

# SCOTT CURRAN, PHD

ORCID.ORG/0000-0002-4665-0231

Phone: (865) 202-9674

curransj@ornl.gov

Scopus Author ID: 54791967800

2360 Cherahala Blvd

Knoxville, TN 37932

## EDUCATION

---

- |            |   |          |
|------------|---|----------|
| <b>PhD</b> | The University of Tennessee, Energy Science and Engineering<br>Dissertation: "Fuel Economy and Green House Gas Reduction Potentials of Advanced Combustion Modes ..." | May 2014 |
| <b>MS</b>  | The University of Tennessee, Mechanical Engineering<br>Thesis: "On-road Emissions Evaluation of Student-Produced Biodiesel"   | May 2009 |
| <b>BS</b>  | The University of Tennessee, Mechanical Engineering<br>Capstone Design Project: Challenge X Hybrid Vehicle Design + Outreach  | May 2007 |

## RESEARCH INTERESTS

---

Alternative and advanced fuels, advanced combustion, engine systems, well-to-wheels and sustainability analysis, emissions controls, additive manufacturing for transportation, neutron diagnostics for internal combustion engines, hardware-in-the-loop engine research, vehicle systems simulations, hybrid and electric vehicles, vehicle and building/grid integration, combined heat and power, natural gas as a fuel

## PROFESSIONAL EXPERIENCE

---

- |  |              |
|--|--------------|
| <b>Oak Ridge National Laboratory, Oak Ridge, Tennessee</b><br>Group Leader and Senior R&D Staff, Fuel Science and Engine Technologies Research   | 2020–present |
| <ul style="list-style-type: none"><li>• Lead fuels and engines research for ORNL, manage 15 staff members/ postdocs</li><li>• Manage medium-/heavy-duty (MD/HD) combustion portfolio and natural gas projects</li><li>• PACE Combustion Consortium Major Outcome Cold-Start co-lead</li><li>• Principal investigator for Co-Optima MD-HD ACI project</li><li>• Principal investigator for PACE Cold-Start project</li><li>• Principal investigator for MD/HD low temperature combustion (LTC) project</li><li>• Principal investigator for four-lab natural gas pre-chamber project</li></ul>  |              |
| <b>Oak Ridge National Laboratory, Oak Ridge, Tennessee</b><br>R&D staff, Fuels and Engines Research Group  | 2012–2020    |
| <ul style="list-style-type: none"><li>• Principal investigator for light-duty advanced combustion research laboratory</li><li>• Principal investigator of Vehicle Technologies Office and EERE natural gas analysis projects, including leadership team of EERE comprehensive natural gas report</li><li>• Principal investigator of DOE medium- and heavy-duty combustion research project portfolio</li><li>• Leadership team member of DOE Combustion Consortium - Cold-Start Purpose</li><li>• Owner of Sustainable Employee Commute and Fleet roadmaps for ORNL Sustainable Campus</li><li>• Conduct life cycle analysis of transportation systems with a focus on well-to-wheel analysis of transportation and stationary power generation systems</li><li>• Coordinate and perform vehicle systems simulations for advanced combustion scenarios</li><li>• Leader in multidisciplinary collaboration across ORNL—advanced and additive manufacturing, building technologies, neutron sciences, ORNL Critical Materials Institute, &amp; bioenergy program</li></ul> |              |

- Engine lead for first engine experiments at ORNL Spallation Neutron Source
- Lead for Additive Manufacturing Integrated Energy (AMIE) Demo Printed Utility Vehicle Team
- ORNL Urban Dynamics Institute participant and supporter, lead cities advisory board discussions
- ORNL liaison to local DOE Clean Cities Coalition—ET Clean Fuels
- Manager and mentor of postdocs, students, and earlier career staff

**Oak Ridge National Laboratory**, Oak Ridge, Tennessee 2009–2012

Post-Masters Research Fellow, Fuels, Engines and Emissions Research Center

- Waste heat recovery for internal combustion engines
- Advanced combustion research, including fuel effects and emissions controls
- Well-to-wheel analysis for transportation and stationary power systems
- Sustainable fleet analysis and technical assistance
- Bridge transportation and bioenergy research

**The University of Tennessee**, Knoxville, Tennessee (UTK) 2015–Present

Adjunct Assistant Professor, Mechanical, Aerospace and Biomedical Engineering

- Collaborate with UTK faculty and students + senior mentor program
- Participate in Automotive Research Chair search committee

**The University of Tennessee**, Knoxville, Tennessee 2009–2012

Research Associate I, Mechanical, Aerospace and Biomedical Engineering

- Collaborated with UTK faculty and students

**The University of Tennessee**, Knoxville, Tennessee 2007–2009

Graduate Research Assistant, Mechanical, Aerospace and Biomedical Engineering

- Led the team and directed outreach for Challenge X hybrid vehicle design competition
- Coordinated UT Biodiesel program (student-run biodiesel pilot plant converting waste cooking oil to biodiesel for research and fleet use)
- Developed and coordinated special topics course on biodiesel production and use

## **EXTERNAL APPOINTMENTS AND VOLUNTEER EXPERIENCE**

---

**ASME** 2022–Present

Executive Committee Member - Internal Combustion Engine Division

**International Journal of Engine Research** 2019–Present

Editorial Board Member

- Participate on leading engine research journal editorial board
- Review incoming journal submissions and assign reviewers
- Participate in editorial board meetings

**Clemson Automotive Engineering Department** 2019–Present

External Advisory Board

- Review and advise automotive engineering program

**SAE International** 2019–Present

McFarland Awards Committee – Chair

- Review and make recommendations on submitted awards

<b>ASME</b>	2019–2022
ICED Student Competition Chair	
<ul style="list-style-type: none"> <li>• Organize call for entries and reviews for annual competition</li> </ul>	
<b>SAE International</b>	2016–Present
Powertrain Fuels and Lubricants Activity Executive Committee Member	
<ul style="list-style-type: none"> <li>• Participate in SAE Powertrain Fuels and Lubricants Activity meetings</li> <li>• Led committee initiatives for improving organizer participation</li> </ul>	
<b>SAE International</b>	2019–2021
Engine Combustion Committee Chair	
<ul style="list-style-type: none"> <li>• Lead combustion activity meetings</li> <li>• Resolve any technical paper issues that arise during publication process</li> <li>• Confirm new committee members</li> <li>• Participate on Powertrain Fuels and Lubricants executive committee as representative of the engine combustion committee</li> </ul>	
<b>SAE International</b>	2016–2019
Engine Combustion Committee ViceChair	
<ul style="list-style-type: none"> <li>• Assist chair, lead meetings as needed</li> <li>• Participate on Powertrain Fuels and Lubricants executive committee as representative of the engine combustion committee</li> </ul>	
<b>Tennessee Clean Fuels Coalition, Knoxville, Tennessee</b>	2014–Present
Board Member	
<ul style="list-style-type: none"> <li>• Provide technical input on coalition activities as a technical expert in alternative fuels and advanced vehicle technologies</li> <li>• Review coalition’s direction, management, activities, and financial performance</li> <li>• Guide education and outreach events and secure demonstration vehicles and vehicle technologies for events</li> </ul>	
<b>Institute for a Secure and Sustainable Environment, Knoxville, Tennessee</b>	2016–2019
Advisory Committee Member	
<ul style="list-style-type: none"> <li>• Developed and maintained a strategic plan for ISSE</li> <li>• Provided input on ISSE plans and strategic initiatives</li> </ul>	
<b>The University of Tennessee, Knoxville, Tennessee</b>	2014–2018
UT EcoCAR 3 Outreach Advisor Emeritus	
<ul style="list-style-type: none"> <li>• Managed and mentored UTK EcoCAR 3 communications managers and engineering students engaged in outreach and science communication for DOE Advanced Vehicle Technical Competition team (hybrid Chevrolet Camaro)</li> <li>• Established relationships with regional sustainable transportation groups for outreach opportunities</li> <li>• Promoted public and STEM engagement with hybrid vehicle technologies in region</li> </ul>	
<b>The University of Tennessee, Knoxville, Tennessee</b>	2011–2014
UT EcoCAR 2 Outreach Advisor	

