection Engineers Annual Engineering Technology Conference, Scottsdale, AZ, October, 2009.

#### Poster Presentations

- Altintas, I., Block, J., Braun, H.W., de Callafon, R. Gollner, M.J., Smarr, L. and Trouve, A., **WIFIRE: A Scalable Data-Driven Monitoring, Dynamic Prediction and Resilience Cyberinfrastructure**. American Geophysical Union Fall Meeting, San Francisco, California, Dec. 2013.
- Gorham, D., Singh, A.V., Hakes, R.**, Forthofer, J., Finney, M. and Gollner, M.J., **Buoyancy Induced Instabilities in Reacting Flows**. 2013 Burgers Symposium, University of Maryland, Nov. 2013.
- Gollner, M. J., Xie, Y., Lee, M., Nakamura, Y. and Rangwala, A.S., **Flame spread on vertical matchstick arrays**. UCSD Jacobs School Research Expo, 2012.
- Cobian, J.**, Gollner, M.J. and Williams, F.A., **Development of a graphical user interface for the analysis of upward flame spread**, 2012 CAMP Statewide Undergraduate Research Symposium, Irvine, CA, 2012.
- Gollner, M.J., Huang, X., Williams, F.A. and Rangwala, A.S., **An experimental study of flame spread over inclined fuels**, 10th Symposium on Fire Safety Science, College Park, Maryland. June, 2011. Received best poster award.
- Gollner, M.J., Huang, X., Williams, F.A. and Rangwala, A.S., **An experimental study of flame spread over inclined fuels**, UCSD Jacobs School Research Expo, 2011. Selected Semi-Finalist.
- Huang, X., Gollner, M.J. and Williams, F.A., **A Comparison of Methods to Measure the Geometries of Spreading Flames**, UCSD Jacobs School Research Expo, 2011.
- Gollner, M.J., Olney, K., Kleissel, J., **Clean Renewable Energy Bonds - A funding case study in San Diego, CA, 2010 International Conference on Environment and Alternative Energy**, La Jolla, CA, 2010.
- Gollner, M.J., Overholt, K., Rangwala, A.S., Williams, F.A., and Perricone, J., **Evaluating Material Flammability Hazards in High-Challenge Warehouse Fires**. UCSD Jacobs School Research Expo, 2010.
- M. J. Gollner, T. Hetrick, A. S. Rangwala, J. Perricone, and F. A. Williams. **A Fundamental Approach towards Fire Hazard Classification**. UCSD Jacobs School Research Expo, 2009. "Hot Research Poster," 2009, Jacobs School of Engineering.

#### Reports and other Publications

- Goller, M.J., **Hakes, R., Caton, S.**) and **Kohler, K**, **Pathways for Building Fire Spread at the Wildland Urban Interface**, Fire Protection Research Foundation, National Fire Protection Association, March, 2015.
- Raia, P.** and Gollner, M.J., **Literature Review on Hybrid Fire Suppression Systems**. Fire Protection Research Foundation, National Fire Protection Association, 2014.
- Gollner, M.J., Kimball, A. and Vecchiarelli, T., **Fire Safety Design and Sustainable Buildings: Challenges and Opportunities: Report of a National Symposium**. Fire Protection Research Foundation, National Fire Protection Association, 2013.
- Gollner, M.J., **The Flammability of a Storage Commodity**. Fire Protection Engineering Magazine. April 1, 2014.

## Fellowships, Prizes and Awards

2015	Best Workshop Paper	International Conference on Computational Science
2015	Distinguished Paper	35 <sup>th</sup> International Symposium on Combustion
2014	3 Readers and Editors Choice Awards	HPCwire Magazine
2013	Jack Watts Award	Outstanding Reviewer for Fire Technology
2012	Doctoral Dissertation Fellowship	MAE Department, UC San Diego
2011	Best Poster Award	10 <sup>th</sup> International Symposium on Fire Safety Science
2011	Best Fire Science Image Award	10 <sup>th</sup> International Symposium on Fire Safety Science
2011	3 <sup>rd</sup> Place, Science Art Competition	US National Combustion Meeting, Atlanta, GA
2010	Gordon Scholar	Jacobs School of Engineering, UC San Diego
2010	Chancellor's Award for Sustainability	University of California, San Diego
2010	Recipient, Student Research Grant	SFPE Educational and Scientific Foundation
2010	Honorable Mention, Graduate Student Researcher Program	National Science Foundation
2010	Rae K. Hepps Graduate Fellowship	University of California, San Diego
2007	Malcolm R. Stacey Scholarship	University of California, San Diego

