

ANTHONY J. MARCHESE, Ph.D.

COLORADO STATE UNIVERSITY • FORT COLLINS, CO 80523 • (970) 491-2328

RESEARCH: Combustion, alternative fuels, algal biofuels, diesel emissions, multi-phase reacting flows, microgravity research, chemical kinetics, biomass cookstoves, product development.

EDUCATION: **Ph.D., Mechanical and Aerospace Engineering** **Princeton University**
Awarded: November 1996 Princeton, NJ

Thesis Topic: *Microgravity Droplet Combustion*

M.A., Mechanical and Aerospace Engineering **Princeton University**
Awarded: April 1994 Princeton, NJ

M.S., Mechanical Engineering **Rensselaer Polytechnic Institute**
Awarded: May 1992 Hartford, CT
GPA: 4.00 / 4.00

B.S., Mechanical Engineering **Rensselaer Polytechnic Institute**
Awarded, Magna cum Laude: December 1989 Troy, NY
GPA: 3.81 / 4.00

EMPLOYMENT: **Associate Department Head for Graduate Studies** **July 2011 to July 2013**
Associate Professor **January 2008 to Present**
Colorado State University, Dept. of Mechanical Engineering Fort Collins, CO

Executive Director **January 2004 – July 2007**
South Jersey Technology Park at Rowan University Glassboro, NJ

Department Chair **January 2007 to December 2007**
Associate Professor **August 2000 – December 2007**
Assistant Professor **September 1996 - August 2000**
Rowan University, Dept. of Mechanical Engineering Glassboro, NJ

Visiting Faculty Fellow **September 2003- August 2004**
Princeton University Princeton, NJ

Graduate Research Assistant **September 1992 - August 1996**
Princeton University Princeton, NJ

Assistant Research Engineer **December 1989 - September 1994**
United Technologies Research Center East Hartford, CT

Student Trainee Research Engineer **June 1987 - September 1989**
NASA Lewis Research Center Cleveland, OH

EXPERIENCE: ***Associate Professor and Associate Dept. Head*** ***January 2008 – Present***
Colorado State University, Department of Mechanical Engineering ***Fort Collins, CO***

Founder and Director of the Advanced Biofuels Combustion and Characterization Laboratory, which focuses on development of bio-derived, drop-in replacements for gasoline, diesel and jet fuel. Obtained \$7.1 Million in funding (\$5.4 Million as Principal Investigator) over a 5 year period from NSF, DOE, Boeing, Cummins, EDF and a variety of industrial and state sponsors.

Served as Fuel Conversion Team Leader for the National Alliance for Advanced Biofuels and Bioproducts, a \$50 Million DOE Algal Biofuel Consortium.

As Associate Department Head for Graduate Studies, I oversaw the graduate program in Mechanical Engineering, which included recruiting and management activities for a graduate student population of over 100 students. Specific initiatives included the creation of a new Departmental Seminar Series, new Ph.D. qualifying examination process and development of a

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Web site: <http://www.engr.colostate.edu/~marchese>

new marketing campaign for recruitment of a high caliber graduate student body in our departmental strength areas of energy and human health.

Executive Director

January 2004 – July 2007

South Jersey Technology Park at Rowan University

Glassboro, NJ

Oversaw development of the first phase of Rowan University's planned 188-acre, 1.5 million SF research park.

Managed all day-to-day operations and approved all expenditures of South Jersey Technology Park, Inc., a non-profit 501(c)3 corporation.

Developed and implemented the strategic, financial and real estate plans of the SJTP.

Raised \$7.3 Million in funds from the DRBA, NJCST, NJDCA, U.S. HUD and U.S. for construction and tenant improvements.

Directed the programmatic development, architectural design, financing and construction of the 45,000 SF Samuel H. Jones Innovation Center, a \$15 million LEED® certified wet-laboratory/office building.

Chair, Associate Professor, Assistant Professor

September 1996 – December 2007

Rowan University, Department of Mechanical Engineering

Glassboro, NJ

Hired in 1996 as the first junior faculty member in the Department of Mechanical Engineering at the newly created College of Engineering at Rowan University. Granted early promotion and tenure in May 2000.

Obtained funding for 30 proposals from NASA, NSF, NJDOT, NJDEP, NCIIA, U.S. Navy and private industry for a total of \$3.2 Million in external funding.

Developed the mechanical engineering thermal sciences curriculum and thermodynamics/engine laboratory.

Initiated the Rowan Undergraduate Venture Capital Fund for rapid development of original student inventions within the multidisciplinary Engineering Clinic sequence. Raised over \$120,000, which was distributed directly to undergraduate student teams.

Visiting Faculty Fellow

September 2003 – August 2004

Princeton University

Princeton, NJ

On sabbatical from Rowan University, performed chemical kinetic studies on biodiesel fuels in the Combustion and Fuels Laboratory at Princeton University.

NASA/ASEE Summer Faculty Fellow

June 1998 - August 1998

National Aeronautics and Space Administration

Cleveland, OH

For the summer of 1998 I received a NASA Summer Faculty Fellowship to determine the effects of multi-step kinetics on flame propagation through layered premixed gas systems. The effort included developing reduced methanol kinetic mechanisms and modifying a two-dimensional liquid pool burning model to include detailed chemistry and transport.

Graduate Research Assistant

September 1992 - August 1996

Princeton University

Princeton, NJ

Refined a numerical model to study the transient, spherically symmetric, combustion of pure and multicomponent alkane and alcohol droplets.

Performed microgravity droplet combustion experiments using the NASA Lewis 2.2 Second Drop Tower. Developed new data analysis and numerical modeling technique to determine flame structure from measured OH radical chemiluminescence.

Generated matrix of test conditions for NASA space-based FSDC and DCE droplet combustion experiments launched aboard the space shuttle in November 1995, April 1997 and July 1997, respectively.

Developed a new chemical reaction mechanism for oxidation and pyrolysis of higher n-alkanes. Performed chemical kinetic experiments using a variable pressure flow reactor to test the new mechanism.

Assistant Research Engineer

December 1989 - September 1994

United Technologies Research Center

East Hartford, CT

Performed numerical, analytical, and experimental studies to identify the thermal, structural and fluid dynamic effects of variable speed and high discharge temperature on the operation of positive displacement compressors.

Specified, oversaw installation, and developed software for a UNIX-based, high speed data system featuring a Concurrent 6700 computer.

Developed instrumentation and real-time data analysis techniques utilizing thermocouples, heat flux gages, high-response pressure transducers, accelerometers, proximity probes, mass flow meters and acoustic emission sensors.

Developed 2 inventions describing innovative lubrication, thermal management, and dynamic stabilizing concepts for positive displacement compressors.

Student Trainee Research Engineer

June 1987- September 1989

National Aeronautics and Space Administration

Cleveland, OH

Completed four full-semester, cooperative education assignments (52 weeks, total) in various branches of the Space Propulsion Technology Division at NASA Lewis Research Center. Received offer for career position as research engineer.

Developed calibration system and compressible flow analysis software to simplify control valve selection for the Rocket Engine Test Facility at NASA Lewis Research Center. Designed innovative propellant feed system for aluminum/RP-1 metallized gel propellant rocket engine testing.

Determined the thermodynamic performance of chemical rocket propellants derived from the lunar soil and Martian soil/atmosphere. Assessed the current technology for in-situ production of such propellants in support of a lunar base and/or manned Mars mission.

Performed detailed trajectory analyses for Earth-to-Mars ion-propelled cargo missions.

CONSULTING: ***Princeton University / NASA***
Princeton, NJ; Huntsville, AL

September 1996 - September 1998

Served as a member of the science support team for the Droplet Combustion Experiment (DCE) which flew aboard the first Microgravity Science Laboratory mission (MSL-1) on Space Shuttle Columbia flights STS-83 and STS-94 in April and July 1997.

Generated and communicated the science requirements from the Payload Operations Control Center at Marshall Space Flight Center to astronauts as they executed the experiment aboard Columbia during the STS-83 and STS-94 missions.

Kimble Glass

October 1997 - October 1998

Vineland, NJ

Performed an experimental and modeling study to determine the operating characteristics of annealing furnaces used in specialty glass manufacturing for the pharmaceutical industry.

CVM Corporation

August 1999

Wilmington, DE

Performed analytical calculations for development of a Petroleum Hydrotreating Catalyst Plant, which was under development for installation in Kuwait.

L3 Communications

November 2001-January 2009

Camden, NJ

Developed and delivered short courses including Rapid Product Development, Electronic Packaging and Propulsion for engineering trainee program at L3 Communications.

***National Collegiate Inventors and Innovators Alliance
Amherst, MA***

January 2006-December 2006

Developed and delivered workshops on engineering entrepreneurship for the Kern Engineering Entrepreneurship Network (KEEN) grant program.

TEACHING EXPERIENCE:

Advanced Combustion Theory and Modeling*	Spring 2010, Spring 2011, Spring 2013
Sustainable Technology Entrepreneurship*	Spring 2010, Spring 2011
Convection Heat Transfer	Spring 2008, Fall 2009
Thermodynamics	Fall 2001, Fall 2002, Spring 2009, Fall 2010, Fall 2011, Fall 2012
Design for X	Spring 2001, Spring 2005
Gas Dynamics*	Fall 2000, Spring 2003, Spring 2006
Rocket Propulsion*	Spring 2000, Spring 2001, Fall 2005, Fall 2007
Combustion*	Fall 1999, Fall 2004, Fall 2006, Fall 2008 to Fall 2012
Fluid Mechanics II	Spring 1999
Junior/Senior Engineering Clinic	Fall 1998 to Fall 2007
Freshman Engineering Clinic II	Spring 1997, Spring 1998, Spring 2003, Spring 2007
Solid Mechanics	Fall 1997, Fall 1998, Fall 2001, Fall 2002
Freshman Engineering Clinic I	Fall 1996
Ordinary Differential Equations	Fall 1995
Refrigeration Systems	Summer 1991

* Denotes new courses that I have developed.