- Managed and mentored UTK EcoCAR 2 communications managers and engineering students engaged in outreach and science communication for DOE Advanced Vehicle Technical Competition team (plug-in hybrid Chevrolet Malibu)
- Collaborated on joint journal paper summarizing outreach and STEM activities for EcoCAR 2 technical communications program
- Participated on L&N STEM Academy Transportation Committee
- Promoted public and STEM engagement with hybrid vehicle technologies in region

**Run for Clean Air (5K benefit race), Knoxville, Tennessee** 2008–2013  
Race Committee/photographer/exhibitor

- Participated on organizing committee for 5K race demonstrating alternative-fuel and hybrid vehicles and benefiting local clean air projects
- Secured volunteer technical experts and showcase vehicles for exhibit

**SAE UTK Chapter**, Knoxville, Tennessee 2007-2009  
Student Chapter Chair

- Lead SAE Student Chapter for the University of Tennessee - Knoxville
- Integrate UT Biodiesel as a student chapter activity
- Oversee UTK SAE Baja Team
- Coordinate SAE access for vehicle laboratories and training for students
- Selected to participate in SAE Section Officers Leadership Seminar

## PEER REVIEWED PUBLICATIONS

---

**67+ peer-reviewed articles (20 SAE publications), 2466 citations, h-index = 24, i10-index = 34;**

<i>Citation Indices*</i>	<i>Career</i>
<b>Citations</b>	2499
<b>h-index</b>	24
<b>I10-index</b>	35

*\* As of June 2023 via Google Scholar*

**ORCID:** 0000-0002-4665-0231, <https://orcid.org/0000-0002-4665-0231>

**Scopus Author ID:** 54791967800, <https://www.scopus.com/authid/detail.uri?authorId=54791967800>

### (i) Peer Reviewed Archival Papers — Primary Author

1. Curran, S., Szybist, J., Kaul, B., Easter, J. et al., “Fuel Stratification Effects on Gasoline Compression Ignition with a Regular-Grade Gasoline on a Single-Cylinder Medium-Duty Diesel Engine at Low Load,” **SAE Technical Paper** 2021-01-1173, 2021, doi:10.4271/2021-01-1173
2. Curran, S. and Wagner, R., “Impact of multimode range and location on urban fuel economy on a light-duty spark-ignition based powertrain using vehicle system simulations,” **SAE Technical Paper** 2020-01-1018, 2020, doi:10.4271/2020-01-1018.
3. Curran, S., Chambon, P., Lind., R., et al., “Big Area Additive Manufacturing and hardware-in-the-loop for rapid vehicle powertrain prototyping: A case study on the development of a 3-D-printed Shelby Cobra,” **SAE Technical Paper** 2016-01-0328, 2016, doi 10.4271/2016-01-0328.

4. Curran, S., Gao, Z., and Wagner, R., "Reactivity-controlled compression ignition drive cycle emissions and fuel economy estimations using vehicle system simulations," *Int. J. Engine Res.*, 2014, doi:10.1177/1468087414562258.
5. Curran, S.J., Wagner, R.M., Graves, R.L., Keller, M., and Greene, J.B., "Well-to-wheel analysis of direct and indirect use of natural gas in passenger vehicles," *Energy*, 75, 194–203, 2014, doi:10.1016/j.energy.2014.07.035.
6. Curran, S., Gao, Z., and Wagner, R., "Reactivity controlled compression ignition drive cycle emissions and fuel economy estimations using vehicle systems simulations with E30 and ULSD," *SAE Int. J. Engines* 7(2), 902–912, 2014, doi:10.4271/2014-01-1324.
7. Curran, S.J., Szybist, J.P., and Wagner, R.M., "Combustion noise investigation with multi-cylinder RCCI," ICEF2013-19125, *Proceedings of the ASME 2013 Internal Combustion Engine Division Fall Technical Conference ICEF2013*, Dearborn, MI, USA, October 13–16, 2013, doi: 10.1115/ICEF2013-19125.
8. Curran, S., Hanson, R., Wagner, R., and Reitz, R., "Efficiency and emissions mapping of RCCI in a light-duty diesel engine," *SAE Technical Paper* 2013-01-0289, 2013, doi:10.4271/2013-01-0289, 2013.
9. Curran, S.J., Wagner, R.M., and Hanson, R.M., "Reactivity controlled compression ignition (RCCI) combustion on a multi-cylinder light-duty diesel engine," *Int. J. Engine Res.* 13(3), 216–225, 2012, doi:10.1177/1468087412442324.
10. Curran, S., Hanson R., and Wager, R., "Effect of E85 on RCCI performance and emissions on a multi-cylinder light-duty diesel engine," *SAE Technical Paper* 2012-01-0376, 2012, doi:10.4271/2012-01-0376.
11. Curran, S.J., Theiss, T.J., and Bunce, M.J., "Greenhouse reduction potential with combined heat and power with distributed generation prime movers," ESFuelCell2012-91045, *Proceedings of the ASME 2012 6th International Conference on Energy Sustainability collocated with the ASME 2012 10th International Conference on Fuel Cell Science, Engineering and Technology*, San Diego, CA, July 23–26, 2012, doi:10.1115/ICEF2012-92192.
12. Curran, S.J., Szybist, J.P., and Wagner, R.M., "Reactivity controlled compression ignition performance with renewable fuels," ICEF2012-92192, *Proceedings of the ASME 2012 Internal Combustion Engine Division Fall Technical Conference–ICEF2012*, Vancouver, BC, Canada, September 23–26, 2012, doi:0000-0002-4665-0231.
13. Curran, S.J. Cho, K., Briggs, T.E., and Wagner, R.M., "Drive cycle efficiency and emissions estimates for reactivity controlled compression ignition in a multi-cylinder light-duty diesel engine," ICEF2011-60227, *Proceedings of the 2011 Internal Combustion Engine Division Fall Technical Conference ICEF2011*, Morgantown, WV, October 2–5, 2011, doi:10.1115/ICEF2011-60227.
14. Curran, S., Prikhodko, V., Cho, K., Sluder, C., et al., "In-cylinder fuel blending of gasoline/diesel for improved efficiency and lowest possible emissions on a multi-cylinder light-duty diesel engine," *SAE Technical Paper* 2010-01-2206, 2010, doi:10.4271/2010-01-2206.

