CURRICULUM VITAE

Ali S. Rangwala

rangwala@wpi.edu

RESEARCH HIGHLIGHTS

- **Academic leadership.** Professor of Fire Protection Engineering (joint appointment in Chemical Engineering) at WPI; Program Director of the M.S. in Explosion Protection Engineering.
- **Scholarship.** Co-author of Explosion Dynamics (Wiley, 2023) and Mechanism of Fires: Chemistry and Physical Aspects (Springer, 2022); 82 refereed journal publications.
- **Research.** Combustion, fire and explosion dynamics, flame propagation, combustible dust, numerical modeling, and experimental studies of industrial hazards.
- **Real-world impact.** Co-inventor of patented technologies for combustion-based oil-spill cleanup; research on portable fuel-container explosion prevention; drafted ASTM F3429 on flame-mitigation devices.
- **Recognition and service.** NSF CAREER Award (2009); Sigma Xi Outstanding Senior Faculty Research Award (2017); Fire Safety Journal Editorial Board.

BACKGROUND

Education

2006 **Ph.D.** University of California, San Diego, CA
Mechanical and Aerospace Engineering
Advisor: Prof. Steven G. Buckley
Major Field: Combustion
Dissertation: "Flame Spread Analysis using a Variable B-Number"

2004 **M.S.** University of Maryland, College Park, MD
Fire Protection Engineering
Advisor: Prof. James G. Quintiere

2000 **B.S.** Government College of Engineering, Pune, India
Electrical Engineering

Research Experience

7/2017 – present *Professor,* **Department of Fire Protection Engineering, and Department of Chemical Engineering (joint appointment), Worcester Polytechnic Institute, Worcester**

2024 – present *Program Director,* **M.S. in Explosion Protection Engineering (XPE), Worcester Polytechnic Institute, Worcester** (https://www.wpi.edu/academics/study/master-science-explosion-protection-engineering)

1/2019 – 8/2019 *Visiting Professor,* **Department of Mechanical Engineering, University of Connecticut, Storrs**

7/2012 – 6/2017	*Associate Professor* **Department of Fire Protection Engineering, Worcester Polytechnic Institute, Worcester**
	Associate Professor, **Department of Chemical Engineering, Worcester Polytechnic Institute, Worcester** (Collaborative Appointment)
1/2013 – 7/2013	*Visiting Professor* **Mary Kay O' Connor Process Safety Center, Texas A&M, College Station**
7/2006 – 7/2012	*Assistant Professor* **Department of Fire Protection Engineering, Worcester Polytechnic Institute, Worcester**
01/2003 − 05/2006	**Graduate Research Assistant** – UCSD, Combustion Energy Research Laboratory
01/2000 − 01/2003	**Graduate Research Assistant** – U of Maryland, Fire Protection Engineering

TEACHING

Courses

Fall 2026, 2025, 2024, 2023, 2022, 2021, 2020, 2019, 2017, 2014, 2013, 2012, Spring 2011- 2007 FP 573 /Industrial Fire Protection
The objectives of this course are to provide a scenario-based engineering framework for evaluating industrial fire hazards and determining appropriate fire protection measures, and to apply these engineering principles to generic industrial fire protection issues such as plant layout, warehouse storage, and flammable gas, liquid, and solid fuel hazards.

Spring 2025, 2024, 2023, 2022, 2021, 2018, 2016, 2012-2009, Fall 2013, 2007, WPI FP 575 / Explosion Protection
The objectives of this course are to understand fuel - air explosion phenomena. The course covers the following topics: deflagrations and detonations, pressure development in vented gas and dust deflagrations, design of deflagration vents, explosion suppression and isolation systems, blast wave theory, and correlations, and structural damage and injury potential of blast waves.

Spring 2026, 2024, 2023, 2022, 2021, Fall 2017, 2015, Fall 2009 - 2006 WPI FP 580 ME 593 / Combustion
The objective of this course is to provide students with tools and understanding to solve the basic problems in combustion and to enable them to read and understand the literature in this broad field of study. It covers fundamental governing equations for reacting flow, chemical kinetics, and mechanisms of hydrocarbon oxidation.

SCHOLARSHIP

Books and Book Chapters

1. A. S. Rangwala and Robert G. Zalosh, ***Explosion Dynamics***, Wiley (2023).
2. A. S. Rangwala, V. Raghavan, ***Mechanism of Fires: Chemistry and Physical Aspects*****,** Springer (2022).

3. Robert G. Zalosh and A. S. Rangwala, ***Explosion Protection,*** SFPE Handbook of Fire Protection Engineering, 6th Ed. (2022). (Book Chapter)
4. A. S. Rangwala, ***Diffusion Flames,*** SFPE Handbook of Fire Protection Engineering, 5th and 6th Ed. 2015 and 2022. (Book Chapter)

Patents

1. A. S. Rangwala and S. R. Rockwell, "System And Method Of Measuring 2- And 3-Dimensional Velocity Vector Using Cross Correlation Velocimetry," BL30210-163, 2011.
2. B. E. Elias, R. G. Zalosh and A. S. Rangwala, "Flame arrestor for Portable Gasoline Containers (PGC)," USSN: 61/948,162, 2014.
3. Rangwala, A.S., Shi, X., Arsava, K.S., and Mahnken, G., *Methods and systems for clean-up of hazardous spills*, 2016, US Patent US9772108B2 , World WO2016070054A1
4. K. Arsava, A.S. Rangwala, G. Mahnken, *Thermally Conductive Blanket for Burning Combustible Materials*, 2016, US Patent US10167602B2.
5. Arava, S., Arsava, K., Sezer, H., A. Walawalkar, Rangwala, A. S., Raghavan, V., *Method and apparatus for waste combustion*, 2018, US patent US20180149356A1, Canada patent CA 2986963A1.

Papers and Publications *(Author names in boldface indicate students)*

Refereed Publications (Journal):

1. J. G. Quintiere and A. S. Rangwala, **"A Theory of Flame Extinction based on Flame Temperature,"** *Fire and Materials*, Vol**.** 28 (5), 387-402, 2004.
2. Y. Utiskul, J. G. Quintiere, A. S. Rangwala, B. A. Ringwelski, K. Wakatsuki and T. Naruse, "**Compartment Fire Phenomena under Limited Ventilation,"** *Fire Safety Journal*, Vol. 40 (4), 367-390, 2005.
3. A. S. Rangwala, S. G. Buckley and J. L. Torero, **"Upward Flame Spread on Vertically-Oriented Fuel Surface: The Effect of Finite Width,"** *Proc Comb. Inst.*, Vol. 31 (2), 2607-2615, 2007.
4. A. S. Rangwala, S. G. Buckley and J. L. Torero, **"Analysis of the Constant B-number Assumption while Modeling Flame Spread,"** *Comb. Flame*, Vol. 152 (3), 401 - 414, 2008.
5. V. Raghavan, A. S. Rangwala, and J. L. Torero, **"Laminar Flame Propagation on a Horizontal Fuel Surface - Verification of Classical Emmons Solution,"** *Comb. Theory and Modeling*, Vol. 13 (1), 121-141, 2009.
6. A. S. Rangwala, V. Raghavan, **J. E. Sipe** and **T. Okano**, **"A New Property Evaluation Scheme for Mass Transfer Analysis in Fire Problems,"** *Fire Safety Journal*, Vol. 44 (4), pp. 652, 2009.
7. **H. Park**, A. S. Rangwala, and N. A. Dembsey, **"Estimation of Thermal and Kinetic Parameters of Coal Dust Layer Ignition on a Hot Surface,"** *J. Haz. Mat., Vol. 168, 145-155, 2009.*
8. **J. P. Crocker,** A. S. Rangwala, N. A, Dembsey, and D. J. Le Blanc, **"The Effect of Sprinkler Spray on Fire Induced Doorway Flows: New Tools for Performance Based Design,"** *Fire Tech.*, Vol. 46 (2), 347-362, 2010.

