

M. RAZI NALIM, P.E., Ph.D.
Executive Associate Dean for Research & Graduate Programs
Professor of Mechanical Engineering
Director, Combustion & Propulsion Research Laboratory
Purdue School of Engineering & Technology
Indiana University - Purdue University Indianapolis (IUPUI)¹

BIOGRAPHY:

Dr. Razi Nalim has three decades of experience in higher education and professional practice – in industry, academia, and government. His broad leadership and governance experience in academia includes administering research, sponsored work, graduate programs, assessment, and financial aid at the School of Engineering & Technology in Indianapolis. During his associate deanship at the School, new records were set in graduate student enrollment, faculty research funding, and graduate student support, elevating the School to rank third nationally among similar-size US engineering graduate programs and in the top 100 of such programs overall for the first time. Serving on the Indiana University Faculty Council and the Purdue University Graduate Council, he has chaired or served in important university policy and review bodies. Recognized as a entrepreneurial ‘translational’ scholar, he helped establish multiple industry-university research consortia. His first consortium aimed to research and demonstrate technology on novel powerplants and jet engines that he had initiated at NASA Glenn Research Center as a National Research Council Fellow. Dr. Nalim was twice awarded the Abraham Max Distinguished Professorship, as well as the Frank Burley Distinguished Professorship – the highest honors of his School for research and service accomplishments, respectively. He has published well over a hundred scientific and technical papers, and received 6 patents. supported by over \$10 million in grants from NASA, NIH, NSF, Rolls-Royce, and others. He previously led R&D at two small start-up companies, and has launched a new startup to commercialize his research. He has served overseas as a Fulbright Senior Scholar and NATO AGARD Scholar, and is an Associate Fellow of the American Institute of Aeronautics & Astronautics.

CURRICULUM VITAE

Professional Education & Licensure

Indian Institute of Technology, Kanpur, India	B.Tech., 1983	Mechanical Engineering	1978 – 1983
Cornell University, Ithaca, NY	M.S., 1985	Mechanical Engineering	1983 –1985
Cornell University, Ithaca, NY	Ph.D., 1994	Aerospace Engineering (Minor: Chemical Engineering)	1989 –1993
Professional Engineer License	P.E., 1992	Mechanical Engineering	Indiana (2002) New York (1992)

Other Professional Training

- NSF, Arlington, VA. *Commercialization Planning Program & Beat-the-Odds Boot Camp*, 2015.
- Massachusetts Institute of Technology, Cambridge, MA. *Leadership Skills for STEM Faculty*, 2007.
- ABET, Baltimore, MD. *Assessing Program Outcomes*, 2008.
- Oxonia Institute, Colombo, Sri Lanka. *Financial & Cost Accounting, Economics*, 1978.

¹ IUPUI is Indiana University – Purdue University Indianapolis, the joint campus of Purdue University and Indiana University in Indiana’s capital city, and the leading urban research university campus of Indiana. The School of Engineering & Technology delivers Purdue University engineering programs at the BS, MS, and PhD levels, and is the largest-enrollment school at IUPUI.

CONTACT INFORMATION

Home Address: 13883 Golden Saddle Ct, Carmel, IN 46032

Work Address: Engineering & Technology, IUPUI, 799 W. Michigan St, ET 215, Indianapolis, IN 46202

Mobile phone : 317-443-1959, Voice-mail: 317-278-3010, E-mail: razinalim@gmail.com, mnalim@iupui.edu

Experience: ~5 yrs industry, ~3 yrs government, ~19 yrs academic and consulting

Executive Associate Dean for Research & Graduate Programs	07/2016 -present	Purdue School of Engineering & Technology, IUPUI, Indianapolis, IN
Associate Dean for Research	07/2014 – 06/2016	
Professor of Mechanical Engineering (ME) Adjunct Prof. of Biomedical Engineering (BME)	07/2008 - present	
Associate Dean, Research & Graduate Programs, Ex-officio Head of Technology Graduate Program	07/2010 - 06/2013	
Associate Chair of ME	07/2008 - 06/2010	
Graduate Chair of ME, Associate Professor of ME, Adjunct Associate Professor of BME	07/2004 - 06/2008	
Assistant Professor of ME	08/1997 - 06/2004	

Founder, CEO, & Chief Scientist	2012 -	Aerodyn Combustion LLC
Founder & Consultant	1998 -	Wave Dynamics LLC
National Research Council Associate	1994-1997	NASA Glenn Research Center, Cleveland, OH
Project Engineer	1994	CFD Research Corporation, Huntsville, AL
Manager - Research Programs	1989	Diesel and Gas Engineering Co., Beaver Dams, NY
Research Staff Engineer	1985-1989	
Research Associate, Graduate Assistant	1989-1994	Cornell University, Ithaca, NY
Research/Teaching Assistant	1984-1985	
Founder & Consultant	1992-1994	Engine Pollution Research Associates
Field Social Investigator and Data Coder	1978	University of Adelaide, Australia

Awards & Honors

- Invited speaker, TEDx IUPUI on “Raising the Next Generation,” 2013.
- Peter E. Manceri Memorial Best Paper, Marine Committee, ASME Int’l Gas Turbine Institute, 2012.
- ‘Outstanding Contributions to ME Education’ session author, ASEE Annual Conference, 2009.
- Fulbright U.S. Senior Scholar, research and teaching in Sri Lanka, US Department of State, 2004-05.
- TRIP Scholar, Translating Research Into Practice, IUPUI, 2009.
- Promotion to Associate Fellow, AIAA, 2006.
- Abraham Max Distinguished Professorship for excellence in research, E&T, IUPUI, 2007 and 2002.
- Frank Burley Distinguished Professorship for excellence in service, E&T, IUPUI, 2004.
- Meritorious Service Award, ASME Internal Combustion Engine Division, 2007.
- NATO Advisory Group for Aerospace Research and Development Scholar, Paris, France, 1996.
- National Research Council Fellowship, for research at NASA (1994-1997).
- Inducted to Honor Society of Phi Kappa Phi, at Cornell University (1993).
- Government of India International Exchange Scholarship (1978-1983).

Teaching & Curriculum Development Experience

Professional short courses and workshops at international venues: combustion fundamentals & new developments, pressure-gain combustion, computer-aided manufacturing, project-enhanced active learning in engineering & science

Graduate programs: combustion, gas dynamics, unsteady gas flow, cellular biomechanics

Undergraduate programs: energy engineering, thermodynamics, powerplant engineering, heat & mass transfer, computational fluid dynamics, thermal-fluid design.

Research & Academic Interests

- Graduate education, engineering education, project-based learning, global workforce development, international collaboration, undergraduate research, faculty and student entrepreneurship.
- Combustion, internal combustion engines, air pollution control, detonation, explosion dynamics.
- Non-steady/oscillatory flow, transient jets and boundary layers, shock waves, wave rotors, computational fluid dynamics, biofluid mechanics.
- Energy efficiency, sustainability, energy user feedback, biofuels, power generation, carbon capture.
- Aeropropulsion, unmanned aerial vehicles, gas turbine engines.

Languages

- Spoken & Written: English, Sinhala, Tamil, Urdu/Hindi. Written: French, Arabic, Spanish

GRANTS & CONTRACTS

External Monetary Funding Awarded as lead/sole PI (\$3.1M)

1. Rolls-Royce Corporation, “Wave Rotor Constant-Volume Combustion for Energy Efficiency and Greenhouse Gas Abatement in Gas Turbine Engines,” \$40,000 to Aerodyn Combustion, PI, 2016.
2. Purdue Research Foundation, “PRF Grants,” \$88,791, PI, 2015-2017.
3. Aerodyn Combustion LLC, “Pressure Wave Supercharger Modeling & Redesign,” \$35,258, PI, 2016.
4. Elevate Ventures for State of Indiana, “Wave Rotor Constant-Volume Combustion for Energy Efficiency and Greenhouse Gas Abatement in Gas Turbine Engines,” STTR match, 2015, \$50,000 to Aerodyn Combustion LLC.
5. Aerodyn Combustion, LLC, “Demonstrator WRPGC Onboard Cycle Analysis,” \$10,000, PI, 2014.
6. NASA Aeronautics Research Institute, Leading-Edge Aeronautics Research for NASA (LEARN) Fund, “Hybrid Wave-Rotor Electric Aero-Propulsion (HyWREAP),” \$200,000, PI, 2012-2013.
7. National Science Foundation, “Transient Jets and Re-Ignition for Energy Efficiency Gains from Confined Combustion,” \$328,120, PI, 2012-2015.
8. Rolls-Royce Corporation, “Wave Rotor Combustor Jet Ignition Kinetics,” \$55,000, PI, 2011.
9. National Science Foundation, “Implementation, Dissemination, Barrier Identification and Faculty Training for Project-Enhanced Learning in Gateway Engineering Courses,” \$200,000, PI, 2010-2012.
10. Rolls-Royce Corporation, “Methods Development for Wave Rotor Combustor Design,” \$212,254, PI, 2009-2010.
11. Rolls-Royce North American Technologies ‘Liberty Works,’ “Wave Rotor Combustion Rig Design, Analysis, and Test Support,” \$491,708, PI, 2007-2008.

