

## **DIONISSIOS (DENNIS) N. ASSANIS**

### **Education**

Ph.D., Power and Propulsion, Massachusetts Institute of Technology (M.I.T.), 1985  
M.S., Management, Sloan School of Management, M.I.T., 1986  
M.S., Mechanical Engineering, M.I.T., 1982  
M.S., Naval Architecture and Marine Engineering, M.I.T., 1982  
B.Sc., Marine Engineering, Newcastle University, England, 1980

### **Positions at the University of Delaware**

President, June 2016-date  
Professor of Mechanical Engineering, June 2016-date

### **Positions at State University of New York (SUNY) at Stony Brook**

Provost and Senior Vice President of Academic Affairs, Oct. 2011-date  
Vice President for Brookhaven National Laboratory Affairs, Oct. 2011-date  
Professor of Mechanical Engineering, Oct. 2011-date  
SUNY Distinguished Professor, May 2015-date

### **Positions at University of Michigan (UM)**

Director, Michigan Memorial Phoenix Energy Institute, July 2009-Sept.2011  
Jon R. and Beverly S. Holt Professor of Engineering, 2000-2011  
Arthur F. Thurnau Professor, 1999-2011  
Chair, Mechanical Engineering, Jan. 2002- Aug. 2007  
Professor of Mechanical Engineering, Sept. 1994-Sept. 2011  
Professor of Applied Physics, 2003-2011  
Founding Director for the United States, Clean Vehicle Consortium, U.S.-China Clean Energy Research Center, 2010-2015  
Director, Automotive Research Center, Sept. 2000- Oct.2009  
Director, W. E. Lay Automotive Laboratory, 1996-2011  
Fellow, Michigan Memorial Phoenix Energy Institute, 2007-2011  
Founding Co-Director, General Motors Collaborative Research Laboratory on Engine Systems, 2002-2011  
Associate Director, General Motors Satellite Research Laboratory, 1998-2002  
Deputy Director, Automotive Research Center, Jan. 1996-Aug. 2000  
Acting Director, Automotive Research Center, Aug.1995- Dec. 1995  
Interim Director, CoE Interdisciplinary Professional Programs, Fall 2001  
Founding Director, CoE Automotive Engineering Program, Sept. 1999-Apr. 2002  
Founding Director, MEAM Automotive Engineering Program, 1995-1999

### **Positions at University of Illinois in Urbana-Champaign**

Associate Professor of Mechanical Engineering, Aug. 1990 - Aug. 1994  
Head, Thermal Sciences/Systems Division II, Aug. 1992 - Aug. 1994  
Research Scientist, Office for Supercomputing Applications, Aug. 1991- 1994  
Assistant Professor of Mechanical Engineering, Sept. 1985 - Aug. 1990

### **Positions at Other Institutions**

Honorary President, Zhejiang Automotive Engineering Institute, 2009-date  
Honorary Professor, Zhejiang Automotive Engineering Institute, 2009-date

Advisory Professor, Shanghai Jiao Tong University, Shanghai, China, 2009-date  
Guest Professor, Shanghai Jiao Tong University, Shanghai, China, 2003-2008  
Adjunct Research Scientist, Argonne National Laboratory, Energy and Environmental Systems Division,  
May 1987-2002  
Research Assistant, Sloan Automotive Laboratory, M.I.T., Sept. 1982- Aug. 1985  
Teaching and Research Assistant, Department of Ocean Engineering, M.I.T, Sept. 1980-June 1982

### **Honors and Awards**

Paideia Award, Hellenic University Club of Philadelphia, 2016  
SUNY Distinguished Professor, 2015  
Fellow, American Association for Advancement of Science, 2013  
SAGE Best Paper Award by the Editor and Editorial Board of Proceedings of the Institution of  
Mechanical Engineers, 2012  
ASEE Mechanical Engineering Division Ralph Coats Roe Award, 2011  
University of Michigan College of Engineering, Stephen S. Atwood Award, 2011  
University of Michigan Rackham Distinguished Faculty Achievement Award, 2009  
Member, National Academy of Engineering, 2008  
ASME, Internal Combustion Engine Award, 2008  
ASME Fellow, 2008  
Tau Beta Pi Professor of the Year Award, 2006  
SAE Award for Research on Automotive Lubricants, 2002  
SAE Fellow, 2001  
Jon R. and Beverly S. Holt Professor of Engineering, UM, 2000-2011  
ASEE Annual Distinguished Lecturer, College of Engineering, UM, April 12, 2000  
Teaching Excellence Award, College of Engineering, UM, 2000  
Arthur F. Thurnau Professor, UM, 1999-2011  
Excellence in Teaching Award, Mechanical Engineering and Applied Mechanics, UM, 1998  
ASME Internal Combustion Engine Division Meritorious Service Award, 1997  
ASME Internal Combustion Engine Division Speaker Award, 1993,  
ASME Internal Combustion Engine Division Speaker Award, 1994  
University of Illinois Scholar, 1991-94  
SAE Russell Springer Award, 1991  
IBM Research Award, 1991  
ASME/Pi Tau Sigma Gold Medal Award, 1990  
NSF Presidential Young Investigator Award, 1988-93  
Lilly Endowment Teaching Fellow Award, 1988  
NSF Engineering Initiation Award, 1987  
NASA Certificate of Recognition for Creative Development of a Technical Innovation, 1987  
SAE Ralph Teetor Award to Outstanding Young Educators, 1987  
Excellent Teacher, listed every semester in *The Daily Illini*, 1985-94  
Honors, B.Sc. Degree with Distinction, 1980

### **Service to Other Organizations**

#### **1. External Boards**

Member (Ex Officio), Board of Trustees, University of Delaware, 2016-date.  
Member, Board of Directors, Delaware Technology Park, 2016-date.  
Member, Board of Directors, Delaware Innovation Space, Inc., 2017-date.  
Member, Executive Committee, Delaware Business Roundtable, 2017-date.

Chair, Board of Managers, SUNY Korea LLC, a non-profit limited liability company organized on behalf of SUNY that has received approval from the Ministry of Education, Science and Technology of the Republic of Korea to engage in an academic operation and deliver SBU degree programs at the Songdo Global University Campus, Incheon Free Economic Zone, South Korea, 2011-2016.

Member, Board of Directors, Brookhaven Science Associates, a partnership formed between Battelle and The Research Foundation of SUNY on behalf of Stony Brook University in order to manage the U.S. Department of Energy Brookhaven National Laboratory, 2011-2016.

Member, Board of Trustees, Long Island High Technology Incubator Inc., a non-profit business incubator affiliated with Stony Brook University and the Medical Center that supports early-stage, high-tech companies to enhance their opportunity for development and growth, 2011-2016.

Member, Board of Trustees, Simons Center for Geometry and Physics, a center for theoretical physics and mathematics at Stony Brook University, founded in 2007 by a gift from the James and Marilyn Simons Foundation, 2011-2016.

Member, Advisory Board, Advanced Energy Research and Technology Center (AERTC), a partnership of academic institutions, research institutions, energy providers and industrial corporations to promote innovative energy research, education and technology deployment with a focus on efficiency, conservation, renewable energy and nanotechnology applications for new and novel sources of energy, 2011-2016.

Member, External Advisory Board, Tuskegee Alliance for Pathways to Academic Careers, NSF AGEP-T Program, 2014-2015.

Trustee Ex-Officio (Non-Voting), Board of Trustees, Stony Brook Foundation, a not-for-profit 501(c)(3) corporation established in 1965 as the official fundraising and private gift-receiving agency for the State University at Stony Brook, 2011-13.

Member, Board of Directors, NextEnergy, a non-profit organization with a mission to be one of the nation's leading non-profit research catalysts and business accelerators for alternative and renewable energy, 2010-2011.

Member, Board of Directors, Consortium for Advanced Simulation of Nuclear Reactors, an energy innovation hub led by Oak Ridge National Laboratory (ORNL) and funded by DOE up to \$122 million, 2010-2011.

Member, President's Council of Advisors on Science and Technology (PCAST) Working Group on Energy Technology Innovation System, 2010.

Co-Chair, National Academy of Engineering Annual German-American Frontiers of Engineering GAFOE Symposium, 2010-2012.

Member, Science and Technology Council Advisory Board, Cummins Engine Company, Inc., Columbus, IN, 2010.

Member, International Advisory Board, Center for Clean Combustion Energy, Tsinghua University, China, 2010-2013.

Chair, Advisory Board, Tula Technology, Santa Clara, CA, 2009-2011.

Member, State of Michigan Great Lakes Wind Council, 2009-2010.

Member, Energy Council of the CTO Forum, a Silicon Valley-based organization that brings together Chief Technology Officers from a cross-section of businesses and industries to discuss critical issues at the intersection of technology, energy and the environment, 2009-2011.

Member, External Advisory Board, Center for Mobile Propulsion, RWTH Aachen University, 2009-date.

Member, National Academy of Sciences Committee on Fuel Economy of Medium- and Heavy-Duty Vehicles, appointed by the National Research Council's Board on Energy and Environmental Systems, 11/08-5/31/10.

Member, ASME Internal Combustion Engine Division Executive Committee, 2008-10.

Chair, King Abdullah University of Science and Technology (KAUST) Search for Director of Center for Clean Combustion Energy, 2008-09.

Member, External Validation Panel for Launching MSc degree in Automotive Engineering Design, Hong Kong Polytechnic University, 2007.

Member, Global External Advisory Board, Department of Mechanical Engineering, Korean Advanced Institute for Science and Technology (KAIST), 2006-date.  
Member, External Advisory Board, Department of Mechanical Engineering, Georgia Tech, 2004-date.  
Member, External Advisory Panel, "Business Briefing: Global Automotive and Manufacturing and Technology," World Market Research Centre, May 2002.

## **2. Editorships**

Editor, *International Journal of Automotive Technology*, 2008-date  
Editorial Board, *International Journal of Powertrains*, 2010-date  
Editorial Board, *International Journal of Engine Research*, 2003-date  
Editorial Board, *Journal of Emission Control Science and Technology*, 2014-date  
Scientific Board, *Ingineria Automobilului*, 2007-date  
Editorial Board, *International Journal of Automotive Technology*, 2005-2008  
Associate Editor, *ASME Journal for Gas Turbines and Power*, 1996-2007  
Guest Editor, *International Journal of Heavy Vehicle Systems*, 2004

## **3. Professional Society Memberships**

American Society of Mechanical Engineers, Fellow  
Executive Committee Member, ICE Division, 2008-2009  
Journal Associate Editor, 1996-2008  
Past Chair of Student Activities, ICE Division  
Society of Automotive Engineers, Fellow  
Member, SAE Research Executive Committee, 2000-2008  
Faculty Advisor, University of Michigan, 1996-2004  
Future Car, Faculty Co-Advisor, 1997-98  
American Association for Advancement of Science, Fellow  
American Society for Engineering Education, Member  
Sigma Xi, Member  
The Combustion Institute, Member

Organized and chaired more than 100 national and international conferences, sessions, workshops and lectures for professional societies

## **4. Service as Consultant to Government and Industry**

Assanis and Associates, Inc., President, Ann Arbor, MI (2000-2011)  
Optimetrics, Inc., Ann Arbor, MI (1999)  
Textron Automotive, Southfield, MI (1998)  
M.A.N.A.G.E., Inc., President, Ann Arbor, MI (1995-1998)  
Automated Analysis Corporation, Ann Arbor, MI (1996)  
Mobil Technology Company, New Jersey (1996-1997)  
GM Electromotive Division, La Grange, IL (1988-1992)  
National Aeronautics and Space Administration, Cleveland, OH (1988)  
Adiabatics, Inc., Columbus, IN (1986-1991)  
Science Application International Corp., Seattle, WA (1986-1987)

## **CONTRIBUTIONS TO EDUCATION**

### **Sustained Commitment to Education**

I have sustained my passionate commitment to education for over 30 years. As an Assistant and Associate Professor at the University of Illinois at Urbana-Champaign, I have taught a range of thermal science courses with student evaluations of my teaching consistently placing me at the very top in departmental (more than 50 faculty members) and college rankings. After joining the University of Michigan, my teaching evaluations (4.74/5.0 average for the quality of the courses I have taught and 4.85/5.0 for the effectiveness of my teaching) have continued to be among the highest in the Mechanical Engineering Department (55 tenured or tenure track faculty) and the College of Engineering (more than 320 faculty members). As Provost of Stony Brook University, I have continued to be actively involved in undergraduate curricular reform, mentor doctoral students, and guest lecturing in honors college and mechanical engineering classes.

In 1987, I was honored with the Society of Automotive Engineers Ralph Teetor Award, given to 20 outstanding engineering educators nationwide each year. In 1988, I was one of six young UIUC faculty members selected in campus-wide competition to receive Lilly Teaching Fellow Awards. In 1990, I received the American Society of Mechanical Engineers/Pi Tau Sigma Gold Medal Award given annually in nationwide competition to the best mechanical engineer 10 years after graduation. In 1991-94, I was named University of Illinois Scholar for my contributions to research and teaching. I am truly gratified to have been honored with the 1997-98 MEAM Excellence in Teaching Award, the 2000 College of Engineering Teaching Excellence Award, and the distinguished Arthur F. Thurnau Chaired Professorship in recognition of my contributions to education.

I am a proponent of life-long learning and have frequently taught short courses and workshops to practicing engineers in industry.

## **CONTRIBUTIONS TO RESEARCH**

### **Major Research Accomplishments**

Dr. Assanis' research interests lie in the thermal sciences and their applications to energy conversion, power and propulsion, and automotive systems design. His research focuses on analytical and experimental studies of the thermal, fluid and chemical phenomena that occur in internal combustion engines, after-treatment systems, and fuel processors. His efforts to gain new understanding of the basic energy conversion processes have made significant impact in the development of energy and power systems with significantly improved fuel economy and dramatically reduced emissions. His group's research accomplishments have been published in over 350 articles in books, journals and international conference proceedings. More specifically:

- Over the past 30 years, he has made major contributions in modeling and computer simulation of internal combustion engine processes and systems, under steady-state and transient operation, and in carrying-out sophisticated in-situ experimental techniques, applicable to operating engine combustion chambers, to validate their fidelity. His innovative work has shed light into complex fuel-air mixing, combustion, pollutant formation and transient heat transfer phenomena in metal and ceramic-insulated engine combustion chambers. His simulation models and experimental insights are used by engine researchers and developers (e.g., General Motors, Caterpillar, Argonne, Lawrence Livermore and Sandia National Laboratories) to improve vehicle fuel economy while at the same time satisfying ultra-stringent emissions standards.

- His group has pioneered the integration of high fidelity engine models with driveline and vehicle models and used these comprehensive tools for realistic assessment and design optimization of conventional and hybrid powertrain systems. His engine-in-vehicle simulation methodologies have contributed significantly to the dual need-dual use heavy-duty industry/U.S. Army ground mobility mission through the development and optimization of advanced propulsion systems with 2-3 times higher fuel efficiency and ultra low smoke and particulate emissions.
- He has made lasting contributions to the fundamental understanding of the chemical and physical processes that govern the operation of Homogeneous Charge Compression Ignition (HCCI) engines and their exhaust aftertreatment systems. His revolutionary insights make possible to operate engines in ultra clean, low temperature combustion, fuel economical regimes that constitute a paradigm shift from the traditional, high temperature, pollutant forming engine combustion. His HCCI combustion strategies and patents have assisted industry to improve fuel economy of clean gasoline and diesel cars by 15%-20%, while virtually eliminating NO<sub>x</sub> and particulate emissions.
- Dr. Assanis has led the efforts to revitalize the University of Michigan's automotive engineering activities and transformed the Walter E. Lay Automotive Laboratory into a beehive of research activity. He has initiated large-scale projects involving partnerships among academia, government and industry, led the fundraising efforts through writing major proposals, and directed the research activities. He has collaborated extensively with faculty members, research scientists and post-doctoral scholars from various Universities and disciplines. He has directed the research of more than 60 Ph.D. and more than 150 MS and M.Eng. graduate students. His group's engine and powertrain system simulations are used in industry, academia and government.
- He has played a pivotal role in the establishment of a transportation research laboratory in the Stony Brook University's Advanced Energy Research Center, transferring a portion of his research activities and equipment from the University of Michigan to Stony Brook in support of this vision. He is currently leading a group of faculty R&D efforts directed at the development of experimental techniques and CFD models aimed at improving fuel-air mixing, ignition and combustion in state-of-the-art homogeneous charge compression ignition and natural gas engines. Further, he has contributed his expertise in energy and clean combustion systems to the development of an innovative gas-powered HVAC system, incubated in the AERTC with potential to greatly benefit the economy of New York State.
- In parallel with his scholarly work on engine combustion, he has served as principal investigator on campus efforts to enhance the success of our underrepresented students and post-doctoral fellows with funding from a series of highly competitive NSF AGEP programs. As part of these efforts, he closely collaborated with groups of faculty and staff to build a community of science scholars, develop best practices for institutionalization and transform frontiers of research and academic models of excellence.

### **Grants and Contracts**

Dr. Assanis has been the project director, principal or co-principal investigator for more than \$100M in grants and contracts funded by automotive industry (General Motors, Ford Motor Co., Chrysler LLC and DaimlerChrysler Corporation, Mitsubishi Motors Co., Honda Motor Co., Borg Warner, Ricardo), the heavy-duty truck industry (Detroit Diesel Corporation, Caterpillar, Inc., International, Cummins, Yanmar Diesel Engine Co, Komatsu), the oil industry (ExxonMobil Corporation, Lubrizol, Amoco Oil, Chevron, Ethyl Corporation), the U.S. government (Department of Defense, Department of Energy, NASA, EPA, National Science Foundation) and National Laboratories (Sandia, Argonne). Major collaborative research partnerships he has led include:

- Department of Energy, Office of Policy and International Affairs, "U.S.-China Clean Energy Research Center - Clean Vehicle Consortium CERC-CVC," Sept. 2010-Sept. 2015. The strategic

intent of the CERC-CVC is to forge a strong partnership between the U.S. and China, the largest greenhouse gas emitters and the largest existing and emerging vehicle markets, for breakthrough research and development. The CERC-CVC is led by the University of Michigan in partnership with Ohio State University, M.I.T., national labs (Sandia National Laboratories, Oak Ridge National Laboratory, Argonne National Laboratory, Joint BioEnergy Institute, Fraunhofer Institutes, Germany), and industry (Ford Motor Company, General Motors, Cummins Engine Co., Toyota Motor Co., Chrysler, Cummins, MAGNET, A123, American Electric Power, First Energy and the Transportation Research Center). The total value of the U.S. effort is nearly \$30M, of which the US DOE will contribute \$12.5M over a five-year period, and industry and academia will contribute \$17M. The Chinese government will match the US effort with a \$25M of funding to a consortium of Chinese academic partners, led by Tsinghua University, and industry. The Project Director role has been transferred to Dr. Huei Peng effective October 1, 2011, upon Dr. Assanis' assumption of his role as Provost at Stony Brook University. Dr. Assanis continues to provide strategic guidance to the CERC-CVC as a Founding Director.

- General Motors-University of Michigan Engine Systems Research Collaborative Research Laboratory (GM/UM ESR CRL), initiated in 1998 and currently in its fourth, five-year phase. Under Dr. Assanis' leadership, the CRL raised more than \$15M in total funding between 1998-2013, to conduct fundamental research into core competitive areas for GM in order to significantly improve fuel economy and dramatically reduce emissions of next generation engines. This successful research partnership between the two institutions has also motivated the growth and strengthening of additional areas of excellence of importance to GM and commensurate with the scholarly expertise and intellectual pursuits of the University of Michigan faculty. As of December 2010, Professor Assanis has stepped down as GM-UM ESR CRL Founding Co-Director to become the Founding Director for the United States Clean Vehicle Consortium, U.S.-China Clean Energy Research Center, 2010-2015.
- UM-led Multi-University Consortium on Homogeneous Charge Compression Ignition (HCCI)/ Low temperature Combustion (LTC) Engine Research, funded since 2001 by the Department of Energy (approx. \$10M of funding to 12/31/09). This innovative research holds the promise of delivering high fuel economy with dramatically reduced emissions through a paradigm-shift approach compared to the traditional, high temperature, pollutant forming engine combustion in today's engines. University of Michigan partners include Stanford, MIT, and UC Berkeley. In 2011, the consortium won a third-phase DOE award (3 years, \$3.75M) to explore high-pressure, lean burn (HPLB) combustion, with the potential to improve engine efficiency by 20-40%. As of January 1, 2012, Professor Assanis has transferred the directorship of the HCCI/LTC/HPLB consortium to Professor Margaret Wooldridge.
- Automotive Research Center, (ARC), a UM-led, eight-university, U.S. Army Center of Excellence founded in 1994 to advance the state-of-the-art modeling and simulation of military and civilian ground vehicles. The ARC is the most advanced university-based automotive research center in the country and has provided both educational opportunities and a unique cooperative partnership among the military, academia and the automotive industry. Current University partners include Clemson University, Oakland University, University of Alaska-Fairbanks, University of Iowa, Virginia Tech University, and Wayne State University. Under Dr. Assanis' leadership for over 9 years, the center raised more than \$65M of DOD funds and emphasized research into the design of vehicles propelled by next-generation powertrain systems for a variety of energy supply sources. As of October 2009, Professor Assanis stepped down as ARC Director to become the Director of the Michigan Memorial Phoenix Energy Institute and transferred the project director role to Dr. Anna Stefanopoulou. The ARC continues operation into a Phase IV and Dr. Assanis is a Director Emeritus.

- Department of Energy, Office for Energy Efficiency and Renewable Energy, Robert Bosch LLC, AVL Powertrain Engineering Inc., University of Michigan and Stanford University, “Advanced Combustion Controls – Enabling Systems and Solutions (ACCESS) for High Efficiency Light Duty Vehicles, \$24,000,000, Project Director: Hakan Yilmaz (Bosch); Co-PI and Lead for Combustion Research: Dennis Assanis; my group’s portion of the budget \$4,000,000 (\$2,000,000 from DOE, \$680,360 from Bosch, \$480,000 from AVL and \$839,640 from UM), 4/1/2010- 6/30/2014. As of January 1, 2012, Professor Assanis has transferred the combustion Project Director role to Dr. Stani Bohac.

