SAGE L. KOKJOHN

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Education

University of Wisconsin-Madison	Mechanical Engineering	Ph.D. 2012
University of Wisconsin-Madison	Mechanical Engineering	M.S. 2008
Iowa State University, Ames, IA	Mechanical Engineering	B.S. 2006

Professional Experience

Assistant Professor	University of Wisconsin – Madison	2013 – Present
Senior Research Engineer	Cummins Inc.	2012 – 2013
Graduate Research Assistant	University of Wisconsin-Madison	2007 – 2012

Biographical Statement

Professor Kokjohn uses detailed engine modeling and experiments to explain the mechanisms controlling high-efficiency combustion systems. His areas of interest include turbulent combustion model development and identification of pathways to achieve robust, high-efficiency energy conversion. He has published over 90 articles related to energy research in academic journals and conference proceedings and has been issued three US patents. Since joining the University of Wisconsin – Madison in 2013, Prof. Kokjohn has secured over $4.5M in external funding to support basic and applied energy research. He currently has ongoing projects funded by the Department of Energy (DOE), the Office of Naval Research (ONR), the National Science Foundation (NSF), Caterpillar, Ford, and Toyota.

Honors and Awards

SAE Max Bentele Award for Engine Technology Innovation, 2018

SAE Ralph R. Teetor Educational Award, 2018

Most Innovative Technical Solution – Nelson Institute Climate Leadership Challenge – (with R.M. Hanson, D.A. Splitter, and R.D. Reitz), 2010

SAE Excellence in Oral Presentation Award – “Investigation of Fuel Reactivity Stratification for Controlling PCI Heat-Release Rates Using High-Speed Chemiluminescence Imaging and Fuel Tracer Fluorescence”, 2012

Undergraduate Student Presentation Competition for ASME Internal Combustion Engine Division’s Fall Technical Conference (with Undergraduate Student Researcher Albert Gnadt), 2014.

Professional Societies

Society of Automotive Engineers (SAE)

American Society of Mechanical Engineers (ASME)

The Combustion Institute

Institute for Liquid Atomization and Spray Systems (ILASS)

Patents

1. Kokjohn, S.L. and Wickman, D., WARF Patent Application, P190068, Oct., 2018.
2. Supercritical fuel reforming for internal combustion engines, Wickman, D., Chuahy, F., and Kokjohn, S.L., US Patent Application P180102US01, Filed April 25, 2018.
3. Improved Compression Ignition Combustion in Rotary Engines for Higher Efficiency and Lower Pollutant Emissions, Reitz, R.D. and Kokjohn, S.L., US Patent US 9057321 B2, 2015.
4. Engine Combustion Control at Low Loads via Fuel Reactivity Stratification, Reitz, R.D., Hanson, R., Splitter, D. and Kokjohn, S.L., US Patent US8851045 B2, 2014.
5. Engine Combustion Control via Fuel Reactivity Stratification, Reitz, R.D., Hanson, R., Splitter, D. and Kokjohn, S.L., US Patent US8616177, 2013.

Research Publications

Kokjohn's publications have been cited over 3500 times and he has an h-index of 27. Figure 1 shows a summary of citations of Kokjohn's work from Google Scholar (10/26/2018). Kokjohn has published a total of 46 archival journal papers, 30 of them after starting his current position. He has 2 papers under review.

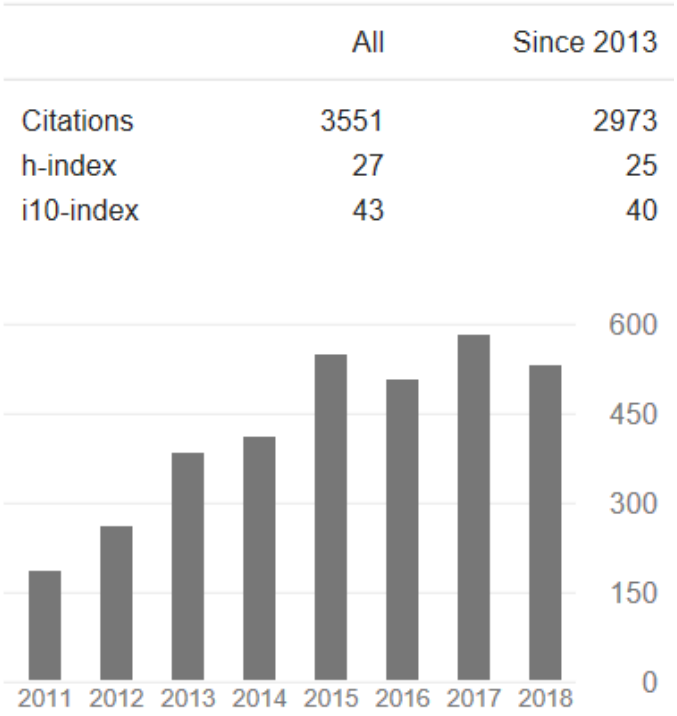

Figure 1. Citation count and summary for Kokjohn's publications (Google Scholar 10/26/2018).

Archival Research Publications (46 accepted/in-print, 2 under review)

1. Roberts, J.A., Kokjohn, S.L., Hou, D., and Huang, Y., "Performance of Gasoline Compression Ignition (GCI) with On-Demand Reactivity Enhancement over Simulated Drive Cycles," *SAE Int. J. Engines*, submitted June, 2018.

2. Kavuri, C., and Kokjohn, S.L., "Computational Investigation of the Factors Constraining High-Load Reactivity Controlled Compression Ignition (RCCI) Combustion," *Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering*, submitted May, 2018.
3. Chuahy, F.D.F, and Kokjohn, S.L. "The Combination of Solid Oxide Fuel Cells and Advanced Combustion Engines: A Pathway to 70% Electric Efficiency," *Applied Energy*, 235:391-408, 2019. https://doi.org/10.1016/j.apenergy.2018.10.132
4. Kavuri, C. and Kokjohn, S.L., "Exploring the Potential of Machine Learning in Reducing the Computational Time/Expense and Improving the Reliability of Engine Optimization Studies", *Int. J. Engine Research*, Accepted, 2019. https://doi.org/10.1177/1468087418808949
5. Chuahy, F.D.F. and Kokjohn, S.L., "System and second law analysis of the effects of reformed fuel composition in "single" fuel RCCI combustion," *SAE Int. J. Engines*, Accepted, Oct. 2018.
6. Roberts, J.A., Chuahy, F.D.F., Roy, S., and Kokjohn, S.L., "Isolation of the Parametric Effects of Pre-Blended Fuel on Low Load Gasoline Compression Ignition (GCI)", *Fuel*, 237:522-535, 2019, doi: 10.1016/j.fuel.2018.09.150
7. Kavuri, C., Paz, J., Staaden, D., and Kokjohn, S. L., "Experimental and Computational Study of Post Injection Strategies for Gasoline Compression Ignition (GCI) Combustion under High-Load Conditions: Understanding the Role of Premixed, Main and Post Injections in Soot Mitigation and Load Extension," *Fuel*, 233:834-850, 2018. doi: 10.1016/j.fuel.2018.06.137.
8. Chuahy, F.D.F, Olk, J., DelVescovo, D., and Kokjohn, S.L., "An Engine Size Scaling Method for Kinetically Controlled Combustion Strategies", *Int. J. Engine Research*, In Press, 2018. doi: 10.1177/1468087418786130.
9. Kavuri, C. and Kokjohn, S.L., "Computational Study to Identify Feasible Operating Space for a Mixed Mode Combustion Strategy: A Pathway for PCI High Load Operation," *Journal of Energy Resources Technology*, 140(8), 2018. doi: 10.1115/1.4039548.
10. Wissink, M., Curran, S.J., Kavuri, C. and Kokjohn, S.L., "Spray-Wall Interactions in a Small-Bore, Multi-Cylinder Engine Operating With Reactivity-Controlled Compression Ignition," *Journal of Engineering for Gas Turbines and Power*, 140(9), 2018. doi: 10.1115/1.4039817.
11. Benajes, J., Novella, R., Pastor, J.M., Hernandez-Lopez, A., and Kokjohn, S.L., "Computational Optimization of a Combustion System for a Stoichiometric DME Fueled Compression Ignition Engine," *Fuel*, 223:20-31, 2018. doi: 10.1016/j.fuel.2018.03.022
12. Li, Y., Jia, M., Kokjohn, S.L., Chang, Y., and Reitz, R.D., "Comprehensive Analysis of Exergy Destruction Sources in Different Engine Combustion Regimes," *Energy*, 149:697-708, 2018. doi: 10.1016/j.energy.2018.02.081
13. Benajes, J., Novella, R., Pastor, J.M., Hernandez-Lopez, A., and Kokjohn, S.L., "Computational optimization of the combustion system of a heavy duty direct injection diesel engine operating with dimethyl-ether," *Fuel*, 218:127-139, 2018. doi: 10.1016/j.fuel.2018.01.020
14. Wickman, D.D. and Kokjohn, S.L., "A Computational investigation of the potential for non-sooting fuels to enable ultra-low NOx and CO_2 emissions," *Fuel*, 216:648-684, 2018. doi: 10.1016/j.fuel.2017.12.014
15. Chuahy, F.D.F, and Kokjohn, S.L., "Effects of reformed fuel composition in "single" fuel reactivity controlled compression ignition combustion," *Applied Energy*, 208:1-11, 2017. doi: 10.1016/j.apenergy.2017.10.057