**(ii) Peer Reviewed Archival Papers — Co-Author**

1. Chuahy, F., Curran, S., and Sluder, C.S., "Numerical assessment of fuel physical properties on high-dilution diesel advanced compression ignition combustion", *Applications in Energy and Combustion Science*, 2023 – Article in Press - AECS-D-22-00077R1

2. Sluder, C. and Curran, S., "Diesel-Range Fuel Property Effects on Medium-Duty Advanced Compression Ignition for Low-Load NOX Reduction," *SAE Int. J. Fuels Lubr.* 16(1):2023, <https://doi.org/10.4271/04-16-01-0006>.
3. Vijayagopal, R., Curran, S., Deter, D., and Longman, D., "Evaluating Class 6 Delivery Truck Fuel Economy and Emissions Using Vehicle System Simulations for Conventional and Hybrid Powertrains and Co-Optima Fuel Blends," *SAE Technical Paper* 2022-01-1156, 2022, doi:10.4271/2022-01-1156.
4. Lerin, C., Curran S., Moses-DeBusk, M., et al., "Hardware-in-the-Loop Investigation of Emissions Challenges in Hybrid Medium- and Heavy-Duty Powertrains Using a Pre-Production Diesel-Electric Parallel Hybrid System with and Without Stop-Start Operation", ASME ICEF Conference, October 2021, ICEF2021-68317, doi:10.1115/ICEF2021-68317
5. Dempsey, A. B., Curran, S., Wagner, R., Cannella, W., and Ickes, A. (April 30, 2021). "Gasoline Compression Ignition on a Light-Duty Multi-Cylinder Engine Using a Wide Range of Fuel Reactivities and Heavy Fuel Stratification." ASME. *J. Energy Resour. Technol.* September 2021; 143(9): 092303. DOI:10.1115/1.4050742
6. Chuahy, F., Moses-DeBusk, M., Curran, S., Storey, J., and Wagnon, S., "The effects of distillation characteristics and aromatic content on low-load gasoline compression ignition (GCI) performance and soot emissions in a multi-cylinder engine", *Fuel*, 299, 2021, DOI: 10.1016/j.fuel.2021.120893.
7. Chuahy, F., Powell, T., Curran, S., Szybist, J., " Impact of fuel chemical function characteristics on spark assisted and kinetically controlled compression ignition performance focused on multi-mode operation", *Fuel*, 299, 2021, DOI: 10.1016/j.fuel.2021.120844.
8. Powell, T.R.; Szybist, J.P.; Dal Forno Chuahy, F.; Curran, S.J.; Mengwasser, J.; Aradi, A.; Cracknell, R. Octane Index Applicability over the Pressure-Temperature Domain. *Energies*, 2021, 14, 607. DOI: 10.3390/en14030607
9. Lerin C, Edwards KD, Curran SJ, et al. Exploring the potential benefits of high-efficiency dual-fuel combustion on a heavy-duty multi-cylinder engine for SuperTruck I. *International Journal of Engine Research*. March 2021. doi:10.1177/14680874211006943
10. Wissink, M., Chen, Y., Frost, M., Curran, S., et al., "Operando measurement of lattice strain in internal combustion engine components by neutron diffraction", *PNAS*, 2020, 117 (52) 33061-33071; DOI: 10.1073/pnas.2012960117
11. Dempsey, A., Curran, S., Ickes, A., Wagner, R., "Gasoline compression ignition (GCI) on a light-duty multi -cylinder engine using a wide range of fuel reactivities & heavy fuel stratification," ICEF2020-2929, *Proceedings of the 2020 Internal Combustion Engine Division Fall Technical Conference ICEF2020*.
12. Kass, M., Wissink, M., Janke, C., Connatser, R., Curran, S., "Compatibility of elastomers with polyoxymethylene dimethyl ethers and blends with diesel," *SAE Technical Paper* 2020-01-0620, 2020, doi:10.4271/2020-01-0620.
13. Lewis, S., Storey, J., Connatser, R., Curran, S., et al., "Detection of polar compounds condensed on particulate matter using capillary electrophoresis-mass spectrometry," *SAE Technical Paper* 2020-01-0395, 2020, doi:10.4271/2020-01-0395.
14. Reitz, R. D., Ogawa, H., Payri, R., Fansler, T., Kokjohn, S., Moriyoshi, Y., ... Curran, S., Wagner R., "The future of the internal combustion engine," IJEF editorial (invited), *Int. J. Engine Res.*, 21(1), 3–10, 2019, doi:10.1177/1468087419877990.
15. Moore, A.M., Curran, S.J., Lapsa, M.V., and Bittler, A.D., "Geoanalysis of park-and-ride facilities for future laboratory-wide commuting program," *TRIP* 3, December, 2019, doi:10.1016/j.trip.2019.100025.

16. Wissink, M., Curran, S., et al., "Isolating the effects of reactivity stratification in reactivity-controlled compression ignition with iso-octane and n-heptane on a light-duty multi-cylinder engine," *Int. J. Engine Res.* 199, 907–926, 2018, doi:10.1177/1468087417732898.
17. Moses-DeBusk, M., Curran, S., et al., "Impacts of air-fuel stratification in ACI combustion on particulate matter and gaseous emissions," *Emiss. Control Sci. Technol.* 5, 225–237, 2019.
18. Wissink, M., Curran, S., et al., "Spray-wall interactions in a small-bore, multi-cylinder engine operating with reactivity-controlled compression ignition," *ASME J. Eng. Gas Turb. Power* 140(9), 2018, doi:10.1115/1.4039817.
19. Drallmeier, J., Curran, S., Wissink, M., and Wagner, R., "Ignition delay in low temperature combustion," *SAE Technical Paper* 2018-01-1125, 2018, doi:10.4271/2018-01-1125.
20. Brosha, E., Kreller, C., Prikhodko, V., Curran, S., et al., "Response characteristics of a stable mixed potential ammonia sensor in simulated diesel exhaust," *J. Electrochem. Soc.* 164(9), 2017, doi: 10.1149/2.1271709jes .
21. Brosha, E., Prikhodko, V., Kreller, C., Pihl, J., Curran, S., et al., "Response characteristics of stable mixed-potential NH<sub>3</sub> sensors in diesel engine exhaust," *Emiss. Control Sci. Technol.* 3(1): 112–121, 2017, <https://doi.org/10.1007/s40825-016-0050-2>.
22. Wissink, M., Curran, S., Roberts, G., Rousselle, C., and Musculus, M., "Isolating the effects of reactivity stratification in reactivity-controlled compression ignition with iso-octane and n-heptane on a light-duty multi-cylinder engine," *Int. J. Engine Research*, October 9, 2017, doi.org/10.1177/1468087417732898.
23. Wissink, M., Curran, S., et al., "Spray-wall interactions in a small-bore, multi-cylinder engine operating with reactivity-controlled compression ignition," ICEF 2017-3607, *Proceedings of the ASME 2017 Internal Combustion Engine Division Fall Technical Conference, ICEF2017*, Seattle, WA, October 15–18, 2017, doi:10.1115/ICEF2017-3607.
24. Roberts, G., Rousselle, C., Musculus, M., Wissink, M., Curran, S., and Eagle, E., "RCCI combustion regime transitions in a single-cylinder optical engine and a multi-cylinder metal engine," *SAE Int. J. Engines* 10(5), 2017, doi:10.4271/2017-24-0088.
25. Hanson, R., and Curran, S., "Fuel economy and emissions testing of an RCCI Series hybrid vehicle," *Int. J. of Powertrains* 6(3), 259, 2017, doi:10.1504/IJPT.2017.087894.
26. Wissink, M., Splitter, D., Dempsey, A., Curran, S., Kaul, B.C., and Szybist, J.P. "An assessment of thermodynamic merits for current and potential future engine operating strategies," *Int. J. Engine Res.*, 18(1–2), 155–169, 2017, doi:10.1177/1468087416686698.
27. Chambon, P., Curran, S., Huff, S., Love, L., Post, B., Wagner, R., Jackson, R., and Green Jr., J., "Development of a range-extended electric vehicle powertrain for an integrated energy systems research printed utility vehicle," *Applied Energy*, 191, 99–110, April 1, 2017, ISSN 0306-2619, <https://doi.org/10.1016/j.apenergy.2017.01.045>.
28. Jackson, R., Curran, S., et al., "Overview of the Oak Ridge National Laboratory Advanced Manufacturing Integrated Energy Demonstration Project: Case study of additive manufacturing as a tool to enable rapid innovation in integrated energy systems," IMECE2016-66256, *ASME International Mechanical Engineering Congress and Exposition 2016*, doi:10.1115/IMECE2016-66256.
29. Raju, N.G.K., Dempsey, A., and Curran, S., "Analysis of engine air handling systems for light-duty compression ignition engines using 1-d cycle simulation: Achieving high dilution levels for advanced combustion," ICEF2016-9459, *ASME 2016 Internal Combustion Engine Division Fall Technical Conference*, Greenville, SC, October 9–12, 2016, doi: 10.1115/ICEF2016-9459.