9. **T. M. Hetrick** and A. S. Rangwala, **"Development and Validation of a Modified Hold Time Model for Total Flooding Fire Suppression,"** *Fire Safety Journal*, Vol. 45 (1), 12-20, 2010.
10. **S. M. Ali**, V. Raghavan, and A. S. Rangwala, **"A Numerical Study of Quasi-Steady Burning Characteristics of a Condensed Fuel - Effect of Angular Orientation,"** *Comb. Theory and Modelling*, Vol. 14 (4), 495–518, 2010.
11. V. Raghavan, **W.T. James**, and A. S. Rangwala, **"Estimation of Modeling Parameters for Condensed Multi-Component Fuels,"** *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, Vol. 225 (5), 1229-1235, 2011.
12. **M. J. Gollner**, F. A. Williams, and A. S. Rangwala, **"Upward Flame Spread Over Corrugated Cardboard,"** *Comb. Flame*, Vol. 158 (7), 1404-1412 2011.
13. **K. M. Chirag, K. Vijay,** V. Raghavan, and A.S. Rangwala, **"Smoldering Combustion of Biomass Particles,"** *Journal App. Sci.*, Vol. 11, no. 10, pp 1862-1866, 2011.
14. **M. J. Gollner, K. Overholt**, F. A. Williams, A. S. Rangwala, and J. Perricone, **"Warehouse Commodity Classification from Fundamental Principles. Part I: Commodity and Burning Rates,"** *Fire Safety Journal*, Vol. 46 (6), pp 305-316, 2011.
15. **K. Overholt, M. J. Gollner,** A. S. Rangwala, J. Perricone, and F. A. Williams, **"Warehouse Commodity Classification from Fundamental Principles. Part II: Flame Heights and Flame Spread Rates,"** *Fire Safety Journal*, Vol. 46 (6), pp 317-329, 2011.
16. **K. A. Joshi,** V. Raghavan, and A. S Rangwala, **"An Experimental Study of Coal Dust Ignition in Wedge Shaped Hot Plate Configurations,**" *Comb. Flame*, Vol. 159, pp 376-384, 2012.
17. **Y. Xie,** V. Raghavan, A. S. Rangwala, **"Naturally Entraining Solid Particle Injector,"** *Powder Technology*, Vol. 213, pp 199-201 2011 (Short Communication).
18. **Y. Xie,** V. Raghavan, A. S. Rangwala, "**Study of Interaction of Entrained Coal-dust Particles in Lean Methane–air Premixed Flames,"** *Comb. Flame* Vol. 159, (7), pp 2449-2456, 2012.
19. **S. M**. **Ali,** Raghavan V., and Rangwala A. S., **"Numerical Analysis of Flame Heating on Arbitrarily Oriented Condensed Fuel Surfaces,"** *Fire Safety J.*, Vol. 49, pp 67–78, 2012.
20. **Gollner, M.J., Xie, Y., Lee, M.**, Nakamura, Y., and Rangwala, A.S., "**Burning behavior of vertical matchstick arrays**," *Combust. Sci. Tech*, Vol. 184(5), pp 585 – 607, 2012.
21. **K. A. Joshi,** V. Raghavan, and A. S Rangwala**, "Influence of Confinement Geometry on Ignition Behavior of Dust Layers,"** *Proc. Combust. Inst.*, Vol. 34(2), pp. 2471-2478, 2013.
22. **M. J. Gollner, X. Huang, J. Cobian,** A. S Rangwala, and F. A. Williams, "**Upward Flame Spread and Burning of an Inclined Fuel Surface,"** *Proc. Combust. Inst.*, Vol. 34 (2) pp. 2531 – 2538, 2013.
23. **P. W. Bellino**, M. R. Flynn, and A. S. Rangwala, "**A Study of In-situ Burning of Crude Oil in an Ice Channel,"** *Proc. Combust. Inst.* Vol. 34 (2), pp 2539 – 2546, 2013.

24. **S. R. Rockwell** and A. S. Rangwala, "**Influence of Coal Particles on Turbulent Premixed Methane-air Flames,"** *Comb. Flame,* Vol. 160, pp. 635 – 640, 2013.
25. **P. W. Bellino**, M. R. Flynn, and A. S. Rangwala, "**A Study of Spreading in an Ice Channel,"** *Journal of Loss Prevention in the Process Industries,* Vol. 26(3), pp. 558-561, 2013.
26. **K. A. Joshi**, V. Raghavan, and A. S Rangwala, **"Effect of Weathering of Coal and Organic Dusts on their Spontaneous Ignition,"** *Fire Technology,* Vol. 49 (4), pp. 843-856, 2013.
27. **B. E. Elias,** R. G. Zalosh, and A. S. Rangwala, **"Portable Gasoline Container Headspace Flammability,"** *Fire Safety J.* Vol. 58, pp. 248-257, 2013.
28. **S. R. Rockwell** and A. S. Rangwala, **"Modeling of Dust-Air Flames,"** *Fire Safety J.*, Vol. 59, pp 22-29, 2013.
29. **H. F. Farahani, X. Shi,** A. Simeoni, and A. S. Rangwala, **"A Study of Burning of Crude Oil in Ice Cavities,"** *Proc. Combust Inst*. Vol. 35 (3) pp 2699 – 2706, 2015.
30. **M. Lee, S. Ranganathan,** and A. S. Rangwala, **"Influence of Reactant Temperature on Particle Entrained Laminar Methane-Air Premixed Flames"** *Proc. Combust Inst.* Vol. 35 (1), pp 729-736, 2015
31. **A. K. Sahu, K.A. Joshi,** V. Raghavan, and A.S Rangwala, **"Comprehensive Numerical Modeling of Ignition of Coal Dust Layers in Different Configurations,"** *Proc. Combust Inst.* Vol. 35(2), pp 2355 – 2362, 2015.
32. **D. Castellanos,** A. Lewandowski, A. Diaz, A. F. Mejia, V. Carreto, C. Mashuga, A. S. Rangwala, Z. Cheng, and M. S. Mannan, **"Influence of Particle Size and Crystalline Level on the Efficiency of Dust Explosion Inhibitors,"** *Industrial & Engineering Chemistry Research* Vol. 53, no. 28, pp. 11527-11537, 2014.
33. **S. Vasanth**, S. M. Tauseef, T. Abbasi, A. S. Rangwala, and S. A. Abbasi, "Assessment of the effect of pool size on burning rates of multiple pool fires using CFD," *Journal of Loss Prevention in the Process Industries*, Vol. *30*, pp. 86-94, 2014.
34. **L. van Gelderen, N. L. Brogaard, M. X. Sørensen**, Janne Fritt-Rasmussen, Ali S. Rangwala, and Grunde Jomaas, **"Importance of the Slick Thickness for Effective In-situ Burning of Crude Oil,"** *Fire Safety Journal*, Vol. 78, pp. 1 -9, 2015.
35. **S. Ranganathan, M. Lee,** V. Akkerman, and Ali S. Rangwala, **"Suppression of premixed flames with inert particles."** *Journal of Loss Prevention in the Process Industries* 35 (2015): 46-51
36. Trapp, Andrew C., and Ali S. Rangwala, **"Analyzing the impact of in-rack sprinklers in a warehouse fire: A demonstration of the role optimization has in mitigating damage,"** *Fire Safety Journal* Vol. 73, pp. 55-62, 2015.
37. **Farahani, H.**, G. Jomaas, and A. S. Rangwala., "**Effects of convective motion in n-octane pool fires in an ice cavity,"** *Combustion and Flame,* Vol. 162 (12), pp. 4643-4648, 2015.
38. D. Li, X. Chen, Y. Zhang, and A. S. Rangwala, "**Premixed CH4-Air Flame Structure Characteristic and Flow Behavior Induced by Obstacle in an Open Duct,"** *Advances in Mechanical Engineering*, *7*(1), p.248279, 2015.

39. **Bourgeois, A.,** J. Bergendahl, and A. S. Rangwala, **"Biodegradability of fluorinated fire-fighting foams in water,"** *Chemosphere* Vol. 131, pp. 104-109, 2015.
40. **O. Ugarte,** V. Akkerman, A. S. Rangwala, **"A computational solver for gas explosion venting,"** *Process Safety and Environmental Protection*, Vol. 99, pp. 167- 174, 2016.
41. **X. Shi, P. W. Bellino**, A. Simeoni, A.S. Rangwala,**" Experimental study of burning behavior of large-scale crude oil fires in ice cavities,"** *Fire Safety Journal*, Vol. 79, pp. 91 – 99, 2016.
42. **S. R. Rockwell** and A. S. Rangwala. **"Determination of thermal plume thickness using thermocouple cross correlation coefficient decay."** *Flow Measurement and Instrumentation, Vol.* 52, pp. 144- 147, 2016.
43. **R. T. Ranellone, P. Tukaew, X. Shi,** and A. S. Rangwala, **"Ignitability of Crude oil and its oil-in-water products at arctic temperature,"** *Marine pollution bulletin*, *115*(1), pp.261-265, 2017.
44. **X. Shi, A.K. Sahu, S. Nair,** V. Raghavan, and A. S. Rangwala, **"Effect of Ullage on Burning Behavior of Small-Scale Pool Fires in a Cavity,"** *Proc. Combust. Inst.* Vol. 36 (2), pp. 3113-3120, 2017.
45. **X. Shi, R. T. Ranellone, H. Sezer,** N. Lamie, L. Zabilansky, K. Stone, and A. S. Rangwala, **"Influence of ullage to cavity size ratio on in-situ burning of oil spills in ice-infested water,"** *Cold Regions Science and Technology* 140, pp 5-13, 2017.
46. **H. Sezer, K. S. Arsava, S. P. Kozhumal,** and A. S. Rangwala **"The Effect of Embedded Objects on Pool Fire Burning Behavior,"** *International Journal of Heat and Mass Transfer* 108 (2017): 537-548**.**
47. **H. Sezer, F. Kronz,** V.Y. Akkerman, and A.S. Rangwala, **"Methane-induced Explosions in Vented Enclosures,"** *Journal of Loss Prevention in the Process Industries*, *48*, pp.199-206 (2017).
48. **H. F. Farahani, W.U.R. Alva,** A. S. Rangwala, and G. Jomaas, **"Convection-driven melting in an n-octane pool fire bounded by an ice wall,"** *Combustion and Flame*, *179*, pp.219-227 (2017).
49. **H. Sezer, K. S. Arsava,** and A. S. Rangwala, "**Oil spill clean-up using immersed metal wool,"** *Journal of Environmental Chemical Engineering* 5(5), pp. 5196-5206 (2017).
50. **S. Ranganathan,** S. R. Rockwell, **D. Petrow,** R. Zalosh, and A. S. Rangwala, **"Radiative fraction of dust entrained, turbulent premixed flames,"** *Journal of Loss Prevention in the Process Industries*, *51*, pp.65-71 (2018).
51. **S. Ranganathan, D. Petrow,** S. R. Rockwell, and A. S. Rangwala, **"Turbulent burning velocity of methane–air–dust premixed flames,"** *Combustion and Flame*, 188, pp.367-375, (2018).
52. **H. F. Farahani, Y. Fu**, G. Jomaas, and A. S. Rangwala, **"Convection-driven cavity formation in ice adjacent to externally heated flammable and non-flammable liquids,"** *Cold Regions Science and Technology*, pp. *154*, 54-62 (2018).
53. **K. S. Arsava,** G. Mahnkenn, A. S. Rangwala, **"Use of immersed conductive objects to enhance the burning rate of hydrocarbon pool fires,**" *Cold Regions Science and Technology*, Vol. 146, 133-141 (2018).

