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EDUCATION

BSME	University of Pennsylvania	1987
MSME	University of California-Berkeley	1989
Ph.D.	University of California-Berkeley	1991
Post-Doc	National Institute of Standards and Technology	1992

PROFESSIONAL EXPERIENCE:

Univ. of Texas at Austin, **Professor** (9/05-), Assoc. Prof., (9/98-8/05), & Asst. Prof., (1/93-8/98) Research interests include thermal-fluid analysis, fire physics, combustion science, and heat and mass transfer processes in reacting systems.

Altect, Inc. Austin, TX, **Co-Founder**, May 2019 – Present; Provide advice and assistance as needed for firm developing Li-ion battery safety and hazard mitigation systems.

Hazard Dynamics LLC. Austin, TX, **Partner**, August 2019 – Present; Activities include research and development in fire and explosion safety design, characterization of fire and explosion dynamics, expert witness services, and product liability consulting.

National Institute of Standards and Technology, **NRC Post-doctoral Fellow**, (12/91-12/92)
Building and Fire Research Lab: Performed computational and analytical studies on laminar diffusion flames for application to large fire combustion modeling.

University of California at Berkeley, **Research Assistant**, (8/87-11/91)
Conducted research on flame wall interactions for engine applications: Performed experimental and numerical studies on unsteady flame quenching.

HONORS AND AWARDS:

D. Peter Lund Award from Society of Fire Protection Engineers in 2020
Chosen by University of Texas Alumni Assoc. (Texas Exes) as Texas Ten Professor in 2020
Harry C. Bigglestone Award for Excellence in Communication of Fire Concepts, 2013
Fellow, American Society of Mechanical Engineers, 2006
Mechanical Engineering Honorary Graduate Engineering Award 2004
Student Engineering Council Faculty Appreciation Week Award 2003
Halliburton Foundation, Faculty Award of Excellence, 1999
College of Engineering Faculty Excellence Award, 1998
3M Untenured Faculty Fellowship, 1996, 1997
National Science Foundation Early Career Award (CAREER), 1997
Society of Automotive Engineers Ralph Teetor Educators Award, 1997
NRC Postdoctoral Research Fellow (NIST), 1991-1992
E.V. Laitone Prize in Combustion (UCB) 1990
AT&T Corporate Research Fellowship, 1987-1991
Magna Cum Laude, University of Pennsylvania, 1987
Ralph Teetor Award in MEAM, University of Pennsylvania, 1987
General Motors Scholar, 1985-1987

MEMBERSHIP & SERVICE IN PROFESSIONAL AND HONORARY SOCIETIES:

Member, UL Fire Safety Research Institute Advisory Board 2022-present
Member, Editorial Board Springer Journal Fire Technology 2017-present
Executive Editor Begell House Thermopedia 2019-present
Member, SFPE Fire Model Selection Task Group (2023-2025)
Scientific Advisory Committee for 4th International Symposium on Lithium Battery Fire Safety (2024, 2025)
Member, NFPA 855 (Standard for the Installation of Stationary Energy Storage Systems) Task Group 9 Committee 2021-2022
Member, SFPE Technical Committee for Engineering Guide Fire Modeling 2021-2022
Member, American Society of Mechanical Engineers 1990-present
(Chair K11 2014-17 committee on heat transfer in fire and combustion systems,
Fellow of ASME)
Member, ASME IMECE Steering Committee 2016-2020
Member, NRC Standing Committee on Biological and Physical Sciences in Space, 2014-2017
Member, NFPA Research Foundation Advisory Board, 2009-2013
Member, WPI Dept. of Fire Protection Engineering Advisory Board, 2007-2011

Associate Editor, ASME Journal of Heat Transfer, 2007-2011
Member, NSF Fire Workshop, 2007
Member, National Academy Sci. /NRC Committee on Future of Fire Research, 2001-2002
Executive Board Member, Central States Section of Combustion Institute, 2002-2011
Member, Academic Enrichment Committee, National Science Foundation Alliance for Minority Participation, 1993-1994
Member, The Combustion Institute 1993-2010
Member, Society of Fire Protection Engineers, 2001-present
Member, International Association for Fire Safety Science, 2005-present
Member, National Fire Protection Association, 1998-present
Member, American Association Aerosol Researchers, 2005-2008
Member, Society of Automotive Engineers (SAE) 1993-2002
Member, American Society of Engineering Education 1993-96
Member, National Society of Black Engineers 1983-87, 1993-1998
Member, National Society of Professional Engineers, 2000-2002
Tau Beta Pi 1985-1991
Pi Tau Sigma 1985- 1987

DEPARTMENT, CSE, & UNIVERSITY COMMITTEE SERVICE:
Chair, Battery Fabrication Lab Advisory Committee (2019-present)
Director, ME Online MS Program (2015-present)
Member, CSE Billy and Claude R. Hocott Faculty Award (24-25)
Member, Dept. of Mechanical Engineering CPR Committee (2022-23, 2025-26)
Member, Dept. of Mechanical Engineering Advisory Committee (2024, 2025)
Member, Dept. of Civil Arch. Env. Engineering Faculty Search Committee 2025-2026
Member, Dept. of Mechanical Engineering Faculty Search Committee 2022-2023
Member, Dept. of Civil Arch. Env. Engineering Faculty Search Committee 2022-2023
Member, Dept. of Mechanical Engineering Faculty Search Committee 2021-2022
Member, Dept. of Civil Arch. Env. Engineering Faculty Search Committee 2020-2021
Thermal Fluid Systems Area Coordinator (2013-2021)
Cockrell School Promotion and Tenure Committee (2016-2018)
Dept. of Mechanical Engineering Chair Search Committee (Chair) 2016
School of Architecture Dean Review Committee 2013
Jackson School of Geosciences Dean Search Committee 2009
Cockrell School of Engineering Dean Search Committee 2008
Civil Arch. Envr. Engineering Dept. Chair Search Committee, 2008

Faculty Building Advisory Committee, 2003-2008 (Chair, 2006-08)
Civil Engineering Dept. Chair Review Committee, 2005-06
Mechanical Engineering Dept. Chair Review Committee (Chair) 2006-07
ME Graduate Advisor, 2005-2012
ME Graduate Student Recruiting Committee, 2000-2012
ME Safety Committee, 2002-2010
ME Chair of (TFS) Faculty Recruiting Committee, 2000-2001
Engineering Awards Committee, 2000-2012, Chair (2009-12)
ME Dept. Chair Search Committee, 2000
Equal Opportunity in Engineering Committee, 1993-1998; 2002-2016
ME Strategic Planning Committee, 1998
ME Dept. Chair Search Committee, 1997
Instructional Technology Committee, 1995-1997
ME Dept. Promotions/Rewards Sub-Committee, 1995

COMMUNITY AND UNIVERSITY SERVICE:

Scientific and Technical Support for Austin Fire Department, 2002-present
Faculty Mentor, UT Equal Opportunities in Engineering, 1993-1997, 2002-2003
Faculty Adviser, Society of Fire Protection Engineers, 2003-present
Faculty Adviser, National Society of Black Engineers, 1993-2003
Science Fair Judge (Doss Elementary School) Spring 1995, 2004, 2006
Scholarship Essay Judge (African American Staff Advocating Progress) 10/1993

CONFERENCES ORGANIZED/CHAIRED:

Topic Organizer, ASME IMECE, Tampa, TX, Nov. 2017
Session Organizer, ASME Summer Heat Transfer Conference, Bellevue WA, 2017
Topic Organizer, ASME IMECE, Phoenix, AZ, Nov 2016
Session Organizer, ASME IMECE, Houston, TX, Nov. 2015
Session Organizer, ASME IMECE, San Diego, CA, Nov. 2013
Session Organizer, ASME IMECE, Houston, TX, Nov. 2012
Session Organizer, ASME Summer Heat Transfer Conference, San Juan, PR 2012
Session Organizer, ASME JSME Joint Thermal Conf., Honolulu, HI 2011
Session Organizer, ASME IMECE, Denver, CO, Nov. 2011
Session Chair, ASME Summer Heat Transfer Conference, Jacksonville, FL August 2008
Session Chair, ASME Summer Heat Transfer Conference, Vancouver, BC Canada July 2007
Session Chair, AIAA-ASME Joint Thermal Conference, San Francisco, CA June 2006

