

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, rocket propulsion, 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 Professor** December 2007 to Present
Colorado State University, Dept. of Mechanical Engineering Fort Collins, CO

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

Director January 2004 – July 2007
South Jersey Technology Park at Rowan University 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: **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 SJTP, 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. SBA a variety of state and federal sources 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.

E-Mail: marchese@colostate.edu

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

Chair, Associate Professor, Assistant Professor ***September 1996 – Present***
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 \$3,200,000 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 to date, which has been 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*** ***September 1996 - September 1998***
Princeton, NJ; Huntsville, AL

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-Present***
Camden, NJ

Develop and deliver short courses including Rapid Product Development, Electronic Packaging and Propulsion for engineering trainee program at L3 Communications in Camden, NJ.

National Collegiate Inventors and Innovators Alliance ***January 2006-December 2006***
Amherst, MA

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

TEACHING EXPERIENCE:

Combustion Theory and Modeling

Spring 2010

Sustainable Technology Entrepreneurship	Spring 2010, Spring 2011
Convection Heat Transfer	Spring 2008, Fall 2009
Thermodynamics	Fall 2001, Fall 2002, Spring 2009, Fall 2010
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, Fall 2009, Fall 2010
Fluid Mechanics II	Spring 1999
Junior/Senior Engineering Clinic	Fall 1998 to Fall 2007
Sophomore Engineering Clinic Coordinator	Fall 1998 to Spring 2001
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

TEACHING INTERESTS

In addition to the above courses, I am interested in developing and teaching graduate level courses in Non-Equilibrium Gas Dynamics, Conduction Heat Transfer and Radiation Heat Transfer; and undergraduate courses in Thermodynamics, Heat Transfer, Fluid Mechanics and Product Design.

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)
 National Space Society (NSS)
 Association of University Research Parks (AURP)

SERVICE TO THE PROFESSION

Reviewer for the *ALAA Journal*
 Reviewer for the *ALAA Journal of Propulsion and Power*
 Reviewer for the journal *Combustion Science and Technology*
 Reviewer for the journal *Environmental Pollution*
 Reviewer for the journal *Fuel*
 Reviewer for the journal *Biotechnology and Bioengineering*
 Reviewer for the textbook *Introduction to Combustion*, by Stephen Turns.
 Reviewer for the journal *Environmental Science and Technology* (2)
 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*
 Reviewer for the textbook “Introduction to Combustion”, 3rd Edition

Reviewer for the Thirty-Third Symposium (International) on Combustion (6)
 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
 Reviewer for proceedings of the ASEE Annual Meeting, 2001-present
 Reviewer for proceedings of the NCIIA Annual Meeting, 2003-present
 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
Reviewer for Smithsonian Institution and Indo-US Science & Technology Forum (IUSSTF)
 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 NCIIA Advanced E-Team Proposals, June 2001, Jan. 2009, May 2010
 Session Chair, Spring Meeting, Combustion Institute, Western States Section, March 2010
 Session Chair, 7th Joint Meeting of the Combustion Institute, March 2010.
 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
 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
 Member of Combustion and Fuels Committee, SAE, 2006-present
 Executive Committee, Western States Section of the Combustion Institute, 2009 – 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
 Technical Organizing Committee, Algal Biomass Summit, Algal Biomass Organization, 2011
 Chair, ASEE Entrepreneurship Division, 2000-2001
 Chair, ASEE Entrepreneurship Division, 2006-2007

SERVICE TO THE UNIVERSITY

College of Engineering Think Tank, Colorado State University, 2009 – present
 College of Engineering Awards Committee, 2010 - present
 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

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
Director of Faculty Center for Teaching Excellence, 2000
College of Engineering Dean, 2000
Rhorer Chair for Entrepreneurial Studies, 2006
Vice President for University Advancement, 2006

Colorado State University

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

AWARDS AND HONORS

CSU Best Teacher Award Nominee, 2009, 2010
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
Winner of 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 Disclosure; *Cook Stove Assembly*, with M. Defoort, B. Willson and D. Lionberg. Filed: April 10, 2009.

TECHNICAL SESSIONS , WORKSHOPS AND CONFERENCES ORGANIZED

Organizer and Moderator, “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.