16. Ren, S., Kokjohn, S.L., Wang, Z., Liu, H., Wang, B., Wang, J., "A Multi-Component Wide Distillation Fuel (Covering Gasoline, Jet Fuel and Diesel Fuel) Mechanism for Combustion and PAH Prediction," *Fuel*, 208:447-468, 2017. doi: 10.1016/j.fuel.2017.07.009

17. Kavuri, C, and Kokjohn, S.L., "Computational Optimization of a Reactivity Controlled Compression Ignition (RCCI) Combustion System Considering Performance at Multiple Modes Simultaneously," *Fuel*, 207:702-718, 2017. doi: 10.1016/j.fuel.2017.06.071

18. Chuahy, F.D.F, and Kokjohn, S.L., "Effects of the Direct-Injected Fuel's Physical and Chemical Properties on Dual-Fuel Combustion," *Fuel*, 207:729-740, 2017. doi: 10.1016/j.fuel.2017.06.039

19. Chuahy, F.D.F, and Kokjohn, S.L., "High Efficiency Dual-Fuel Combustion through Thermochemical Recovery and Diesel Reforming," *Applied Energy*, 195:503-522, 2017. doi: 10.1016/j.apenergy.2017.03.078

20. Delvescovo, D., Kokjohn, S.L., and Reitz, R.D., "The Effects of Charge Preparation, Fuel Stratification, and Premixed Fuel Chemistry on Reactivity Controlled Compression Ignition (RCCI) Combustion," *SAE Int. J. Engines*, 10(4):1491-1505, 2017. doi: 10.4271/2017-01-0773.

21. Kavuri, C., Paz, J., and Kokjohn, S.L., "A Comparison of Reactivity Controlled Compression Ignition (RCCI) and Gasoline Compression Ignition (GCI) Strategies at High Load, Low Speed Conditions," *Energy Conversion and Management*, 127:324-341, 2016. doi: 10.1016/j.enconman.2016.09.026

22. Li, Y, Jia, M., Chang, Y., Kokjohn, S.L., and Reitz, R.D., "Thermodynamic energy and exergy analysis of three different engine combustion regimes," *Applied Energy*, 180:849-858, 2016. doi: 10.1016/j.apenergy.2016.08.038

23. Ra, Y. , Chuahy, F., and Kokjohn, S.L., "Development and validation of a reduced reaction mechanism describing diesel fuel / syngas co-oxidation," *Fuel*, 185:663-683, 2016. doi:10.1016/j.fuel.2016.07.039.

24. Kavuri, C., Tiry, M., and Kokjohn S.L., "Experimental and Computational Investigation of Soot Production from a Premixed Compression Ignition Engine using a Load Extension Injection," *International Journal of Engine Research*, 2016. doi: 10.1177/1468087416650073.

25. DelVescovo, D., Kokjohn, S.L., and Reitz, R.D., "The Development of an Ignition Delay Correlation for PRF Fuel Blends from PRF0 (n-heptane) to PRF100 (isooctane)," *SAE Int. J. Engines*, 9(1):520-535, *2016*. doi:10.4271/2016-01-0551.

26. Kavuri, C.N., Klos, D., Kokjohn S.L., and Hou, D., "Blending the Benefits of Reactivity Controlled Compression Ignition (RCCI) and Gasoline Compression Ignition (GCI) Combustion using an Adaptive Fuel Injection System," *International Journal of Engine Research*, 2015. doi: 10.1177/1468087415615255.

27. Pan, L., Kokjohn, S.L., and Huang, Z., "Development and validation of a reduced chemical kinetic model for DME combustion," *Fuel*, 160, 2015. doi:10.1016/j.fuel.2015.07.066

28. Klos, D. and Kokjohn, S.L., "Investigation of the Effect of Injection and Control Strategies on Combustion Instability in Reactivity Controlled Compression Ignition (RCCI) Engines," *Journal of Engineering for Gas Turbines and Power*, 138(1), 2015. doi: 10.1115/1.4031179

29. Bhagatwala, A., Sankaran, R., Kokjohn, S.L., Chen, J.H., "Numerical investigation of spontaneous flame propagation under RCCI conditions," *Combustion and Flame*, 162(9), 2015. doi: 10.1016/j.combustflame.2015.06.005

30. Klos, D., Janecek, D., and Kokjohn, S.L., "Investigation of the Combustion Instability-NOx Tradeoff in a Dual Fuel Reactivity Controlled Compression Ignition (RCCI) Engine," *SAE Int. J. Engines* 8(2):821-830, 2015, doi:10.4271/2015-01-0841.

31. Klos, D.T. and Kokjohn, S.L., "Investigation of the Sources of Combustion Instability in Low Temperature Combustion (LTC) Engines," *International Journal of Engine Research*, 22(1), 2014. doi: 10.1177/1468087414556135

32. Kokjohn, S.L., Musculus, M.P.B., and Reitz, R.D. "Evaluating Temperature and Fuel Stratification for Heat-Release Rate Control in a Reactivity-Controlled Compression-Ignition Engine using Optical Diagnostics and Chemical Kinetics Modeling," *Combustion and Flame*, 162(6), 2015. doi: 10.1016/j.combustflame.2015.04.009

Work performed prior to employment at UW-Madison

33. Kokjohn, S.L. and Reitz, R.D., "RCCI and Conventional Diesel Combustion: A Comparison of Methods to Meet Light-Duty NOx and Fuel Economy Targets," *International Journal of Engine Research*, Vol. 14, No. 5 pp. 452-468, 2013. doi: 10.1177/1468087413476032

34. Hanson, R.M., Curran, S., Wagner, R., Kokjohn, S.L., Splitter, D.A., and Reitz, R.D., "Piston Bowl Optimization for RCCI Combustion in a Light-Duty Multi-Cylinder Engine," SAE Int. J. Engines, Vol. 5, No. 2, pp. 286-299, 2012. https://doi.org/10.4271/2012-01-0380.