54. **K. S. Arsava,** V. Raghavan, and, A. S. Rangwala, **"Enhanced Oil Spill Clean-Up Using Immersed Thermally Conductive Objects,"** *Fire Technology*, *54*(6), 1745-1758 (2018).
55. **H. F. Farahani**, J. L. Torero, G. Jomaas, and A. S. Rangwala. "Scaling analysis of ice melting during burning of oil in ice-infested waters." *International Journal of Heat and Mass Transfer* 130, pp.386-392 (2019).
56. **X. Pi and A. S. Rangwala, "The influence of wire orientation during nucleate pool boiling in subcooled dodecane,"** *International Journal of Heat and Mass Transfer*137, p. 1247-1257 (2019).
57. A. S. Rangwala and R. Zalosh. "Prevention of gasoline vapor explosions in portable fuel containers." *Journal of Loss Prevention in the Process Industries, Vol. 61, 249-254* (2019).
58. **C. Li, H. F. Farahani**, T. Borth, R. Yang, and A. S. Rangwala, "**Effect of low temperature boundary on fuel distribution of pool fires on an immiscible sub-layer**". *Experimental Thermal and Fluid Science*, *104*, 221-228 (2019).
59. **Di Cristina, Giovanni, Shijin Kozhumal,** Albert Simeoni, Nicholas Skowronski, Ali Rangwala, and Seong-kyun Im. "Forced convection fire spread along wooden dowel array." *Fire Safety Journal* (2020): 103090.
60. **Pi, Xiaoyue, Li Chang**, and Ali S. Rangwala. "The burning rate of a pool fire increased by bubble behaviors during nucleate boiling." *Fire Safety Journal* (2020): 103097.
61. **Kodakoglu, Furkan, Hamed Farmahini Farahani**, Ali S. Rangwala, and V'yacheslav Akkerman. **"Dynamics of explosion venting in a compartment with methane-air mixtures,"** *Journal of Loss Prevention in the Process Industries* 67 (2020): 104230.
62. **Chang, Li,** and Ali S. Rangwala. **"The Influence of Turbulence on Subcooled Nucleate Pool Boiling,"** *International Journal of Heat and Mass Transfer* (2020): 120694.
63. **Kimmerly, Veronica M**., and Ali S. Rangwala, **"Laboratory-scale investigation of air entrainment in burn pits used for waste disposal,"** *Fuel* 276 (2020): 117941.
64. **Di Cristina, Giovanni,** Nicholas S. Skowronski, Albert Simeoni, Ali S. Rangwala, and Seong-kyun Im. "Flame spread behavior characterization of discrete fuel array under a forced flow." *Proceedings of the Combustion Institute*, vol. 38, pp. 5109-5117, 2021.
65. **Hariharan, S. B., Farahani, H. F**., Rangwala, A. S., Dowling, J. L., Oran, E. S., & Gollner, M. J. **"Comparison of particulate-matter emissions from liquid-fueled pool fires and fire whirls."** *Combustion and Flame*, *227*, (2021): 483-496.
66. **Di Cristina G.**, N. Skowronski, A. Simeoni, A. S. Rangwala, and S. Im, "Flame spread predictions over linear discrete fuel arrays using an empirical B-number model and stagnation point flow," *Combustion and Flame*, vol. 234, 111644, 2021.
67. **Hariharan, S. B., Farahani, H. F.**, Rangwala, A. S., Oran, E. S., & Gollner, M. J. **"Effects of Natural and Forced Entrainment on PM Emissions from Fire Whirls."** *Environmental Science & Technology*, *56*(6), (2022): 3480-3491.
68. **Chang, Li.**, and Ali. S. Rangwala. **"Experimental study of crude oil slick burning on a turbulent water surface."** *Combustion and Flame* 241 (2022): 112119.

69. **Sauer, Nathaniel G**., **Julia M. Cuendet**, and Ali S. Rangwala. **"A study of thin fuel slick combustion on wavy water."** *Marine Pollution Bulletin* 182 (2022): 113932.
70. **Nair, S.**, Mahnken, G., Arsava, K. S., and Rangwala, A. S. **"Modeling the Influence of Immersed Objects on Pool Fire Burning."** *Fire Technology*, 58 (2022): 1-25.
71. **Farahani, H. F., Hayashi,** T., Sakaue, H., and Rangwala, A. S. **"Dynamics of ice melting by an immiscible liquid layer heated from above."** *Experimental Thermal and Fluid Science*, *135*, (2022): 110641.
72. **Di Cristina, Giovanni,** Michael R. Gallagher, Nicholas S. Skowronski, Albert Simeoni, Ali Rangwala, and Seong-kyun Im. **"Design and implementation of a portable, large-scale wind tunnel for wildfire research."** *Fire Safety Journal* (2022): 103607.
73. **Ho, H. H**., Arsava, K. S., and Rangwala, A. S. **"Burning Behavior Analysis in Meso and Large-Scale Oil Slick Fires With and Without Waves Using Outdoor Gas Emission Sampling (OGES) System,"** *Fire Technology* 58 (2022): 1963–1993.
74. **L. Chang and A. S. Rangwala**, **"Burning of fuel layers on a turbulent water surface with an immersed conductive object,"** *Combustion and Flame* 252 (2023): 112745.
75. **Yamazaki, Masafumi, Tatsunori Hayashi, Hamed Farmahini Farahani**, Ali S. Rangwala, and Hirotaka Sakaue**. "Photoluminescence-based Simultaneous Thermometry and Velocimetry in Non-aqueous Liquid,"** *International Journal of Thermofluids* (2023): 100384.
76. **Ho, H.H., Nair, S.** and Rangwala, A.S., 2023. Heat release rate of enhanced large-scale open oil slick fires with Outdoor Gas Emission Sampling (OGES) system. *Marine Pollution Bulletin*, *192*, p.114987.
77. **Sauer, N.G.**, Arsava, K.S. and Rangwala, A.S.," Burning capability of the flame refluxer under the influence of waves," *Fire Safety Journal*, *140*, (2023) p.103901.
78. **Kottalgi, M., Nair, S., Chang, L.** and Rangwala, A., **"Influence of Immersed Conductive Objects on Quasi-Steady Burning Behavior of Fuel Slick in Turbulent Waters,"** *Combustion Science and Technology*, (2024) pp.1-18.
79. **Sauer, N.G., Ho, H.H., Nair, S**. and Rangwala, A.S., **"Burning Behavior of Liquid Fuel on Wavy Water,"** *Fire Technology*, *60*(1), (2024) pp.71-99.
80. **Kottalgi, M., Nair, S., Chang, L**., and Rangwala, A, **"Influence of Water Turbulence on Burning Behavior of Thin Fuel Slick,"** *Combustion Science and Technology*, 1-13 (2025).
81. **Chang, L.** and Rangwala, A.. **"Hydrocarbon Fuel Burning Analysis Using a Variable B-Number on Turbulent Water Surface with Immersed Thermal Conductors,"** *Combustion Science and Technology*, 1-27 (2025).
82. **Buchanan, S., H. B. M. Kiah.**, R. Walls, and A. S. Rangwala. **"Incident analysis of the 2022 Boksburg BLEVE based on public domain data."** *Journal of Loss Prevention in the Process Industries* (2026).