12. Rolls-Royce North American Technologies ‘Liberty Works,’ “Wave Rotor Combustion Rig Test Article Procurement,” \$136,072, PI, 2006.
13. NASA Glenn Research Center (subcontract via Allison Advanced Development Co.), “CVCCE Technology Utilizing Wave-Rotor Configurations – Seals Development,” \$68,197, PI, 2004 - 2005.
14. State of Indiana 21st Century Research & Technology Fund, “Expansion of Propulsion and Power Center of Excellence,” \$366,526, PI, 2004-2007.
15. Cummins Inc., “Engine Cooling System Design and Evaluation”, \$101,877, PI, 2003-2005.
16. State of Indiana 21st Century Research & Technology Fund, “Advanced Propulsion and Power Institute: Innovative Propulsion and Systems and High-Fidelity Computer Simulation,” \$252,832, PI, 2001-2002.
17. Dresser-Rand, “Two-Stroke Engine Flow Simulation, Phase I & II,” \$78,360, PI, 2000-2002.
18. Defense Advanced Research Projects Agency (subcontract via Allison Advanced Development Co.), “Wave Rotor Detonation Engine Performance,” \$79,574, PI, 2001-2002.
19. Blue Operations-LLC (Amazon.com founder Jeff Bezos), “Wave Rotor Engine for Space Propulsion” \$14,943, PI, 2001.
20. NASA – INSGC, via Purdue University, “Aerospace Educational Scholarships,” \$46,000 grants to IUPUI, 2000–2004.
21. NASA Glenn Research Center, “Wave Fan and Hybrid Pulse Detonation Engine,” \$121,759, PI, 1999–2002.
22. Allison Advanced Dev. Co., “Pulse Detonation Engine Model Subroutine,” \$24,787, PI, 1999.
23. NASA Lewis Research Center, “Low-Emission Self-Cooled Combustion Wave Rotor,” \$53,078, PI, 1998-1999.
24. NASA Lewis Research Center, “Advanced Wave Rotor Design for Low NOx Turbine Engines,” \$70,000 SBIR grant to CFD Research Corp, 1994.
25. Air Sciences & Engine Technology, Inc., approx. \$7,000 contract for emissions data acquisition software and systems design, PI, 1993.
26. American Diesel Engineering Co., \$3,000 contract for combustion system upgrade, PI, 1992.

External Monetary Funding Awarded as co-PI/co-I (\$7.0M, less subcontracts as PI = \$6.3M)

27. National Science Foundation Research Traineeship Program, “Graduate Education through Integration of Arts/Design and Experiential Learning in the Curriculum,” co-PI, \$452,958 recommended and pending, 2016-2019.
28. National Science Foundation, “Wave Rotor Constant-Volume Combustion for Energy Efficiency and Greenhouse Gas Abatement in Gas Turbine Engines,” STTR Phase I & IB project, 2015-16, \$100,000 to IUPUI, \$270K total award to Aerodyn Combustion LLC.
29. Walmart Foundation, “Optimal Plastic Injection Molding Tooling Design and Production through Advanced Additive Manufacturing,” \$291,202, co-PI, 2014-2016.
30. Cummins, Inc., “Waste Heat Recovery System for Diesel Engines – Design and Concepts Evaluation,” \$106,649, Co-PI, 2006-2007.
31. National Science Foundation of Sri Lanka, “Computer Simulation of Two-Stroke Gasoline Direct Injection Engine, to Modify and Optimize Engine Design in order to Minimize Harmful Emissions,” Co-PI at Univ. of Moratuwa, \$6,000, 2005-2007.
32. NIH R01, “Mechanical Loading and Bone,” \$1,305,000, Co-I, 2006-2010.
33. NIH R01, “Mechanical Response of Osteoblasts in 3D Matrix,” \$821,000, Co-I, 2004-2008.

34. State of Indiana 21st Century Research & Technology Fund, “Expansion of Propulsion and Power Center of Excellence,” \$1,608,881 (total inc. IUPUI share as PI), Co-PI, 2004-2007.
35. State of Indiana 21st Century Research & Technology Fund, “Advanced Propulsion and Power Institute,” \$2,000,000 (total inc. IUPUI share as PI), co-PI, 2001-2002.
36. American Diesel Engineering Co., \$100,000 contract for design and manufacture of gas-fired turbocharger test rig and combustion system designer, 1989.

External In-Kind Grants & Gifts Awarded as PI (~\$1M)

1. Rolls-Royce Corporation, “Transient Jets and Re-Ignition for Energy Efficiency Gains from Confined Combustion,” doctoral student internship and consulting support, \$90,000, PI, 2012-2015.
2. Convergent Science, “Converge” code for fluid dynamics, valued at 408,000, PI, 2011-2016.
3. General Power Corporation, via University of Florida, Wave Turbine Prototype & Test Rig, valued at \$300,000, PI, 2005.
4. NASA Glenn Research Center, via University of Washington, Single Channel Rig for Wave Rotor Ignition and Flame Studies, valued at \$100,000, PI, 2004.

External Monetary Gifts Assisted (\$170K at IUPUI)

1. Jafari Family, graduate fellowships, \$100K, 2012-2013
2. Carrier Corp., graduate fellowships, \$50K, 2010-12.
3. Carrier Corp., equipment funding for heat transfer laboratory, \$20,000, 2003-04.

Internal Grants as PI/co-PI at IUPUI (\$530K)

1. Indiana University School of Medicine, “Euthanasia chamber flow simulation,” \$19,500, 2013.
2. IUPUI Office of the Vice Chancellor for Research, “Transient Jets and Re-Ignition for Energy Efficiency Gains from Confined Combustion,” NSF matching funds, \$60,000, PI, 2012-2015.
3. IUPUI Release Time for Research, “Vortex Mixing and Ignition in Transient Confined Gas Jets for Constant-Volume Combustors,” PI, \$10,000, 2010.
4. IUPUI Research Support Funds Grant (RSFG), “Micro Portable Power Pack Using Wave-Turbine Engine and Liquid Fuel,” PI, \$30,000, 2007-2008.
5. IUPUI Signature Center Initiative, “Center for Renewable Energy,” co-PI, \$300,000 (PI: Dr. A. Hsu), 2007-2010.
6. IUPUI, “PhD Program Development” grant for ME Department student support for new PhD program, \$35,000, 2005-06.
7. IUPUI International Development Fund, “Computational Engineering Facility and Recruitment in South Asia,” PI, \$15,000, 2005-06.
8. IUPUI Overseas Sabbatical Project Study, “Pollution Control from Small Internal Combustion Engines in South Asian Cities,” PI, \$3,000, 2005.
9. IUPUI School of Engineering & Technology, research initiative funding, “Biofluid Macromolecule Transport & Surface Phenomena,” \$5,000, PI, 2000-01.

Summary of Internal Student Support & Travel Grants at IUPUI (\$490K)

- IUPUI doctoral student fellowships, \$44,000, in 2007 and 2004.
- Purdue Research Foundation Ph.D. student support, \$27,978 in 2004 and 2005.
- IUPUI masters student fellowships, \$72,000, in 1998-2017.

- IUPUI undergraduate research and honors program fellowships, \$120,900 in 2003-2016.
- IUPUI departmental graduate assistantship and tuition grants, \$131,300, in 2009-16.
- IUPUI block grants for graduate research assistants, \$81,600, in 1998-2014.
- IUPUI & PRF travel grants, \$13,481, in 1998-2015.



