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Benjamin Knox, Ph.D., P.E.

Dr. Benjamin Knox is a Senior Engineer at Colwell Consulting where he provides engineering analyses of complex fluid and thermal processes, especially regarding the origin, cause and propagation of fires and explosions. He has conducted numerous fire origin and cause investigations involving recreational and passenger vehicles, marine vessels, lawn mowers, structures, electrical appliances, as well as industrial equipment. Dr. Knox also has experience in the analysis of fire related injuries, such as burns, carbon monoxide poisoning, and smoke inhalation.

Dr. Knox has published scientific articles in the areas of flame dynamics, burn pattern analysis, spray dynamics, autoignition, pollutant formation/oxidation, and detonations. Applications of his research include vehicular failure analysis and prevention, engine combustion strategies, as well as industrial spraying processes.

Dr. Knox has held graduate research assistant positions in the Combustion Laboratory at the Georgia Institute of Technology as well as The State University of New York at Buffalo. Dr. Knox has also held positions at the Air Force Research Laboratory (Wright-Patterson Air Force Base) and Caterpillar Inc.

Education

Ph.D., Mechanical Engineering, Georgia Institute of Technology
M.S., Mechanical Engineering, The State University of New York at Buffalo
B.S., Mechanical & Aerospace Engineering, The State University of New York at Buffalo

Professional Honors

Principal Member for NFPA Technical Committee on Recreational Vehicles (REC-AAA)
Best Paper Award, American Society of Mechanical Engineers, 2014
Society of Automotive Engineers Excellence in Oral Presentation, 2014 and 2016
Georgia Institute of Technology President's Fellowship, 2011-2015
Air Force Research Laboratory Summer Faculty Fellowship, 2009-2011
Mark Diamond Research Fund Grant, 2011
Center for Undergraduate Research and Creative Activities Grant, 2008

Certifications

Fire Investigation 1A: Fire Origin and Cause Determination accredited by the California State Fire Marshal

Advanced Cognitive Interviewing & Forensic Statement Analysis certified by the California Commission on Peace Officer Standards and Training

Publications

Knox, B.W., Papageorge, M., Colwell, J.D. (2020). Full-Scale Burn Test of a 2014 Sport Utility Vehicle. *SAE Technical Paper* 2020-01-0925.

Colwell, J.D., Knox, B.W. (2018). Full-Scale Burn Tests of Side-by-Side All-Terrain Vehicles. *SAE Technical Paper* 2018-01-0279.

Magnotti, G.M., Matusik, K.E., Duke, D.J., Knox, B.W., Martinez, G.L., Powell, C.F., Kastengren, A.L., Genzale, C.L. (2017). Modeling the Influence of Nozzle-Generated Turbulence on Diesel Sprays. *ILASS Americas, 29th Annual Conf. on Liquid Atomization and Spray Systems.*

Martinez, G.L., Magnotti, G.M., Knox, B.W., Genzale, C.L., Matusik, K.E., Duke, D.J., Powell, C.F., Kastengren, A.L. (2017). Quantification of Sauter Mean Diameter in Diesel Sprays using Scattering-Absorption Extinction Measurements. *ILASS Americas, 29th Annual Conf. on Liquid Atomization and Spray Systems.*

Knox, B.W., Genzale, C.L. (2017). Scaling Combustion Recession after End-of-Injection in Diesel Sprays. *Combust. Flame* 177 (2017): 24-36.

Jarrahbashi, D., Kim, S., Knox, B.W., Genzale, C.L. (2017). Computational Analysis of End-of-Injection Transients and Combustion Recession. *Int. J. of Engine Research* 18(10):1088-1110.

Knox, B.W. (2016). End-of-Injection Effects on Diesel Spray Combustion. Ph.D. Dissertation, Georgia Institute of Technology.

Knox, B.W., Genzale, C.L. (2016). Effects of End-of-Injection Transients on Combustion Recession in Diesel Sprays. *SAE Int. J. Engines* 9(2):932-949.

Knox, B.W., Genzale, C.L. (2016). Reduced-Order Numerical Model for Transient Reacting Diesel Sprays with Detailed Kinetics. *Int. J. of Engine Research* 17(3):261-279.

Knox, B.W., Genzale, C.L., Pickett, L.M., Garcia-Oliver, J.M., Vera-Tudela W. (2015). Combustion Recession after End-of-Injection in Diesel Sprays. *SAE Int. J. Engines* 8(2):679-695.

Knox, B.W., Franze, M.J., Genzale, C.L. (2015). Diesel Spray Rate-of-Momentum Measurement Uncertainties and Diagnostic Considerations. *J. Eng. Gas Turbines Power* 138(3), 031507.

Falcone, J.A., Knox, B.W., Genzale, C.L. (2015). Identifying Uncertainties in Diesel Spray Rate-of-Momentum Transients under Elevated Back Pressure. *ASME 2015 Internal Combustion Engine Division Fall Technical Conference*.

Knox, B.W. (2011). The Fluidic Obstacle Technique: An Approach for Enhancing Deflagration-to-Detonation Transition in Pulsed Detonation Engines. M.S. Thesis, The State University of New York at Buffalo.

Knox, B.W., Forliti, D.J., Stevens, C.A., Hoke, J.L., Schauer, F.R. (2011). A Comparison of Fluidic and Physical Obstacles for Deflagration-to-Detonation Transition. *49th Aerospace Sciences Meeting and Exhibit Conference*.

Knox, B.W., Forliti, D.J., Stevens, C.A., Hoke, J.L., Schauer, F.R. (2010). Unsteady Flame Speed Control and Deflagration-to-Detonation Transition Enhancement using Fluidic Obstacles. *48th Aerospace Sciences Meeting and Exhibit Conference*.

Peer Reviewer

- SAE International
- Process Safety Progress
- ASME Internal Combustion Engine Division