## 3. TEACHING, MENTORING AND ADVISING

### Courses Taught

ENFP 300 (Spring 2013) Fire Protection Fluid Mechanics

Teaching Evaluation: 3.31/4.0 (48 students - with Undergrad TF)

ENFP 630 (Fall 2013) Diffusion Flames and Burning Rate Theory

Teaching Evaluation: 3.75/4.0 (11 students - No TA)

ENFP 300 (Spring 2014) Fire Protection Fluid Mechanics

Teaching Evaluation: 3.30/4.0 (27 students - with Graduate TA)

ENFP 350 (Spring 2014) Professional Development Course

Teaching Evaluation: 3.25/4.0 (32 students - No TA)

ENFP 489W (Fall 2014) Wildland Fires: Science and Applications

Teaching Evaluation: 3.58/4.0 (13 students - with Graduate TA)

ENFP 629W (Fall 2014) Wildland Fires: Science and Applications

Teaching Evaluation: 3.51/4.0 (32 students - with Graduate TA)

ENFP 630 (Spring 2015) Diffusion Flames and Burning Rate Theory

Teaching Evaluation: 3.76/4.0 (5 students - no TA)

ENFP 489W (Fall 2015) Wildland Fires: Science and Applications

ENFP 629W (Fall 2015) Wildland Fires: Science and Applications

### Curriculum Development

ENFP 489W/629W (Fall 2014) Wildland Fires: Science and Applications

New course created. First engineering-based wildland fire course.

## Teaching Awards

2009–10 TA Excellence Award MAE Department, UC San Diego

## Advising: Graduates

### *PhD Students at the University of Maryland, College Park*

2013-2015 Ajay Singh *A Fundamental Study of Boundary Layer Diffusion Flames*, (Now Postdoctoral Scholar at Stanford University)

### *MS Students at the University of Maryland, College Park*

2012-2014 Brian Hall *Transient Fire Load on Aluminum Ferries*, (Now at US Coast Guard)

2012-2014 Zhao Zhao *Flame Spread through Wooden Dowels*, (Now with City of Dallas)

2013-2014 Daniel Gorham *Studying Wildland Fire Spread Using Stationary Burners*, (Now at NFPA)

2013-2014 Colin Miller *Upward Flame Spread over Discreet Fuels* (Now PhD Student at UMD)

2013-2014 Brian Cohen *In Situ Burning Alternatives*, (Now at Arup, NYC)

## Advising: Current Students

### *PhD Students at the University of Maryland, College Park*

2014- Wei Tang *Wildland Fire Propagation*

2014- Pietro Maisto *Buoyant Flows in Green/Sustainable Buildings*

2014- Colin Miller *Wildland Fire Propagation*

### *MS Students at the University of Maryland, College Park*

2015- Raquel Hakes *Ignition of Structural Fuels with Firebrands*

2015- Sara Caton *Generation of Firebrands*

### *Undergraduates at the University of Maryland, College Park*

2015- Irene Lemberos *RISE Academy for Engineering*

2015- Evan Sluder *Intermittent heating of fine fuels*

### *Visiting students at the University of Maryland, College Park*

2014-15 Jan Zimlich *BS student from Mannheim, Germany*

2015-16 Lin Jiang *PhD student from USTC*

## Advising: Previous Students

### *Undergraduates at the University of Maryland*

2013- Conor McCoy *Intermittent Heating of Wildland Fuels* (RISE Academy for Engineering and University Honors Program)

2013- Raquel Hakes *Instabilities in Wildland Flame Spread and NFPA FPRF WUI Report* (RISE Academy for Engineering)