### **Grants and Contracts at Stony Brook University**

National Science Foundation, *SUNY Alliance for Graduate Education and the Professoriate (AGEP): Best Practices for Institutionalization*, 5/15/11-5/31/13, \$150,000, Principal Investigator.

National Science Foundation, *Alliance for Graduate Education and the Professoriate (AGEP) SUNY Phase II: Building a Community of Science Scholars*, 5/3/01 to 2/29/12, \$5.5M, Principal Investigator since 10/11.

Marie Curie Actions Program, European Commission, International Outgoing Fellowships FP7-PEOPLE-2011-IOF, “Fuel Additives Effect on Fuel Injector Design,” 2013-2016, €271,944, U.S. Principal Investigator.

National Science Foundation, *Alliance for Graduate Education and the Professoriate – Transformation: Frontiers of Research and Academic Models of Excellence (AGEP-T FRAME)*, 10/1/13-9/30/16, \$1.4M, Principal Investigator.

### **Grants and Contracts at University of Michigan**

Automotive Research Center (ARC) of Excellence in Modeling and Simulation of Ground Vehicles, Department of Defense: Phase I: 9/94-7/98, \$9,000,000, Co-Principal Investigator and *Deputy Director (1/96-7/98)*; Phase II: 7/98-6/04, \$25,000,000, Co-Principal Investigator (7/98-9/02) and Principal Investigator (9/02-6/04); *Deputy Director (7/98 to 9/00) and Director (9/00-6/04)*; Phase III: 7/04-7/10, \$40M, *Director*.

Experimental Investigation of Heat Rejection Characteristics of I-4 and V-6 Engine Designs, Ford Motor Co., 1/95 to 6/96, \$142,000, Principal Investigator.

Prediction of Engine Heat Rejection, Ford University Research Program, 1995, \$50,000 (unrestricted grant), Principal Investigator.

Direct Injection of Natural Gas: In Cylinder CFD Computations, DOE/NASA, 1/95 to 12/96, \$214,506, Principal Investigator.

Engine Heat Transfer and Engine/Fuels Interaction Technology, Chevron Oronite Technology Group, 5/95 to 4/99, \$8,000, Principal Investigator.

Engine Friction Studies with Boundary-Friction Reducing Additives, Mobil Technology Group and ExxonMobil Research and Engineering Company, 1/96-8/15/00, Total Funding \$919,362, (\$183,540, 1/96-6/96; \$135,822, 6/96-5/97; \$250,000, 1/97-12/97; \$200,000, 1/98-12/98; \$100,000, 1/99-6/99; \$50,000, 1/00-8/00), Principal Investigator.

Experimental Investigation of Heat Rejection Characteristics of Diesel Engine Designs, Ford Motor Co., 6/96-6/97, \$20,000, Principal Investigator.

Study of Unburned Hydrocarbon Emissions Mechanisms, Ricardo, 1997, \$90,000 (gift), Principal Investigator.

Direct Injection of Natural Gas: In Cylinder CFD Computations, SANDIA, 3/97-2/98, \$25,000, Principal Investigator.

Fuel Economy and Power Benefits of Cetane-Improved Fuels in Heavy-Duty Diesel Engines, Ethyl, 1997, \$20,000 (gift), Principal Investigator.

Investigation of Thermal and Strength Characteristics of Metal Matrix Composite Pistons for Heavy-Duty Diesel Engines, Focus Hope, 1997-98, \$60,000, Principal Investigator.

Effect of Metal Matrix Composite Liners on Engine Friction and Wear, Inco Limited, 1997-99, \$50,000 (gift), Principal Investigator.

Optimizing the Performance and Emissions of a Direct-Injection Spark-Ignition Engine Using Multi-Dimensional Modeling, Honda Initiative Grant Program, 8/1/97-7/31/98, \$25,000, Principal Investigator.

General Motors/UM Collaborative Research Laboratory (formerly Satellite Research Laboratory), 5/98-12/31/02, \$5,000,000, GMCRL Co-Principal Investigator and Director, Advanced Powertrain Systems Division.



Effect of Exhaust Valve Opening on Cold Start Hydrocarbon Emissions, Ford Motor Company, 6/98 to 12/01, Total Funding \$380,000 (\$230,000, 6/98-12/99; \$150,000, 1/00-12/00), Principal Investigator.

Ricardo Single Cylinder Research Engines, Mobil Technology Company, 9/1/98, \$230,000 (gift), Principal Investigator.

Optimizing the Performance and Emissions of Direct-Injection Compression-Ignition Engines Using Multi-Dimensional Modeling, EPA, 9/1/98-8/31/99, \$40,000, Principal Investigator.

Diesel Spray Combustion Modeling, Yanmar Diesel Engine Company, Japan, 9/1/98, \$27,000 (gift), Principal Investigator.

Using Chemical Kinetics to Simulate Engine Performance and Emissions, Caterpillar, Inc., 1/1/99-12/31/99, \$40,000 (gift), Principal Investigator.

Mixture Preparation and Nitric Oxide Formation in a GDI Engine Studied by Combined Laser Diagnostics and Numerical Modeling DOE/Sandia National Laboratory, 4/1/1999-3 /31/2002, \$383,505, Co-Principal Investigator.

Development of Pressure Reactive Piston Technology for Improved Efficiency and Low NOx Emissions in Spark-Ignition (SI) and Compression Ignition (CI) Engines, Ford Motor Company/DOE PNGV Program, 10/12/99-5/31/2003, \$436,825, Principal Investigator.

In Cylinder Pressure Sensors Using Thin Film Shape Memory Alloys, Orbital Research, 6/00-8/31/02, \$120,000, Principal Investigator.

Systems Approach for Demonstrating Very Low Nox Emissions from a Direct-Injection Compression-Ignition (CIDI) Engine with a NOx Catalyst, EPA, 1/01-6/30/02, \$100,000, Principal Investigator.

Concurrent Design of Next Generation Powertrains, Manufacturing Processes and Materials: A Simulation-Based Approach, US ARMY/TACOM under the Dual Use Science and Technology program DUST 2000, 4/3/01-4/2/03, \$3,000,000, Co-Principal Investigator.

Simulation-Based Design and Demonstration of Next Generation Advanced Diesel Technology, Ford Motor Company/US ARMY TACOM under the Dual Use Science and Technology program DUST 2001, \$2,420,000, 9/1/01 to 12/31/03, Principal Investigator.

A University Consortium on Homogeneous Charge Compression Ignition, Low Temperature Combustion for High Efficiency, Ultra-Low Emission Engines, The University of Michigan in partnership with Massachusetts Institute of Technology, Stanford University, and University of California-Berkeley, Department of Energy, Phase I: 10/1/01-3/31/06, \$4,800,000, Principal Investigator and Consortium Director.

General Motors/UM Collaborative Research Laboratory on Engine Systems Research, "Advanced Diesel Combustion System Optimization Tools Implementation," 6/1/04-8/31/04, \$17,160, Principal Investigator and GMCRL Co-Director.

General Motors/UM Collaborative Research Laboratory on Engine Systems Research, "Advanced Diesel Combustion System Development and Measurement of Hydrocarbon Species and Unregulated Emissions from Diesel Engines Operating in Advanced Combustion Modes," 9/1/03-8/31/04, \$116,206, Principal Investigator and GMCRL Co-Director.

General Motors/UM Collaborative Research Laboratory on Engine Systems Research, "Experimental Assessment of Design Concepts for Robust Spray-Guided Stratified-Charge Combustion," 8/1/04-7/31/05, \$135,168, Principal Investigator and GMCRL Co-Director.

Precision Heat Management in SI Engines, DaimlerChrysler Challenge Fund Project, \$180,000, 9/1/01 to 12/31/04.

Detailed Exhaust Hydrocarbon Measurements in a Multi-Cylinder Engine, Ford Motor Company, 9/1/03 to 8/31/05, \$98,000, Principal Investigator.

Engine-In-Vehicle Modeling, Navistar, 1/1/99-12/06, \$300,000, unrestricted grant, Co-Principal Investigator.

General Motors/UM Collaborative Research Laboratory on Engine Systems Research, "PCCI Diesel Engine Combustion and Aftertreatment Systems," 9/19/2006, \$85,000, unrestricted grant, Principal Investigator.

Fuel Processors for PEM Fuel Cells, Department of Energy, 10/01-9/06, \$4,545,471, Co-Principal Investigator.

Eaton Corporation Innovation Center, "Assessment of the NOx Reducing Potential of NOx Adsorber-NH3 SCR Exhaust Aftertreatment Systems," Phase I: 7/1/04 to 6/30/05, \$114,876; Phase II: 7/1/05-12/31/06, \$60,000, Principal Investigator.

General Motors/UM Collaborative Research Laboratory on Engine Systems Research, "Discovery Project: Free Piston Linear Alternator," 6/1/05-8/31/07, \$528,245, Principal Investigator.

Investigation of VVT Fuel Economy and Emissions Benefits under Cold-Start, Idle and Low Load Conditions, DaimlerChrysler Challenge Fund Project, 1/1/05 to 6/30/08, \$300,000, Principal Investigator.

U.S. Environmental Protection Agency, "Integrated Hydraulic Hybrid Propulsion System and Advanced Components for Maximizing Fuel Efficiency and Emissions Benefits," 4/2006-10/2009, \$226,000, Co-Principal Investigator; PI: Z. Filipi.

Advanced Powertrain Modeling, Borg Warner, 1/06-6/10, \$300,000, Principal Investigator.

Ford Motor Company, "Development of Diesel EGR Cooler Fouling Model," Ford-UM Alliance, 9/1/07-12/31/09, \$200,000, Principal Investigator.

Department of Energy, Office for Energy Efficiency and Renewable Energy, "A University Consortium for Efficient and Clean High Pressure Lean Burn Engines," The University of Michigan in partnership with Massachusetts Institute of Technology and University of California-Berkeley, 10/1/09-8/31/12, \$3,750,000, Principal Investigator and Consortium Director.

Collaborative Development of Clean Diesel Exhaust Aftertreatment System Through Modeling and Testing, Michigan Economic Development Corporation, 21<sup>st</sup> Century Jobs Fund, \$1,650,000, 1/1/07-6/30/10, Principal Investigator (proposal selection process conducted by American Association for the Advancement of Science; 61 awards from 505 submitted proposals).

General Motors R&D Center, "Modeling and Experimental Study of Boosted HCCI Engine," 7/1/07-6/30/2011, \$1,400,000, Principal Investigator.

Ford Motor Company, "EGR Cooler Fouling Research," 4/1/10-12/31/11, \$281,000, Principal Investigator.

U.S. Environmental Protection Agency, "Center for Engineering Excellence through Hybrid Technology," 11/1/09-10/31/12, \$1,560,000, Co-Principal Investigator; PI: Z. Filipi.

University of Tennessee-Battelle, LLC, "Simulation of High Efficiency Stoichiometric GDI Combustion," 5/1/10-4/30/11, \$100,000, Principal Investigator.

ConocoPhillips, Inc., "Fuel Effects on HCCI Combustion Limits," 6/30/2011, \$100,000, Principal Investigator.

Michigan Public Service Commission, "Integrated Assessment of Feasibility and Deployment of Offshore Wind Technologies in the Great Lakes," 1/1/11-12/31/12, \$800,000, Principal Investigator. The Project Director role has been transferred to D. Guy Meadows effective October 1, 2011, upon Dr. Assanis' assumption of the role of Provost at Stony Brook University.

### **Grants and Contracts at University of Illinois in Urbana-Champaign**

Effect of Combustion Chamber Insulation on Turbocharged Diesel Engine Performance, UIUC-Research Board, 3/20/86 - 6/30/87, \$20,000 (grant), Principal Investigator.

Intake Valve Event Optimization for Specified Engine Operating Conditions, General Motors Pontiac Group, 8/21/86 to 6/30/88, \$31,000, Co-Principal Investigators: J. E. Peters and D.N. Assanis, Project Director: D.N. Assanis.

Development of a Modern Engine Test Cell for Studies of Low-Heat-Rejection Engine Performance, UIUC-Research Board, \$6,000 (grant), 1/15/87 to 1/15/88, Principal Investigator.

NSF, An Experimental and Analytical Study of Unsteady Heat Transfer in Low-Heat-Rejection Engine Combustion Chambers, \$69,983, 7/1/87 to 11/30/89, Principal Investigator.

Development of an Integrated Rankine Bottoming Cycle for Diesel Engine Exhaust Heat Recovery, UIUC-Research Board, \$7,624 (grant), 8/21/87 to 5/21/88, Principal Investigator.

Adiabatics, Inc., Development and Use of a Compu4dter Simulation Code for LHR Vehicle Fuel Economy, \$30,926, 9/1/87 to 7/31/88, Co-Principal Investigators: D. N. Assanis, R. A. White, Project Director: D.N. Assanis.

Analysis and Testing of Ceramic-Coated Engine Components, Adiabatics, Inc., \$14,466, 9/1/87 to 12/31/88, Principal Investigator.

Fluidized Bed Heat Recovery from Diesel Engines, U.S. Army CERL, \$13,692, 9/15/87 - 5/31/88, Principal Investigator.

Engineering Research Equipment Grant: A Modern Single-Cylinder Engine Test Facility for Diesel Engine Research, NSF, \$51,400 (equipment grant), from 5/1/88 to 10/31/89, Principal Investigator

Presidential Young Investigator Award: Engine Combustion and Emissions Studies, NSF, \$312,500, 6/88 to 12/93, Principal Investigator.

A Modern Single Cylinder Diesel Research Engine, Caterpillar, \$27,000 (gift), 7/7/88, Principal Investigator

Development of Multi-Dimensional Heat Transfer Models for LHR Engine Studies, National Center for Supercomputing Applications, 35 CPU hours on CRAY X/MP, 3/88 to 12/89, Principal Investigator.

Combustion and Emissions of Low-Heat-Rejection Diesel Engines, \$129,223, U.S. Army TACOM, 8/88 to 8/90, Principal Investigator.

The Effect of Light Weight Reciprocating Components on Engine Combustion, Frictional Losses, and Heat Transfer, Chrysler, 8/88 to 8/90, \$115,992, Principal Investigator.

An Optical Table for Laser Velocimetry, \$6,311 (gift), Newport Corp., from 4/89, Principal Investigator

Support for Women, Minorities, and Disabled Engineering Research Assistants, NSF, 2/89 - 2/90, \$4,958, Principal Investigator.

Development of an Improved Combustion Model for Use in a Multi-dimensional Engine Simulation, National Center for Supercomputing Applications, 90 CPU hours on CRAY X/MP and CRAY 2, 12/89 - 12/90, Principal Investigator.

An Experimental and Analytical Study of Unsteady Heat Transfer in LHR Engines - REU Supplement, NSF, 2/1/90 to 7/31/90, \$8,973, Principal Investigator.

Investigation of a Fluidized Bed Heat Exchanger, U.S. Army CERL, 8/90 to 5/91, \$16,935, Principal Investigator

Development of a Hydrocarbon Emissions Model for Multi-Dimensional Engine Simulation, National Center for Supercomputing Applications, 80 CPU hours on CRAY X/MP and CRAY 2, 4/90 - 4/91, Principal Investigator.

Effect of Reed Valves in the Intake Ports on SI Engine Performance and Knock, Ford Motor Company, 8/21/90 to 12/93, \$169,377, Co-Principal Investigators: D.N. Assanis, J. E. Peters, R. A. White, Director: D. N. Assanis.

A Study of Fuel-Air Distribution in the Intake System of a Spark-Ignited Natural Gas Engine, Cummins, 8/21/90 - 5/31/94, \$140,000 (gift), Co-Principal Investigators: D. N. Assanis, R. A. White.

Lignin-Augmented Bituminous Coal Depolymerization: A Route to Clean Fuels, Center for Research on Sulfur in Coal, \$105,036, Co-PI, 8/21/90 to 8/31/91, Co-Principal Investigators: D. N. Assanis, C. Kruse, PD: C. Kruse.

Prediction of 3-D Turbulent Flows Using a BFC Computer Code, National Center for Supercomputing Applications, \$24,000 and 50 CPU hours on CRAY 2, 9/90 - 8/92, Principal Investigator.

Joint Research Program between Mitsubishi Motors Corp. and University of Illinois, Mitsubishi Motors Corp., \$340,000 6/1/91 to 5/31/93, Co-Principal Investigators: D. N. Assanis, R. A. White, H. Sehitoglu, D. Socie, Project Director: D. N. Assanis.

Octane Requirement Increase and its Relation to Combustion Chamber Deposits, Amoco Oil Company, \$130,798, 9/1/91 to 12/93, Co-Principal Investigators: D. N. Assanis, R. A. White, Project Director: R. A. White.

Integrated Production/Use of Ultra Low Ash Coal, Center for Research on Sulfur in Coal, \$148,959, Co-PI, 8/91-8/92, Co-Principal Investigators: D. N. Assanis, C. Kruse, Project Director: C. Kruse.

Development, Optimization, and Testing of a 3-D Computational Fluid Dynamics Code, National Center for Supercomputing Applications, 96 hours on CRAY Y-MP, 11/91 to 12/92, Principal Investigator.

A Modern Set of Emissions Analyzers for Internal Combustion Engine Pollution Studies, UIUC Research Board, \$42,000 (grant), 10/91, Principal Investigator.

Development of a Comprehensive Evaporation Model for Use in a Multi-Dimensional Engine Simulation, National Center for Supercomputing Applications, 85 CPU hours on CRAY X/MP and CRAY 2, 11/92 - 12/93, Principal Investigator.

Effects of Combustion Characteristics on Heat Loss under Knocking and Non-Knocking Conditions, Mitsubishi Motor Company, 6/93 - 5/95, \$200,085, Co-Principal Investigator: D. N. Assanis.

An Improved Model for Droplet Evaporation in High Pressure Diesel Sprays, UIUC Research Board, \$6,728 (grant), 6/93 to 12/93, Principal Investigator.

Design of Low Distortion Insulated Piston/Liner System, Inco Ltd., \$25,000 (gift), from 8/93 - 8/95, Principal Investigator.

RISC-6000 Workstations for Computation and Visualization of Reactive Engine Flows, IBM, \$39,888 (gift), from 12/93, Co-Principal Investigators: D. N. Assanis, R. A. White.

Direct Injection of Natural Gas: In Cylinder CFD Computations, DOE/NASA, 1/94 to 12/94, \$231,174, Co-Principal Investigators: D. N. Assanis, J. E. Peters, R. L. Lucht, Project Director: D.N. Assanis.

Direct Injection of Natural Gas: In Cylinder Laser Measurements, GRI, 1/94 to 12/96, \$488,178, Co-Principal Investigators: D. N. Assanis, J. E. Peters, R. L. Lucht, Project Director: R.L. Lucht.

Prediction of Engine Heat Rejection, Ford University Research Program, from 1/94, \$50,000 (grant), Principal Investigator.

Evaluation of Hydrated Ethanol for DI Compression Ignition Engines, Illinois Department of Energy and Natural Resources, 1/94 to 6/96, \$60,000 per year, Co-Principal Investigators: D. N. Assanis, C. Goering.

## Publications

### Articles in Refereed Journals, Transactions or Archives

1. D. N. Assanis, and J. B. Heywood, "Development and Use of a Computer Simulation of the Turbocompound Diesel System for Engine Performance and Component Heat Transfer Studies," *SAE 1986 Transactions*, 95:2, 2.451-2.476, 1987. (Presented as SAE Paper 860329, SAE International Congress and Exposition, Detroit, MI, Feb. 24-28, 1986; and included in *The Adiabatic Diesel Engine: Global Developments*, SAE Special Publication 650, 95-120, 1986.)
2. Assanis, D. N., and Heywood, J. B., "Simulation Studies of the Effects of Low-Heat-Rejection on Turbocompound Diesel Engine Performance," *International Journal of Vehicle Design*, 8:3, 282-299, 1987. (Based on Presentation at 3rd International Conference on Turbocharging and Turbochargers, Institute of Mechanical Engineers, London, United Kingdom, May 6-8, 1986.)
3. Assanis, D. N., and E. Badillo, "Transient Heat Conduction in Low-Heat Rejection Engine Combustion Chambers," *SAE 1987 Transactions*, 96:4, 4.82-4.92, 1988. (Presented as SAE Paper 870156, SAE International Congress and Exposition, Detroit, MI, Feb. 23-27, 1987; and included in *Adiabatic Engines and Systems*, SAE Special Publication 700, 153-163, 1987.)
4. Assanis, D. N., and E. Badillo, "Transient Analysis of Piston-Liner Heat Transfer in Low-Heat-Rejection Diesel Engines," *SAE 1988 Transactions: Journal of Engines*, 97:6, 6.295-6.305, 1989. (Presented as SAE Paper 880189, SAE International Congress and Exposition, Detroit, MI, Feb. 29-March 4, 1988; and included in *Recent Developments in the Adiabatic Engine*, SAE Special Publication 738, 97-107, 1988.)
5. Assanis, D. N., "Effect of Combustion Chamber Insulation on the Performance of a Low-Heat-Rejection Diesel Engine with Exhaust Heat Recovery," *Journal of Heat Recovery Systems & Combined Heat and Power*, 9:5, 475-484, 1989. (Based on Paper 869486, presented at 21st Intersociety Energy Conversion Engineering Conference, San Diego, CA, Aug. 25-29, 1986.)
6. Assanis, D. N., and E. Badillo, "On Heat Transfer Measurements in Diesel Engines using Co-Axial Fast-Response Thermocouples," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, 111:3, 458-465, 1989. (Presented at ASME-ETCE Technical Conference, Houston, TX, Jan. 22-25, 1989; and included in *Basic Processes in Internal Combustion Engines*, ICE-6, 25-32, 1989.)
7. Assanis, D. N., "Thin Thermal Barrier Coatings for Internal Combustion Engine Components," *International Journal of Materials and Product Technology*, 4:3, 232-243, 1989. (Presented with R. Kamo and W. Bryzik as SAE Paper 890143, SAE International Congress and Exposition, Detroit, MI, Feb. 27 - March 3, 1989 and selected for *SAE 1989 Transactions: Journal of Engines*, 98:3, 131-136, 1990.)
8. Phillips, A., and D. N. Assanis, "A PC-Based Vehicle Powertrain Simulation for Fuel Economy and Performance Studies," *International Journal of Vehicle Design*, 10:6, 639-658, 1989. (An improved version of the simulation was presented with A. Phillips and P. Badgley in SAE Paper 900619, SAE International Congress and Exposition, Detroit, MI, Feb. 26-March 2, 1990; *SAE 1990 Transactions: Journal of Passenger Cars*, 99:6, 1991.)
9. Assanis, D. N. and M. Polishak, "Valve Event Optimization in a Spark-Ignition Engine," *International Journal of Vehicle Design*, 10:6, 625-638, 1989. (Presented at ASME-ICED Technical Conference, Dearborn, MI, Oct. 15-18, 1989; *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, 112:3, 341-347, 1990.)
10. Assanis, D. N., and E. Badillo, "Evaluation of Alternative Thermocouple Designs for Transient Heat Transfer Measurements in Metal and Ceramic Engines," *SAE 1989 Transactions: Journal of Engines*, 98:3, 1036-1051, 1990. (Presented as SAE Paper 890571, SAE International Congress and Exposition, Detroit, MI, Feb. 27 - March 3, 1989; and included in *Worldwide Progress on Adiabatic Engines*, SAE Special Publication 785, 169-184, 1990.)
11. Tamamidis, P., and D. N. Assanis, "Generation of Orthogonal Grids with Control of Spacing," *Journal of Computational Physics*, 94:2, 437-453, 1991.