PROFESSIONAL MEMBERSHIP

Tau Beta Pi National Engineering Honor Society
Pi Tau Sigma National Mechanical Engineering Honor Society
Sigma Xi, The Scientific Research Society
The Combustion Institute
American Institute of Aeronautics and Astronautics (AIAA)
American Society of Mechanical Engineers (ASME)
Society of Automotive Engineering (SAE)
American Society of Engineering Education (ASEE)
Algae Biomass Organization (ABO)
Association of University Research Parks (AURP)

SERVICE TO THE PROFESSION

Editorial Board Service

Editorial Review Board, *Journal of Algal Research*

Journal Reviews

Reviewer for the *ALAA Journal*

Reviewer for the *ALAA Journal of Propulsion and Power*

Reviewer for the journal *Applied Energy*
 Reviewer for the journal *Combustion Science and Technology*
 Reviewer for the journal *Environmental Pollution*
 Reviewer for the journal *Fuel*
 Reviewer for the journal *Energy & Fuels*
 Reviewer for the journal *Fuel Processing Technology*
 Reviewer for the journal *the Journal of Experimental Marine Biology and Ecology*
 Reviewer for *Proceedings of the Combustion Institute*
 Reviewer for the journal *Biotechnology and Bioengineering*
 Reviewer for the textbook *Introduction to Combustion*, by Stephen Turns.
 Reviewer for the textbook *Technology Ventures*, by Thomas Byers, et al.
 Reviewer for the journal *Environmental Science and Technology*
 Reviewer for the *Journal of Physics D: Applied Physics*
 Reviewer for the *Journal of the Air and Waste Management Association*
 Reviewer for the journal *Combustion and Flame*
 Reviewer for the journal *Combustion Theory and Modeling*
 Reviewer for the journal *Proceedings of the Royal Society of London*
 Reviewer for the journal *Measurement Science and Technology*
 Reviewer for the journal *ASME Journal of Heat Transfer*
 Reviewer for the *International Journal of Engineering Education*
 Reviewer for the *ASEE Journal of Engineering Education*

Conference Paper Reviews

Reviewer for proceedings of the ASEE Annual Meeting, 2001-present
 Reviewer for proceedings of the NCHIA Annual Meeting, 2003-present
 Reviewer for the Thirty-Third Symposium (International) on Combustion
 Reviewer for the Thirty-Second Symposium (International) on Combustion
 Reviewer for the Thirty-First Symposium (International) on Combustion
 Reviewer for the Thirtieth Symposium (International) on Combustion
 Reviewer for the Twenty-Ninth Symposium (International) on Combustion
 Reviewer for the Twenty-Eighth Symposium (International) on Combustion

Grant and Program Review Panels

Program Review Committee, National Collegiate Inventors and Innovator's Alliance, Oct. 2001
 Peer review panelist for U.S. Civilian Research and Development Foundation (CRDF) Grants, 2003
 Program Review Committee for Hewlett Foundation ESWI Grant Program, Nov. 2002
 Program Review Committee for Kern Family Foundation Engineering Entrepreneurship, 2004-2005
 Peer review panelist for NASA Postdoctoral Program (NPP), April 2012
 Peer review panelist for NSF Energy for Sustainability (Biofuels), May 17-18, 2012
 Reviewer for Smithsonian Institution and Indo-US Science & Technology Forum (IUSSTF), 2011
 Peer review panelist for NSERC Chair in Design Engineering, University of Victoria. April 2011
 Peer review panelist for NSERC Chair in Design Engineering, Ryerson University, Dec. 2011
 Peer review panelist for NSERC Chair in Design Engineering, Ryerson University, Dec. 2008
 Peer review panelist for NSF Combustion and Plasma Systems, December 2005, March 2007
 Peer review panelist for EPA/NSF Pollution Prevention in Fluid and Thermal Systems, May 1997
 Peer review panelist for NASA Microgravity Combustion Science Proposals, May 2002
 Peer review panelist for NASA Microgravity Combustion Science Proposals, May 2000
 Peer review panelist for NASA EPSCoR Microgravity Science Proposals, October 2000
 Peer review panelist for NASA EPSCoR Microgravity Science Proposals, January 2001
 Peer review panelist for NCHIA Advanced E-Team Proposals, June 2001, Jan. 2009, May 2010

Conference Organization and Session Chair Activities

Conference Organizer and Host, Fall 2013 Technical Meeting of the Western State Section of the Combustion Institute, 2013
 Technical Organizing Committee, Algae Biomass Summit, Algae Biomass Organization, 2013
 Engineering and Analysis Track Chair, Algae Biomass Summit, Algae Biomass Organization, 2012
 Technical Organizing Committee, Algae Biomass Summit, Algae Biomass Organization, 2011
 Program Committee, 3rd International Conference on Algal Biomass, Biofuels and Bioproducts, 2013
 Program Committee, 2nd International Conference on Algal Biomass, Biofuels and Bioproducts, 2012
 Program Committee, 1st International Conference on Algal Biomass, Biofuels and Bioproducts, 2011
 Session Chair, 3rd International Conference on Algal Biomass, Biofuels and Bioproducts, 2013
 Session Chair, 2nd International Conference on Algal Biomass, Biofuels and Bioproducts, 2012
 Session Chair, 1st International Conference on Algal Biomass, Biofuels and Bioproducts, 2011
 Session Chair, Spring Meeting, Combustion Institute, Western States Section, March 2010
 Session Chair, 8th Joint Meeting of the Combustion Institute, May 2013.
 Session Chair, 7th Joint Meeting of the Combustion Institute, March 2011.
 Session Chair, 6th Joint Meeting of the Combustion Institute, May 2009.
 Session Chair, SAE Powertrain and Fluids Meeting, October 2006, October 2007, November 2009
 Session Chair, Thirty-Third Symposium (International) on Combustion, August 2010
 Session Chair, Thirty-Second Symposium (International) on Combustion, August 2008
 Session Chair, Spring Meeting, Combustion Institute, Western States Section, March 2008
 Session Chair, Fall Meeting, Combustion Institute, Eastern States Section, November 2005
 Session Chair, 4th Joint Meeting of the U.S. Sections of the Combustion Institute, March 2005
 Session Chair, FIE Annual Conference, October 2006, November 2003
 Session Chair, ASEE Annual Conference, Education Research Methods Division, June 2001
 Session Chair, ASEE Annual Conference, Entrepreneurship Division, 2001, 2004, 2006, 2007
 Session Chair, Twenty-Seventh Symposium (International) on Combustion, August 1998
 Session Chair, Fall Meeting, Combustion Institute, Eastern States Section, October 1997

Other Professional Service Activities

Vice Chair/Chair Elect, Western States Section of the Combustion Institute, 2013 – present
 Secretary, Western States Section of the Combustion Institute, 2009 – 2013
 Member of Combustion and Fuels Committee, SAE, 2006-present
 Member of the Board of Directors, National Alliance on Advanced Biofuels and Bio-Products
 Team Leader, Fuel Conversion, National Alliance on Advanced Biofuels and Bio-Products
 Chair, ASEE Entrepreneurship Division, 2000-2001, 2006-2007
 F.I.R.S.T. Robot Competition, (Camden High School/Rowan team) 1998, 1999, 2000, 2001, 2002
 ASME Leadership Development Intern, Council on Education, 1999

SERVICE TO THE UNIVERSITY

Associate Dept. Head for Graduate Studies, Department of Mechanical Engineering, 2011 - present
 College of Engineering Think Tank, Colorado State University, 2009 - 2012
 College of Engineering Awards Committee, 2010 - 2011
 Administrator and Director, South Jersey Technology Park at Rowan University, 2002-2007
 Intellectual Property Task Force, 2005-2007
 Campus Master Plan Steering Committee, 2004-2007
 Middle States Accreditation Steering Committee, 2003- 2004
 Chair, College of Engineering Clinic Committee, 2001-2002
 College of Engineering Promotion Committee, 2003, 2006-present
 College of Engineering Sophomore Clinic Coordinator, 1998-2000
 College of Engineering Planning Committee, 2000-present
 Rowan University Senate, 1999-2001
 ASME faculty advisor, 1996-1998

Learning Outcomes Assessment Committee member, 1996-1998
Intercollegiate Athletics Committee member, 1998-2000
Advisory Panel, Faculty Center for Excellence in Teaching and Learning, 1996-2001
Advisory Panel, Center for the Study of Student Life and Development, 2000-2002
Curriculum Chair, Department of Mechanical Engineering, 1997-1998
College of Engineering Computer Resources Committee (CRC), 1997-1999

SEARCH COMMITTEES

Rowan University

Rhorer Chair for Entrepreneurial Studies, 2006
Vice President for University Advancement, 2006
College of Engineering Dean, 2000
Director of Faculty Center for Teaching Excellence, 2000
Mechanical Engineering Faculty, 1 Position, 2004
Mechanical Engineering Faculty, 1 Position, 2000
Mechanical Engineering Faculty, 1 Position, 1999
Mechanical Engineering Faculty, 2 Positions, 1998
Mechanical Engineering Faculty, 2 Positions, 1997
Mechanical Engineering Faculty, 1 Position, 1996
Electrical and Computer Engineering Faculty, 1 Position, 2002
Electrical and Computer Engineering Faculty, 2 Positions, 2000
Electrical and Computer Engineering Faculty, 2 Positions, 1997
Electrical and Computer Engineering Faculty, 2 Positions, 1996
Mechanical Engineering Technician, 1 Position, 1997
Mechanical Engineering Technician, 1 Position, 2007
Process Engineering Technician, 1 Position, 1999

Colorado State University

Department Head, Mechanical Engineering, 2009
Mechanical Engineering Faculty, 2013
Mechanical Engineering Thermal Sciences Faculty Position, 2010

AWARDS AND HONORS

CSU Best Teacher Award Nominee, 2009, 2010, 2011, 2012
ASEE 2004 Kauffman Award for Technology Entrepreneurship, 2004
CASE Professor of the Year, Rowan University Nominee, 2002
NASA Institute for Advanced Concepts, Phase I Fellow, 2002.
Carnegie Scholar, Carnegie Academy for the Scholarship of Teaching and Learning, 2001-2002
ASME Leadership Development Initiative Fellowship, Council on Education, 1999
NASA/ASEE Summer Faculty Fellow, 1998
NASA/ASEE Summer Faculty Fellow, 1999
Honored as the first-ever "Person of the Week" by the Rowan Alumni Association, 1997
Luigi Crocco Prize for Outstanding Teaching Assistant, 1993

WORKSHOPS ATTENDED AND CONTINUING EDUCATION

Babson-Olin Symposium for Engineering Entrepreneurship Educators (SyE³) Pilot Program, June 21-25, 2005.
Mini-Conference on Energy STEM Innovations. NSF Coalition. University of Wisconsin, Madison, WI. May 28-29, 2003.

Entrepreneurship Boot Camp. Rowan University Center for Innovation and Entrepreneurship. Glassboro, NJ. April 2002

Carnegie Academy for the Scholarship of Teaching and Learning, The Carnegie Foundation for the Advancement of Teaching, Menlo Park, CA, 2001, 2002

Roundtable on Entrepreneurship in Engineering Education, Stanford, CA, October 2005.

Roundtable on Entrepreneurship in Engineering Education, Stanford, CA, October 27-29, 2004.

Roundtable on Entrepreneurship in Engineering Education, Stanford, CA, October 5-6, 2000.

1999 Summer Academy, *American Association for Higher Education*, Snowmass Village, CO, July 14-18, 1999

New Century Scholars Workshop, *National Science Foundation*, Stanford, CA, August 1-5, 1999

MEDIA APPEARANCES:

Channel 4, KCNC, CBS4 Denver, May 2010. Interviewed in a segment on engine testing on bio-butanol produced from pine beetle kill.

