Publications

Published peer-reviewed journal papers

2026

1. Gaunekar, Sairaj, and Anirudha Ambekar. "Effect of Oxygen Balance on the Pyrolysis and Kinetics of Guanidine Nitrate/Basic Copper Nitrate-Based Airbag Gas Generant." Propellants, Explosives, Pyrotechnics (2026): e70117.

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2. Gaunekar, S., & Ambekar, A. (2025). Effect of heating and purge flow rates on Magnesium Nitridation reaction using Thermogravimetry. *Thermochimica Acta, 747*, 179974. https://doi.org/10.1016/j.tca.2024.179974
3. Jain A., Ambekar A., Thajudeen T. (2025) Effect of Particle Size Distribution of Nanoadditives in Titania-laden Diesel Fuel on the Fine and Ultrafine Particulate Emissions. *Energy. 320, 135322. https://doi.org/10.1016/j.energy.2025.135322*
4. Prakash, A., Dhiman, R., Ambekar, A., Thajudeen, T., & Kore, S. D. (2025). Investigating the effect of varying powder size range on particulate matter emission and mechanical properties of in-situ micropowder alloyed WAAM depositions. *Welding in the World, 69*, 1171–1190.
5. Rubal Dhiman, Adarsh Prakash, Subhrajyoti Saroj; Priyabrata Sahoo, Anirudha Ambekar, Sachin Kore, Sarath Guttikunda, Thaseem Thajudeen (2025), "Comprehensive Analysis of the Fine And Ultrafine Particulate Emissions From Various Welding Sources in an Industrial Environment", Atmospheric Pollution Research
6. Gaunekar, S., & Ambekar, A. (2025). The hygrothermal aging effects of guanidine nitrate/basic copper nitrate-based airbag gas generant. Thermochimica Acta, 180101. https://doi.org/10.1016/j.tca.2025.180101

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7. Gaunekar, S., & Ambekar, A. (2024). Effect of hygrothermal aging on the decomposition reactions of Magnesium/Teflon/Viton (MTV) pyrotechnic. Propellants, Explosives, Pyrotechnics. https://doi.org/10.1002/prep.202400162
8. Dhiman, R., Sharma, R., Jain, A., Ambekar, A., Thajudeen, T., & Guttikunda, S. K. (2024). Spatial and temporal variation of cooking-emitted particles in distinct zones using Scanning Mobility Particle Sizer and a network of low-cost sensors. Indoor Environments, 1(2), 100008. https://doi.org/10.1016/j.indenv.2024.100008
9. Prakash, A., Dhiman, R., Ambekar, A., Thajudeen, T., & Kore, S. D. (2024). Investigations into metallurgical, mechanical, and particulate matter emissions in in-situ micropowder alloyed wire arc additive manufacturing process. Welding International, 1–16. https://doi.org/10.1080/09507116.2024.2442481

10. Jain, A., Ambekar, A., & Thajudeen, T. (2024). Effect of titania nano-additives on fine and ultrafine carbonaceous emissions during flame combustion of diesel. Aerosol and Air Quality Research, 24(5). https://doi.org/10.4209/aaqr.230281

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11. Jain, A., Ambekar, A., & Thajudeen, T.* (2023). Experimental investigation on the effect of size modification of alumina nano-additives on the performance and emission characteristics of a compression ignition engine. *Journal of Thermal Analysis and Calorimetry, 149*, 479–494. https://doi.org/10.1007/s10973-023-12684-2

2019

12. Ambekar, A., & Yoh, J. J. (2018). Chemical kinetics of multi-component pyrotechnics and mechanistic deconvolution of variable activation energy. *Proceedings of the Combustion Institute, 37*(3), 3193–3201. https://doi.org/10.1016/j.proci.2018.05.142