PUBLICATIONS & PATENTS

US Patents Issued or Licensed

1. M.R. Nalim & P. Akbari, "Direct injection of a discrete quantity of fuel into channels of a wave rotor engine", US patent 8,893,46, issued 2014, license option sold.
2. M.R. Nalim & P. Akbari, "Pilot fuel injection for a wave rotor engine," US patent 8,443,583 issued 2013, license option sold.
3. M.R. Nalim, "Rotary Ejector Enhanced Pulsed Detonation System", U.S. patent 6,845,620, issued 2005.
4. M.R. Nalim, "Partitioned Multi-Channel Combustor", U.S. patent 6,526,936, issued 2003.
5. M.R. Nalim, "Wave Rotor Detonation Engine", U.S. patent 6,460,342, issued 2002.
6. M.R. Nalim & D.E. Paxson, "Method and Apparatus for Cold-Gas Reinjection in Through-Flow and Reverse-Flow Wave Rotors," U.S. Patent 5,894,719, issued 1999.

Refereed Journal Articles

1. M. R. Nalim, P.H. Snyder, M. Kowalkowski, "Experimental Test, Model Validation, and Viability Assessment of a Wave-Rotor Constant-Volume Combustor," *AIAA Journal of Propulsion & Power*, in print, 2016.
2. ** A. Karimi & M. R. Nalim, "Ignition by Hot Transient Jets in Confined Mixtures of Gaseous Fuels and Air," *Journal of Combustion*, Volume 2016, Article ID 9565839, 13 pages, 2016.
3. **A. Karimi, M. Rajagopal, R. Nalim, "Traversing Hot-Jet Ignition in a Constant-Volume Combustor," *ASME Journal of Engineering for Gas Turbines & Power*, vol. 136, No. 4, 2014.
4. **V. Kilchyk, R. Nalim, & C. Merkle, "Scaling Interface Length Increase Rates in Richtmyer-Meshkov Instabilities," *ASME Journal of Fluids Engineering*, vol. 135, no. 3, 2013.
5. M.R. Nalim, **Z.A. Izzy, & P. Akbari, "Rotary Wave-Ejector Enhanced Pulse Detonation Engine," *Shock Waves*, vol. 22, no. 1, pp. 23-38, Jan 2012.
6. **V. Kilchyk, R. Nalim & C. Merkle, "Laminar Premixed Flame Fuel Consumption Rate Modulation by Shocks and Expansion Waves," *Combustion & Flame*, vol. 158, no. 6, pp. 1140-1148, June 2011.
7. **H. Li, M.R. Nalim & C. Merkle, "Transient Thermal Response of Turbulent Compressible Boundary Layers," *ASME Journal of Heat Transfer*, Vol. 133, 2011.
8. **V. Kilchyk, R. Nalim & C. Merkle, "Baroclinic Vortex Sheet Production by Shocks and Expansion Waves," *Shock Waves*, vol. 20, no. 5, 367-380, 2010.
9. P. Akbari & M. R. Nalim, "Review of Recent Developments in Wave Rotor Combustion Technology," *AIAA Journal of Propulsion & Power*, vol. 25, no. 4, pp.833-844, Jul-Aug 2009.

** Student co-authors

10. M. R. Nalim, **H. Li, & P. Akbari, "Air-Standard Aerothermodynamic Analysis of Gas Turbine Engines Using Wave Rotor Combustion," *ASME Journal of Engineering for Gas Turbines & Power*, vol. 131, p. 054506, Sep 2009.
11. P. Akbari, M. R. Nalim, E. S. Donovan, & P. H. Snyder, "Leakage Assessment of Pressure-Exchange Wave Rotors," *AIAA Journal of Propulsion & Power*, vol. 24, no. 4, Jul-Aug 2008.
12. **H. Li & M.R. Nalim, "Thermal Boundary Layer Response to Convected Far-Field Flow Temperature Changes," *ASME Journal of Heat Transfer*, v. 130, no. 10, Oct 2008.
13. P. Akbari, M.R. Nalim, & N. Müller, "A Review of Wave Rotor Technology and Its Applications," *ASME Journal of Engineering for Gas Turbines & Power*, v.128, no.4, pp.717-735, Oct 2006.
14. P. Akbari, M.R. Nalim, & N. Müller, "Performance Enhancement of Microturbine Engines Topped with Wave Rotors," *ASME Journal of Engineering for Gas Turbines & Power*, v.128, pp. 190-202, Jan 2006.
15. **H. Li, R. Nalim and P.-A. Haldi, "Thermal-Economic Optimization of a Distributed Multi-Generation Energy System – A Case Study of Beijing," *Applied Thermal Engineering*, v. 26, Issue 7, pp. 709-719, May 2006.
16. R. Nalim, K. Pekkan, H. B. Sun, & H. Yokota, "Oscillating Couette Flow for In-Vitro Cell Loading," *Journal of Biomechanics*, Vol. 37, No. 6, pp. 939-942, Jun 2004.
17. K. Pekkan & M.R. Nalim, "Two-Dimensional Flow and NO_x Emissions in Deflagrative Internal Combustion Wave Rotor Configurations," *ASME Journal of Engineering for Gas Turbines & Power*, vol. 125, no. 3, pp. 720-733, Jul 2003.
18. H.B. Sun, R. Nalim, & H. Yokota "Expression and Activities of Matrix Metalloproteinases Under Oscillatory Shear in IL-1-Stimulated Synovial Cells," *Connective Tissue Research*, v. 44, no. 1, pp. 42-49, Jan 2003.
19. M.R. Nalim, "Thermodynamic Limits of Work and Pressure Gain in Combustion and Evaporation Processes," *AIAA J. of Propulsion & Power*, Vol.18, No.6, pp. 1176-1182, Nov-Dec 2002.
20. M. R. Nalim, "Longitudinally-Stratified Combustion in Wave Rotors," *AIAA J. of Propulsion & Power*, v. 16, no. 6, pp. 1060-1068, Nov-Dec 2000.
21. M.R. Nalim, "Assessment of Combustion Modes for Internal Combustion Wave Rotors," *ASME J. of Engineering for Gas Turbines & Power*, v. 121, no. 2, pp. 265-271, Apr 1999.
22. D.E. Paxson & M.R. Nalim, "A Modified Through-Flow Wave-Rotor Cycle with Combustor Bypass Ducts," *AIAA J. of Propulsion & Power*, v. 15, no. 3, pp. 462-467, May-Jun 1999.
23. M.R. Nalim & D.E. Paxson, "A Numerical Investigation of Premixed Combustion in Wave Rotors," *ASME J. of Engineering for Gas Turbines & Power*, v. 119, pp. 668-675, Jul 1997.
24. M.R. Nalim & E.L. Resler Jr, "Wave Cycle Design for Wave Rotor Gas Turbine Engines with Low NO_x emissions," *ASME J. of Engineering for Gas Turbines & Power*, v. 118, pp. 474-480, Jul 1996.
25. E.L. Resler Jr, J.C. Mocsari, & M.R. Nalim, "Analytic Design Methods for Wave Cycles," *AIAA J. of Propulsion & Power*, v. 10, no. 5, pp. 683-689, Sep-Oct 1994.

