



Combustion

Science & Engineering, Inc.

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JASON A. SUTULA, P.E., Ph.D.

EDUCATION:

Ph.D., College of Science and Engineering, University of Edinburgh, Edinburgh, United Kingdom, June 2009

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

B.S., Fire Protection Engineering, University of Maryland, College Park, MD, 1997

DOCTORAL DISSERTATION:

Sutula, J.S., "Towards a Methodology for the Prediction of Flame Extinction and Suppression in Three-Dimensional Normal and Microgravity Environments," University of Edinburgh, Edinburgh, United Kingdom, 2009.

MASTER'S THESIS:

Sutula, J.S., "Buoyancy Effects on a Low Strain Counter-Flow Diffusion Flame," University of Maryland, College Park, Maryland, December 1998.

PROFESSIONAL EXPERIENCE:

Senior Engineer, Combustion Science & Engineering, Inc., Columbia, Maryland, 2003 to present.

Conduct and direct engineering fire hazard analysis and forensic failure investigations to prevent and/or explain fires and explosions. Experience includes extensive post-fire reconstruction analysis in conjunction with fire litigation involving computational fluid dynamics fire modeling, fire dynamics analysis, and case related large and small-scale experimentation. Litigation experience spans a broad range of both criminal and civil cases involving residential, commercial, and industrial fires.

Adjunct Lecturer, University of Maryland, College Park, MD, 2009 to present.

Current faculty for "Advanced Fire Suppression," a graduate level distance learning course for the Department of Fire Protection Engineering at the University of Maryland.

Project Engineer, Combustion Science & Engineering, Inc., Columbia, MD, 1999 to 2003.

Performed analytic examinations of the fluid dynamics within two large atrium spaces using the Fire Dynamics Simulator (FDS) to determine the minimum necessary requirements for a smoke control system to maintain a safe environment for occupant egress. Conducted Oxygen consumption calorimetry, ignition, and flame spread tests with various combustible materials to better determine combustion parameters required for combustion modeling. Designed and implemented comparison studies between two commonly used fire model codes (CFAST and FDS) with room fire test data to determine model capabilities when predicting smoke detector activation. Results have been used to aid in post-fire reconstruction models. Involved in the development of novel computer software model to analyze both the uptake and washout of Carbon Monoxide within occupants of structures involved in fire. Conducted both large-scale and small-scale research involving the transmission of radiant energy through laminated double and triple-pane glazing samples to characterize

hazardous life-safety scenarios within airport terminals. Responsible for fire modeling and fire hazard analysis in conjunction with fire litigation support. 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.

Research Assistant, University of Maryland, College Park, MD, 1996 to 1999.

Conducted small-scale research involving analysis of the extinction of diffusion flames in a low strain environment. Designed and constructed a unique counter-flow burner capable of producing both low strain and high strain diffusion flames. Implemented several particle tracking procedures including smoke particle imaging and Particle Image Velocimetry techniques in order to characterize the flow structure of a controlled low strain diffusion flame.

Laboratory Coordinator, University of Maryland, College Park, MD, 1998

Coordinated “Fire Phenomena/Enclosure Fires” course for the part of the Bureau of Alcohol, Tobacco, and Firearms training course for Certified Fire Investigators. Responsible for the setup and conduction of several large-scale and small-scale laboratory demonstrations and experiments such as controlled spontaneous ignition of cotton rags and linseed oil, methane and heptane pool fire tests, fire plume characterization tests, and full-scale room flashover tests.

PROFESSIONAL REGISTRATION:

Registered Professional Engineer (Fire Protection), State of Delaware, No. 12773, January 2003

HONORS:

University of Maryland Graduate Fellowship Award (Fall 1997-Spring 1998)
Maryland State Distinguished Scholar Scholarship (1993-1997)
Department of Fire Protection Engineering Chairperson’s Award (1997)
Harry C. Bigglestone Award presented by Fire Technology (2007)

PROFESSIONAL STANDING:

Alumni Member, Salamander Honorary Fire Protection Engineering Society Beta Chapter
Professional Member, Society of Fire Protection Engineers (SFPE)
Member, National Fire Protection Association (NFPA)
Member, International Association for Fire Safety Science (IAFSS)
Member, Order of the Engineer
Member, National Association of Fire Investigators (NAFI)
Alternate Member, NFPA 72 National Fire Alarm Code (SIG-HOU) Technical Committee
Member, NFPA 720 Carbon Monoxide Detection (SIG-CAR) Technical Committee
Member, NFPA 72 Task Group on the Waking Effectiveness of Smoke Detectors and Alarm Notification Devices
Member, NFPA 72, Task Group Smoke Detector Technologies

INSTRUCTOR:

“Advanced Fire Suppression”, Adjunct Lecturer for graduate level distance learning course for the Department of Fire Protection Engineering at the University of Maryland, December 2009 – February 2010.