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13. Ambekar, A., Kumar, A., & Chowdhury, A. (2018). Droplet combustion studies of nitromethane and its blends. *Experimental Thermal and Fluid Science, 93*, 431–440. https://doi.org/10.1016/j.expthermflusci.2018.01.026
14. Swami, U., Ambekar, A., Gondge, D., Sreedhara, S., & Chowdhury, A. (2018). Burn rate characterization of desensitized isopropyl nitrate blends. *Combustion and Flame, 190*, 454–466. https://doi.org/10.1016/j.combustflame.2017.11.026
15. Ambekar, A., & Chowdhury, A. (2018). An experimental technique for the determination of intrinsic burning rate constants of liquid fuels. *Applied Thermal Engineering, 135*, 238–245. https://doi.org/10.1016/j.applthermaleng.2018.02.074
16. Oh, J., Ambekar, A., & Yoh, J. J. (2018). The hygrothermal aging effects of titanium hydride potassium perchlorate for pyrotechnic combustion. *Thermochimica Acta, 665*, 102–110. https://doi.org/10.1016/j.tca.2018.05.019
17. Ambekar, A., & Yoh, J. J. (2018). Kinetics deconvolution study of multi-component pyrotechnics. *Thermochimica Acta, 667*, 27–34. https://doi.org/10.1016/j.tca.2018.07.007
18. Ambekar, A., & Yoh, J. J. (2018). A reduced order model for prediction of the burning rates of multicomponent pyrotechnic propellants. *Applied Thermal Engineering, 30*, 492–500. https://doi.org/10.1016/j.applthermaleng.2017.11.008

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19. Kim, Y., Ambekar, A., & Yoh, J. J. (2017). Toward understanding the aging effect of energetic materials via advanced isoconversional decomposition kinetics. *Journal of Thermal Analysis and Calorimetry*. https://doi.org/10.1007/s10973-017-6778-2

20. Ambekar, A., Kim, M., & Yoh, J. J. (2017). Characterization of display pyrotechnic propellants: Colored light. *Applied Thermal Engineering, 110*, 1066–1074. https://doi.org/10.1016/j.applthermaleng.2016.09.040

21. Ambekar, A., Kim, M., Lee, W. H., & Yoh, J. J. (2017). Characterization of display pyrotechnic propellants: Burning rate. *Applied Thermal Engineering, 121*, 761–767. https://doi.org/10.1016/j.applthermaleng.2017.04.097

2016

22. Ambekar, A., & Chowdhury, A. (2016). A review of the combustion characteristics of monopropellants. *Annals of the Indian National Academy of Engineering, XIII*, 326–332.

2015

23. Ambekar, A., Bhangale, R., Chatterjee, R., Kulkarni, C., Kumar, S., & Chowdhury, A. (2015). Glow-plug-assisted combustion of nitromethane sprays in a constant volume chamber. *Applied Thermal Engineering, 76*, 462–474. https://doi.org/10.1016/j.applthermaleng.2014.11.043

24. Ambekar, A., Sreedhara, S., & Chowdhury, A. (2015). Burn rate characterization of iso-propyl nitrate – A neglected monopropellant. *Combustion and Flame, 162*(3), 836–845. https://doi.org/10.1016/j.combustflame.2014.09.002

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25. Ambekar, A., Chowdhury, A., Challa, S., & Radhakrishna, D. (2014). Droplet combustion studies of hydrocarbon–monopropellant blends. *Fuel, 115*, 697–705. https://doi.org/10.1016/j.fuel.2013.07.056

