



# Combustion

Science & Engineering, Inc.

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## **STEPHEN M. OLENICK, MSFPE, MBA, P.E., CFEI**

### **EDUCATION:**

B.S., Fire Protection Engineering, University of Maryland, College Park, MD, May 1998

M.S., Fire Protection Engineering, University of Maryland, College Park, MD, December 1999

M.B.A., Loyola University, Baltimore, MD, December 2011

### **THESIS:**

Olenick, S.M., "Validation of the Forced Flow Ignition and Flame Spread Test (FIST), A Reduced Scale Test Apparatus, to Assess Material Flammability for Micro-Gravity Environments," University of Maryland, College Park, Maryland, December 1999.

### **PROFESSIONAL EXPERIENCE:**

#### **Principal Engineer, Combustion Science & Engineering, Inc., Columbia, MD, 2011-present.**

Responsible for conducting fire investigations and fire hazards analysis, providing fire litigation support, and utilizing computer fire modeling including both zone models and computational fluid dynamics (CFD). Litigation experience includes both criminal and civil cases involving residential, commercial, and industrial fires. Conducted various site fire investigations that cover a wide range of structural settings including residential, commercial, and industrial facilities. Performed model validation of both zone and CFD models to determine error limits and accuracy of models in various scenarios. Participated in numerous projects funded by government grants (NASA, NIST, etc.) to determine methodologies for modeling smoke detector activation. Responsible for providing leadership and managerial duties on numerous computational and experimental projects, as well as overseeing and reviewing many computational simulations.

#### **Senior Engineer, Combustion Science & Engineering, Inc., Columbia, MD, 2005-2011.**

#### **Project Engineer, Combustion Science & Engineering, Inc., Columbia, MD, 2000-2005.**

#### **Graduate Research Assistant, University of Maryland, College Park, MD, 1998-1999.**

Responsible for design, construction, and operation of the FIST apparatus to characterize the combustion of solid materials in micro-gravity. Funded by NASA and conducted under the supervision of Professor Dr. Jose Torero.

#### **Undergraduate Research Assistant, University of Maryland, College Park, MD, 1997-1998**

Responsible for investigating the effect of weathering on the flash point of crude oil. Funded by NIST and conducted under the supervision of Professor Dr. Jose Torero and graduate student Neil Wu.

## PROFESSIONAL REGISTRATION:

Registered Professional Engineer (Fire Protection), State of Delaware, No. 13131  
Certified Fire and Explosion Investigator (CFEI), National Association of Fire Investigators, No. 7461-4946

## HONORS:

Fire Technology Jack Watts Award for Outstanding Reviewer, 2017  
National Fire Protection Research Foundation William M. Carey Award for best presentation, SUPDET, 2007  
NFPA Harry C. Bigglestone Award for Excellence in Communication of Fire Protection Concepts, 2005.

## PROFESSIONAL STANDING:

### *Memberships:*

Member, Salamander Honorary Fire Protection Engineering Society, Beta Chapter  
Member, Society of Fire Protection Engineers (SFPE)  
Member, National Fire Protection Association (NFPA)  
Member, International Association of Arson Investigators (IAAI)  
Member, National Association of Fire Investigators (NAFI)  
Member, International Association of Fire Safety Science (IAFSS)

### *Committees:*

Chair, Technical Committee on Fuel Gases Warning Systems (NFPA 715), 2019-present  
Principal, National Fire Alarm and Signaling Code (NFPA 72) Technical Committee on Single- and Multiple-Station Alarms and Household Fire Alarm Systems (SIG-HOU), 2005-present  
Principal, Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment (NFPA 720) Technical Committee on Carbon Monoxide Detection, 2012-2017  
Member, SFPE Task Group on Computer Model Evaluation, 2000-2010

### *Journals and Conferences:*

Editorial Board, *Fire Technology*, 2016-present  
Guest Editor for Special Section on Detection for *Fire Technology*, 2010 (v.46, n.3)  
Member, Programme Committee, National Fire Protection Research Foundation SUPDET, 2008  
Reviewer, *Fire Technology*  
Reviewer, *Fire Safety Journal*  
Reviewer, IAFSS *International Symposium on Fire Safety Science*

## SELECTED PRESENTATIONS AND PUBLICATIONS:

### *Presentations:*

Olenick, S.M., Boehmer, H., and Klassen, M.S., " Door Messaging Strategies: Implications for Detection and Notification", NFPA Fire Protection Research Foundation Suppression, Detection and Signaling Research and Applications Symposium (SUPDET), September, 2019.

