

STEPHEN A. CIATTI

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EDUCATION

Ph. D., University of Wisconsin – Madison, 2001, Mechanical Engineering
M. S., University of Wisconsin – Madison, 1997, Mechanical Engineering
B. M. E., University of Minnesota – Twin Cities, 1993, Mechanical Engineering

EXPERIENCE

2001 – Present, Staff Mechanical Engineer - Center for Transportation Research,
Argonne National Laboratory

- Currently the principal investigator for investigating diesel and low temperature combustion (LTC) characteristics using endoscope in-cylinder imaging. Endoscope and fiber-optic imaging provides detailed information to evaluate combustion performance in both traditional diesel and LTC systems. Engine is a state-of-the-art 2009 GM-Europe 1.9 liter direct injection diesel. Engine is operating on low cetane fuels (such as gasoline and gasoline blends) with up to 500% NO_x reduction while maintaining diesel-like efficiencies (40+% BTE).
- Generated Argonne internal project to utilize absorption spectroscopy and fiber-optics to develop a technique to measure combustion temperature under conditions that produce few emission-type photons. This approach utilizes a super-continuum laser to provide rapid scanning of the measurement control volume with minimal modification to the engine.

2008 – Present, Adjunct Associate Professor of Mechanical Engineering, University of Illinois at Chicago

- Responsibilities include advising and providing research funding for a graduate student, participating in M.S. and Ph. D. pre-defense and defense committees, writing proposals and publications with other UIC faculty.

1995-2001, Research Assistant - Engine Research Center; University of Wisconsin-Madison

- Dissertation title “Determination of Diesel Injector Nozzle Characteristics Using Two-Color Optical Pyrometry”
- M.S. Thesis: "Spark Ignition Effects on Two-Stroke Cyclic Variability" investigated the location and timing effects of spark ignition on two-stroke outboard engine performance. Also developed a closed loop control scheme for combustion quality and misfire detection using ionization sensors

1993-1995 Locomotive Maintenance Supervisor - Burlington Northern Railroad

1990-1993 Intern Powerplant Engineer – Northwest Airlines

PROFESSIONAL AFFILIATIONS

- American Society of Mechanical Engineers (ASME)
 - Vice-Chair of Technical Programs for the ASME Internal Combustion Engine Division (ICED) Executive Committee (2007-2012)
- Central States Section of the Combustion Institute (CSCI)
 - Member of “At-large Board of Advisors” for CSCI (2007-2012)
- Member of the Editorial Board for Journal of Automobile Engineering, Institution of Mechanical Engineers, Leicestershire, England - UK
- Society of Automotive Engineers (SAE)
- Institute for Liquid Atomization and Spray Systems (ILASS)

AWARDS

- ASME ICED Best Presented Paper” Award (2005)
- ASME ICED Best Presented Paper Award (2004)
- Department of Energy 2002 National Laboratory Combustion and Emissions Control R&D Award

SELECTED PUBLICATIONS

Ciatti, S.A., Subramanian, S., Ferris, A (May 2012) –ASME ICES2012-81067, “Effect of EGR in a Gasoline Operated Diesel Engine in LTC mode,” ASME ICE Engine Division Conference, Torino, Italy

Das Adhikary, B., Ra, Y., Reitz, R., and **Ciatti, S.**, (April 2012) - SAE Technical Paper 2012-01-1336, "Numerical Optimization of a Light-Duty Compression Ignition Engine Fuelled With Low-Octane Gasoline," SAE World Congress, Detroit, MI

Knizley, A. A., Srinivasan, K. K., Krishnan, S. R., **Ciatti, S. A.**, (April 2012) “Fuel and diluent effects on entropy generation in a constant internal energy-volume (uv) combustion process”, *Energy*, Volume 43, Issue 1, July 2012, Pages 315-328

Ciatti, S. A., Subramanian, S. (Oct. 2011) – ASME ICEF2011-60014, “Low Cetane Fuels in a Compression Ignition Engine to Achieve LTC”, ASME IC Engine Division Conference, Morgantown, WV

Ciatti, S. A. and Subramanian, S., (Sept. 2010) ASME GTP-10-1362 – “An Experimental Investigation of Low Octane Gasoline in Diesel Engines”, ASME Journal of Engineering for Gas Turbines and Power Systems, New York, NY

Viele, M., Quillen, K., **Ciatti, S. A.**, (Sept. 2010) ASME ICEF2010-35119 “Next-Cycle and Same-Cycle Cylinder Pressure Based Control of Internal Combustion Engines”

Ciatti, S. A., (June 2010) – Textbook chapter “Light Emission from Flames”, Handbook of Combustion Vol. 1, Wiley VCH Publishing, Hoboken, NJ

Ciatti, S. A., (2009) – Textbook chapter “Utilizing Combustion Imaging to Enable the Use of Alternative Fuels in Engines”, pp.101-112, Combustion Science and Technology – Recent Advances, Narosa Publishing, New Delhi, India

Ciatti, S. A., Bihari, B., and Wallner, T. (2007) JAUTO399 – “Establishing Combustion Temperature in a Hydrogen-Fuelled Engine Using Spectroscopic Measurements”, Proceedings of IMechE Vol. 221 Part D: Journal of Automobile Engineering

Wallner, T., **Ciatti, S. A.**, and Bihari, B. (2007) SAE 2007-01-1464 - “Investigation of Injection Parameters in a Hydrogen DI Engine Using an Endoscopic Access to the Combustion Chamber”, SAE Worlds Congress, Detroit, MI

SELECTED INVITED PRESENTATIONS

SAE Powertrain, Fuels and Lubricants Conference – “Multizone Stratified Compression Ignition (MSCI) – A Practical Approach to High Efficiency and Low Emissions”, Malmo, Sweden (Invited by Prof. Bengt Johansson, Lund University)

Tsinghua University (July 2012) – “Advanced Engine Controls – The Impact of Alternative Fuels, Hybrids, Plug-In Hybrids and Low Temperature Combustion”, Beijing, China

Ohio State University (Oct. 2011) – “Gasoline Compression Ignition – Opportunities to Improve Efficiency and Emissions”, Columbus, OH

Columbia University (Sep. 2011) – “What is a Green Vehicle and What Does Green Mean to Me?”, New York, NY

Texas A&M University (Nov. 2010) – “Combustion of Low Cetane Fuel in a Diesel Engine and 2nd Law Implications”, College Station, TX

Indian Institute of Technology – Madras, Indian Institute of Science and Politechnic University of Torino (all July 2010) – “Combustion of Low Cetane Fuel in a Diesel Engine”, Chennai - India, Bangalore – India and Turin – Italy.

University of Wisconsin-Madison (January 2010) – “Advanced Engine Technology and the Role of Science Tools in Creating 21st Century Transportation”, Madison, WI