Panelist, “The Algae to Biofuels Value Chain: From Biology to Quality Fuels and Valuable Co-products”, 102nd AOCS Annual Meeting & Expo, May 1-4 2011, Cincinnati, Ohio, USA

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

Instructor, “Sustainable Vision Teaching Laboratory”, An NSF Sponsored Workshop, Colorado State University, July 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., 2011, Colorado State University, Expected.**
Torben Grumstrup, Ph.D., 2012, Colorado State University, Expected.
Marc, Baumgartner, Ph.D, 2013, Colorado State University, Expected.
Esteban Hincapie, Ph.D., 2013, 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, MS, 2011, Colorado State University, Expected.
Kristen Naber, MS, 2011, Colorado State University, Expected
David Martinez, MS, 2011, Colorado State University, Expected.
David McKenna, MS, 2011, 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
Aparna Arunachalam, M.S. 2010, CSU
Dan Lionberg, M.S. Candidate, CSU
Marty Malenshek, M.S., 2008, CSU
Liaw Batan, Ph.D. Candidate, Life Cycle Assessment of Production Systems of Microalgae Biodiesel, CSU
Steve Brown, Ph.D. Candidate, Atmospheric Sciences, CSU
Syndi Nettles-Anderson, Ph.D Candidate, CSU
Brett Wilson, M.S. 2009, CSU
Guhan Srivatsan, M.S. 2010, CSU
Nathaniel Douglas, M.S. Candidate, CSU
Frank Locisano, M.S. Candidate, CSU
Jason Quinn, Ph.D. Candidate, CSU
Matt Ruter, M.S. Candidate, CSU
Dijiang Liu, Ph.D. Candidate, CSU
John Field, Ph.D. Candidate, CSU
Nick Wilvert, M.S. Candidate, CSU

Undergraduate Research Students

Bryant Ladson, Morehouse College, 2009, CSU AGEP 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: 315; h-Index: 8]

1. [40 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. [9 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. [8 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. [26 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. [102 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. [4 citations] Marchese, A. J. and Dryer, F. L. (1998). Radiative Effects in Space-Based Methanol/Water Droplet Combustion Experiments. *Proc. Combust Inst.* **27**, pp. 1200-1208.
7. [35 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. [42 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. [29 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. [9 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. [5 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. [7 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.
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Engineering Entrepreneurship, Product Design and Technology Commercialization

89. Marchese, A. J., Graff, G., and Hudnut, P. (2011). Development of a New Graduate Course in Sustainable Technology Entrepreneurship for Scientists and Engineers. *Proc. Conf. Amer. Soc. Eng. Edu., Vancouver, BC, June 2011.*
90. Weaver, K. M., Marchese, A. J., Halpern, S. and Noel, T. (2006). 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
91. Mason, T. and Marchese, A. J. (2006). 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.
92. Weaver, K. M., Marchese, A. J. and Schoen, T. (2005). Impacts on Technology/Engineering Entrepreneurship from a \$10,000,000 College of Business Entrepreneurial Excellence Grant. *Roundtable on Engineering Entrepreneurship, Stanford, CA, October 2005. Submitted.*
93. Marchese, A. J., Schmalzel, J. L. and Weaver, K. M. (2005). 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.