Conference Papers, Refereed or Refereed Extended Abstract

26. Md Nazmuzzaman Khan, Kyong-yup Paik, and M Razi Nalim, "Torch-Jet Ignition Of Premixed Methane-Hydrogen-Air Blends In A Constant Volume Combustor : 3D Computational Modeling," AIAA 2015 Propulsion & Energy Forum, Jul 2015, Orlando, FL.
27. Ravichandra R. Jagannath, Sally P. M. Bane, M. R. Nalim, "Wave Rotor Combustor Turbine Model Development," AIAA 2015 Propulsion & Energy Forum, Jul 2015, Orlando, FL.
28. T. Wu, S. Jahan, P. Kumar, A. Tovar, H. El-Mounayri, Y. Zhang, J. Zhang, D. Acheson, and R. Nalim, "A Framework for Optimizing the Design of Injection Molds with Conformal Cooling for

- Additive Manufacturing,” SME 43rd North American Manufacturing Research Conference, Jun 2015, Charlotte, NC.
29. D. Acheson, H. El-Mounayri, A. Tovar, R. Nalim, J. Zhang, K. Brand, D. Hewitt, “Groundbreaking Collaboration between Consumer Retailer Walmart, University Research, and Existing Manufacturing and Revolutionary Additive Manufacturing Firms,” ASEE Conference for Industry and Education Collaboration (CIEC), Feb 2015, Palm Springs, CA.
 30. R. Jagannath, S.P.M. Bane, R. Nalim, M.J. Khan, “ A Simplified Method To Calculate The Fuel Burn of a Hybrid-Electric Airplane,” AIAA 2014-3490, 50th JPC[†], Cleveland, OH, 2014.
 31. M. Rajagopal, M.D. Khan, R. Nalim, "Simulation of Hot-jet Ignition in a Heated Constant-volume Combustor using Adaptive Mesh Refinement and Multi-zone Reaction", AIAA 2014-3727, 50th JPC[†], Cleveland, OH, 2014.
 32. R. Jagannath, M. Rajagopal, S. Bane, R. Nalim, "Real-Gas Thermodynamic Analysis of the Wave-Rotor Combustion Turbine", 10th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT2014), Orlando, FL, 2014.
 33. **A. Karimi, **P. Chinnathambi, M. K. Rajagopal, M. R. Nalim, “Hot Jet Re-ignition of Hydrocarbons and Hydrogen in Air: Effect of Jet Chemical Activity,” AIAA-2013-3710, 49th JPC, San Jose, CA, Jul 2013.
 34. R. Helfenbein, R. Nalim, M. Rajagopal, “Faculty Perceptions of Project-Enhanced Learning in Early Engineering Education: Barriers, Benefits, and Breakthroughs,” ASEE National Conference, Atlanta, GA, Jun 2013.
 35. **A. Karimi, M. Rajagopal, R. Nalim, “Traversing Hot-Jet Ignition in a Constant-Volume Combustor,” ASME GT2013-95797, IGTI Turbo Expo, San Antonio, TX, Jun 2013.
 36. **S.D. Wijeyakulasuriya, M. Rajagopal, R. Nalim, “Shock-Flame Interaction Modeling in a Constant-Volume Combustion Channel, using Detailed Chemical Kinetics and Automatic Mesh Refinement,” ASME GT2013-94617, IGTI Turbo Expo, San Antonio, TX, Jun 2013.
 37. Nalim, M.R., Rajagopal, M., Karimi, A., Chinnathambi, P.,, "Advances in Combustion Processes for Next-Generation Engines", International Conference on Advances in Mechanical Engineering (ICAME), Pune, India, May 2013.
 38. **P. Chinnathambi, **A. Karimi, M. Rajagopal, R. Nalim, “Experimental Study of Traversing Hot-Jet Ignition of Lean Hydrocarbon-Air Mixtures in a Constant-Volume Combustor,” paper 2C12, 8th US National Combustion Meeting, Park City, UT, May 2013.
 39. **A. Karimi, **P. Chinnathambi, M. Rajagopal, R. Nalim, “Effect of Jet Composition in Hot Jet Ignition of Premixed Mixture in a Constant-Volume Combustor,” paper 2C09: 8th US National Combustion Meeting, Park City, UT, May 2013.

[†] Conference and publisher acronyms and review type:

ASM: AIAA Aerospace Sciences Meeting and Exhibit (refereed extended abstract)

CIMAC: International Council of Combustion Engines (refereed full paper)

ESTC: Energy-Sources & Technology Conference (refereed full paper)

FIE: Frontiers in Education Conference (refereed full paper)

ICED: ASME Internal Combustion Engine Division Technical Conference (refereed full paper)

IECEC: International Energy Conversion Engineering Conference and Exhibit (refereed full paper)

IGTI: International Gas Turbine Institute Congress ‘Turbo Expo’ (refereed full paper)

IMECE: International Mechanical Engineering Congress & Exposition (refereed full paper)

ISABE: International Symposium on Air Breathing Engines (refereed extended abstract)

JPC: AIAA/ASME/SAE/ASEE Joint Propulsion Conference (refereed extended abstract)

SIAM: Society for Industrial and Applied Mathematics (refereed abstract)

40. P.H. Snyder & M.R. Nalim, "Wave Rotor Pressure Gain Combustion Rig Performance Assessment," 33rd JANNAF Air-Breathing Propulsion conference, paper 2746, Monterey, CA, Dec 2012.
41. M. Rajagopal, **A. Karimi, R. Nalim, "Wave-Rotor Pressure-Gain Combustion Analysis for Power Generation and Gas Turbine Applications," GTIndia 2012-9741, ASME Gas Turbine India Conference, Mumbai, India, Dec 2012.
42. R. Helfenbein, R. Nalim, M. Rajagopal, "Faculty Perceptions of Project-Enhanced Learning in Early Engineering Education: Barriers and Benefits," FIE 2012, Seattle, WA, Oct 2012.
43. R. Nalim, M. Rajagopal, R. Helfenbein, "Project-Enhanced Learning in Engineering Science Education," FIE 2012 Workshop, Seattle, WA, Oct 2012.
44. **A. Karimi, **S. Wijeyakulasurya, M. Nalim, "Numerical Study of Supersonic Flow over Backward-Facing Step for Scramjet Application," AIAA-2012-4001, 48th JPC, Atlanta, GA, Jul 2012.
45. **S. Wijeyakulasurya, M.R. Nalim, "Fuel Proximity Effect on Hot-Jet Ignition in a Wave Rotor Constant Volume Combustor," AIAA-2012-4171, 48th JPC, Atlanta, GA, Jul 2012.
46. **K. Smith, M.R. Nalim, "Coupled Analysis of the Inlet and Fuel Systems of a Wave Rotor Constant-Volume Combustor," AIAA-2012-4169, 48th JPC, Atlanta, GA, Jul 2012.
47. P. Snyder & R. Nalim, "Pressure Gain Combustion Application to Marine and Industrial Gas Turbines," ASME GT2012-69886 (Best paper award), IGTI Turbo Expo, Copenhagen, Jun 2012.
48. **A. Karimi, R. Nalim, M. Rajagopal, "Turbulence-Chemistry Interaction in Co-axial Methane Diffusion Flame: Effect of Reaction Mechanisms and Combustion Models," Combustion Institute - Central States Spring Technical Meeting, Dayton, OH, Apr 2012.
49. R. Nalim, L. Li, P. Orono, R. Helfenbein, W. Yu, and M. Mital, "Project-Enhanced Learning in Challenging Engineering Science Courses," ASEE IL/IN Sectional Conf., Valparaiso, IN, Mar 2012.
50. P. Snyder, **T. Elharis, **S. Wijeyakulasuriya, M.R. Nalim, Y. Matsutomi, S. Meyer, "Pressure Gain Combustor Component Viability Assessment Based on Initial Testing," AIAA-2011-5749, 47th JPC, San Diego, CA, July 2011.
51. **T. Elharis, **S. Wijeyakulasuriya, M.R. Nalim, "A Two-Step Reaction Model for Stratified-Charge Combustion in Wave-Rotors," AIAA-2011-5748, 47th JPC, San Diego, CA, July 2011.
52. **I. Perera, **S. Wijeyakulasuriya, R. Nalim, "Hot Combustion Torch Jet Ignition Delay Time for Ethylene-Air Mixtures," AIAA-2011-95, 49th ASM, Orlando, FL, Jan 2011.
53. **T. Elharis, **S. Wijeyakulasuriya, M.R. Nalim, Y. Matsutomi, "Analysis of Deflagrative Combustion in a Wave-Rotor Constant-Volume Combustor," AIAA-2011-583, 49th ASM, Orlando, FL, Jan 2011.
54. **S. Wijeyakulasuriya, M.R. Nalim, "Multidimensional Modeling of Gas Mixing in Transient Translating Confined Turbulent Jets," AIAA-2011-397, 49th ASM, Orlando, FL, Jan 2011.
55. **S. Wijeyakulasuriya, **I. Perera, & M.R. Nalim, "Mixing and Ignition Potential of Transient Confined Turbulent Jet in a Wave Rotor Combustor," AIAA 2010-7042, 46th JPC, Nashville, TN, Jul 2010.
56. M.R. Nalim, **T.M. Elharis, **S.D. Wijeyakulasuriya, & Z.A. Izzy, "Wave Rotor Combustor Aerothermodynamic Design and Model Validation based on Initial Testing," AIAA 2010-7041, 46th JPC, Nashville, TN, Jul 2010.
57. **Y. Matsutomi, S.E. Meyer, **S. Wijeyakulasuriya, Z. Izzy, M.R. Nalim, M. Shimo, M. Kowalkowski & P.H. Snyder, "Experimental Investigation on the Wave Rotor Combustor," AIAA 2010-7043, 46th JPC, Nashville, TN, Jul 2010.
58. S. Krishnan & R. Nalim, "Project-based Learning in Introductory Thermodynamics," Paper AC 2009-1911, Session: Outstanding Contributions To Mechanical Engineering Education, Proceedings of the 116th ASEE Annual Conference, Austin, TX, Jun 2009.
59. **S.D. Wijeyakulasuriya & M.R. Nalim, "Transient Translating Gas Jets in Confined Channels," AIAA 2009-4987, 45th JPC, Denver, CO, Aug 2009.