2014- Stephanie Poole *Imaging Techniques for Wildland Fire Experiments*

2014- Sara Caton *NFPA FPRF WUI Report*

2014- Kyle Kohler *NFPA FPRF WUI Report*

2014 Jonathan Kilpatrick *Discrete Fuel Flame Spread*

2013-14 Stephen Ernst *“Flame spread over mixed fuels”*

2013-14 Peter Raia *“NFPA FPRF Hybrid Water Mist Investigation”* (Sponsored Project)

2012 Daniel Gorham *Flammability of Wildland Fuels*

2012-13 Tyler Pierce *Flame Spread Through Matchstick Arrays*

2012 Joseph Praydis *Inclined Flame Spread on Thin Fuels*

*Visiting students at the University of Maryland, College Park*

2014-15 Jens Triller *RISE Academy for Engineering*

*At the University of California, San Diego*

2012 Pawel Kozlowski *Matchstick flame spread. Senior Group Project (Now D.Phil candidate at Oxford University)*  
2012 Vincent Sherman (Now PhD student at UC San Diego)  
2012 Oscar Rios (Now PhD student at UC San Diego)  
2012 Andy Chen  
2011–2012 Mario Zuniga *Flame spread over inclined cylinders, McNair Scholar co-Adviser*  
2011–2012 Jeanete Cobian *Development of a Flame-Tracking GUI. UCSD CAMP Student Enrichment Program (Now PhD student at UC Riverside)*  
2011 Alexander Marcacci *Design and Fabrication of a Tilting Flame Spread Apparatus. (Now at Applied Materials, Inc.)*

*At Worcester Polytechnic Institute*

2011 Amanda Keller *Corrugated Cardboard Flame Spread Major Qualifying Project co-Adviser*  
2011 Benjamin Travis *Corrugated Cardboard Flame Spread Major Qualifying Project co-Adviser*

*MS Students at the University of California, San Diego*

2010–2012 Xinyan Huang *Flame Spread at Inclined Angles. (Now PhD student at Imperial College, London)*

**Advising: Other Mentoring Activities**

*At the University of California, San Diego*

2012 Adviser UC San Diego Engineers For a Sustainable World, Renewable Energy Study

*At the University of Maryland, College Park*

2013-14 Science Adviser FIRST LEGO League “Team Fire”

**Thesis Committees**

- 2013 - Xi Ding (M.S., FPE)- Design and Implementation of the Flaming Combustion Calorimeter
- 2014 - Mark B. McKinnon (M.S., FPE) - Development of a Model for Flaming Combustion of Double-Wall Corrugated Cardboard
- 2014 - Thomas G. Layton (M.S., FPE) - Detailed Measurements of Fire-Induced Mixing Phenomena
- 2014 - Taylor Myers (M.S., FPE) - A Potential Flow Model of A Fire Sprinkler Head
- 2014 - Jerry Taricska (M.S., FPE) - Assessment of Duct Leakage Rates on Stairwell Pressurization System â CONTAM Study
- 2014 - Eric Link (M.S., FPE) - Development of a Turbulent Wolfard-Parker Burner with Suppressing Co-Flow
- 2014 - Adam Boussof (M.S., FPE) Hot Surface Ignition of R-32 and R-410A Refrigerant Mixtures with Lubricating Oil
- 2014 - Hyeon Kim (M.S., FPE) - Measurement of Heat Flux in Burning Rate Conditions
- 2015 - Isaac Leventon (Ph.D., ME)-
- 2015 - Mark B. McKinnon (Ph.D., ME) -

**Student Awards**

- 2015 - Ajay V. Singh (Ph.D) - Outstanding Graduate Student Assistant Award, University of Maryland Graduate School.
- 2015 - Raquel Hakes (B.S.) - Chair’s Award, Department of Fire Protection Engineering, University of Maryland.
- 2015 - Ajay V. Singh (Ph.D.) - Northrop Grumman Graduate Fellowship in Engineering Education (2014-2015).