30. Dempsey, A.B, Curran, S.J., and Wagner, R.M., A perspective on the range of gasoline compression ignition combustion strategies for high engine efficiency and low NO<sub>x</sub> and soot emissions: Effects of in-cylinder fuel stratification," *Int. J. Engine Research*, January 14, 2016, doi: 10.1177/1468087415621805.
31. Storey, J., Curran, S., Lewis, S., et al., "Evolution and current understanding of physicochemical characterization of particulate matter from reactivity controlled compression ignition combustion on a multi-cylinder light-duty engine," *Int. J. Engine Research* 18(5–6), 505–519, 2016, doi:10.1177/1468087415621805.
32. Lucachick, G., Curran, S., Storey, J., Prikhodko, V., and Northrop, W., "Volatility characterization of nanoparticles from single and dual-fuel low temperature combustion in compression ignition engines," *Aerosol Sci. Technol.* 50(5), 436–447, 2016, doi:10.1080/02786826.2016.1163320.
33. Brosha, E., Prikhodko, V., Kreller, C., Pihl, J., Curran, S., and Parks, J., "Response characteristics of stable mixed-potential NH<sub>3</sub> sensors in diesel engine exhaust," *Emiss. Control Sci. Technol.* 1(3), 112–121, 2016, doi: 10.1007/s40825-016-0050-2.
34. Gao, Z., Curran, S., et al., "Drive cycle simulation of high efficiency combustions on fuel economy and exhaust properties in light-duty vehicles," *Applied Energy* 157, 726–776, 2015, doi: 10.1016/j.apenergy.2015.03.070.
35. Dempsey, A., Curran, S., Wagner, R., and Cannella, W., "Effect of premixed fuel preparation for partially premixed combustion with a low octane gasoline on a light-duty multi-cylinder compression ignition engine," *J. Eng. Gas Turb. Power*, 137(11), 111506, 2015, doi: 10.1115/1.4030281.
36. Szybist, J., and Curran, S., "Corn ethanol: The surprisingly effective route for natural gas consumption in the transportation sector," extended abstract for the 250th American Chemical Society (ACS) National Meeting and Exposition held in Boston, MA, April 2015.
37. Dempsey, A., Curran, S., and Reitz, R., "Characterization of reactivity controlled compression ignition (RCCI) using premixed gasoline and direct-injected gasoline with a cetane improver on a multi-cylinder engine," **SAE Technical Paper** 2015-01-0855, 2015, doi:10.4271/2015-01-0855.
38. Hanson, R., Spannbaauer, S., Gross, C., Reitz, Curran, S., Storey, J., and Huff, S., "Highway fuel economy testing of an RCCI series hybrid vehicle," **SAE Technical Paper** 2015-01-0837, 2015, doi:10.4271/2015-01-0837.
39. Bergin, M., Dempsey, A., Curran, S., Reitz, R., and Rutland, C., "Load limit extension in pre-mixed compression ignition using a 2-zone combustion system," **SAE Int. J. Engines** 8(2), 903–920, 2015, doi:10.4271/2015-01-0860.
40. Kreller, C.R., Sekhar, P.K., Prikhodko, V.Y., Pihl, J.A., Curran, S, et al., "Dynamometer testing of planar mixed-potential sensors," *ECS Transactions*, Vol. 61, Num. 19, 2014, doi: 10.1149/06119.0055ecst.
41. Storey, J., Curran, S., Dempsey, A., Lewis, S., Walker, N., Reitz, R., and Wright, C., "The contribution of lubricant to the formation of particulate matter with reactivity controlled compression ignition in light-duty diesel engines," *Emiss. Control Sci. Technol.* 1, 64–79, 2014, doi:10.1007/s40825-014-0007-2.
42. Dempsey, A., Curran, S., Storey, J., Eibl, M., et al., "Particulate matter characterization of reactivity controlled compression ignition (RCCI) on a light duty engine," **SAE Technical Paper** 2014-01-1596, 2014, doi: 10.4271/2014-01-1596.



43. Prikhodko, V., Curran, S., Parks, J., and Wagner, R., "Effectiveness of diesel oxidation catalyst in reducing HC and CO emissions from reactivity controlled compression ignition," *SAE Int. J. Fuels Lubr.* 6(2), 329–335, 2013, doi:10.4271/2013-01-0515.
44. Hanson, R., Curran, S., Wagner, R., and Reitz, R., "Effects of biofuel blends on RCCI combustion in a light-duty, multi-cylinder diesel engine," *SAE Int. J. Engines* 6(1), 488–503, 2013, doi:10.4271/2013-01-1653.
45. Wagner, R.M., Green, J.B., and Curran S.J., "A perspective on the future of high efficiency engines," keynote, XIth Conference on Engine Combustion Processes, Ludwigsburg, Germany, Current Problems and Modern Techniques XIth Congress, March 2013.
46. Hanson, R.M., Curran, S.J., and Wagner, R.M., "Piston bowl optimization for RCCI combustion in a light-duty multi-cylinder engine," *SAE Technical Paper* 2012-01-0950, 2012, doi:10.4271/2012-01-0380.
47. Prikhodko V., Curran S., Barone T., Lewis S., Storey J., Cho K., et al., "Diesel oxidation catalyst control of hydrocarbon aerosols from reactivity controlled compression ignition combustion," pp. 273–278 in *Proceedings of the ASME 2011 International Mechanical Engineering Congress and Exposition*, vol. 9, Denver, CO, November 11–17, 2011, doi: 10.1115/IMECE2011-64147.
48. Cho, K., Curran, S.J., Prikhodko, V.Y., Sluder, C.S., Parks, J.E., and Wagner, R.M., "Experimental investigation of fuel-reactivity controlled compression ignition (RCCI) combustion mode in a multi-cylinder, light-duty diesel engine," *Proceedings of the 7th U.S. National Combustion Meeting*, Atlanta, GA, March 2011.
49. Prikhodko, V., Curran, S., Barone, T., Lewis, S., et al., "Emission characteristics of a diesel engine operating with in-cylinder gasoline and diesel fuel blending," *SAE Int. J. Fuels Lubr.* 3(2), 946–955, 2010, doi:10.4271/2010-01-2266.
50. Briggs, T., Wagner, R., Edwards, K., Curran, S., et al., "A waste heat recovery system for light duty diesel engines," *SAE Technical Paper* 2010-01-2205, 2010, doi:10.4271/2010-01-2205.