60. R. Nalim, **H. Li, & P. Akbari, "Air-Standard Aerothermodynamic Analysis of Gas Turbine Engines with Wave Rotor Combustion," 2009 IGTI Turbo Expo, ASME GT-2009-60055, Orlando, FL, June 2009.
61. **V. Kilchyk, R. Nalim, & C. Merkle, "Shock and Expansion Wave – Laminar Flame Interaction," 6th International Colloquium on Pulsed and Continuous Detonations, Moscow, Russia, Nov 2008.
62. **H. Li, M.R. Nalim, & C. M. Merkle, "Transient Thermal Response of Turbulent Compressible Boundary Layers," IMECE2008-68788, ASME IMECE, Boston, MA, Oct 2008.
63. **S. D Wijeyakulasuriya & M.R. Nalim, "Gas Injection Strategies in Confined Subsonic Cross Flow for Wave Rotor Fueling," AIAA 2008-4867, 44th JPC, Hartford, CT, Jul 2008.
64. P. Akbari, M.R. Nalim, **S.D Wijeyakulasuriya, & N. Mueller "Wave Disk Engine for Small-Scale Power Generation," AIAA 2008-4879, 44th JPC, Hartford, CT, Jul 2008.
65. **V. Kilchyk, R. Nalim & C. Merkle, "Baroclinic Vorticity Production by Shocks and Expansion Waves," 18th International Shock Interaction Symposium, Rouen, France, Jul 2008.
66. **H. Li & M.R. Nalim, "Thermal Boundary Layer Response to Far-Field Flow Temperature Transitions," IMECE2007-42188, ASME IMECE, Seattle, WA, Nov 2007. (See journal version).
67. **H. Li, P. Akbari, & M. R. Nalim, "Air-Standard Thermodynamic Analysis of Gas Turbine Engines Using Wave Rotor Combustion," AIAA 2007-5050, 43rd JPC, Cincinnati, OH, Jul 2007.
68. **E. Szpynda, P. Akbari, & M. R. Nalim, "Recent Developments in Wave Rotor Combustion Technology and Future Perspectives: A Progress Review," AIAA 2007-5055, 43rd JPC, Cincinnati, OH, Jul 2007. (See journal version)
69. **V. Kilchyk, C. Merkle, & R. Nalim, "Effect of Channel Rotation on Premixed Turbulent Combustion in a Wave Rotor Combustor," AIAA 2007-5053, 43rd JPC, Cincinnati, OH, Jul 2007.
70. **D. Baronia, M. R. Nalim & P. Akbari, "Numerical Study of Wave Rotor Ignition and Flame Propagation in a Single-Channel Rig," AIAA 2007-5054, 43rd JPC, Cincinnati, OH, Jul 2007.
71. **S.D. Wijeyakulasuriya & M.R. Nalim, "Simulation of Scavenging in a Small Two-Stroke Gasoline Engine Typical in South Asia," SAE 07APAC-113, 14th Asia Pacific Automotive Engineering Conference, Hollywood, CA, Aug 2007.
72. P. Akbari, M.R. Nalim, and P.H. Snyder, "Numerical Simulation and Design of a Combustion Wave Rotor for Deflagrative and Detonative Propagation," 42nd JPC, AIAA 2006-5134, Sacramento, Jul 2006.
73. P. Akbari, M.R. Nalim, E.S. Donovan, & P.H. Snyder, "Leakage Assessment of Pressure-Exchange Wave Rotors" 42nd JPC, AIAA 2006-4449, Sacramento, Jul 2006. (See journal version)
74. P. Akbari, **H. Li, M.R. Nalim, "Analytic Aerothermodynamic Cycle Model of the Combustion Wave Rotors in a Gas Turbine Engine," 4th IECEC, AIAA 2006-4176, San Diego, Jun 2006.
75. **E. Dempsey, P. Akbari, N. Müller, and M.R. Nalim, "Performance Optimization of Gas Turbines Utilizing Four-Port Wave Rotors," 4th IECEC, AIAA 2006-4152, San Diego, Jun 2006.
76. S.A. Khalid, **A. Banerjee, P. Akbari, & M.R. Nalim, "Two-Dimensional Numerical Modeling of Mixture Inflow in a Combustion Wave Rotor," 4th IECEC, AIAA 2006-4125, San Diego, Jun 2006.
77. P. Akbari, **D. Baronia, & M.R. Nalim, "Single-Tube Simulation of a Semi-Intermittent Pressure-Gain Combustor," 2006 IGTI Turbo Expo, ASME GT2006-91061, Barcelona, May 2006.
78. P. Akbari & M.R. Nalim, "Analysis of Flow Processes in Detonative Wave Rotors and Pulse Detonation Engines," 44th ASM, AIAA 2006-1236, Reno, Jan 2006.
79. **E. Dempsey, P. Akbari, N. Müller, & M.R. Nalim, "Optimum Applications of Four-Port Wave Rotors for Gas Turbines Enhancement" 17th ISABE, 2005-1214, Munich, Sep 2005.
80. P. Akbari, **B. Alparslan, **V. Kilchyk, & M.R. Nalim, "Numerical Analysis of Hydrogen-Fueled Wave Rotors for Gas Turbine Applications," International Hydrogen Energy Congress, Istanbul, Jul 2005.
81. **J.P. Bowman, M.R. Nalim, & S.S. Krishnan, "Cooling Challenges of Modern Truck Diesel Engines," ICED Spring Technical Conference, ASME ICES2005-1093, Chicago, Apr 2005.