Refereed Publications (Conference):

1. J. L. Consalvi, B. Porterie, M. Coutin, L. Audoin, C. Casselman, A. Rangwala, S.G. Buckley, J.L. Torero, **"Upward Propagation over PMMA: Theory, Experiment and Numerical Modeling,"** *Proc. Fire Safety Sci.* Vol. 8, Beijing, China, Sep 18-23, 2005.

2. A. S. Rangwala, **"Flame Spread Analysis using a Variable B-Number,"** *Proc. Fire Safety Sci.* Vol. 9, Karlsruhe, Germany, Sep 21- 26, 2008.
3. **K. Joshi**, A. S. Rangwala, and V. Raghavan, **"Spontaneous Ignition of Coal Dust Layers,"** *7th Asia Pacific Conference on Combustion*, Taipei, Taiwan, May 24-27, 2009.
4. **N. L. Brogaard, M. X. Sørensen**, J. Fritt-Rasmussen, A. S. Rangwala, G. Jomaas, **"A new Experimental Rig for Oil Burning on Water – Results for Crude and Pure Oils,"** *Proc. Fire Safety Sci.* Vol. 11, Canterbury, New Zealand, Feb 10- 14, 2014.
5. **X. Shi, P. W. Bellino,** A. S. Rangwala, "**Flame Heat Feedback from Crude Oil Fires in Ice Cavities,"** *Arctic Marine Oilspill Program (AMOP) technical seminar on environment contamination and response*, vol. 38, Jun 2 – 4, 2015, Vancouver, British Columbia, Canada.
6. **X. Shi, N. S. Ghion, K. T. Sundberg, J.P. Ramos, S. Stephansky, K. Ross, F. Kang, Y.Fu,** V. Raghavan, and Rangwala, A. S., **"Influence of Wicking Agent on In-situ Burning of Water –in-oil Products from Alaska North Slope Crude,"** *Arctic Marine Oilspill Program (AMOP) technical seminar on environment contamination and response* vol. 39, Jun 7 – 9, 2016, Halifax, Nova Scotia, Canada.
7. **K. Arsava** and A. S. Rangwala, **"Water-in-oil Emulsion Burner for On-board and On-ice Incinerator,"** *Arctic Marine Oilspill Program (AMOP) technical seminar on environment contamination and response*, vol. 39, Jun 7 – 9, 2016, Halifax, Nova Scotia, Canada.
8. **H. Farahani**, G. Jomaas, A. S. Rangwala, **"A study on burning behavior and convective flows in Methanol pool fires bound by ice,"** *Proc. International Oil Spill Conference,* Santa Barbara, CA, 2017.
9. **Y. Fu, H. F. Farahani,** G. Jomaas, and A. S. Rangwala, **"Parametric study on cavity formation during in-situ burning of oils in ice,"** Proc. *International Oil Spill Conference Proceedings*, Santa Barbara CA, 2017.
10. **Kemal S. Arsava,** Trevor J. Borth, Scott L. Fields, Kurt Hansen, **Shijin Kozhumal**, Glenn Mahnken, David Petrow, Ali S. Rangwala, **Hayri Sezer**, Karen Stone, Jose Torero, **Panyawat Tukaew**, Robert G. Zalosh, **"Application of Flame Refluxer Concept to ISB – Experimental Results of 5 Field Trials in Mobile, Alabama,"** *Arctic Marine Oilspill Program (AMOP) technical seminar on environment contamination and response*, vol. 42, Jun 4 – 6, 2019, Halifax, Nova Scotia, Canada.
11. **Panyawat Tukaew, Kemal S. Arsava,** Ali S. Rangwala, **"Outdoor Gas Emission Sampling System – Performance during Large Scale Fire Tests in Mobile Alabama,"** *Arctic Marine Oilspill Program (AMOP) technical seminar on environment contamination and response*, vol. 42, Jun 4– 6, 2019, Halifax, Nova Scotia, Canada.
12. **Nathaniel G. Sauer, Mahesh Kottalgi,** Kemal Arsava, and Ali S. Rangwala, **"Burning Behavior of an Oil Slick with Waves,"** *Arctic Marine Oilspill Program (AMOP) technical seminar on environment contamination and response*, vol. 43, Jun 2– 4, 2021, Edmonton, Alberta, Canada (online via Zoom).
13. **Hsin-Hsiu Ho, Nathaniel G. Sauer, Mahesh Kottalgi**, Kemal S. Arsava, Karen Stone, and Ali S. Rangwala, **"Oil Foaming of Crude Oil Fires on Water,"** *Arctic Marine Oilspill Program (AMOP) technical seminar on environment contamination and response* vol. 44, Jun 7– 9, 2022, online via Zoom.

14. **Sharanya Nair**, **Hamed F. Farahani**, and Ali S. Rangwala, **"Modeling the Effect of Surface Heating on Oil Spread near an Ice Wall,"** *Arctic Marine Oilspill Program (AMOP) technical seminar on environment contamination and response*, vol. 44, Jun 7– 9, 2022, online via Zoom.
15. **Nathaniel G. Sauer, Adam Saar, Hsin-Hsiu Ho, Sharanya Nair**, Leonard Zabilansky, and Ali S. Rangwala, **"Evaporation Behavior of Volatile Fuel in Waves,"** *Arctic Marine Oilspill Program (AMOP) technical seminar on environment contamination and response* vol. 44, Jun 7 – 9, 2022, online via Zoom.
16. **Tatsunori Hayashi, Masafumi Yamazaki, Mitsugu Hasegawa**, **Sharanya Nair, Hamed F. Farahani**, Hirotaka Sakaue, and Ali S. Rangwala **"Simultaneous Measurement of Temperature and Velocity Field in an Oil Adjacent to Ice,"** *Arctic Marine Oilspill Program (AMOP) technical seminar on environment contamination and response*, vol. 44, Jun 7 – 9, 2022, online via Zoom .
17. **Sharanya Nair**, Hamed F. Farahani, Vasudevan Raghavan, Ali S. Rangwala, "Experimental Study of Dynamics of Flames from Discrete Methanol Fuel Wicks in Ullages**,"** *Proc. Fire Safety Sci.* Vol. 14, Epochal Tsukuba International Congress Center in Tsukuba, Japan, 2023.
18. **Nathaniel Sauer**, Kemal Arsava, Ali Rangwala, "**Burning Capability of the Flame Refluxer under the influence of Waves,"** *Proc. Fire Safety Sci.* Vol. 14, Epochal Tsukuba International Congress Center in Tsukuba, Japan, 2023.
19. **Mahesh Kottalgi, Sharanya Nair**, Li Chang, Ali Rangwala, **"Influence of water turbulence on burning behavior of dodecane fuel slick,"** *Proc. Fire Safety Sci.* Vol. 14, Epochal Tsukuba International Congress Center in Tsukuba, Japan, 2023.
20. **Nair, S., Sauer, N.G., Ho, H.H., Kottalgi, M., Harter, R**., Arsava, K.S., Trubac, K.P., Whitehouse, N., Rangwala, A.S. and Stone, K., 2024, July. In-situ burning with a floating flame refluxer system. In *International Oil Spill Conference Proceedings* (Vol. 2024, No. 1). Allen Press.
21. **Raghuram, S.**, V. Raghavan, and A. S. Rangwala, **"Passive ventilation of a volatile liquid spill in an enclosure."** *International Symposium on Hazards, Prevention, and Mitigation of Industrial Explosions* (ISHPMIE), June 10-14, Naples, Italy, 2024.
22. **Murray, H.** and A. S. Rangwala, **"Modeling Combustible Dust Off-Gassing: Mass Loss Rate and Mole Fraction Accumulation of Ignitable Vapors in a Naturally Ventilated Compartment,"** 16th *International Symposium on Hazards, Prevention, and Mitigation of Industrial Explosions* (ISHPMIE), Paper 66, April 20-24, Kaohsiung, Taiwan, 2026. Best Paper Award.

Non Refereed Publications:

Conference papers:

1. T. Naruse, A. S. Rangwala, B. A. Ringwelski, Y. Utiskul, K. Wakatsuki, and J. G. Quintiere, **"Compartment Fire Behavior Under Limited Ventilation,"** 4th International Seminar on Fire and Explosion Hazards, University of Ulster, Northern Ireland, UK, Sep 8-12, 2003.