Conference papers

1. **A. Ambekar** and A. Chowdhury, "Combustion of Blended Monopropellants", 48th AIAA/ ASME/ SAE/ ASEE Joint Propulsion Conference & Exhibit, July 2012.
2. **A. Ambekar**, L. Mallick, R. Gandhi, A. Chowdhury, D. Radhakrishna, and S. Challa, "Burn Rate Characterization of Iso-propyl Nitrate Blends: Part I", 49th AIAA/ ASME/ SAE/ ASEE Joint Propulsion Conference, July 2013.
3. **A. Ambekar**, L. Mallick, R. Gandhi, A. Chowdhury, D. Radhakrishna, and S. Challa, "Burn Rate Characterization of Iso-propyl Nitrate Blends: Part II", 49th AIAA/ ASME/ SAE/ ASEE Joint Propulsion Conference, July 2013.
4. **A. Ambekar**, R. Bhangale, A. Dukale, R. Gandhi, A. Chowdhury, D. Radhakrishna, and S. Challa, "Ignition and Combustion of Nitromethane Sprays", 49th AIAA/ ASME/ SAE/ ASEE Joint Propulsion Conference. July 2013.
5. **A. Ambekar**, L. Mallick, R. Gandhi, A. Chowdhury, "Droplet Combustion Study of Blended Monopropellants", 9th Asia-Pacific Conference on Combustion (ASPACC), 19-22 May 2013.
6. **A. Ambekar**, R. Bhangale, A. Dukale, R. Gandhi, A. Chowdhury, "Ignition and Combustion of Isopropyl Nitrate Sprays", 9th Asia-Pacific Conference on Combustion (ASPACC), 19-22 May 2013.
7. S. K. Saini, S. Mohanan, **A. Ambekar**, A. Chowdhury, A. Srivastava, "Optical Diagnostic of Temperature Distribution in a Monopropellant Flame using Mach Zehnder Interferometer", Proceedings of the 22nd National and 11th International ISHMT-ASME Heat and Mass Transfer Conference, 28-31 December 2013.
8. A. Kumar, **A. Ambekar**, Sreedhara S., A. Chowdhury, "An Analytical Study of Monopropellant Droplet Combustion", 5th International and 41st National Conference on Fluid Mechanics and Fluid Power (FMFP), 12-14 December 2014.
9. **A. Ambekar** and A. Chowdhury, "Experimental Prediction of Intrinsic Burning Rate Constants of Liquid Fuel Droplets", 10th Asia-Pacific Conference on Combustion (ASPACC), 19-22 July 2015, Beijing, China.
10. **A. Ambekar** and A. Chowdhury, "A Semi-Analytical Method for Determination of Burn Rates of Liquid Monopropellant Strands", 10th Asia-Pacific Conference on Combustion (ASPACC), 19-22 July 2015, Beijing, China.
11. **A. Ambekar** and A. Chowdhury, "Instabilities in Isopropyl Nitrate Flames in Oxidizing Atmospheres", 10th Asia-Pacific Conference on Combustion (ASPACC), 19-22 July 2015, Beijing, China.
12. L. Mallick, **A. Ambekar**, S. Lal, N. R. Kumbhakarna, A. Chowdhury, I.N.N. Namboothiri, "Thermodynamic and thermal characterization of bishomocubane derivatives as possible binders in composite solid propellants", 10th Asia-Pacific Conference on Combustion (ASPACC), 19-22 July 2015, Beijing, China.

13. **A. Ambekar**, and Jack J. Yoh, "Comparative study of burning rate correlations for pyrotechnic compositions", 16th International Symposium on Fireworks (ISF), Omagari, Daisen City, Akita Prefecture, Japan, April 24-29, 2017.
14. **A. Ambekar**, J. Oh, Y. Kim, and J. J. Yoh, "Kinetic study of multi-component pyrotechnics: observations and interpretations of the DSC curves", 11th Asia-Pacific Conference on Combustion (ASPACC), 10th -14th December 2017, The University of Sydney, NSW Australia.
15. **A. Ambekar** and J. J. Yoh, "Assessment of 3D printing technology for potential application towards manufacturing composite propellants", 11th Asia-Pacific Conference on Combustion (ASPACC), 10th -14th December 2017, The University of Sydney, NSW Australia.
16. J. Oh, **A. Ambekar**, Y. Kim, and J. J. Yoh, "Effects of humidity levels, and periods on pyrotechnic initiators' aging", 11th Asia-Pacific Conference on Combustion (ASPACC), 10th -14th December 2017, The University of Sydney, NSW Australia.
17. P. Grewal and **A. Ambekar**, "Screening and Theoretical Analysis of Blended Green Monopropellant Candidates", 13th Asia-Pacific Conference on Combustion (ASPACC), 05th-09thDecember, 2021, Abu Dhabi.
18. S. Gaunekar and **A. Ambekar**, "Kinetic analysis of Magnesium/ Teflon/ Viton pyrotechnic", 4th National Aerospace Propulsion Conference (NAPC 2022), 19-20 December 2022, IIT Bombay, Powai, Mumbai.
19. S. Gaunekar and **A. Ambekar**, "Comparison between decomposition kinetics of mechanoactivated and recrystallized ammonium perchlorate composite solid propellant", 14th Asia-Pacific Conference on Combustion (ASPACC), Kaohsiung Exhibition Center, 14-18 May 2023, Kaohsiung, Taiwan.
20. A. Jain, U. Saini, **A. Ambekar**, T. Thajudeen, "Performance and Combustion Characteristics of Diesel Blended with Ceria Nano-additives", 29th International Colloquium on the Dynamics of Explosions and Reactive Systems (ICDERS), 23 – 28 July 2023, SNU Siheung, South Korea.
21. A. Jain, **A. Ambekar**, T. Thajudeen, "Effect of Titania Nano-Additives on the Particulate Matter Including Ultra-Fine Particle Emissions of A Compression Ignition Engine", Indian Aerosol Science and Technology Association (IASTA) National Conference 2023, 12 – 14 December 2023, Navi Mumbai, India.
22. A. Jain, **A. Ambekar**, T. Thajudeen, "Experimental Investigations for the Particulate Matter and Ultra-fine Particles Emissions during the Flame Combustion of Alumina- and Ceria-laden Diesel Fuel", 10th International and 50th National Conference on Fluid Mechanics and Fluid Power (FMFP), 20 – 22 December 2023, IIT Jodhpur, India.
23. R. Rubal, R., **A. Ambekar**, T. Thajudeen, "Performance of Low-Cost Sensors in Measuring Particulate Matter Concentrations in Indoor and Outdoor Environments", EGU General Assembly 2023, 24–28 Apr 2023, Vienna, Austria.