94. Marchese, A. J., Schmalzel, J. L. and Weaver, K. M. (2004). Creating an Entrepreneurial Culture at a Startup Engineering Program. *Proc. Conf. Amer. Soc. Eng. Edu.* Salt Lake City, UT, June 2004.
95. Weaver, K. M., Marchese, A. J., Dickson, P., George Vozikis, G. and Kisenwether, E. C. (2004). Technology Entrepreneurship: Developing Inter-Disciplinary Programs In Technology And The Sciences. *USASBE Annual Meeting*, Hilton Head, SC. January 2003.
96. Marchese, A. J., Schmalzel, J. L., Chen, J. C. and Weaver, K. M. (2003). Creating an Entrepreneurial Culture at a Startup Engineering Program. *ASEE/NCIIA Teaching Entrepreneurship to Engineering Students Conference*, Monterrey, CA. January 12-16, 2003
97. Weaver, M., Marchese, A. J. Vozikis, G., Dickson, P., Cornell, (2003). Developing Inter-Disciplinary Programs in Technology Entrepreneurship: The Experiences of Three Diverse Universities. *National Collegiate Inventors and Innovators Alliance, Seventh Annual Meeting* Boston, MA March 20-22, 2003.
98. 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. *5th Annual Conference of National Collegiate Inventors and Innovators Alliance*, Washington, DC.
99. Schmalzel, J. L., Marchese, A. J., Krchnavek, R. R., Weiss, L. B. and Shah, V. S. (2001). Developing a Micro-Business: Engineering Intrapreneurship. *5th Annual Conference of National Collegiate Inventors and Innovators Alliance*, Washington, DC.
100. Marchese, A. J., Schmalzel, J. L., Chen, J. C., Chandrupatla, T.R., Dahm, K., Mandayam, S. A., Ramachandran, R. P. and von Lockette, P. (2000). The NCIIA Venture Capital Fund at Rowan University. *ASEE Annual Meeting*, St. Louis, MO.
101. Marchese, A. J., Chandrupatla, T. R., Schmalzel, J. L., and Mandayam, S. (1999). A Venture Capital Fund to Encourage Rapid Product Development with Multidisciplinary Teams in the Junior Engineering Clinic. *Proc. Conf. Amer. Soc. Eng. Edu*, Charlotte, NC.

Engineering Design Education

102. Marchese, A. J. and Farrell, S. (2008). A Project-Based Introduction to Engineering for First Year Students: Biodiesel Production. *Education of Engineers for Sustainable Development Conference*, 2008, Graz, Austria.
103. Abraham, J., Greene, C. and Marchese, A. J. (2007). Work in Progress – External Assessment Through Peer-to-Peer Evaluation of Capstone Projects. *Frontiers in Education Conference, Milwaukee, WI*.
104. Marchese, A. J., Abraham, J., Greene, C., Kisenwether, L. and Ochs, J. (2007). Toward a Common Standard Rubric for Evaluating Capstone Design Projects. *Capstone Design Conference, Boulder CO, June 2007*.
105. Marchese, A. J. (2006). Development and Testing of a 10 lbf Hybrid Rocket Motor in a Rocket Propulsion Course. *Proc. Conf. Amer. Soc. Eng. Edu.* Honolulu, HI.
106. Marchese, A. J. (2006). This is Rocket Science: Development and Testing of a Hybrid Rocket Motor in a Rocket Propulsion Course. *Frontiers in Education Conference, San Diego, CA*.
107. Farrell, S., Kadlowec, J., Marchese, A.J., Schmalzel, J., and Mandayam, S. (2002). Hands on the Human Body! Introducing Nature's Engineering Systems. *AIChE 2002 Annual Meeting*.