2. M. Coutin, A. S. Rangwala, S. G. Buckley, and J. L. Torero, **"Material Properties Governing Co-Current Flame Spread in Microgravity: The Effect of Air Entrainment,"** 7th NASA microgravity combustion workshop, Cleveland, Ohio, June 3-6, 2003.
3. A. S. Rangwala, J. L. Torero, S. G. Buckley, **"Towards Determination of the B number for Co-Current Flame Spread using the Fire Dynamic Simulator (FDS) Code: Comparison Between Model and Experiment,"** Paper 03F-36, Fall Technical Meeting of the Western States Section of the Combustion Institute, University of California, Los Angeles, Oct 20-21, 2003.
4. A. S. Rangwala, S. G. Buckley, and J. L. Torero, "**Modeling and Analysis of the Upward Burning of PMMA,**" 43rd AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan 10-13, 2005.
5. A. S. Rangwala, S. G. Buckley, and J. L. Torero, "**A New Scaling for Upward Burning Flames in Natural Convection, with Applications to Material Flammability Assessment,**" 4th Joint Meeting of the U.S. Sections of the Combustion Institute, Philadelphia, PA, March 20-23, 2005.
6. A. S. Rangwala, S. G. Buckley, and J. L. Torero, **"An Analysis of Upward Burning Utilizing Experimentally Measured Stand-off Distances,"** Paper 05F-16, Fall Technical Meeting of the Western States Section of the Combustion Institute, Stanford University, Stanford, October 17-18, 2005.
7. A. S. Rangwala, T. J. Myers, and A. F. Ibarreta, **"Measurement of the Non-Dimensional Frank-Kamenetskii Number Using a Standard Dust Layer Ignition Testing Apparatus,"** 5th International Conference on Fire and Explosion Hazards, Edinburgh, Scotland, April 23-27, 2007.
8. A. S. Rangwala, S. G. Buckley, N. A. Dembsey, and J. L. Torero, **"Modeling Solid-Phase Pyrolysis using Emmons Burning Rate Solution, Application to FDS,"** 5th International Conference on Fire and Explosion Hazards, Edinburgh, Scotland, April 23-27, 2007.
9. **T. M. Hetrick** and A. S. Rangwala, **"Validation Study on Clean Extinguishing Agent Hold Time Calculation Methodologies,"** Suppression and Detection Research and Applications (SUPDET), Orlando, Florida, Mar 11-13, 2008.
10. **T. M. Hetrick** and A. S. Rangwala, **"Analysis of Clean Extinguishing Agent Hold Time Calculation Methodologies,"** Spring, Technical Meeting of the Central States Section of the Combustion Institute, University of Alabama, April 20-22, 2008.
11. **S. R. Rockwell** and A. S. Rangwala, **"Frequency and Spatial Dependence of Cross Correlation Velocimetry,"** Spring, Technical Meeting of the Central States Section of the Combustion Institute, University of Alabama, April 20-22, 2008.
12. **H. Park, K. Joshi**, A. S. Rangwala, N. A. Dembsey, and E. J. Granite, "**Estimation of Thermal and Kinetic Parameters to Model Coal Dust Ignition,"** Pittsburgh Coal Conference, University of Pittsburgh , Sep 29 – Oct 2, 2008.
13. A. S. Rangwala, **H. Park**, N. Dembsey, and E. Granite, **"Using Thermal and Kinetic Parameters to Model Coal Dust Ignition in a Corner Configuration,"** Mary Kay O' Connor Process Safety Conference, Texas A & M University, Oct 28-29, 2008.
14. **T. M. Hetrick**, A. S. Rangwala, and P. E. Rivers, **"Development and Validation of a Modified Clean Agent Draining Model for Total Flooding Fire Suppression Systems,"**

Suppression and Detection Research and Applications (SUPDET), Orlando, Florida, Feb 24-27, 2009.

15. **K. Overholt, M. J. Gollner**, and A. S. Rangwala, **"Characterizing Flammability of Corrugated Cardboard using a Cone Calorimeter,"** 6th Joint Meeting of the U.S. Section of the Combustion Institute, Michigan, Ann Arbor, May 17-20, 2009.
16. **M. J. Gollner, T. Hetrick**, and A. S. Rangwala, J. Perricone, and F. A. Williams, "**Controlling Parameters Involved in the Burning of Standard Storage Commodities: A fundamental approach towards fire hazard classification,"** 6th Joint Meeting of the U.S. Section of the Combustion Institute, Michigan, Ann Arbor, May 17-20, 2009.
17. **K. A. Joshi**, V. Raghavan, and A. S. Rangwala **" Spontaneous Ignition of Moist Coal Dust,"** 6th Joint Meeting of the U.S. Section of the Combustion Institute, Michigan, Ann Arbor, May 17-20, 2009.
18. **S. R. Rockwell**, A. Klein and A. S. Rangwala, "**An examination of Cross Correlation Velocimetry's ability to predict characteristic turbulent length scales in fire induced flow**," Fall Technical Meeting of the Eastern States Combustion Institute, paper: C-05 Oct 18-21, 2009
19. **M. J. Gollner, K. Overholt,** A. S. Rangwala, F. A. Williams, and J. Perricone, **"The B-number as a Criterion for Commodity Classification,"** Combustion Institute Western States Fall Meeting, Irvine, CA, October 2009.
20. A. S. Rangwala and E. J. Granite, **"Utilization of Carbon Dioxide towards Control /Suppression of Underground Coal Fires,"** AICHE, Spring National Meeting, Topic Area: Green House Management, San Antonio, Texas, Mar 21-25, 2010.
21. **B. E. Elias**, R.G. Zalosh and A.S. Rangwala, **"Conditions affecting flame propagation inside a portable gasoline container,"** Central States Meeting of the Combustion Institute, U. Illinois, Urbana-Champaign, Mar 21- 23, paper: C10-83, 2010.
22. **B. E. Elias**, R.G. Zalosh, and A. S. Rangwala, **"Gasoline Container Vapor Space Flammability,"** 8th International Symposium on Hazards, Prevention, and Mitigation of Industrial Explosions, Yokohama, Japan Sep 5-10, 2010.
23. **K. A. Joshi**, V. Raghavan, A. S. Rangwala, "**Effect of Weathering of Coal Dust on its Spontaneous Ignition,"** 7th U.S. National Combustion Meeting, Atlanta, Georgia, Mar 20-23, 2011.
24. **Y. Xie**, V. Raghavan, and A.S. Rangwala, **"Study of Interaction of Entrained Coal Dust Particles in Lean Methane – Air Premixed Flames,"** 7th U.S. National Combustion Meeting, Atlanta, Georgia, Mar 20-23, 2011.
25. **S. R. Rockwell** and A. S. Rangwala **"A Review of Theoretical Expressions for Laminar Burning Velocity of Particle-air Flames,"** 7th U.S. National Combustion Meeting, Atlanta, Georgia, 2011.
26. **B. E. Elias**, R. G. Zalosh, and A. S. Rangwala, **"Gasoline Container Vapor Flammability,"** 7th U.S. National Combustion Meeting, Atlanta, Georgia, Mar 20-23, 2011.
27. **M. J. Gollner, X. Huang,** F.A. Williams, and A.S. Rangwala, **"Buoyancy Enhanced Flame Spread over Continuous Surfaces,"** 7th U.S. National Combustion Meeting, Atlanta, Georgia, Mar 20-23, 2011.

28. **P. W. Bellino,** M. R. Flynn and A. S. Rangwala, **"A Study of In-situ Burning of Oil in an Ice Channel,"** Mary Kay O'Connor, Process Safety Conference, Texas A & M University, College Station, TX, Oct 25-27, 2011.
29. **K. A. Joshi,** V. Raghavan, and A. S. Rangwala, "**Effect of Weathering of Coal and Organic Dusts on their Spontaneous Ignition,"** 28th International Pittsburgh Coal Conference, Pittsburgh, PA, Sep 12-15, 2011.
30. **S. Rockwell** and A.S. Rangwala, **"Sensitivity Analysis of Theoretical Expressions for Laminar Burning Velocity of Particle Air Flames,"** 28th International Pittsburgh Coal Conference, Pittsburgh, PA, Sep 12-15, 2011.
31. **S. Rockwell** and A.S. Rangwala, **"Influence of Coal Dust Particles on the Turbulent Burning Velocity of Methane-Air Flames,"** Eastern States Fall Technical Meeting, Storrs, University of Connecticut, Oct 9-12, 2011.
32. **K. A. Joshi,** V. Raghavan, and A.S. Rangwala, **"Modeling Spontaneous Ignition of Coal Dust Trapped Between Two Hot Surfaces,"** Eastern States Fall Technical Meeting, Storrs, University of Connecticut, Oct 9-12, 2011.
33. **X. Xie,** V. Raghavan, and A. S. Rangwala, **"Study of Interaction of Entrained Coal Dust Particles in Lean Methane – Air Premixed Flames,"** Eastern States Fall Technical Meeting, Storrs, University of Connecticut, Oct 9-12, 2011.
34. **B. Elias,** R.G. Zalosh, and A. S. Rangwala, **"Conditions Affecting External Flame Propagation into a Portable Gasoline Container: A Summary of Test Methods and Experimental Findings,"** Eastern States Fall Technical Meeting, Storrs, University of Connecticut, Oct 9-12, 2011.
35. **M. Lee** and A. S. Rangwala, **"Influence of Reactant Temperature on Coal Particle Methane-Air Hybrid Flames,"** 29th International Pittsburgh Coal Conference, Pittsburgh, PA, Oct 15-18, 2012.
36. **S. R. Rockwell** and A. S. Rangwala, **"Analysis of Turbulent Hybrid Methane-air Coal-dust Flames,"** 29th International Pittsburgh Coal Conference, Pittsburgh, PA, Oct 15-18, 2012.
37. **R. Sreenivasan, B. E. Elias,** and A. S. Rangwala, **"Image Analysis Techniques for Particle Air Flames –A Review,"** 29th International Pittsburgh Coal Conference, Pittsburgh, PA, Oct 15-18, 2012.
38. **M. Lee** and A. S. Rangwala, **"Influence of Reactant temperature on Coal-Particle Methane-Air Hybrid Flames,"** 7th International Seminar on Fire and Explosion Hazards (ISFEH), paper# 105, May 5-10, 2013, Providence, RI.
39. **H. Li**, A. S. Rangwala and J.L. Torero, **"Critical Conditions for Water-based Suppression of Plastic Pool Fires,"** 8th U.S. National Combustion Meeting, Park City, Utah, May 19-22, 2013.
40. **X. Shi** and A. S. Rangwala, **"Hydrocarbon Pool Fire Behavior around Vertical Cylinders,"** 8th U.S. National Combustion Meeting, Park City, Utah, May 19-22, 2013.
41. **B. E. Elias** and A. S. Rangwala, **"Influence of Turbulence Level on CO and CO2 Concentration for Turbulent Methane-Air Flames,"** X ISHPMIE, Bergen, Norway 10 – 14 June, 2014.