12. Sekar, R. R., W. W. Marr, D. N. Assanis, R. L. Cole, T. J. Marciniak, and J. E. Schaus, "Oxygen Enriched Diesel Engine Performance: A Comparison of Analytical and Experimental Results," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, 113:3, 365-369, 1991. (Presented at ASME-ICED Technical Conference, Rockford, IL, Oct. 1990; and included in *New Technology in Large Bore Engines*, ICE-13, 57-62, 1990.)
13. Filipi, Z., and D. N. Assanis, "Quasi-Dimensional Computer Simulation of the Turbocharged Spark-Ignition Engine and its Use for Two and Four Valve Engine Matching Studies," *SAE 1991 Transactions: Journal of Engines*, 100:3, 52-68, 1992. (Presented as SAE Paper 910075, SAE International Congress and Exposition, Detroit, MI, Feb. 25-March 1, 1991.)
14. Assanis, D. N., Wiese, K., Schwarz, E., and W. Bryzik, "The Effects of Ceramic Coatings on Diesel Engine Performance and Exhaust Emissions," *SAE 1991 Transactions: Journal of Engines*, 100:3, 657-665, 1992. (Presented as SAE Paper 910460, SAE International Congress and Exposition, Detroit, MI, Feb. 25-March 1, 1991.)
15. Varnavas, C., and D. N. Assanis, "The Effects of Spray, Mixing, and Combustion Model Parameters on KIVA-II Predictions," *SAE 1991 Transactions: Journal of Engines*, 1488-1497, 100:3, 1992. (Presented as SAE Paper 911785, *SAE International Off-Highway and Powerplant Congress*, Milwaukee, WI, Sept. 9-12, 1991.)
16. Shih, L., and D. N. Assanis, "Implementation of a Fuel Spray Wall Interaction Model in KIVA-II," *SAE 1991 Trans: Journal of Engines*, 100:3, 1498-1512, 1992. (Presented as SAE Paper 911787, SAE International Off-Highway and Powerplant Congress, Milwaukee, WI, Sept. 9-12, 1991.)
17. Yerramareddy, S., Tcheng, D. T., Lu, S. C-Y., and D.N. Assanis, "Creating and Using Models for Engineering Design: A Machine Learning Approach," *IEEE Expert, Special Track on Machine Learning*, 52-59, June 1992.
18. Assanis, D.N., "The Effect of Thin Ceramic Coatings on Petrol Engine Performance and Emissions," *International Journal of Vehicle Design*, 13:4, 378-388, 1992. (Based on SAE Paper 900903, presented with T. Mathur at SAE 41st Annual Earthmoving Industry Conference, Peoria, IL, April 3-5, 1990; and selected for *SAE 1990 Transactions: Journal of Materials and Manufacturing*, 99:5, 1991.)
19. Assanis, D. N., and F. A. Friedmann, "A Thin-Film Thermocouple for Transient Heat Transfer Measurements in Ceramic-Coated Combustion Chambers," *International Communications in Heat and Mass Transfer*, 20, 459-468, 1993.
20. Karvounis, E., and D. N. Assanis, "The Effect of Inlet Flow Distribution on Catalytic Conversion Efficiency", *International Journal of Heat and Mass Transfer*, 36:6, 1495-1504, 1993.
21. Tamamidis, P., and D. N. Assanis, "Evaluation of Various High Order Schemes With and Without Flux Limiters," *International Journal for Numerical Methods in Fluids*, 16, 931-948, 1993.
22. Tamamidis, P., and D. N. Assanis, "Three Dimensional Incompressible Flow Calculations with Alternative Discretization Schemes," *Numerical Heat Transfer, Part B*, 24, 57-76, 1993.
23. Tamamidis, P., and D. N. Assanis, "Prediction of Three-Dimensional Steady Incompressible Flows using Body-Fitted Coordinates," *ASME Transactions: Journal of Fluids Engineering*, 115, 457-462, 1993. (Based on paper presented at ASME-WAM Symposium on Multidisciplinary Applications of Computational Fluid Mechanics, Atlanta, GA, Dec. 1-6, 1991.)
24. Assanis, D. N., Karvounis, E., Sekar, R., and W. Marr, "Heat Release Analysis of Oxygen-Enriched Diesel Combustion," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, 115, 761-768, 1993. (Presented as ASME Paper 93-ICE-8, ASME-ETCE Technical Conference, Houston, TX, Jan. 31- Feb. 3, 1993.)
25. Karvounis, E. and D. N. Assanis, "A Novel Methodology for Engine Design and Optimization," *International Journal of Vehicle Design*, 14:3, 261-277, 1993.
26. Karvounis, E. and D. N. Assanis, "FIND: A Framework for Intelligent Design," *SAE 1993 Transactions: Journal of Engines*, 102:3, 1605-1620, 1994. (Presented as SAE Paper 931180, SAE Earthmoving Conference, Peoria, IL, April 20-21, 1993.)

27. Baker, D., and D. N. Assanis, "Multi-Dimensional Finite Element Code for Transient Heat Transfer Calculations," *Numerical Heat Transfer, Part B*, 25:4, 395-414, 1994.
28. Baker, D., and D. N. Assanis, "A Methodology for Coupled Thermodynamic and Heat Transfer Analysis of a Diesel Engine," *Applied Mathematical Modeling*, 18, 590-601, 1994.
29. Tamamidis, P., and D. N. Assanis, "Optimization of Inlet Port Design in a Uniflow-Scavenged Engine Using a 3-D Turbulent Flow Code," *SAE 1993 Transactions: Journal of Engines*, 102:3, 1621-1633, 1994. (Presented as SAE Paper 931181, SAE Earthmoving Conference, Peoria, IL, April 20-21, 1993.)
30. Shih, L., and D. N. Assanis, "Effect of Ring Dynamics and Crevice Flows on Unburned Hydrocarbon Emissions," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, 116:4, 784-792, 1994. (Presented at ASME-ICED Fall Technical Conference, Morgantown, WV, September 26-29, 1993; and included in *Alternate Fuels, Engine Performance and Emissions*, ICE-20, 195-206, 1993.)
31. Mavinahally, N., Assanis, D. N., Govinda Mallan, K.R., and K. V. Gopalakrishnan, "Torch Ignition: Ideal for Lean Burn Premixed-Charge Engines," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, 116:4, 793-798, 1994. (Presented as ASME Paper 94-ICE-6, ASME ETCE Conference, New Orleans, LA, January 23-26, 1994.)
32. Nakic, D., Assanis, D. N., and R. A. White, "Effect of Elevated Piston Temperature on Combustion Chamber Deposit Growth," *SAE 1994 Transactions*, 103:3, 1454-1466, 1995. (Presented as SAE Paper 940948, SAE International Congress and Exposition, Detroit, MI, March 1-5, 1994.)
33. Papageorgakis, G., and Assanis, D.N., "A Spray Breakup Model for Low Injection Pressures," *International Communications in Heat and Mass Transfer*, 23 (1), 1-10, 1996. (Based on ATA Paper 94A1097, *New Design Frontiers for More Efficient, Reliable, and Ecological Vehicles*, Vol. 2, pp. 793- 802, presented at 4th International Conference Florence ATA 1994, March 16-18, 1994.)
34. Tamamidis, P., Zhang, G., and D. N. Assanis, "Comparison of Pressure-Based and Artificial Compressibility Methods for Solving 3-D Steady Incompressible Flows," *Journal of Computational Physics*, 124, 1-13, 1996.
35. Zhang, G., Assanis, D. N., and P. Tamamidis, "Segregated Prediction of 3-D Compressible Subsonic Fluid Flows Using Collocated Grids," *Numerical Heat Transfer, Part A*, 29:757-775, 1996.
36. Bohac, S., Baker, D., and D. N. Assanis, "A Global Model for Steady-State and Transient S.I. Engine Heat Transfer Studies," *SAE 1996 Transactions: Journal of Engines*. (Presented as SAE Paper 960073, 1996 SAE International Congress, Detroit, MI, February 26-29, 1996.)
37. Syrimis, M., Shigahara, K., and D. N. Assanis, "Correlation between Knock Intensity and Heat Transfer under Light and Heavy Knocking Conditions in a Spark Ignition Engine," *SAE 1996 Transactions: Journal of Engines*. (Presented as SAE Paper 960495, 1996 SAE International Congress, Detroit, MI, February 26-29, 1996.)
38. Sun, X., Assanis, D. N., and G. Brereton, "Assessment of Alternative Strategies for Reducing Hydrocarbon and Carbon Monoxide Emissions from Small Two-Stroke Engines," *SAE 1996 Transactions: Journal of Engines*. (Presented as SAE Paper 960743, 1996 SAE International Congress, Detroit, MI, February 26-29, 1996.)
39. Badillo, E., Assanis, D. N., and H. Servati, "One-Dimensional Transient Dynamics of Fuel Evaporation and Diffusion in Induction Systems," *SAE 1997 Transactions: Journal of Engines*. (Presented as SAE Paper 970058, 1997 SAE International Congress and Exposition, Detroit, MI, February 24-27, 1997.)
40. Alsterfalk, M., Filipi, Z. S., and D. N. Assanis, "The Potential of the Variable Stroke Spark-Ignition Engine," *SAE 1997 Transactions: Journal of Engines*. (Presented as SAE Paper 970067, 1997 SAE International Congress and Exposition, Detroit, MI, February 24-27, 1997.)
41. Syrimis, M., and D. N. Assanis, "Piston Heat Transfer Measurements Under Varying Knock Intensity in A Spark-Ignition Engine," *SAE 1997 Transactions: Journal of Engines*. (Presented as SAE Paper 971667, 1997 SAE International Fuels and Lubricants Meeting, Dearborn, MI, May 5-8, 1997.)
42. Murrell, J. D., Lewis, G. M., Baker, D. M., and D. N. Assanis, "An Early-Design Methodology for Predicting Transient Fuel Economy and Catalyst-Out Exhaust Emissions," *SAE 1997 Transactions: Journal of Engines*.

(Presented as SAE Paper 971838, Vehicle Thermal Management Systems VTMS-3 International Conference, Indianapolis, IN, May 19-22, 1997.)

43. Green, G. J., Henly, T. J., Starr, M. E., Assanis, D. N., Syrimis, M., and F. Kanafani, "Fuel Economy and Power Benefits of Cetane-Improved Fuels in Heavy-Duty Diesel Engines," *SAE 1997 Transactions: Journal of Fuels and Lubricants*. (Presented as SAE Paper 972900, SP-1302, SAE International Fall Fuels and Lubricants Meeting, Tulsa, Oklahoma, October 13-16, 1997.)
44. Syrimis, M., and D. N. Assanis, "The Effect of the Location of Knock Initiation on Heat Flux into an SI Combustion Chamber," *SAE 1997 Transactions: Journal of Engines*. (Presented as SAE Paper 972935, SP-1300, SAE International Fall Fuels and Lubricants Meeting, Tulsa, Oklahoma, October 13-16, 1997.)
45. Zhang, G., Filipi, Z. S., and D. N. Assanis, "A Flexible, Reconfigurable, Transient Multi-Cylinder Diesel Engine Simulation for System Dynamic Studies," *Mechanics of Structures and Machines*, 25(3), 357-378, 1997.
46. Agarwal, A., Filipi, Z. Assanis, D. N., and D. Baker, "Assessment of Single- and Two-Zone Turbulence Formulations for Quasi-Dimensional Modeling of Spark Ignition Engine Combustion," *Combustion Science and Technology*, **136**: 13-39, 1998.
47. Anderson, M., Assanis, D.N., and Filipi, Z. S., "First and Second Law Analyses of a Naturally-Aspirated Miller Cycle SI Engine with Late Intake Valve Closure," *SAE 1998 Transactions: Journal of Engines*. (Presented as SAE Paper 980889, SAE International Congress and Exposition, Detroit, MI, Feb. 23-26, 1998.)
48. Papageorgakis, G., and Assanis, D.N., "Optimizing Gaseous Fuel-Air Mixing in Direct Injection Engines Using an RNG-Based k- $\epsilon$  Model," *SAE 1998 Transactions: Journal of Engines*. (Presented as SAE Paper 980135, SAE International Congress and Exposition, Detroit, MI, Feb. 23-26, 1998.)
49. Papageorgakis, G., and Assanis, D.N., "Comparison of Linear and Non-Linear RNG-Based k- $\epsilon$  models for Incompressible Turbulent Flows," *Numerical Heat Transfer, Part B*, **35**: 1-22, 1999.
50. Assanis, D. N., Delagrammatikas, G., Fellini, R., Filipi, Z. S., Liedtke, J., Michelena, N., Papalambros, P., Reyes, D., Rosenbaum, D., Sales, A., Sasena, M., "Optimization Approach to Hybrid Electric Propulsion System Design," *Mechanics of Structures and Machines*, 27(4), 393-421, 1999.
51. Assanis, D. N., Bryzik, W., Castanier, M. P., Darnell, I. M., Filipi, Z. S., Hulbert, G. M., Jung, D., Ma, Z., Perkins, N. C., Pierre, C., Scholar, C. M., Wang, Y., Zhang, G., "Modeling and Simulation of an M1 Abrams Tank with Advanced Track Dynamics and Integrated Virtual Diesel Engine," *Mechanics of Structures and Machines*, 27(4), 453-505, 1999.
52. Assanis, D. N., Bryzik, W., Chalhoub, N., Filipi, Z., Henein, N., Jung, D., Liu, X., Louca, L., Moskwa, J., Munns, S., Overholt, J., Papalambros, P., Riley, S., Rubin, Z., Sendur, P., Stein, J., and G. Zhang, "Integration and Use of Diesel Engine, Driveline and Vehicle Dynamics Models for Heavy Duty Truck Simulation," *1999 SAE Transactions: Journal of Engines*. (Presented as SAE Paper 1999-01-0970, SAE International Congress and Exposition, Detroit, MI, March 1-4, 1999.)
53. Lee, K. S., Assanis, D. N., Lee, J. H., and K. M. Chun, "Measurements and Predictions of Steady-State and Transient Stress Distributions in a Diesel Engine Cylinder Head," *1999 SAE Transactions: Journal of Engines*. (Presented as SAE Paper 1999-01-0973, SAE International Congress and Exposition, Detroit, MI, March 1-4, 1999.)
54. Assanis, D. N., Hong, S. J., Nishimura, A., Papageorgakis, G., and B. VanZieleghem, "Studies of Spray Breakup and Mixture Stratification in a Gasoline Direct Injection Engine Using KIVA-3V," *ASME Transactions: Journal of Gas Turbines and Power*, **122**:3, 485-492, 2000. (Presented at ASME-ICE Spring Technical Conference, Columbus, IN, April 24-28, 1999.)
55. Filipi, Z. S., and D. N. Assanis, "The Effect of the Stroke-to-Bore Ratio on Combustion, Heat Transfer and Performance of a Homogeneous Charge SI Engine of Given Displacement," *International Journal of Engine Research*, **1**:2, 191-208, 2000.
56. Assanis, D.N., Filipi, Z. S., Gravante, S., Grohnke, D., Gui, X., Louca, L., Rideout, G., Stein, J., and Wang., Y., "Validation and Use of SIMULINK Integrated, High Fidelity, Engine-In-Vehicle Simulation of the

- International Class VI Truck,” *2000 SAE Transactions: Journal of Engines*. (Presented as SAE Paper 2000-01-0288, included in *Vehicle and Engine Systems Models*, SP-1527, SAE 2000 World Congress, Detroit, MI, March 6-9, 2000.)
57. Fiveland, S.B., and D. N. Assanis, “A Four-Stroke Homogeneous Charge Compression Ignition Engine Simulation for Combustion and Performance Studies,” *2000 SAE Transactions: Journal of Engines*. (Presented as SAE Paper 2000-01-0332, included in *Compression Ignition Combustion Processes*, SP-1530, SAE 2000 World Congress, Detroit, MI, March 6-9, 2000.)
  58. Panagiotidis, M., Delagrammatikas, G., and D. N. Assanis, “Development and Use of a Regenerative Braking Model for a Parallel Hybrid Electric Vehicle,” *2000 SAE Transactions: Journal of Engines*. (Presented as SAE Paper 2000-01-0995, SAE 2000 World Congress, Detroit, MI, March 6-9, 2000.)
  59. Assanis, D.N., Filipi, Z.S., Fiveland, S.B., and Syrimis, M., “A Methodology for Cycle-by-Cycle Transient Heat Release Analysis in a Turbocharged Direct Injection Diesel Engine,” *2000 SAE Transactions: Journal of Engines*. (Presented as SAE Paper 2000-01-1185, and included in *Compression Ignition Combustion Processes*, SP-1530, SAE 2000 World Congress, Detroit, MI, March 6-9, 2000.)
  60. Noorman, M.T., Assanis, D. N., Patterson, D., Tung, S. C., and Tseregounis, S., “Overview of Techniques for Measuring Friction Using Bench Tests and Fired Engines,” *2000 SAE Transactions: Journal of Fuels and Lubricants*. (Presented as SAE Paper 2000-01-1780, and included in *Advances in Powertrain Tribology*, SP-1548, SAE 2000 Fuels and Lubricants International Conference, Paris, France, June 19-22, 2000.)
  61. Agarwal, A. and Assanis, D. N., “Multi-Dimensional Modeling of Ignition, Combustion and Nitric Oxide Formation in Direct Injection Natural Gas Engines,” *2000 SAE Transactions: Journal of Fuels and Lubricants*. (Presented as SAE Paper 2000-01-1839 and included in *Novel SI and CI Combustion Systems*, SP-1549, SAE 2000 Fuels and Lubricants International Conference, Paris, France, June 19-22, 2000.)
  62. Lee, K.S., and D. N. Assanis, “Thermo-Mechanical Analysis of Optically Accessible Quartz Cylinder Under Fired Engine Operation,” *International Journal of Automotive Technology*, **1**:2, 79 -87, 2000.
  63. Assanis, D. N., Poola, R., Sekar, R., and G. R. Cataldi, “Study of Using Oxygen-Enriched Combustion Air for Locomotive Diesel Engines,” *ASME Transactions: Journal of Gas Turbines and Power*, **123**:1, 157-166, 2001. (Presented in Diamond Anniversary Conference of the ASME-ICE Division, Fairborn, OH, October 20-23, 1996.)
  64. Filipi, Z. S., and D. N. Assanis, “A Non-Linear, Transient, Single-Cylinder Diesel Engine Simulation for Predictions of Instantaneous Engine Speed and Torque,” *ASME Transactions: Journal of Gas Turbines and Power*, **123**:4, 951-959, 2001.
  65. Agarwal, A., and D. N. Assanis, “Multi-Dimensional Modeling of Natural Gas Autoignition using Detailed Chemical Kinetics,” *Combustion Science and Technology*, **163**: 177-210, 2001.
  66. Fiveland, S. B. and D. N. Assanis, “Development of a Two-Zone HCCI Combustion Model Accounting for Boundary Layer Effects,” *2001 SAE Transactions: Journal of Engines*. (Presented as SAE Paper 2001-01-1028, SAE World Congress, Detroit, MI, March 5-8, 2001.)
  67. Delagrammatikas, G. J., and D. N. Assanis, “The Reverse Engineering of a Turbocharged Diesel Engine through a Unified Systems Approach,” *2001 SAE Transactions: Journal of Engines*. (Presented as SAE Paper 2001-01-1244, SAE World Congress, Detroit, MI, March 5-8, 2001.)
  68. Jung, D. and D. N. Assanis, “Multi-Zone DI Diesel Spray Combustion Model for Cycle Simulation Studies of Engine Performance and Emissions,” *2001 SAE Transactions: Journal of Engines*. (Presented as SAE Paper 2001-01-1246, SAE World Congress, Detroit, MI, March 5-8, 2001.)
  69. Michelena, N. Louca, L., Kokkolaras, M., Lin, C. C., Jung, D., Filipi, Z., Assanis, D. N., Papalambros, P., Peng, H, Stein, J. and M. Feury, “Design of an Advanced Heavy Tactical Truck: A Target Cascading Case Study,” *2001 SAE Transactions, Journal of Commercial Vehicles*. (Presented as SAE Paper 2001-01-2793, SAE International Truck and Bus Exposition, Chicago, IL, November 12-14, 2001).
  70. Kim, H.M., Kokkolaras, M., Louca, L.S., Delagrammatikas, G.J., Michelena, N. F., Filipi, Z. S., Papalambros, P. Y., Stein, J.L. and D.N. Assanis, “Target Cascading in Vehicle Redesign: A Class VI Truck Study,” *Int. J. of Vehicle Design*, Vol. 29, No.3, 2002.