Olenick, S.M., Boehmer, H.R., and Klassen, M.S., "Door Messaging Strategies - Researching the Options", NFPA Research Foundation Door Messaging Strategies Workshop, July, 2019.

Olenick, S.M., Boehmer, H.R., and Klassen, M.S., "Door Messaging Strategies - Researching the Options", NFPA Conference & Expo, San Antonio, June, 2019.

Martin, G., Boehmer, H.R., and Olenick, S.M., "Thermally-Induced Failure of Smoke Alarms", presented at the 16th International Conference on Automatic Fire Detection (AUBE '17) and the National Fire Protection Association Research Foundation's Suppression, Detection and Signaling Research and Applications Symposium (SUPDET 2017) joint conference, September, 2017.

Martin, G., Boehmer, H.R., and Olenick, S.M., "Thermally-Induced Failure of Smoke Alarms", IAFSS 12th International Symposium on Fire Safety Science, June, 2017. (poster presentation)

Olenick, S.M., Roby, R.J., Carpenter, D.J., and Goodman, A., "Evaluation of the NFPA 72 Spacing Requirements for Waffle Ceilings", National Fire Protection Research Foundation Suppression and Detection Research and Applications Symposium (SUPDET 2008), Orlando, Florida, March 2008.

McAllister, J. and Olenick, S.M., "Smoke Detection Systems, Fire Modeling, and Fire Toxicology: Useful Tools in Fire Investigation and Reconstruction," Cozen O'Connor Continuing Legal Education seminar, April, 2007.

Sutula, J., Klassen, M., Roby, R., Olenick, S., Gaines, G. and Torero, J., "Flame Extinction Based on a Critical Damköhler Number for the Assessment of Suppression Effectiveness in Reduced Gravity Environments," Presented at the 5<sup>th</sup> International Seminar on Fire and Explosion Hazards, Edinburgh, Scotland, April 23-27, 2007.

Milarcik, E.L, Olenick, S.M., and Roby, R.J., "An Analysis of the Performance of Residential Smoke Detection Technologies Utilizing the Concept of Relative Time," presented to the National Fire Protection Research Foundation Suppression and Detection Research and Applications Symposium (SUPDET), March, 2007. (2007 Carey award)

Olenick, S.M., Roby, R.J., Klassen, M.S., Zhang, W., Sutula, J.A., Worrell, C., Wu, D., D'Souza, V., Ashley, A., Dubois, J., Torero, J.L., and Streit, L., "The Role of Smoke Detectors in Forensic Fire Investigation and Reconstruction," presented to the International Symposium on Fire Investigation Science and Technology (ISFI), June 26-28, 2006.

Sutula, J.A., Klassen, M.S., Roby, R.J., Olenick, S.M., Gaines, G., Chakraborty, A., and Torero, J.L., "Development of an Engineering Tool for Determination of Suppression Device Placement in Reduced Gravity Environments" Habitation 2006 Conference, Orlando, February, 2006.

Gaines, G., Roby, R., Klassen, M., Zhang, W., Olenick, S., and Torero, J., "An Algorithm to Predict Smoke Detector Activation in a Forced Flow Microgravity Environment" Habitation 2006 Conference, Orlando, February, 2006.

Ma. T., Olenick, S.M., Klassen, M.S., Roby, R.J., and Torero, J.L., "Carpet Under Fire: A Forensic View on the Role of Carpet (Porous Media) in Liquid Spill Fires", Harry C. Bigglestone Award Presentation, NFPA World Safety Conference and Exposition, Las Vegas, June, 2005.

Olenick, S.M., Zhang, W., Carpenter, D. J., Roby, R. J., and Klassen, S. M., "Verification and Validation of a Smoke Detector Activation Algorithm for the Fire Dynamics Simulator (FDS)", presented to the NFPA Fire Protection Research Foundation Fire Suppression and Detection Research Application Symposium, Orlando, January, 2005.

Stephen M. Olenick, Noah L. Ryder, and Jason A. Sutula, "Computer Modeling of a Controlled Full Scale House Burn with Fire Dynamics Simulator: Construction of a Complex Geometry and Comparison of Predictions with Experimental Data," presented to the NFPA World Safety Conference and Exposition, Dallas, May, 2003.