82. **B. Alparslan, M.R. Nalim, & P.H. Snyder, "Wave Rotor Combustor Test Rig Preliminary Design," IMECE, ASME IMECE2004-61795, Anaheim, Nov 2004.
83. P. Akbari, M.R. Nalim, & N. Müller, "A Review of Wave Rotor Technology and Its Applications," IMECE, ASME IMECE2004-60082, Anaheim, Nov 2004. (See journal version above)
84. P. Akbari, N. Müller, & M.R. Nalim, "Performance Improvement of Recuperated and Unrecuperated Microturbines Using Wave Rotor Machines," 2004 CIMAC Congress, Kyoto, Jun 2004.
85. **T. Geng & R. Nalim, "Statistical Design-of-Experiments for Wave Ejector Performance Improvement," 42nd ASM, AIAA 2004-1211, Reno, Jan 2004.
86. R. Nalim & K. Pekkan, "Internal Combustion Wave Rotors for Gas Turbine Engine Enhancement", International Gas Turbine Conference, IGTC2003-ABS-146, Tokyo, Nov 2003.
87. M.R. Nalim & K. Pekkan, "A Review of Rotary Pressure-Gain Combustion Systems for Gas Turbine Applications," IGTI Turbo Expo, ASME GT-2003-38349, Atlanta, Jun 2003.
88. **S. Chowdhury & R. Nalim, "Computational Study of Fuel Injection in a Large-Bore Gas Engine," ICEF2003-755, ASME ICED and Rail Transportation Div. Conference, Erie, Sep 2003.
89. K. Pekkan, R. Nalim & H. Yokota, "Computed Synovial Fluid Flow in a Simple Knee Joint Model," FEDSM2003-45430, 4th ASME_JSME Joint Fluids Engineering Conference. Honolulu, Jul 2003.
90. C.F. Smith, P.H. Snyder, C.W. Emmerson, & M.R. Nalim, "Impact of the Constant Volume Combustor on a Supersonic Turbofan Engine," AIAA 2002-3916, 38th JPC, Indianapolis, Jul 2002.
91. P. Snyder, **B. Alparslan, & M.R. Nalim, "Gas Dynamic Analysis of the Constant Volume Combustor, A Novel Detonation Cycle," AIAA 2002-4069, 38th JPC, Indianapolis, Jul 2002.
92. K. Pekkan & M.R. Nalim, "Control of Fuel and Hot-Gas Leakage in a Stratified Internal Combustion Wave Rotor," AIAA 2002-4067, 38th JPC, Indianapolis, Jul 2002.
93. Z. Izzy & M.R. Nalim, "Wave-Fan and Rotary-Ejector Pulse Detonation Performance Prediction," AIAA 2002-4068, 38th JPC, Indianapolis, Jul 2002.
94. K. Pekkan & M.R. Nalim, "Two-Dimensional Flow and NO_x Emissions in Deflagrative Internal Combustion Wave Rotor Configurations," IGTI, Amsterdam, Jun 2002.
95. M.R. Nalim & Z.A. Izzy, "Simulation of a Wave Rotor Pulse Detonation Engine with Integrated Ejector," ISABE, Bangalore, Sep 2001.
96. M.R. Nalim & Z.A. Izzy, "Rotary Ejector Enhanced Pulsed Detonation System," AIAA 2001-3613, 37th JPC, Salt Lake City, Jul 2001.
97. **L.A. Gunter & M.R. Nalim, "Dynamic Performance of Conventional and Electrically Activated Engine Thermostats," ASME ICED, Philadelphia, Apr 2001.
98. **K.K. Fong & M.R. Nalim, "Gas Dynamic Limits and Optimization of Pulsed Detonation Static Thrust," AIAA 2000-3471, 36th JPC, Huntsville, Jul 2000.
99. M.R. Nalim & K. Jules, "Pulse Combustion and Wave Rotors for High-speed Propulsion Engines," AIAA 98-1614, 8th International Space Planes & Hypersonics Conf., Norfolk, Apr 1998.
100. M.R. Nalim, "Thermodynamic Limits of Pressure Gain and Work Production in Combustion and Evaporation Processes," AIAA 98-3398, 34th JPC, Cleveland, Jul 1998.
101. D.E. Paxson & M.R. Nalim, "A Modified Through-Flow Wave-Rotor Cycle with Combustor Bypass Ducts," AIAA 97-3140 and NASA TM-206971, 33rd JPC, Seattle, Jul 1997.
102. M.R. Nalim, "Numerical Study of Stratified Charge Combustion in Wave Rotors," AIAA 97-3141 and NASA TM-107513, 33rd JPC, Seattle, Jul 1997.
103. M.R. Nalim & D.E. Paxson, "A Numerical Investigation of Premixed Combustion in Wave Rotors," ASME 96-GT-116, IGTI, and NASA TM-107242, Birmingham, Jun 1996.
104. M.R. Nalim, "Preliminary Assessment of Combustion Modes for Internal Combustion Wave Rotors," AIAA 95-2801 and NASA TM-107000, 31st JPC, San Diego, Jul 1995.
105. M.R. Nalim & E.L. Resler Jr, "Wave Cycle Design for Wave Rotor Gas Turbine Engines with Low NO_x Emissions," ASME 95-GT-245, IGTI, Houston, Jun 1995.

106. M.R. Nalim, J.C. Mocsari, & E.L. Resler Jr, "Wave Cycle Design for NO_x-limited Wave Rotor Core Engines for High Speed Propulsion," ASME 93-GT-426, IGTI, Cincinnati, Jun 1993.
107. E.L. Resler Jr, J.C. Mocsari, & M.R. Nalim, "Analytic Design Methods for Wave Cycles," AIAA 93-2523, 29th JPC, Monterey, 1993.
108. M.R. Nalim, N.C. Suresh, F.D. Mills, & E. Primrose, "ALCO 251SI Lean Burn PCC Engine - Simultaneous NO_x and Non-Methane Hydrocarbon Emissions Minimization using a Programmable Controller," *Engine Design, Operation, & Control using Computer Systems*, D.L. Harrington (ed.), ICE-Vol. 9, pp. 21-24, ASME, ICED 1989.
109. J.K. Tice & M.R. Nalim, "Control of NO_x Emissions in Gas Engines using Pre-stratified charge - Applications and Field Experience," ASME 88-ICE-11, ESTC 1988.
110. M.R. Nalim, I.C. Cook, J.K. Tice, & M.K. Jones, "Development of a Low Emission Gas Engine for a 40kWe Cogeneration Unit," *New Engine Technology for Cogeneration*, J.M. Bailey (ed.), ICE-Vol. 2, pp. 69-74, ASME, ICED, 1987.
111. J.K. Tice, M.R. Nalim, H.K. Mak, & S.K. Panahe, "Development and Field Demonstration of Selective Dilution for control of NO_x in Large Engines," ASME 86-ICE-8, ESTC 1986.
112. E.L. Resler Jr, J.K. Tice, & M.R. Nalim, "Gas Engine Emission Reduction by Selective Dilution: The Cornell Project," ASME 85-DGP-7, ESTC 1985.

National-Level Workshops Organized & Led Interactively for Small Groups

1. R. Nalim, workshop on "Project-Enhanced Active Learning for Mid-Years Gateway Engineering Sciences," Mid Years Engineering Experience (MYEE) Conference, Mar 2016, College Station, TX.
2. R. Nalim, M. Rajagopal, R. Helfenbein, workshop on "Project-Enhanced Learning in Engineering Science Education," FIE 2012 Workshop, Seattle, WA, Oct 2012.
3. R. Nalim, workshop on "Project-Enhanced Learning in STEM Education," E.C. Moore Symposium, Indianapolis, 2011.
4. Dora Musalik, R. Nalim, F. Schauer, D. Paxson, AIAA Short Course, "Pulse Detonation Engine Technology," Nashville, TN, Jul 2010.

Recent & Significant Invited Keynote Lectures, Panels, & Public Talks

5. Keynote: "Indirectly-heated biomass gasification and integration with combustion engine power plants", International Conference and Expo on Biomass Gasification Technologies, Islamabad, Pakistan, July 2016.
6. Panelist, "Combined Heat & Power," Lugar Center for Renewable Energy, Spring Annual Forum, May 2015.
7. Keynote: "Advances in Combustion Processes for Next-Generation Engines," (contributors: M. Rajagopal, A. Karimi, P. Chinnathambi), International Conference on Advances in Mechanical Engineering, College of Engineering Pune, India, May 2013.
8. Panelist at IU McKinney School of Law 8th Annual Environment, Energy & Natural Resources Symposium, "Renewable Energy & Air: The Market and Legal Policy Response to the move from Fossil Fuels," March 2015, Indianapolis, IN.
9. Panelist at Conexus Indiana Aerospace & Defense Council, "Fueling Innovation and Business Growth Through Federal R&D Programs," Dec 2014.
10. Panelist on IUPUI workshop on responsible conduct of research (RCR), "Mentorship", Office of Research Ethics, Education & Policy (REEP) Oct 2014.
11. TEDx IUPUI, Indianapolis, "A Cooler Earth in Our Kids' Lifetime," 2013.
12. Scientech (an association of scientists, engineers, and physicians), Indianapolis, "Next-Generation Super-Efficient Jet Engines and Gas Turbines," 2013.
13. NASA Aeronautics Research Institute, web broadcast seminar, "Hybrid Wave-Rotor Electric Aero-Propulsion," 2013.