42. V. Akkerman, A. Rangwala, "**Dust and Gas Explosion Model for Methane Accidents in Coal Mines**," 31st International Pittsburgh Coal Conference, Pittsburgh, PA, Oct. 6-9, 2014.
43. **S. Demir, S.H.R. Chalagalla,** V. Akkerman, A. Rangwala, V. Bychkov, **Predictive Scenario for Fires in Gaseous and Dust/Gas Environments: Premixed Flame Evolution,** 40th AIAA Dayton-Cincinnati Aerospace Sciences Symposium, Dayton, OH, USA, Mar. 4, 2015.
44. **S.H.R. Chalagalla, S. Demir,** V. Akkerman, A. Rangwala, V. Bychkov, "**Predictive Scenario for a Methane-Air Fire Spreading in a Mining Passage,**" West Virginia Academy of Science (WVAS) Annual Meeting, West Liberty, WV, USA, Apr. 11, 2015. /2nd Paper Award /
45. **S. Demir, H. Sezer,** B. Demirgok, A. Rangwala, V. Akkerman, "**Theory and Modeling of Flame Acceleration Mechanisms for Spatial Variations of Planar Flame Speed,"** West Virginia Academy of Science (WVAS) Annual Meeting, West Liberty, WV, Apr. 11, 2015.
46. V. Akkerman, **S.H.R. Chalagalla, S. Demir,** A. Rangwala, V. Bychkov, "**Predictive Scenario for Premixed Methane-Air Flame Spreading and Explosion Triggering in a Mining Passage,**" 9th US National Combustion Meeting, Cincinnati, OH, May 17-20, 2015
47. **S. Demir, H. Sezer, B. Demirgok,** A. Rangwala, V. Akkerman, "**Towards Modelling of Dusty-Gaseous Fires in Coal Mines,**" 9th US National Combustion Meeting, Cincinnati, OH, May 17-20, 2015.
48. **O. Ugarte,** V. Akkerman, A. Rangwala, **"Development of a Computational Explosive Vent Analyzer (EVA),"** 9th US National Combustion Meeting, Cincinnati, OH, May 17-20, 2015.
49. **S. Demir,** V. Akkerman, A. Rangwala, V. Bychkov, "**Analysis of Finger Flame Acceleration as a Stage of a Methane-Air-Dust Fire in a Coal Mine**," American Society of Mechanical Engineers (ASME) Power Conference, San Diego, CA, June 28 - July 2, 2015.
50. **S. Safaei,** V. Raghavan, T.M. Muruganandam, L. Genovesi, A. S. Rangwala, "**A Novel and Cost Effective Radiant Heat Flux Gauge,"** Suppression and Detection Research and Applications (SUPDET), San Antonio, TX, Mar 1-4, 2016.
51. **H. Sezer,** V. Akkerman, **O.J. Ugarte** and A. S. Rangwala, **"Methane and Propane Induced Explosions in Vented Enclosures,"** Eastern States Spring Technical Meeting, Princeton University, Mar 13 – 16, 2016.
52. **X. Shi,** A. S. Rangwala, **"Study of In-situ Burning Flame Heat Feedback in Ice Cavities,"** Eastern States Spring Technical Meeting, Princeton University, Mar 13 – 16, 2016.
53. **D. Di Cristina,** S.K. Im, A. Rangwala, V. Raghavan, **"Mixing in Turbulent Flows: Influence of Particle Injection,"** Eastern States Spring Technical Meeting, Princeton University, Mar 13 – 16, 2016.
54. **K. S. Arsava**, H. Sezer, and A.S. Rangwala, "**A Novel Oil-water Emulsion Burner Concept for Offshore Oil Spill Clean-up**", 2016 Mary Kay O'Connor Process Safety Center International Symposium, October 24-27, Texas A&M, 2016.

55. **H. F. Farahani,** G. Jomaas, A. S. Rangwala **"A Flow Visualization Study on Convective Flow in a Methanol Pool Fire Bound by an Ice Wall,"** International Oil Spill Conference, May 15 – 18, Long Beach, CA, 2017.
56. **Shijin P. Kozhumal, G.D. Cristina**, N.S. Skowronski, A. Simeoni, S. Im, A.S. Rangwala, **"Numerical investigation of fire dynamics in the presence of burning obstacles under a unidirectional wind,"** 10th US National Combustion Meeting, College Park, MD, April 23-26, 2017.
57. **S. Arava, A. J. Walawalkar, K.S. Arsava, H. Sezer,** and A.S. Rangwala, **"A Novel In-situ Combustion Concept for Hazardous Waste Clean Up**", 10th U. S. National Combustion Meeting Organized by the Eastern States Section of the Combustion Institute, College Park, MD, April 23-26, 2017.
58. **Sezer, H., K. S. Arsava,** and A. S. Rangwala, **"Burning Behavior of a Pool Fire on a Water Layer with a Thin Metal Wool",** 10th US National Combustion Meeting, College Park, MD, April 23 - 26, 2017.
59. **S. Ranganathan, D. Petrow,** S. Rockwell, A.S. Rangwala, **"Experimental Investigation of Laminar Premixed Methane-air Flame with Sand and Sodium Bicarbonate Particles,"** 10th US National Combustion Meeting, College Park, MD, April 23-26, 2017.
60. T.J. Borth, **S.K. Lakkundi, K. Arsava, S.P. Kozhumal**, A.S. Rangwala, **"Influence of codirectional, axisymmetric air injection on soot generation within a laminar pool fire,"** 10th US National Combustion Meeting, College Park, MD, April 24 - 26, 2017.
61. **G. Di Cristina, S.P. Kozhumal,** A. S. Rangwala, S. K. Im, **"Manipulating turbulent mixing behavior through particle injection,"** 10th US National Combustion Meeting, College Park, MD, April 24 - 26, 2017.
62. **K. Arsava, P. Tukaew**, **H. Sezer**, S. Fields, K. Hansen, A.S. **Rangwala " An offshore in-situ burn enhanced by floating immersed objects",** Clean Gulf, December 5-7, 2017.
63. **V.Kimmerly**, A.S. Rangwala, **"Effects of ullage on combustion efficiency and plume entrainment of pit fires,"** Eastern States Combustion Institute, Spring Technical Meeting, Pennsylvania State University, PA, Mar 4-7, 2018.
64. **C. Li, H.F. Farahani**, R. Yang, A.S. Rangwala, **"Effect of low temperature wall on the extinction and fuel layer distribution of pool fires,"** Eastern States Combustion Institute, Spring Technical Meeting, Pennsylvania State University, PA, Mar 4-7, 2018
65. **N. Mofidi**, A. S. Rangwala, **"A study of cavity effect on flame spread over kerosene-soaked sand bed,"** Eastern States Combustion Institute, Spring Technical Meeting, Pennsylvania State University, PA, Mar 4-7, 2018.
66. **X. Pi, L. Chang,** A.S. Rangwala, **"The influence of an immersed heater on pool fire burning behaviors,"** 11th US National Combustion Meeting, Pasadena, California, Mar 24-27, 2019
67. **G. Di Cristina, S. Kozhumal**, A. Simeoni, N. Skowronski, A. Rangwala, S. K. Im, **"Forced convection fire spread along wooden dowel array,"** 11th US National Combustion Meeting, Pasadena, California, Mar 24-27, 2019
68. **S.K. Lakkundi, V.M. Kimmerly**, A.S. Rangwala, **"An experimental study on the effects of ullage on flame spread through wooden matchstick arrays,"** 11th US National Combustion Meeting, Pasadena, California, Mar 24-27, 2019