Symposium Organizer, AIAA-ASME Joint Thermal Conference, San Francisco, CA June 2006.
Local Host/Arrangements Chair, Central States Section Combustion Institute, March 2004
U.S. Session Organizer/Chair, Combustion and Fire Sessions, ASME-JSME Thermal Eng. Conf., 2003
Session Chair, Central States Section of Combustion Inst. Spring meeting, April 2002
Session Chair, AIAA/ASME, St. Louis, MO, 2002
Session Chair, ASME NHTC, Pittsburgh, Pennsylvania, 2000
Session Chair, Western States Section of Combustion Inst. Spring meeting, Golden, Colorado 2000
Session Co-Organizer, ASME IMECE K-11 sessions, Anaheim, California, 1998
Session Chair, AIAA/ASME K-11 sessions, Albuquerque, New Mexico, 1998
Session Chair, ASME IMECE K-11 sessions, Baltimore, Maryland, 1997
Session Chair, ASME IMECE K-11 sessions, Atlanta, Georgia, 1996
Session Co-Organizer, ASME IMECE K-11 sessions, Atlanta, Georgia, 1996
Session Co-Organizer, ASME NHTC K-11 sessions, Portland, Oregon, 1995
Session Chair, ASME NHTC K-11 sessions Portland, Oregon, 1995

OTHER PROFESSIONAL SERVICE:

Reviewer: J. Fire Technology; J. Energy Storage, J. Power Sources; Combustion and Flame; Combustion Theory and Modeling**;** Combustion Institute; Combustion Science and Technology; Experimental Thermal and Fluid Science; AIAA J. of Thermophysics and Heat Transfer; Transactions of the Society of Automotive Engineers; National Science Foundation; Israel Science Foundation; NASA Microgravity Combustion Proposal Panel; Numerical Heat Transfer; Journal of Acoustical Soc. of America; Environmental Progress International Association Fire Safety Science; International Journal of Hydrogen Energy; International Heat Transfer Conference (IHTC-13).

PUBLICATIONS:

A. Refereed Archival Journals

1. Yang, C., Singh, A., Pu, X., Mallarapu, A., Smith, K., Keyser, M., Haberman, M.R., Khani, H., Misztal, P., Spray, R. and Ezekoye, O.A., 2025. Addressing the safety of next-generation batteries. *Nature*, *645*(8081), pp.603-613.
2. Li, W., Zhao, Z., Yanyachi, A., Kuppan, S., Liu, Z., Zhou, J., Ezekoye, O., Khani, H. and Liu, Y., 2025. Sponge-Inspired Pressing Approach to Facilitate Electrolyte Wetting in Li-Ion Pouch Cells. *Journal of The Electrochemical Society*.
3. Li, W., Yanyachi, A., Sun, T., Wu, D., Banis, M.N., Liu, Z., Zhou, J., Kuppan, S., Ezekoye,

O. and Liu, Y., 2025. Multimodal Characterization of Coating Defects in Graphite Electrodes for Lithium-Ion Batteries. *Journal of The Electrochemical Society*, *172*(8), p.080523.

4. Lin, L., Yanyachi, A.M., Eichler, J.E., Mullins, C.B., Finegan, D.P. and Ezekoye, O.A., 2025. Characterizing hazardous gases from NMC811 materials and coin cells with TGA and tube-furnace FTIR-MS evolved-gas-analysis. *Energy Storage Materials*, p.104313.
5. Qian, G., Zan, G., Li, J., Meng, D., Sun, T., Thampy, V., Yanyachi, A.M., Huang, X., Yan, H., Chu, Y.S. and Gul, S., …… Ezekoye O.A., Liu, Y. 2025. In-device Battery Failure Analysis. *Advanced Materials*, p.2416915.
6. McGee, T.M., Ezekoye, O.A. and Haberman, M.R., 2025. Modal analysis of lithium-ion pouch cell for state estimation and monitoring early-stage aging. *Journal of Energy Storage*, *113*(C).
7. Lin L, Ezekoye OA. Time-resolved characterization of toxic and flammable gases during venting of Li-ion cylindrical cells with current interrupt devices. Journal of Loss Prevention in the Process Industries. 2025 Apr 1;94:105488.
8. Franqueville, J.I., Scott, J.G. and Ezekoye, O.A., 2024. Quantifying the relationship between US residential mobility and fire service call volume. *International Journal of Emergency Services*.
9. McGee, T.M., Neath, B., Matthews, S., Ezekoye, O.A. and Haberman, M.R., 2024. Ultrasonic detection of pre-existing thermal abuse in lithium-ion pouch cells. *Journal of Power Sources*, *595*, p.234035.
10. Franqueville, J.I., Archibald, E.J. and Ezekoye, O.A., 2023. Data-driven modeling of downwind toxic gas dispersion in lithium-ion battery failures using computational fluid dynamics. *Journal of Loss Prevention in the Process Industries*, *86*, p.105201.
11. McGee, T.M., Neath, B., Matthews, S., Ezekoye, O.A. and Haberman, M.R., 2023. Ultrasonic inspection of lithium-ion pouch cells subjected to localized thermal abuse. Journal of Power Sources, 583, p.233542.
12. Yan H and Ezekoye OA., 2023. State of charge effects on active material elemental composition changes between pre-thermal-runaway and post-failure states for 8-1-1 nickel-manganese-cobalt 18650 cells, Journal of Energy Storage, 63, 2023
13. Kennedy, R.W. and Ezekoye, O.A., Experimental and modeling characterization of nickel–manganese–cobalt (532) lithium ion battery arrays with thermal separators. Journal of Energy Storage, 60, p.106682. 2023.
14. Yan H, Gajjar PD, Ezekoye OA. Electrothermal Characterization and Modeling of Lithium-Ion Pouch Cells in Thermal Runaway. Fire Technology. 2022 Dec 29:1-39.
15. Coelho, F., Okuno, R., Sepehrnoori, K., Ezekoye, OA .,A Comparative Study of the Cubic-Plus-Association Equation of State and a Peng-Robinson Equation of State–Based Solid Model for Asphaltene Simulation in the Wellbore, SPE Production & Operations 38 (01), 125-145,

2023

16. Bilyaz, S. and Ezekoye, O.A., 2022. Modeling the dispersion and mixing of light gases in enclosed spaces using the Method of Moments. Journal of Loss Prevention in the Process Industries, p.104877
17. Wessies, S.S. and Ezekoye, O.A., 2022. A Framework for Determining the Ignition Signatures in a Fuel Bed due to Firebrand Deposition. Fire Technology, pp.1-23.
18. Franqueville, J.I., Cabrera, JM. & Ezekoye, O.A. Improving Heat Flux Predictions for Directional Flame Thermometers by Incorporating Convective Effects. Fire Technol 58 (4), 2463-2483 (2022). https://doi.org/10.1007/s10694-022-01263-w
19. Abbasi, M.Z., Wilson, P.S., and Ezekoye, O.A., "Ray tracing and finite element modeling of sound propagation in a compartment fire", The Journal of the Acoustical Society of America (Vol.151, Issue 5) 2022
20. Buffington, T., Cabrera, J-M, and Ezekoye, O.A., "Statistical aggregation of heat flux measurements for Bayesian inference of a burner fire's radiative fraction", Fire Safety Journal Vol 129, 2022
21. Kennedy, R.W., Bilyaz, S., and Ezekoye, O.A., "Low Order Modeling of Lithium Cobalt Oxide Lithium-Ion Battery Arrays with Various States of Charge", Journal of Energy Storage, 49, 2022
22. Abbasi, M.Z., Wilson, P.S., and Ezekoye, O.A., "Head-related transfer function measurements in a compartment fire", The Journal of the Acoustical Society of America (Vol.151, Issue 3) 2022
23. Cabrera, J.M., Moser, R.D. and Ezekoye, O.A., "Experimental and Modeling Uncertainty Considerations for Determining the First Item Ignited in a Compartment Using a Bayesian Method" Journal of Verification, Validation and Uncertainty Quantification, 7(1), 2022.
24. Yan, H., Marr, K. C., & Ezekoye, O. A. "Thermal runaway behavior of nickel–manganese–cobalt 18650 lithium-ion cells induced by internal and external heating failures", Journal of Energy Storage, 45, 103640, (2022)
25. Wessies, S.S., and Ezekoye, O.A.., "Cooling of Heated Solid Cylinder Supported on Bedded and Embedded Substrates by Impinging Air Jet." Journal of Thermal Science and Engineering Applications (2022): 1-12.
26. Bilyaz, S., Buffington, T., and Ezekoye, O.A., "The Effect of Fire Location and the Reverse Stack on Fire Smoke Transport in High-Rise Buildings", Fire Safety Journal 126 (2021)
27. Coelho F, Sepehrnoori K, Ezekoye OA. "A Coupled Hydrate and Compositional Wellbore Simulator: Understanding Hydrate Inhibition from Associated Brines in Oil and Gas Production". SPE Production & Operations. 2021
28. Cabrera, J., Moser, R., and Ezekoye, O. A., "Bayesian inference of fire evolution within a

compartment using heat flux measurements" Fire Technology, 57 2020 https://doi.org/10.1115/1.4046657