71. Hong, S. J., M. Wooldridge and D. N. Assanis, "Modeling of Chemical and Mixing Effects on Autoignition Under Direct Injection Stratified Charge Conditions," *Proceedings of 29<sup>th</sup> International Symposium on Combustion*, Sapporo, Japan, July 21-26, 2002.
72. Fiveland, S., Agama, R., Christensen, M., Johansson, B., Hiltner, J., Mauss, F., and D. N. Assanis, "Experimental and Simulated Results Detailing the Sensitivity of Natural Gas HCCI Engines to Fuel Composition," *2001 SAE Transactions: Journal of Fuels and Lubricants*, **110**:4, 2123-2134. (Presented as SAE Paper 2001-01-3609, 2002 SAE World Congress, Detroit, MI, March 4-7, 2002.)
73. Olsson, J. O., Tunestal, P., Johansson, B., Fiveland, S., Agama, R., Willi, M. and D. N. Assanis, "Compression Ratio Influence on Maximum Load of a Natural Gas Fueled HCCI Engine," *2002 SAE Transactions: Journal Engine*, **111**:3, pp. 442-458. (Presented as SAE Paper 2002-01-0111, Session on Homogeneous Charge Compression Ignition Engines, 2002 SAE World Congress, Detroit, MI, March 4-7, 2002.)
74. Depcik, C. and D. N. Assanis, "A Universal Heat Transfer Correlation for Intake/Exhaust Flow in a Spark-Ignition Internal Combustion Engine", *2002 SAE Transactions: Journal of Engines*, **111**:3, pp. 734-740. (Presented as SAE Paper 2002-01-0372, Session on Engine Modeling, 2002 SAE World Congress, Detroit, MI, March 4-7, 2002.)
75. Lee, T., Bae, C., Bohac, S.V. and D. N. Assanis, "Estimation of Air Fuel Ratio of an SI Engine from Exhaust Gas Temperature at Cold Start Condition," *2002 SAE Transactions: Journal of Fuels and Lubricants*, **111**:4, pp. 592-600. (Presented as SAE Paper 2002-01-1667, 2002 SAE Spring Fuels and Lubricants Meeting and Exhibition, Reno, NV, May 6-9, 2002.)
76. Fiveland, S. B. and D. N. Assanis, "Development and Validation of a Quasi-Dimensional Model for HCCI Engine Performance and Emissions Studies under Turbocharged Conditions," *2002 SAE Transactions: Journal of Fuels and Lubricants*, **111**:4, pp. 842-860. (Presented as SAE Paper 2002-01-1757, 2002 SAE Spring Fuels and Lubricants Meeting and Exhibition, Reno, NV, May 6-9, 2002.)
77. Lechner, G., Knafl, A., Assanis, D. N., Tseregounis, S.I., McMillan, M.L., Tung, S.C., Mulawa, P.A., Bardasz, E. and S. Cowling, "Engine Oil Effects on the Friction and Emissions of a Light-Duty, 2.2L Diesel CIDI Engine," *2002 SAE Transactions: Journal of Fuels and Lubricants*, **111**:4, pp. 1165-1181. (Presented as SAE Paper 2002-01-2681, SAE Powertrain & Fluid Systems Conference & Exhibition, San Diego, CA, October 21-24, 2002; selected for 2002 Award for Research on Automotive Lubricants.)
78. Babajimopoulos, A. Assanis, D. N. and S. Fiveland, "Modeling the Effects of Gas Exchange Processes on HCCI Combustion and an Evaluation of Potential Control Through Variable Valve Actuation," *2002 SAE Transactions: Journal of Fuels and Lubricants*, **111**:4, pp. 1794-1809. (Presented as SAE Paper 2002-01-2829, SAE Powertrain & Fluid Systems Conference & Exhibition, San Diego, CA, October 21-24, 2002.)
79. Assanis, D.N., Filipi, Z.S., Fiveland, S.B., and Syrimis, M., "A Predictive Ignition Delay Correlation Under Steady-State and Transient Operation of a Direct-Injection Diesel Engine," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **125**:2, 450-457, 2003.
80. Syrimis, M., and D. N. Assanis, "Knocking Cylinder Pressure Data Characteristics in a Spark-Ignition Engine," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **125**:2, 494-499, 2003.
81. Zhang, G., and D. N. Assanis, "Manifold Gas Dynamic Modeling and its Coupling with Single Cylinder Engine Models using SIMULINK," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **125**:2, 563-571, 2003.
82. Nelson II, S. A., Filipi, Z., and D. N. Assanis, "The Use of Neural Networks for Matching Compressors with Diesel Engines," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **125**:2, 572-579, 2003.
83. Bohac, S., Assanis, D. N., and H. Holmes, "Speciated Hydrocarbon Emissions and the Associated Local Ozone Production from an Automotive Gasoline Engine," *International Journal of Engine Research*, **5**:1, 53-70, 2004.

84. Delagrammatikas, G.J., and D. N. Assanis, "Development of a Neural Network Model of an Advanced, Turbocharged Diesel Engine for Use in Vehicle-Level Optimization Studies," *I. Mech. E. Proceedings, Part D, Journal of Automobile Engineering*, **218**:5, 521-533(13), 2004.
85. Li, Z, Kokkolaras, M. Jung, D., Papalambros, P. Y., and D. N. Assanis, "An Optimization Study of Manufacturing Variation Effects on Diesel Injector Design with Emphasis on Emissions," *2004 SAE Transactions: Journal of Materials and Manufacturing* (Presented as SAE Paper 2004-01-1560, 2004 SAE World Congress, Detroit, MI, March 8-11, 2004.)
86. Filipi, Z., Wang, Y., and D. N. Assanis "Effect of Variable Geometry Turbine Control (VGT) on Vehicle System Transient Response," *International Journal of Heavy Vehicle Systems*, **11**:3/4, 303-326, 2004.
87. Lin, C.C., Filipi, Z., Wang, Y., Louca, L., Peng, H., Assanis, D., and J. Stein, "Integrated, Feed-Forward Hybrid Electric Vehicle Simulation in SIMULINK and its Use for Power Management Studies," *International Journal of Heavy Vehicle Systems*, **11**:3/4, 349-371, 2004.
88. Filipi, Z., Louca, L., Kokkolaras, M., Daran, B., Lin, C.C., Yildir, U., Wu, B., Assanis, D., Peng, H., Papalambros, P., Stein, J., Szkubiel, D., and R. Chapp, "Combined Optimization of Design and Power Management of the Hydraulic Hybrid Propulsion System for the 6x6 Medium Truck," *International Journal of Heavy Vehicle Systems*, **11**:3/4, 372-402, 2004.
89. Kokkolaras, M., Louca, L.S., Delagrammatikas, G.J., Michelena, N.F., Filipi, S.V., Papalambros, P.Y., Stein, J.L. and D.N. Assanis, "Simulation-Based Optimal Design of Heavy Trucks by Model-Based Decomposition: An Extensive Analytical Target Cascading Case Study," *International Journal of Heavy Vehicle Systems*, **11**:3/4, 403-433, 2004.
90. Jung, D., and D. N. Assanis, "Modeling of a Direct-Injection Diesel Engine Emissions for a Quasi-Dimensional Multi-Zone Spray Model," *International Journal of Automotive Technology*, **5**:3, 165-172, 2004.
91. Jung, D., and D. N. Assanis, "Reduced Quasi-Dimensional Combustion Model of the Direct Injection Diesel Engine for Performance and Emissions Predictions," *KSME International Journal*, Vol. 18, No. 5, pp.865-876, 2004.
92. Wu, B., Lin, C.-C., Filipi, Z., Peng, H., and D. N. Assanis, "Optimal Power Management for a Hydraulic Hybrid Delivery Truck," *Vehicle System Dynamics*, **42**:1-2, 23-40, 2004.
93. Snyder, J., R., Grover, R. O., Sick, V., and D. N. Assanis, "Transient Spray Cone Angles in Pressure-Swirl Injector Sprays," *2004 SAE Transactions: Journal of Fuels and Lubricants*. (Presented as SAE Paper 2004-01-2939, SAE Powertrain & Fluid Systems Conference & Exhibition, Tampa, Florida, October 25-28, 2004.)
94. Sjoberg, M., Dec, J.E., Babajimopoulos, A., and D. N. Assanis, "Comparing Enhanced Natural Thermal Stratification against Retarded Combustion Phasing for Smoothing of HCCI Heat Release Rates," *2004 SAE Transactions: Journal of Fuels and Lubricants*. (Presented as SAE Paper 2004-01-2994, SAE Powertrain & Fluid Systems Conference & Exhibition, Tampa, Florida, October 25-28, 2004.)
95. Chang, J., Gurap, O., Filipi, Z, Assanis, D. N., Kuo, T. W., Najt, P., and R. Rask, "New Heat Transfer Correlation for the HCCI Engine Derived from Measurements of Instantaneous Surface Heat Flux," *2004 SAE Transactions: Journal of Fuels and Lubricants*. (Presented as SAE Paper 2004-01-2996, SAE Powertrain & Fluid Systems Conference & Exhibition, Tampa, Florida, October 25-28, 2004.)
96. Wu, B., Filipi, Z.S., Assanis, D. N., Kramer, D. M., Ohl, G. L., Prucka, M. J., and E. DiValentin, "Using Artificial Neural Networks for Representing the Air Flow through a 2.4 Liter VVT engine," *2004 SAE Transactions: Journal of Fuels and Lubricants*. (Presented as SAE Paper 2004-01-3054, SAE Powertrain & Fluid Systems Conference & Exhibition, Tampa, Florida, October 25-28, 2004.)
97. Bohac, S. and D. N. Assanis, "Effect of Exhaust Valve Timing on Gasoline Engine Performance and Hydrocarbon Emissions," *2004 SAE Transactions: Journal of Fuels and Lubricants*. (Presented as SAE Paper 2004-01-3058, SAE Powertrain & Fluid Systems Conference & Exhibition, Tampa, Florida, October 25-28, 2004.)

98. Depcik, C., van Leer, B., and D. N. Assanis, "The Numerical Simulation of Variable-Property Reacting Gas Dynamics: New Insights and Validation," *Numerical Heat Transfer - Part A: Applications*, **47**:1, 27-56, 2005.
99. Depcik, C. and D. N. Assanis, "Graphical User Interfaces in an Engineering Educational Environment," *Computer Applications in Engineering Education*, **13**:1, 48-59, 2005.
100. Cho, H., Jung, D., and D. N. Assanis, "Control Strategy of Electric Coolant Pumps for Fuel Economy Improvement," *International Journal of Automotive Technology*, **6**:3, 269-275, 2005.
101. Chang, J., Filipi, Z., Assanis, D., Kuo, T-W., Najt, P. and R. Rask, "Characterizing the Thermal Sensitivity of a Gasoline HCCI Engine with Measurements of Instantaneous Wall Temperature and Heat Flux," Special HCCI issue, *International Journal of Engine Research*, 289-310, **6**:4, 2005.
102. Babajimopoulos, A., Assanis, D.N., Flowers, D., Aceves, S., and R. Hessel, "A Fully Coupled Computational Fluid Dynamics and Multi-Zone Model with Detailed Chemical Kinetics for the Simulation of Premixed Charge Compression Ignition Engines," Special HCCI issue of *International Journal of Engine Research*, 497-512, **6**:5, 2005.
103. Depcik, C. and D. N. Assanis, "One Dimensional Automotive Catalyst Modeling," *Progress in Energy and Combustion Science*, 308-369, **31**:4, 2005.
104. Kokkolaras, M., Mourelatos, Z.P., Louca, L.S., Filipi, Z.S., Delagrammatikas, G.J., Stefanopoulou, A.G., Papalambros, P.Y., and D.N. Assanis, "Design under Uncertainty and Assessment of Performance Reliability for a Dual-Use Medium Truck with Hydraulic-Hybrid Powertrain and Fuel Cell Auxiliary Power Unit," *2005 SAE Transactions: Journal of Engines*. (Presented as SAE Paper 2005-01-1396, SP-1956, 2005 SAE World Congress, Detroit, MI, April 11-14, 2005.)
105. Jacobs, T. J., Bohac, S. V., Assanis, D. N., Szymkowicz, P. G., "Lean and Rich Premixed Compression Ignition Combustion in a Light-Duty Diesel Engine," *2005 SAE Transactions: Journal of Engines*. (Presented as SAE Paper 2005-01-0166, SP-1963, 2005 SAE World Congress, Detroit, MI, April 11-14, 2005.)
106. Lechner, G., Jacobs, T., Chryssakis, C., D. N. Assanis, and R. Siewert, "Evaluation of Narrow Spray Cone Angle, Advanced Injection Timing Strategy to Achieve Partially Premixed Compression Ignition Combustion in a Diesel Engine," *2005 SAE Transactions: Journal of Engines*. (Presented as SAE Paper 2005-01-0167, SP-1963, 2005 SAE World Congress, Detroit, MI, April 11-14, 2005.)
107. Aceves, S., Flowers, D.L., Espinosa-Loza, F., Babajimopoulos, A., and D.N. Assanis, "Analysis of Premixed Charge Compression Ignition Combustion with a Sequential Fluid Mechanics-Multizone Chemical Kinetics Model," *2005 SAE Transactions: Journal of Engines*. (Presented as SAE Paper 2005-01-0115, SP-1963, 2005 SAE World Congress, Detroit, MI, April 11-14, 2005.)
108. Hong, S.J., Wooldridge, M. S., Im, H.G., Assanis, D.N., and Pitsch, H., "Development and Application of a Comprehensive Soot Model for 3D CFD Reacting Flow Studies in a Diesel Engine," *Combustion and Flame*, **143**:1-2, 11-26, 2005.
109. Jung, D. and D. N. Assanis, "Quasi-Dimensional Modeling of Direct Injection Diesel Engine Nitric Oxide, Soot and Unburned Hydrocarbon Emissions", *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, 128:2, 388-396, 2006.
110. Chryssakis, C.A., Hagen, J.R., Knafl, A., Hamosfakidis, V.D., Filipi, Z.S., and D.N. Assanis, "In-Cylinder Reduction of PM and NOx Emissions from Diesel Combustion with Advanced Injection Strategies," special issue on "New Strategies in Automotive Diesel Engines for Meeting Upcoming Pollutant Emissions Restrictions," *International Journal of Vehicle Design*, 83-102, **41**:1-4, 2006.
111. Bohac, S.V., Han, M., Jacobs, T.J., Lopez, A.J., Assanis, D.N., and P.G. Szymkowicz, "Speciated Hydrocarbon Emissions from an Automotive Diesel Engine and DOC Utilizing Conventional and PCI Combustion," *2006 SAE Transactions: Journal of Fuels and Lubricants*, **115**, 41-52, 2007. (Presented as SAE Paper 2006-01-0201, SP-2005, 2006 SAE Congress, Detroit, MI, April 3-6, 2006.)
112. Knafl, A., Busch, S. B., Han, M., Bohac, S.V., Assanis, D.N., Szymkowicz, P.G., and R.D. Blint, "Characterizing Light-Off Behavior and Species-Resolved Conversion Efficiency during In-Situ Diesel

- Oxidation Catalyst Degreening,” *2006 SAE Transactions: Journal of Fuels and Lubricants*, **115**, 53-62, 2007. (Presented at 2006 SAE Congress, SP-2022, Detroit, MI, April 3-6, 2006.)
113. Chang, K.J., Babajimopoulos, A., Lavoie, G.A., Filipi, Z.S., and D.N. Assanis, “Analysis of Load and Speed Transitions in an HCCI Engine Using 1-D Cycle Simulation and Thermal Networks,” *2006 SAE Transactions: Journal of Engines*, **115**, 621-633, 2007. (Presented as SAE Paper 2006-01-1087, SP-2005, 2006 SAE Congress, Detroit, MI, April 3-6, 2006.)
  114. Guralp, O.A., Hoffman, M.A., Assanis, D.N., Filipi, Z.S., Kuo, T.W., Najt, P., and R. Rask, “Characterizing the Effect of Combustion Chamber Deposits on a Gasoline HCCI Engine,” *2006 SAE Transactions, Journal of Engines*, **115**, 824-835, 2007. (Presented as SAE Paper 2006-01-3277, Powertrain and Fluid Systems Conference and Exhibition,” October 2006, Toronto, ON, Canada).
  115. Filipi, Z., Fathy, H., Hagen, J., Knafl, A., Ahlawat, R., Liu, J., Jung, D., Assanis, D.N., Peng, H., and J. Stein, “Engine-in-the-Loop Testing for Evaluating Hybrid Propulsion Concepts and Transient Emissions – HMMWV Case Study,” *2006 SAE Transactions: Journal of Commercial Vehicles*, **115**, 23-41, 2007. (SAE Paper 2006-01-0443, SP-2008, 2006 SAE Congress, Detroit, MI, April 3-6, 2006.)
  116. Jacobs, T. J. and D. N. Assanis, “The Attainment of Premixed Compression Ignition Low-Temperature Combustion in a Compression Ignition Direct Injection Engine,” *Proceedings of Combustion Institute*, vol. 31, 2913-2920, 2007. (Presented at 31<sup>st</sup> International Symposium on Combustion, Heidelberg, Germany, August 6-11, 2006).
  117. Cho, H., Jung, D., Filipi, Z.S., Assanis, D.N., Vanderslice, J., and W. Bryzik, “Application of Controllable Electric Cooling Pumps for Fuel Economy and Cooling Performance Improvement,” *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **127**:1, 239-244, 2007.
  118. Babajimopoulos, A., Lavoie, G.A., and D.N. Assanis “On the Role of Top Dead Center Conditions in the Combustion Phasing of Homogeneous Charge Compression Ignition Engines,” *Combustion Science and Technology*, **179**:9, 2039-2063, 2007.
  119. Depcik, C. and D.N. Assanis, “Merging Undergraduate and Graduate Fluid Mechanics Through the Use of the SIMPLE Method for the Incompressible Navier-Stokes Equations,” *International Journal of Engineering Education*, **23**:4, 816-833, 2007.
  120. Jacobs, T. Depcik, C, Hagen, J. and D. N. Assanis, “Instructional Use of a Single Zone, Pre-Mixed Spark Ignition Heat Release Simulation,” *International Journal of Mechanical Engineering Education*, **35**:1, 1-31, 2007.
  121. Fernandes, G., Fuschetto, J., Filipi, Z., Assanis, D.N., and H. McKee, “Impact of Military JP-8 Fuel on Heavy Duty Diesel Engine Performance and Emissions,” *Journal of Automobile Engineering, Proceedings of the Institution of Mechanical Engineers, Part D*, **221**:8, 957-970, 2007.
  122. Northrop, W., Jacobs, T., Assanis, D., and Bohac, S., “Deactivation of a Diesel Oxidation Catalyst due to Exhaust Species from Rich Premixed Compression Ignition in a Light-Duty Diesel Engine,” *Int. J. Engine Res.*, **8**:6, 487-498, 2007.
  123. Sampara, C.S., Bissett, E.J., Chmielewski, M., and D.N. Assanis, “Global Kinetics for Platinum Diesel Oxidation Catalysts,” *Industrial and Engineering Chemistry Research*, **46**:24, 7993-8003, 2008.
  124. Sampara, C.S., Bissett, E.J., and D.N. Assanis, “Hydrocarbon Storage Modeling for Platinum Diesel Oxidation Catalysts,” *Chemical Engineering Science*, **63**, 5279-5192, 2008.
  125. Hong, S. J., Wooldridge, M.S., Im, H.G., Assanis, D.N., and E. Kurtz, “Modeling of Diesel Combustion, Soot and NO Emissions Based on a Modified Eddy Dissipation Concept,” *Combustion Science and Technology*, **180**:8, 1421-1488, 2008.
  126. Chryssakis, C. and D. N. Assanis, “A Unified Spray Break-up Model for Internal Combustion Engine Applications,” *Atomization and Sprays*, **18**:5, 375-426, 2008.
  127. Jung, D., and D. N. Assanis, “A Reduced Quasi-Dimensional Model to Predict the Effect of Nozzle Geometry on Diesel Engine Performance and Emissions,” *Journal of Automobile Engineering (IMechE Proc. Part D)*, **222**:D1, 131-141, 2008.

