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-May 2016
Vice President for Brookhaven National Laboratory Affairs, Oct. 2011-May 2016
Professor of Mechanical Engineering, Oct. 2011-May 2016
SUNY Distinguished Professor, May 2015-May 2016

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 Distinguisher 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

Chair, Evaluation Team for Re-Accreditation of Binghamton University, Middle States Commission on Higher Education, 2019-2020.
Commissioner, National Commission on Innovation and Competitiveness Frontiers, Council on Competitiveness, 2019-date.

Member, Executive Committee, Management Executive Society, American Management Association, 2019- date.

Chair, Board of Directors, Colonial Athletic Association, 2018-2020.

Member, Board of Directors, Delaware Innovation Space, Inc., 2017-date.

Member, Executive Committee, Delaware Business Roundtable, 2017-date.

Member, Board of Directors, Delaware Technology Park, 2016-date.

Member (Ex Officio), Board of Trustees, University of Delaware, 2016-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
International Advisory Board, *International Journal of Engine Research*, 2018-date
Editorial Board, *International Journal of Engine Research*, 2003-2018
Editorial Board, *Energies*, 2019-date
Editorial Section Board for Energy, *Applied Sciences*, 2019-date
Editorial Board, *Journal of Emission Control Science and Technology*, 2014-date
Scientific and Advisory Editorial Board, *Ingineria Automobilului,* 2007-date
Editorial Board, *International Journal of Powertrains*, 2010-2015
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., Co-Founder and President, Ann Arbor, MI (2000-2011)
Optimetrics, Inc., Ann Arbor, MI (1999)
Textron Automotive, Southfield, MI (1998)

M.A.N.A.G.E., Inc., Co-Founder and President, Ann Arbor, MI (1995-1998)
Pythia Software, Inc., Co-Founder and President, Ann Arbor, MI (1997-1999)
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 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.

CONTIBUTIONS 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 NOx 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. students, including learners presenting neurodevelopmental disorders (Asperger's and Tourette's syndromes). He has also supervised 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, 21st 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, 9/1/91to 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.

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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.)

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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.)

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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.

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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.

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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.

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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, 9th 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., Hagena, J. and D. N. Assanis, "Cycle-By-Cycle Air-To-Fuel Ratio Calculation During Transient Engine Operation Using Fast Response CO And CO_2 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., Pomphaithoonsakun, 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_2, and C_3H_6 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.

135. Triantopoulos, V., Martz, J.B., Sterniak, J., Lavoie, G., Assanis, D.N., and S. Bohac, "Operating Limits of Spark-Assisted Compression Ignition Combustion under Boosted Ultra-EGR Dilute Conditions in a Negative Valve Overlap Engine, ASME Fall Technical Conference, ICEF2019-7220, V001T03A013; 14 pages, First published online https://doi.org/10.1115/ICEF2019-7220, Dec. 2019.

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-l55, 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, 22nd 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, 7th 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," 14th 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," 15th 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, 9th 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, 11th 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, 12th 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, 10th 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., Chair and Invited Lecturer on "Prime Power Review," 2008 Ground-Automotive Power and Energy Workshop, NDIA Michigan Chapter, Troy, MI, November 18-19, 2008.

50. Assanis, D.N., in collaboration with G. Lavoie and A. Babajimopoulos, "Advanced Combustion for High Efficiency Ultra-Clean Engines," Keynote Lecture, 6th US National Combustion Meeting, Ann Arbor, MI, May 17-20, 2009.

51. 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 Woodrow Wilson International Center for Scholars, Washington, DC, June 18-19, 2009.

52. Assanis, D.N., "On the Road to Clean and Efficient Powertrains," invited presentation, UMTRI Symposium on Powertrain Strategies for the 21st Century: How Are New Regulations Affecting Company Strategies?", Ann Arbor, MI, July 15, 2009.

53. Assanis, D.N., Invited Panelist on "Future Transportation and Energy Policy," 5th International IEEE Vehicle Power and Propulsion Conference VPPC 2009, Dearborn MI, September 10, 2009.

54. Assanis, D.N., Invited Keynote Speaker, "Advanced Combustion for High Efficiency Ultra Clean Engines," American Filtration Society, 4th Biennial Conference on Emission Solutions in Transportation, Ann Arbor, MI, October 5-8, 2009.

55. Assanis, D.N., Invited Keynoter for Opening Ceremony, "The Business of Plugging-In", Motorcity Hotel and Conference Center, October 19-21, 2009.

56. Assanis, D.N, Invited Panelist on "High Efficiency IC Engines," SAE 2009 Powertrains, Fuels and Lubricants Meeting, San Antonio, TX, November 2-4, 2009.

57. 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 21st Century", Energy for the Future Conference, University of Dearborn, MI, March 16, 2010.

58. Assanis, D.N, Invited Panelist on "Pathways to High Efficiency IC Engines," SAE 2010 World Congress, Detroit, MI, April 13-15, 2010.

59. 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.

60. 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.

61. Assanis, D. N., "The Road to Clean Vehicles," invited lecture, Zhejiang Automotive Institute, Hangzhou, China, May 29, 2010.

62. Assanis, D.N, Invited Speaker on "Pathways to High Efficiency I.C. Engines," 11th International Conference on Present and Future Engines for Automobiles, Shanghai, China, May 30-June 3, 2010.

63. Assanis, D.N., Invited Plenary Speaker, "Towards Carbon Neutral Vehicles," Emissions 2010, Ann Arbor, MI, June 14-16, 2010.

64. Assanis, D.N., "A University Consortium on High Pressure Lean Combustion for Efficient and Clean Internal Combustion Engines," 16th Directions in Engine-Efficiency and Emissions Research (DEER) Conference, September 27-30, 2010, Detroit, Michigan.

65. 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.

66. 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.

67. 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.

68. 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.

69. Assanis, D.N, Invited Keynoter on "Advanced Combustion Strategies for Ultra Low Emissions High Efficiency Powertrains," The 12th Hyundai-Kia International Conference, Hotel Rolling Hills, Hwaseong-si, South Korea, October 23-24, 2012.

70. Assanis, D.N, Co-Organizer, Co-Chair and Invited Speaker on "Advanced Combustion Strategies for Ultra Low Emissions High Efficiency Powertrains," 12th International Conference on Present and Future Engines for Automobiles, Delphi, Greece, June 1-6, 2013.

71. Assanis, D.N, Co-Organizer, Co-Chair and Invited Speaker, 13th 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.
6. Assanis, D.N., Cole, D., Jacobs, T.J., Mamalis, S., and D.J. Patterson, "Internal Combustion Engines," *Marks' Standard Handbook for Mechanical Engineers*, 12th Edition, McGraw-Hill Book Company, 2018.

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*

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

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