**(iii) Peer Reviewed Archival Papers — Joint with The University of Tennessee**

1. Routh, K., Curran, S., and Irick, D., "The University of Tennessee EcoCAR 2 communications, outreach, education and STEM recruiting program overview: Year 2," IMECE2013-64907, *Proceedings of the ASME 2013 International Mechanical Engineering Congress & Exposition IMECE2013*, San Diego, CA, USA, November 13–21, 2013, doi:10.1115/IMECE2013-64907.
2. Curran, S.J., Rohr, W., and Irick, D.K., "Performance and emissions characteristics of an E85 retrofitted Baja SAE vehicle," *SAE Technical Paper* 2012-32-0023, *2012 Small Engine Technology Conference & Exhibition*, Madison, WI, USA, October 16-18, 2012

**INVITED PRESENTATIONS, PANELS AND LECTURES**

**30+ invited presentations (>8 for SAE symposia/conferences).**

1. Curran, S., "Fuels and Engines Research at ORNL", 2021 Workshop - Paving the Road to Future Automotive Research Datasets: Challenges and Opportunities, Virtual, November 2021.
2. Curran, S., ASME Early Career Networking Panel – National Labs, 2021 ASME ICEF conference, Virtual, October 2021.
3. Curran, S., "ORNL Sustainable Transportation," 2019 100 Best Fleets meeting, Knoxville, TN, June 2019.

4. Curran, S., and Wagner, R., "Electromobility and the Future of the Internal Combustion Engine," ASME 2018 ICEF, November 2018.
5. Curran, S., Lapsa, M., Hudey, B., and Daniel, C., "Technologies that Work Today and Are Coming Tomorrow," keynote, 2018 Sustainable Fleet Technology Conference & Expo, Raleigh, NC.
6. Curran, S., "ORNL Sustainable Transportation Program," Panel—2018 Sustainable Fleet Technology Conference & Expo, Raleigh, NC.
7. Curran, S., Szybist, J., and Wagner, R., "Internal Combustion Engines for Hybrid Electric Configurations," ARPA-E High Efficiency Hybrid Vehicles Workshop, Southfield, MI, October 12, 2017.
8. Curran, S., "Addressing Barriers to LTC from an International Perspective," 38th Task Leaders Meeting, Baiona, Spain, 2017.
9. Curran, S., "Condensed Hybrid and Electric Vehicle Development with Hardware-in-the-Loop and Additive Manufacturing," The Battery Show & Electric and Hybrid Vehicle Technology Conference, EV Tech Expo—Pre-Conference Workshops, Novi, MI, 2017.
10. Curran, S., and Storey, J., "Evolution and Current Understanding of Physicochemical Characterization of Particulate Matter from RCCI," 39th Task Leaders Meeting in Baiona, Spain, 2017.
11. Curran, S., and Wagner, R., "Low Temperature Combustion Enabled by Multi-mode Including Vehicle Electrification," **SAE International High Efficiency Engine Symposium**, Detroit MI, 2017.
12. Curran, S., and Wagner, R., "Reactivity Stratified Combustion Development for Light-Duty Multi-Cylinder Engines," IEA TCP for Clean and Efficient Combustion, 38th Task Leaders Meeting in Ruka, Finland, June 26–30, 2016.
13. Splitter, D.A., Wagner, R.M., Dempsey, A.B., and Curran, S.J., "The Landscape of GCI Combustion "Fuel Properties and Stratification," **SAE 2015 Gasoline Compression Ignition Engine Symposium**, September 17, 2015, Capri, Italy [presented by Derek Splitter].
14. Curran, S.J., Wagner, R.M., and Dempsey, A.B., "Next Generation Compression Ignition Engines and Future Fuel Opportunities," **2015 SAE/JSAE Powertrain Fuels and Lubricants International Meeting**, September 1–4, 2015, Kyoto, Japan [presented by Scott Curran].
15. Wagner, R.M., Dempsey, A.B., and Curran, S.J., "Directions in High Efficiency Engine Research and Future Fuel Opportunities," 13th International Conference on Engines for Vehicles, Port Jefferson, NY, June 22, 2015 [presented by Scott Curran].
16. Curran, S.J., Prikhodko, V., et al., "Emission Challenges and Opportunities for Multi-Cylinder RCCI on a Light-Duty Diesel Engine," Emissions 2015, Troy, MI, June 2015 [presented by Vitaly Prikhodko].
17. Curran, S.J., et al., "Opportunities and Challenges Associated with Multi-mode Diesel/ RCCI Combustion: An Aftertreatment Perspective," **SAE LD Emissions Control Symposium** Troy, MI, December 2014.
18. Curran, S.J., and Wagner, R.M., "The Role of Fuels in Optimizing Current and Future Engines," Southeast Alternative Fuels Conference & Expo, Raleigh, NC, October 24, 2014.
19. Curran, S.J., et al., "Emission Challenges and Opportunities for Multi-Cylinder RCCI on a Light-Duty Diesel Engine," 5th International CTI Conference: Emissions Challenges Troy, MI, September 2014.