35. Kokjohn, S.L., Reitz, R.D., Splitter, D.A., and Musculus, M.P.B., "Investigation of Fuel Reactivity Stratification for Controlling PCI Heat-Release Rates Using High-Speed Chemiluminescence Imaging and Fuel Tracer Fluorescence," SAE Int. J. Engines, Vol. 5, No. 2, pp. 248-269, 2012. https://doi.org/10.4271/2012-01-0375.

36. Kokjohn, S.L., Splitter, D.A., Hanson, R.M., Reitz, R.D., Manente, V. and Johansson, B., "Modeling Charge Preparation and Combustion in Diesel Fuel, Ethanol, and Dual Fuel PCCI Engines," *Atomization and Sprays*, Vol. 21, No. 2, pp. 107-119, 2011.

37. Kokjohn, S.L., and Reitz, R.D., "Investigation of the Roles of Flame Propagation, Turbulent Mixing, and Volumetric Heat Release in Conventional and Low Temperature Diesel Combustion," *ASME J. Eng. Gas Turbines Power*, Vol. 133, No. 10, 2011.

38. Kokjohn, S.L., Hanson, R.M., Splitter, D.A., and Reitz, R.D., "Fuel Reactivity Controlled Compression Ignition (RCCI): A Pathway to Controlled High-Efficiency Clean Combustion," *International Journal of Engine Research*, Vol. 12, No. 3, pp. 209-226, 2011.

39. Puduppakkam, K.V., Kokjohn, S.L., Liang, L., Naik, C.V., Reitz, R.D., and Meeks, E., "Use of Detailed Kinetics and Advanced Chemistry-Solution Techniques in CFD to Investigate Dual-Fuel Engine Concepts," SAE Int. J. Engines, Vol. 4, No. 1, pp. 1127-1149, 2011. https://doi.org/10.4271/2011-01-0895.

40. Hanson, R.M., Kokjohn, S.L., Splitter, D.A., and Reitz, R.D., "Fuel Effects on Reactivity Controlled Compression Ignition (RCCI) Combustion at Low Load," SAE Int. J. Engines, Vol. 4, No. 1, pp. 394-411, 2011. https://doi.org/10.4271/2011-01-0361.

41. Kokjohn, S.L., Hanson, R.M., Splitter, D.A., Kaddatz, J., and Reitz, R.D., "Fuel Reactivity Controlled Compression Ignition (RCCI) Combustion in Light- and Heavy-duty Engines," SAE Int. J. Engines, Vol. 4, No. 1, pp. 360-374, 2011. https://doi.org/10.4271/2011-01-0357.

42. Bergin, M., Musu, E., Kokjohn, S.L., and Reitz, R.D., "Examination of Initialization and Geometric Details on the Results of CFD Simulations of Diesel Engines," *ASME J. Eng. Gas Turbines Power*, Vol. 133, No. 4, 2011.

43. Kokjohn, S.L., and Reitz, R.D., "An Investigation of Charge Preparation Strategies for Controlled PPCI Combustion using a Variable Pressure Injection System," *International Journal of Engine Research*, Vol. 11, No. 4, pp. 257-282, 2010. https://doi.org/10.1243/14680874JER06409.

44. Splitter, D.A., Hanson, R.M., Kokjohn, S.L., Rein, K., Sanders, S., and Reitz, R.D., "An Optical Investigation of Ignition Processes in Fuel Reactivity Controlled PCCI Combustion," SAE Int. J. Engines, Vol. 3, No. 1, pp. 142-162, 2010. https://doi.org/10.4271/2010-01-0345

45. Hanson, R.M., Reitz, R.D., Splitter, D.A., and Kokjohn, S.L., "An Experimental Investigation of Fuel Reactivity Controlled PCCI Combustion in a Heavy-Duty Engine," *SAE Int. J. Engines*, Vol. 3, No. 1, pp. 700-716, 2010. https://doi.org/10.4271/2010-01-0864

46. Kokjohn, S.L., Hanson, R.M., Splitter, D.A., and Reitz, R.D., "Experiments and Modeling of Dual Fuel HCCI and PCCI Combustion Using In-Cylinder Fuel Blending," *SAE Int. J. Engines*, Vol. 2, No. 2, pp. 24-39, 2009. DOI: 10.4271/2009-01-2647

47. Kokjohn, S.L., Swor, T.A., Andrie, M.J., and Reitz, R.D., "Experiments and Modeling of Adaptive Injection Strategies (AIS) in Low Emissions Diesel Engines," *SAE Int. J. Engines*, Vol. 2, No. 1, pp. 16-32, 2009. https://doi.org/10.4271/2009-01-0127.

48. Kokjohn, S.L. and Reitz, R.D. "A Computational Investigation of Two-stage Combustion in a Light-Duty Engine," *SAE Int. J. Engines*, Vol. 1, No. 1, pp. 1083-1104, 2008. DOI: 10.4271/2008-01-2412.

Conference Publications

1. Chuahy, F. Strickland, T., Walker, N.R., and Kokjohn, S.L. “Effects of Reformed Fuel on Dual-Fuel Combustion Particulate Morphology”, 2018 Spring Technical Meeting, Central States Section of The Combustion Institute, May 20–22, 2018, Minneapolis, Minnesota.
2. Strickland, T. and Kokjohn, S.L. “Simulation of a diesel fuel jet with a 3D stochastic soot model”, 2018 Spring Technical Meeting, Central States Section of The Combustion Institute, May 20–22, 2018, Minneapolis, Minnesota.
3. Paliwal, S., Andrie, M.J., and Kokjohn, S.L. “Effect of Thermal Barrier Coatings on the Efficiency and Knock Limit of a Small Natural Gas Fueled Spark Ignited Engine”, 2018 Spring Technical Meeting, Central States Section of The Combustion Institute, May 20–22, 2018, Minneapolis, Minnesota.
4. Roberts, J.A., Kokjohn, S.L., Hou, D., and Huang, Y., "Performance of Gasoline Compression Ignition (GCI) with On-Demand Reactivity Enhancement over Simulated Drive Cycles," SAE Technical Paper 2018-01-0255, 2018, https://doi.org/10.4271/2018-01-0255. {refereed}.
5. Chuahy, F.D.F., Olk, J., and Kokjohn, S.L., "Reformed Fuel Substitution for Transient Peak Soot Reduction," SAE Technical Paper 2018-01-0267, 2018, https://doi.org/10.4271/2018-01-0267. {refereed}.
6. Chuahy, F.D.F. and Kokjohn, S.L., "System and Second Law Analysis of the Effects of Reformed Fuel Composition in “Single” Fuel RCCI Combustion," SAE Technical Paper 2018-01-0264, 2018, https://doi.org/10.4271/2018-01-0264. {refereed}.
7. Paz, J., Staaden, D., and Kokjohn, S.L., "Gasoline Compression Ignition Operation of a Heavy-Duty Engine at High Load," SAE Technical Paper 2018-01-0898, 2018, https://doi.org/10.4271/2018-01-0898. {refereed}.
8. Benajes, J.[D], Hernandez-Lopez, A., Novella, R., Pastor, J.M., and Kokjohn, S.L., “Numerical Optimization of the Combustion System of a HD Compression Ignition Engine Fueled with DME Considering Current and Future Emission Standards,” SAE Technical Paper 2018-01-0247, 2018, https://doi.org/10.4271/2018-01-0247.