69. **V. Kimmerly**, A.S. Rangwala, **"Effects of ullage on combustion efficiency and plume entrainment of pit fires,"** 11th US National Combustion Meeting, Pasadena, California, Mar 24-27, 2019
70. **V. Kimmerly**, A.S. Rangwala, **"Effects of Pit Geometry on Fire,"** 16th International Congress on Combustion By-Products, and their Health Effects, U Michigan, Ann Arbor, MI, Jul 10 – 12 2019.
71. **X. Pi**, **K. Twarog, L. Chang,** C.J. Sung, A.S. Rangwala, **"The influence of surface configuration of an immersed metal element to pool fire burning**,**"** 35th American Society for Gravitational and Space Research (ASGSR) Meeting, 2019, Denver, CO, United States.
72. **G. Di Cristina,** A. Simeoni, N. S. Skowronski, A. S. Rangwala, and S. Im, **"Modelling fire spread for dowel array using empirical mass transfer number model,"** 2020 the Eastern States Sections of the Combustion Institute Meeting, Columbia, SC USA, 2020.
73. **Farahani, H. F., Hayashi, T.**, Sakaue, H., & Rangwala, A. **"Flow Field Study of a Top Heated Immiscible Liquid Layer Adjacent to Ice,"** *14th International Symposium on Particle Image Velocimetry* (Vol. 1, No. 1) Aug 2021.
74. **Nair, S., H.F. Farahani**, V. Raghavan, A.S. Rangwala, **"Experimental study of dynamics of flames from discrete methanol fuel wicks in ullages,"** Eastern States Combustion Institute, Spring Technical Meeting, University of Central Florida, Orlando, FL, Mar 6 – 9, 2022.
75. **Kottalgi, M., S. Nair**, A. S. Rangwala, **"Influence of turbulence on burning behavior of fuel slick on water,"** Eastern States Combustion Institute, Spring Technical Meeting, University of Central Florida, Orlando, FL, Mar 6 – 9, 2022.
76. **Sauer, N. G., H.-H. Ho, S. Nair,** L. Zabilansky, A. Rangwala, **"A study of kerosene pool burning on wavy water,"** Eastern States Combustion Institute, Spring Technical Meeting, University of Central Florida, Orlando, FL, Mar 6 – 9, 2022.
77. **Ho, H. H., N. Sauer, M. Kottalgi**, K. Arsava , A. Rangwala, **"Burning behavior analysis of meso-scale pool fires using combustion product sampling,"** Eastern States Combustion Institute, Spring Technical Meeting, University of Central Florida, Orlando, FL, Mar 6 – 9, 2022.
78. **Murray, H.** and A. S. Rangwala, **"Explosion risk by dust off gassing,"** 14th US National Combustion Meeting, Boston, MA, Mar 16 -19, 2025.
79. **Goetz, A**., A. S. Rangwala, and K. Thomas, **"Explosion risk of spills of liquids in an enclosure with one vent."** 14th US National Combustion Meeting, Boston, MA, Mar 16 -19, 2025.
80. **Temples, S. C.**, K. Kuwana, S. R. Rockwell, and A. S. Rangwala, **"Ember persistence in a pneumatic duct."** 14th US National Combustion Meeting, Boston, MA, Mar 16 -19, 2025.
81. **Murray, H.** and A. S. Rangwala, **"Combustible Dust Off-Gassing: Accumulation of Ignitable Vapors in a Naturally Ventilated Compartment,"** 2025 Mary Kay O'Connor Process Safety Center (MKOPSC) Safety & Risk Conference, Houston, TX, Oct 21-23, 2025.

82. **Goetz, A.** and A. S. Rangwala, **"Flammable vapor concentration build-up from liquid spills inside an enclosure with a single vent,"** 2025 Mary Kay O'Connor Process Safety Center (MKOPSC) Safety & Risk Conference, Houston, TX, Oct 21-23, 2025.

Conference Presentations w/o Papers:

1. A. S. Rangwala, S. G. Buckley, and J. L. Torero, **"Understanding Material Property Impacts on Co-Current Flame Spread: Improving Understanding Crucial for Fire Safety,"** Workshop on Strategic Research to Enable NASA's Exploration Missions; Cleveland, OH, June 22-23, (2004).
2. H. Kytomaa, F. Gavelli and A. S. Rangwala, **"Steps Involved in the Analysis of Spill Scenarios,"** AICHE, Vancouver, Sep 11-13, (2005).
3. **J. P. Crocker,** J. P. Woycheese, A. S. Rangwala, and D. J. Le Blanc, **"Effect of Lintel Depth, Fire Size, and Sprinkler Activation on Ceiling Jet Velocity and Temperature in a Doorway,"** SFPE Annual Professional Development Conference and Expo, Las Vegas, NV (2007).
4. **J. W. Brown, F. X. Jervis, S. R. Rockwell**, A. S. Rangwala, and N. A. Dembsey, "**Characterizing Material Flammability using a Critical B-number,"** SFPE Annual Professional Development Conference and Expo, Charlotte, NC, Oct 12-17 (2008).
5. **M. J. Gollner, T. Hetrick,** A. S. Rangwala, J. Perricone, and F. A. Williams, **"A Fundamental Approach towards Fire Hazard Classification,"** Presentation to the San Diego Society of Fire Protection Engineers, (2009).
6. E. J. Granite and A. S. Rangwala, **"Overview of underground coal fires,"** International Pittsburgh Coal Conference, September 21-24, Pittsburgh, PA (2009).
7. **M. J. Gollner, K. Overholt**, A. S. Rangwala, J. Perricone, F. A. Williams, **"Commodity Classification from First Principles,"** SFPE Professional Development Conference and Expo, Scottsdale, AZ, Oct 18-23, (2009).
8. **Gollner, M.J**., Williams, F.A., and Rangwala, A.S. **Upward flame spread over corrugated cardboard**, Society of Fire Protection Engineers Annual Engineering Technology Conference, New Orleans, LA, October, 2010.
9. **M. J. Gollner, X. Huang,** F. A. Williams and A.S. Rangwala, **"Flame Propagation on Inclined Fuel Surfaces,"** 3rd FM Global Open Source CFD Fire Modeling Workshop, Norwood, MA, May 9-10, (2011).
10. A. S. Rangwala, **"Controlling Mechanisms of Dust Layer Ignition and Flame Propagation in Dust Clouds,"** 8th Global Congress on Process Safety, 46th Loss Prevention Symposium, Hilton Americas-Houston and George Brown Convention Center, Houston, TX, April 1 – 5, 2012.
11. **X. Shi** and A. S. Rangwala, **"Influence of Immersed Objects on Liquid Pool Boilover"** AICHE annual meeting, San Francisco, CA, Nov 3 – 8, 2013.
12. A. S. Rangwala, **"Flame Refluxer,"** OSPR/Chevron Oil Spill Response Technology Workshop, San Ramon, CA, Feb 26 – Mar 1, 2017.
13. **G. Di Cristina, S. P. Kozhumal**, N. S. Skowronski, A. Simeoni, A. S. Rangwala, and S. Im, **"Design and implementation of a large-scale portable wind tunnel for wildfire research,"** Igniting Exchange: North Atlantic Fire Science Exchange Meeting, Portland, ME USA, 2018.

14. A. S. Rangwala, **"Burning of Crude Oil with a Flame Refluxer,"** OSPR/Chevron Oil Spill Response Technology Workshop, San Ramon, CA, Feb 22 – 26, 2021 (Virtual Meeting).
15. **M. Yamazaki, M. Hasegawa**, H. Sakaue, S. Nair, H.F. Farahani, A.S. Rangwala, "Investigation on Ice Melting by Simultaneous Thermometry and Velocimetry Method in Oil," 75th Annual Meeting of the American Physical Society (APS), Division of Fluid Dynamics, Nov 20 – 22, Indianapolis, Indiana, 2022.
16. **H. Murray, K. Barnes, S. Collins, A. Haynes, A. Satish**, and A. S. Rangwala, "Ignition Behavior of Weathered Crude Oil," International Oil Spill Science Conference (IOSSC 2026), Abstract 755, Concordia University, Montreal, Canada, Oct 13 – 16, 2026. Journal of Hazardous Materials: Organics Merit Award.