Channel 10, WCAU, Philadelphia. August 2002. Interviewed in a segment describing an experiment built by Rowan Engineering students, which flew aboard NASA's KC135 reduced gravity aircraft.

Channel 6, WPVI, Philadelphia. April 2001. Interviewed in a segment describing the development of the Engineering College at Rowan and describing an experiment built by Rowan Engineering students, which flew aboard NASA's KC135 reduced gravity aircraft.

Channel 17, WPHL, Philadelphia. Sept. 1999. Appeared in a segment describing an experiment built by Rowan Engineering students, which flew aboard NASA's KC135 reduced gravity aircraft.

Channel 17, WPHL, Philadelphia. April 1 1997. Interviewed in a segment on the evening news on Channel 17, WPHL, Philadelphia. The interview explained my research and discussed its relevance to the fire aboard the Russian Space Station, Mir.

NJN, New Jersey's Public Television Station. July 1997. Interviewed in a long segment on the evening news for NJN, New Jersey's public television station prior to the STS-94 Space Shuttle mission.

My experimental work has been featured in various newspaper articles in numerous newspapers (The Star Ledger (4), Gloucester County Times (4), Atlantic City Press (3), Mount Olive Chronicle(4), Courier Post, Philadelphia Inquirer, the Fort Collins Coloradoan (2), the Denver Post (2), the Bloomberg Markets magazine.

The Rowan Undergraduate Venture Capital Fund has been featured in dozens of articles in newspapers such as the Philadelphia Inquirer, Star Ledger, Atlantic City Press, Courier Post, Gloucester County Times, etc. and in national publications such the ASME *Mechanical Engineering* magazine.

My student's work in microgravity boiling heat transfer has been featured in the Philadelphia Inquirer, Gloucester County Times and the Courier Post.

PERSONAL INTERESTS:

Baseball, soccer, golf, hiking, roller blading, mountain biking, drawing/painting, guitar.

INVENTIONS

U.S. Pat. # 5,366,352; *Thermostatic Compressor Suction Inlet Duct Valve*, with R. L. DeBlois and D. G. Cutts; Awarded: November 22, 1994.

U.S. Pat. # 5,256,044; *Scroll Compressor with Improved Axial Compliance*, with J. J. Nieter, and R. L. DeBlois; Awarded: October 26, 1993.

U.S. Patent Application #20100258104; *Cook Stove Assembly*, with M. Defoort, B. Willson and D. Lionberg. Filed: October 14, 2010.

U.S. Patent Application; *Thermophoretic Sampler*, with John Volckens. Filed: May 24, 2012.

TECHNICAL SESSIONS , WORKSHOPS AND CONFERENCES ORGANIZED

Organizer and Session Chair, “Conversion of Whole Algal Biomass into Liquid Fuels via Hydrothermal Processes”, 7th Annual Algae Biomass Summit, Orlando, FL, September 30, 2013.

Organizer and Session Chair, Third International Conference on Algal Biomass, Biofuels and Bioproducts, June 16-19, 2013, Toronto, Canada.

Organizer and Panelist, Marchese, A. J. (2012). Optimized Biodiesel. 2012 Biodiesel Technical Workshop of the National Biodiesel Board. Kansas City, MS, October 31, 2012.

Engineering and Analysis Track Chair, 6th Annual Algae Biomass Summit, Denver, CO, September, 2012.

Organizer and Session Chair, “New Conversion Technologies for Algal Biomass”, 6th Annual Algae Biomass Summit, Denver, CO, September 27, 2012.

Organizer and Session Chair, “New Conversion Technologies for Algal Biomass ”, Second International Conference on Algal Biomass, Biofuels and Bioproducts, June 10-13, 2012, San Diego, CA.

Organizer, "Alternative Fuels", 2012 SAE Powertrain, Fuels and Lubricants, Fall 2012, Europe.

Organizer and Session Chair, “Harvesting and Extraction Processes”, 5th Annual Algae Biomass Summit, Minneapolis, MN, October 15-17, 2011.

Organizer and Session Chair, “New Conversion Technologies for Algal Biomass ”, First International Conference on Algal Biomass, Biofuels and Bioproducts, July 17-21, 2011, St. Louis, MO.

Instructor, “Sustainable Vision Teaching Laboratory”, An NSF Sponsored Workshop, Colorado State University, June 2011

Organizer and Panelist, “Conversion of Algae Biomass and Lipids into Practical Fuels”, 4th Annual Algae Biomass Summit, Phoenix, AZ, September 28-30, 2010.

Organizer and Session Chair, "Alternative Fuels", 2010 SAE Powertrain & Fluid Systems, November 2010, San Diego, CA

Organizer and Session Chair, "Alternative Fuels", 2009 SAE Powertrain & Fluid Systems, November 2009, San Antonio, TX

Organizer, "Compression Ignition Performance with Alternative Fuels", 2009 International SAE Powertrain & Fluid Systems, October 2009, Florence, Italy.

Organizer, 2nd National Capstone Design Conference, Boulder, CO, June 2010

Organizer and Session Chair, "Alternative Fuels", 2008 SAE Powertrain & Fluid Systems, October 2008, Chicago, IL

- Organizer and Session Chair, "Alternative Fuels", 2007 SAE Powertrain & Fluid Systems, October 2007, Chicago, IL.
- Organizer and Panelist, "Toward a Common Standard Rubric for Evaluating Capstone Design Projects", 1st National Capstone Design Conference, Boulder CO, June 2007.
- Organizer and Session Chair, "Diesel Emissions: Emissions Measurement", 2006 SAE Powertrain & Fluid Systems, October 16 – 19, 2006 Toronto, Ontario, Canada
- Panelist, "From E team funding to Venture Capital: Creating Bridging Alternatives for Technology Commercialization", National Collegiate Inventors and Innovators Alliance, Tenth Annual Meeting, Portland, OR, March 2006.
- Panelist, "Commercialization of Undergraduate Intellectual Property: A Comparison to the Research University Model", National Collegiate Inventors and Innovators Alliance, Tenth Annual Meeting, Portland, OR, March 2006.
- Workshop Organizer and Leader, "Innovative Entrepreneurship Programs", Roundtable On Entrepreneurship Education for Scientists and Engineers, Stanford University, Stanford, CA, October 2005.
- Panelist, "Commercialization of University Intellectual Property: Variations in Approaches of Research (Doctoral), Comprehensive (Masters) and Liberal Arts Institutions", National Collegiate Inventors and Innovators Alliance, Ninth Annual Meeting, San Diego, CA, March 2005.
- Panelist, "Understanding Student Empowerment and Promoting Student Learning through the Scholarship of Teaching and Learning", Association of American Colleges and Universities, Philadelphia, PA, November 2004.
- Panelist, "Best Practices in Engineering Entrepreneurship Education", Roundtable On Entrepreneurship Education for Scientists and Engineers, Stanford University, Stanford, CA, October 2004.
- Panelist, "Challenges in Diversity - Gender, Class and Ethnicity: Strategies for Teaching & Learning. The Professions", Carnegie Fellows' Notre Dame Diversity Conference, South Bend, IN, November 2002.
- Organizer and Session Chair, "Reinventing the Design Curriculum", National Collegiate Inventors and Innovators Alliance, Fourth Annual Meeting, Washington, DC, March 2000.
- Organizer and Session Chair, "Crossing Interdisciplinary Boundaries: Impediments and Enablers to Faculty Collaboration and Integration", Eighth AAHE Conference on Faculty Roles and Rewards, New Orleans, LA, February 2000.
- Panelist, "Innovation in Engineering Education: What Makes Innovation Possible and Sustainable", Frontiers in Education Conference, Kansas City, MO, October 2000.

GRADUATE STUDENTS SUPERVISED

Graduate Advisor – PhD

Timothy Vaughn, Ph.D., 2013, Colorado State University, Expected.
Torben Grumstrup, Ph.D., 2013, Colorado State University, Expected.
Marc, Baumgartner, Ph.D, 2014, Colorado State University, Expected.
Esteban Hincapie, Ph.D., 2014, Colorado State University, Expected.
Andrew Hockett, Ph.D., 2015, Colorado State University, Expected.
Jessica Tryner, Ph.D., 2015, Colorado State University, Expected.

Graduate Advisor – Master's

Fred Hovermann, "Development of a New Apparatus to Measure Flame Spread through a Free-Stratified Fuel/Air Mixture", MS, 2003.
Jason Hearne, "School Bus Idling and Mobile Diesel Emissions: Effect of Fuel Type and Development of a Mobile Test Cycle", MS, 2004.
Andrew Toback, "Diesel Emission Reduction Strategies for School Buses and Heavy Duty Diesel Vehicles: Exhaust After Treatment", MS, 2005.
Sarina Colligan, "Emissions Measurements and Life Cycle Analysis of Biodiesel and ULSD for Recycling and Trash Vehicles", MS, 2005.
Marcos Villa-Gonzalez, "Two-dimensional Propagating Edge Flames, MS, 2005.
Matthew Hammill, "Ignition Delay of Oxygenated Fuel Droplets: Development of a 1 Second Drop Tower and 1-g Results", MS, 2005.
Timothy Vaughn, "Ignition Delay of Biodiesel and Biodiesel Surrogate Fuel Droplets", MS, 2006.
Mark Wessel, "Microgravity Ignition Delay of Bio-Ester Fuel Droplets", MS, 2007.
David McKenna, "Mobile Emissions Measurements from Biodiesel Blends in Diesel Locomotives", MS, 2008.
Bethany Fisher, "Characterization of Gaseous and Particulate Emissions from Combustion of Algae Based Methyl Ester Biodiesel", MS, 2009, Colorado State University.
Daniel Thayer, "A Personal Thermophoretic Sampler for Collection and Analysis of Airborne Nanoparticles", MS, 2010, Colorado State University.
Harrison Bucy, "Oxidative Stability of Algal Methyl Esters", MS, 2011, Colorado State University.
Kelly Fagerstone, "Measurement of Direct Nitrous Oxide Emissions from Microalgae Cultivation Under Oxidic and Anoxic Conditions, MS, 2011, Colorado State University.
Kristen Naber, "FTIR Spectroscopy of Methyl Butanoate-Air and Propane-Air Low Pressure Flat Flames, 2012, Colorado State University.
David Martinez, "A Reduced Chemical Kinetic Mechanism for Computational Fluid Dynamic Simulations of High BMEP, Lean Burn, Natural Gas Engines, MS, 2012, Colorado State University.
David McKenna, MS, 2011, Colorado State University, Expected.
Caleb Elwell, MS, 2013, Colorado State University, Expected.
Andrew Thompson, MS, 2014, Colorado State University, Expected.