- 2015 - Ajay V. Singh (Ph.D.) - University of Maryland Graduate School's Outstanding Graduate Assistant Award for 2015. The award conveys the honor of being named among the top 2% of campus Graduate Assistants in a given year.
- 2015 - Ajay V. Singh (Ph.D.) - Distinguished Paper selected from the Fire Colloquium from the 35<sup>th</sup> International Symposium on Combustion.
- 2014 - Conor McCoy (B.S.) - Summer Undergraduate Research Fellowship (SURF) in the Engineering Laboratory (EL) at the National Institute of Standards and Technology (NIST) in Gaithersburg, MD.
- 2014 - Raquel Hakes (B.S.) - Honorable Mention, Posters on the Hill, U.S. Council on Undergraduate Research (Selected as top 10% of over 600 submissions).
- 2014 - Mario Zuniga (B.S., UCSD) - Selected for U.S. Peace Corps Assignment in Cameroon.
- 2013-14 - Colin Miller (M.S., UMD) - Awarded J.L. Bryan Chair Research Fellowship
- 2013 - Ajay Singh (Ph.D.) - Selected as Future Faculty Fellow, A. James Clark School of Engineering, University of Maryland, College Park.

## **SERVICE**

### **International Cooperation**

- Invited speaker on international exchange programs to Toyohashi University of Technology, Japan (2015).
- Participant, U.S. Department of State, U.S./China Young Scientist Forum (YSF) on Disaster Resilience (2014)
- Participant and Presenter, Operation Tomodachi - Fire Research, Joint US-Japan workshop for fire-structure interaction and large outdoor fires, National Institute for Standards and Technology (2015)

### **Professional Organizations**

- Research Advisory Board Member, Fire Protection Research Foundation, National Fire Protection Association (2015-Present)
- Principal Member, Technical Committee on Wildland and Rural Fire Protection, National Fire Protection Association (2014-Present)
- Elected Member, Management Committee, International Association of Fire Safety Science (2014-Present)
- Chair, New Technologies Sub Committee, International Association of Fire Safety Science (2012-Present)
- Associate Editor, International Association of Fire Safety Science Newsletter (Fire Safety Science News) (2011-2014)

### **Reviewing Activities**

#### Editorial Positions

- Associate Editor, Fire Technology (2014-Present)
- Guest Editor, Fire Technology, Special Issue for Suppression and Detection (2014-Present)

#### Editorial Boards

- Fire Safety Journal (2014-Present)
- Fire Technology (2013-Present)

#### Reviewer for Journals

- Atomization and Sprays, Automation in Construction, Combustion and Flame, Combustion Science and Technology, Fire Safety Journal, Fire Technology, Fuel, International Journal of Production Economics, PLOS ONE, Proceedings of the Combustion Institute, Proceedings of the IAFSS

#### Journal Reviews per Year

- 2010: 3
- 2011: 1
- 2012: 7
- 2013: 19
- 2014: 20

#### Program and Grant Review Panels

- 2013: NASA SOFIE ISS Science Concept Review Panel
- 2014: DHS AFG R&D Review Panel
- 2015: NASA SOFIE ISS Requirements Definition Review Panel

- 2015: NSF Panel Member, CMMI
- 2015: NSF External Reviewer
- 2015: Kentucky Science and Engineering Foundation External Reviewer:

Other Journal Service

- English mentor for the 11<sup>th</sup> Symposium on Fire Safety Science, Christchurch, New Zealand, 2014.

**Campus Service**

*Campus-Wide*

- University Senate Representative for the Department of Fire Protection Engineering (2014-16)

*Department of Fire Protection Engineering*

- Clinical Professor Search Committee (2013-14)
- Outreach and Open-House Presentations to Students (2012-Present)
- Website and Social Media Coordinator (2012-Present)

**Workshop Organization**

- Co-Organizer with A. Trouve of the NSF-funded WIFIRE Workshop: “Towards Data-Driven Operational Wildland Spread Modeling.” held at UC San Diego in January, 2015.
- Task Leader on Turbulent Buoyant Plumes, The IAFSS International Workshop on Measurement and Computation of Fire Phenomena (MaCFP Workshop). (2015-Present)

**Session Chairs**

- Session Chair, 11th International Symposium on Fire Safety Science, Christchurch, NZ, February, 2014.
- Session Chair, Eastern States Section of the Combustion Institute, Fall Technical Meeting, Clemson, SC, October, 2013.
- Session Chair, Eighth U.S. National Meeting of the Combustion Institute, Park City, UT, May, 2013.
- Session Chair, Western States Section of the Combustion Institute Meeting
- Co-Session Chair, Redefining Suppression, SUPDET 2010 Conference â High Challenge Warehouse Workshop. National Fire Protection Association. February 2010.