29. Buffington, T., Cabrera, J., Kurzawski, A.J., and Ezekoye, O.A., "Deep-learning emulators of transient compartment fire simulations for inverse problems and room-scale calorimetry" Fire Technology, 2020 https://doi.org/10.1007/s10694-020-01037-2
30. Buffington, T., Bilyaz, S., and Ezekoye, O.A., "Brain-STORM: A deep learning model for computationally fast transient high-rise fire simulations", Fire Safety Journal 125 (2021)
31. Osara, J., Ezekoye, O.A., Marr, K.C., Bryant, M.D., "A Methodology for Analyzing Aging and Performance of Li-ion Batteries: Consistent Cycling Application" J. Energy Storage, 2021
32. Coelho FM, Sepehrnoori K, Ezekoye OA. "Coupled geochemical and compositional wellbore simulators: A case study on scaling tendencies under water evaporation and CO2 dissolution". Journal of Petroleum Science and Engineering. 2021
33. Tyler Buffington, James G. Scott, Ofodike A. Ezekoye, "Combining spatial and sociodemographic regression techniques to predict residential fire counts at the census tract level" Computers, Environment and Urban Systems, 88 2021
34. Yan, H., Marr, K.C, and Ezekoye, O.A., "Towards fire forensic characteristics of failed cylindrical format lithium-ion batteries and packages" Fire Technology, 2020 https://doi.org/10.1007/s10694-020-01079-6
35. Kennedy, R.W., Marr, K.C. and Ezekoye, O.A., Gas release rates and properties from Lithium Cobalt Oxide lithium ion battery arrays. *Journal of Power Sources*, *487*, p.229388. 2021.
36. Archibald, E.J., Kennedy, R., Marr, K.C., Jeevarajan, J.A, and Ezekoye, O.A., "Characterization of Thermally Induced Runaway in Pouch Cells for Propagation" Fire Technology, 2020 https://doi.org/10.1007/s10694-020-00974-2
37. Bilyaz, S., Marr, K.C, and Ezekoye, O.A., "Modeling of thermal runaway propagation in a pouch cell stack, https://doi.org/10.1007/s10694-020-00970-6 , 2020
38. Mustafa Z. Abbasi, Preston S. Wilson, and Ofodike A. Ezekoye, "Change in acoustic impulse response of a room due to a fire", The Journal of the Acoustical Society of America (Vol.147, Issue 6) 2020
39. Kurzawski, A.J. and Ezekoye, O.A., "Inversion for Fire Heat-Release Rate using Heat Flux Measurements", ASME. J. Heat Transfer. May 2020; 142(5): 051301. https://doi.org/10.1115/1.4046264
40. Cabrera, J., Moser, R., and Ezekoye, O. A. "A Modified Directional Flame Thermometer: Development, Calibration, and Uncertainty Quantification." ASME. J. Verif. Valid. Uncert. (2020). doi: https://doi.org/10.1115/1.4046657
41. Kurzawski, A.J., Cabrera, J-M., and Ezekoye, O.A., "Model Considerations for Fire Scene Reconstruction Using a Bayesian Framework", Fire Technology, 56, pages445–467 (2020)

42. Baird, A.R., Archibald, E.J., Marr, K.C., and Ezekoye, O.A., "Explosion Hazards from Lithium-Ion Battery Vent Gas' Journal of Power Sources, 446, pp227-257, 2020
43. Ding, Y., Fukumoto, K., Ezekoye, O.A., Lu, S., Wang, C., and Li, C. "Experimental and Numerical Simulation of Multi-component Combustion of Typical Charring Material" Combustion and Flame 211, pp417-429, 2020
44. Buffington, T and Ezekoye, O.A., "Statistical analysis of fire department response times and effects on fire outcomes in the United States", Fire Technology, 55, pages2369–2393 (2019)
45. Wessies, S., Chang, R., Marr, K.C., and Ezekoye, O.A., "Experimental and Analytical Characterization of Firebrand Ignition of Home Insulation Materials", Fire Technology 55, 1027–1056 (2019).
46. Bilyaz, S and Ezekoye, O.A., "Fire Smoke Transport and Opacity Reduced-Order Model (Fire-STORM): A New Computer Model for High-Rise Fire Smoke Simulations", Fire Technology 55, 981–1012 (2019). https://doi.org/10.1007/s10694-019-00815-x
47. Wanegar, D and Ezekoye, O.A., "Orthogonal Function Extension to Enclosure Theory" Journal of Quantitative Spectroscopy and Radiative Transfer, Vol. 224, pp272-278, 2019
48. Ganesh, H.S., Ezekoye, O.A., Edgar, T.F, and Baldea, M. "Heat Integration and Operational Optimization of An Austenitization Furnace Using Concentric-tube Radiant Recuperators", AIChE Journal, 65, no. 7 (2019)
49. Ding, Y., Ezekoye, O. A., Zhang, J., Wang, C., & Lu, S. The effect of chemical reaction kinetic parameters on the bench-scale pyrolysis of lignocellulosic biomass. Fuel, 232, 147-153, 2018.
50. Anderson, A.D. and Ezekoye, O.A., "Quantifying generalized residential fire risk using ensemble fire models with survey and physical data", *Fire Technology*, Volume 54, Issue 3, pp 715–747, May 2018
51. Anderson, A.D. and Ezekoye, O.A., "Exploration of NFIRS protected populations using geocoded fire", *Fire Safety Journal,* Vol. 95, Pages 122-134, January 2018
52. Heng, V.R., Ganesh, H.S., Dulaney, A.R., Kurzawski, A., Baldea, M., Ezekoye, O.A. and Edgar, T.F.,. Energy-Oriented Modeling and Optimization of a Heat Treating Furnace. *Journal of Dynamic Systems, Measurement, and Control*, *139*(6), 2017.
53. Roberts, B.C., Jones, A.R., Ezekoye, O.A., Ellison, C.J. and Webber, M.E., Development of kinetic parameters for polyurethane thermal degradation modeling featuring a bioinspired catecholic flame retardant. *Combustion and Flame*, *177*, pp.184-192., 2017.
54. Ding, Y., Ezekoye, O.A., Lu, S., Wang, C., and Zhou, R., "Comparative pyrolysis behaviors and reaction mechanisms of hardwood and softwood" *Energy Conversion and Management*, 132, pp102–109, 2017
55. Roberts, B.C., Webber, M.E. & Ezekoye, O.A., "Why and How the Sustainable Building Community Should Embrace Fire Safety," *Current Sustainable/Renewable Energy Reports*

December 2016, Volume 3, Issue 3–4, pp 121–137

56. Ding, Y., Ezekoye, O.A., Lu, S. and Wang, C., "Thermal degradation of beech wood with thermogravimetry/Fourier transform infrared analysis" Energy Conversion and Management, 120, 2016, pp.370-377.
57. Overholt KJ, Floyd JE, Ezekoye OA. Computational modeling and validation of aerosol deposition in ventilation ducts. Fire Technology. 2016 Jan 1;52(1):149-66.
58. Anzalone, R., Barr, B.W., Upadhyay, R.R. and Ezekoye, O.A., "Use of a Quasi-Steady Ablation Model for Design Sensitivity with Uncertainty Propagation". *Journal of Thermal Science and Engineering Applications*, *9*(1) 2016.
59. Roberts BC, Webber ME, Ezekoye OA. Development of a multi-objective optimization tool for selecting thermal insulation materials in sustainable designs. *Energy and Buildings*. Volume 105, 15 October 2015, Pages 358-367.
60. He, Q., Ezekoye, O. A., Li, C., & Lu, S. Ventilation limited extinction of fires in ceiling vented compartments. *International Journal of Heat and Mass Transfer*, 91, (2015). 570-583.
61. Kumar, A., Baldea, M., Edgar, T. F., & Ezekoye, O. A. Smart Manufacturing Approach for Efficient Operation of Industrial Steam-Methane Reformers. *Industrial & Engineering Chemistry Research*, 54(16), (2015). 4360-4370.
62. Dorindo E. Cardenas and Ofodike A. Ezekoye, Thermal Characterization of Electrical Wires and Insulation Operated in Variable Frequency Mode, *Fire Technology* Volume 51, issue 5 (2015) pp 1071-1092
63. Felipe Roman Centeno, Rogério Brittes, Francis. H.R. França, and Ofodike A. Ezekoye, "Evaluation of Gas Radiation Heat Transfer in a 2D Axisymmetric Geometry Using the Line-by-Line Integration and WSGG Models" *Journal of Quantitative Spectroscopy and Radiative Transfer* v.156 pp1–11 (2015)
64. Overholt, K.J. and Ezekoye, O.A., Quantitative Testing of Fire Scenario Hypotheses: A Bayesian Inference Approach, *Fire Technology*, (2015) *51*(2), pp.335-367.
65. Fabiano Cassol, Rogério Brittes, Francis H.R. França , Ofodike A. Ezekoye, "Application of the weighted-sum-of-gray-gases model for media composed of arbitrary concentrations of H2O, CO2 and soot", *International Journal of Heat and Mass Transfer* 79 (2014) 796–806
66. Overholt, K.J, Cabrera, J. Kurzawski, A. Koopersmith, M., Ezekoye O.A., "Fire behavior and heat fluxes for lab-scale burning of little bluestem grass", *Fire Safety Journal* Volume 67, July 2014, Pages 70–81
67. Maurizio Natali, Joseph H. Koo, Eric Allcorn, O.A. Ezekoye, An in-situ ablation recession sensor for carbon/carbon ablatives based on commercial ultra-miniature thermocouples, *Sensors and Actuators B: Chemical*, Volume 196, June 2014, Pages 46-56, ISSN 0925-4005, http://dx.doi.org/10.1016/j.snb.2014.01.022.