Graduate Committee

Peter Jansson, "Hydro Catalysis: A New Energy Paradigm", MS, 1997
Jeremy T. Neyhart, "Automated segmentation of radiodense tissue in digitized mammograms", MS, 2002

Brian K. Fitzpatrick, “Theory, Construction and Instrumentation of a Thermoacoustic Prime Mover, MS, 2002.

Brian Kuritz, “Application of Experimental Design in the Steady State Particulate Exposure Levels in a 1992 International School Bus, MS, 2003.

David Martinez, “Measurement of Particulate Matter inside the Passenger Compartment of a School Bus”, MS, 2007.

Ahmet Yozgatligil, “Burning and Sooting Behavior of Ethanol Droplet Combustion under Microgravity Conditions”, Ph.D., 2005, Drexel University.

Kenneth Kroenlein, Ph.D, 2007, Princeton University

Michael Foster, Ph.D., 2007, Drexel University.

Bradley Urban, Ph.D, 2008, Princeton University

Lei Tao, Ph.D., 2010, CSU

Aparna Arunachalam, M.S. 2010, CSU

Dan Lionberg, M.S. 2011, CSU

Marty Malenshek, M.S., 2008, CSU

Liaw Batan, Ph.D. Candidate,

Steve Brown, Ph.D. Candidate, Atmospheric Sciences, CSU

Brett Wilson, M.S. 2009, CSU

Guhan Srivatsan, M.S. 2010, CSU

Nathaniel Douglas, M.S. 2011, CSU

Frank Locisano, M.S. 2011, CSU

Jason Quinn, Ph.D., 2011, CSU

Matt Ruter, M.S. 2010, CSU

Dijiang Liu, Ph.D. Candidate, CSU

John Field, Ph.D. Candidate, CSU

Nick Wilvert, M.S., 2012, CSU

Matthew Viele, Ph.D. Candidate, CSU

Koushik Badrinarayanan, M.S. Candidate, CSU

Dan Wise, Ph.D. Candidate, CSU

Ray Duthu, Ph.D. Candidate, CSU

Aron Dobos, Ph.D. Candidate, CSU

Jason Prapas, Ph.D. Candidate, CSU

Undergraduate and High School Research Students

Jeffrey Mohr, CSU, Honors Undergraduate Research Scholar, 2012-present

Darryl Beemer, CSU, Honors Undergraduate Research Scholar, 2012-present

Juan David Llanos, Loyola Marymount University, 2013, C2B2 REU

Wesley Blummer, Villanova University, 2012, C2B2 REU

Daniel Purdy, Colorado State University, 2012 SBDC Research Student

Patrick Hock, 2011, German Foreign Exchange Student

Hayden Schappell, 2011, Broomfield High School, Colorado

Bryant Ladson, Morehouse College, 2009, CSU AGEF Program

Kabel Skelton, 2010, CSU, Engines and Energy Conversion Laboratory

Travis Lau, Northwestern University, 2009, C2B2 REU
 Manuel Kern, 2009, German Foreign Exchange Student
 Alexander Stanton, West Virginia University, 2008, C2B2 REU
 Michael Harris, 2006, REU Pollution Prevention, Rowan University
 Amy Mensch, 2005, REU Pollution Prevention, Rowan University
 Jamie Ginn, 2005, REU Pollution Prevention, Rowan University
 Ingrid Osorio, 2004, REU Pollution Prevention, Rowan University
 Cliff Amundson, 2004, REU Pollution Prevention, Rowan University
 Michael Resciniti, 2002
 Nick Pekula, 2002
 Jennifer Akers, 2000

JOURNAL PUBLICATIONS AND BOOK CHAPTERS [Total Citations: 1138; h-Index: 17]

1. [65 citations] Marchese, A. J., and Dryer, F. L. (1996). The Effect of Liquid Mass Transport on the Combustion and Extinction of Bi-Component Droplets of Methanol and Water, *Combust. Flame*. **105**, p. 104.
2. [28 citations] Marchese, A. J., Dryer, F. L., Colantonio, R. O., and Nayagam, V. (1996). Microgravity Combustion of Methanol and Methanol/Water Droplets: Drop Tower Experiments and Model Predictions. *Proc. Combust Inst.* **26**, pp. 1209-1218.
3. [25 citations] Marchese, A. J., Dryer, F. L., Nayagam, V., and Colantonio, R. O. (1996). Hydroxyl Radical Chemiluminescence Imaging and the Structure of Microgravity Droplet Flames, *Proc. Combust Inst.* **26**, pp. 1219-1227.
4. [44 citations] Marchese, A. J. and Dryer, F. L. (1997). The Effect of Non-Luminous Thermal Radiation in Microgravity Droplet Combustion. *Combust. Sci. and Tech.*, **124**, 1-6, pp. 371-402.
5. [168 citations] Held, T. J., Marchese, A. J., and Dryer, F. L. (1997). A Semi-Empirical Reaction Mechanism for N-Heptane Oxidation and Pyrolysis, *Combust. Sci. and Tech.*, **123**, pp. 107-146.
6. [3 citations] Marchese, A. J., Dryer, F. L. and Colantonio, R. O. (1998). Radiative Effects in Space-Based Methanol/Water Droplet Combustion Experiments. *Proc. Combust Inst.* **27**, pp. 2627-2634.
7. [68 citations] Nayagam, V., Haggard, J. B., Colantonio, R. O., Marchese, A.J., Dryer, F.L., Zhang, B. L. and Williams, F. A. (1998). Microgravity n-Heptane Droplet Combustion in Oxygen-Helium Mixtures at Atmospheric Pressure. *AIAA Journal*. **Vol. 36, No. 8**, pp. 1369-1378.
8. [71 citations] Marchese, A. J., Dryer, F. L. and Nayagam, V. (1999). Numerical Modeling of Isolated N-Alkane Droplet Flames: Initial Comparisons with Ground and Space-Based Microgravity Experiments. *Combust. Flame*, **116**, pp. 432-459.
9. [36 citations] Newell, J. A., Marchese, A. J., Ramachandran, R. P., Sukumaran, B. and Harvey, R. (1999). Multidisciplinary Design and Communication: A Pedagogical Vision. *International Journal of Engineering Education*. **Vol 15, No. 5**, pp. 376-382.
10. [19 citations] Marchese, A. J., Schmalzel, J. L., Mandayam, S. A. and Chen, J. C. (2001) A Venture Capital Fund for Undergraduate Engineering Students at Rowan University. *Journal of Engineering Education*. **Vol. 90, No. 4**, pp. 589-596.
11. [13 citations] Miller, F.J., Easton, J. W., Marchese, A.J. and Ross, H.D. (2002). Gravitational Effects on Flame Spread Through Non-Homogeneous Gas Layers. *Proc. Combust Inst.* **29**, pp. 2561-2567.

12. [13 citations] Ramachandran, R. P. and Marchese, A. J. (2002). Integration of Multidisciplinary Design And Technical Communication: An Inexorable Link. *International Journal of Engineering Education*. **Vol 18, No. 1**, pp. 32-38.
13. [19 citations] Marchese, A. J. Ramachandran, R.P., Hesketh, R.P. and Schmalzel, J.L. (2003). The Competitive Assessment Laboratory: Introducing Engineering Design via Consumer Product Benchmarking. *IEEE Transactions on Education*. **46**, pp. 197-205.
14. [15 citations] Pekula, N., Kuritz, B., Hearne, J., Marchese, A.J., Hesketh, R. P. (2004). The Effect of Ambient Temperature and Humidity on Idling Emissions from Heavy Duty Diesel Trucks. *SAE 2003 Transactions, Vol.112, Journal of Fuels and Lubricants*, ISBN Number: 0-7680-1451-4, September 2004, pages 148-158.
15. Kuritz, B., Hearne, J., Marchese, A.J., Hesketh, R. P. (2004). Application of Experimental Design in the Steady State Particulate Exposure Levels in a 1992 International School Bus. *General Emissions 2004, SAE International Special Publication: Paper Collections*. ISBN: 978-0-7680-1399-3, March, 2004.
16. Ginn, J., Toback, A., Hearne, J., Marchese, A.J., Hesketh, R. P. and Amundsen, C. (2005). Life Cycle and Economic Analysis of Heavy Duty Diesel Vehicle Idling Alternatives. *SAE 2004 Transactions, Vol.113-4, Journal of Fuels and Lubricants*, ISBN Number 0-7680-1553-7, July 2005, pages 426-435.
17. [3 citations] Toback, A., Hearne, J., Kuritz, B., Marchese, A.J., Hesketh, R. P. (2005). The Effect of Ambient Temperature and Humidity on Idling Emissions from Diesel School Buses. *SAE 2004 Transactions, Vol.113-4, Journal of Fuels and Lubricants*, ISBN Number: 0-7680-1553-7, July 2005, pages 530-539.
18. [5 citations] Hearne, J., Toback, A., Marchese, A.J., Hesketh, R. P. (2005). Development of a New Composite School Bus Test Cycle and the Effect of Fuel Type on Mobile Emissions from Three School Buses. *General Emissions 2005, SAE International Special Publication: Paper Collections*. ISBN: 978-0-7680-1589-8, April 2005.
19. [2 citations] Toback, A., Hearne, J., Colligan, S., Osorio, I, Hesketh, R. P. and Marchese, A.J. (2005). Experimental Evaluation of Aftertreatment Devices on Mobile School Bus Emissions from Diesel Powered School Buses. *Diesel Exhaust Emissions Control 2005, SAE International Special Publication: Paper Collections*. ISBN: 978-0-7680-1587-4, April 2005.
20. [2 citations] Villa-Gonzales, M., Marchese, A. J., Easton, J. W. and Miller, F. J. (2007) Experimental Measurements of Two-Dimensional, Planar, Propagating Edge Flames. *Proc. Combust Inst.* **31**, 939-946.
21. [114 citations] Gail, S., Thomson, M., Sarathy, S. M., Syed, S. A., Dagaut, P., Dievart, P., Marchese, A. J. and Dryer, F. L. (2007). A Wide Range Kinetic Modeling Study of Methyl Butanoate. *Proc. Combust Inst.* **31**, 305-311.
22. Sukumaran, B., Mehta, Y., Bryant, T., D’Intino, R., Marchese, J., Everett J. and Gephardt, Z. (2007). Generating Entrepreneurship Opportunities for the Developing World through the Engineering Curriculum. *World Transaction in Engineering and Technology Education*, Vol. 6, No. 1, pp. 37-40.
23. [7 citations] Kadowec, J., Bhatia, K., Chandrupatla T.R., Chen, J. C., Constans, E., Hartman, H., , Marchese, A. J., von Lockette, P. and Zhang, H. (2007). Design Integrated into the Mechanical Engineering Curriculum: Assessment of the Engineering Clinics. *Journal of Mechanical Design*, July 2007, Volume 129, Issue 7, pp. 682-691.
24. Nayagam, V., Marchese, A. J. and Sacksteder, K.R (2008). Inverse Scale Modeling in Droplet Combustion. *Progress in Scale Modeling. Kozo Saito, Editor. Springer*
25. Marchese, A. J., Abraham, J., Greene, C., Kizenwether, L. and Ochs, J. (2008). Toward a Common Standard Rubric for Evaluating Capstone Design Projects. *Advances in Engineering Education*,
26. [2 citations] Weaver, K. M, Marchese, A. J., Vozikis, G. S. and Dickson, P. (2010). Promoting Entrepreneurship Across the University: The Experiences of Three Diverse Academic Institutions. *Journal of Small Business and Entrepreneurship*, **23**, pp. 797-806.