9. Kavuri, C. and Kokjohn, S.L., “Computational Study to Identify Feasible Operating Space for a Mixed Mode Combustion Strategy: A Pathway for PCI High Load Operation”, ASME ICEF2017-3668, ASME 2017 Internal Combustion Engine Division Fall Technical Conference, Seattle, Washington, USA, October 15–18, 2017. {refereed}.
10. Wissink, M., Curran, S.J., Kavuri, C. and Kokjohn, S.L., “Spray-Wall Interactions in a Small-Bore, Multi-Cylinder Engine Operating With Reactivity-Controlled Compression Ignition,” ASME Paper No. ICEF2017-3607, ASME 2017 Internal Combustion Engine Division Fall Technical Conference, Seattle, Washington, USA, October 15–18, 2017. {refereed}.
11. Chuahy, F.. and Kokjohn, S.L. “Single fuel RCCI combustion using reformed fuel,” 10th US National Technical Meeting of the Combustion Institute, University of Maryland at College Park, College Park, MD, April 23-26, 2017.
12. Kavuri, C. and Kokjohn, S.L. “Investigating Air Handling Requirements of High Load Low Speed Reactivity Controlled Compression Ignition (RCCI) Combustion,” 2016-01-0782, SAE World Congress 2016. {refereed}.
13. Chuahy, F. and Kokjohn, S.L., “Effects of the direct-injected fuel Physical Properties under early and late Reactivity Controlled Compression Ignition (RCCI) Combustion,” ILASS Americas 27th Annual Conference on Liquid Atomization and Spray Systems, Raleigh, NC, May 2015.
14. Chuahy, F. and Kokjohn, S.L., “Effect of the Direct-Injected Fuels Physical Properties under Reactivity Controlled Compression Ignition (RCCI) Combustion,” 25th International Multidimensional Engine Modeling User's Group Meeting, Detroit, MI, April 20, 2015.
15. Klos, D. and Kokjohn, S.L., “Investigation of the Effect of Injection and Control Strategies on Combustion Instability in Reactivity Controlled Compression Ignition (RCCI) Engines,” Paper ICEF2014-5419, Proceedings of ICEF 2014, ASME Internal Combustion Engine Division Fall Technical Conference, Columbus, IN, October 2014. {refereed}
16. Klos, D.T. and Kokjohn, S.L., “Investigation of the Effect of Injection and Control Strategies on Combustion Instability in Reactivity Controlled Compression Ignition (RCCI) Engines,” 24th International Multidimensional Engine Modeling User's Group Meeting, Detroit, MI, April 7, 2014.
17. Gnadt, A. and Kokjohn, S.L. “Cycle Simulations “RCCI Cycle-Simulations with Stochastic Operating Conditions,” ASME Internal Combustion Engine Division Fall Technical Conference, Columbus, IN, October 20, 2014.
18. Bhagatwala, A.[B], Sankaran, R.[A], Kokjohn, S.L., Chen, J.H.[A], “Numerical investigation of spontaneous flame propagation under RCCI conditions,” American Physical Society, 67th Annual Meeting of the APS Division of Fluid Dynamics, Vol. 59, No 20, San Francisco, CA, Nov. 25, 2014
19. Lim, J.H., Walker, N.R., Kokjohn, S.L., Reitz, R.D., "High Speed Dual-fuel RCCI Combustion for High Power Output," SAE Paper 2014-01-1320, Detroit, MI, April 9, 2014. {refereed}
20. Reitz, R.D. and Kokjohn, S.L., "Comparison of Conventional Diesel and Reactivity Controlled Compression Ignition Combustion in a Light-Duty Engine," 18th Directions in Engine-Efficiency and Emissions Research (DEER) Conference Detroit, MI, October 18, 2012.
21. Kaddatz, J., Kokjohn, S.L., Andrie, M.J., and Reitz, R.D., "Light-duty Reactivity Controlled Compression Ignition Combustion using a Cetane Improver," SAE Paper 2012-01-1110, Detroit, MI, April 25, 2012. {refereed}
22. Splitter, D.A., Wissink, M., Kokjohn, S.L., and Reitz, R.D., "Effect of Compression Ratio and Piston Geometry on RCCI Load Limits and Efficiency," SAE paper 2012-01-0383, Detroit, MI, April 25, 2012. {refereed}

23. Kokjohn, S.L., Musculus, M.P.B., Reitz, R.D., and Splitter, D.A., "In-Cylinder Mechanisms of PCI Heat-Release Rate Control by Fuel Reactivity Stratification," 17th Directions in Engine-Efficiency and Emissions Research (DEER) Conference Detroit, MI, October 03, 2011.
24. Kokjohn, S.L., Musculus, M.P.B., and Reitz, R.D., "Chemiluminescence and Fuel PLIF Imaging of Reactivity Controlled Compression Ignition (RCCI) Combustion," ILASS-Americas 23rd Annual Conference on Liquid Atomization and Spray Systems, Ventura, CA, May 15, 2011 - May 18, 2011.
25. Splitter, D.A., Hanson, R.M., Kokjohn, S.L., Wissink, M., and Reitz, R.D., "Injection Effects in Low Load RCCI Dual-Fuel Combustion," SAE Paper 2011-24-0047, Detroit, MI, April 12, 2011. {refereed}
26. Splitter, D.A., Hanson, R.M., Kokjohn, S.L., and Reitz, R.D., "Reactivity Controlled Compression Ignition (RCCI) Engine Operation at Mid and High Loads with Conventional and Alternative Fuels," SAE Paper 2011-01-0363, Detroit, MI, April 12, 2011. {refereed}
27. Kokjohn, S.L. and Reitz, R.D., "A Comparison of Conventional Diesel and RCCI Combustion using Detailed CFD Modeling," 21st International Multidimensional Engine Modeling User's Group Meeting, Detroit, MI, April 11, 2011.
28. Puduppakkam, K.V., Kokjohn, S.L., Liang, L., Naik, C.V., Reitz, R.D., and Meeks, E., "Use of Detailed Kinetics and Advanced Chemistry-Solution Techniques in CFD to Investigate Dual-Fuel Engine Concepts," THIESEL 2010 Conference on Thermo- and Fluid Dynamic Processes in Diesel Engines, Valencia, Spain, September 13, 2010 - September 16, 2010.
29. Splitter, D.A., Hanson, R.M., Kokjohn, S.L., and Reitz, R.D., "Improving Engine Performance by Optimizing Fuel Reactivity in a Dual-Fuel PCCI strategy," THIESEL 2010 Conference on Thermo- and Fluid Dynamic Processes in Diesel Engines, Valencia, Spain, September 13, 2010 - September 16, 2010.
30. Kokjohn, S.L., Reitz, R.D., Manente, V., and Johansson, B., "Modeling Charge Preparation and Combustion in an Ethanol Fueled PPCI Engine," ILASS-Americas 22nd Annual Conference on Liquid Atomization and Spray Systems, Cincinnati, OH, May 17, 2010 - May 19, 2010.
31. Swor, T.A., Kokjohn, S.L., Andrie, M.J., and Reitz, R.D., "Improving Diesel Engine Performance Using Low and High Pressure Split Injections for Single Heat Release and Two-Stage Combustion," SAE paper 2010-01-0340, Detroit, MI, April 15, 2010. {refereed}
32. Curran, S., Prikhodko, V., Wagner, R., Cho, K., Sluder, C., Kokjohn, S.L., and Reitz, R.D., "In-Cylinder Fuel Blending of Gasoline/Diesel for Improved Efficiency and Lowest Possible Emissions on a Multi-Cylinder Engine," SAE Paper 2010-01-2206, Detroit, MI, April, 13, 2010. {refereed}
33. Kokjohn, S.L., and Reitz, R.D., "Characterization of Dual-Fuel PCCI Combustion in a Light-Duty Engine," 20th International Multidimensional Engine Modeling User's Group Meeting, Detroit, MI, April 12, 2010.
34. Reitz, R. D., Kokjohn, S. L., Hanson, R., and Splitter, D, "High-Efficiency, Ultra-Low Emission Combustion in a Heavy-Duty Engine via Fuel Reactivity Control," Global Powertrain Congress, Troy, MI, November 05, 2009.
35. Reitz, R. D., Kokjohn, S. L., Hanson, R., and Splitter, D, "High-Efficiency, Ultra-Low Emission Combustion in a Heavy-Duty Engine via Fuel Reactivity Control," 15th Diesel Engine-Efficiency and Emissions Research (DEER) Conference, Dearborn, MI, August 03, 2009.
36. Kokjohn, S. L., and Reitz, R.D., "A Modeling Study of Charge Preparation in an HCCI Engine Using a Variable Pressure Pulse (VPP) Injection System and Optimized PRF Blends," ICLASS-2009, 11th Triennial International Conference on Liquid Atomization and Spray Systems, Vail, Colorado USA, July 30, 2009.

