

## **BRUCE G. BUNTING**

Retired, consultant, subject matter expert  
Fuels, lubrication, aftertreatment, combustion  
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### **EDUCATION**

- 1987 **Ph.D., Mechanical Engineering**, Rensselaer Polytechnic Institute, high temperature lubrication by catalytically generated reaction films.
- 1975 **M.S., Mechanical Engineering**, Michigan Technological University, air pollution in underground mines from diesel and blasting operations.
- 1970 **B.S., Mechanical Engineering**, Michigan State University.

### **RESEARCH AND PROFESSIONAL EXPERIENCE**

2013-present, **subject matter expert**, Energetics, Inc., Columbia, MD. Part time employee providing program support to DOE fuels and lubricants program. Perform proposal and project reviews, write reports and presentations, serve as technical expert.

2012-2013, **senior science consultant**, Aramco Services Company (Saudi Aramco), Houston, TX. Helped set up new automotive research laboratory to be located in Detroit area. Reviewed and specified equipment, helped formulate research plans and goals, set up relationships with universities and industry to further research goals.

2003-2012, **distinguished scientist**, Fuels, Engines, and Emissions Research Center, Oak Ridge National Laboratory, Knoxville, TN. Research areas included petroleum and bio-derived fuels, combustion and emissions, aftertreatment, and lubrication.

1996-2002, **manager / technical advisor**, exhaust aftertreatment, Cummins, Inc., Columbus, IN.

1989-1996, **staff engineer**, products research, Amoco Oil Company (now BP), Naperville, IL.

1987-1989, **senior scientist**, research, MRC Ball Bearing, SKF Industries, Jamestown, NY.

1981-1985, **group leader**, product development, American Bosch, United Technologies Diesel Systems, Springfield, MA.

Registered professional engineer (Michigan), Society of Automotive Engineers, Society of Tribologists and Lubrication Engineers, adjunct faculty, University of Tennessee Knoxville.

## FUELS RELATED PUBLICATIONS

Bunce, Bunting, Wang, and Crawford, *Experimental and Statistical Comparison of Engine Response as a Function of Fuel Chemistry and Properties in CI and HCCI Engines*, SAE paper 2012-01-0857.

Bunting and Boyd, *An Evaluation of Pyrolysis Oil Properties and Chemistry as Related to Process and Upgrade Conditions with Special Consideration to Pipeline Shipment*, AIChE 2012 Spring Meeting, Houston, TX, 4/3/2012.

Bunting, Bunce, Puduppakkam, and Naik, *Kinetic Modeling of Fuel Effects Over a Wide Range of Chemistry, Properties, and Sources*, ICSAT2012, Melbourne, AU, March, 2012.

Bunting and Boyd, *Pyrolysis Oil Properties and Chemistry Related to Process and Upgrade Conditions for Pipeline Shipment*, ORNL/TM-2011/518, January 2012.

Bunting, Bunce, Barone, and Storey, *Fungible and Compatible Biofuels*, ORNL Technical Report for DOE, Sept. 30, 2010.

Bunting, Lardet, and Crawford, *Statistical Overview of 5 Years of HCCI Fuel and Engine Data from ORNL*, presentation at US DOE DEER Conference, Detroit, MI, Sept. 30, 2010.

Bunting and Crawford, *Analysis of the Effects of Fuel Chemistry and Properties on HCCI Engine Operation Using a PCA Representation of Fuels*, CRC Report No. AVFL-13c, Coordinating Research Council, May 2010.

Eaton, Bunting, Fairbridge, and Lewis, *Effect of Narrow Cut Oil Shale Derived Distillates on HCCI Engine Performance*, SAE paper 2009-01-2646.

Kumar, Wolf, Bunting, Fang, Frazier, Xu, Stanton, and Gustafson, *The Effect of Diesel Fuel Properties on Engine-out Emissions and Fuel Efficiency at Mid-load Conditions*, SAE paper 2009-01-2697.

Bunting, Eaton, Naik, Puduppakkam, Chou, and Meeks, *A Comparison of HCCI Ignition Characteristics of Gasoline Fuels Using a Single-Zone Kinetic Model with a Five Component Surrogate Fuel*, SAE paper 2008-01-2399.

Bunting, Eaton, Crawford, Xu, Wolf, Kumar, Stanton, and Fang, *Performance of Biodiesel Blends of Different FAME Distributions in HCCI Combustion*, SAE paper 2009-01-1342.

Puduppakkam, Liang, Naik, Meeks, and Bunting, *Combustion and Emissions Modeling of a Gasoline HCCI Engine Using Model Fuels*, SAE paper 2009-01-0669.