14. Center for Coal Technology Research Advisory Panel Meeting, Indianapolis, IN, "Energy Research at the School of Engineering and Technology at IUPUI," 2011.
15. Panelist, Hoosier Environmental Council Forum: "Bringing High Speed Rail to Central Indiana," Indianapolis, panel on "Economics, Energy & Environment Perspective on High Speed Rail," 2010.
16. Keynote: "Constant-volume combustion and pulsed-detonation systems for gas turbines," Energy Conclave 2010: Workshop on Advances in Combustion and Transportation, Kanpur, India, Jan 2010.
17. Keynote: "Review and Simulation of Combustion in the Wave Rotor," (contributors: V. Kilchyk, and P. Akbari), International Workshop on Advances in Combustion Science and Technology, Kanpur, India, Dec 2007.
18. Keynote: "City Pollution from Small Combustion Engines," Workshop on Sustainable Approaches in Water Management, Urban Planning and Effective and Renewable Energy Uses, R. Jupner, P. Fox (proceedings editors), Indianapolis, Sep 2005.

Other Conference Papers, Poster Presentations, Conference Abstracts, & Magazine Articles

19. Kyong-Yup Paik, Md Nazmuzzaman Khan, Ali Tarraf Kojok, and M. Razi Nalim, "Experimental Study of Ignition by a Transient Hot Gas Jet with Shock Wave Interactions in a Constant-Volume Combustion Channel," 9th U.S. National Combustion Meeting, May 2015, Cincinnati, OH.
20. H. El-Mounayri & R. Nalim, "A Systematic Approach for Assessing Learning in Capstone Design," Best Practices Presentation, The Assessment Institute in Indianapolis, Sep 2010.
21. M.R. Nalim & S.S. Krishnan, invited poster, "Project-Based Learning in Introductory Thermodynamics," ASEE Global Colloquium, GC 2009-247, Budapest, Hungary, Oct 2009.
22. M.R. Nalim and **S.D. Wijeyakulasuriya, "Multi-Dimensional Moving Grid Simulation of Scavenging in a Small Two-Stroke Gasoline Engine Typical in South Asia," University of Moratuwa Engineering Research Unit Symposium, Oct 2007.
23. R. Nalim, P. Akbari, & **D. Baronia, "Combustion Regimes and Models of a Wave Rotor Channel," SIAM 11th International Conference on Numerical Combustion, Granada, Apr 2006.
24. M.R. Nalim & S.A. Khalid, "Introducing CFD to Undergraduate Students," *Dynamics*, CD Adapco newsletter, Summer 2005.
25. K. Pekkan & M.R. Nalim, "On Alternative Combustion Models for Wave Rotor Combustion Simulation," Spring Technical Meeting, Combustion Inst. - Central States Sect., Knoxville, Apr 2002.
26. Q.Z. Jackson, T.H. Jackson, A. Ungan, R.M. Pidaparti, M.R. Nalim, "Numerical Study of Crack Detection Based on Microwave-Induced Heating and Thermography," Proc. of the International Society for Optical Engineering (SPIE) v. 4335, pp. 392-398, *Advanced Nondestructive Evaluation for Structural & Biological Health Monitoring*, Tribikram Kundu, (ed.), Jul 2001.
27. Z. Izzy, K.K. Fong & M.R. Nalim, "Valved Pulsed Combustor Performance with Detonative and Deflagrative Combustion," Spring Technical Meeting, Central States Section, Combustion Institute, Indianapolis, Apr 2000.

Major Software Development

1. R. Nalim group, SCWID code for prediction of wave rotor combustion and gas dynamics, adapted from NASA Q1D code, 1995-present.
2. A. Khalid & R. Nalim, StarDesign & StarViz interfaces for StarCD CFD code, 2006.
3. R. Nalim, Method-of-characteristics code for transient gas dynamics with shocks and entropy interfaces, 1993.
4. R. Nalim, Multi-zone NO emissions kinetics code for sparked internal combustion engines, 1985.

~~~~~

---

**RESEARCH SUPERVISION****Post-doctoral Associate Supervision**

1. Manikananda Rajagopal, Ph.D. (IIT Madras), 2012-2014. Currently with Ford Motor Company .
2. Arif Khalid, Ph.D. (MIT), 2005-2007. Currently with GE Aviation.
3. Pezhman Akbari, Ph.D. (MSU), 2004-2006, and 2016. Currently with Columbia University.
4. Kerem Pekkan, PhD. (METU), 2002-2004. Currently with Carnegie-Mellon University.
5. Yanhu Guo, Ph.D., 2001.

**Major advisor / Committee chair for PhD Student Dissertations**

1. Ravichandra Jagannath, PhD dissertation in progress, Aeronautics & Astronautics
2. Mohamed I. Feyz, PhD dissertation in progress.
3. Sameera Wijeyakulasuriya, “Transient and Translating Gas Jet Modeling for Pressure-Gain Combustion Applications,” PhD dissertation, Dec 2011. Currently with Convergent Science.
4. Viktor Kilchyk, “Pressure-Wave Amplification of Flame Area in Wave Rotor Channels,” PhD dissertation, Aug 2009. Currently with Brookhaven National Laboratory.
5. Hongwei Li, “Unsteady Boundary Layer and Transient Heat Transfer in Wave Rotors,” PhD dissertation, Aug 2009. Currently with Technical University of Denmark.
6. Berrak Alparslan, PhD candidate, 2003-04.

**Chair (major advisor) for MS Student Theses, completed or substantial progress**

7. Ali Tarraf-Kojok, MSME thesis in progress.
8. Kyong-Yup Paik, MSME thesis, Aug 2016 expected.
9. Arash Jamali, Numerical Simulation of Combustion and Unburnt Products in Dual-Fuel Compression-Ignition Engines with Multiple Injection, MSME thesis, Dec 2015.
10. M. Nazmuzzaman Khan, “Three-Dimensional Transient Numerical Study of Hot-Jet Ignition of Methane-Hydrogen Blends in a Constant-Volume Combustor”, MSME thesis, Aug 2015.
11. Abdullah Karimi, “Numerical Study of Hot Jet Ignition of Hydrocarbon-Air Mixtures in a Constant-Volume Combustor, MSME thesis,” Dec 2014.
12. Prasanna Chinnathambi, “Experimental Investigation on Traversing Hot Jet Ignition of Lean Hydrocarbon-Air Mixtures in a Constant Volume Combustor,” MSME thesis, Dec 2013.
13. Roozbeh Hojatpanah, “Empirical Study of Acoustic Instability in Premixed Flames: Measurements of Flame Transfer Function,” MSME thesis, Aug 2012.
14. Keith Smith, “Coupled Dynamic Analysis of Flow in the Inlet Section of a Wave Rotor Constant Volume Combustor,” MSME thesis, Dec 2011.
15. Tarek Elharis, “A Multi-Step Reaction Model for Stratified-charge Combustion in Wave Rotors,” MSME thesis, Aug 2011.
16. John Bowman, “Optimization of Heavy-Duty Truck Engine Cooling for Low Emissions” (tentative), MSME thesis in progress.
17. Indika Perera, “Experimental Investigation into Combustion Torch Jet Ignition of Methane-Air, Ethylene-Air, and Propane-Air Mixtures,” MSME thesis, Dec 2010.
18. Sameera Wijeyakulasuriya, “Gas Injection Strategies in Confined Subsonic Cross Flow for Wave Rotor Fueling,” MSME thesis, Dec 2007.

19. Dhruv Baronia, "Numerical Analysis of Hot Jet Injection and Premixed Flame Propagation in a Channel," MSMS thesis, Dec 2006.
20. Arnab Banerjee, "Prediction and Design of Fuel-Air Mixing in a Combustion Wave Rotor using Two-Dimensional Unsteady Moving Mesh Flow Computation," MSME thesis, Dec 2005.
21. Tao Geng, "Parametric Study of Rotary Ejector Wave Rotor Detonation Engine using a Design-of-Experiments Approach," MSME thesis, May 2004.
22. Snehaunshu Chowdhury, "Geometry Design Evaluation of High-Pressure Fuel Injection Transient Jets," MSME thesis, May 2004.
23. Berrak Alparslan, "Performance Analysis of Novel Wave Rotor Pulsed Detonation Engine Cycles," MSME thesis, Dec. 2002.
24. Kok Kee Fong, MSME thesis, "Parametric Study of a Pulse Detonation Engine," MEME thesis, Dec 2000.

#### **Chair (major advisor) for Graduate Non-Thesis Projects**

25. Kevin Murphy, MS project in progress.
26. Mark Creason, "Computational Analysis and Aerodynamic Design of the Purdue Wave Rotor Rig Exhaust Duct, Part II," ME 597 project, May 2012.
27. Mark Creason, "Computational Analysis and Aerodynamic Design of the Purdue Wave Rotor Rig Exhaust Duct, Part I," ME 597 project, Dec 2011.
28. Brian Froelich, "Preliminary Testing of a Single-Channel Wave Rotor Combustion Rig," ME 597 project, Dec 2010.
29. Brian Froelich, "Development of Single-Channel Wave-Rotor Combustor Rig Components," ME 597 project, Dec 2010.
30. Zachary Lightner, "On the Use of a Time Constant to Predict Unsteady Heat Transfer in the 1-D SCW1D Program," ME 597 project, May 2010.
31. Zachary Lightner, "Advanced Wave Rotor CFD Model: Incidence Losses," ME 597 project, May 2010.
32. Jace McFerran, "Pressure Loss Effects in a Wave Rotor Due to Contact Sealing," ME 597 project, May 2004.
33. Khalil Omran, "Fast Deflagrations," ME 597 project, 2003.
34. Salim Semssar, "Basic Flow Analysis of ATS Hydraulic Power Steering Rotary Valve," ME 597 project, 2003.
35. Kumaran Palanisamy, "A Numerical Simulation Study of Two Dimensional Transient Combustion in a Wave Rotor," ME 697 project, Dec 2001.
36. Kelly Ledbetter, "Simulation of Battery Cooling Using Computational Fluid Dynamics Software," ME 597 project, Dec 2001.
37. Zuhair Izzy, "Comparison of Detonation and Deflagration Combustion in Valved Pulsed Combustors," ME 697 project, Jul 2000.
38. Alan Gunter, "Dynamic Performance of Conventional and Electrically Activated Engine Thermostats," ME 697 project, 2000.
39. Alan Gunter, "CFD Model of Electrically Activated Thermostat," ME 697 project, 2000.
40. Felicia Hinant, "Mesh Generation of a Wave Rotor Test Channel with a Converging-Diverging Nozzle for use with KIVA-3V," ME 697 project, 1999.
41. Felicia Hinant, "Investigation of Emissions Testing and Emissions Modeling of Hybrid Electric Vehicles," ME 697 project, 1999.

### External Examiner for Dissertations & Theses

1. Robert John Blackburn, University of Cambridge, Department of Engineering, Clare College, United Kingdom, "Maximising the thermal Efficiency of a Pressure-Gain Combustion Gas Turbine," Ph.D. dissertation, Aug 2015.
2. Yu Matsutomi, Purdue University, West Lafayette, "Studies on Pressure-Gain Combustion Engines," Ph.D. thesis, 2010.
3. Shailendra Sinha, Indian Institute of Technology, Kanpur, India, "Biodiesel Development, Performance, Emissions, Combustion and Wear Investigations on a Medium-Duty Transportation CIDI Engine," Ph.D. dissertation, Jul 2007.
4. Sameera Wijeyakulasuriya, University of Moratuwa, Sri Lanka (major advisor), "Computer Simulation of Two-Stroke Gasoline Direct Injection Engine," M.Sc. thesis, 2007.
5. Pezhman Akbari, Michigan State University, "Analytical Design Procedure for Wave Rotors Enhancing Performance of Gas Turbines," Ph.D. dissertation, 2004.

### Other Graduate and Undergraduate Student Thesis and Project Supervision

1. Served on additional sixteen internal masters thesis committees.
2. Supervised *over 100 undergraduate students in over 50 undergraduate research, individual and group projects and independent studies outside the classroom*, in addition to numerous term projects in regular assigned courses.