108. Chandrupatla T.R., Chen, J. C., Constans, E., Gabler, H. C., Kadlowec, J., Marchese, A. J., von Lockette, P. and Zhang, H. (2001). Engineering Clinics: Integrating Design throughout the ME Curriculum. *ASME IMECE 2001, New York, NY*.
109. Farrell, S., Newell, J., Hesketh, R. P., Slater, C. S. and Marchese, A. J. (2001). The Multidisciplinary Engineering Clinic At Rowan University: Benefits To Students And Faculty. *International Conference on Engineering Education. August 6 – 10, 2001 Oslo, Norway*.
110. Jahan, K., Hesketh, R. P., Schmalzel, J. L. and Marchese, A. J. (2001). Design and Research Across the Curriculum: The Rowan Engineering Clinics. *International Conference on Engineering Education. August 6 – 10, 2001 Oslo, Norway*
111. Farrell, S., Kadlowec, J., Marchese, A.J., Schmalzel, J., and Mandayam, S. (2002). Hands on the Human Body: Introducing Freshmen to Multidisciplinary Engineering Principles through Application to the Human Body. *ASEE Annual Meeting, Montreal, Canada*.
112. Marchese, A. J., Constans, E., Dahm, K., Hollar, K., Hutto, D., Johnson, F., Sun, C. von Lockette, P., Kadlowec, J., Cleary, D., and Sukumaran, B. (2001). The Sophomore Engineering Clinic I: Integrating Statics, Solid Mechanics and Product Development in a Sophomore Level Design Course. *ASEE Annual Meeting, Albuquerque, NM*.
113. Marchese, A. J., Mandayam, S., Chen, J. C., and Schmalzel, J. L (2000). Reinventing the Design Curriculum. *4th Annual Conference of National Collegiate Invention and Innovation Alliance, Washington, DC*.
114. Marchese, A. J., Schmalzel, J. L., Hesketh, R. P. Jahan, K., and Ramachandran, R. P. (2000). The Competitive Assessment Laboratory at Rowan University. *ASEE Annual Meeting, St. Louis, MO*.
115. Marchese, A. J., Mandayam, S. A. and Schmalzel, J. L. (1999). A Sophomore Design Experience: Development of a Portable NDE Device for Aircraft Skin Inspection. *37th Annual Aerospace Sciences Meeting, Reno, NV, Jan. 1999. AIAA Paper No. 99-0284*.
116. Marchese, A. J., Chandrupatla, T. R., Schmalzel, J. L., and Mandayam, S. (1999). A Venture Capital Fund to Encourage Entrepreneurship and Rapid Product Development with Multidisciplinary E-Teams in the Engineering Clinic at Rowan University. *3rd Annual Conference of National Collegiate Inventors and Innovators Alliance, Washington, DC*.
117. Marchese, A. J., Newell, J., Ramachandran, R. P., Sukumaran, B., Schmalzel, J. L. and Maraiappan, J. L. (1999). The Sophomore Engineering Clinic: An Introduction to the Design Process through a Series of Open Ended Projects. *Proc. Conf. Amer. Soc. Eng. Edu, Charlotte, NC*.
118. Chandrupatla, T.R., Schmalzel, J. L. and Marchese, A. J. (1999). Sterolithography: A Distributed Partnership. *Proc. Conf. Amer. Soc. Eng. Edu, Charlotte, NC*.
119. Mariappan, J. and Marchese, A. J. (1998). TQM Approach to Design in the Sophomore Engineering Clinic. *ASME International Mechanical Engineering Congress & Exhibition. Anaheim, CA*.
120. Mandayam, S., Marchese, A. J. and Schmalzel, J. L. (1998). Nondestructive Evaluation of an Aircraft Wing: Product Design and Development in the Sophomore Engineering Clinic. *Frontiers in Education Conference, Tempe, AZ, Paper No. 1394*.
121. Schmalzel, J. L., Marchese, A. J., Mariappan, J., and Mandayam, S. (1998). The Engineering Clinic: A Four-Year Design Sequence. *2nd Annual Conference of National Collegiate Inventors and Innovators Alliance, Washington, DC*.
122. Schmalzel, J. L., Jahan, K., Keil, Z., Mariappan, J. Marchese, A. J. and Mandayam, S. (1998). An Interdisciplinary Design Sequence for Sophomore Engineering. *Proc. Conf. Amer. Soc. Eng. Edu, 1998*.

123. Marchese, A. J., Hesketh, R. P., Jahan, K. (1997) Design in the Rowan University Freshman Engineering Clinic. *Proc. Conf. Amer. Soc. Eng. Edu.*, Session 3225, 1997.
124. Hesketh, R. P., Jahan, K., Marchese, A. J. (1997) Multidisciplinary Experimental Experiences in the Freshman Engineering Clinic Design at Rowan University. *Proc. Conf. Amer. Soc. Eng. Edu.*, Session 2326, 1997.
125. Hesketh, R. P., Jahan, K., Marchese, A. J. (1997) Integrating Hands-on Education to Freshman Engineers at Rowan College. *1997 ASEE Zone 1 Spring Meeting*. West Point, NY, April, 1997.