128. Jung, D., Wang, W.L., Knafl, A., Jacobs, T.J., Hu, S.J., and D.N. Assanis, "Experimental Investigation of the Abrasive Flow Machining Effects on Injector Nozzle Geometries, Engine Performance and Emissions in a DI Diesel Engine," *International Journal of Automotive Technology*, **9**:1, 9-15, 2008.
129. Depcik, C., Assanis, D.N., and K. Bevan, "A One-Dimensional Lean NO<sub>x</sub> Trap Model with a Global Kinetic Mechanism that includes NH<sub>3</sub> and N<sub>2</sub>O," *Int. J. Engine Res.*, **9**:1, 57-77, 2008.
130. Skjoedt, M., Butts, R., Assanis, D. N., and S.V., Bohac, "Effects of Base Oil, Friction Modifier and Viscosity Grade on Firing Engine Friction in an Automotive Engine," *Tribology International*, **41**:6, 556-563, 2008.
131. Granell, S. M., Assanis, D. N., Bohac, S. V., and D. E. Gillespie, "The Fuel Mix Limits and Efficiency of a Stoichiometric, Ammonia and Gasoline Dual Fueled Spark Ignition Engine," *ASME Journal of Engineering for Gas Turbines and Power*, **130**:4, 042802:1-8, 2008.
132. Han, M., Jacobs, T. J., Assanis, D. N. and S. V. Bohac, "Method and Detailed Analysis of Individual Hydrocarbon Species from Diesel Combustion Modes and Diesel Oxidation Catalyst," *ASME Journal of Engineering for Gas Turbines and Power*, **130**:4, 042803:1-10, 2008. (Presented at ASME ICE Fall Technical Conference, Charleston, SC, October 14-17, 2007.)
133. Jacobs, T.J., and D.N. Assanis, "Characteristic Response of a Production Diesel Oxidation Catalyst Exposed to Lean and Rich PCI Exhaust," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **130**:4, 042805:1-9, 2008. (Presented at ASME ICE Fall Technical Conference, Charleston, SC, October 14-17, 2007.)
134. Busch, S., Bohac, S.V., and D.N. Assanis, "A Study of the Transition Between Lean Conventional Diesel Combustion and Lean, Premixed, Low-Temperature Diesel Combustion," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **130**:5, 052804:1-8, 2008. (Presented at ASME ICE Fall Technical Conference, Charleston, SC, October 14-17, 2007.)
135. Chang, J., Filipi, Z.S., Assanis, D.N., Najt, P., Rask, R., Kuo, T.W., "Investigation of Mixture Preparation Effects on Gasoline HCCI Combustion Aided by Measurements of Wall Heat Flux," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **130**, 062806:1-9, 2008. (Presented at ASME ICE Fall Technical Conference, Charleston, SC, October 14-17, 2007.)
136. Depcik, C. and D. N. Assanis, "Simulating Area Conservation and the Gas-Wall Interface for One-Dimensional Based Diesel Particulate Filter Models," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **130**, 062807:1-18, November 2008.
137. Jung, D., Yu, S., and D. N. Assanis, "Modeling of a Proton Exchange Membrane Fuel Cell with a Large Active Area for Thermal Behavior Analysis," *ASME Transactions: Journal of Fuel Cell Science and Technology*, **5**, 044502:1-6, 2008.
138. Jacobs, T.J., Jagmin, C., Williamson, W.J., Filipi, Z.S., Assanis, D.N., and W. Bryzik, "Performance and Emission Enhancements of a Variable Geometry Turbocharger on a Heavy-Duty Diesel Engine," Special Issue on Performance and Dynamics of Multi-Wheeled and Tracked Military Vehicles, *International Journal of Heavy Vehicle Systems*, **15**, 170-187, 2008.
139. Han, M., Assanis, D. N. and S. V. Bohac, "Comparison of HC Species from Diesel Combustion Modes and Characterization of a Heat-up DOC Formulation," *International Journal of Automotive Technology*, **9**:4, 405-413, 2008.
140. Han, M., Assanis, D. N. and S. V. Bohac, "Characterization of Heat-Up Diesel Oxidation Catalysts through Gas Flow Reactor and *In-situ* Engine Testing," *I. Mech. E. Part D, Journal of Automobile Engineering*, **222**:9, pp. 1705-1716, 2008.
141. Malikopoulos, A., Assanis, D.N., and P.Y. Papalambros, "Real-Time Self-Learning Optimization of Diesel Engine Calibration," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, 131, 022803:1-7, March 2009. (Based on ASE Paper ICEF2007-1603, Proceedings of ASME ICE Fall Technical Conference, 537-545, Charleston, SC, October 14-17, 2007.)
142. Prucka, R.G., Filipi, Z.S., Assanis, D.N., Kramer, D.M., and G.L. Ohl, "An Evaluation of Residual Gas Fraction Measurement Techniques in a High Degree of Freedom Spark Ignition Engine," *SAE Journal of*

- Engines*, **1**:1, 71-84, April 2009. (Presented at 2008 SAE International Congress and Exposition, Detroit, MI, April 14-17, 2008.)
143. Mosburger, M., Fuschetto, J., Assanis, D.N., Filipi, Z. and H. McKee, "Impact of High Sulfur JP-8 Fuel on Heavy Duty Diesel Engine EGR Cooler Condensate," *2008 SAE Transactions, Journal of Commercial Vehicles*, **1**:1, 100-107, April 2009. (Presented as SAE Paper 2008-01-1081 at 2008 SAE International Congress and Exposition, Detroit, MI, April 14-17, 2008.)
  144. Han, M., Assanis, D. N., Bohac, S. V., 2008, "Sources of Hydrocarbon Emissions from Low Temperature Premixed Compression Ignition Combustion in a Common Rail Direct Injection Engine," *Combustion Science and Technology*, **181**:3, 496-517, 2009.
  145. Malikopoulos, A.A., Papalambros, P.Y., and Assanis, D.N., "A Real-Time Computational Learning Model for Sequential Decision-Making Problems Under Uncertainty," *ASME J. Dyn. Sys., Meas., Control*, **131**:4, 041010(8), 2009.
  146. Hamosfakidis, V., Im, H., and D.N. Assanis, "A Regenerative Multiple Zone Model for HCCI Combustion," *Combustion and Flame*, **156**:4, 928-941 2009.
  147. Ickes, A.M., Bohac, S.V., and D.N. Assanis, "Effect of Fuel Cetane Number on a Premixed Diesel Combustion Mode," *International Journal of Engine Research*, **10**:4, 251-263, 2009.
  148. Ickes, A., Bohac, S., and D.N. Assanis, "Effect of Ethylhexyl Nitrate Cetane Improver on NOx Emissions from Premixed Low-Temperature Diesel Combustion," *Energy and Fuels*, **23**, 4943-4948, 2009.
  149. Lee, B., Filipi, Z., Assanis, D.N., and D. Jung, "Simulation-Based Assessment of Various Dual-Stage Boosting Systems in Terms of Performance and Fuel Economy Improvements," *SAE Int. J. Engines*, **2**(1): 1335-1346, 2009. (Presented as SAE Paper 2009-01-1471, SAE 2009 International Congress and Exposition, Detroit, MI, April 20-23, 2009.)
  150. Northrop, W. Bohac, S. and D.N. Assanis, "Premixed Low Temperature Combustion of Biodiesel and Blends in a High Speed Compression Ignition Engine," *SAE Int. J. Fuels Lubr.*, **2**(1): 28-40, 2009. (Presented as SAE Paper 2009-01-0133, SAE 2009 International Congress and Exposition, Detroit, MI, April 20-23, 2009.)
  151. Abarham, M., Hoard, J., Assanis, D.N., Styles, D., Curtis, E., Ramesh, N., Sluder, C.S., and J. Storey, "Modeling of Thermophoretic Soot Deposition and Hydrocarbon Condensation in EGR Coolers," *SAE Int. J. Fuels Lubr.*, **2**(1): 921-931, 2009. (Presented as SAE Paper 2009-01-1939, SAE 2009 International Powertrains, Fuels and Lubricants Meeting, Florence, Italy, June 15-17, 2009).
  152. Cho, K., Grover, R., Assanis, D.N., Filipi, Z., Najt, P., Szekely, G., and R. Rask, "Combining Instantaneous Temperature Measurements and CFD for Analysis of Fuel Impingement on the DISI Engine Piston Top," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **132**:7, 2010. (Presented as ICES2009-76117, Proceedings of the ASME Internal Combustion Engine Division 2009 Spring Technical Conference ICES2009, Milwaukee, WI, May 3-6, 2009.
  153. Lavoie, G., Martz, J., Wooldridge, M.S. and D.N. Assanis, "Multi-Mode Combustion Diagram for Spark Assisted Compression Ignition," *Combustion and Flame*, **157**:6, 1106-1110, 2010.
  154. Malikopoulos, A.A., Papalambros, P.Y., and Assanis, D.N., "Online Identification and Stochastic Control for Autonomous Internal Combustion Engines," *ASME J. Dyn. Sys., Meas., Control*, **132**:2, 6 pages, 2010.
  155. Depcik, C., Kobiera, A., and D.N. Assanis, "Influence of Density Variation on One-Dimensional Modeling of Exhaust Assisted Catalytic Fuel Reforming," *Heat Transfer Engineering: An International Journal*, **31**:13, 1098 – 1113, 2010.
  156. Abarham, M., Hoard, J., Assanis, D.N., Styles, D., Curtis, E.W., Ramesh, N., Sluder, C.S., Storey, J.M., and M. Lance, "Review of Soot Deposition and Removal Mechanisms in EGR Coolers," *SAE Int. J. Fuels Lubr.*, **3**:1, 690-704, 2010. (Presented at SAE 2010 World Congress, Detroit, MI, April 13-15, 2010.)
  157. Mamalis, S., Nair, V., Andruskiewicz, P., Olesky, S., Assanis, D.N., Babajimopoulos, A., Wermuth, N., and P. Najt, "Comparison of Different Boosting Strategies for Homogeneous Charge Compression Ignition Engines - A Modeling Study," *SAE Int. J. Engines*, **3**:1, 296-308, 2010. (Presented as SAE Paper 2010-01-0571 at SAE 2010 World Congress, Detroit, MI, April 13-15, 2010.)

158. Cho, K., Assanis, D.N., Filipi, Z., Szekely, G., Najt, P. and R. Rask, "Experimental Investigation of Combustion and Heat Transfer in a Direct-Injection Spark-Ignition (DISI) Engine via Instantaneous Combustion Chamber Surface Temperature Measurements," *Mech. E. Part D, Journal of Automobile Engineering*, **222**:11, pp. 2219-2233, 2008.
159. Northrop, W., Vanderpool, L.M., Madathil, P.V., Assanis, D.N., and S.V. Bohac, "Investigation of Hydrogen Emissions in Partially Premixed Diesel Combustion," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **132**, 112803, 2010. (Presented as ASME Paper ICEF 2009-14063, ASME ICE Division Fall Technical Conference, Lucerne, Switzerland, September 20-24, 2009).
160. Martz, J., Middleton, R., Lavoie, G., Babajimopoulos, A., and D.N. Assanis, "A Computational Study and Correlation of Premixed Isooctane-Air Laminar Reaction Front Properties under Spark Ignited and Spark Assisted Compression Ignition Engine Conditions," *Combustion and Flame*, doi: 10.1016/j.combustflame.2010.09.014, 2010; **158**: 6, 1089-1096, June 2011.
161. Abarham, M., Hoard, J.W., Assanis, D.N., Styles, D., Sluder, S., and J. Storey, "An Analytical Study of Thermophoretic Particulate Deposition in Turbulent Pipe Flows," *Aerosol Science and Technology*, Vol. 44 (9), pp. 785-795, 2010.
162. Northrop, W., Madathil, P. Bohac, S, and D.N. Assanis, "Condensational Growth of Particulate Matter from Partially Premixed Low Temperature Combustion of Biodiesel in a Compression Ignition Engine," *Aerosol Science and Technology*, 45: 1, 26-36, 2011.
163. Ortiz-Sotto, E., Assanis, D.N, and A. Babajimopoulos, "A Comprehensive Engine to Drive-Cycle Modeling Framework for the Fuel Economy Assessment of Advanced Engine and Combustion Technologies," published online before print July 25, 2011, doi: 10.1177/1468087411411615; *International Journal of Energy Research* **13**:3, 287-304, June 2012.
164. Keum, S.H., Park, H., Babajimopoulos, A., Assanis, D.N., and D. Jung, "Modeling of Heat Transfer in Internal Combustion Engines with Variable Density Effect," *International Journal of Engine Research*, 12:6, 513-526, December 2011.
165. Martz, J., H. Kwak, H., Im, H., Lavoie, G., and D.N. Assanis, "Combustion Regime of a Reacting Front Propagating into an Auto-Igniting Mixture," *Proceedings of the Combustion Institute*, **33**:2, 3001-3006, 2011. (Initially presented at 33rd International Symposium on Combustion, Beijing, China, Aug 1-6, 2010).
166. Han, D., Ickes, A., Bohac, S. V., Zhen, H., Assanis, D. N., "Premixed Low-Temperature Combustion of Blends of Diesel and Gasoline in a High Speed Compression Ignition Engine," *Proceedings of the Combustion Institute*, 33:2, 3039-3046, 2011. (Initially presented at 33rd International Symposium on Combustion, Beijing, China, Aug 1-6, 2010PROCI-D-10-00751, 2010).
167. Northrop, W. F., Bohac, S. V., Chin, Jo-Yu, Assanis, D. N., "Comparison of Filter Smoke Number and Elemental Carbon Mass from Partially Premixed Low Temperature Combustion in a Direct Injection Diesel Engine," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, 133(10), pp. 102804-1 to 102804-6, 2011. (Initially presented as ASME ICEF2010-35117, 2010).
168. Northrop, W., Assanis, D.N. and S. Bohac, "Evaluation of Diesel Oxidation Catalyst Conversion of Hydrocarbons and Particulate Matter from Premixed Low Temperature Combustion of Biodiesel," *SAE Int. Journal of Engines*, 4(1), 1431-1444, 2011. (Presented as SAE Paper 2011-01-1186, SAE 2011 World Congress, Detroit, MI, April 12-14, 2011.)
169. Vávra, J., Bohac, S. V., Manofsky, L., Lavoie, G., Assanis, D., 2012, "Knock in Various Combustion Modes in a Gasoline-Fueled Automotive Engine," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **134**:8, 082807, 8 pages, Jun 29, 2012; doi:10.1115/1.4006694. (Initially presented as ICEF2011-60124).
170. Martz, J., Lavoie, G., Im, H.G., Middleton, R., Babajimopoulos, A., and D.N. Assanis, "The Propagation of a Laminar Reaction Front during End Gas Auto-Ignition," *Combustion and Flame*, **159**:6, 2077-2086, June 2012; <http://dx.doi.org/10.1016/j.combustflame.2012.01.011>, May 2012.
171. Han, D., Ickes, A., Bohac, S. V., Zhen, H., and D. N. Assanis, "HC and CO Emissions of Premixed Low-Temperature Combustion Fueled by Blends of Diesel and Gasoline," *Fuel*, **99**, 13-19, Sept. 1, 2012.

172. Hellström, E., Stefanopoulou, A.G., Vávra, J., Babajimopoulos, A., Assanis, D., Jiang, L., and H. Yilmaz, "Understanding the Dynamic Evolution of Cyclic Variability at the Operating Limits of HCCI Engines with Negative Valve Overlap," *SAE International Journal of Engines*, **5**: 3, 2012. (Presented as SAE Paper 2012-01-1106).
173. Hagena, J., Assanis, D., Filipi, Z., "Cycle-Resolved Measurements of In-Cylinder Constituents during Diesel Engine Transients and Insight into their Impact on Emissions," *Proceedings of the IMechE, Part D, Journal of Automobile Engineering*, **225**:9, 1103-1117. (Presented as invited paper in Special Issue on Transient Operation of Internal Combustion Engines, London, UK, 2011).
174. Prucka, R., Filipi, Z., Assanis, D., "Control-Oriented Model-Based Ignition Timing Prediction for High Degree of Freedom Spark-Ignition Engines," *IMEchE, Journal of Automobile Engineering, Part D*, **226**:6, 828-839, June 2012. (Published online before print doi: 10.1177/0954407011430178).
175. Keum, S., Im, H., and D. N. Assanis, "A Spray-Interactive Flamelet Model for Direct Injection Engine Combustion," *Combustion Science and Technology*, **184**:4, 469-488, April 2012.
176. Jung, D., Kwak, K., and D. Assanis, "Integration of a Single Cylinder Engine Model and a Boost System Model for Efficient Numerical Mapping of Engine Performance and Fuel Consumption," *International Journal of Automotive Technology*, **13**:1, 1-7, January 2012), doi:10.1007/s12239-012-0001-z.
177. Chin, J.Y., Batterman, S., Northrop, W., Bohac, S. and D.N. Assanis, "Gaseous and Particulate Emissions from Diesel Engines at Idle and Under Load: Comparison of Biodiesel Blend and Ultra Low Sulfur Diesel Fuels," *Energy and Fuels*, **16**:11, 6737-6748, 2012.
178. Salvi, A., Assanis D., and Z. Filipi, "Impact of Physical and Chemical Properties of Alternative Fuels on Combustion, Gaseous Emissions and Particulate Matter during Steady and Transient Engine Operation," *Energy and Fuels*, **26**:7, 4231-4241, June 2012; DOI: 10.1021/ef300531r
179. Middleton, R., Martz, J., Lavoie, G., Babajimopoulos, A., and D.N. Assanis, "A Computational Study and Correlation of Premixed Isooctane-Air Laminar Reaction Fronts Diluted with EGR," *Combustion and Flame*, **159**:10, 3146-3157, October 2012.
180. Janakiraman, V. M., Nguyen, X. L., Sterniak, J., and D. N. Assanis, "Nonlinear Identification of A Gasoline HCCI Engine Using Neural Networks Coupled With Principal Component Analysis," *Journal of Applied Soft Computing*, **13**:5, 2375-2389, May 2013; DOI: 10.1016/j.asoc.2006.06.005. ISSN: 1568-4946.
181. Abarham M., Chafekar T., Hoard J., Styles, D., Assanis, D., "In-Situ Visualization of Exhaust Soot Particles Deposition and Removal in Channel Flows," *Chemical Engineering Science*, **87**: 359-370, 14 January 2013.
182. Lavoie, G., Ortiz-Soto, E., Babajimopoulos, A., Martz, J., and D.N. Assanis, "Thermodynamic Sweet Spot for High Efficiency Dilute Boosted Gasoline Engines," *International Journal of Engine Research*, **14**:3, 260-278, June 2013; doi: 10.1177/1468087412455372, August 16, 2012.
183. Manofsky-Olesky, L., Martz, J.B., Lavoie, G.A., Vávra, J., Assanis, D.N., and A. Babajimopoulos, "The Effects of Spark Timing, Unburned Gas Temperature, and Negative Valve Overlap on the Rates of Stoichiometric Spark Assisted Compression Ignition Combustion," *Applied Energy*, **105**, 407-417, May 2103, <http://dx.doi.org/10.1016/j.apenergy.2013.01.038>
184. Hagen, L., Manofsky-Olesky, L., Bohac, S., Lavoie, G., and D. Assanis, "Effects of a Low Octane Gasoline Blended Fuel on Negative Valve Overlap Enabled HCCI Load Limit, Combustion Phasing And Burn Duration," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **135**, 072001 1-10, 2013; doi:10.1115/1.4023885. (Presented as ASME Paper ICEF2012-92155, Proceedings of the ASME 2012 Internal Combustion Engine Division Fall Technical Conference, September 23-26, 2012, Vancouver, BC, Canada).
185. Zaseck, K., Babajimopoulos, A., Brusstar, M., Filipi, Z., and D.N. Assanis, "Design and Modeling of a Novel Internal Combustion Engine with Direct Hydraulic Power Take-off," *SAE Int. J. Alt. Power*, **2**:204-215, May 2013; doi: 10.4271/2013-01-1733. (Presented as SAE Paper 2013-01-1733, SAE 2013 World Congress and Exhibition, April 16, 2013, Detroit, Michigan).
186. Abarham, M., Zamankhanb, P., Hoard, J., Styles, D., Sluder, S., Storey, J., Lance, M., and D. Assanis, "CFD Analysis of Particle Transport in Axi-Symmetric Tube Flows under the Influence of Thermophoretic Force,"



187. Zhu, H., Bohac, S., Nakashima, K., Hagen. L., Huang, Z., and D.N. Assanis, "Effect of Biodiesel and Ethanol on Load Limits of High-Efficiency Premixed Low-Temperature Combustion in a Diesel Engine," *Fuel*, **106**, 773-778, 2013; <http://dx.doi.org/10.1016/j.fuel.2012.10.073>
188. Zhu, H., Bohac, S., Huang, Z., and D.N. Assanis, "Defeat of the Soot/NOx Trade-Off using Biodiesel-Ethanol in a Moderate EGR Premixed Low-Temperature Combustion Mode," *ASME Transactions: Journal of Engineering for Gas Turbines and Power*, **135**, 091502 1-7, September 2013.
189. Zhu, H., Bohac, S., Nakashima, K., Hagen. L., Huang, Z., and D.N. Assanis, "Effect of Fuel Oxygen on the Trade-Offs between Soot, NOx and Combustion Efficiency in Premixed Low-Temperature Diesel Engine Combustion," *Fuel*, **112**, 459-465, 2013; <http://dx.doi.org/10.1016/j.fuel.2013.05.023>
190. Zhu, H., Bohac, S., Huang, Z., and D.N. Assanis, "Emissions as Functions of Fuel Oxygen and Load from a Premixed Low-Temperature Combustion Mode," *International Journal of Engine Research*, October 2013. doi: 10.1177/1468087413501317.
191. Kodavasal, J., McNenly, M., Babajimopoulos, A., Aceves, S., Assanis, D., Havstad, M., and D. Flowers, "An Accelerated Multi-Zone for Engine Cycle Simulation (AMECS) of Homogeneous Charge Compression Ignition Combustion" *International Journal of Energy Research*, **14**:5, 415-433, 2013.
192. Lewis, A.M., Ortiz-Soto, E., Lavoie, G., and D.N. Assanis, "Scaling and Dimensional Methods to Incorporate Knock and Flammability Limits in Models of High Efficiency Gasoline and Ethanol Engines," *International Journal of Energy Research*, 1468087414530387, May 2014; doi:10.1177/1468087414530387.
193. Janakiraman, V. M., Nguyen, X. L., Sterniak, J., and D. N. Assanis, "Identification of the Dynamic Operating Envelope of HCCI Engines Using Class Imbalance Learning," *IEEE Trans. on Neural Networks and Learning Systems*, 2014; doi: 10.1109/TNNLS.2014.2311466
194. Mamalis, S., Babajimopoulos, A., Guralp, O., Najt, P., and D.N. Assanis, "The Interaction between Compression Ratio, Boosting and Variable Valve Actuation for High Load Homogeneous Charge Compression Ignition: A Modeling Study," **15**:4, 460-470, June 2014; doi: 10.1177/1468087413492528.
195. Mamalis, S., Babajimopoulos, A., Assanis, D.N. and C. Borgnakke, "A Modeling Framework for Second Law Analysis of Low Temperature Combustion Engines," *International Journal of Engine Research*, **15**:6, 641-653, September 2014; doi: 10.1177/1468087413512312.
196. Salvi, A., Hoard, J., Bieniek, M., Abarham M., Styles, D., Assanis, D., "Effect of Volatiles on Soot Based Deposit Layers," *ASME J. Eng. Gas Turbines Power*, **136**:11, 111401 (7 pages), May 16, 2014. doi: 10.1115/1.4027460. (Presented as ICEF2013-19162, Proceedings of the ASME Internal Combustion Engine Division Fall Technical Conference, October 2013).
197. Manofsky-Olesky, L., Lavoie, G., Assanis, D.N., Wooldridge, M., and J. Martz, "The Effects of Diluent Composition on the Rates of HCCI and Spark Assisted Compression Ignition Combustion," *Applied Energy*, **124**, 186-198, July 2014; doi: 10.1016/j.apenergy.2014.03.015.
198. Ortiz-Soto, E., Lavoie, G., Martz, J, Wooldridge, M., and D.N. Assanis, "Enhanced Heat Release Analysis for Advanced Multi-Mode Combustion Engine Experiments," *Applied Energy*, **136**, 465-479, December 2014; doi:10.1016/j.apenergy.2014.09.038.
199. Mamalis, S. and D.N. Assanis, "Second Law Analysis of Boosted Homogeneous Charge Compression Ignition Engines: Modeling Study," *Journal of Energy Engineering*, 10.1061/(ASCE)EY.1943-7897.0000251, C4014014.2014.
200. Kodavasal, J., Lavoie, G., Assanis, D.N., and J. Martz, "The Effects of Thermal and Compositional Stratification on the Ignition and Duration of Homogeneous Charge Compression Ignition Combustion," *Combustion and Flame*, **162**:2, 451-461, 2015; doi:10.1016/j.combustflame.2014.07.026
201. Kodavasal, J., Lavoie, Assanis, D. and J. Martz, "The Effect of Diluent Composition on Homogeneous Charge Compression Ignition Auto-Ignition and Combustion Duration," *Proceedings of 35<sup>th</sup> International Symposium on Combustion*, San Francisco, CA, August 3-8, 2014; **35**:3, 3019-3026, 2015.