Professional Presentations (Invited Talks)

1. "**Mathematical Modeling of Low Ventilation Compartment Fires, using Mathematica as an Equation Solver,**" National Institute of Standards and Technology, (NIST), Gaithersburg, MD, Aug 2002.
2. **"A Variable B-Number for Modeling Laminar Flame Propagation,"** National Institute of Standards and Technology, (NIST), Gaithersburg, MD, Nov 2006.
3. **"Warehouse Commodity Classification - Ongoing Research at WPI and UCSD,"** FM Global Research Center, Norwood, MA, Nov 30, 2009.
4. **"Upward Flame Spread on a Group-A Plastic Warehouse Storage Commodity,"** UTRC research center, New Haven, CT, Feb 4, 2010.
5. "**Fire Protection Engineering: A Career Option?"** Department of Chemistry, Connecticut College, New London, CT, Feb 23, 2010.
6. **"A History of Fire Protection Engineering,"** Department of Mechanical and Aerospace Engineering, Indian Institute of Technology, Chennai, India, Aug 17, 2012.
7. **"Flame Propagation in Dust Clouds"** Department of Mechanical and Aerospace Engineering, Indian Institute of Technology, Chennai, India, Aug 23, 2012.
8. **"Fire Protection Engineering: A Career Option?"** Center for Pollution Control and Environmental Engineering, Pondicherry University, Kalapet, Puducherry-605014, India, Aug 21, 2012.
9. **"Coal-dust Air Flames,"** National Institute of Occupational Safety and Health (NIOSH), Pittsburgh, PA, Sep 6, 2012.
10. **"Flame Propagation in Dust Clouds,"** UT Austin, Department of Mechanical and Aerospace Engineering, Feb 21, 2013
11. **"Connect, Collaborate, and Innovate Approach to Fire Research"** Indian Institute of Technology, Kanpur, India, Aug 1, 2013.
12. **"Burning Behavior of Crude Oil in Ice Cavities,"** US Coast Guard Research Center, New London, CT, April 10, 2014.
13. **"Collaborative Opportunities between FIKE and WPI"** Fike Corporation, Kansas, MO, Aug 21, 2014
14. **"Flame Propagation in Dust Clouds,"** State Key Laboratory of Fire Science**,** University of Science and Technology, Hefei, China, Dec 19 2014

15. **"What's happening in WPI Fire Protection Engineering – Pathways to Future Collaboration",** Coast Guard Academy, New London, CT, Jul 15, 2015.
16. **"New Concepts for Hazardous Waste Cleanup by Combustion,"** IIT Gandhinagar, Gujarat, India, 3 Jan 2017.
17. **"Fire Research at WPI,"** IIT Madras, Chennai, India, 13 Jan 2017.
18. **"Laminar and Turbulent Dust Flames,"** IIT Mumbai, India, 20 Feb 2020.
19. **"The Tea Lite Candle and the Global Waste Problem,"** University of Maryland, College Park, MD (8/21/2018), University of Notre Dame, Notre Dame, IN (10/25/2018), Northeastern University, Boston, MA (2/22/2019), University of Edinburgh, Scotland, UK (4/12/2019), Washington University, St. Louis, MO (08/15/2019), IIT Kanpur, India, (2/24/2020).

Honors and Awards

1. 2008, International Association for Fire Safety Science (IAFSS) Thesis Award: **Flame Spread Analysis Using A Variable B-number.**
2. 2009, NSF CAREER Award on the topic of **Controlling Mechanisms of Dust Layer Ignition and Flame Propagation in Dust Clouds.**
3. 2017, Sigma Xi **Outstanding Senior Faculty Research Award**.

SERVICE TO

Profession

- Drafted the ASTM F3429, Standard Specification for Performance of Flame Mitigation Devices Installed in Disposable and Pre-Filled Flammable Liquid Containers. In effect since Sep 2020.
- Member of a federal advisory committee, BPAC (Biological and Physical Sciences Advisory Committee), (2022 – 2026)
- Editorial board of Fire Safety Journal (2014-current)
- Serving on the Technical Committee of NFPA 660 Fundamentals of Combustible Dust (2019 – current)
- Topic leader in the topic area of Ignition and Flame Spread for 11th International Symposium on Fire Safety Science.
- Lead organizer of a Fire Research Workshop (31 Jul – 1st Aug, 2013) at IIT Kanpur, India.
- Lead organizer of an Explosion Dynamics Workshop (13 – 14 Jul, 2023) at IIT Gandhinagar, India.
- Lead organizer of an Explosion Dynamics Workshop (13 Oct 2023) at Mary Kay O'Connor Process Safety Center, College Station, TX.
- Served on the editorial board of Fire Technology (Journal) (2009- 2012)
- Served as the editor for a special issue of Fire Technology on detection (Publications from the annual SUPDET conference held in Orlando, Florida, 2009-2011)
- Associate editor for IAFSS newsletter (2009 - 2013)
- Served as a member of the technical committee on the Incipient Fire Project panel, Fire Protection Research Foundation (Validation of Smoke Detection Performance Prediction Methodology). Chaired the final panel discussion at the SUPDET conference in Orlando, Florida, Feb 2009

- Served as a member of the technical committee on the impact of large volume low speed fans on sprinkler operation (NFPRF technical panel)
- Serving as the Faculty representative of the SFPE student chapter at WPI
- Served on the board of advisors committee of the Society of Fire Protection Engineers' (SFPE) New England Chapter (2008, 2009)
- Serving on the scientific advisory board for Fire and Explosion Hazards Conference
- Session chair (AI & Databasing Applied to Explosions; Risk Management) at the 16th International Symposium on Hazards, Prevention, and Mitigation of Industrial Explosions (ISHPMIE), Kaohsiung, Taiwan, April 2026
- Served on NAE, DOJ, NASA, NSF, DHS, OSHA and NFPA review panels

Department and University

- Established the first Combustion Laboratory at WPI http://combustionlab.wpi.edu
- The combustion lab was featured in Discovery Channel's weird or what hosted by William Shatner
- Work done on oil spill cleanup by combustion was featured on NPR. http://www.npr.org/2017/03/21/520861834/researchers-test-hotter-faster-and-cleaner-way-to-fight-oil-spills
- The lab was featured in Boston CBS local news with a story on Michael Vaudreuil's MQP project (http://boston.cbslocal.com). Mike worked at WPI facilities and at the same time got his BS in ME. He graduated in May 2016.
- The lab was featured in a study of Portable Gas Cans (PGC) on NBC news (Television and Web media) http://www.nbcnews.com/news/investigations/new-tests-show-flame-arresters-can-stop-gas-can-explosions-n33981
- Interviewed with Worcester local news network (channel 3 news) regarding the coal mine explosion in West Virginia
- Work on dust explosions was quoted in Wall Street Journal
- Interviewed with the associated press on the steel-dust fire accident in Tennessee

EXPERT WITNESS and ENGINEERING PRACTICE

I have served as a consultant to law firms and industry for work related to fire and explosion safety. Representative litigation/expert witness clients include:

1. **International Paper,** (Memphis, TN) – Spontaneous ignition risk during outdoor storage of baled waste paper, Oct 2010 (consulting)
2. **Escobedo, Tippit & Cardenas** (McAllen, Texas) **-** Chris Gaddy et al. vs. Blitz U.S.A et al. related to explosion in portable gas can (PGC), Aug 2010 (deposition)
3. **Richardson, Patrick, Westbrook and Brickman** (Barnwell, SC) – Matthews vs. Plastics Group related to explosions in portable gas can (PGC), Feb 2012 (deposition)
4. **Sekisui Voltek**, (Lawrence, MA) - Combustible dust risk assessment, Dec 2012, (consulting).
5. **PCC Structurals,** (Tilton, NH) –Fire and explosion hazard assessment at aluminum foundry, May 2015 (consulting).
6. **Akin Gump Strauss Hauer & Feld**, (Washington DC) – Rowlett v. Wal-Mart Stores, Inc. related to explosion incident in a portable gas can (PGC), Jul 17 2015 (deposition).

7. **Applied Research Associates**, (Gloucester Point, VA) – Sensor design for pool fire thickness measurements, Aug 2016 (consulting).
8. **Cochran, Davis & Associates** (Palos Verdes Estates, CA) - Garvey Avenue Partners, LLC and J.E. Brittain & Sons Insurance Services dba Hospitality General Insurance Services, Inc, related to electrical fire, Sep 2016 (consulting).
9. **Quinn Emanuel Urquhart & Sullivan, LLP** (Redwood Shores, CA) – Oakland Bulk Storage Terminal Design – Self-ignition of coal and dust explosion hazard analysis, Sep 2017 (deposition and trial testimony).
10. **Cozen O'Connor** (Philadelphia, PA) - Federal Insurance Company v. Emulsion LLC - Examination of events leading to a fire because of spontaneous ignition (deposition, 2019).
11. **Attorney General,** (Boston, MA) **–** Aldana vs. Commonwealth, use of thermite to cause fire and explosions (trial, 2022).
12. **Weinberg Wheeler Hudgins Gunn and Dial** (Cook County, IL) – ITM vs. Midwest Can Company, related to explosion incident in a portable gas can (deposition, 2023)
13. **Wilson Elser Moskowitz Edelman & Dicker LLP** (Hartford, CT) - Hartford Casualty v. Churchill Linen Service, Inc., related to self heating of laundry (consulting).
14. **Downey & Lenkov LLC** (Chicago, IL) – Moore v. Honeywell, related to furnace explosion (consulting).