“Office of the Maryland State Fire Marshal NFPA 921 Training Course,” Co-instructor, February 10, 2010 and March 3, 2010.

PUBLICATIONS AND PRESENTATIONS:

Papers:

Sutula, J. A., Jones, J., and Torero, J. L., “Diffusion Flame Extinction in a Low Strain Flow,” *4th International Micro-gravity Workshop*, NASA LeRC, 1997.

Sutula, J. A., Mehta, S. N., Ezekoye, O. A., and Torero, J. L., “Buoyancy Effects on a Low Strain Counter-Flow Diffusion Flame,” Proceedings of the *First Joint Meeting of the United States Sections of the Combustion Institute*, March 14-17, 1999.

Sutula, J. A., Torero, J. L., and Ezekoye, O. A., “Experimental Observations on a Low Strain Counter-Flow Diffusion Flame: Flow and Buoyancy Effects,” *5th International Micro-gravity Workshop*, NASA LeRC, 1999.

Klassen, M. S., Sutula, J. A., Holton, M. M., Roby, R. J., and Izbicki, T., “Window Breakage of Multi-Pane Glazing due to Radiant Exposure,” Proceedings of the *Fall Technical Meeting of the Eastern States Section of the Combustion Institute*, October 10-13, 1999.

Sutula, J. A., Carpenter, D. J., and Roby, R. J., “Use of the FDS Model to Analyze Two Competing Scenarios in an Alleged Arson Case,” Proceedings of the *3rd Technical Symposium on Computer Applications in Fire Protection Engineering*, September 12-13, 2001.

D’Souza, V. T., Sutula, J. A., Olenick, S. M., Zhang, W., and Roby, R. J., “Use of the Fire Dynamics Simulator to Predict Smoke Detector Activation,” Proceedings of the *Eastern States Section Meeting of the Combustion Institute*, Hilton Head, SC, December 3-5, 2001.

D’Souza, V. T., Sutula, J. A., Olenick, S. M., Zhang, W., and Roby, R. J., “Predicting Smoke Detector Activation Using the Fire Dynamics Simulator,” Proceedings of the *IAFSS 7th International Symposium on Fire Safety Science*, Worcester, MA, June 16-21, 2002.

Sutula, J., Ryder, N., Hamer, A., Schemel, C., VanBrunt, V., “Consequence Modeling of Fire using Large Eddy Simulation,” Proceedings of the 2003 Mary K. O’Connor Process Safety Symposium, College Station, TX, October 2003.

Heller, J., Roby, R., Sutula, J., and Streit, L., “Fire Modeling and Smoke Alarm Litigation,” Defense Research Institute 2005 Fire and Causality Seminar Program, November 17-18, 2005.

Klassen, M. S.; Sutula, J. A.; Holton, M. M.; Roby, R. J.; Izbicki, T. Transmission Through and Breakage of Multi-Pane Glazing Due to Radiant Exposure, *Fire Tech.*, Vol. 42, No. 2, 79-107, 2006.

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.

Sutula, J. A., Carpenter, D. J., Anderson, J., and Cometo, A., "The Use of Animation as an Aid in the Presentation of Results of Computational Fluid Dynamics Modeling in Fire Reconstruction Analysis," Proceedings of the 2nd International Symposium on Fire Investigation Science and Technology, University of Cincinnati, Cincinnati, OH, pp. 445 - 456, June 28th - 30th, 2006.

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 5th International Seminar on Fire and Explosion Hazards, Edinburgh, Scotland, April 23-27, 2007.

Magazine Articles:

Sutula, J., "Applications of the Fire Dynamics Simulator in Fire Protection Engineering Consulting," *Fire Protection Engineering*, Issue no. 14, Spring 2002.

Sutula, J., "Applications of the Fire Dynamics Simulator in Fire Protection Engineering Consulting – Case Study," *Fire Protection Engineering*, to be published in Issue No. 15, Summer 2002.

Book Reviews:

Sutula, J., "Book review of *Enclosure Fire Dynamics*, Karlsson, B. and Quintiere, J.," *Fire Technology*, Volume 36, Number 4, November 2000.