20. Curran, S.J., "Efficiency and Emissions Comparison of Single and Dual-Fuel Low Temperature Combustion on a Light Duty Multi-Cylinder Diesel Engine," **SAE 2014 High Efficiency Engine Symposium**, Detroit MI, April 6, 2014.
21. Curran, S.J., Gao, Z., Szybist, J., Smith, D., and Wagner, R., "Fuel Effects on RCCI Combustion: Performance and Drive Cycle Considerations," 2014 CRC Workshop on Advanced Fuels and Engine Efficiency, Baltimore, MD, February 25, 2014.
22. Curran, S.J., Gao, Z., Daw, S., Prikhodko, V., Smith, D., Parks, J., and Wagner, R., "Opportunities and Challenges for Integrating Future Engine Concepts into Hybrid Electric Vehicle Powertrains," **SAE 2014 Hybrid and Electric Vehicle Technologies Symposium**, San Diego, CA, February 11, 2014.
23. Curran S.J., Gao, A., and Wagner, R.M., "Reactivity Controlled Compression Ignition Drive Cycle Emissions and Fuel Economy Estimations Using Vehicle Systems Simulations," Vehicle Systems Analysis Tech Team Meeting, Southfield, MI, August 7, 2013.
24. Curran, S.J., "Well-to-Wheel Analysis of Direct and Indirect Use of Natural Gas in Transportation," **2013 SAE Fuels, Lubricants, and Aftertreatment Symposium**, Long Beach, CA, November 18–21, 2013.
25. Curran S.J., "ORNL Sustainable Transportation Research and Public Activities," 3rd Annual Southeast Sustainability Summit, Knoxville TN, August 21, 2013.
26. Curran S.J., "Emissions Challenges and Opportunities for Reactivity Controlled Compression Ignition on a Light-Duty Multi Cylinder Engine," Emissions 2013, Ypsilanti, MI, June 2013.
27. Curran, S.J., Wagner, R.M., and Gao, Z., "Background on RCCI and B20 RCCI Results with Both Gasoline and Ethanol Blends," 2012 National Biodiesel Board Biodiesel Technical Workshop, Kansas City, MO, October 30–31, 2012.
28. Curran, S.J., "The role of Renewable Fuels in Enabling High Efficiency Internal Combustion Engines," Sustainable Technology through Advanced Interdisciplinary Research (STAIR) Seminar Series at the University of Tennessee, Knoxville, TN, September 11, 2012.
29. Curran, S.J., Wagner, R.M., Hanson, R.M., and Szybist, J.P., "Reactivity Controlled Compression Ignition Combustion in a Multi-Cylinder Light-Duty Diesel Engine," **SAE Powertrain Fuels and Lubricants Meeting**, Malmo, Sweden, September 2012 [presented by Robert Wagner].
30. Curran, S.J., Hanson, R.M., Barone, T.L., Storey, J.M., and Wagner, R.M., "RCCI Operation on a Light-Duty Multi-Cylinder Engine Using SME B20 with Gasoline and Ethanol Blends," National Biodiesel Board Biodiesel Wksp, Kansas City, MO, November 2011.
31. S.J. Curran, "Biodiesel Done Right," FEMP Industry Day, Washington DC, 2010.

## SELECTED REPORTS

---

1. Kaul, B., Gillespie, T., Curran, S., "Hazard and Operability Study for the Ammonia Fuel Systems at the NTRC", ORNL, 2022
2. Curran, S., Langholtz, M., Busch, I., Kamath, D., Oyedeji, O., Theiss, T., "Analyzing the Best Uses of Biomass for Energy-Sector Decarbonization via an Integrated Carbon Management Approach" ORNL Research Insights, 2022
3. Wissink, M., Curran, S., An, K., and Frost, M., "The Neutronic Engine: Enable new critical measurements supporting high efficiency engine research and HPC models, ORNL, 2019

4. Sears, T., Curran, S., et al., "Natural Gas as Fuel in On- and Off-Road U.S. Transportation Applications: Opportunities and Challenges", ORNL/SPR-2019/1185 2021 – Report to Congress
5. Curran, S., Wagner, W., Campbell, R., "Summary Report on the SAE 2016 Range Extenders for Electric Vehicles Symposium, ORNL/TM-2017/143, 2017
6. Keel-Blackmon, K., Curran, S., Lapsa, M., "Summary of OEM Idling Recommendations from Vehicle Owner's Manuals", ORNL/TM-2016/50, 2016 – Report to Congress
7. Szybist, J., and Curran, S., "Corn Ethanol: The Surprisingly Effective Route for Natural Gas Consumption in the Transportation Sector", ORNL/TM-2015/200, 2015
8. Curran, S., Wagner, R., "Multi-mode RCCI Engine Map Used to Demonstrate Potential Improvements in Modeled Fuel Economy", ORNL/LTR-2012/532, 2012
9. Stinton, D., McGervey, J., Curran, S., "Procuring Stationary Fuel Cells For CHP: A Guide for Federal Facility Decision Makers", ORNL/TM-2011/308, 2011
10. Curran, S., FEMP Project 98 TA Report - Fleet Analysis", ORNL/TM-2010/211, 2010

## PATENTS

---

- "Neutronic Engine", 201804196.US.00, 63/208,124, Patent Application = 17833989, 2021
- "Hybrid Fluid Power/Waste Heat Recovery System for Transportation Application", 202004574.US.00, 62/972,879, Provisional, 2020

## SELECTED CONFERENCE/ SYMPOSIUM ACTIVITIES

---

- **Conference Chair:** 2022 ORNL Smoky Mountains Mobility Conference, Chattanooga, TN **(2022)**
- **Chair - ASME Student Competition,** ASME ICEF Undergraduate student presentation competition, **(April 2020 – Present)**
- **Co-lead and moderator, SAE WCX Panel,** Co-Optimization of Engine and Fuels Technology, SAE International WCX, Virtual **(2021)**
- **Conference Co-Chair, Future Fleets Lead Organizer, Panel Moderator, Sponsor Lead,** 2019 ORNL Smoky Mountains Mobility Conference, Chattanooga, TN **(2019)**
- **Lead Symposium Organizer, Natural Gas Symposium** - SAE International Innovations in Mobility, Novi, MI **(2019)**
- **Lead Symposium Organizer, Range Extenders for Electric Vehicles** - SAE International Innovations in Mobility, Novi, MI **(2019)**
- **Lead Super Session Organizer -Dual Fuel – PFL 260 Dual Fuel,** SAE International, includes being session chair at conferences, **(April 2015 – 2019)**
- **Judge - ASME Student Competition,** ASME ICEF Undergraduate student presentation competition, **(April 2015 – 2019)**
- **Track Lead Organizer, Range Extender Track,** SAE 14th International Conference on Engines & Vehicles, Capri, Napoli (Italy) September 15-19, **(2019)**
- **NG Panel Organizer,** 2019 SAE World Congress Experience, Detroit Mi, **(2019)**
- **Propulsion Track Lead, Panel Moderator, Sponsor Lead,** 2018 ORNL Smoky Mountains Mobility Conference, Chattanooga, TN **(2018)**
- **Advanced Diagnostics for Internal Combustion Engines Panel Organizer,** 2018 SAE World Congress Experience, Detroit Mi, **(2018)**

- **Hybrid Track Lead Organizer and Chair**, SAE Naples International Conference on Engines & Vehicles, Capri, Napoli (Italy), **2017**
- **Co-founder and co-chair, SAE Range Extender Symposium**, SAE International, Detroit, Mi, **2017**
- **Co-founder and co-chair, SAE Range Extender Symposium**, SAE International, Knoxville, TN **2016**
- **Particulate Matter Panel Organizer**, 2019 SAE World Congress Experience, Detroit Mi, **(2019)**
- **Lead Session Organizer** – PFL 205 Fuel and Lubricant Effects of CI Engine Performance, SAE International **(2012 – 2015)**
- **Session Chair, Combined Heat and Power Track ASME Fuel Cell 2017**, San Diego, Ca, **(2012)**
- **Organizer - Young Professionals Initiative Panel 2014 SAE World Congress**, Detroit, Mi **(2014)**
- **Session Co-Organizer** – PFL 205 Fuel and Lubricant Effects of CI Engine Performance, SAE International, **(2011 – 2012)**