27. [13 citations] Fisher, B. C., Marchese, A. J., Volckens, J., Lee, T. and Collett, J. (2010). Measurement of Gaseous and Particulate Emissions from Algae-Based Fatty Acid Methyl Esters. *SAE Int. J. Fuels Lubr.* **3**, pp. 292-321.
28. [6 citations] Thayer, D., Volckens, J., Koehler, K., Marchese, A. J. and Prieto, A. (2011). A Personal Sampler for Airborne Nanoparticles. *Aerosol Science and Technology*. **45**, pp. 1-7.
29. [8 citations] Marchese, A. J., Vaughn, T. L., Kroenlein, K. and Dryer, F. L. (2011). Ignition Delay of Fatty Acid Methyl Ester Fuel Droplets in Microgravity: Experiments and Detailed Numerical Modeling. *Proc. Combust. Inst.*, **33**, pp. 2021-2030.
30. [11 citations] Fagerstone, K., Quinn, J. C., De Long, S., Bradley, T. and Marchese, A. J. (2011). Quantitative Measurements of Direct N₂O Emissions from Microalgae Cultivation. *Environmental Science & Technology*, **45** (21), pp. 9449-9456.
31. [2 citations] Bucy, H. and Marchese, A. J. (2012). Oxidative Stability of Algae Derived Methyl Esters. *Journal of Engineering for Gas Turbines and Power*, **Vol. 134**, pp. 092805-1 to 092805-13.
32. [5 citations] Bucy, H., Baumgardner, M. and Marchese, A. J. (2012). Chemical and Physical Properties of Algal Methyl Ester Biodiesel Containing Varying Levels of Methyl Eicosapentaenoate and Methyl Docosahexaenoate. *Algal Research* **1** pp. 57-69.
33. Leith, D., Miller-Lionberg, D., Marchese, A. J., Lentz, H., Lersch, T., Casuccio, G. and Volckens, J. (2013). Development of a Transfer Function for a Personal Thermophoretic Nanoparticle Sampler. *Aerosol Science and Technology*. Submitted.
34. Hawley, B., McKenna, D., Marchese, A. J. and Volckens, J. (2013). Time Course of Bronchial Cell Inflammation Following Exposure to Diesel Particulate Matter. *Environmental Science and Technology*. Submitted.
35. Tryner, J., Willson, B.D. and Marchese, A. J. (2013). The Effects of Fuel Type and Stove Design on Emissions and Efficiency of Natural Draft Semi-Gasifier Biomass Cookstoves. *Biomass and Bioenergy*, Submitted.
36. Prapas, J., Baumgardner, M., Marchese, A. J. and DeFoort, M. (2013). Influence of Chimneys on Combustion Characteristics of Buoyantly Driven Biomass Stoves. *Biomass and Bioenergy*. Submitted.
37. Baumgardner M., Marchese, A. J. and Sarathy, M. (2013). Autoignition Characterization of Primary Reference Fuels and n-Heptane/n-Butanol mixtures in a Constant Volume Combustion Device and Homogeneous Charge Compression Ignition Engine. *Energy and Fuels*. Submitted.

CONFERENCE PROCEEDINGS AND TECHNICAL PRESENTATIONS

Research

1. Hockett, A., Barta, J., Hampson, G., Suhre, B. and Marchese, A. J. (2013). Computational Modeling of a Natural Gas/Diesel Dual Fuel Engine using CONVERGE™. *Fall Technical Meeting of the Western States Section of the Combustion Institute*. Fort Collins CO, October 7-8, 2013.
2. Vaughn, T. L., Grumstrup, T. and Marchese, A.J. (2013). Prompt NO_x Measurements in Partially Pre-mixed Methyl Laminar Flames: Comparison Between Alkanes and Methyl Esters. *Fall Technical Meeting of the Western States Section of the Combustion Institute*. Fort Collins CO, October 7-8, 2013
3. Vaughn, T. L., Olsen, D., Ratcliff, M., McCormick, R. L. and Marchese, A. J. (2013). Characterization of Gaseous and Particulate Emissions from the Combustion of Cellulosic Biomass Based Oxygenated Components in a Compression Ignition Engine. *Fall Technical Meeting of the Western States Section of the Combustion Institute*. Fort Collins CO, October 7-8, 2013.
4. Baumgardner, M.E. and Marchese, A. J. (2013). A Phenomenological Relationship between Octane Number and Cetane Number and the Impact on HCCI Fuel Characterization. *Fall Technical Meeting of the Western States Section of the Combustion Institute*. Fort Collins CO, October 7-8, 2013.

5. Loveldi, N., Mizia, J., Marchese, A. J. and DeFoort, M. (2013). Performance Assessment of a Biomass Downdraft Semi-Gasifier Burner with Application Toward Solid Human Waste Incineration. *Fall Technical Meeting of the Western States Section of the Combustion Institute*. Fort Collins CO, October 7-8, 2013.
6. Thompson, A., Baumgardner, M.E. and Marchese, A. J. (2013). Modeling In-Cylinder Heat Transfer for a Single Cylinder HCCI Engine. *Fall Technical Meeting of the Western States Section of the Combustion Institute*. Fort Collins CO, October 7-8, 2013.
7. Tryner, J., Beemer, D., DeFoort, M. and Marchese, A.J. (2013). The Effect of Primary and Secondary Air Flow Rates on Measured Gas Composition in a Top Lit Updraft Semi-Gasifier Cookstove. *Fall Technical Meeting of the Western States Section of the Combustion Institute*. Fort Collins CO, October 7-8, 2013.
8. Hincapie, E. and Marchese, A. J. (2013). Investigation on Acoustophoretic Motion of Microalgae. *2012 Algae Biomass Summit*. Orlando, FL, October 2013.
9. Marchese, A. J. (2013). Conversion of Algal Lipids and Biomass into Drop-In Liquid Fuels: Lessons Learned from the NAABB Consortium. Invited Keynote Presentation. *Third International Conference on Algal Biomass, Biofuels and Bioproducts*. Toronto, CA, June 2013.
10. Hincapie, E. and Marchese, A. J. (2013). Investigation on Acoustophoretic Motion of Microalgae. *Third International Conference on Algal Biomass, Biofuels and Bioproducts*. Toronto, CA, June 2013.
11. Tryner, J. and Marchese, A.J. (2013). The Effects of Fuel Type and Geometry on Emissions and Efficiency of Natural Draft Semi-Gasifier Biomass Cookstoves. *The 8th US National Meeting of the Combustion Institute*. Park City, UT, May 19-22, 2013.
12. Grumstrup, T., Marchese, A. J., Dryer, F. L. and Farouk, T. (2013). The contributions of thermal and prompt NO_x chemistry on NO_x formation near igniting oxygenated liquid fuel droplets. *The 8th US National Meeting of the Combustion Institute*. Park City, UT, May 19-22, 2013.
13. Baumgardner, M. E., Marchese, A. J. and Sarathy, M. (2013). Autoignition Characterization of Primary Reference Fuels and n-Heptane/n-Butanol mixtures in a Constant Volume Combustion Device and Homogeneous Charge Compression Ignition Engine. *The 8th US National Meeting of the Combustion Institute*. Park City, UT, May 19-22, 2013.
14. Martinez, D., Tozzi, L. and Marchese, A. J. (2013). A Method for Predicting Knock in Gas Engines by Means of Chemical Precursors from CFD with Detailed Chemistry. *8th Dessau Gas Engine Conference*, Dessau, Germany, March 21-22, 2013.
15. Martinez, D., Tozzi, L. and Marchese, A. J. (2013). Optimization of a Reduced Methane Chemical Kinetic Mechanism for CFD Simulations of High BMEP, Lean-Burn Natural Gas Engines. *CIMAC Congress*, Shanghai, China 2013.
16. Tryner, J., Willson, B. D. and Marchese, A.J. (2012). Development of an Improved Natural Draft Biomass Gasifier Cookstove. *Work-in-Progress Poster Session. Thirty Forth Symposium (International) on Combustion*. Warsaw, Poland, August 2012.
17. Vaughn, T., Grumstrup, T., Naber, K. and Marchese, A.J. (2012). Measurements of NO_x Formation From the Combustion of Algal Methyl Ester Biodiesel and Algal Hydrotreated Renewable Diesel. *Work-in-Progress Poster Session. Thirty Forth Symposium (International) on Combustion*. Warsaw, Poland, August 2012.
18. Baumgardner, M., Hockett, A. and Marchese, A. J. (2012). Targeted chemical mechanism modification and experimental validation for bio-alcohol/FAME blends for use in traditional and advanced combustion applications. *Work-in-Progress Poster Session. Thirty Forth Symposium (International) on Combustion*. Warsaw, Poland, August 2012.