Stephen M. Olenick, Jason A. Sutula, Richard J. Roby, and Vijay T. D'Souza, "Modeling of Smoke Detector and Sprinkler Activation," presented to the NFPA Fire Protection Research Foundation's Fire Suppression and Detection Research Application Symposium; January, 2003.

Vijay T. D'Souza, Jason A. Sutula, Stephen M. Olenick, Wei Zhang, and Richard J. Roby, "Predicting Smoke Detector Activation using the Fire Dynamics Simulator," presented to the IAFSS 7th International Symposium on Fire Safety Science, June, 2002.

Maclain M. Holton, Stephen M. Olenick, Michael S. Klassen, and Richard J. Roby, "A Study of the Effectiveness of Passive Infrared Burglar Alarms to Detect Fires and Smoke," presented to The NFPA Fire Protection Research Foundation: Fire Suppression and Detection Research Application Symposium, Tampa, FL, January, 2002.

Stephen M. Olenick, Michael S. Klassen, and Richard J. Roby, "Validation Study of FDS for a High-Rack Storage Fire Involving Pool Chemicals," presented to the NFPA 430 (Storage of Liquid and Solid Oxidizers) Technical Task Group, January, 2002.

Vijay T. D'Souza, Jason A. Sutula, Stephen M. Olenick, Wei Zhang, and Richard J. Roby, "Use of the Fire Dynamics Simulator to Predict Smoke Detector Activation," presented to the Fall Technical Meeting of the Eastern States Section of the Combustion Institute, December, 2001.

Sutula, J. A., and Olenick, S. M., "The Fire Protection Engineering Consultant," presented to the University of Maryland College Park Department of Fire Protection Engineering Course "ENFP 108: Hot Topics in Fire" as guest lecturers, October, 2001.

Stephen M. Olenick, Michael S. Klassen, and Richard J. Roby, "Validation Study of FDS for a High-Rack Storage Fire Involving Pool Chemicals," presented to the SFPE 3<sup>rd</sup> Technical Symposium on Computer Applications in Fire Protection Engineering, September, 2001.

S. Olenick, J. Sutula, and J. DuBois, "Practical Applications of Computer Modeling in Combustion Engineering Consulting," presented to the Chesapeake Chapter of the Society of Fire Protection Engineers (SFPE), February 2001.

S. Olenick, J. Sutula, and J. DuBois, "Practical Applications of Computer Modeling in Combustion Engineering Consulting," presented to the University of Maryland Student Chapter of the Society of Fire Protection Engineers (SFPE), October 2000.

T. Steinhaus, S. M. Olenick, A. Sifuentes, R. T. Long and J. L. Torero, "A Method for Assessing Material Flammability for Micro-Gravity Environments," presented to the Joint Meeting of the United States Sections, The Combustion Institute, Washington, D.C., March 1999.

### ***Publications:***

Boehmer, H., Klassen, M., and Olenick, S. Modern Vehicle Hazards in Parking Structures and Vehicle Carriers. NFPA Fire Protection Research Foundation report FPRF-2020-07. July, 2020. <https://www.nfpa.org/News-and-Research/Data-research-and-tools/Building-and-Life-Safety/Modern-Vehicle-Hazards-in-Parking-Garages-Vehicle-Carriers>

Olenick, S.M., Boehmer, H., and Klassen, M.S. Door Messaging Strategies: Implications for Detection and Notification. NFPA Fire Protection Research Foundation report FPRF-2019-12. October 2019. <https://www.nfpa.org/News-and-Research/Data-research-and-tools/Detection-and-Signaling/Door-Messaging-Strategies-Implications-for-Detection-and-Notification>

Olenick, S.M., Boehmer, H., and Klassen, M.S., " Door Messaging Strategies: Implications for Detection and Notification". Extended Abstract. Proceedings of the NFPA Fire Protection Research Foundation Suppression, Detection and Signaling Research and Applications Symposium (SUPDET), 2019.

Martin, G., Boehmer, H., and Olenick, S.M., "Thermally-Induced Failure of Smoke Alarms," *Fire Technology*, v52, n2, 2020. <https://doi.org/10.1007/s10694-019-00898-6> including erratum (<https://doi.org/10.1007/s10694-019-00913-w>).