68. Baker, Chad A., Alaattin Osman Emiroglu, Rehan Mallick, Ofodike A. Ezekoye, Li Shi, and Matthew J. Hall. "Development of an Analytical Design Tool for Monolithic Emission Control Catalysts and Application to Nano-Textured Substrate System." *Journal of Thermal Science and Engineering Applications* 6, no. 3 (2014): 031014.
69. Bruns, M.C. and Ezekoye, O.A., "Modeling Differential Scanning Calorimetry of Thermally Degrading Thermoplastics", *Journal of Analytical and Applied Pyrolysis* 105, 241-251, 2014
70. Overholt, K.J, Cabrera, J. Kurzawski, A. Koopersmith, M. Ezekoye O.A., " Characterization of fuel properties and fire spread rates for little bluestem grass" *Fire Technology* 50.1 (2014):pp 9-38.
71. Waye, S.K., Anderson, A., Corsi, R. and Ezekoye, O.A., "Thermal Effects on Polybrominated Diphenyl Ether Mass Transfer and Emission from Computer Cases", *International J. Heat and Mass Transfer*, Volume 64, Pages 343–351, 2013
72. Ezekoye, O.A., Hurley, M. J., Torero, J.L., and McGrattan, K.B., "Applications of Heat Transfer Fundamentals to Fire Modeling", *ASME Journal of Thermal Science and Engineering Applications*, vol 5, no. 2, 2013
73. Weinschenk, C. and Ezekoye, O.A., "Characterization of a CFD Thermocouple Model Subjected to Stochastic Environmental Forcing using Moment Based Analysis", *ASME Journal of Thermal Science and Engineering Applications*, 5(4), Oct 2013
74. Hubbard, J.A., Haglund, J.S Ezekoye O.A., McFarland, A.R. "Modeling liquid film evaporation in a wetted wall bioaerosol sampling cyclone", *ASME Journal of Thermal Science and Engineering Applications*, vol. 5, 2013
75. Gamba, M., Clemens, NT, and Ezekoye, OA, "Volumetric PIV and 2D OH PLIF Imaging in the Far-Field of a Low-Reynolds Number Nonpremixed Jet Flame", *Measurement Science and Technology*, 24(2), 024003 2013
76. Anderson, A. and Ezekoye, O.A. "A Comparative Study Assessing Factors that Influence Home Fire Casualties and Fatalities using State Fire Incident Data", *Journal of Fire Protection Engineering*, vol. 23, 1: pp. 51-75, 2013
77. Godse, U.B., Ponkala, M.J.V., Stuber, J., Elkhatib, B. and Ezekoye O.A., "Characterization of mass transfer rates and contamination kinetics on silicon wafer surface", *Semiconductor Manufacturing, IEEE Transactions on* , vol.26, no.1, pp.145,155, 2013
78. Barr, B.W. and Ezekoye, O.A., "Thermo-mechanical Modeling of Brand Breakage on a Fractal Tree for Brand Lofting Predictions" *The Combustion Institute*, vol. 34 issue 2 2013. p. 2649-2656
79. Bruns, M.C. and Ezekoye, O.A., "Development of a hybrid sectional quadrature-based moment method for solving population balance equations", *Journal of Aerosol Science*, *Volume 54*, *December 2012*, *Pages 88-102*

80. Overholt, K.J., and Ezekoye, O.A., "Characterizing heat release rates using an inverse fire modeling technique". *Fire Technology*, October 2012, Volume 48, Issue 4, pp 893-909
81. Mladenka, S, Romero, W, Yeldell, C, Ezekoye, OA, Cournoyer, ME, "Chemical hood glass failure under thermal loading associated with fire", *Journal of Chemical Health and Safety*, , *19*(6), 30-36, 2012
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63. Stanglmaier, R.H., Roberts, C.E., Ezekoye, O.A., and Matthews, R.D., "Condensation of Fuel on Combustion Chamber Surfaces as a Mechanism for Increased HC Emissions from SI Engines During Cold Start," SAE Fuels and Lubric. Meeting, 1997
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65. Leach, S.V., Ellzey, J.L., and Ezekoye, O.A., "A Numerical Study of Smoldering Combustion," ASME NHTC, Baltimore, Maryland, 1997
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75. Lu, J.H., Ezekoye, O.A., Iiyama, A., Greif, R., and Sawyer, R.,"Effect of Knock on Time Resolved Engine Heat Transfer", Society of Automotive Engineers Paper 890158, 1989

C. Other Publications

1. Mustafa Z. Abbasi, Preston S. Wilson, and Ofodike A. Ezekoye, "Ray tracing and finite element modeling of sound propagation in a compartment fire", 2021, arXiv preprint arXiv:2108.11516.
2. Mustafa Z. Abbasi, Preston S. Wilson, and Ofodike A. Ezekoye, "Head-related transfer function measurements in a compartment fire", 2021 arXiv preprint arXiv:2108.11465.
3. McGee, Tyler, Erik Archibald, Ofodike A. Ezekoye, and Michael R. Haberman. "Ultrasonic inspection of lithium-ion batteries to determine state of charge, state of health, and battery safety." *The Journal of the Acoustical Society of America* 146, no. 4 (2019): 2816-2817.
4. Trettel, B. and Ezekoye, O., 2017. Turbulence intensity's effect on liquid jet breakup from long circular pipes. *Bulletin of the American Physical Society*.
5. Abbasi, Mustafa Z., Preston S. Wilson, and Ofodike A. Ezekoye. "Effect of fire and high temperatures on alarm signals." *The Journal of the Acoustical Society of America* 135, no. 4 (2014): 2374-2374.
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9. Austin D. Anderson, Karyl A. Kinsey*, and Ofodike A. Ezekoye, “A Methodology for Predicting Residential Fire Incidence, Type, and Severity Using Geocoded NFIRS Fires”,

Society of Fire Protection Engineers National Meeting, Austin, TX 2013

10. Kristopher J. Overholt and Ofodike A. Ezekoye, “A Parameter Uncertainty Framework for Fire Scenarios Using a Bayesian Inference Approach”, Society of Fire Protection Engineers National Meeting, Austin, TX 2013
11. Ford, Kyle, Mudeer Habeeb, Joelle Suits, Mustafa Abbasi, Preston S. Wilson, and Ofodike Ezekoye. "An analysis of firefighter personal safety alarm effectiveness on the fire ground." *The Journal of the Acoustical Society of America* 134, no. 5 (2013): 4094-4094.
12. Abbasi, Mustafa Z., Preston S. Wilson, and Ofodike A. Ezekoye. "Modeling acoustic propagation in a compartment fire." *The Journal of the Acoustical Society of America* 134, no. 5 (2013): 4218-4218. Suits, Joelle I., Preston S. Wilson, and Ofodike A. Ezekoye. "Background noise levels on the fireground." *The Journal of the Acoustical Society of America* 134, no. 5 (2013): 4221-4221.
13. Suits, Joelle I., Craig A. Champlin, Preston S. Wilson, and Ofodike A. Ezekoye. "The effect of firefighter personal protective equipment on auditory thresholds." *The Journal of the Acoustical Society of America* 134, no. 5 (2013): 4228-4228.
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15. Andrew J. Kurzawski, Kristopher J. Overholt, Jan-Michael Cabrera and Ofodike A. Ezekoye, “Fire Spread and Heat Fluxes for Burning Little Bluestem Grass”, Society of Fire Protection Engineers National Meeting, Austin, TX 2013
16. Jan-Michael Cabrera and Ofodike A. Ezekoye, “Fire Suppression Systems in Gloveboxes”, Society of Fire Protection Engineers National Meeting, Austin, TX 2013
17. Abbasi, Mustafa Z., Preston S. Wilson, Ofodike A. Ezekoye, and Joelle I. Suits. "A sonar experiment to study sound propagation through flames." *The Journal of the Acoustical Society of America* 132, no. 3 (2012): 1962-1962.
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19. Bruns, M.C., and Ezekoye, O.A, “Sectional approximations in thermoplastic kinetics”, U.S. Joint National Combustion Meeting, Atlanta, GA March 2011.
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21. Kalen Braman, Venkat Raman, Rochan Upadhyay, and Ofodike Ezekoye, “DNS of high speed boundary layers over ablating surfaces” American Physical Society Abstract BAPS.2010.DFD.MR.1, Long Beach, CA, November 23, 2010