Integrating Writing and Engineering Design

126. Harvey, R., Hutto, D., Hollar, K., Consans, E., Pietrucha, B. and Marchese, A. J. (2002). Writing as a Design Practice: A Preliminary Assessment. *ASEE Annual Meeting*, Montreal, Canada
127. Johnson, F. S., Hutto, D., Dahm, K., Marchese, A. J., Sun, C., Constans, E., Hollar, K. and von Lockette, P. (2001). An Investigation into Interdisciplinary Team Teaching in Writing and Engineering: A Multi-Year Study. *ASEE Annual Meeting*, Albuquerque, NM.
128. Johnson, F. S., Hutto, D. and Marchese, A. J. (2001). Engineering Education in New Contexts: Creating and Improving A Multidisciplinary Learning Environment. *Writing Across the Curriculum Conference*, Indianapolis, IN, May 2001.
129. Marchese, A. J., Mosto, P. and Johnson, F. (2000). Crossing Interdisciplinary Boundaries: Impediments and Enablers to Faculty Collaboration and Integration. *Eighth AAHE Conference on Faculty Roles and Rewards*, New Orleans, LA, February 2000.
130. Ramachandran, R. P., Marchese, A. J., Newell, J. A. (2000). A Pedagogical Concept of Integrating Multidisciplinary Design and Technical Communication. *ASEE Annual Meeting*, St. Louis, MO.
131. Harvey, R., Johnson, F., Marchese, A. J., Newell, J. A., Ramachandran, R. P., and Sukumaran, B. (1999). Improving the Engineering and Writing Interface: An Assessment of a Team-Taught Integrated Course. *ASEE Annual Meeting*, St. Louis, MO.
132. Harvey, R., Johnson, F., Marchese, A. J., Newell, J. A., Ramachandran, R. P., and Sukumaran, B. (1999). Teaching Quality: An Integrated TQM Approach to Technical Communication and Engineering Design. *ASEE Zone Meeting, Monmouth University, Spring 1999*.

Diversity Issues

133. Gale, R., Marchese, A. J. and Rome, D. (2004) "Understanding Student Empowerment in the Professions, Promoting Student Learning through the Scholarship of Teaching and Learning", *Association of American Colleges and Universities, Philadelphia, PA, November 2004*.
134. Marchese, A. J. (2003). Creating a High Quality and Inclusive Public Undergraduate Engineering Program: Bridging the Gap Between Institutional Mission and Institutional Culture. *Workshop on Racism and Diversity in Community*. University of Illinois at Urbana-Champaign. January 24-25, 2003
135. Marchese, A. J. (2002). Creating an Inclusive Undergraduate Engineering Program. *Challenges in Diversity - Gender, Class and Ethnicity: Strategies for Teaching & Learning*. November 2002. Notre Dame, IN.
136. Marchese, A. J. (2002). Strategies for Enhancing Learning in Students of Color at Predominantly White Undergraduate Engineering Programs. *American Association for Higher Education. Annual Meeting*. March 2002, Chicago, IL.

TRADE JOURNAL ARTICLES

137. Marchese, A. J., Mandayam, S. and Schmalzel, J. L. (1998). Thermodynamics of Coffee Makers. *Hewlett Packard Engineering Educator*, Vol. 2, No. 1., p. 8.
138. Schmalzel, J., Marchese, A. J., and Hesketh, R. P. (1998). What's Brewing in the Engineering Clinic? *Hewlett Packard Engineering Educator*, Vol. 2, No. 1., p. 6.
139. 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. (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.
2. 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.
3. 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.
4. Marchese, A. J. (2010). Combustion of Algae-Derived Biofuels. *CSU Engineering Innovations Breakfast*. Boulder, CO, April 6, 2010.
5. Marchese, A. J. (2010). Engaging the Entrepreneurial Mindset. *Lawrence Technological University, Detroit, MI*. May 13, 2010.
6. Marchese, A. J. (2010). Production and Characterization of Algal Biofuels. *Coordinating Research Council*, Golden, CO, March 2, 2010.
7. Marchese, A. J. (2010). Production and Characterization of Algal Biofuels. Invited Keynote Presentation, *Western States Meeting of the Combustion Institute*, Boulder, CO, March, 2010.
8. Marchese, A. J. (2009). "Algae Based Biofuels for the Transportation Sector", Clean Energy Supercluster, Expo 2009, May 2009, Colorado State University.
9. Marchese, A. J. (2009). Pollutant Emissions Reduction in Biofuel Powered Systems. Front Range Student Ecology Symposium, February 25, 2009.
10. Marchese, A. J. (2008). Creating an Entrepreneurial Culture in an Engineering Curriculum. *Worcester Polytechnic Institute*, Worcester, MA, October 25, 2008.
11. Marchese, A. J. (2008). Engaging the Entrepreneurial Mindset in an Engineering Curriculum. *Ohio Northern University*, Ada, OH. May 19, 2008.
12. Marchese, A. J. (2007). Biodiesel Locomotive Emissions Testing Using a Mobile Emissions Analyzer SEMTECH Users Conference, Sensors, Inc., Detroit, MI., October 2007.
13. Marchese, A. J. (2007). A Solution to the Biodiesel NO_x Problem. *Colorado State University*, April, 2007.
14. Marchese, A. J. (2007). Fundamental and Practical Research toward Solution to the Biodiesel NO_x Problem. *West Virginia University*, March, 2007.
15. Marchese, A. J. (2006). Biodiesel Research at Rowan University. *New Jersey Technology Council, Green Homes, Green Vehicles, Green Buildings Conference*. May 2006.