Bunting, Eaton, Storey, Fairbridge, Mitchell, Crawford, Gallant, Franz, and Alnajjar, *The Chemistry, Properties, and HCCI Combustion Behavior of Refinery Streams Derived from Canadian Oil Sands Crude*, SAE paper 2008-01-2406.

## AFTERTREATMENT RELATED PUBLICATIONS

Bunting, More, Lance, and Rohr, *A Study of DPF Ash Distribution and Redistribution in Relation to DPF Operating Conditions*, ORNL internal report, 2010.

Toops, Bunting, Brookshear, Nguyen, *Impact of Biodiesel on Emission Control Devices*, Biodiesel technical Workshop, San Antonio, TX, 09/03/2010.

Brookshear, Nguyen, Bunting, Toops, *Impact of Biodiesel Fuels on Performance of Emissions Control Devices*, 7<sup>th</sup> Annual Southeast Catalyst Society Meeting, Asheville, NC, 09/03/2010.

Barone, Storey, Bunting, Connatser, Lewis, *The Influence of Chemical Composition on Particulate Emissions from an Advanced Combustion Engine*, American Association for Aerosol Research Annual Meeting, Minneapolis, MN, 09/03/2010.

Ottinger, Toops, Nguyen, Bunting, Howe, *Effect of Lean/Rich High Temperature Aging on NO Oxidation and NOx Storage/Release of a Fully-Formulated Lean NOx Trap*, Applied Catalysis B, 101 (2011), 486-494.

Toops, Nguyen, Foster, Bunting, *Deactivation of Accelerated Engine-Aged and Field-Aged Fe-Zeolite SCR Catalysts*, Catalysis Today 151 (2010) p 257.

Ottinger, Nguyen, Bunting, Toops, *Effects of Rapid High Temperature Cyclic Aging on a Fully-Formulated Lean NOx Trap Catalyst*, SAE 2009-01-0634.

Eaton, Nguyen, Bunting, Toops, *The Role of Phosphorous and Soot on the Deactivation of Diesel Oxidation Catalysts*, SAE 2009-01-0628.

Toops, Youngquist, Nguyen, Bunting, *Development of an Accelerated Ash-Loading Protocol for Performance Evaluation of Diesel Particulate Filters*, SAE 2008-01-2496.

Toops, Bunting, Youngquist, Nguyen, *Effect of Accelerated Ash Loading on Performance of Diesel Particulate Filters and Morphology of Ash Layers*, 2008 DOE DEER Conference, Dearborn, MI, 09/18/2008.

Toops, Bunting, Ottinger, Foster, Youngquist, Nguyen, *Accelerated Aging of Emissions Control Devices*, DOE CLEERS Workshop, Dearborn, MI, 09/18/2008.

Eaton, Bunting, Toops, Nguyen, *Impact of Lube-Oil Phosphorous on Diesel Oxidation Catalysts*, DOE DEER Conference, Detroit, MI, 08/14/2007.

Bunting, *Strategies for Optimization of Engines, Fuels, and Aftertreatment*, University of Wisconsin Engine Research Center Symposium: Fuels for Future Internal Combustion Engines, June 6-7, 2007.

Bunting, Szybist, Toops, Nguyen, Gopinath, Eaton, *The Use of Small Engines as Surrogates for Research in Aftertreatment, Combustion, and Fuels*, SAE 2006-32-0035.

## LUBRICATION RELATED PUBLICATIONS

Qu, Yu, Bansal, Dinesh, Howe, Luo, Dai, Blau, Bunting, Mordukhovich, and Smolenski, Oil-Miscible and Non-Corrosive Ionic Liquids as Candidate Lubricant Additives, STLE 2012 Annual Meeting & Exhibition, May 06, 2012, St. Louis, MO.

Qu, Yu, Bansal, Dinesh, Howe, Luo, Dai, Blau, Bunting, Mordukhovich, and Smolenski, Anti-Wear Performance and Mechanism of an Oil-Miscible Ionic Liquid as a Lubricant Additive, ACS Applied Materials and Interfaces, 2012, volume 4, page 997.

Qu, Yu, Bansal, Dinesh, Howe, Luo, Dai, Blau, Bunting, Mordukhovich, and Smolenski, Ionic Liquids as Novel Engine Lubricants or Lubricant Additives, DOE Directions in Engine-Efficiency and Emissions Research (DEER) Conference, Detroit, Oct 3, 2011.

Bunting, Validation of a Small Engine Based Procedure for Studying Performance of Engine Lube Oils, DOE Directions in Engine-Efficiency and Emissions Research (DEER) Conference, Detroit, Sept. 29, 2010.

Bruce Bunting, Mike Bunce, Teresa Barone, and John Storey, *Fungible and Compatible Biofuels*, ORNL Technical Report for DOE, September 30, 2010.