19. Hincapie, E. and Marchese, A. J., Marrone, B., Coons, J. and McCarty, B. (2012). Design of a Continuous Flow, Ultrasonic Algae Harvesting Device: Ultrasonic Property Measurements and Finite Element Modeling Results. *2012 Algae Biomass Summit*, Denver, CO, September 24 -27, 2012.
20. Hincapie, E. and Marchese, A. J., Marrone, B., Coons, J. and McCarty, B. (2012). Design of a Continuous Flow, Ultrasonic Algae Dewatering System: Ultrasonic Property Measurements and Finite Element Modeling Results. *Second International Conference on Algal Biomass, Biofuels and Bioproducts*. San Diego, CA, June, 2012.
21. Hawley, B., Volckens, J. and Marchese, A. J. (2012). Is Green Diesel Healthy Diesel? Investigating the inflammatory effects of exhaust from an engine run with petro- or biodiesel fuels. *Mountain and Plains Educational Research Center for Occupational and Environmental Health and Safety*, February, 2012.
22. Marchese, A. J. and Albrecht, K. O. (2012). A Review of Algal Lipid to Fuel, Lipid Extracted Algae to Fuel and Whole Algal Biomass to Fuel Conversion Technologies. *Invited Keynote Presentation. Second International Conference on Algal Biomass, Biofuels and Bioproducts*. San Diego, CA, June, 2012.
23. Martinez-Morett, D., Tozzi, L. and Marchese, A. J. (2012). Natural Gas Chemical Kinetic Mechanisms For CFD Simulations Of High BMEP, Lean-Burn Gas Engines, ASME Internal Combustion Engine Division, Spring Technical Conference, Torino, Italy, May 6 – 9, 2012. **ASME ICES2012-81109**
24. Hincapie, E. and Marchese, A. J. (2012). Design and Construction of an Algal Dewatering System by the Use of Ultrasonic Standing Waves and its Performance Evaluation by Finite Element Modeling. *World Renewable Energy Forum*, Denver, CO, May 13-17, 2012.
25. Hincapie, E. and Marchese, A. J. (2012). Design and Construction of an Algal Dewatering System by the Use of Standing Waves and its Performance. *International Biomass Conference and Expo*, Denver, CO, April 16-19, 2012.
26. Bucy, H., Fisher, B.C. and Marchese, A. J. (2011). Chemical and Physical Properties of Algal Methyl Esters Containing Varying Levels of Methyl Eicosapentaenoate and Methyl Docosahexaenoate. *2011 Algae Biomass Summit*, Minneapolis, MN, October 25-27, 2011.
27. Fagerstone, K., Quinn, J., Bradley, T., DeLong, S. and Marchese, A. J. (2011). Measurement of Direct Nitrous Oxide Emissions from Microalgae Cultivation Under Simulated Photobioreactor and Open Pond Conditions. *2011 Algae Biomass Summit*, Minneapolis, MN, October 25-27, 2011.
28. Marchese, A. J. (2011). Fuel Properties and Pollutant Emissions from Algal Methyl Ester Biodiesel. Invited Keynote Presentation. *First International Conference on Algal Biomass, Biofuels and Bioproducts*. St. Louis, MO, July 17-20, 2011.
29. Bucy, H. and Marchese, A. J. (2011). Oxidative Stability and Ignition Quality of Algal Methyl Esters Containing Varying Levels of Methyl Eicosapentaenoate and Methyl Docosahexaenoate. *First International Conference on Algal Biomass, Biofuels and Bioproducts*, St. Louis, MO, July 17-20, 2011.
30. Fagerstone, K., Quinn, J., Bradley, T. and Marchese, A. J. (2011). Measurement of Direct Nitrous Oxide Emissions from Microalgae Cultivation. *First International Conference on Algal Biomass, Biofuels and Bioproducts*, St. Louis, MO, July 17-20, 2011.
31. Batan, L., Quinn, J., Fagerstone, K., Bradley, T. and Marchese, A. J. (2011). A Current Evaluation of Life Cycle Greenhouse Gas Emissions, Land Use and Environmental Impact from Large Scale Production of Biofuels from Microalgae” *2011 World Congress on Industrial Biotechnology & Bioprocessing*, May 8 – 11, 2011, Toronto, CA.
32. Bucy, H. and Marchese, A. J. (2011). Oxidative Stability of Algae Derived Methyl Esters Containing Varying Levels of Methyl Eicosapentaenoate and Methyl Docosahexaenoate. **ASME ICEF2011-60047**
ASME 2011 Internal Combustion Engine Division Fall Technical Conference, Morgantown, WV, October 2-5, 2011.

33. Marchese, A. J. (2010). Emissions from Algal Methyl Ester Biodiesel. 2010 *Biodiesel Technical Workshop of the National Biodiesel Board*. Kansas City, MS, November 3, 2010.
34. Thayer, D., Koehler, K., Prieto, A., Marchese, A. J. and Volckens, J. (2010). Laboratory Evaluation of a Personal, Thermophoretic Sampler for Airborne Nanoparticles. *29th Annual Conference of the American Association of Aerosol Research*. Portland, OR, October, 2010.
35. Thayer, D., Volckens, J., Koehler, K., Marchese, A. J. and Prieto, A. (2010). A Personal Sampler for Engineered Nanoparticles. *Graduate Student Poster Session of the American Industrial Hygiene Conference and Exposition (AIHCE)*, Denver, CO, May 24-26, 2010.
36. Fisher, B. C. and Marchese, A. J. (2010). Characterization of Gaseous and Particulate Emissions from the Combustion of Algal Methyl Esters in a Turbocharged Direct Injection Diesel Engine. *Western States Meeting of the Combustion Institute*, Boulder, CO, March, 2010.
37. Farouk, T., Dryer, F. L., Marchese, A. J., Vaughn, T. L. and Kroenlein, K. (2010). A Numerical Study on the Impact of Supporting Fibers on Tethered Droplet Ignition under Microgravity Conditions. *Western States Meeting of the Combustion Institute*, Boulder, CO, March, 2010.
38. Marchese, A. J., Grumstrup, T. and Vaughn, T. L. (2010). Examination of the Role of C₂O Radical in Methyl Ester NO_x Formation. *Western States Meeting of the Combustion Institute*, Boulder, CO, March, 2010.
39. Fisher, B. C., Lee, T., Collett, J., Volckens, J. and Marchese, A. J. (2010). Measurement of Gaseous and Particulate Emissions from Algae-Based Biodiesel FAME. **SAE-2010-01-1523**, 2010 *SAE International Powertrains, Fuels & Lubricants Meeting*, Rio de Janeiro, Brazil, May 5-7, 2010.
40. Fisher, B. C., Lee, T., Collett, J., Volckens, J. and Marchese, A. J. (2009). Measurement of Gaseous and Particulate Emissions from Algae-Derived Biodiesel FAME. 2009 *Algae Biomass Summit*, San Diego, CA October 7-9, 2009.
41. Volckens, J., Koehler, K., Marchese, A. J. and Prieto, A. (2009). A Personal Sampler for Engineered Nanoparticles. *28th Annual Conference of the American Association of Aerosol Research*. Minneapolis, MI, October, 2009.
42. McKenna, D. S., Marchese, A. J. and Volckens, J. (2009). Investigation of Health Effects of Algae-Derived Biofuel Exhaust Emissions. *NSF IGERT Poster Session, Washington, DC*.
43. Marchese, A. J. (2009). Algae Derived Biofuels for the Transportation Sector. Panel Member: Greenhouse Gas Emissions from Advanced Diesel Technologies- What to Expect Now and in the Future. *2009 Transportation Planning, Land Use and Air Quality Conference*. Denver, CO, July 28-29, 2009.
44. Fisher, B. C. and Marchese, A. J. (2009). Characterization of Gaseous and Particulate Emissions from Algae-Derived Biodiesel FAME. *Biofuels for Transportation Symposium, American Chemical Society Meeting*, Washington DC, August 16-20, 2009.
45. Martinez-Morett, D., R. P. Hesketh, K. K. Bhatia, A. J. Marchese, L. J. Bonanno (2009). Measurement of Particulate Matter Within School Bus Passenger Compartments Under Realistic Operating Conditions: An Evaluation Of Retrofit Devices. *Air and Waste Management Association, 102nd Annual Conference and Exhibition*, Detroit, MI, June 2009.
46. Volckens, J., Marchese, A. J. and Prieto, A. (2009). A Personal Sampler for Assessing Nanoparticle Exposures. *American Industrial Hygiene Association Annual Conference*, Toronto, CA, June 2009.
47. Marchese, A. J. (2009). Properties and Suitability of Liquid Fuels Derived from Microalgae. *The IARU International Scientific Congress on Climate Change*, Copenhagen, Denmark, March 2009.
48. McKenna, D., Vaughn, T., Rowen, C., Hesketh, R. P., Bhatia, K.K., Marchese, A. J., Chipko, G. and Guran, S. (2008). Evaluation of Emissions and Performance of Diesel Locomotives with B20 Biodiesel

- Blends: Static Test Results. **RTDF2008-74030**. 2008 ASME Rail Transportation Division Meeting, September 24, 2008.
49. Martinez, D., Marchese, A. J., Bhatia, K. and Hesketh, R. (2008). Measurement of Particulate Matter within School Bus Passenger Compartments Under Realistic Operating Conditions: An Evaluation of Retrofit Devices. *AICHE 2008 Annual Meeting, Philadelphia, PA, November 2008*.
 50. Marchese, A. J., Stanton, A. and Yalin, A. (2008). Combustion Chemistry and Pollutant Emissions from Algae-Derived Biofuels. *Work-in-Progress Poster Session. Thirty Second Symposium (International) on Combustion*. Montreal, CA, August 2008.
 51. McKenna, D. and Marchese, A. J. (2008). Evaluation of Emissions and Performance of Diesel Locomotives with Biodiesel Blends: Static Test Results. *Western States Meeting of the Combustion Institute, Los Angeles, CA, March 2008*.
 52. Vaughn, T., Yalin, A. and Marchese, A. J. (2008). The Role of Chemical Structure on Prompt NO_x Formation in Ignition of Bio Ester and SVO Fuel Droplets. *Poster Session, Colorado Center for Biorefining and Biofuels Spring Meeting*, Fort Collins, CO, February 12, 2008.
 53. McKenna, D. and Marchese, A. J. (2008). Evaluation of Emissions and Performance of Diesel Locomotives Operating on Biodiesel Blends. *Poster Session, Colorado Center for Biorefining and Biofuels Spring Meeting*, Fort Collins, CO, February 12, 2008.
 54. Martinez, D., Marchese, A. J., Bhatia, K. and Hesketh, R. (2007). Comparative Analysis Of Catalytic Retrofits For Particulate Matter Reduction In School Bus Passenger Compartments Under Realistic Operating Conditions. *AICHE 2007 Annual Meeting, Salt Lake City, UT*.
 55. Martinez, D., Marchese, A. J., Bhatia, K. and Hesketh, R. (2007). Measurement of Particulate Matter within School Bus Passenger Compartments under Realistic Operating Conditions: An Evaluation of Retrofit Devices. *SAE Powertrain & Fluid Systems Conference and Exhibition. Chicago, IL, October, 2007*.
 56. Vaughn, T., Wessel, M. and Marchese, A. J. (2007). Combustion and Ignition of Bio-Ester Fuel Droplets in Microgravity. *Fifth Joint Meeting of the U.S. Sections of the Combustion Institute*. San Diego, CA, March 2007.
 57. Martinez, J., Marchese, A. J., Bhatia, K. and Hesketh, R. (2007). Measurement of Particulate Matter within School Bus Passenger Compartments under Realistic Operating Conditions. *Fifth Joint Meeting of the U.S. Sections of the Combustion Institute*. San Diego, CA, March 2007.
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169. Johnson, F. S, Marchese, A. J. and Mosto, P. (2000). Crossing Interdisciplinary Boundaries: Impediments to and Enablers of Faculty Collaboration and Integration. *The Department Chair*, Anker Publishing Company.