**Memberships**

- The Combustion Institute, Member
- International Association of Fire Safety Science, Member
- National Fire Protection Association, Member
- Society of Fire Protection Engineers, Member
- American Physical Society, Division of Fluid Mechanics, Member
- The American Institute of Aeronautics and Astronautics

**4. CONTRACTS AND GRANTS**

*(Research Funding received as a single/lead PI while at UMCP: \$ 343,378; Additional Research Funding received as a lead co-I or subcontract PI for UMD: \$ 907,364; Total Research Funding brought into UMD 2012-15: \$ 1.38 million)*

**National Institute for Standards and Technology Fire Research Grant**

01/16–12/16	\$96,416	Understanding Ignition Susceptibility of Wildland Urban Interface (WUI) Fuels to Firebrand Attack (PI)
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**National Science Foundation**

01/16–12/16	\$63,090	EAGER: Fire Whirls on Water: Clean and Efficient Hydrocarbon Combustion (Co-PI)
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### **Joint Fire Science Program**

09/15–09/17      \$47,065      Fire Ember Production from Wildland and Structural Fuels (Subcontract-PI)

### **NFPA, Fire Protection Research Foundation**

06/14–06/15      \$25,000      Pathways to Fire Spread in the Wildland-Urban Interface (PI)

### **University of Maryland Council on the Environment Seed Grant**

2/14–2/16      \$90,000      Quantifying wildfire pollutant/aerosol emissions using simulations, data assimilation and satellite observations (Co-PI)

### **National Science Foundation**

10/13–9/16      \$467,075      Hazards SEES Type 2: WIFIRE: A Scalable Data-Driven Monitoring, Dynamic Prediction and Resilience Cyberinfrastructure for Wildfires (Subcontract-PI)

### **USDA Forest Service**

07/13–07/16      \$216,962      Entrainment, attachment, and turbulence structure of inclined flames. (PI, Co-operative Agreement, U.S. Forest Service, Missoula Fire Sciences Laboratory)

### **US Department of Homeland Security**

06/13–06/14      \$368,224      Quantification of Green Building Features on Firefighter Safety, (Subcontract-PI)

### **Minta Martin Aeronautical Research Fund, University of Maryland**

6/13–6/15      \$75,000      Boundary Layer Diffusion Flames: Resolving Problems for Hybrid Rocket Motors and Fire Safety (PI)

### **NFPA, Fire Protection Research Foundation**

07/13–07/14      \$5,000      Student Project on Hybrid Water Mist System (PI)

### **OUTREACH ACTIVITIES**

#### *Wildfire Science Adviser to FIRST LEGO League “Team Fire”*

*Location:* College Park, MD

*Description:* Advised several k-12 student groups competing in the 2013 FIRST Lego League 2013 “Nature’s Fury” challenge on wildfires. Team Fire won the regional competition for research and are now competing at the state level. September, 2013 – Present

#### *Outreach to Women in Engineering groups at UMD*

*Location:* College Park, MD

*Description:* Conducted laboratory tours, presentations on wildfire research, discussions on college education and more to several women in engineering groups at the University of Maryland including coordination of a summer program for students through E<sup>2</sup>, SPICE Camp etc. 2012–2014

#### *Assisting Clean Renewable Energy Bond Applications in San Diego*

*Location:* San Diego *Mentors:* Prof. Jan Kleissl and Byron Washom

*Description:* Leader of group which developed an analytical tool to calculate solar potential to assist local school districts applying for government bonds for solar panel installations. We also mentored 3 inner-city high school students from the San Diego Unified School District who assisted us with data assimilation for the project. \$540.4 million dollars in funding was awarded to UCSD and local school districts. April–August, 2009

#### *The Physics and Chemistry of Fire, Expanding Your Horizons Conference*

*Location:* University of San Diego

*Description:* Presentation developed and taught to high school girls interested in STEM careers at the University of San Diego, San Diego, CA. March, 2011 & 2012.