37. Kokjohn S. L., and Reitz, R.D., "Investigation of Design Parameters in Partially Premixed Compression Ignition Combustion Using Adaptive Injection Strategies," Paper ICES2009-76030, Proceedings of ICES2009, ASME Internal Combustion Engine Division, Spring Technical Conference, Milwaukee, WI, May 03, 2009. {refereed}
38. Shi, Y., Kokjohn, S. L., Ge, H. W., and Reitz, R. D., "Efficient Multi-dimensional Simulation of HCCI and DI Engine Combustion with Detailed Chemistry," SAE Paper 2009-01-0701, 2009. {refereed}
39. Kokjohn, S. L., and Reitz, R.D., "A Modeling Study of Charge Preparation and Combustion in an HCCI Engine Using a Variable Pressure Pulse (VPP) Injection System and Optimized PRF Blends," International Multidimensional Engine Modeling User's Group Meeting, Detroit, MI, April 19, 2009.
40. Bergin, M., Musu, E., Kokjohn, S. L., and Reitz, R.D., "Examination of Initialization and Geometric Details on the Results of CFD Simulations of Diesel Engines," International Multidimensional Engine Modeling User's Group Meeting, Detroit, MI, April 19, 2009.
41. Reitz, R.D., Kokjohn, S. L., Swor, T. A., and Andrie, M.J., "Experiments and Modeling of Two-Stage Combustion for Low Emissions Diesel Engines," 14th Diesel Engine-Efficiency and Emissions Research (DEER) Conference, Dearborn, MI, August 04, 2008 - August 07, 2008.
42. Abani, N., Kokjohn, S. L., Park, S. W., Bergin, M., Munnannur, A., Ning, W., Sun. Y., and Reitz, R.D. "An Improved Spray Model for Reducing Numerical Parameters Dependencies in Diesel Engine CFD Simulations, " SAE paper 2008-01-0970, Special Publication, Multi-Dimensional Engine Modeling, Detroit, MI, April 14, 2008.
43. Kokjohn, S. L., and Reitz, R.D., "A Computational Investigation of Two-Stage Combustion in a Light-Duty Diesel Engine," ILASS Americas, 21st Annual Conference on Liquid Atomization and Spray Systems, Orlando, Florida, May 18, 2008 - May 21, 2008.
44. R.D., "An Improved Spray Model for Reducing Numerical Parameters Dependencies in Diesel Engine CFD Simulations, " SAE paper 2008-01-0970, Special Publication, Multi-Dimensional Engine Modeling, Detroit, MI, April 14, 2008. {refereed}
45. Kokjohn, S. L., and Reitz, R.D., "A Computational Investigation of Two-Stage Combustion in a Light-Duty Diesel Engine," International Multidimensional Engine Modeling User's Group Meeting, Detroit, MI, April 13, 2008.
46. Sun, Y., Kokjohn, S. L., Weninger, E., and Reitz, R. D., "Adaptive Injection Strategies for Ultra- Low Emissions Diesel Engines," 13th Diesel Engine Emission Reduction Conference, Detroit, MI, August 24, 2007.

Research Presentations

1. “Advanced Combustion: Challenges and Opportunities”, University of Michigan – Ann Arbor, August 16, 2018.
2. “Advanced Combustion: Challenges and Opportunities”, Purdue University, July, 24th, 2018.
3. “Advanced Combustion: Challenges and Opportunities”, 2017 Syracuse University, October, 4th, 2017.
4. “Fuel Reforming as an Enabler for Improved Thermodynamic Efficiency”, DOD Inter Agency Power Group Mechanical Working Group Meeting, Southwest Research Institute, San Antonio, TX, May, 3, 2017.
5. “Enabling High Efficiency Combustion using Fuel Reforming”, DOD Inter Agency Power Group Mechanical Working Group Meeting, Army Research Labs, Washington, D.C., May, 19, 2016.

6. “State of Engine Technology and Dedicated Transportation Systems as an Enabler”, Workshop: Freight innovations to optimize regional food resiliency, Chicago, IL., January 5th, 2016.
7. “Enabling High Efficiency Operation Using Reactivity Controlled Compression Ignition”, Gasoline Compression Ignition Symposium, Capri, Italy, September 17, 2015.
8. “Challenges surrounding engine enhancements with emissions reduction potential”, Expert Roundtable on Emerging Technologies in Off-Road Vehicles, Ottawa, Canada, December 4th, 2014.
9. “RCCI Combustion: A Pathway to Address the Transportation Fuel Imbalance”, Invited Lecture, Engineering Physics 602 Seminar, UW-Madison, September 22, 2014.
10. “RCCI combustion: a pathway to high-efficiency gasoline engines”, Tsinghua University, Beijing, China, September 1, 2014.
11. “Achieving High Efficiency Combustion by Controlling Fuel Reactivity”, Chicago Section of the American Institute of Chemical Engineers (AICHe), Schaumburg, IL, November 12, 2013.
12. “Maximizing Engine Efficiency by Controlling Fuel Reactivity Using Conventional and Alternative Fuels”, Wisconsin Energy Institute (WEI) Bioenergy Showcase, Madison, WI, October 16th, 2013.
13. “Opportunities for combustion model development with applications to high-efficiency engines”, High-Performance Computational Science with Structured Meshes and Particles (HPCS-SMP) Workshop, NSF Workshop at Rice University, Houston, TX, September 23rd, 2013

Students Advised

Professor Kokjohn has focused on preparing the next generation of researchers in the area of combustion and energy conversion. He has or is currently advising 6 post-doctoral researchers (previous = 4 and current = 2), 6 PhD students (graduated = 4 and current = 2), 10 M.S. students (graduated = 4 and current = 6), 6 under graduate researchers, and 6 visiting PhD students (previous = 4 and current = 2). Additionally, his externally funded research program supports several staff members.

Master of Science Students – Graduated (4)

1. Jamen Olk, Mechanical Engineering, 7/2017
   Thesis title: Multi-cylinder reformed fuel combustion
   Current Position: Engineer at Polaris
2. Jordan Paz, Mechanical Engineering, 6/2017
   Thesis title: An Investigation into Gasoline Operation in a Heavy Duty Compression Ignition Engine
   Current Position: Engineer at Bosch
3. Michael Tiry, Mechanical Engineering, 1/2016
   Thesis title: Factors influencing load limits of reactivity controlled compression ignition combustion
   Current Position: Engineer at Harley Davidson
4. David Klos, Mechanical Engineering, 5/2015
   Thesis title: Investigations of Low Temperature Combustion Engine Design and Combustion Instability
   Current Position: Engineer at SpaceX

PhD Students – Graduated (4)

1. John Roberts, Mechanical Engineering, 8/2018
   Thesis title: Isolation of Fuel Property and Boundary Condition Effects on Low Load Gasoline Compression Ignition (GCI)
   Current Position: Research Engineer at Sierra Nevada Corp.