24. R. Rubal, **A. Ambekar**, T. Thajudeen, “Performance of low-cost sensors in measuring particulate matter concentrations in indoor and outdoor environments”, Air Sensors International Conference, August 26th, 2022, Bangalore, India.
25. R. Rubal, R., **A. Ambekar**, S. Guttikunda, T. Thajudeen, “Air Quality Assessment: Analyzing PM Distribution and Calibrating Low-Cost Sensors for Precise Measurements”, Indian Clean Air Summit, 23-25 th August 2023, Bangalore, India.
26. Rubal, R., **Ambekar, A.**, Guttikunda, S. K., and Thajudeen, T., “Examining PM Distribution and Calibrating Low-Cost Sensors for Accurate Measurements in Indoor, Laboratory, and Outdoor Environments”, EAC 2024, Tampere, Finland, 25-30th Aug 2024.
27. Rubal, R., **Ambekar, A.**, Guttikunda, S. K., and Thajudeen, T., “Air Quality Assessment: Analyzing PM Distribution and Calibrating Low-Cost Sensors for Precise Measurements in Indoor and Outdoor Environments”, EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-1131, https://doi.org/10.5194/egusphere-egu24-1131, 2024
28. Dhiman R., Sharma R., Jain A., **Ambekar A.**, Thajudeen T., “Understanding the spatial and temporal variation of cooking-emitted particles in distinct zones”, AAC 2024, Sarawak, Malaysia, 3-7th Nov 2024.
29. Prakash, A., Dhiman R, **Ambekar A.**, Thajudeen T., and Kore S.D.., “Investigating the Effect of Varying Powder Size on Particulate Matter Emission and Mechanical Properties of In-Situ Micropowder Alloyed WAAM Depositions”, 77th IIW Annual Assembly and International Conference on Welding and Joining, Rhodes, Greece, 6–12 July 2024.

Posters

1. **A. Ambekar**, M. Kim, W. H. Lee, and J. J. Yoh, "Experimental and numerical study of combustion of a pyrotechnic star", 36th International Symposium on Combustion, July 31 – August 5, 2016, Seoul, Korea.
2. **A. Ambekar** and J. J. Yoh, "Thermogravimetric Analysis of Commercial Pyrotechnic Compositions", 2016 KSPE Fall Conference, Gangwan-do, South Korea, 21-23 Dec. 2016.
3. S. Gaunekar and **A. Ambekar**, "Hygrothermal Aging of Guanidine nitrate /Basic copper nitrate-based airbag gas generant", 40th International Symposium on Combustion, 21st July till Friday, 21st to 26th July 2024, Milan (Italy). [Poster - Accepted]
4. C V Anoop, T. Thajudeen, **A. Ambekar**, "An experimental investigation to characterize liquid fuels in strand burner", 40th International Symposium on Combustion, 21st July till Friday, 21st to 26th July 2024, Milan (Italy). [Poster - Accepted]
5. Rathi Vineet Kumar, T. Thajudeen, **A. Ambekar**, "Combustion of Irregularly Shaped Electrolytic Iron Particles In A CH4–Air Inverse Diffusion Flame", 40th International Symposium on Combustion, 21st July till Friday, 21st to 26th July 2024, Milan (Italy). [Poster - Accepted]
6. Akshat Jain, Anirudha Ambekar, and Thaseem Thajudeen, "Experimental Investigations of the Effect of Titania Nanoadditives on Fine and Ultrafine Carbonaceous Emissions during Flame Combustion of Diesel", 13th Asian Aerosol Conference 2024 (AAC 2024), Sarawak, Malaysia, 3-7th Nov 2024.
7. Anoop C V, Thaseem Thajudeen, and Anirudha Ambekar, "Experimental investigations on particulate emission characteristics of heptane flames with the addition of ferrocene compounds", 13th Asian Aerosol Conference 2024 (AAC 2024), Sarawak, Malaysia, 3-7th Nov 2024.