#### *UCSD Academic Connections Program*

*Location:* UC San Diego

*Description:* Introduction to Mechanical Engineering, 3-Week Summer Course, UCSD Academic Connections, Primary Instructor.

#### *Mentor for CAMP and McNair Scholars Program*

*Location:* UC San Diego

*Description:* Served as mentor for two undergraduate UCSD students working on laboratory research. Both programs aim to involve underrepresented minority students in science and engineering research during their undergraduate years. Students performed experiments in the laboratory, analyzed data, wrote papers and presented their work at several conferences. 2011-2012

#### *Engineers for a Sustainable World, Renewable Energy Study*

*Location:* UC San Diego

*Description:* Served as a mentor and advisor for a group of UCSD undergraduate students who have developed a workshop on renewable energy implementation in San Diego county. The study not only allows students to analyze the feasibility of renewable energy in San Diego, but also to present what they learn to their peers and invited industry and academic experts. 2012

#### *Outreach Awards and Recognition*

Recipient, Chancellor's Award for Sustainability, University of California, San Diego

Recipient, Distinguished Service Award, National Order of the Arrow Committee, Boy Scouts of America

Eagle Scout, Boy Scouts of America

## **MEDIA COVERAGE**

- Appearance and Feature story on "Daily Planet" on Discovery Canada and the Science Channel in the USA. Feature covers our lab's wildland fire research and a large-scale fire whirl demo.
- "UC San Diego, UMD Researchers to Build 'WIFIRE' Cyberinfrastructure," UC San Diego News Center, Sep. 26, 2013.
- UMD/ US Forest Service Collaborative project on Wildland fire spread research featured in New York Times Magazine Article, "Into the Wildfire" by Paul Tullis, Sept. 19, 2013.
- Room fire test and interview for William Shatner's Weirder or What, to appear on Discovery Channel (USA) and History Channel (Europe/Australia) in Spring, 2012.
- Descubren como se propaga el fuego en incendios de almacenes y depositos, Tendencias de la Ingenieria, Pablo Javier Picente, Feb. 14, 2011.  
[http://www.tendencias21.net/Descubren-como-se-propaga-el-fuego-en-incendios-de-almacenes-y-depositos\\_a5731.html](http://www.tendencias21.net/Descubren-como-se-propaga-el-fuego-en-incendios-de-almacenes-y-depositos_a5731.html)
- UC San Diego Engineers Play Role in Warehouse Fire Safety, UC San Diego Jacobs School of Engineering Website Feature, February, 2011.  
[http://www.jacobsschool.ucsd.edu/news/news\\_releases/release.sfe?id=1041](http://www.jacobsschool.ucsd.edu/news/news_releases/release.sfe?id=1041).
- Engineers Predict how Fires Spread in Warehouses, Science Daily Website Feature, Feb. 7, 2011.  
<http://www.sciencedaily.com/releases/2011/02/110202172309.htm>
- UC San Diego Students, Area Attorneys and Financial Analysts Win Sustainability Award", UC San Diego Feature Story, Rex Gram, May 26, 2010.  
<http://ucsdnews.ucsd.edu/newsrel/awards/05-26SustainabilityAward.asp>
- Solar Success, Pulse, Magazine of UC San Diego Jacobs School of Engineering.  
<http://www.jacobsschool.ucsd.edu/pulse/spring2010/around2.shtml>.
- UCSD engineering students help San Diego region secure \$154 million in solar bonds," PhysOrg, Nov. 3, 2009.  
<http://www.physorg.com/wire-news/18723097/ucsd-engineering-students-help-san-diego-region-secure-154-milli.html>.
- Campus Secures \$15 Million in Clean Renewable Energy Bonds, UC San Diego Feature Story, Rex Gram, This Week at UCSD, Nov. 2, 2009.

[http://ucsdnews.ucsd.edu/thisweek/2009/11/02\\_energy.asp](http://ucsdnews.ucsd.edu/thisweek/2009/11/02_energy.asp).

- County wins big share of solar funds, San Diego Union Tribune, Onell R. Soto, Oct. 30, 2009.  
<http://www.signonsandiego.com/news/2009/oct/30/county-wins-big-share-solar-funds/?metro>