INVITED PRESENTATIONS AND SEMINARS

1. Marchese, A. J. (2013). Conversion of Algal Lipids and Biomass into Drop-In Liquid Fuels: Lessons Learned from the NAABB Consortium. Invited Keynote Presentation. *Third International Conference on Algal Biomass, Biofuels and Bioproducts*. Toronto, CA, June 2013.
2. Marchese, A. J. (2013). Biofuels from Microalgae: Recent Progresses in Development of Sustainable and Scalable Liquid Transportation Fuels. Invited Keynote Presentation. *Sixth International Congress of Mechanical Engineering (CIMM) 2013*, Barranquilla, Colombia, May 2-4, 2013.
3. Marchese, A. J. (2013). An Evaluation of Algal Lipid Derived and Whole Algal Biomass Derived Fuel Conversion Technologies and Fuel Properties. *The Program for Advancing Research in Petroleum Alternatives for Transportation*, February 25 -27, 2012, Dead Sea, Israel
4. Marchese, A. J. (2012). Fuel Properties from Algal Methyl Ester Biodiesel Containing Various Varying Levels of Methyl Eicosapentaenoate and Methyl Docosahexaenoate. 2012 *Biodiesel Technical Workshop of the National Biodiesel Board*. Kansas City, MS, October 31, 2012.
5. Marchese, A. J. (2012). Fuel Properties and Pollutant Emissions from Algal Biofuels. *Sustainable Bionergy Development Center Seminar Series. Colorado State University, Invited Presentation*. October 16, 2012.
6. Marchese, A. J. (2012). Recent Developments in Algal Biofuel Conversion Technologies. *Renewable and Alternative Energy Seminar Series*, Davis, Graham and Stubbs, LLC. Denver, CO, July 25, 2012.
7. Marchese, A. J. (2012). A Review of Algal Lipid to Fuel, Lipid Extracted Algae to Fuel and Whole Algal Biomass to Fuel Conversion Technologies. *Invited Keynote Presentation. Second International Conference on Algal Biomass, Biofuels and Bioproducts*. San Diego, CA, June, 2012.
8. Marchese, A. J. (2012). Fuel Properties and Pollutant Emissions from Algal Biofuels. *University of Illinois at Chicago, Invited Presentation*. January 10, 2012.
9. Marchese, A. J. (2011). Fuel Properties and Pollutant Emissions from Algal Methyl Ester Biodiesel. *Woodward Governor, Invited Presentation*. September 15, 2011.

10. Marchese, A. J. (2011). Algal biofuels: progress and challenges ahead in the quest for a sustainable and scalable liquid transportation fuel". *Invited Presentation. Professor Frederick L. Dryer: A Celebration of 45 Years of Distinction. A Special Symposium at the Eastern States Sectional Meeting of the Combustion Institute. Storrs, CT. October 8, 2011.*
11. Marchese, A. J. (2011). Algal Biofuels: Current Status of the Industry. Invited panelist for Alternative Fuels Panel, *ASME 2011 Internal Combustion Engine Division Fall Technical Conference, Morgantown, WV, October 2-5, 2011.*
12. Marchese, A. J. (2011). Oxidative Stability, Ignition Quality and Pollutant Emissions from Algal Methyl Ester Biodiesel. *Invited Presentation. Bio-Energy Conference of the Americas, Medellin, Colombia, August 2011.*
13. Marchese, A. J. (2011). Fuel Properties and Pollutant Emissions from Algal Methyl Ester Biodiesel. Invited Keynote Presentation. *First International Conference on Algal Biomass, Biofuels and Bioproducts. St. Louis, MO, July 17-20, 2011.*
14. Marchese, A. J. (2010). Algae's Investment Outlook in Fuel, Pharmaceuticals and Chemicals. *Invited Keynote Panel Session. World Algae Congress USA 2010. San Francisco, CA, December 7, 2010.*
15. Marchese, A. J. (2010). Emissions from Algal Methyl Ester Biodiesel. *2010 Biodiesel Technical Workshop of the National Biodiesel Board. Kansas City, MS, November 3, 2010.*
16. Marchese, A. J. (2010). Production, Characterization and Combustion of Algal Biofuels. Invited Presentation, *2nd Algae Workshop, Colorado Lakes and Reservoir Management Association (CLRMA). Denver, CO, August 27, 2010.*
17. Marchese, A. J. (2010). Combustion of Algae-Derived Biofuels. *CSU Engineering Innovations Breakfast. Boulder, CO, April 6, 2010.*
18. Marchese, A. J. (2010). Engaging the Entrepreneurial Mindset. *Lawrence Technological University, Detroit, MI. May 13, 2010.*
19. Marchese, A. J. (2010). Production and Characterization of Algal Biofuels. *Coordinating Research Council, Golden, CO, March 2, 2010.*
20. Marchese, A. J. (2010). Production and Characterization of Algal Biofuels. Invited Keynote Presentation, *Western States Meeting of the Combustion Institute, Boulder, CO, March, 2010.*
21. Marchese, A. J. (2009). "Algae Based Biofuels for the Transportation Sector", Clean Energy Supercluster, Expo 2009, May 2009, Colorado State University.
22. Marchese, A. J. (2009). Pollutant Emissions Reduction in Biofuel Powered Systems. *Front Range Student Ecology Symposium, February 25, 2009.*
23. Marchese, A. J. (2008). Creating an Entrepreneurial Culture in an Engineering Curriculum. *Worcester Polytechnic Institute, Worcester, MA, October 25, 2008.*
24. Marchese, A. J. (2008). Engaging the Entrepreneurial Mindset in an Engineering Curriculum. *Ohio Northern University, Ada, OH. May 19, 2008.*
25. Marchese, A. J. (2007). Biodiesel Locomotive Emissions Testing Using a Mobile Emissions Analyzer SEMTECH Users Conference, Sensors, Inc., Detroit, MI., October 2007.
26. Marchese, A. J. (2007). A Solution to the Biodiesel NO_x Problem. *Colorado State University, April, 2007.*
27. Marchese, A. J. (2007). Fundamental and Practical Research toward Solution to the Biodiesel NO_x Problem. *West Virginia University, March, 2007.*

28. Marchese, A. J. (2006). Biodiesel Research at Rowan University. *New Jersey Technology Council, Green Homes, Green Vehicles, Green Buildings Conference*. May 2006.
29. Marchese, A. J. (2005). The Biodiesel NOx Problem. *University of Colorado at Colorado Springs, Colorado Institute for Technology Transfer and Implementation*, November 2005.
30. Marchese, A. J. (2005). Exhaust Emissions from Biodiesel Powered School Buses. *NJ Biofuels Workshop*, Rutgers EcoComplex, June 2005.
31. Marchese, A. J. (2003). Flame Spread through Free Stratified Mixtures. *Drexel/ KAIST and Seoul National University Mini-Combustion and Plasma Workshop*, Drexel University, August 2003.
32. Marchese, A. J. (2003). Microwave Resonant Transfer Plasma Propulsion. *Mechanical Engineering Department Seminar Series*. Drexel University. April 2003.
33. Marchese, A. J. (2003). Flame Propagation through Free Stratified Fuel/Air Mixtures. *Aerospace and Mechanical Engineering 2002/2003 Colloquium*. University of Notre Dame. February 2003.
34. Marchese, A. J. (2001). Microgravity Droplet Combustion: Experiments and Detailed Numerical Modeling. *Invited Lecture: University of Vermont*. University of Vermont. July 2001.
35. Marchese, A. J. (1997) Microgravity Droplet Combustion. *Invited Lecture: University of Delaware Fluid, Particulate and Environmental Seminar Series*, Oct. 1997.

OTHER

1. Marchese, A. J. Combustion of Single and Multicomponent Liquid Droplets: Detailed Kinetic Modeling and Microgravity Experiments. *Ph.D. Dissertation, Department of Mechanical and Aerospace Engineering*, Princeton University, 1996.
2. Marchese, A. J. Thermodynamics of Scroll Compressors. *Master's Project. Rensselaer Polytechnic Institute at Hartford*, 1992.

CONTRACTS AND GRANTS (Total: \$12,754,000; PI: \$8,783,000)

Externally-Funded Projects as PI (\$8,783,000)

2013 – 2014	“Quantifying Fugitive Methane Emissions from the Natural Gas Supply Chain: Gathering and Processing Module, <i>Environmental Defense Fund</i> , \$1,650,000 .”
2013 - 2014	“Turbocharger Telemetry Testing at Altitude for QSK50 and QSK19 Tier 4f Diesel Engines”, <i>Cummins, Inc.</i> , \$820,000 .
2012 – 2014	“Evaluation of Cellulosic Biomass Derived Oxygenates as Drop-In Blend Components”, <i>Department of Energy</i> , \$500,000 .
2012 – 2013	“Targeted Chemical Mechanism Modification for Bio-Alcohol/FAME Blends for Use in Traditional and Advanced Combustion Applications”, <i>Colorado Center for Biorefining and Biofuels</i> , \$35,000 .
2012 – 2013	“Evaluation of Beef Tallow as Primary Feedstock for Methyl Ester Biodiesel Production: Phase I”, <i>SunWest Alternative Biofuels, LLC</i> , \$75,000 .
2011 – 2012	“Evaluation of Renewable Aviation Jet Fuel from Alternative Sources”, <i>The Boeing Company</i> , \$25,000 .
2011 – 2012	“CFD Modeling of Combustion and Heat Transfer during the Intake, Compression, and Combustion Processes in Natural Gas Engines ”, <i>Prometheus, LLC</i> , \$34,497 .
2010 – 2013	“National Alliance for Advanced Biofuels and Bio-products: CSU Component”, (Co-PIs: Kenneth Reardon, Shawn Archibeque). <i>Department of Energy</i> , \$1,259,248 .
2010 – 2011	“JP-8 Aerosol Compression Ignition Studies”, (Co-PI: Dan Olsen). <i>Busek Co./Air Force</i> , \$76,342 .
2010 – 2011	“Demonstration of Bio-Alcohol/FAME Blends with Tailored Low Temperature Chemistry for Enhanced Homogenous Charge Compression Ignition (HCCI) Engine Performance”, (Co-PI: Ken Reardon). <i>Colorado Center for Biorefining and Biofuels</i> , \$35,000 .
2009	“Engine Performance and Emissions Testing of Hydrogen Generator – Phase I Diesel Engine Tests”, <i>GENR8, LLC</i> , \$12,000 .
2009-2011	“Technology Entrepreneurship for a Globally Sustainable Future”, (Co-PIs: Greg Graff and Paul Hudnut). <i>NCILA Course and Program Grant</i> , \$31,500 .
2009 – 2012	“The Effect of Chemical Structure on Pollutant Formation Kinetics in Algae-Derived Biofuel Combustion”, Co:PI: Azer Yalin, <i>National Science Foundation</i> , \$324,268 .
2008 - 2009	“Effect of Chemical Structure on NOx and PM Emissions from Algae-Based Biodiesel FAME”, 2008-2009, <i>U.S. Small Business Administration, Sustainable Biofuels Development Center</i> , \$75,000 .
2008	“Chemical Kinetic and Engine Modeling of a High Altitude, 2-Stroke, Direct Injection C ₃ H ₈ -N ₂ O Internal Combustion Engine”, <i>Busek Co./DARPA</i> , \$15,000 .
2008 – 2012	“A Rapid Compression Machine for Chemical Kinetic Studies of Emissions from Bio-Derived Fuels”, <i>National Science Foundation MRI</i> , \$451,951 .
2007 – 2008	“Evaluation of Biodiesel Blends in NJ TRANSIT Diesel Locomotives”, (Co-PI’s: Krishan Bhatia and Robert Hesketh). <i>NJDEP</i> , \$150,000 .
2007 – 2008	“Evaluation of Biodiesel Blends in Airport Ground Support Equipment”, (Co-PI’s: Krishan Bhatia and Robert Hesketh; PI transferred to Bhatia). <i>NJDEP</i> , \$85,000 .