## HONORS AND AWARDS

---

<b>UT Battelle Awards Night for Community Engagement</b>	2022
For sustained dedication to community outreach in informing the public about sustainable transportation options and for inspiring the next generation of science communicators.	
<b>ORNL BTSD Award for Team Science</b>	2022
In recognition of team science with advanced neutron diffraction research including the first running engine in a neutron diffraction beamline and the development of the neutronic engine	
<b>IEEE Senior Member</b>	2022
In recognition of significant contributions to focus on sustainable transportation including hybrid and electric vehicle research and integrated energy systems	
<b>DOE Vehicle Technologies Office Team Award</b>	2021
In recognition of significant contributions to the development of the science base for fuel and engine technologies	
<b>UT Battelle Awards Night for Operational Performance</b>	2021
In recognition of supporting in response to COVID-19 restrictions, the ORNL virtual tours digital platform to showcase multiple facilities and provide 3D access to ORNL's groundbreaking science and rich history	
<b>Global Grand Challenges Summit 2019</b>	2019
Second series of summits jointly hosted by the UK, US and Chinese academies of engineering. Invitation only event.	
<b>National Academies Frontiers of Engineering Program</b>	2019
For demonstrated accomplishment in engineering research and technical work with recognizable contributions to advancing the frontiers of engineering	
<b>ORNL Exceptional Effort Award</b>	2017
Support to ORNL Urban Dynamics Institute Science Advisory Board activities	
<b>ORNL Significant Achievement Award</b>	2016
For leadership in Additive Manufacturing Integrated Energy Demo	
<b>SAE International Stefan Pischinger Award for Young Industry Leadership</b>	2015
For exceptional promise in leadership in the field of sustainable mobility through the development of high-efficiency engine technologies and a commitment to outreach and public education for alternative fuels and advanced vehicle technologies	

<b>SAE International McFarland Award</b>	2014
For introducing a new SAE young professional initiative to improve the interaction of young SAE members with leading SAE professionals	
<b>ORNL Significant Achievement Award</b>	2014
For technical contributions to the planning of the DOE SuperTruck Project	
<b>DOE Vehicle Technologies Office R&amp;D Award</b>	2013
For leadership in transitioning RCCI combustion to multi-cylinder engines with bio-renewable fuels	
<b>American Society of Mechanical Engineers (ASME) Old Guard Early Career Award</b>	2013
For dedication to meeting the ASME goal of helping the global engineering community develop solutions to benefit lives and livelihoods through advances in energy efficiency and alternative fuel research, including involvement with ASME conferences, STEM recruiting, mentoring, and public outreach and education	
<b>ORNL Community Sustainability Award</b>	2013
For participation in City of Oak Ridge, Knoxville, and ORNL Earth Day events over the previous 5 years, including volunteering personal time to bring alternative fuel vehicles to the events and spending time explaining to attendees the benefits of such vehicles	
<b>SAE Engineering Meetings Board Outstanding Oral Presentation</b>	2013
For outstanding oral presentation during SAE technical meeting	
<b>ASME Best Presentation Award</b>	2012
For best presentation during ASME Internal Combustion Engine Division meeting	
<b>ORNL Significant Achievement Award</b>	2014
For contributions to DOE congressional tracked (JOULE) milestone of achieving 45% efficiency in an engine	
<b>East Tennessee (ET) Clean Fuels Coalition—Star Volunteer Award</b>	2008
In recognition of significant volunteer efforts for alternative fuels and hybrid outreach	
<b>US Department of Energy Graduate Automotive Technology Education Fellow</b>	2008
Prestigious DOE fellowship to pursue research in advanced vehicle technologies	

---

#### PROFESSIONAL AFFILIATIONS

<b>SAE International</b>	2005–Present
Chair Combustion Committee ('21), PFL executive committee, McFarland Awards Committee, super-session organizer, SAE symposium cofounder (SAE Rex, SAE NG symposium), technical expert panel organizer, paper reviewer, session chair	
<b>American Society of Mechanical Engineers</b>	2005–Present
Lifetime member, distinguished elected member Internal Combustion Engine (ICE) division, Chair ICE Division undergraduate presentation competition Executive Committee – Internal Combustion engine Division	
<b>IEEE</b>	2021–Present
Senior Member	
<b>Combustion Institute</b>	2020–Present
Member	

---

## PROFESSIONAL SERVICE

---

**Peer review articles for the following journals:** *International Journal of Engine Research, Fuel, Energy, Applied Energy, SAE Journals, Applied Energy, Applied Thermal Engineering, Energy & Fuels*

---

## LEADERSHIP TRAINING AND EXPERIENCE

---

### Leadership Experience

- Group leader, Fuels and Engines Research, ORNL
- Principal investigator for at least two VTO AOP projects per year since 2011
- ORNL MD/HD Portfolio lead – manage 4 projects
- Lead ORNL natural gas in transportation activities
- ORNL lead for EERE NG report to congress
- Leadership team for DOE VTO Combustion Consortium – Emissions/Cold-Start Purpose
- Managed/ mentor 3 post-docs, 1 post-masters, interns and visiting scholars
- Roadmap co-owner for Sustainable ORNL fleet and roadmap projects
- Lab Space Manager for NTRC Engine research cell 4 and control room cell 4/5
- Vehicle lead for ORNL Integrated Energy Systems/ AMIE – Printed Utility Vehicle
- Engine lead for first engine experiments at ORNL's Spallation Neutron Source (SNS)
- SAE Engine Combustion Committee Chair 2019-2021,
- SAE Engine Combustion Committee Vice Chair 2017-2019
- Board of Advisors East TN Clean Fuels – TN DOE Clean Cities Coalition
- External Advisory Board for UTK Institute for a Secure and Sustainable Environment
- External Advisory Board for Clemson ICAR
- Outreach advisor for UTK EcoCAR 2 and EcoCAR 3 teams + manage outreach coordinators

---

## STUDENTS ADVISED AND -POST-DOCS/INTERNS MENTORED

---

### Post-Doctoral Fellows:

- Dr. Flavio Chuahy (2019-2021)
  - Experimental Co-Optima fuels effects on combustion research
  - Cold-start with Combustion Consortium
  - Collaborate with other staff on CFD efforts
  - Work together on professional development plan
  - Find opportunities for technical society engagement and new projects
- Dr. Martin Wissink (2017-2018)
  - Experimental combustion and fuel effects R&D
  - Multiple publications, many presentations, ORNL post-doc symposium
  - Joint project at SNL including Wissink site visit research at SNL Combustion Research Facility (CRF) in Livermore, Ca
  - Collaboration with ORNL SNS for neutron engine experiments
  - Currently ORNL R&D staff
- Dr. Adam Dempsey (2013-2015)
  - CFD simulation and experimental combustion and fuels effects R&D
  - Multiple publications, many presentations, ORNL post-doc symposium winner

- Currently assistant professor at Marquette University, previously research staff at Caterpillar

#### Post-Masters Fellows:

- Ms. Chloe Lerin (2019-2021) – ORAU Post-Masters
  - Experimental low temperature combustion on HD engine
  - Experimental HD Natural Gas pre-chamber
  - Significant professional development activities and dedicated mentorship meetings
  - Encourage new skill sets including 0 and 1-D simulations
  - Shadowing experiences to meet other female engineers at ORNL

#### Visiting Graduate Student Researchers

- Dr. Glen Lucachick (2016) – University of Minnesota
  - Currently transducer engineer at MTS Systems
- Mr. Shaun Spannbaauer (2015) - University of Wisconsin – Madison
  - Currently engine systems engineer, Ford Motor Company
- Dr. Reed Hanson (2011) - University of Wisconsin – Madison
  - Currently development engineer at Achates Power, previously post-doc at Argonne National Laboratory