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24. Gamba, M. Clemens N. and Ezekoye, O.A., "Simultaneous 3D Volumetric PIV and 2D OH PLIF in the Far-Field of a Nonpremixed Turbulent Jet Flame", 6th US Combustion Meeting of The U.S. Sections of the Combustion Institute, March 2009
25. Morgan C. Bruns, Joseph H. Koo, and Ofodike A. Ezekoye, "Thermal Degradation of a Spatially Lumped Population of Thermoplastic Chains" 6th US Combustion Meeting of The U.S. Sections of the Combustion Institute, March 2009
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29. Morgan C. Bruns, Joseph H. Koo, and Ofodike A. Ezekoye, "Examination of Polymer Degradation and Transport using Population Balance Techniques," Central States Section Combustion Institute, Tuscaloossa AL, April 2008
30. Scot Waye, Steven Biegalski, Ofodike Ezekoye, "Development of an Aerosol Cascade Impactor Interactive Design Tool," American Association Of Aerosol Research, Reno, NV, September 2007
31. Josh Hubbard, John Haglund, Ofodike Ezekoye, "Control-Volume Numerical Simulation of Bioaerosol Dispersion in the Atmospheric Surface Layer," American Association Of Aerosol Research, Reno, NV, September 2007
32. Ezekoye, O.A., Svensson, S., and Nicks, R., "Investigating Positive Pressure Ventilation", Interflam 2007, London, England, UK, September 2007

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34. Bruns, M., Ezekoye, O. and Koo, J. "Determining Failure Time for Weak-Char Ablatives" AIAA-2007-5772 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Cincinnati, OH, July 8-11, 2007
35. . Koo, J. , Ho, W., Bruns M., and Ezekoye O., "A Review of Numerical and Experimental Characterization of Thermal Protection Materials: Part III - Material Testing", AIAA-2007-5773 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Cincinnati, OH, July 8-11, 2007
36. Koo, J. , Ho, W., Bruns M., and Ezekoye O., "A Review of Numerical and Experimental Characterization of Thermal Protection Materials Part II: Properties Characterization", AIAA-2007-2131 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Honolulu, Hawaii, Apr. 23-26, 2007
37. Marr, K., Gamba, M., Clemens, N.T., Ezekoye, O.A., "Strongly-Forced Non-Premixed Jet Flames in Cross-Flow" 5th US Combustion Meeting of The U.S. Sections of the Combustion Institute, March 2007
38. Gamba, M. Clemens N. and Ezekoye, O., "Strongly-Pulsed Turbulent Non-Premixed Jet Flames in Cross-Flow", 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 8-11, 2007
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40. Barve, V.V., Ezekoye, O.A., Clemens, N.T. and Katta, V.R., "Soot Production Rates in Strongly Forced Methane- Air Laminar Diffusion Flames" AIAA/ASME Joint Thermophysics And Heat Transfer Conference, San Francisco, CA, June 2006
41. Y. Qu, E. Puttitwong, J. Howell, and O. Ezekoye, "Shadow Effect of Lightpipes in Silicon Wafer Surface Temperature Measurements ," 9th AIAA/ASME Joint Thermophysics And Heat Transfer Conference, San Francisco, CA, June 2006.
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43. Mike Adler, O.A. (D. K.) Ezekoye and Timothy Klatt, "Arson of the Ancestors? Interdisciplinary Research into Ancient Structure Fires in the American Southwest," Southwest

Symposium: Acts Of History: Ritual, Landscape, and Historical Archaeology In The U.S. Southwest And Northwest Mexico, Las Cruces New Mexico, January 2006.

44. R. R. Upadhyay and O. A. Ezekoye, "Simulation of Turbulent Mixing and Chemical Reaction in a Partially Stirred Reactor Using the Direct Quadrature Method of Moments" AICHE Annual Meeting (Cincinnati, OH) 2005
45. R. R. Upadhyay and O. A. Ezekoye, "Transported PDF Simulations using Direct Quadrature Method of Moments", 4th Joint Meeting of The U.S. Sections of the Combustion Institute, March 2005
46. Ozgur Ekici, Ofodike A. Ezekoye, Matthew J. Hall, and Ronald D. Matthews, "Numerical Simulation of a Railplug Ignitor", 4th Joint Meeting of The U.S. Sections of the Combustion Institute, March 2005
47. K. Lakshminarasimhan, N.T. Clemens, O.A. Ezekoye "Flame Characteristics of a Resonantly Excited Transitional Methane Jet Diffusion Flame", 4th Joint Meeting of The U.S. Sections of the Combustion Institute, March 2005
48. O. A. Ezekoye and R. R. Upadhyay, "Design Fire Evaluation using Quadrature Based Moment Methods", 4th Joint Meeting of The U.S. Sections of the Combustion Institute, March 2005
49. R. R. Upadhyay and O. A. Ezekoye, "Study of Smoke Buildup and Light Scattering in a Model Photoelectric Smoke Detector", Central States Section Combustion Institute Meeting, Austin, TX 2004
50. V. V. Barve and O. A. Ezekoye, "Computations of Time-Varying Flame Properties for Laminar, Methane-Air Diffusion Flames" Central States Section Combustion Institute Meeting, Austin, TX 2004
51. F. Bisetti, K. Lakshminarasimhan, J. Whitaker, N.T. Clemens, and O. A. Ezekoye, "Diffusion Flame Properties in Transitional Pulsed Jet Flows" Central States Section Combustion Institute Meeting, Austin, TX 2004
52. O. Ekici, O. A. Ezekoye and R. D. Matthews, "Arc Evolution Modeling for a Railplug Igniter" Central States Section Combustion Institute Meeting, Austin, TX 2004
53. Bisetti, F., Martin, K.M. and Ezekoye, O. A. "Extended Flame Stability for Partially Premixed Acetylene-Air Flames by Acoustic Control" Central States Section Combustion Institute Meeting, Knoxville, TN 2002
54. G. Paganoni, J.L. Ellzey and O.A. Ezekoye, "Simulations of Buoyancy Induced Instabilities in a Counterflow Diffusion Flame," Joint Section Meeting of US Combustion Institute, Oakland CA, March 2001
55. C.F. Palacios, K.M. Martin and O.A. Ezekoye, "Correlation of Aerodynamic and Geometric Particle Size Properties of Soot Generated by an Acetylene Diffusion Flame," Joint Section Meeting of US Combustion Institute, Oakland CA, March 2001

56. H. Gao and O.A. Ezekoye, "Global Soot Production in Transient Spray Flames", Spring Western States Section Meeting of the Combustion Institute, March 2000.
57. K.M. Martin and O.A. Ezekoye, "Changes in Emissions of Soot and Gaseous Pollutants from an Acoustically Forced Acetylene-Air Diffusion Flame", Spring Western States Section Meeting of the Combustion Institute, March 2000.
58. N.A. Hall, N.A. Tanner, V.H. Mehta, K.M. Martin, and O.A. Ezekoye, "Acoustic Modifications to the Single-Droplet Combustion Process", Spring Western States Section Meeting of the Combustion Institute, March 2000.
59. G. Paganoni and O.A. Ezekoye, "Numerical Analysis of Counterflow Flame Instabilities", Spring Western States Section Meeting of the Combustion Institute, March 2000.
60. C.F. Palacios, K.M. Martin and O.A. Ezekoye, "Development of an Apparatus for Analysis of a Diffusion Flame with Pulsed Fuel Supply", Spring Western States Section Meeting of the Combustion Institute, March 2000.
61. Sutula, J.A., Mehta, S.N., Ezekoye, O.A. and Torero, J.L., "Buoyancy effects on a Low Strain Counter-Flow Diffusion Flame," Joint Meeting of the United States Sections of the Combustion Institute, March 1999.
62. O.A. Ezekoye and Y. Wibowo "Computation of Sedimentation Rates for Acoustically Enhanced Agglomeration," AICHE CCPS Annual International Conference and Workshop on Modeling Consequences of Accidental Releases of Hazardous Materials, San Francisco, CA Sept. 1999
63. O.A. Ezekoye and K.M. Martin, "Case Study of an Explosion and Fire during Fueling of a Steel Can", 15th Triennial Meeting of International Association of Forensic Sciences, Los Angeles CA, August 1999
64. K.M. Martin and O.A. Ezekoye, "Acoustic Control of Sooting Flames", Fifth International Conference on Technologies and Combustion for a Clean Environment, Lisbon, Portugal, July 1999
65. J. Sutula, J. Jones, J.L. Torero, J. Borlik, and O.A. Ezekoye, "Diffusion Flame Extinction in a Low Strain Flow," Fourth International Microgravity Combustion Workshop, Cleveland OH, May 1997
66. K.M. Martin and O.A. Ezekoye, "Acoustic Methods for Enhanced Filtration of Combustion Aerosols," Sixteenth International Conference on Incineration and Thermal Treatment Technologies, May 1997
67. J. Borlik, O.A. Ezekoye, and J.L. Torero, "Flame Extinction in a Strained Vortical Flow," Central States Section Meeting of the Combustion Institute, April 1997
68. Z. Zhang and O.A Ezekoye, "Thermal and Chemical Characterization of a Confined Methane-Air Coflow Flame," Central States Section Meeting of the Combustion Institute, April 1997