2. Flavio Chuahy, Mechanical Engineering, 5/2018
   Thesis title: A Pathway to Higher Efficiency Internal Combustion Engines through Thermochemical Recovery and Fuel Reforming
   Current Position: Research Engineer at Cummins
3. Chaitanya Kavuri, Mechanical Engineering, 2/2018
   Thesis title: Addressing the Challenges of Advanced Compression Ignition Strategies using Optimization Techniques with Machine Learning
   Current Position: Research Engineer at Caterpillar
4. Dan Delvescovo, Mechanical Engineering, 5/2016 (Co-Advised with Reitz)
   Thesis title: The Effects of Fuel Stratification and Heat Release Rate Shaping in Reactivity Controlled Compression Ignition (RCCI) Combustion
   Current Position: Assistant Professor at Oakland University

Master of Science Students – In Progress (6)

1. Austin Nawrocki, Mechanical Engineering, expected 12/2018
   Thesis title: Sources and Impacts of Combustion Instability
   Plans to continue to PhD in Kokjohn's Group: No
2. Saager Paliwal, Mechanical Engineering, expected 12/2018
   Thesis title: Analysis of a Residential Combined Heat and Power System
   Plans to continue to PhD in Kokjohn's Group: No
3. Daniel Staaden, Mechanical Engineering, expected 12/2018
   Thesis title: Advanced combustion engine experiments
   Plans to continue to PhD in Kokjohn's Group: No
4. Noah Breneman, Mechanical Engineering, expected 12/2019
   Thesis title: Advanced air handling systems for small engines
   Plans to continue to PhD in Kokjohn's Group: Yes
5. Aravindh Babu, Mechanical Engineering, expected 12/2019
   Thesis title: Fuel property impacts on gasoline compression ignition combustion
   Plans to continue to PhD in Kokjohn's Group: Yes
6. Taylor Ross, Mechanical Engineering, expected 12/2020
   Thesis title: Catalyst thermal management
   Plans to continue to PhD in Kokjohn's Group: No

PhD Students – In Progress (2)

1. Arun Ravindran, Mechanical Engineering, expected 9/2019
   Thesis title: Modeling fuel property effects on GDI-SI cold-start
   PhD qualifying exam passed: Yes
   PhD preliminary exam passed: No
2. Tyler Strickland, Mechanical Engineering, expected 9/2019
   Thesis title: Detailed PM Simulations in Low Temperature Combustion
   PhD qualifying exam passed: Yes
   PhD preliminary exam passed: No

Post-Doctoral Students (4 Completed – 2 active)

1. Dr. Wonah Park, PhD Mechanical Engineering, Seoul National University (Seoul, South Korea) 10/2014 – 4/01/2015 (Currently Staff Member at Korea Institute of Machinery & Materials)

2. Dr. Michael Bergin, PhD Mechanical Engineering, University of Wisconsin-Madison, 10/2014 – 7/2015 (Currently Staff Engineer at Wisconsin Engine Research Consultants)
3. Dr. Sumit Roy, PhD Mechanical Engineering, 9/2015-9/2016, (Currently NIT Agartala)
4. Dr. Apeng Zhou, PhD Mechanical Engineering, Syracuse University, 7/2017-6/2018 (Currently Research Engineer at Clear Flame, LLC)
5. Dr. Nicholas Ryan Walker, PhD Mechanical Engineering, University of Wisconsin-Madison, 5/2016-Present
6. Dr. Nimal Naser, PhD Mechanical Engineering, King Abdullah University of Science and Technology (KAUST), 11/2018-Present

Research Staff Supported by Kokjohn

1. Dr. David Wickman 10/2014 – 7/2015 PhD Mechanical Engineering, University of Wisconsin-Madison, (Currently Staff Engineer at Wisconsin Engine Research Consultants)
2. Dr. Youngchul Ra 8/2014 – 8/2015, PhD Mechanical Engineering, Massachusetts Institute of Technology, (Currently Associate Professor, Michigan Technological University)
3. Mr. Michael Andrie 1/2016 – Present, M.S. Agricultural Engineering, University of Minnesota (Kokjohn supports at 25% rate)
4. Dr. Glenn Bower 1/2016 – Present, PhD Mechanical Engineering, University of Wisconsin-Madison, (Kokjohn supports at 1 month per year)

Undergraduate Students

1. Albert Gnadt, Mechanical Engineering, Spring 2014
   Project: RCCI Cycle-Simulations with Stochastic Operating Conditions
   Remarks: Engine Research Center Undergraduate Research Fellowship, 2 credit independent study.
   Current status: Graduate Student at MIT.
2. Aaron Spinosa, Mechanical Engineering, Spring 2015
   Project: Characterization of fuel injection systems
   Remarks: Engine Research Center Undergraduate Research Fellowship, 3 credit independent study.
   Current status: Engineer at Ford.
3. Saager Paliwal, Mechanical Engineering, Spring 2016
   Project: Exhaust gas speciation in low temperature combustion
   Remarks: Engine Research Center Undergraduate Research Fellowship, 3 credit independent study.
   Current status: MS Student in Prof. Kokjohn's Group
4. Noah Breneman, Mechanical Engineering, Spring 2017
   Project: Simulation of conjugate heat transfer
   Remarks: Engine Research Center Undergraduate Research Fellowship, 3 credit independent study.
   Current status: MS Student in Prof. Kokjohn's Group
5. Cal Kirley, Mechanical Engineering, Spring 2017
   Project: Friction simulation
   Remarks: Engine Research Center Undergraduate Research Fellowship, 3 credit independent study.
   Current status: Undergraduate at UW-Madison
6. Jackson Rutledge, Mechanical Engineering, Spring 2018
   Project: System simulation
   Remarks: Engine Research Center Undergraduate Research Fellowship, 3 credit independent study.
   Current status: Undergraduate at UW-Madison

Visiting Students

1. Lun Pan: Visiting student from Prof. Huang's group at Tsinghua University (China) (advised at UW by Kokjohn from Aug. 2014 to Aug. 2016). Supported by China Scholarship Council. Received PhD from Tsinghua University in Sept. 2016. Currently an engineer at Tenneco.
2. Yaopeng Li: Visiting student from Prof. Jia's group at Dalian University of Technology (China) (advised at UW by Kokjohn from Aug. 2015 to Aug. 2016). Supported by China Scholarship Council. Received PhD from Dalian University of Technology in December 2016. Currently a post doctoral researcher at Dalian University.
3. Alberto Hernandez: Visiting student from Prof. Novella's group at Universitat Politècnica de València (Spain) (advised at UW by Kokjohn from June 2015 to Aug. 2015). Currently PhD student at Universitat Politècnica de València.
4. Shuojin Ren: Visiting student from Prof. Zhi Wang's group at Tsinghua University (China) (advised at UW by Kokjohn from Aug. 2016 to Aug. 2017). Supported by China Scholarship Council.
5. Feiyu Yang: Visiting student from Prof. Huang's group at Xi'an Jiaotong University's (China) (advised at UW by Kokjohn from Aug. 2017 to Aug. 2018). Supported by China Scholarship Council.
6. Xinlei Liu: Visiting student from Prof. Zhi Wang's group at Tsinghua University (China) (advised at UW by Kokjohn from Aug. 2017 to July 2019). Supported by China Scholarship Council.

Research Funding

Professor Kokjohn has built a diverse research funding portfolio capable of sustaining his research efforts throughout the up-and-down cycles of federal and industrial funding. Since joining UW-Madison as Faculty in 2013, Kokjohn has secured $4.67M in funding to support his group's research efforts. Figure 2 shows the cumulative funding awarded to Professor Kokjohn; 79% of this funding has been awarded as a sole PI effort. Figure 3 shows the funding split between federal programs, industrial awards, and internal competition. While federal funding makes up the largest portion of Kokjohn's external research budget (65%), his interactions with industry are also important as they ensure his research has a real impact on reducing emissions and fuel consumption for future energy conversion devices.