#### Doctoral Students (advised in dissertation committee)

- Mr. Deivanayagam ("Deiva") Hariharan (2019-present) - Stony Brook University
  - External member of dissertation committee
  - Advise and evaluate PhD thesis - related to RCCI combustion

#### ORNL Interns supervised:

- Mr. Zaky Hussein (2017): ORAU HERE/SULI Student
  - Co-mentor with Claus Daniel - Sustainable campus analysis of commuter data
  - Currently under-graduate research assistant at the University of Tennessee
- Mr. Joseph Drallmeier, (2016, 2017): ORAU HERE/SULI Student
  - Highlights: First published paper from research at ORNL, Winner – ASME ICED student presentation competition based on presentation at ORNL given at end of second summer.
  - Currently PhD student at the University of Michigan
- Ms. Dani Perdue (2016): GEM Fellow
  - Co-mentor with Robert Wagner
  - Vehicle systems simulations and analysis for solar panels with EVs
  - Currently PhD student at Rice University
- Ms. Nandini Raju (2015-2016): Clemson ICAR Industrial Intern, ASTRO
  - Engine cycle simulation using GT Suite for advanced combustion R&D
  - Highlights: First published paper
  - Currently research engineer at Fiat Chrysler Automotive (FCA)
- Ms. Karson Stone (2014): ORAU HERE/SULI Student
  - GHG analysis of advanced and alternative fuels
  - Currently logistics research at Walmart Corporate
- Ms. Michelle (Edwards) Hunt (2013, 2014): ORAU HERE/SULI Student
  - Robert Wagner Co-mentor
  - GHG analysis of alternative fuels
  - Currently Transportation Project Specialist at Tennessee Department of Transportation

#### Senior Mentor Advisees

- Ms. Karson Stone (2013): University of Tennessee
  - Senior mentor as part of UT honors program



- Regular meetings regarding professional development and career planning

University of Tennessee - DOE AVTC Communications Managers/ Interns:

*Trained, managed and mentored managers and interns on meeting DOE Advanced Vehicle Technology Competition (AVTC) goals, developing outreach plan, planning and executing public outreach and STEM events as outreach advisor (volunteer effort). Helped recruit previous communications managers to also help mentor new managers [In voluntary role as adjunct assistant professor at UTK]*

- Emily King Kinsey (2015-2017): EcoCAR 3 Communications Manager
  - Now communications staff at IACMI
- Elizabeth Salasin (2014-2015): EcoCAR 3 Communications Manager
  - Now Physician Recruiter for Centra Medical Group
- Sarah (Zimmerman) Sanders (2013-2014): EcoCAR 2 Communications Manager
  - Now digital media specialist, Libraries at the University of Tennessee
  - Previously director of Outreach for Legacy Parks Foundation in Knoxville TN
- Karson Stone (2012-2014): Communications Intern, EcoCAR 2
  - Currently logistics research at Walmart Corporate
- Katelynn Routh EcoCAR 2 Communications Manager – 2012-2013
  - Currently Organizational Change manger, Jacobs Engineering, Oak Ridge TN
- Victoria Kisluk – EcoCAR 2 Communications Manger 2011-2012
  - Currently Director, Student-Athlete Success, Texas A&M University-Commerce
- Amanda Womac – Challenge X - 2009
  - Currently Director of Communications, College of Arts & Sciences, U. of Tennessee
  - Mentored and trained as Challenge-X team lead while still in graduate school

## **OUTREACH TARGET AUDIENCES**

---

General public for alternative fuels and hybrid and electric vehicles, with a focus on East Tennessee and Southeast region. Broader clean energy and transportation science for next generation of Science, Technology, Engineering, and Math (STEM) professionals

## **SELECTED PUBLIC ENGAGEMENT AND OUTREACH EXAMPLES (DISTINCT FROM REQUIRED DUTIES)**

---

- **#AAASmtg** Twitter on Sustainable Transportation, 2020
  - Participate with other ORNL leaders to engage on twitter for #AAASmtg
- **ORISE Autonomous Driving: Education in Communication Competition, 2020**
  - Developed and judged competition for infographic on autonomous vehicles
  - <https://orise.orau.gov/resources/stem/scholarships.html>
- **Knoxville Earth Fest:** Annually starting in 2007
  - Major Earth Day event in Knoxville and surrounding region; average 10K people each event
  - Provide alternative fuel and hybrid vehicle displays + chats for public
- **City of Oak Ridge Earth Day:** Annually starting in 2006
  - Provide alternative fuel and hybrid vehicle displays; average 1–2K people each event
- **ORNL Earth Day—**Annually starting in 2009
  - Coordinate alternative fuel vehicle and hybrid vehicle displays
- **National Drive Electric Week:** 2013, 2014, 2015, 2016, 2017
  - Regional event for nationwide celebration to heighten awareness of today's widespread availability of plug-in vehicles
- **National Parks Facebook Live:** 2017

- Live interview celebrating US National Parks 100th anniversary and Manhattan Project park focusing on ORNL’s National Transportation Research Center
- <https://www.facebook.com/ManhattanProjectNPS/videos/1079446312151995/>
- **ARC Middle School Science Camp:** 2012,2013,2014,2015,2016,2017
  - Tour middle school science camp students at National Transportation Research Center; engage ORNL interns to assist with events
- **Pint of Science: 2016**
  - Engage with public on combustion science in regional event
- **Interview “Wrenchin’ Up with Jim Bates”:** 2016  
<https://www.youtube.com/watch?v=mI41VyyckEs&feature=youtu.be>
  - Interview conducted at premier automotive engineering conference (SAE World Congress) about printed utility vehicle for web series program to explain 3D printing
- **Interview “Translogic”** 2016: <http://www.autoblog.com/2016/06/30/3d-printed-utility-vehicle-wireless-home-translogic-203/>
  - Episode of popular automotive web series on AMIE project, including drive of printed utility vehicle at ORNL, discussion of other printed vehicles at ORNL
- **My Brother’s Keeper:** 2016
  - STEM activity for underrepresented STEM groups—tour 3D printed utility vehicle and house
- **L&N STEM Academy Transportation Summit:** 2014
  - Sustainable transportation displays and presentations
- **Run for Clean Air:** Organizer—2008–2013
  - 5K race with exhibits to promote knowledge and understanding of alternative fuels and clean transportation; >2000 people in attendance
- **UTK Engineers Day:** 2007, 2008, 2009, 2010, 2011, 2012, 2013
  - Showcase event for area high schoolers visiting UTK campus—displays
- **National Alternative Fuel Vehicle Day Odyssey:** 2006, 2008, 2010, 2012
  - Alternative fuel and hybrid display, how biodiesel is made; 1–5K people each event
- **Earth Day Green Celebratory UT Lady Vols Event:** 2008
  - Threw first pitch at UT Lady Vols Softball game as UT–Knoxville green celebrity

---

#### TECHNICAL SOCIAL MEDIA

**Linked-in:** <https://www.linkedin.com/in/scott-curran-21874511/>

**Twitter:** @ScottJCurran - <https://twitter.com/ScottJCurran>

**Instagram:** energyscience.scott