69. Ezekoye, O. and Manoucheri, M., " Polystyrene Soot Agglomeration Enhancement in an Ultrasonic Acoustic Field," The Fourth International Congress on Toxic Combustion Byproducts, Berkeley, California, June 1995
70. Fuss, S.P., Ezekoye, O.A., and Hall, M.J., "Effect of Temperature on the Infrared Radiation Properties of Methane," Joint Central and Western States Section Meeting of the Combustion Institute, April 1995.
71. Ezekoye, O.A., "Pressure Transient Augmentation of Heat Transfer During Laminar Flame Quenching," Joint Central and Western States Section Meeting of the Combustion Institute, April 1995.
72. Zhang, Z. and Ezekoye, O.A., "Acetylene-Air Diffusion Flame Computations: Comparison of State Relationships with Finite Rate Kinetics," Proceedings of International Conference on Fire Research and Engineering, Orlando, Florida, September 1995
73. Ezekoye, O. A. and Baum, H.R., "A Lagrangian Element Analysis of Combustion Processes in Fires", Central & Eastern States Sections of the Combustion Institute joint meeting, New Orleans, Louisiana, 1993.Connelly, Ogasawara, Lee, Greif, Sawyer, and Ezekoye, "Stagnation Quenching of Laminar, Methane-Air Flames in a Constant Volume Chamber: Wall Temperature Effects", Western States Section Meeting/The Combustion Institute, Stanford, California, 1994
74. Baum, H.R., Ezekoye, O.A., McGrattan, K.B., and Rehm, R.G., "Large Eddy Simulation of Fire Phenomena", Ninth Symposium on Turbulent Shear Flows, Kyoto, Japan, August 1993
75. Ezekoye, O. A., "A Thermal Element Method for Combustion Processes in Fires" presented at the National Institute of Standards and Technology Annual Conference on Fire Research, Rockville, Maryland, 1992
76. Ezekoye, Lu, Fabris, Greif, and Sawyer, "Effect of Variable Wall Temperature on Wall Heat Flux during Laminar Flame Quenching", Western States Section Meeting/The Combustion Institute, La Jolla, California, 1990
77. Lesser, M. B. & Ezekoye, O. A. “Acoustic methods for liquid impact and cavitation”, Proc. 7th Int. Conf. on Erosion by Liquid and Solid Impact (eds Field, J. E. & Dear, J. P.) (Cavendish Laboratory, Cambridge, UK, 1987).

Books, Proceedings, Book Chapters Authored/Co-authored, Editor/Co-Editor of Books

1. Peterson, R.B., Ezekoye, O.A., and Simon, T., ***Proceedings of the 1995 National Heat Transfer Conference, Vol 2 Combustion and Fire Research*** , The American Society of Mechanical Engineers, 1995 (editor)

2. Menguc, M.P., Ball, K.S. and Ezekoye, O.A., ***Proceedings of the ASME Heat Transfer Division, Vol 4 Heat Transfer in Fire and Combustion Systems*** , The American Society of

Mechanical Engineers, 1996 (editor)

3. Franca, Francis, Howell, John R., Ezekoye, Ofodike, and Morales, Juan, "Inverse Design of Thermal Systems with Dominant Radiative Transfer," ***Advances in Heat Transfer***, J.P. Hartnett and T.F. Irvine, eds., vol. 36, pp. 1-110, Elsevier Science (USA), 2002.

4. Baker, Derek, Schmidt, Philip, Ezekoye, Ofodike and Howell, John, **Thermodynamics: An Integrated Learning System**, John Wiley & Sons, New York pp., 1-480, 2004.

5. Ezekoye, Ofodike A. "Conduction of Heat in Solids", in **SFPE Handbook of Fire Protection Engineering**, pp. 25-52. Springer New York, 2016.

6. Ezekoye, Ofodike A. and Wessies, Savannah, "Vegetative Firebrand Attack" in **Encyclopedia of Wildfires and Wildland-Urban Interface (WUI) Fires**, Springer, 2020.

7. Wessies, Savannah and Ezekoye, Ofodike A. " Exposure Threats to Structures in the WUI", in **SFPE Handbook of Fire Protection Engineering**,. Springer New York, 2022.

PATENTS

Gill, Brijesh, Cox, Charles, Ezekoye, Ofodike A, Ekici, Ozgur, " *Portable fluid warming system*" US Patent Publication (Source: USPTO) Publication No. US 7891974 B2 published on 22-Feb-2011 Application No. US 11/832415 filed on 01-Aug-2007

Ezekoye, O.A. and Cabrera, J.M., University of Texas System, 2017. *Systems and methods of continuously producing encapsulated liquid water*. U.S. Patent 9,724,663.

Sidlgata V. Sreenivasan, Shrawan Singhal, Ovadia Abed, Lawrence Dunn, Paras Ajay, and Ofodike Ezekoye, 2023. *Roll-to-roll programmable film imprint lithography*. US Patent 11,669,009

PRESENTATIONS (Recent)

- Gaseous emission plumes from Li-ion battery thermal runaway events, World Energy Storage Day, Sept 23, 2024
- Gas Production and Characterization during Lithium-ion Cell Thermal Runaway, SFPE Engineering Solutions Symposium 2024 (Phoenix, AZ)
- Plume Modeling: Data, Models & Gaps, Energy Storage Safety and Reliability Forum 2024 (Richland WA)
- Lithium-Ion Systems Fire and Explosion Engineering Protections, DFW SFPE, 2024 (Dallas, TX)
- Lithium-ion Battery Thermal Runaway: Experiments & Models for Detection and Consequences, Int'l Battery Seminar and SAE Battery Safety, March 2024

- Firefighter Safety on Firegrounds Involving Lithium-ion Batteries, NFPA Webinar November 2023

RESEARCH TOPICS:

Fire Dynamics

The goal in these projects is to use experimental and computational techniques to characterize fire behavior such that improvements can be made in fire service tactics in fighting fire and building design codes for fire prevention.

Thermal Runaway, Thermal Pyrolysis, Material Ignition, and Thermal Protection

Theoretical models for material degradation and thermal runaway are developed with a goal of incorporating these models into large scale simulations of fire ignition and initiation and design of safety systems. Material systems of interest span the range of battery and electrochemical systems to simple polymeric materials.

Wildland Urban Interface (WUI) Fire

We investigate mechanisms by which wildfire impact the built environment with a goal of improving building codes and standards to lessen the impact of wildfire on communities at the WUI.

Evolving PDFs using Moment Methods

We are interested in computationally efficient methods for evolving probability density function using moment based formulations of these pdfs. These techniques are used in aerosol evolution, turbulent combustion simulation in fire compartments, and uncertainty propagation.

Inverse Models for Furnace and Fire Systems

Inverse analysis describes a powerful class of tools used to invert the typical causality of modeling problems. We investigate the use of inverse models for furnace design, fire characterization, and forensic analysis.