202. Middleton, R., Martz, J., Olesky, L., Lavoie, G., Wooldridge, M., and D. Assanis, "The Effect of Spark Timing and Negative Valve Overlap on Spark Assisted Compression Ignition Combustion Heat Release Rate," *Proceedings of 35<sup>th</sup> International Symposium on Combustion*, San Francisco, CA, August 3-8, 2014; **35**:3, 3117-3124, 2015.
203. Keum, S.H., Pal, P., Im, H.G., Babajimopoulos, A., and D.N. Assanis, "Effects of Fuel Injection Parameters on the Performance of Homogeneous Charge Compression Ignition at Low-Load Conditions," *International Journal of Engine Research*, April 29, 2015, doi: 10.1177/1468087415583597.

#### Refereed Conference or Symposium Presentations

1. Assanis, D. N., and A. D. Carmichael, "A Study of Wave Energy Conversion for an Offshore Structure," *Proceedings of the American Society of Mechanical Engineers 3rd International Offshore Mechanics and Arctic Engineering Symposium*, II, 287-294, 1984.
2. Kamo, R. and D. N. Assanis, "Thin Thermal Barrier Coatings for Engines," ASME Paper 89-ICE-14, ASME-ETCE Technical Conference, Houston, TX, 1989.
3. Wiese, K., M. Bonne, F. Friedmann, and D. N. Assanis, "Combustion and Heat Transfer Studies in a Direct-Injection Diesel Engine," SAE Paper 891902, SAE International Off-Highway Meeting and Exposition, Milwaukee, WI, Sept. 11-14, 1989.
4. Assanis, D. N., R. R. Sekar, D. Baker, C. Siambekos, R. L. Cole, and T. Marciniak, "Simulation Studies of Diesel Engine Performance with Oxygen Enriched Air and Water Emulsified Fuels," ASME Paper 90-ICE-17, ASME-ETCE Technical Conference, New Orleans, LA, Jan. 1990.
5. Assanis, D. N., Friedmann, F. A., Wiese, K. L., Zaluzec, M. J., and J. M. Rigsbee, "A Prototype Thin-film Thermocouple for Transient Heat Transfer Measurements in Ceramic-Coated Combustion Chambers," SAE Paper 900691, SAE International Congress and Exposition, Detroit, MI, Feb. 26-March 2, 1990.
6. Varnavas, C., and D. N. Assanis, "Combustion Studies in a Diesel Engine Using a Multidimensional Engine Simulation," ASME-ETCE Technical Conference, Houston, TX, Jan. 20-23, 1991.
7. Assanis, D. N., and F. Friedmann, "A Telemetry Linkage System for Piston Temperature Measurements in a Diesel Engine," SAE Paper 910299, SAE International Congress and Exposition, Detroit, MI, Feb. 25-March 1, 1991.
8. Assanis, D. N., and C. Varnavas, "On the Prediction of Diesel Engine Combustion Using a Multi-Dimensional Computer Code," *Proceedings of International Conference on the Analysis of Thermal and Energy Systems*, pp. 539-554, Athens, Greece, June 1991.
9. Assanis, D. N., and D. Baker, "Thermodynamic and Heat Transfer Analysis of Ceramic-Insulated Diesel Engine Part I: Methodology," *Proceedings of International Conference on the Analysis of Thermal and Energy Systems*, pp. 571-583, Athens, Greece, June 3-6, 1991.
10. Assanis, D. N., and D. Baker, "Thermodynamic and Heat Transfer Analysis of Ceramic-Insulated Diesel Engine Part II: A Case Study," *Proceedings of International Conference on the Analysis of Thermal and Energy Systems*, pp. 585-599, Athens, Greece, June 3-6, 1991.
11. Tamamidis, P., and D. N. Assanis, "2-D and 3-D Computations of Engine Scavenging Flows," ASME Paper 92-ICE-1, ASME-ETCE Technical Conference, Houston, TX, Jan. 26-29, 1992.
12. Karvounis, E. and D.N. Assanis, "An Integrated Framework for Internal Combustion Engine Simulation and Design," ASME Paper 92-ICE-2, ASME-ETCE Technical Conference, Houston, TX, Jan. 26-29, 1992.
13. Shih, L., and D. N. Assanis, "Modeling Hydrocarbon Absorption and Desorption Processes into Cylinder Wall Oil Films," *Proceedings of American Chemical Society National Meeting*, Washington, D.C., Aug. 23-25, 1992.
14. Syrimis, M. and D. N. Assanis, "Combustion of Low-Ash Coal-Diesel Slurries in a High-Speed, Direct-Injection Diesel Engine," *Coal-Fueled Diesel Engines 1993*, 53-61, ICE-19, ASME-ETCE Technical Conference, Houston, TX, Jan. 31- Feb. 3, 1993.

15. Assanis, D. N., Gavaises, M., and G. Bergeles, "Calibration and Validation of the Taylor Analogy Breakup Model for Diesel Spray Calculations," ASME Paper 93-ICE-11, ASME-ETCE Technical Conference, Houston, TX, Jan. 31- Feb. 3, 1993.
16. Assanis, D. N. and Karvounis, E., and J. A.E. Bell, "Design Optimization of the Piston Compounded Adiabatic Diesel Engine Through Computer Simulation", SAE Paper 930986, SAE International Congress and Exposition, Detroit, MI, March 1-5, 1993.
17. Varnavas, C., and D. N. Assanis, "Evaluation of an Improved Model for Droplet Evaporation in High Temperatures," Sixth Annual Conference on Liquid Atomization and Spray Systems, ILASS 93 Americas, Worcester, MA, May 17-19, 1993.
18. Shih, L., and D. N. Assanis, "Experimental Validation of Spray Dynamics and Wall Interaction Models in Quiescent Chambers", Sixth Annual Conference on Liquid Atomization and Spray Systems, ILASS 93 Americas, Worcester, MA, May 17-19, 1993.
19. Tamamidis, P., and D. N. Assanis, "Benchmarking High Resolution Schemes in Two-Dimensional Unsteady Flows," *Forum on Unsteady Flows*, FED-157, pp. 95-106, ASME International Fluids Engineering Conference, Washington, D.C. June 20-24, 1993.
20. Tamamidis, P., and D. N. Assanis, "Numerical Simulation of Internal Flows in Complex Geometries Using Curvature-Modified k- $\epsilon$  Models," ASME International Fluids Engineering Conference, Forum on Turbulent Flows, Washington, D.C. June 20-24, 1993.
21. Li, Q., and D. N. Assanis, "A Quasi-Dimensional Combustion Model for Diesel Engine Simulation," *Alternate Fuels, Engine Performance and Emissions*, ICE-20, 109-118, ASME-ICED Fall Technical Conference, Morgantown, WV, September 26-29, 1993.
22. Assanis, D. N., and B. Bolton, "Variable Valve Timing Strategies for Optimum Engine Performance and Fuel Economy," ASME Paper 94-ICE-5, ASME ETCE Conference, New Orleans, LA, January 23-26, 1994.
23. Bolton, B., and D. N. Assanis, "Optimum Breathing Strategies for Turbocharged Diesel Engines Based on the Miller Cycle Concept," ASME PD-Vol. 64-8.2, pp. 253-262, Second Biennial European Joint Conference on Engineering Systems Design and Analysis ESDA, London, England, July 4-7, 1994.
24. Varnavas, C., and D. N. Assanis, "An Improved Model for Predicting Evaporation of High Pressure Engine Sprays", ICLASS 94, Sixth International Conference on Liquid Atomization and Spray Systems, Rouen, France, July 18-22, 1994.
25. Herring, P., and D. N. Assanis, "A Low Heat Rejection and Low Thermal Distortion Piston-Liner Design," ASME-ICED Fall Technical Conference, Lafayette, IN, October 2-5, 1994.
26. Varnavas, C., and D. N. Assanis, "A High Temperature and High Pressure Evaporation Model for the KIVA-3 Code," SAE Paper 960629, 1996 SAE International Congress, Detroit, MI, February 26-29, 1996.
27. Agarwal, A., Filipi, Z., Assanis, D. N., and D. Baker, "On Turbulence Modeling for a Quasi-Dimensional Spark Ignition Engine Simulation," Sixth International Conference on Numerical Combustion, SIAM (Society for Industrial and Applied Mathematics), New Orleans, March 4-6, 1996.
28. Nelson II, S. A., Filipi, Z., and D. N. Assanis, "The Use of Neural Networks for Matching Compressors with Diesel Engines," Presented at ASME-ICE Spring Technical Conference, Youngstown, OH, April 21-24, 1996.
29. Papageorgakis, G., Agarwal, A., Zhang, G., and D. N. Assanis, "Multi-Dimensional Modeling of Natural Gas Injection, Glow Plug Ignition, and Combustion with the KIVA-3 Code," ASME-ICE Spring Technical Conference, Youngstown, OH, April 21-24, 1996.
30. Sun, X., Assanis, D. N., and G. Brereton, "Numerical Modeling and Experimental Validation of Steady-State Hydrocarbon Emissions from Small Utility Four-Stroke Engines," Presented in Session on Engine Emissions, ASME-ICE Spring Technical Conference, Youngstown, OH, April 21-24, 1996.

31. Zhang, G., and D. N. Assanis, "Application of 1-D and 3-D Gas Dynamic Modeling to Engine Manifolds," invited paper, Symposium on Supercomputer Applications in the Automotive Industries, 29th ISATA, Florence, Italy, June 3-6, 1996.
32. Filipi, Z., and D.N. Assanis, "On Determining the Optimum Stroke-to-Bore Ratio for a Spark-Ignition Engine of a Given Displacement," Powertrain Systems Session, 26th International FISITA Congress, Prague, June 16-23, 1996.
33. Zhang, G., and D. N. Assanis, "3-D Turbulent Flow Predictions Using High-Order Schemes and Comparison with Measurements," Presented in Symposium on Numerical Developments in CFD, ASME Fluids Engineering Division Summer Meeting, San Diego, CA, July 7-11, 1996.
34. Zhang, G., and D. N. Assanis, "Finite Volume Predictions of 3D Turbulent Compressible Flows Using a Segregated Solution Approach and High Order Schemes," International Symposium on Finite Volumes for Complex Applications - Problems and Perspectives, Rouen, France, July 15-18, 1996.
35. Poola, R., Assanis, D. N., Sekar, R., and G. R. Cataldi, "Study of Using Oxygen-Enriched Combustion Air for Locomotive Diesel Engines," Presented in Diamond Anniversary Conference of the ASME-ICE Division, Fairborn, OH, October 20-23, 1996.
36. Filipi, Z. S., and D. N. Assanis, "A Non-Linear, Transient, Single-Cylinder Diesel Engine Simulation for Predictions of Instantaneous Engine Speed and Torque," Presented at ASME-ICE Spring Technical Conference, Fort Collins, Colorado, April 27-30, 1997.
37. Assanis, D. N., Atreya, A., Borgnakke, C., Dowling, D., Filipi, Z., Hoffman, S., Homsy, S., Kanafani, F., Morrison, K., Patterson, D., Syrimis, M., Winton, D., Zhang, G., and Bryzik, W., "Development of a Modular Multi-Cylinder Transient Diesel Engine Simulation for System Performance and Vibration Studies," Presented at ASME-ICE Spring Technical Conference, Fort Collins, Colorado, April 27-30, 1997.
38. Zhang, G., and D. N. Assanis, "Manifold Gas Dynamic Modeling and its Coupling with Single Cylinder Engine Models using SIMULINK," Presented at ASME-ICE Spring Technical Conference, Fort Collins, Colorado, April 27-30, 1997.
39. Syrimis, M., and D. N. Assanis, "Knocking Cylinder Pressure Data Characteristics in a Spark-Ignition Engine," Presented at ASME-ICE Spring Technical Conference, Fort Collins, Colorado, April 27-30, 1997.
40. Agarwal, A., and D. N. Assanis, "Modeling the Effect of Natural Gas Composition on Ignition Delay Under Compression Ignition Conditions," Presented as SAE Paper 971711, 1997 SAE International Fuels and Lubricants Meeting, Dearborn, MI, May 5-8, 1997.
41. Baker, D. M., and D. N. Assanis, "A Coupled Methodology for Modeling the Transient Thermal Response of SI Engines Subject to Time-Varying Operating Conditions," Presented as SAE Paper 971859, Vehicle Thermal Management Systems VTMS-3 International Conference, Indianapolis, IN, May 19-22, 1997.
42. Assanis, D. N., Filipi, Z. S., and G. Zhang, "Development of Interactive Graphical Software Tools in the Context of Teaching Modeling of Internal Combustion Engines in a Multimedia Classroom," Presented at 1997 ASEE Annual Conference, Milwaukee, WI, June 15-18, 1997.
43. Filipi, Z. S., Homsy, S. C., Morrison, K. M., Hoffman, S., Dowling, D. R., and D. N. Assanis, "Strain Gage-Based Instrumentation for In-Situ Diesel Fuel Injection System Diagnostics," Presented at 1997 ASEE Annual Conference, Milwaukee, WI, June 15-18, 1997.
44. Nishida, K., Ceccio, S., Assanis, D. N., Tamaki, N., and Hiroyasu, H., "Characterization of Cavitation Flow in a Simple Hole Nozzle," Seventh International Conference on Liquid Atomization and Spray Systems, Seoul, Korea, Aug. 18-22, 1997.
45. Syrimis, M., and D. N. Assanis, "Characterization of Knocking Combustion and its Dispersion," ASME-ICE Fall Technical Conference, Madison, WI, Sept. 27 - Oct. 1, 1997.
46. Agarwal, A., and Assanis, D. N., "Multi-Dimensional Modeling of Natural Gas Ignition under Compression Ignition Conditions Using Detailed Chemistry," SAE Paper 980136, SAE International Congress and Exposition, Detroit, MI, Feb. 23-26, 1998.

47. Agarwal, A., and Assanis, D. N., "Multi-Dimensional Modeling of Nitric Oxide Formation in Direct-Injection Natural Gas Engines, COMODIA 98, *Proceedings of the Fourth International Symposium on Diagnostics and Modeling of Combustion in Internal Combustion Engines*, 561-566, Kyoto, July 20-23, 1998.
48. Assanis, D.N., Filipi, Z.S., Fiveland, S.B., and Syrimis, M., "A Predictive Ignition Delay Correlation Under Steady-State and Transient Operation of a Direct-Injection Diesel Engine," Presented at ASME-ICE Fall Technical Conference, Ann Arbor, MI, October 16-20, 1999.
49. Nishimura, A., and D. N. Assanis, "A Model for Primary Diesel Fuel Atomization Based on Cavitation Bubble Collapse Energy," Eight International Conference on Liquid Atomization and Spray Systems, ICLASS-2000, Pasadena, CA, July 16-20, 2000.
50. Filipi, Z., Wang, Y., and Assanis, D. N., "Effect of Variable Geometry Turbine (VGT) on Diesel Engine and Vehicle System Transient Response," Presented as SAE Paper 2001-01-1247, SAE World Congress, Detroit, MI, March 5-8, 2001.
51. Lin, C. C., Filipi, Z., Wang, Y., Louca, L., Peng, H., Assanis, D. N. and Stein, J., "Integrated, Feed-Forward Hybrid Electric Vehicle Simulation in SIMULINK and its Use for Power Management Studies," Presented as SAE Paper 2001-012-1334, included in *Advanced Hybrid Vehicle Powertrains*, SP-1607, SAE World Congress, Detroit, MI, March 5-8, 2001.
52. Buyuktur, S., Wooldridge, M. and D. N. Assanis, "Development of a Forward-Looking Fuel Cell Vehicle Simulation," 2001 Global Powertrain Congress, June 5-7, 2001, Detroit, MI.
53. Grover, R. and D. N. Assanis, "A Spray Wall Impingement Model Based Upon Conservation Principles," COMODIA 2001, *Proceedings of the Fifth International Symposium on Diagnostics and Modeling of Combustion in Internal Combustion Engines*, Nagoya, Japan, July 1-4, 2001.
54. Hong, S. J., D. N. Assanis and M. Wooldridge, "Multi-Dimensional Modeling of NO and Soot Emissions with Detailed Chemistry and Mixing in a Direct Injection Natural Gas Engine," SAE Paper 2002-01-1112, Session on Multi-Dimensional Engine Modeling, 2002 SAE World Congress, Detroit, MI, March 4-7, 2002.
55. Bohac, S. and D. N. Assanis, "Quantification of Local Ozone Production Attributable to Automobile Hydrocarbon Emissions," SAE Paper 2001-01-3760, 2001; presented at Environmental Sustainability Conference and Exhibition: Land, Sea and Air Mobility, Graz, Austria, April 8-10, 2002.
56. Grover, R.O., Assanis, D. N., Lippert, A.M., El Tahry, S.H., Drake, M.C., Fansler, T.D., Harrington, D.L., "A Critical Analysis of Splash Criteria for SIDI Spray Impingement," ICLASS Americas 2002, Madison, WI, May 14-17, 2002.
57. Chryssakis, C. A., Driscoll, K.D., Sick, V., and D. N. Assanis, "Validation of an Enhanced Liquid Sheet Atomisation Model Against Quantitative Laser Diagnostic Measurements," ICLASS-Europe 2002, Zaragoza, Spain, September 9-11, 2002.
58. Wu, B., Lin, C.-C., Filipi, Z., Peng, H., and D. N. Assanis, "Optimization of Power Management Strategies for a Hydraulic Hybrid Medium Truck," *Proceedings of the 6th International Symposium on Advanced Vehicle Control*, Hiroshima, Japan, September 2002.
59. Louca, L., Kokkolaras, M., Delagrammatikas, G., Michelena, N., Filipi, Z., Papalambros, P., and D. N. Assanis, "Analytical Target Cascading for the Design of an Advanced Technology Truck," IMECE 2002-32860, 2002 ASME International Mechanical Engineering Congress and Exposition, New Orleans, LA, November 17-22, 2002.
60. Delagrammatikas, G. and D. N. Assanis, "Optimization of Advanced Engine Controls for Conventional Vehicles: A Driving Cycle Perspective," submitted to Symposium on Advanced Automotive Technologies, IMECE 2002-32087, ASME International Mechanical Engineering Congress and Exposition, New Orleans, LA, November 17-22, 2002.
61. Jacobs, T. J., Assanis, D. N., and Z. S. Filipi, "The Impact of Exhaust Gas Recirculation on Performance and Emissions of a Heavy-Duty Diesel Engine," SAE Paper, 2003-01-1068, 2003 SAE World Congress, Detroit, MI, March 3-6, 2003.

62. Chryssakis, C. A., Assanis, D. N., Lee, J. K., Nishida, K., "Fuel Spray Simulation of High-Pressure Swirl-Injector for DISI Engines and Comparison with Laser Diagnostic Measurements," SAE Paper 2003-01-0007, 2003 SAE World Congress, Detroit, MI, March 3-6, 2003.
63. Chryssakis, C. A., Assanis, D. N., Lee, J. K., Nishida, K., "An Investigation of the Breakup Mechanisms for Swirl Sprays From High-Pressure Swirl Injectors," ICLASS 2003, Sorrento, Italy, July 13-18, 2003.
64. Kazancioglu, E., Wu, G., Ko, J., Bohac, S., Filipi, Z., Hu, S. J., Assanis, D. N., and Saitou, K., Robust Optimization of an Automotive Valvetrain Using a Multi-Objective Genetic Algorithm, Paper DETC 2003/DAC-48714, Proceedings of DETC'03 ASME 2003 Design Technical Conference, Chicago, IL, Sept. 2-6, 2003.
65. Zeng, P. and D. N. Assanis, "Time-Resolved Heat Transfer in Engine Intake Manifold," TRCON-03 International Symposium on Transient Convective Heat and Mass Transfer in Single and Two-Phase Flows, Cesme, Turkey, August 17-22, 2003.
66. Babajimopoulos, A., Lavoie, G. A. and D. N. Assanis, "Modeling HCCI Combustion with High Levels of Residual Gas Fraction – A Comparison of Two VVA Strategies", SAE Paper 2003-01-3220, 2003 SAE International Powertrain and Fluid Systems Conference, Oct.27-30, Pittsburgh, PA.
67. Hong, S.J, Assanis, D. N., Wooldridge, M. S., Im, H.G., Kurtz, E. M., and H. Pitsch, "Modeling of Diesel Combustion and NO Emissions Based on a Modified Eddy Dissipation Concept," SAE Paper 2004-01-0107, 2004 SAE World Congress, Detroit, MI, March 8-11, 2004.
68. Zeng, P. and D. N. Assanis, "Cylinder Pressure Reconstruction and its Application to Heat Transfer Analysis," SAE Paper 2004-01-0922, 2004 SAE World Congress, Detroit, MI, March 8-11, 2004.
69. Grover, R. O., Assanis, D. N., and A.M. Lippert, "A Comparison of Classical Atomization Models against Current Experimental Measurements within a Zero-Dimensional Framework," ILASS Americas, 17<sup>th</sup> Annual Conference on Liquid Atomization and Spray Systems, Arlington, VA, May 2004.
70. Vanzieleghem, B., Assanis, D., Im, H.G., "Modeling of Gasoline Direct Injection Combustion using KIVA-3V: Development of an Extended Coherent Flamelet Model and Validation with Optical Engine Planar Laser Induced Fluorescence Measurements", COMODIA 2004, Yokohama, Japan, August 2004.
71. Vanzieleghem, B.P., C.A. Chryssakis, R.O. Grover, V. Sick and D.N. Assanis, "Modeling of Gasoline Direct Injection Mixture Formation with KIVA-3V and Validation with Optical Engine Planar Laser Induced Fluorescence Measurements: Development of Spray Breakup and Wall Impingement Models," COMODIA 2004, Yokohama, Japan, August 2004.
72. Zeng, P., Prucka, R. G., Filipi, Z. S., and D. N. Assanis, "Reconstructing Cylinder Pressure of a Spark-Ignition Engine for Heat Transfer and Heat Release Analysis," ASME Paper ICEF 2004-886, ASME Internal Combustion Engine Technical Conference, Long Beach, CA, October 24-27, 2004.
73. Zeng, P., and D.N. Assanis, "Unsteady Convective Heat Transfer Modeling and Application to Engine Intake Manifolds," IMECE Paper 2004-60068, 2004 ASME International Mechanical Engineering Congress and R&D Exposition, Anaheim, CA, Nov 13-19, 2004.
74. Zeng, P., and D.N. Assanis, "The Development of a Computer-Based Teaching Tool for Internal Combustion Engine Courses," IMECE Paper 2004-61998, 2004 ASME International Mechanical Engineering Congress and R&D Exposition, Anaheim, CA, Nov 13-19, 2004.
75. Cho, H., Jung, D., Filipi, Z., Assanis, D. N., Bryzik, W., and J. Vanderslice, "Application of Controllable Electric Coolant Pumps for Fuel Economy and Cooling Performance Improvement," IMECE Paper 2004-61056, 2004 ASME International Mechanical Engineering Congress and R&D Exposition, Anaheim, CA, Nov 13-19, 2004.
76. Chryssakis, C., Assanis, D.N., Kook, S., and C. Bae, "Effect of Multiple Injections on Fuel-Air Mixing and Soot Formation in Diesel Combustion Using Direct Flame Visualization and CFD Techniques," ASME Paper ICES2005-1016, ASME Internal Combustion Engine Technical Conference, Chicago, IL, April 5-7, 2005.