- 2006 – 2007 “The Innovation Center: A Rowan University Technology Center and Business Incubator”, *U.S. Small Business Administration*, **\$493,614.**
- 2006 – 2007 “A Technology Business Incubator in the Innovation Center at the South Jersey Technology Park”, *New Jersey Commission on Science and Technology*, **\$1,500,000.**
- 2006 “A Technology Business Incubator at the South Jersey Technology Park”, *U.S. Department of Housing and Urban Development*, **\$72,168.**
- 2005 – 2006 "The Helping Hand: Design of a Writing Assistive Device for Arthritic Impaired Patients", *National Collegiate Inventors and Innovators Alliance/Lemelson Foundation*, **\$14,400.**
- 2004 – 2005 “A Master Plan for the South Jersey Technology Park”, *New Jersey Division of Community Affairs Smart Future Planning Grant*, **\$150,000.**
- 2005 – 2006 “Development of a High Tech Workforce Training Center at the South Jersey Technology Park at Rowan University”, *U.S. Small Business Administration*, **\$49,332.**
- 2004 - 2006 “Development of a 1-Second Drop Tower for Microgravity Combustion and Fluid Mechanics Research”, (Co-PI: John Chen). *National Science Foundation*, **\$189,364.**
- 2003 – 2004 “Rowan Undergraduate Venture Capital Fund”, Principal Investigator, *Henry M. Rowan Family Foundation, Inc.*, **\$65,000.**
- 2002 “The BlackLight Rocket Engine”, (Co-PIs: John Schmalzel and Peter Jansson). *NASA Institute for Advanced Concepts*, **\$75,000.**
- 2002 – 2003 “A Distributed Venture Capital Fund for Joint Product Development at Rowan University and Swarthmore College”, *National Collegiate Inventors and Innovators Alliance/Lemelson Foundation*, **\$4,000.**
- 2002 – 2003 “Ski Lift Footrest Retrofit”, *National Collegiate Inventors and Innovators Alliance/Lemelson Foundation*, **\$8,375.**
- 2001 – 2002 “Enhanced Machine Head Design”, Principal Investigator, *National Collegiate Inventors and Innovators Alliance/Lemelson Foundation*, **\$10,800.**
- 2001 “Development of a Passively Cooled Jet Blast Deflector for Aircraft Carrier Launch Operations”, *NAVY Air Warfare Center*, **\$10,000.**
- 2001 – 2002 “Enhancing Engineering Design Education through Integration with Technical Communication” *Carnegie Academy for the Scholarship of Teaching and Learning*. **\$6,000.**
- 2000 – 2003 “Gravitational Influences on Flame Propagation through Non-Uniform Gas Mixtures”, *NASA Microgravity Combustion Science*, **\$98,000.**
- 2000 – 2002 “A Venture Capital Fund to Encourage Rapid Product Development with Multidisciplinary E-Teams”, *National Collegiate Inventors and Innovators Alliance/Lemelson Foundation*, **\$30,000.**
- 2000 – 2002 "CreATe: Creative Audio Technology Laboratory at Rowan University", (Co-PI's: John Schmalzel, Eddie Guerra, Eric Constans, Robert Rawlins). *National Science Foundation*, **\$50,000.**
- 2000 “Development of a Fire Resistant Cover for the NAVY ILARTS System”, *NAVY Air Warfare Center*, **\$5,000.**
- 1999 – 2003 "Development of a Human-Powered Stairclimber ", *John and Helen Glass*, **\$50,000.**

- 1999 – 2000 “Stairclimber Competitive Assessment and New Product Development”, *Electric Mobility Corporation*, **\$20,000.**
- 1999 – 2000 “A Venture Capital Fund to Encourage Rapid Product Development with Multidisciplinary E-Teams in the Junior Engineering Clinic II”, *National Collegiate Inventors and Innovators Alliance/Lemelson Foundation*, **\$11,000.**
- 1998 – 2000 “Competitive Assessment Laboratory”, (Co-PI’s: Robert Hesketh, John Schmalzel, Kauser Jahan) *National Science Foundation*, **\$111,200.**
- 1998 – 1999 “Numerical Model Development of Flame Propagation through Non-Uniform Premixed Gas Systems”, *NASA Glenn Research Center*, **\$10,000.**
- 1998 – 1999 “A Venture Capital Fund to Encourage Rapid Product Development with Multidisciplinary E-Teams in the Junior Engineering Clinic I”, *National Collegiate Inventors and Innovators Alliance/Lemelson Foundation*, **\$10,000.**
- 1998 NASA Summer Faculty Fellowship. **\$10,000.**

Externally-Funded Projects as Co-PI (Total: \$3,971,000)

- 2013 – 2014 “Commercialization of a Thermophoretic Personal Air Sampler (TP Sampler)”, (PI: John Volckens). *U.S. EPA.*, **\$150,000.**
- 2013 – 2015 “Achieving Tier 4 Emissions and Efficiency with Biomass Cookstoves”, Department of Energy, PI: Morgan DeFoort), **\$998,637**
- 2012 – 2013 “Graduate Fellowship Support for RCCI Combustion Research”, Woodward Governor, PI: Morgan DeFoort), **\$113,503**
- 2011 – 2012 “Graduate Fellowship Support for RCCI Combustion Research”, Woodward Governor, PI: Morgan DeFoort), **\$98,870.**
- 2011 – 2012 “Commercialization of a Thermophoretic Personal Air Sampler (TP Sampler)”, (PI: John Volckens). *R.J. Lee Group, Inc.*, **\$50,000.**
- 2011 – 2012 “VanDyne SuperTurbo Modeling and Experiments”, (PI: Dan Olsen). *VanDyne Super-Turbo, Inc.* **\$36,902.**
- 2010 – 2011 “Opportunity at the Bottom of the Pyramid: A Faculty Development Program to Prepare the Global Engineer”, (PI: Phil Weilerstein, Co-PI’s: Paul Hudnut and Bryan Willson). *National Science Foundation*, **\$99,000.**
- 2008 “Performance Evaluation of Fuel Additives on a John Deere 6.8 L Diesel Engine”, (PI: Dan Olsen), *EnCana Corporation*, **\$99,943.**
- 2007 – 2008 “Evaluation of Biodiesel Blends in Home Heating Oil”, (PI: Krishan Bhatia). *NJDEP*, **\$100,000.**
- 2007 -2008 “Resonant Transfer Plasma Calorimetry Studies”, (PI: Peter Jansson). *BlackLight Power Corporation*, **\$75,000.**
- 2006 – 2008 “In-Cabin Particulate Matter Quantification and Reduction Strategies”, (PI: Robert Hesketh). *NJDEP*, **\$220,000.**
- 2005 – 2009 “Collaborative Research: Team Play! Integrating Engineering Principles of Sports into the Engineering Curriculum” (PI: Jennifer Kadowec), *National Science Foundation*, **\$129,697.**

- 2004 – 2007 " REU in Pollution Prevention and Sustainability ", (PI: Kauser Jahan). *National Science Foundation REU* , **\$240,513.**
- 2003 – 2005 “The Technology Entrepreneurship Concentration: An Interdisciplinary Certificate Program for Undergraduate Engineering and Business Majors at Rowan University”, (PI: Mark Weaver). *National Collegiate Inventors and Innovators Alliance/Lemelson Foundation*, **\$32,000.**
- 2002 – 2003 “Diesel Emission Reduction Strategies for School Buses and HDDV Trucks”, (PI: Robert Hesketh). *NJDOT Dept. of Research and Technology*. **\$740,000.**
- 2001 – 2003 “Development of an Apparatus to Measure Ignition Delay in Microgravity”, (PI: John Chen). *National Science Foundation*. **\$224,400.**
- 2001 “Developing Reliability Models of Control Systems for a Nuclear Power Facility”, (PI: Peter Jansson). *PSE&G*. **\$100,000.**
- 2000 – 2003 "Hands on the Human Body", (PI: Stephanie Farrell). *National Science Foundation*, **\$162,300.**
- 1998 "Low Cost Automated Crash Notification System", (PI: Clay Gabler) *NJDOT Research Challenge Grant*, **\$112,100.**
- 1998 "Project for an Advanced Electric Vehicle", (PI: Linda Head), *NJDOT Research Challenge Grant*, **\$41,095.**
- 1998 "Development of a Position Tracking System for a Handheld Scanner", (PI: Shreekanth Mandayam). *Physical Acoustics Corporation*, **\$18,000.**
- 1996 – 1998 “Stereolithography: A Distributed Partnership” (PI: T.R. Chandrupatla). *National Science Foundation*, **\$200,000.**

Internally-Funded Awards (Total: \$104,500)

- 2011 – 2012 “Is Green Diesel Healthy Diesel? Evaluating the Effects of Alternative Diesel Fuel Emissions Using an Novel Lung Model”, *Clean Energy Supercluster Grant*, **\$15,000**
- 2011 – 2012 “Development of a Low Pressure Flat Flame Burner Apparatus for Quantitative Measurements of Prompt NO_x in Methyl Ester Flames”, *Rockwell Anderson Seed Grant*, **\$6,000**
- 2010 – 2011 “Development of a Portable Low-Cost Irrigation Pump Set for Developing Economies”, *Clean Energy Supercluster Seed Grant*, **\$18,000.**
- 2009 “Microgravity Ignition of Algae- Derived Biofuel Droplets”, *NASA Space Grant Consortium Seed Grant*, **\$8,500.**
- 2008 – 2009 “Combustion Chemistry and Pollutant Emissions from Algae-Derived SVO, FAME and HTRD”, *Clean Energy Supercluster Seed Grant*, **\$35,000.**
- 1998 – 1999 "Curriculum Pathfinder: A Comprehensive Guide for Students in Engineering", (PI: Jess Everett). *Rowan Courseware Development Grant*, **\$14,500.**
- 1996 – 1997 Image Analysis System for Microgravity Combustion Research”, Principal Investigator, *Rowan Foundation*, **\$5,000.**
- 1997 -1998 “Analysis Software for Microgravity Combustion Research”, Principal Investigator, *Rowan Foundation*, **\$2,500.**