COURSES TAUGHT

Undergraduate	**Graduate**
ME 326 Thermodynamics I	ME 381R4 Graduate Heat Transfer

ME 328 Thermodynamics II	ME 381 Conduction Heat Transfer
ME 339 Undergrad Heat Transfer	ME 382 R5 Combustion Theory*
ME 242L Thermal Fluids Laboratory	ME 382 R Fire Science*
ME 139L Heat Transfer Laboratory	ME 381R2 Convection Heat Transfer
ME 279M Tech. Innovation Leadership *	ME 383M Heat Transfer in Industrial Systems*
ME 310T Applied Thermodynamics	
ME 360N Intermediate Heat Transfer	

***Introduced class at UT Austin**

PH.D. SUPERVISIONS COMPLETED:

1. Christopher Hackert, "Flame Quenching in Channels", co-supervised with J. Ellzey (completed 9/97)
2. Ziji Zhang, "Soot Properties of Diffusion Flames" (completed 5/98)
3. Sharon Leach, "Smoldering Combustion", co-supervised with J. Ellzey (completed 8/98)
4. Karl Martin "Acoustic Flame Processes", (completed 2/2002)
5. Patrice Seers, "Spark Ignition Physics", co-supervised with R.D. Matthews (completed 12/03)
6. Yan Qu, "Modeling Radiative Transfer in Semiconductor RTP" co-supervised with J.R. Howell (completed 8/06)
7. Krishna Lakshminarasimhan, "Measurements of Acoustically Forced Flames", co-supervised with N.T. Clemens (completed 8/06)
8. Ekachai Puttitwong, "Experiments of Heat Transfer in Semiconductor RTP", co-supervised with J.R. Howell (12/06)
9. Vinayak Barve, "Modelling of Flow and Soot Evolution in Pulsed Flame", (PhD 12/06)
10. Rochan Upadhyay, "Development of Population Balance Models for Fire" (PhD 12/06)
11. Ozgur Ekici, "Modelling of Spark Evolution", co-supervised with R.D. Matthews (5/07)
12. Scot Waye, "Transport Modeling of Brominated Flame Retardant (PBDE) from Plastics" co-supervised with S. Biegalski (12/08)
13. Mirko Gamba. "Experiments in Turbulent Flames", co-supervised with N. Clemens (5/09)
14. Joshua Hubbard, "Characterization of a Wetted Wall Cyclone", (w/ John Haglund) (8/09)
15. Kevin Marr, "Characterization of Pulsed Flame in Cross-flow", (w/ Noel Clemens) (05/11)
16. Craig Weinschenk, "Modeling Fire Evolution with Firefighter Tactical Inputs" (08/11)
17. Uday Godse, "Modeling Decontamination on Semiconductor Wafer Surfaces" (w/ S.V. Sreenivasan) (12/11)

18. Morgan Bruns, “Modeling and Simulation of Linear Thermoplastic Thermal Degradation” (5/12)
19. Kris Overholt, “Forward and Inverse Modeling of Fire Physics Towards Fire Scene Reconstructions” (5/13)
20. Austin Anderson, “Methods of Quantifying Fire Risk in Buildings and Communities” (5/17)
21. Bonnie Roberts, “Fire Safety in Sustainable Buildings: Status, Options, Alternatives” (w/ M. Webber) (5/17)
22. Andrew J. Kurzawski, “Inverse Modeling and Characterization of an Experimental Testbed to Advance Fire Scene Reconstruction” (12/17)
23. Ben Trettel, “Turbulent jet breakup: theory and data” (08/20)
24. Mustafa Z. Abbasi, “Sound Propagation in a Compartment Fire” (w/ Preston Wilson) (12/20)
25. Tyler C. Buffington, “Combining data-driven and physics-based models for fire applications” (12/20)
26. Jan-Michael Cabrera, “Towards a Bayesian Framework for Fire Origin and Evolution in Fire Forensics” (12/20)
27. Serhat Bilyaz, “Development of Reduced-Order Models for Fire Hazards in Battery Energy Storage Systems” (12/20)
28. Erik Archibald, “Fire and Explosion Hazards due to Thermal Runaway Propagation in Lithium-Ion Battery Systems” (05/21)
29. Robert Kennedy, “Experimental and Computational Characterization of Thermal Runaway Propagation in Lithium-Ion Pouch Cell Arrays” (12/21)
30. Savannah Wessies, “Firebrand Ignition - Characterization of Heat Transfer Mechanisms” (12/21)
31. Fernando Coelho, “Comprehensive Modeling of Flow Assurance: Scales, Hydrates, and Asphaltenes” (w/ Kamy Sepehrnoori) (08/22)
32. Haotian Yan, “Towards an Investigation Framework for Lithium-ion Battery Fire Forensics” (12/22)
33. Tyler McGee, “Ultrasonic and vibrational methods to determine changes of state of lithium-ion cells” (12/23)
34. Juliette Franqueville, “Data-Driven and Physics-Based Models for Emerging Public Safety Challenges” (12/24)

M.S. SUPERVISIONS COMPLETED:

1. Michael Manoucheri 8/95
2. Stephen Paul Fuss, co-supervised with M.J. Hall 12/95
3. Vijay K. Bokka, co-supervised with R.D. Matthews 5/96
4. Campbell D. Lowman 5/97
5. Karl Martin 12/97
6. Jeffrey Borlik 5/98
7. Yanuar Wibowo 8/98
8. J.A. Carter 5/00
9. J.J. Schmidt 8/00
10. G. Paganoni 12/00
11. S. Jenkins co-supervised with R.D. Matthews 5/01
12. C. Palacios 8/01
13. Fabrizio Bisetti 8/02
14. Vinayak Barve 12/02
15. Krishna Lakshminarasimhan 12/02
16. Sameer Bhat (with R.D. Matthews) 5/03
17. Mirko Gamba (with J.R. Howell) 5/03
18. Amara Holder 8/03
19. Rochan Upadhyay 8/03
20. Craig Weinschenk 12/07
21. Shrawan Singhal (w/ S.V. Sreenivasan) 12/07
22. Wai-Kit- Ho (w/ Joe Koo) 12/07
23. Khiet Nguyen (w/ Joe Koo) 12/07
24. Eric Burton (w/ J. Haglund)
25. Philip Kokel 12/08
26. Colin Beal 12/08
27. Reed Anzalone, 12/10
28. Joel Hron (w/ Isakson) 05./11
29. Benjamin Bar (05/12)
30. Austin Anderson (09/12)
31. Mikko Ponkala (12/12)
32. Mustafa Abbasi (w/ P.S. Wilson, 05/13)
33. J. Suits (w/ P.S. Wilson, 08/13)
34. Jan Michael Cabrera (12/13)\
35. Andrew Kurzawski (12/13)

36. Casey Farmer (w/ P.S. Wilson)
37. Michael K. Chang (8/17)
38. Dan Wanegar (12/17)
39. Michael Omana (05/18)
40. Austin Baird (05/19)
41. Palash Gajjar (05/20)
42. Tyler McGee (w/ M. Haberman,12/20)
43. Barrett Neath (w/ M. Haberman, 05/22)
44. Katherine Pinkerton (12/23)
45. Samuel Matthews (w/ M, Hall, 08/24)

PH.D. IN PROGRESS

1. Dan Wanegar
2. Lingmin Lin
3. Kyeong Soo Han
4. Junyuan Li
5. Ayrton Yanyachi
6. M. Shuklo Shoshe

M.S. IN PROGRESS:

1. Tullie St. John
2. Emily Ash

OTHER RESEARCH SUPERVISION/VISITORS:

Dr. Erik Archibald (Research engineer)
Dr. Jan-Michael Cabrera (Post-doc/Research Engineer)
Dr. Kevin Marr (Research engineer)
Paul Lee (Research engineer)
Samuel B. Matthews (Research engineer)
Dr. Chao-Ho Lan (Post-doc)
Dr. Biao Zhou (Post-doc)
H. Chin (ME 377K)
P. Sendejo (Excel, TREX)
A. Rosette (Excel, TREX)
T. Johnson (Excel)

Mike Hall (ME 377K)
Will Campbell
Neal Hall (ME 377K)
Michael Hall (ME 377K)
Neal Tanner, Undergraduate Research Assistant
Feras Habal, Undergraduate Research Assistant
Olen Anderson, Undergraduate Research Assistant
Joseph Castro, Undergraduate Research Assistant
Steve Golab (ME377K)
Timothy Klatt (Plan II Honors Thesis)
Michael Mueller, UGRA
Anderson Mossi, Visiting scholar
David Gramlich, Undergraduate Research Assistant 2008
Mustafa Abbassi, Undergraduate Research Assistant 2009-10
Prof. Francis Franca
Thanhson Nguyen, Undergraduate Research Assistant 2010
Fabiano Cassol, Visiting scholar
Jan-Michael Cabrera, Undergraduate Research Assistant, 2011
Andrew Kurzawski, Undergraduate Research Assistant , 2011
Mudeer Habeeb, Undergraduate Research Assistant, 2012, 2013
Kyle Ford, Undergraduate Research Assistant, 2013
Daniel Thjin, Undergraduate Research Assistant, 2013
Sarah Cameron, Undergraduate Research Assistant, 2013
Javier Humani, Undergraduate Research Assistant, 2013
Dr. Dorindo Cardenas, Visiting Scholar (2014)
Dr. Zhengming Yi, Visiting scholar (2013-2014)
Qize He, Visiting Scholar, 2014-2015
Shardul Kulkarni, Undergraduate Research Assistant, 2014-2015
Howard M. Kay, Undergraduate Research Assistant, 2014-2015
Stephany Paredes, Undergraduate Research Assistant, 2015
Yangming Ding, Visiting Scholar, 2015-2016
Dr. Ru Zhou, Visiting Scholar, 2016
Yanming Ding, Visiting Scholar, 2016
Kevin Conde, Visiting Scholar, 2017
Miguel Minick, Undergraduate Research Assistant, 2016-17
Anne Jillian Monsanto, Undergraduate Research Assistant, 2016-17