Havey, P., Munoz, M., Klassen, M.S., Holton, M.M., and Olenick, S.M., "Variability and Error Rates in Fire Alarm Audibility Measurements and Calculations," *Fire Technology*, v54, n6, 2018. <https://doi.org/10.1007/s10694-018-0755-6>.

Havey, P., Jaquay, J.T., Holton, M.M., Hussain, N. and Olenick, S.M., "Persistence of Sonic Deposition on Smoke Alarms in Forensic Fire Investigations," *Fire Technology*, v54, n6, 2018. <https://doi.org/10.1007/s10694-018-0761-8>

Martin, G., Boehmer, H.R., and Olenick, S.M., "Thermally-Induced Failure of Smoke Alarms", Proceedings of the 16th International Conference on Automatic Fire Detection (AUBE '17) and the National Fire Protection Association Research Foundation's Suppression, Detection and Signaling Research and Applications Symposium (SUPDET 2017) joint conference, 2017.

Olenick, S.M., Roby, R.J., and Carpenter, D.J., "Re-Visiting the Michael Ledford Fire Incident" Proceedings of the International Symposium on Fire Investigation Science and Technology (ISFI), 2010.

Olenick S.M., Klassen, M.S., Roby, R.J., Ma, T., and Torero, J.L., "The Behavior of Liquid Fuel on Carpet (Porous Media): A Case for the Inclusion of Science in Fire Investigation", *Fire Technology* (Special Issue: Bigglestone Award – A 25<sup>th</sup> Anniversary Retrospective), v.46, n4, 2010.

Olenick, S.M. "Guest Editorial: Special Section on Detection", *Fire Technology*, v.46, n3, 2010.

Milarcik, E.L, Olenick, S.M., and Roby, R.J., "A Relative Time Analysis of the Performance of Residential Smoke Detection Technologies" *Fire Technology*, v. 44, n.4, 2008.

Olenick, S.M., Roby, R.J., Carpenter, D.J., and Goodman, A., "Evaluation of the NFPA 72 Spacing Requirements for Waffle Ceilings", Proceedings of the National Fire Protection Research Foundation Suppression and Detection Research and Applications Symposium (SUPDET 2008), 2008.

Zhang, W., Olenick, S.M., Klassen, M.S., Carpenter, D.J., Roby, R.J., and Torero, J.L., "A Smoke Detector Activation Algorithm for Large Eddy Simulation Fire Modeling," *Fire Safety Journal*, v.43, n.2, 2008.

Roby, R.J., Olenick, S.M., Zhang, W., Carpenter, D.J., Klassen, M.S., and Torero, J.L. A Smoke Detector Algorithm for Large Eddy Simulation Modeling. NIST GCR 07-911, July, 2007.

Milarcik, E.L, Olenick, S.M., and Roby, R.J., "An Analysis of the Performance of Residential Smoke Detection Technologies Utilizing the Concept of Relative Time," Proceedings of the National Fire Protection Research Foundation Suppression and Detection Research and Applications Symposium (SUPDET), 2007. (2007 Carey award)

Sutula, J., Klassen, M., Roby, R, Olenick, S., Gaines, G. and Torero, J., "Flame Extinction Based on a Critical Damköhler Number for the Assessment of Suppression Effectiveness in Reduced Gravity Environments," proceedings of the 5<sup>th</sup> International Seminar on Fire and Explosion Hazards, Edinburgh, Scotland, April 23-27, 2007.

Olenick, S.M., Roby, R.J., Klassen, M.S., Zhang, W., Sutula, J.A., Worrell, C., Wu, D., D'Souza, V., Ashley, A., Dubois, J., Torero, J.L., and Streit, L., "The Role of Smoke Detectors in Forensic Fire Investigation and Reconstruction," Proceedings of the International Symposium on Fire Investigation Science and Technology (ISFI), 2006.

Spearpoint, M., Olenick, S. M., Torero, J. L., and Steinhaus, T., "Ignition Performance of New and Used Motor Vehicle Upholstery Fabrics", *Fire and Materials*, v. 29, n. 5, 2005.