77. Knafl, A., Hagen, J., Filipi, Z., and D. N. Assanis, "Dual Use Engine Calibration: Leveraging Modern Technologies to Optimize Performance and Emissions Trade-offs," SAE Paper 2005-01-1549, SP-1962, 2005 SAE World Congress, Detroit, MI, April 11-14, 2005.
78. Assanis, D. N., Cho, W., Choi, I., Ickes, A., Jung, D., Martz, J., Nelson, R., Sanko, J., Thompson, S., Brevick, J.E., and B. Inwood, "Pressure Reactive Piston Technology Investigation and Development for Spark Ignition Engines," SAE Paper 2005-01-1648, Session on CI and SI Power Cylinder Systems, SP-1964, 2005 SAE World Congress, Detroit, MI, April 11-14, 2005.
79. Lee, S., Bae, C., Prucka, R., Fernandes, G., Filipi, Z. S., and D. N. Assanis, "Quantification of Thermal Shock in a Piezoelectric Pressure Transducer," SAE Paper 2005-01-2092, SAE Brazil Fuels & Lubricants Meeting and Exhibition (Co-sponsored by SAE International), Rio de Janeiro, Brazil, May 11-13, 2005.
80. Chryssakis, C.A. and D.N. Assanis, "A Secondary Atomization Model for Liquid Droplet Deformation and Breakup under High Weber Number Conditions," 18<sup>th</sup> Annual Conference on Liquid Atomization and Spray Systems, Irvine, CA, May 22-25, 2005.
81. Sampara, C. Depick, C., and D.N. Assanis, "Framework for Modeling the Components of a Fuel Processing System for Fuel Cell Applications," IMECE Paper 2005-81330, *IMECE 2005 Proceedings*, 2005 ASME Design Engineering Conference, Orlando, FLA, November 5-11, 2005.
82. Hamosfakidis, V, Im, H., and D.N. Assanis, "A Regenerative Multiple Flamelet Model for PPCI Engine Simulations," Eastern States Section Combustion Institute Fall Technical Meeting, November 13-16, 2005.
83. Cho, W., Jung, D. and D.N. Assanis, "Numerical Investigation of Pressure Reactive Piston Technology in a Spark-Ignition Engine," Paper 20056083, 18th International Combustion Engine Symposium, Jeju Island, Korea, December 20-22, 2005.
84. Jacobs, T. J., Knafl, A., Bohac, S.V., Assanis, D.N., and P.G. Szymkowicz, "The Development of Throttled and Unthrottled PCI Combustion in a Light-Duty Diesel Engine," SAE Paper 2006-01-0202, 2006 SAE Congress, Detroit, MI, April 3-6, 2006.
85. Hagen, J.R., Filipi, Z.S., and D.N. Assanis, "Transient Diesel Emissions: Analysis of Engine Operation During a Tip-In," SAE Paper 2006-01-1151, 2006 SAE Congress, Detroit, MI, April 3-6, 2006.
86. Chryssakis, C.A., Assanis, D. N., and C. Bae, "Development and Validation of a Comprehensive CFD Model of Diesel Spray Atomization Accounting for High Weber Numbers," SAE Paper 2006-01-1546, SP-2010, 2006 SAE Congress, Detroit, MI, April 3-6, 2006.
87. Jung, D., and D.N. Assanis, "Numerical Modeling of Cross Flow Compact Heat Exchanger with Louvered Fins using Thermal Resistance Concept," 2006 SAE Congress, Detroit, MI, April 3-6, 2006.
88. Malikopoulos, A., Filipi, Z., and D.N. Assanis, "Simulation of an Integrated Starter Alternator (ISA) System for the HMMWV," SAE Paper 2006-01-0442, SP-2008, 2006 SAE Congress, Detroit, MI, April 3-6, 2006.
89. Yoo, S., Jung, D., and D.N. Assanis, "Numerical Modeling of the Proton Exchange Membrane Fuel Cell for Thermal Management," Paper FUELCELL 2006-97062, 4<sup>th</sup> International Conference on Fuel Cell Science, Engineering and Technology, Irvine, CA, June 19-21, 2006.
90. Knafl, A., Jacobs, T., Bohac, S.V., and D. N. Assanis, "The Load Limits of Low-Temperature Premixed Compression Ignition Diesel Combustion," ISCE 2006, 2<sup>nd</sup> International Symposium on Clean and High Efficiency Combustion Engines, Tianjin, China, July 10-13, 2006.
91. Hamosfakidis, V. Im, H. and D.N. Assanis, "A Regenerative Multiple Flamelet Model (RMF)," Poster Presentation, 31<sup>st</sup> International Symposium on Combustion, Heidelberg, Germany, August 6-11, 2006.
92. Filipi, Z., Hagen, J., Fathy, H., Assanis, D., Stein, J., "Investigating Effects of Transients on Diesel Emissions using Engine-in-the-Loop Testing," THIESEL 2006 Conference on Thermo- and Fluid Dynamic Processes in Diesel Engines, Valencia, Spain, September 2006.
93. Grannell, S.M., Assanis, D.N., Bohac, S.V., and D. E. Gillespie, "The Operating Features of a Stoichiometric, Ammonia and Gasoline Dual Fueled Spark Ignition Engine," Paper IMECE2006-13048, *Proceedings of*

*IMECE2006 2006 ASME International Mechanical Engineering Congress and Exposition*, Chicago, IL, November 5-10, 2006.

94. Hamosfakidis, V., Kobiera, A., Im, H., and D.N. Assanis, "A Two Conserved Scalar Modeling for HCCI Applications," 5<sup>th</sup> UC Combustion Meeting, March 25-28, 2007, San Diego, CA.
95. Jacobs, T.J., and D.N. Assanis, "On the Sensitivity of NO<sub>x</sub> to Exhaust Gas Recirculation in a Premixed Compression Ignition Engine," 5<sup>th</sup> US Combustion Meeting, March 25-28, 2007, San Diego, CA.
96. Chang, K.J., Lavoie, G.A., Babajimopoulos, A., Filipi, Z.S., and D.N. Assanis, "Control of a Multi-Cylinder HCCI Engine during Transient Operation by Modulating Residual Gas Fraction to Compensate for Wall Temperature Effects," SAE Paper 2007-01-0204, SAE 2007 World Congress, Detroit, MI, April 16-19, 2007.
97. Hattori, K., Murotani, T., Sato, E., Chryssakis, C., Babajimopoulos, A., and D.N. Assanis, "Simultaneous Reduction of NO<sub>x</sub> and Soot in a Heavy-Duty Diesel Engine by Instantaneous Mixing of Fuel and Water," SAE Paper 2007-01-0125, SAE 2007 World Congress, Detroit, MI, April 16-19, 2007.
98. Knafl, A., Han, M., Bohac, S.V., Assanis, D.N., and P.G. Szymkowicz, "Comparison of Diesel Oxidation Catalyst Performance on an Engine and a Gas Flow Reactor," SAE Paper 2007-01-0231, SAE 2007 World Congress, Detroit, MI, April 16-19, 2007.
99. Baglione, M., Duty, M., Ni, J., and D.N. Assanis, "Reverse Dynamic Optimization Methodology for Maximizing Powertrain System Efficiency," Fifth IFAC Symposium on Advances in Automotive Control, Monterey Coast, CA, August 20-22, 2007.
100. Hamosfakidis, V., Kobiera, A., and D.N. Assanis, "A Regenerative Multiple Flamelet Model for non-Premixed Combustion with non-Uniform EGR," 5th IASME/WSEAS International Conference on Heat Transfer, Thermal Engineering and Environment, Vouliagmeni, Athens, Greece, August 25-27, 2007.
101. Malikopoulos, A., Papalambros, P.Y., and D.N. Assanis, "A Learning Algorithm for Optimal Internal Combustion Engine Calibration in Real Time," ASME 2007 International Design Engineering Technical Conference and Computers and Information in Engineering Conference, Las Vegas, Nevada, September 4-7, 2007.
102. Sethu, C., Leustek, M., Bohac, S.V., Assanis D.N. and Z.S. Filipi, "An Investigation in Measuring Crank-Angle Resolved In-Cylinder Engine Friction Using Instantaneous IMEP Method," Powertrain & Fluid Systems Conference & Exhibition, Donald E. Stephens Convention Center, Rosemont (Chicago), IL, October 29 - November 1, 2007.
103. Malikopoulos, A., Papalambros, P.Y., and D.N. Assanis, "A New State-Representation Learning Model for Sequential Decision-Making Problems Under Uncertainty," IMECE 2007-41258, Proceedings of 2007 ASME International Mechanical Engineering Congress and Exposition, Seattle, Washington, November 10-16, 2007.
104. Cho, K., Assanis, D., Filipi, Z., Szekely, G., Najt, P. and R. Rask, "Investigation of Combustion and Heat Transfer in a Direct Injection Spark Ignition (DISI) Engine through Instantaneous Combustion Chamber Surface Temperature Measurements," Internal Combustion Engines: Performance, Fuel Economy and Emissions, Institution of Mechanical Engineers, Combustion Engines and Fuels Group, London, England, December 11-12, 2007.
105. Malikopoulos, A., Papalambros, P.Y., and D.N. Assanis, "Optimal Engine Calibration for Individual Driving Styles," 2008 SAE International Congress and Exposition, Detroit, MI, April 14-17, 2008.
106. Lee, B., Jung, D., Assanis, D.N., and Z.S. Filipi, "Dual-Stage Turbocharger Matching and Boost Control Options," ASME Paper ICES 2008-1692, Proceedings of the ASME Internal Combustion Engine Division 2008 Spring Technical Conference, Chicago, IL, April 27-30, 2008.
107. Guralp, O., Hoffman, M., Assanis, D.N., Filipi, Z., Kuo, T.W., Najt, P. and R. Rask, "Thermal Characterization of Combustion Chamber Deposits on the HCCI Engine Piston and Cylinder Head Using Instantaneous Temperature Measurements," SAE Paper 2009-01-0668, SAE 2009 International Congress and Exposition, Detroit, MI, April 20-23, 2009.



108. Abarham, M., Hoard, J., Assanis, D.N., Styles, D., Curtis, E., Ramesh, N., Sluder, C.S., and J. Storey, "Numerical Modeling and Experimental Investigations of EGR Cooler Fouling in a Diesel Engine," SAE Paper 2009-01-1506, SAE 2009 International Congress and Exposition, Detroit, MI, April 20-23, 2009.
109. Babajimopoulos, A., Challa, P.V.S.S., Lavoie, G., and D.N. Assanis, "Model-Based Assessment of Two Variable Cam Timing Strategies for HCCI Engines: Recompression Vs. Rebreathing," ICES Paper 2009-76103, Proceedings of the ASME Internal Combustion Engine Division 2009 Spring Technical Conference ICES2009, Milwaukee, WI, May 3-6, 2009.
110. Martz, J.B., Kwak, H., Im, H.G., Lavoie, G.A., Assanis, D.N. and S.B. Fiveland, "Propagation of a Reacting Front in an Auto-Igniting Mixture", Proceedings of the 6<sup>th</sup> US National Combustion Meeting, Ann Arbor, MI, May 17-20, 2009.
111. Grannell, S., Assanis, D.N., Gillespie, D. and S.V. Bohac, "Exhaust Emissions from a Stoichiometric, Ammonia and Gasoline Dual Fueled Spark Ignition Engine," ICES2009-76131, Proceedings of the ASME Internal Combustion Engine Division 2009 Spring Technical Conference ICES2009, Milwaukee, WI, May 3-6, 2009.
112. Ickes, A., Assanis D.N. and S. Bohac, "Load Limits with Fuel Effects of a Premixed Diesel Combustion Mode," SAE Paper 2009-01-1972, SAE 2009 International Powertrains, Fuels and Lubricants Meeting, Florence, Italy, June 15-17, 2009.
113. Klinkert, S., Hoard, J.W., Sathasivam, S. R., Assanis, D.N., and S.V. Bohac, "Design of a Flow Reactor for Testing Multi-Brick Catalysts Systems Using Rapid Exhaust Gas Composition Switches," ASME Paper ICEF2009-14016, Presented as ASME Paper ICEF 2009-14063, ASME ICE Division Fall Technical Conference, Lucerne, Switzerland, September 20-24, 2009.
114. Keum, S., Im, H., and D.N. Assanis, "Computational Investigation of the Effect of Stratification on DI/HCCI Engine Combustion at Low Load Conditions," SAE Paper 2009-01-2703, 2009 Powertrains, Fuels and Lubricants Meeting, San Antonio, TX, November 2-4, 2009.
115. Prucka, R., Lee, T.-K., Filipi, Z, and D. Assanis, "Turbulence Intensity Calculation from Cylinder Pressure Data in a High Degree of Freedom Engine," SAE 2010 World Congress, Detroit, MI, April 13-15, 2010.
116. Northrop, W., Bohac, S., Assanis, D. and J.Y. Chin, "Comparison of Filter and Smoke Number and Elemental Carbon Mass from Partially Premixed Low Temperature Combustion in a Direct Injection Diesel Engine," ASME 2010 Internal Combustion Engine Division Fall Technical Conference, San Antonio, TX, September 12-15, 2010.
117. Smith, M., Filipi, Z., Schihl, P. and D.N. Assanis, "Effect of High Sulfur Military JP-8 Fuel on Heavy Duty Diesel Engine Emissions and EGR Cooler Condensate," ICEF2010-35001, ASME 2010 Internal Combustion Engine Division Fall Technical Conference, San Antonio, TX, September 12-15, 2010.
118. Shingne, P, Assanis, D.N., Babajimopoulos, A., Keller, P., Roth, D., Becker, M., "Turbocharger Matching for a 4-Cylinder Gasoline HCCI Engine Using a 1D Engine Simulation," SAE Paper 2010-01-2143, SAE 2010 Powertrain, Fuels and Lubricants Meeting, San Diego, CA, October 25-27, 2010.
119. Delorme, A., Rousseau, A., Wallner, T., Babajimopoulos, A. and D.N. Assanis, "Evaluation of Homogeneous Charge Compression Ignition (HCCI) Engine Fuel Savings for Various Electric Drive Powertrains," The 25<sup>th</sup> World Battery, Hybrid and Fuel Cell Electric Vehicle Symposium and Exhibition," Shenzhen, China, November 5-9, 2010.
120. Manofsky, L., Vavra, J., Assanis, D.N., and A. Babajimopoulos, "Bridging the Gap between HCCI and SI: Spark-Assisted Compression Ignition," SAE Paper 2011-01-1179, SAE 2011 World Congress, Detroit, MI, April 12-14, 2011.
121. Vithala, T.V., Assanis, D.N., Hoard, J., and D. Styles, "3-D Numerical Mixing of Intake Air and Exhaust Gas in a Low Pressure EGR System," ASME 2011 Internal Combustion Engine Division Fall Technical Conference ICEF2011 Morgantown, West Virginia, October 2-5, 2011.
122. Vavra, J., Bohac, S., Manofsky, L., Lavoie, G., and D.N. Assanis, "Knock in Various Combustion Modes in a Gasoline-Fueled Automotive Engine," ASME 2011 Internal

Combustion Engine Division Fall Technical Conference ICEF2011 Morgantown, West Virginia, October 2-5, 2011.

123. Smith, M., Depcik, C., Klinkert, S., Hoard, J., Bohac, S., and D.N. Assanis, "NO<sub>2</sub> Reaction Pathways with NH<sub>3</sub> on an Fe-Zeolite SCR Catalyst," ASME 2011 Internal Combustion Engine Division Fall Technical Conference ICEF2011 Morgantown, West Virginia, October 2-5, 2011.
124. Smith, M., Depcik, C., Hoard, J., Bohac, S., and D.N. Assanis, "Modeling of SCR NH<sub>3</sub> Storage in the Presence of H<sub>2</sub>O," ASME 2011 Internal Combustion Engine Division Fall Technical Conference ICEF2011 Morgantown, West Virginia, October 2-5, 2011.
125. Shingne, P., Assanis, D., Babajimopoulos, A., Mond, A., and H. Yilmaz, "Application of a Supercharger in a Two-Stage Boosting System for a Gasoline HCCI Engine: A Simulation Study," ASME Paper ICEF2011-60220, ASME 2011 Internal Combustion Engine Division Fall Technical Conference ICEF2011 Morgantown, West Virginia, October 2-5, 2011.??
126. Manofsky, L., Vávra, J., Assanis, D., and A. Babajimopoulos, "Bridging the Gap between HCCI and SI: Spark-Assisted Compression Ignition," SAE Paper 2011-01-1179, 2011, doi:10.4271/2011-01-1179.
127. Abarham M., Chafekar, T., Hoard, J., Styles, D., and D. Assanis, "A Visualization Test Setup for Investigation of Water-Deposit Interaction in a Surrogate Rectangular Cooler Exposed to Diesel Exhaust Flow," SAE World Congress, SAE 2012-01-0364, 2012.
128. Hoard, J., Chafekar, T., Abarham M., Schwader, R., Uplegger, S., Styles, D., and D. Assanis, "Large Particles in Modern Diesel Engine Exhaust," ASME Internal Combustion Engine Division Spring Technical Conference, ICES2012-81232, 2012, ASME 2012 Internal Combustion Engine Division Spring Technical Conference, Torino, Italy, May 6-9. 2012.
129. Manofsky-Olesky L., Babajimopoulos, A., Assanis, D., and J. Vávra, "Internal Residual versus Elevated Intake Temperature: How the Method of Charge Preheating Affects the Phasing Limitations of HCCI Combustion," ASME Paper ICES2012-81127, ASME 2012 Internal Combustion Engine Division Spring Technical Conference, Torino, Italy, May 6-9. 2012.
130. Janakiraman, M. V., Sterniak, J., and D.N. Assanis, "Support Vector Machines for Identification of HCCI Combustion Dynamics," ICINCO 2012, 9<sup>th</sup> International Conference on Informatics in Controls, Automation and Robotics, ICINCO (1) 2012: 385-393, Rome, Italy, July 28-31, 2012.
131. Prucka, R., Filipi, Z., Hagen, J. and D. N. Assanis, "Cycle-By-Cycle Air-To-Fuel Ratio Calculation During Transient Engine Operation Using Fast Response CO And CO<sub>2</sub> Sensors," ASME Paper ICEF2012-92094, Proceedings of the ASME 2012 Internal Combustion Engine Division Fall Technical Conference, September 23-26, 2012, Vancouver, BC, Canada.
132. Salvi, A., Hoard, J., Jagarlapudi, P., Pomphaitoonsakun, T., Collao, Assanis, D.N., Styles, D.J., Abarham, M., and E. Curtis, "Optical and Infrared In-Situ Measurements of EGR Cooler Fouling," SAE Technical Paper 2013-01-1289, SAE 2013 World Congress and Exhibition, April 16, 2013, Detroit, Michigan; doi: 10.4271/2013-01-1289.
133. Smith, M., Depcik, C., Hoard, J., Bohac, S., and D.N. Assanis, "The Effects of CO, H<sub>2</sub>, and C<sub>3</sub>H<sub>6</sub> on the SCR Reactions of an Fe Zeolite SCR Catalyst," SAE Paper 2013-01-1062; SAE 2013 World Congress and Exhibition, April 16, 2013, Detroit, Michigan; doi:10.4271/2013-01-1062.
134. Janakiraman, M. V., Nguyen, X., and D. N. Assanis, "A Lyapunov-Based Stable Online Learning Algorithm For Nonlinear Dynamical Systems Using Extreme Learning Machines," International Joint Conference on Neural Networks (IJCNN 2013), Dallas, TX, August 4-9, 2013.

#### Invited Conference or Symposium Presentations

1. Assanis, D. N., J. A. Ekchian, J. B. Heywood, and K. K. Replogle, "Computer Simulation of the Turbocompound Diesel Engine System," *Proceedings of the Society of Automotive Engineers, 22nd Automotive Technology Development Contractor's Meeting*, P-155, 297-316, 1985.