Paul Lee, Undergraduate Research Assistant, 2016-18
Kevin Lee, Undergraduate Research Assistant, 2017-2018
Celia Kelley, Undergraduate Research Assistant, 2016-2019
Noah Graff, Undergraduate Research Assistant, 2017-2019
Eduardo Aguirre, Undergraduate Research Assistant, 2018-2019
Ilisha D'Souza, Undergraduate Research Assistant, 2018-2019
Robyn Richmond, Undergraduate Research Assistant, 2018-2020
Jaime Estrada, Undergraduate Research Assistant, 2018-2020
Sam Matthews, Undergraduate Research Assistant, 2018-2020
Rish Bhataneger, Undergraduate Research Assistant, 2018-2019
Josh Cheung, Undergraduate Research Assistant, Spring 2022
Ben Hudson, Undergraduate Research Assistant, Spring 2022
Adrian Barajas, Undergraduate Research Assistant, Spring 2022
Sahil Shah, Undergraduate Research Assistant, Spring 2022
Zak Ishak, Undergraduate Research Assistant, Spring 2022
Israel Rangel, Undergraduate Research Assistant, Spring 2022
Andrew Hall, Summer 2022
Manazir Ahmed Fall 2023, Spring 2024
Gloria Huan, Fall 2023, Spring 2024
Junyi Chuang, Fall 2023, Spring 2024

Research Featured in the Press

Prof. Ezekoye's research and interviews in the popular press.

- "What we know about the deadly pager blasts in Lebanon" Reuters, September 18, 2024 What we know about the deadly pager blasts in Lebanon | Reuters

- InvestigateTV+ - Season 1; Episode 7 Exploding Batteries, September 19, 2023 https://www.investigatetv.com/2023/09/19/investigatetv-season-1-episode-7/

- "Exploding batteries ignite urgent challenge for city firefighters", Spectrum News 1, David Lazard, New York City, May 01, 2023 https://ny1.com/nyc/all-boroughs/public-safety/2023/05/01/exploding-batteries-igniting-urgent-challenge-for-city-firefighters

- "An exploding problem: Fires sparked by lithium batteries are confounding firefighters", NBC News Feb. 7, 2023, By Vicky Nguyen, David Paredes and Andrew

Blanksteinhttps://www.nbcnews.com/news/exploding-problem-fires-sparked-lithium-batteries-are-confounding-fire-rcna65739

- "Batteries are catching fire at sea" NPR THE INDICATOR FROM PLANET MONEY, March 28, 2023 By WAILIN WONG https://www.npr.org/transcripts/1166625069

- "NYC fire boss asks federal gov't to crack down on substandard lithium-ion batteries and e-bikes after fatal fires", Feb. 13, 2023, By Tom Winter https://www.nbcnews.com/news/us-news/nyc-fire-chief-asks-federal-govt-crack-down-lithium-ion-batteri-rcna70408

- "Boy, 7, and teen killed in fire at New York home sparked by e-bike's lithium-ion battery, officials say", April 11, 2023, By Chantal Da Silva https://www.nbcnews.com/news/us-news/boy-7-teen-killed-fire-new-york-home-sparked-e-bikes-lithium-ion-batte-rcna79072

- "Rising number of lithium battery incidents on airplanes worry pilots, flight attendants", BY STEPHEN STOCK, AMY CORRAL, JOSE SANCHEZ, DILCIA MERCEDES, MAY 8, 2023 / 8:18 AM / CBS NEWS https://www.cbsnews.com/news/hazardous-materials-airplanes/

- More lithium batteries are exploding on planes, Raphael Kahan, 05.15.23 https://www.ynetnews.com/business/article/h1ohekys2

- Lithium is driving the clean car revolution. Will the South pay a price? By Clare Fieseler cfieseler@postandcourier.com May 19, 2023 https://www.postandcourier.com/news/special_reports/lithium-is-driving-the-clean-car-revolution-will-the-south-pay-a-price/article_055a9daa-e39e-11ed-91ed-df0173dfde7a.html

- "UT students studying grass fire threat", featured in news story on Austin's KXAN News, April 22, 2011

- "UT-AFD Fire Experiments", featured in news story on Austin's KTBC Fox7 News, Dec. 19, 2002 and KXAN NBC 36, Dec. 20, 2002.

- "Fighting Fire with Fans", The Austin American Statesman, December 15, 2002.

- "Combustion and Fire", Univ. of Texas Discovery Magazine, v.15 1998.

Senior Design Project Teams Advisor:

Spring 2024, Heat Pump Environmental Control of UTFRG Burn Structure

Spring 2024, Synthetic Jet Cooling System
Spring 2024, Convective and Radiative Wind Tunnel System
Spring 2023, Design, Construction, and Testing of a Battery Storage Rack
Spring 2023, Design and Testing of a Radiative and Convective Wind Tunnel Test System
Spring 2023, Design of an Aerosol Detector Calibration Flow Loop
Spring 2023, Design of an Acid Gas Generation and Calibration System
Fall 2022 Design and Testing of Firefighter HAZMAT Gas Sensor Calibration System
Spring 2022, Design of a Gas Sensor System for a Residential Fire Test
Spring 2022, Design of a Radiative and Convective Wind Tunnel Test System
Spring 2022, Evaluation of Combustion Characteristics of Ammonia and Hydrocarbon Fuel Blends
Spring 2018, Simulation of Lithium-Ion Battery Failures in Energy Storage Systems
Spring 2016, Design of a Control System for a Mass Loss Calorimeter to Measure Material Flammability Properties
Fall 2015, Development of a Wildland Fire Ember Vent Intrusion Apparatus
Fall 2015, Design and Testing of Gas Sensor System to Measure Fire Heat Release Rates
Spring 2015, Study of Firefighter Turnout Gear for AFD
Fall 2014, Study of Positive Pressure Ventilation Fans for AFD
Spring 2012 “Design and Construction of a Mass Loss Calorimeter”
Summer 2011, “Design of a testing Protocol for a Glove Box Fire Suppression System”
Summer 2011,‘Design of a Sensor System for Aero-thermal Ablators”
Spring 2011,“Grassfire Ember Production Apparatus”
Spring 2011, “Aero-thermal Ablation”
Spring 2011, “Development of a Testing Protocol for Glass Window Failure under Thermal/Fire Loading”
Summer 2006, “UT PB Gen4 Reactor Study”
Spring 2004, “Fire Helmet Selection Test Protocol”, for Austin Fire Department
Spring 2004, “Design of a High Speed Valve for Combustion Burner Applications”, for Combustion Research Group
Spring 2003, “Electric Beer Tap”, for Quick
Spring 2002, “Feasibility Study of Replacing the Solenoid-Actuated Valve of the Joint Chemical Agent Detector,” for BAE Systems
Fall 2001, “Redesign of a Casing Packer Setting Tool: High Force Linear Motion Apparatus,” for Schlumberger
Spring 2000, “Design of a New Coal Combustion By-Products Tracking Method for the Fayette Power Project,” for Lower Colorado River Authority

Spring 1997, “Redesign of a High Velocity Oxygen Fueled Coating Gun,” for Hitemco Southwest
Fall, 1996, “Design of a Sludge Water Recycle System for water Conservation at Monsanto’s Chocolate Bayou Facility,” for Monsanto Corp.
Fall 1995, “Define Heat/Cold Properties for a Unique Insulating Coating,” for Mascoat Products
Spring 1995, “Investigation of Heat Recovery Systems Using the Waste Heat Created by the VOC Abatement System at Motorola Oak Hill,” for Motorola Oak Hill
Spring 1995, “Evaluation and Design of Packed Fiber Bed Particulate Removal Devices for Use in the Semiconductor Industry,” for SEMATECH
Spring 1994, “Design and Analysis of a Cogeneration System Using Rice Husks as a Fuel Source,” for Verde development Corp.
Fall 1994, “The Design of a Reconfiguration of Southern Union’s Dispensing Operation through Analysis of the Flow and Composition of Compressed Natural Gas,” for Southern Union Gas
Fall 1993, “Design of an Auxiliary Air Conditioning System to Prevent Heat Soaking in Commuter Aircraft,” for Texas Medical Institute of Technology

Freshman Interest Research in Engineering Teams Advisor
Fall 2018, Fall 2017, Fall 2016, Fall 2015