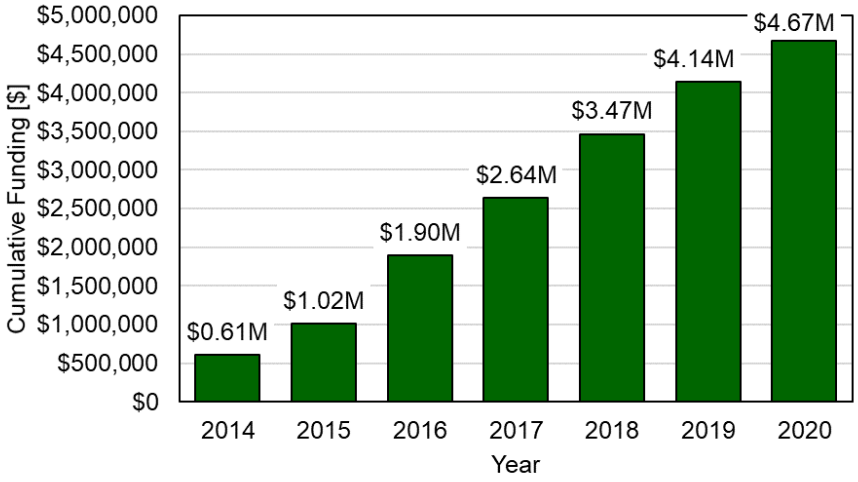

Figure 2. Cumulative funding awarded to Professor Kokjohn. Note that the funding shown is only the portion used to support activities in Kokjohn's group and does include funding managed by Kokjohn, but spent by external partners. The amount managed by Kokjohn, but spent by external partners would add an additional $1.2M in federal funding.

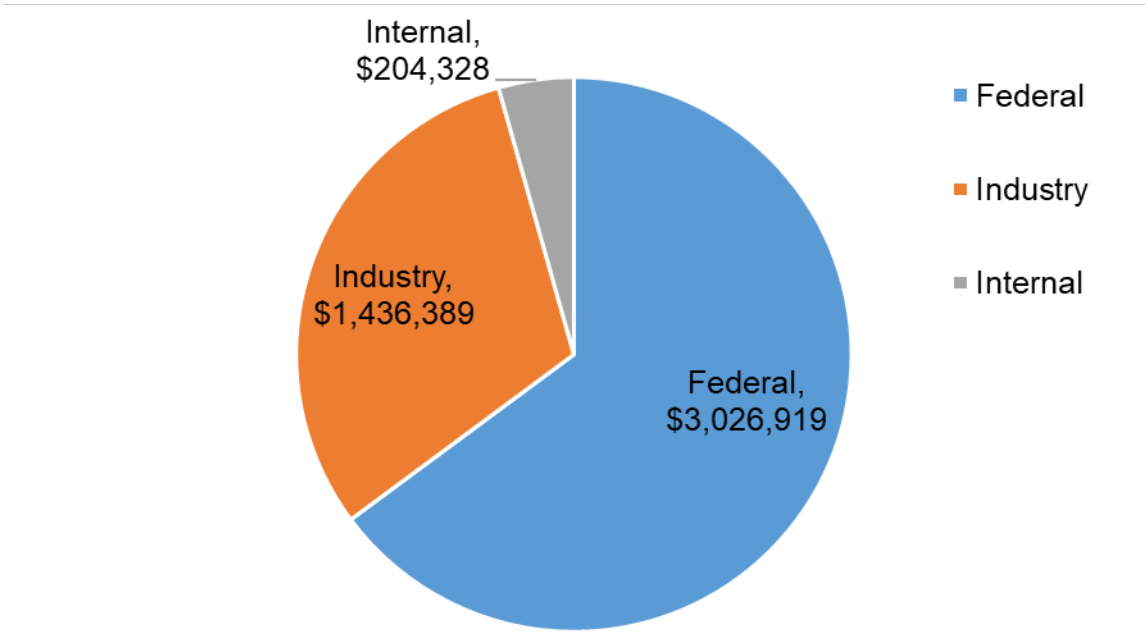

Figure 3. Funding awarded to Prof. Kokjohn split into federal programs, industrial awards, and internal competitions. Note that the funding shown is only the portion used to support activities in Kokjohn's group and does include funding managed by Kokjohn, but spent by external partners. The amount managed by Kokjohn, but spent by external sub-contracts would add an additional $1.2M in federal funding.

a) Sole PI external awards

1. An Integrated High Pressure Solid Oxide Fuel Cell (SOFC) and Premixed Compression Ignition (PCI) Engine System

Sponsor:	Department of Energy – ARPAe (notified of award, currently in budget negotiations)
Capacity:	PI of Program (Major Partners: Caterpillar and United Technologies Research Center)
PI:	Sage Kokjohn
Amount:	$ 1,724,875 (Federal Share)
Project Duration	7/1/2018-6/30/2020

2. Modeling DISI Cold-Start - 3

Sponsor:	Ford University Research Program (URP)
Capacity:	Sole PI
Project Duration	4/1/2018-3/31/2021

3. Advanced Combustion - Experiments

Sponsor:	Caterpillar
Capacity:	Sole PI
Project Duration	1/1/2018-12/31/2018

4. Combustion LES for Prediction of Cycle-to-Cycle Variability for Advanced Combustion

Sponsor:	Toyota
Capacity:	Sole PI
Project Duration	8/1/2017-7/31/2019

5. CFD Methodology Development for Diesel Engine at Cold Idle Condition

Sponsor:	Ford University Research Program (URP)
Capacity:	Sole PI
Project Duration	5/1/2017-4/30/2020

6. Workshop: The Future of Modeling and Simulation for Internal Combustion Engines

Sponsor:	NSF
Capacity:	Sole PI
Amount:	$6,519
Project Duration	6/1/2017 – 11/30/2017

7. Advanced Combustion – Experiments – 3

Sponsor:	Caterpillar
Capacity:	Sole PI
Project Duration	1/1/2017-12/31/2017

8. Advanced Combustion Systems and Approaches for 2050

Sponsor:	Toyota
Capacity:	Sole PI
Project Duration	1/1/2016-5/31/2016

9. SCR Entitlement for Ultra-Low NOx Emissions

Sponsor:	Cummins Inc.
Capacity:	Sole PI

10. Assessment of Soot Prediction using CONVERGE CFD

Sponsor:	Convergent Science Inc.
Capacity:	Sole PI
Project Duration	9/1/2016-8/31/2019

11. Computational Fluid Dynamics

Sponsor:	Oak Ridge National Laboratory
Capacity:	Sole PI
PI:	Sage Kokjohn
Amount:	$45,000
Project Duration	7/1/2016-12/31/2016

12. Development and Validation of an Improved Soot Model Considering a Stochastic Solution to the Population Balance Equations

Sponsor:	Department of Energy - Vehicle Technologies Program
Amount:	$501,919
Capacity:	Sole PI
Project Duration	1/1/2016-12/31/2018

13. Advanced Combustion – Modeling – 2

Sponsor:	Caterpillar
Capacity:	Sole PI
Project Duration	1/1/2016-12/31/2016

14. Advanced Combustion – Experiments – 2

Sponsor:	Caterpillar
Capacity:	Sole PI
Project Duration	1/1/2016-12/31/2016

15. Spark-Assisted HCCI Residential CHP

Sponsor:	Department of Energy – ARPAe (subcontract: Wisconsin Engine Research Consultants)
Amount:	$876,095
Capacity:	Sole PI
Project Duration	12/16/2015-12/15/2018

16. Modeling of DISI Cold Start - 2

Sponsor:	Ford University Research Program (URP)
Capacity:	Sole PI
Project duration	9/1/2015-8/31/2018