2. Assanis, D. N., and E. Badillo, "Unsteady Analysis of Piston-Liner Heat Transfer in Insulated Diesel Engines," Invited Paper, *Proceedings of the Heat Transfer Conference Honoring B. T. Chao*, Urbana, IL, Oct. 1-2, 1987.
3. Assanis, D. N., Wiese, K., Schwarz, E., and W. Bryzik, "Investigation of the Effect of Thin Ceramic Coatings on Diesel Engine Performance and Exhaust Emissions," *Proceedings of the 1990 Coatings for Advanced Heat Engines Workshop*, Castine, Maine, Aug. 6-10, 1990.
4. Varnavas, C., and D. N. Assanis, "Critical Evaluation of the KIVA Evaporation Model for Engine Spray Calculations," Third International KIVA Users Group Meeting, Detroit, MI, Feb. 28, 1993.
5. Agarwal, A., Papageorgakis, G. C., Paul, M., Rubas, P. J., Yuen, L. S., Coverdill, R. E., Lucht, R. P., Peters, J. E., and D. N. Assanis, "Direct Injection of Natural Gas: In-Cylinder Measurements and Calculations," *Proceedings of Annual Automotive Technology Development Contractor's Coordination Meeting*, Society of Automotive Engineers P-289, 147-156, Dearborn, MI, October 24-27, 1994.
6. Assanis, D. N., "A Methodology for Characterizing the Thermal Behavior of Internal Combustion Engine Systems", invited presentation, *Proceedings of The Best of German/American Automotive Technology Conference*, Southfield, MI, June 27-28, 1995.
7. Assanis, D. N., "A Methodology for Characterizing the Thermal Behavior of Internal Combustion Engine Systems", invited presentation, Engineering Foundation Conference, Shonan Village, Japan, September 23-29, 1995.
8. Papageorgakis, G., Agarwal, A., and D. N. Assanis, "Multi-Dimensional Modeling of Natural Gas Injection, Glow Plug Ignition, and Combustion with the KIVA-3 Code: The Effect of Piston Crown Geometry," Sixth International KIVA Users Group Meeting, Detroit, MI, Feb. 25, 1996.
9. Papageorgakis, G., Agarwal, A., and D. N. Assanis, "Multi-Dimensional Modeling of Natural Gas Injection, Glow Plug Ignition, and Combustion with the KIVA-3 Code, Poster Session, Annual DOE Automotive Technology Development Customers' Coordination Meeting, Dearborn, MI, Oct. 28 - Nov. 1, 1996.
10. Assanis, D. N., "3-D Modeling of Engine Reacting Flows: Promises and Challenges," invited paper, Panel on Automotive Applications of CFD, Atlanta, 1996 ASME International Mechanical Engineering Congress and Exposition, Atlanta, GA, Nov. 17-22, 1996.
11. Papageorgakis, G., and D. N. Assanis, "Implementation and Assessment of Alternative Turbulence Models in KIVA-3," Seventh International KIVA Users Group Meeting, Detroit, MI, Feb. 25, 1996.
12. Assanis, D. N., "Engine Friction Measurements," invited presentation, Panel on Surface Engineering and Tribology, SAE International Congress and Exposition, Detroit, MI, Feb. 23-26, 1998.
13. Assanis, D. N., "Engine Friction Measurements," Keynote Presentation, DOE Workshop on Research Needs for Reducing Friction and Wear in Transportation, Argonne National Laboratory, March 22-23, 1999.
14. Delagrammatikas, G. and D.N. Assanis, "Development and Use of a Regenerative Braking Model in ADVISOR," ADVISOR User Conference Proceedings, Costa Mesa, CA, Aug. 24-25, 2000.
15. Assanis, D.N., Keynote Speaker, Session on Advanced Propulsion Technologies, 22<sup>nd</sup> Army Science Conference, Renaissance Harborplace Hotel, Baltimore, MD, December 11-16, 2000.
16. Assanis, D.N., Louca, L., and Z. Filipi, "Drivetrain Simulation and Modeling Based Upshift Control," Modern Advances in Automatic Transmission Technology TPOTEC, Ypsilanti, MI, Aug. 29-30, 2002.
17. Assanis, D. N. and S. Tung, "Overview of Engine Friction and Wear Measurements," Future Trends in Engine Design and Tribology, Society of Tribologists and Lubrication Engineers, Rochester, MI, August 22, 2001.
18. Assanis, D. N., "Modeling of Hybrid Vehicle Systems", invited presentation, 7<sup>th</sup> International Conference on *Present and Future Engines for Automobiles*, Delphi, Greece, May 27-31, 2001.
19. Assanis, D. N., "Discussion of the National Research Council Report on Corporate Average Fuel Economy," SAE President's Invited Panel, 2002 SAE International Congress and Exhibition, 2002 SAE World Congress, Detroit, MI, March 4-7, 2002.

20. Fiveland, S. and D. N. Assanis, "A Quasi-Dimensional HCCI Model for Performance and Emissions Studies," Ninth International Conference on Numerical Combustion, Sorrento, Italy, April 7-10, 2002.
21. Assanis, D. N., "Does the Internal Combustion Engine Have a Future?," The Advanced Power Technology Forum, Management Briefing Seminars 2002, Traverse City, MI, August 5-9, 2002.
22. Assanis D. N., "Does the Internal Combustion Engine Have a Future?," invited plenary speaker, session on "Future Automotive Powertrains," Global Powertrain Congress, Ann Arbor, MI, September 24-26, 2002.
23. Assanis, D.N., "Securing a Successful Academic Career," invited panelist, ASME IMECE, New Orleans, LA, November 17-22, 2002.
24. Bohac, S., Assanis, D.N., and H.L.S Holmes, "Speciated Hydrocarbon Emissions from a Contemporary Automotive Gasoline Engine and Local Ozone Production," Anachem Symposium, Livonia, MI, November 21, 2002.
25. Filipi, Z. S., Wu, B., Lin, C.C., and D. N. Assanis, "Fuel Economy Potential of Hydraulic Hybrid Propulsion Systems for Medium Trucks," SAE International Truck and Bus Meeting and Exhibition, Cobo Center, Detroit, MI, November 18-20, 2002.
26. Assanis. D.N., "Internal Combustion Engines and Hybrids: They are Here to Stay," Testimony to State of Michigan's Senate Technology and Policy Committee," Farnum Building, Lansing, MI, February 19, 2003.
27. Assanis, D.N., "A University Consortium on Homogeneous Charge Compression Ignition Engine Research," invited speaker, International Workshop on Advanced Combustion and Fuels," Argonne National Laboratory, Argonne, IL, June 16-17, 2003.
28. Assanis, D.N., "Major Research Issues," invited panelist, International Workshop on Advanced Combustion and Fuels," Argonne National Laboratory, Argonne, IL, June 16-17, 2003.
29. Vanzieleghem, B.P., Chryssakis, C.A., Grover, R.O., Assanis, D.N., Im, H.G., and V. Sick, "Gasoline Direct Injection Modeling and Validation with Engine Planar Laser Induced Fluorescence Experiments," 14<sup>th</sup> International Multidimensional Engine Modeling User's Group Meeting, Detroit, MI, March 2004.
30. Depcik, C., and D.N. Assanis, "One-Dimensional Catalyst Modeling and its Application to Urea SCR Devices," Seventh CLEERS Workshop, Detroit Diesel, Detroit, MI, June 2004.
31. Assanis, D.N., et al., "Clean and Controllable, Advanced Compression Ignition Engine System for Improved Power Density and Fuel Economy", plenary session presentation at the Annual ARC Conference on "Critical Technologies for Modeling and Simulation of Ground Vehicles", Ann Arbor, May 2004.
32. Babajimopoulos, A., Assanis, D.N., Flowers, D.L., Aceves, S.M., and R.P. Hessel, "A Fully Integrated CFD and Multi-Zone Model with Detailed Chemical Kinetics for the Simulation of PCCI Engines," 15<sup>th</sup> International Multidimensional Engine Modeling User's Group Meeting, Detroit, MI, April 2005.
33. Assanis, et al., "Engine-In-the-Loop Simulation: A Design and Evaluation Tool for Advanced Propulsion Systems", plenary session presentation at the Annual ARC Conference on "Critical Technologies for Modeling and Simulation of Ground Vehicles", Ann Arbor, May 2005.
34. Assanis, D. N., "Bridging the Gap between Fundamental Physics and Chemistry and Applied Models for HCCI Engines", invited presentation, 9<sup>th</sup> International Conference on *Present and Future Engines for Automobiles*, San Antonio, TX, May 29 to June 2, 2005.
35. Assanis, D. N., "Bridging the Gap between Fundamental Physics and Chemistry and Applied Models for HCCI Engines", invited presentation, 11<sup>th</sup> International Conference on *Diesel Engine Emissions Reduction DEER 2005*, Chicago, IL, August 21-25, 2005.
36. Leustek, M.E., Sethu, C., Bohac, S., Filipi, Z., and D.N. Assanis, "Crank-angle Resolved In-Cylinder Friction Measurements with the Instantaneous IMEP Method", Proceedings of World Tribology Congress III, Washington D.C., Sept. 2005.
37. Assanis, D.N., et al., "Integrative Approach to Advanced Propulsion System Design Using Simulation and Engine-In-the-Loop", plenary session presentation at the Annual ARC Conference on "Critical Technologies for Modeling and Simulation of Ground Vehicles", Ann Arbor, May 2006.

38. Assanis, D. N., "Low Temperature Combustion for High Efficiency Ultra Low Emissions Engines", invited presentation, 12<sup>th</sup> International Conference on *Diesel Engine Efficiency and Emissions Reduction DEER 2006*, Detroit, MI, August 20-24, 2006.
39. Assanis, D. N., "Analysis and Control of HCCI Engine Transient Operation Using 1-D Cycle Simulation and Thermal Networks", invited presentation, SAE HCCI Engine Symposium, San Ramon, CA, September 24-26, 2006.
40. Assanis, D. N., "Next Generation Powertrains and Fuels: Grand Challenges and Opportunities", invited presentation, UM Symposium on Energy Science, Technology and Policy, Ann Arbor, MI, February 13-14, 2007.
41. Assanis, D.N., "Energy Research: Grand Challenges and Opportunities," invited talk, Lehigh University, Bethlehem, PA, February 2, 2007.
42. Assanis, D.N., "Today's Students, Tomorrow's Engineers," invited panelist, SAE 2007 World Congress, Detroit, MI, April 16-19, 2007.
43. Assanis, D.N., et al, "Energy and Power for Military Vehicles: Alternative Fuels and Hybrid Propulsion", plenary session presentation at the Annual ARC Conference on "Critical Technologies for Modeling and Simulation of Ground Vehicles", Ann Arbor, May 2007.
44. Assanis, D. N., "On Modeling HCCI Engine Transient Behavior", invited presentation, 10<sup>th</sup> International Conference on *Present and Future Engines for Automobiles*, Rhodes, Greece, May 28 to June 5, 2007.
45. Assanis, D.N., "*TechKnow: Alternative Fuel Cars*," invited panelist, Power Center, Ann Arbor, MI, June 12, 2007.
46. Assanis, D.N., "Analysis and Control of HCCI Engine Transient Operation", invited presentation, Homogeneous Charge Compression Ignition (HCCI) Symposium, Lund, Sweden, September 12-14, 2007.
47. Assanis, D.N., "Low Temperature Combustion for High Efficiency, Ultra-Low Emission Engines" invited talk, University of Illinois at Urbana-Champaign, April 1, 2008.
48. Middleton, R. and D. N. Assanis, "Nitrogen Oxides Oxidation as a Function of Lean NO Trap Loading," 11th DOE Crosscut Workshop on Lean Emissions Reduction Simulation, University of Michigan - Dearborn, May 13 - 15, 2008.
49. Assanis, D.N., in collaboration with G. Lavoie and A. Babajimopoulos, "Advanced Combustion for High Efficiency Ultra-Clean Engines," Keynote Lecture, 6<sup>th</sup> US National Combustion Meeting, Ann Arbor, MI, May 17-20, 2009.
50. Assanis, D.N., Invited Panelist on "Secure, Low-Carbon Transportation System," Workshop on *Formulation of A Bipartisan Energy and Climate Policy: Toward an Open and Transparent Process*, The Howard H. Baker Jr. Center for Public Policy and the Widrow Wilson International Center for Scholars, Washington, DC, June 18-19, 2009.
51. Assanis, D.N., "On the Road to Clean and Efficient Powertrains," invited presentation, UMTRI Symposium on Powertrain Strategies for the 21<sup>st</sup> Century: How Are New Regulations Affecting Company Strategies?," Ann Arbor, MI, July 15, 2009.
52. Assanis, D.N., Invited Panelist on "Future Transportation and Energy Policy," 5<sup>th</sup> International IEEE Vehicle Power and Propulsion Conference VPPC 2009, Dearborn MI, September 10, 2009.
53. Assanis, D.N., Invited Keynote Speaker, "Advanced Combustion for High Efficiency Ultra Clean Engines," American Filtration Society, 4<sup>th</sup> Biennial Conference on Emission Solutions in Transportation, Ann Arbor, MI, October 5-8, 2009.
54. Assanis, D.N., Invited Keynoter for Opening Ceremony, "The Business of Plugging-In", Motorcity Hotel and Conference Center, October 19-21, 2009.
55. Assanis, D.N, Invited Panelist on "High Efficiency IC Engines," SAE 2009 Powertrains, Fuels and Lubricants Meeting, San Antonio, TX, November 2-4, 2009.

56. Assanis, D.N., Invited Panelist on Alternative Energy Sources, "Meeting the Energy Challenge: The Role of Biofuels in Solving Society's Largest Problem in the 21<sup>st</sup> Century", Energy for the Future Conference, University of Dearborn, MI, March 16, 2010
57. Assanis, D.N, Invited Panelist on "Pathways to High Efficiency IC Engines," SAE 2010 World Congress, Detroit, MI, April 13-15, 2010.
58. Assanis D.N., Invited Speaker, "Assessing Great Lakes Offshore Wind: A Partnership between the University of Michigan and Grand Valley State University," University of Michigan Regents' Meeting, Grand Rapids, MI, April 15, 2010.
59. Assanis, D.N., Ortiz-Soto, E., Babajimopoulos, A., and G. Lavoie, "Dual-Mode SI-HCCI Operation for Improved Drive-Cycle Fuel Economy: Engine Modeling and Map Generation Framework," Invited presentation to USCAR, Southfield, MI, May 12, 2010.
60. Assanis, D. N., "The Road to Clean Vehicles," invited lecture, Zhejiang Automotive Institute, Hangzhou, China, May 29, 2010.
61. Assanis, D.N, Invited Speaker on "Pathways to High Efficiency I.C. Engines," 11<sup>th</sup> International Conference on Present and Future Engines for Automobiles, Shanghai, China, May 30-June 3, 2010.
62. Assanis, D.N., Invited Plenary Speaker, "Towards Carbon Neutral Vehicles," Emissions 2010, Ann Arbor, MI, June 14-16, 2010.
63. Assanis, D.N., "A University Consortium on High Pressure Lean Combustion for Efficient and Clean Internal Combustion Engines," 16<sup>th</sup> Directions in Engine-Efficiency and Emissions Research (DEER) Conference, September 27-30, 2010, Detroit, Michigan.
64. Assanis, D.N., Invited Speaker, "Thermodynamic Lessons Learned from Lean/Dilute Burn Diesels to Improve Gasoline Engine Efficiency," invited presentation, Cummins Science and Technology Council Advisory Board Meeting, Columbus, IN, October 6-8, 2010.
65. Assanis, D.N., Invited Speaker, "U.S.-China Clean Energy Research Center for Clean Vehicles", UMTRI Focus on the Future Automotive Research Conferences, Inside China: Understanding China's Current and Future Automotive Industry, The University of Michigan League, Ann Arbor, MI, November 10, 2010.
66. Assanis, D.N., Invited Panelist, Erb Institute Conference, "Michigan-China Clean Tech: Collaboration and Competition in Energy, Smart Grid, Green Cities and Transportation," The University of Michigan Union, December 10, 2010.
67. Kodavasal, J., Keum, S., Assanis, D., and A. Babajimopoulos, "An Extended Multi-Zone Combustion Model for PCI Simulation," 21st International Multidimensional Engine Modeling User's Group Meeting, Detroit, MI, April 2011.
68. Assanis, D.N, Invited Keynoter on "Advanced Combustion Strategies for Ultra Low Emissions High Efficiency Powertrains," The 12<sup>th</sup> Hyundai-Kia International Conference, Hotel Rolling Hills, Hwaseong-si, South Korea, October 23-24, 2012.
69. Assanis, D.N, Co-Organizer, Co-Chair and Invited Speaker on "Advanced Combustion Strategies for Ultra Low Emissions High Efficiency Powertrains," 12<sup>th</sup> International Conference on Present and Future Engines for Automobiles, Delphi, Greece, June 1-6, 2013.
70. Assanis, D.N, Co-Organizer, Co-Chair and Invited Speaker, 13<sup>th</sup> International Conference on Present and Future Engines for Vehicles, Port Jefferson, NY, June 21-25, 2015.

#### Books Edited

1. Uzkan, T., and Assanis, D. N., Editors, "Advanced Engine Simulations, Volume 1, *Proceedings of the 1997 ASME-ICE Spring Technical Conference*, ICE-Vol. 28-1, ASME, 1997.
2. Assanis, D.N., Papalambros, P.Y., and Bryzik, W., Guest Editors, Haug, E., Editor, Automotive Research Center Special Edition Issue, *Mechanics of Structures and Machines*, 27:4, 1999.

3. Zhao, F., Asmus, T., Assanis, D. N., Dec. J. E., Eng, J. A., and P. M. Najt, *Homogeneous Charge Compression Ignition (HCCI) Engines: Key Research and Development Issues*, SAE PT-94, Society of Automotive Engineers, Warrendale, PA, 2003.
4. Assanis, D.N., Bryzik, W., Gorsich, D., and Haque, I., Guest Editors, Automotive Research Center Special Edition Issue, *International Journal of Heavy Vehicle Systems*, **11**:3/4, 372-402, 2004.
5. Cheng, W.K., Dibble, R., and D.N. Assanis, Guest Editors, *International Journal of Engine Research*, Special Issue on HCCI Engines, **6**:5, 2005.

#### Chapters in Books

1. Assanis, D.N., Borgnakke, C., Patterson, D.J., and Cole, D., "Internal Combustion Engines," *Marks' Standard Handbook for Mechanical Engineers*, pp. 9-90 to 9-121, 10th Edition, McGraw-Hill Book Company, 1996.
2. Assanis, D.N., Lavoie, G. A. and S. B. Fiveland, "HCCI Engine Modeling Approaches," pp. 529-655, published in *Homogeneous Charge Compression Ignition (HCCI) Engines: Key Research and Development Issues*, SAE PT-94, Society of Automotive Engineers, Warrendale, PA, 2003.
3. Assanis, D.N., Cole, D., Jacobs, T.J., and D.J. Patterson, "Internal Combustion Engines," *Marks' Standard Handbook for Mechanical Engineers*, pp. 9-93 to 9-127, 11th Edition, McGraw-Hill Book Company, 2007.
4. Chryssakis, A., Assanis, D.N. and F.X. Tanner, "Atomization Models," *Handbook of Atomization and Sprays: Theory and Applications*, Springer, 2011.
5. Janakiraman, M.V., Nguyen, X., Sterniak, J., and D.N. Assanis, "A System Identification Framework for Modeling Complex Combustion Dynamics using Support Vector Machines", *Lecture Notes in Electrical Engineering – Informatics in Control, Automation and Robotics*, **283**, 297-313, Springer Berlin Heidelberg, 2014.

#### US Government Reports

- Assanis, D. N., "A Study of the Heat Transfer, Combustion and Emissions Characteristics of Low-Heat Rejection Diesel Engines," U.S. Army Tank-Automotive Command Research, Development and Engineering Center Technical Report No. 13589, June 1991.
- Poola, R. B., Sekar, R., and D.N. Assanis, "Application of Oxygen-Enriched Combustion for Locomotive Engines, Phase I," Argonne National Laboratory Report ANL/ESD/TM-135, September 1996.
- National Academy of Sciences Committee to Assess Fuel Economy Technologies for Medium- and Heavy-Duty Vehicles; National Research Council; Transportation Research Board, "Technologies and Approaches to Reducing the Fuel Consumption of Medium- and Heavy-Duty Vehicles," Washington, DC, The National Academies Press, September 2010. Available electronically from the National Academies Press Web site at [http://www.nap.edu/catalog.php?record\\_id=12845](http://www.nap.edu/catalog.php?record_id=12845)
- U.S. President's Council of Advisors on Science and Technology (PCAST) Working Group on Energy Technology Innovation System, "Report to the President on Accelerating the Pace of Change in Energy Technologies through an Integrated Federal Energy Policy," November 2010.

#### Patents

- Church, C., Smith, F., and D.N. Assanis, "Use of Singlet Delta Oxygen to Enhance the Performance of Internal Combustion Engines, Diesel Engines in Particular," Patent No. 6,659,088, granted 12/9/2003.
- Najt, P.M., Eng, J.A., Chang, J., Filipi, Z.S., Guralp, O., and D.N. Assanis, "Method for Mid-Load Operation of Auto-Ignition Combustion," Patent No. 7,128,062 B2, granted 10/31/2006.
- Kuo, T.W., Najt, P., Eng, J.A., Rask, R.B., Guralp, O., Hoffman, M., Filipi, Z.S., and D.N. Assanis, "Method and Apparatus to Determine Magnitude of Combustion Chamber Deposits," Patent No. 7,367,319, granted 12/31/2007.

Najt, P., Kuo, T.W., Rask, R., Babajimopoulos, A., Filipi, Z.S., Lavoie, G., and D. N. Assanis, "Hybrid Powertrain System Using Free Piston Linear Alternator Engines," Patent No. US 2011/0011660 A1, Jan. 2011.

Mond, A., Babajimopoulos, A., Shingne, P., Yilmaz, H., and D.N. Assanis, "Compounded Dilution and Air Charging Device," US Patent No. 20120090319, granted 4/19/2012.