Sutula, J., "Book review of *Combating Arson for Profit: Advanced Techniques for Investigators*, 2nd Edition, Icove, D., Wherry, V., and Schroeder, J.," *Fire Technology*, Volume 38, Number 3.

Presentations:

Sutula, J. "Buoyancy Effects on a Low Strain Counter-Flow Diffusion Flame," presented to the First Joint Meeting of the United States Sections of the Combustion Institute, March 16, 1999.

Sutula, J. A. and Roby, R. J., "Advanced Investigation and Technology: Application and Presentation of Fire Modeling in Arson Investigations," presented at the National Society of Professional Insurance Investigators 1999 Advanced Insurance Fraud Seminar, Cincinnati, Ohio, November 11, 1999.

Sutula, J., Olenick, S., Du Bois, J., "Practical Applications of Computer Modeling in Combustion Engineering Consulting," presented to the SFPE University of Maryland Chapter, October 3, 2000.

Sutula, J., Olenick, S., Du Bois, J., "Practical Applications of Computer Modeling in Combustion Engineering Consulting," presented to the SFPE Chesapeake Chapter, February 20, 2001.

Sutula, J., Carpenter, D., and Cox, A., "Fire Scene Assessment and Damage Interpretation," presented at the 52nd Annual IAAI General Meeting and Educational Conference, Atlantic City, NJ, May 21, 2001.

Sutula, J. A., "Use of the FDS Model to Analyze Two Competing Scenarios in an Alleged Arson Case," presented at The 3rd Technical Symposium on Computer Applications in Fire Protection Engineering, September 13, 2001.

Sutula, J. A. and Olenick, S. M., "The Fire Protection Engineering Consultant," presented to the "ENFP108: Hot Topics in Fire" class as guest lecturers at the University of Maryland, College Park, Maryland, October 29, 2001.

Sutula, J. A., "The Fire Dynamics Simulator – Overview and Applications," presented to the SFPE New England Chapter, December 3, 2001.

- Roby, R. J., Smith, K., and Sutula, J. A., "Spread Claims – Defects in Building Construction and Their Impact of Fire," presented at NASP Subrogation 2002, Tampa, Florida, November 12, 2002.
- Olenick, S., Sutula, J., Roby, R., and D'Souza, V., "Modeling of Smoke Detector and Sprinkler Activation," presented at the Fire Suppression & Detection Research Application Symposium, Orlando, Florida, January 23, 2003.
- Klassen, M., Sutula, J., Holton, M., Roby, R., Izbicki, T., "The Evaluation of Life Safety Hazards Posed by Large Fires Outside Heavily Glazed Buildings," presented at the 2003 NFPA World Safety Conference & Exposition, Dallas, Texas, May 20, 2003.
- Sutula, J., Olenick, S., Ryder, N., "Computer Modeling of a Controlled Full Scale House Burn with FDS: Construction of a Complex Geometry and Comparison of Predictions with Experimental Data," presented at the 2003 NFPA World Safety Conference & Exposition, Dallas, Texas, May 20, 2003
- Roby, R. and Sutula, J., "When is Recovery Possible Even if you do Not Know the Cause of the Fire?" presented at the 2003 Subrogation Seminar, Atlanta, Georgia, October 1, 2003.
- Sutula, J., Ryder, N., Hamer, A., Schemel, C, VanBrunt, V., "Consequence Modeling of Fire using Large Eddy Simulation," Presented at the 2003 Mary K. O'Connor Process Safety Symposium, College Station, TX, October 2003.
- Sutula, J. A. and Ashley, Erin, "The Fire Protection Engineering Consultant," presented to the "ENFP108: Hot Topics in Fire" class as guest lecturers at the University of Maryland, College Park, Maryland, October 04, 2004.
- Sutula, J., Klassen, M., Roby, R., Olenick, S., Chakraborty, A., and Torero, J., "Development of an Engineering Tool for Determination of Suppression Device Placement in Reduced Gravity Environments," Presented at Habitation 2006, Orlando, Florida, February 6-8, 2006.
- 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., 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 5th International Seminar on Fire and Explosion Hazards, Edinburgh, Scotland, April 23-27, 2007.
- Klassen, M., Sutula, J., Holton, M., Roby, R. and Izbicki, T., "The 2007 Harry C. Bigglestone Award Presentation," Presented at the National Fire Protection Association World Safety Conference and Exhibition, Boston, Massachusetts, June 3-7, 2007.