~~~~~

SERVICE

Major Professional Service

1. Editorial committee for special issue on pressure-gain combustion, Journal of Propulsion & Power, 2015.
2. Editorial board, International Journal of Rotating Machinery, 2010-present.
3. Review Committee of the Graduate Office at IUPUI, 2013.
4. Advisory board, Technical Communications Program, IUPUI, 2009-2010.
5. Member, AIAA Gas Turbine Technical Committee, 2008-present.
6. Frequent organizer and chair for AIAA and ASME conferences.
7. Reviewer for AIAA, ASME, Combustion Institute journals
8. Associate, ASME Internal Combustion Engine Division, 2000-present.

IUPUI Campus & Indiana University (IU)/Purdue University Service

1. Search committee chair, member or significant search role for IUPUI leaders:
 - a. Chair of Department of Engineering Technology (search chair), 2015.
 - b. Associate Vice-Chancellor for Research, 2012.
 - c. Director for Integrated Nanotechnology Development Institute, 2011-12.
 - d. Director for STEM Institute, 2011-12.
 - e. Associate Vice-Chancellor for International Programs & IU Vice-President, 2010.
 - f. Dean of Engineering & Technology, 2009-10.

2. Member, IUPUI Task Force on Innovation & Discovery, 2012-13.
3. Member, IUPUI Task Force on Increasing Capacity for Graduate Education, 2012-13.
4. Member, Indiana University Faculty Council (Indiana statewide), 2011-2012.
5. Co-chair, IU system-wide Task Force on Publication-Restricted and Export-Controlled Research Policy, 2010-12.
6. Member, Purdue University Graduate Council (Indiana statewide), 2010-2013.
7. Member, Indiana University Intellectual Property Policy Council, 2010-present.
8. Executive Committee, Richard Lugar Center for Renewable Energy, 2010-present.
9. Member, IUPUI graduate fellowship committee, 2010-11.
10. Member, IUPUI Graduate Affairs Council, 2010-11.
11. Member at-large, IUPUI Faculty Council, 2010-present.
12. Associate Director, Indiana Space Grant Consortium (INSGC), 2000-2004.
13. IUPUI Budgetary Affairs Committee, 2009-2010.
14. IUPUI Research Affairs Committee, 2009-2010.
15. Member, IU Energy Institute, 2010-11, and ad-hoc working group on energy, 2008-2009.
16. Member, Graduate Committee, Mechanical Engineering, Purdue Univ., W. Lafayette, 2004-2008.

Engineering & Technology (ET) School Service

17. Chair, Unit Primary Board for promotion and tenure, 2015.
18. Chair, ET Budgetary Affairs Committee, 2009-2010. Member, 2006-present.
19. Chair, ET Search Committee for School contracts and grants manager, 2008-2009.
20. Member, ET First-Year Curriculum Committee, 2008.
21. Member of over ten search committees for Associate Dean, Chair, and faculty positions, 1998-present.
22. Member, Grants and Contracts Process Improvement Group, 2007 School reorganization.
23. Member, ET Research Committee, 2006-2010.
24. Member and Department representative, Faculty Senate, 2000-2009.
25. Member, review committee for Chairman, Department of Construction Technology, 2002-03.
26. Member, ET Graduate Education Committee, 2004-2008.

Mechanical Engineering (ME) Department Service

27. Chair, ME Primary Board for promotion and tenure, 2010-present.
28. Chair, ME Undergraduate and Assessment Committee, 2008-2010.
29. Chair, ME Graduate Education and Research Committee, 2004-2008.
30. Chair, Search Committee for faculty position in Mechanical Engineering, 2007.
31. Chair, Assessment Committee, 1998-2000.
32. Coordinator, ad-hoc committees for Energy Engineering BS degree program (2009) and Systems Engineering graduate certificate program (2007).
33. Chair, review committee for Chairman, Department of Mechanical Engineering, 2006.
34. Member, Graduate Committee, 2001-2004.
35. Member, Assessment & Accreditation Committee, 2000-2004.

Other University Activities

- 36. Founder & Director, Combustion and Propulsion Research Laboratory, 2003-present.
- 37. Founding coordinator, Fundamental of Engineering (FE) exam preparation course.
- 38. Faculty Advisor, AIAA student section, IUPUI, 1999-2004.
- 39. Co-advisor, IUPUI NASA Moonbuggy Design and Race Team, 2001-2003.

Civic Activities

- 40. Leadership of a major statewide community organization, with responsibility for fundraising, communications, civic engagement, social work training, interfaith relations, and event planning.
- 41. Promotion of STEM activities in K-12 schools, working with spouse who teaches science in a school for the blind.
- 42. Leadership in a national minority organization of scientists and engineers, organizing science-faith conferences.

~~~~~