Ma, T., Olenick, S. M., Klassen, M. S., Roby, R. J., and Torero, J. L., "Burning Rate of Liquid Fuel on Carpet (Porous Media)", *Fire Technology*, 40, 2004. (2005 Bigglestone Award)

Roby, R.J., W. Zhang, G.C. Gaines, S.M. Olenick, M.S. Klassen, and J.L. Torero, "The Integration of a Smoke Detector Model with Large Eddy Simulation Fire Modeling for Predicting Smoke Detector Activation in Microgravity," Proceedings of Strategic Research to Enable NASA's Exploration Missions Conference and Workshop Poster Session, June, 2004.

J.L. Torero, S.M. Olenick, J.P. Garo and J.P. Vantelon, "Determination of the Burning Characteristics of a Slick of Oil on Water", *Spill Science and Technology Bulletin*, v.8, 4, 2003.

Stephen M Olenick and Douglas J. Carpenter, "An Updated International Survey of Computer Models for Fire and Smoke," *SFPE Journal of Fire Protection Engineering*, v. 13, n. 2, 2003.

Vijay T. D'Souza, Jason A. Sutula, Stephen M. Olenick, Wei Zhang, and Richard J. Roby, "Predicting Smoke Detector Activation using the Fire Dynamics Simulator," Proceedings of the IAFSS 7<sup>th</sup> International Symposium on Fire Safety Science, 2002.

Maclain M. Holton, Stephen M. Olenick, Michael S. Klassen, and Richard J. Roby, "A Study of the Effectiveness of Passive Infrared Burglar Alarms to Detect Fires and Smoke," Proceedings of The Fire Protection Research Foundation: The Fire Suppression and Detection Research Application Symposium, Tampa, FL, January, 2002.

Vijay T. D'Souza, Jason A. Sutula, Stephen M. Olenick, Wei Zhang, and Richard J. Roby, "Use of the Fire Dynamics Simulator to Predict Smoke Detector Activation," Proceedings of the Fall Technical Meeting of the Eastern States Section of the Combustion Institute, December, 2001.

M. Roslon, S. Olenick, Y. Y. Zhou, D. C. Walther, J.L. Torero, A.C. Fernandez-Pello and H. D. Ross, "Micro-Gravity Ignition Delay of Solid Fuels in Low Velocity Flows," *AIAA-Journal*, v. 39, n. 12, December, 2001.

Stephen M. Olenick, Michael S. Klassen, and Richard J. Roby, "Validation Study of FDS for a High-Rack Storage Fire Involving Pool Chemicals," Final Proceedings, SFPE 3<sup>rd</sup> Technical Symposium on Computer Applications in Fire Protection Engineering, September, 2001.

N. Wu, T. Mosman, S. M. Olenick and J. L. Torero, "The Effect of Weathering on Piloted Ignition and Flash Point of a Slick of Oil," *Spill Science and Technology Bulletin*, (submitted).

M. Roslon, S. Olenick, D. Walther, J.L. Torero, A.C. Fernandez-Pello and H. Ross "Microgravity Ignition Delay of Solid Fuels in Low Velocity Flows," Proceedings of the Spring Meeting of the Western States Sections, The Combustion Institute, Boulder, Colorado, March 2000.

M. Roslon, S. Olenick, D. C. Walther, J. L. Torero, A. C. Fernandez-Pello and H. D. Ross, "Flow Effects on the Micro-Gravity Ignition Delay of Solid Fuels," *38<sup>th</sup> AIAA Aerospace Science Meeting*, Reno, Nevada, January, 2000.

S. Olenick, M. Roslon, D. Walther, J. L. Torero, A.C. Fernandez-Pello and H. Ross, "Flow Effects on the Microgravity Piloted Ignition Delay of Solid Fuels" Proceedings of the International Seminar on Microgravity Combustion, Institute of Fluid Science, Tohoku University, Sendai, Japan, August, pp 172-181, 1999.

T. Steinhaus, S. M. Olenick, A. Sifuentes, R. T. Long and J. L. Torero, "A Method for Assessing Material Flammability for Micro-Gravity Environments," Proceedings of the Joint Meeting of the United States Sections, The Combustion Institute, Washington, D.C., March 1999.

N. Wu, T. Mosman, S. M. Olenick and J. L. Torero, "The Effect of Weathering on Piloted Ignition and Flash Point of a Slick of Oil," *21<sup>st</sup> Arctic and Marine Oil Spill Program (AMOP) Technical Seminar*, Edmonton, Canada, vol.2, June 1998.