17. Modeling of DISI Cold Start - 1

Sponsor:	Ford
Capacity:	Sole PI

18. Advanced Combustion – Modeling - 1

Sponsor:	Caterpillar
Capacity:	Sole PI
Project Duration	1/1/2015-12/31/2015

19. Advanced Combustion – Experiments - 1

Sponsor:	Caterpillar
Capacity:	Sole PI
Project Duration	1/1/2015-12/31/2015

20. Technical Advising on Materials Needs for Increased Peak Cylinder Pressure

Sponsor:	Oak Ridge National Laboratory
Amount:	$10,000
Capacity:	Sole PI
Project duration:	6/02/2014-12/30/2015

21. Evaluation of High Efficiency, Clean Combustion Using an Adaptive Dual-Fuel Injector

Sponsor:	National Science Foundation (Phase II SBIR subcontract through QuantLogic Corp.)
Amount:	$247,064
Capacity:	Sole PI
Project duration:	5/1/2014 - 12/31/2018

22. High Load, Heavy-duty RCCI

Sponsor:	Caterpillar
Capacity:	Sole PI
Project duration:	1/1/2014 - 12/31/2014

b) Joint PI external awards

1. Mono-Ether and Alcohol Bioblendstocks to Reduce the Fuel Penalty of Mixing Controlled Compression Ignition Engine Aftertreatment

Sponsor:	Department of Energy – Vehicle Technologies Program
Amount:	$1,499,895 (Federal) + $383,793 (Cost Share) Kokjohn's Portion = $275,000
Capacity:	Co-PI
PI	Prof. David Rothamer (UW-Madison, ME)
Other Co-PI's	Profs. George Huber (UW-Madison, CBE) and Christos Maravelias (UW-Madison, CBE)
Status	1/1/2019-12/31/2021

2. Powertrain Simulation for LTC Operation with Electrically-Assisted Air Intake Boosting

Sponsor:	John Deere
Capacity:	PI
Co-PI:	Prof. Tom Jahns (UW-Madison, ECE)
Project duration:	7/01/2018-6/30/2020

3. Reducing Naval IC Engine Fuel Consumption using Reformed-fuel Reactivity Controlled Compression Ignition (RCCI) Combustion

Sponsor:	Office of Naval Research
Amount:	Kokjohn's Portion = $536,610
Capacity:	Co-PI 6/1/2014-5/31/2015 (PI Rolf Reitz UW-Madison) PI 6/1/2015 - Present
Project duration:	6/1/2014 - 9/29/2017

c) Internal awards

1. Plasma Assisted Combustion: A Pathway to Enable High Efficiency Clean Combustion

Sponsor:	UW-Madison Fall Competition
Amount:	$34,952
Capacity:	Sole PI
Project duration:	7/01/2017 - 6/30/2018

2. A High Efficiency Natural Gas Combustion Concept for use by the Wisconsin Engine Industry

Sponsor:	State Economic Engagement and Development (SEED)
Amount:	$134,424
Capacity:	Sole PI
Project duration:	9/1/2014 - 6/30/2015

3. Investigation of the Impact of Partial Fuel Oxidation on Combustion Front Propagation

Sponsor:	UW-Madison Fall Competition
Amount:	$34,952
Capacity:	Sole PI
Project duration:	7/01/2015 - 6/30/2016

Formal Courses Taught

Semester	Course	Course Name
Fall 2013	ME 469	Internal Combustion Engines
Spring 2014	ME 361	Thermodynamics
Fall 2014	ME 469	Internal Combustion Engines
Fall 2015	ME 469	Internal Combustion Engines
Fall 2015	ME 273	Engineering Problem Solving with EES
Spring 2016	ME 273	Engineering Problem Solving with EES
Summer 2016	ME 273	Engineering Problem Solving with EES
Spring 2017	ME 769	Combustion Processes
Spring 2017	ME 273	Engineering Problem Solving with EES
Summer 2017	ME 273	Engineering Problem Solving with EES
Fall 2017	ME 469	Internal Combustion Engines
Fall 2017	ME 273	Engineering Problem Solving with EES
Fall 2018	ME 469	Internal Combustion Engines
Fall 2018	ME 273	Engineering Problem Solving with EES

Introduction to Internal Combustion Engines (ME 469)

Senior / graduate level course that introduces students to the thermo-fluids aspects of internal combustion engines.

Thermodynamics (ME 361)

Required core course in the energy stem of the Mechanical Engineering curriculum. This course introduces students to the basics of thermal system analysis

Engineering Problem Solving with EES (ME 273)

Undergraduate level course developed by Prof. Kokjohn focused on developing problem solving skills using computational tools.

Combustion Processes (ME 769)

Graduate level course that investigates details of chemically reacting flows using analytical and numerical tools.

Courses Developed

Engineering Problem Solving with EES (ME 273)

Course focuses on providing students experience using computational tools to solve engineering problems. Content begins with solutions to simultaneous equation and continues to cover solutions to zero dimensional ordinary differential equations and 1 and 2 dimensional partial differential equations.

Professional Service

1. Organizer and Session Chair, Dual-fuel Combustion Session, Society of Automotive Engineers (SAE) World Congress, April 2018, Detroit, Michigan
2. Organizer and Session Chair, Dual-fuel Simulation, American Society of Mechanical Engineers (ASME) Fall Internal Combustion Engine Meeting, October 2017, Seattle, WA
3. Organizer and Session Chair, Dual-fuel Combustion Session, Society of Automotive Engineers (SAE) World Congress, April 2017, Detroit, Michigan
4. Organizer, Dual-fuel Combustion Session, Society of Automotive Engineers (SAE) Powertrain, Fuels, and Lubricants Meeting, October 2016, Baltimore, Maryland
5. Organizer, System Simulation, American Society of Mechanical Engineers (ASME) Fall Internal Combustion Engine Meeting, October 2016, Greenville, South Carolina
6. Organizer and Session Chair, Dual-fuel Combustion Session, Society of Automotive Engineers (SAE) World Congress, April 2016, Detroit, Michigan
7. Organizer, Dual-fuel Simulation, American Society of Mechanical Engineers (ASME) Fall Internal Combustion Engine Meeting, November 2015, San Antonio, Texas
8. Organizer and Session Chair, Emission Control Modeling Session, Society of Automotive Engineers (SAE) 12th International Conference on Engines & Vehicles, September 2015, Capri, Italy
9. Organizer and Session Chair, Dual-fuel Combustion Session, Society of Automotive Engineers (SAE) World Congress, April 2015, Detroit, Michigan
10. Organizer and Session Chair, Dual-fuel Simulation, American Society of Mechanical Engineers (ASME) Fall Internal Combustion Engine Meeting, October 2014, Columbus, Indiana
11. Organizer, Dual-fuel Combustion Session, Society of Automotive Engineers (SAE) Powertrain, Fuels, and Lubricants Meeting, October 2014, Birmingham, England
12. Co-chair of Dual-fuel Session at 2nd International Symposium on Future Fuels for Clean Engines, September 1st and 2nd, Beijing, China.

13. Organizer and Session Chair, Dual-fuel Combustion Session, Society of Automotive Engineers (SAE) World Congress, April 2014, Detroit, Michigan

Conference Paper Reviews

Society of Automotive Engineers
American Society of Mechanical Engineers

Journal Paper Reviews

International Journal of Engine Research
Fuel
Engineering Applications of Computational Fluid Mechanics
Applied Energy
Atomization and Sprays
Energy Conversion and Management
Proceedings of the Combustion Institute
Combustion Science and Technology
Proc. IMechE, Part D: Journal of Automobile Engineering
Journal of Engineering for Gas Turbines and Power

Department and University Service

Undergraduate Program Committee (2017 – Present)
Engine Research Center Undergraduate Research Fellowship Program Coordinator (2013 – present)
Graduate Committee (2013 – 2017)
Secretary of the Mechanical Engineering Department Faculty Meeting (2013 – 2014)

Consulting

Kokjohn Consulting, LLC 2014 - Present