16. Marchese, A. J. (2005). The Biodiesel NOx Problem. *University of Colorado at Colorado Springs, Colorado Institute for Technology Transfer and Implementation*, November 2005.
17. Marchese, A. J. (2005). Exhaust Emissions from Biodiesel Powered School Buses. *NJ Biofuels Workshop*, Rutgers EcoComplex, June 2005.
18. 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.
19. Marchese, A. J. (2003). Microwave Resonant Transfer Plasma Propulsion. *Mechanical Engineering Department Seminar Series*. Drexel University. April 2003.
20. 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.
21. Marchese, A. J. (2001). Microgravity Droplet Combustion: Experiments and Detailed Numerical Modeling. *Invited Lecture: University of Vermont*. University of Vermont. July 2001.
22. 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: \$8,028,599; PI: \$5,628,051)

Externally-Funded Projects as PI (\$5,559,051)

- 2010 – 2012 “National Alliance for Advanced Biofuels and Bio-products: CSU Component”, (Co-PIs: Kenneth Reardon, Shawn Archibeque). *Department of Energy*, **\$1,250,237**.
- 2010 – 2011 “JP-8 Aerosol Compression Ignition Studies”, (Co-PI: Dan Olsen). *Busek Co./Air Force*, **\$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). *Colorado Center for Biorefining and Biofuels*, **\$35,000**.
- 2009 “Engine Performance and Emissions Testing of Hydrogen Generator – Phase I Diesel Engine Tests”, *GENR8, LLC*, **\$12,000**.
- 2009-2011 “Technology Entrepreneurship for a Globally Sustainable Future”, (Co-PIs: Greg Graff and Paul Hudnut). *NCILA Course and Program Grant*, **\$31,000**.
- 2009 – 2012 “The Effect of Chemical Structure on Pollutant Formation Kinetics in Algae-Derived Biofuel Combustion”, Co:PI: Azer Yalin, *National Science Foundation*, **\$324,268**.
- 2008 - 2009 “Effect of Chemical Structure on NOx and PM Emissions from Algae-Based Biodiesel FAME”, 2008-2009, *U.S. Small Business Administration, Sustainable Biofuels Development Center*, **\$75,000**.
- 2008 “Chemical Kinetic and Engine Modeling of a High Altitude, 2-Stroke, Direct Injection C₃H₈-N₂O Internal Combustion Engine”, *Busek Co./DARPA*, **\$15,000**.
- 2008 – 2010 “A Rapid Compression Machine for Chemical Kinetic Studies of Emissions from Bio-Derived Fuels”, *National Science Foundation MRI*, **\$451,951**.
- 2007 – 2008 “Evaluation of Biodiesel Blends in NJ TRANSIT Diesel Locomotives”, (Co-PI’s: Krishan Bhatia and Robert Hesketh). *NJDEP*, **\$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). *NJDEP*, **\$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: \$2,396,048)

- 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 Kadlowec), *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: \$89,500)

- 2011 – 2012 “Development of a Low Pressure Flat Flame Burner Apparatus for Quantitative Measurements of Prompt NOx 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*, **\$2500.**

Externally-Funded Pending Projects as CoPI

- 2010 – 2013 “Evaluation and Inhibition of Microbial Contamination of Naval Biofuels”, (PI: Ken Reardon) Office of Naval Research, **\$5,516,521.**

Not Funded

“Collaborative Research: Bio-Alcohol/FAME Blends with Tailored Low Temperature Chemistry for Enhanced Homogenous Charge Compression Ignition (HCCI) Engine Performance”, NSF, \$230,000.

“ARRA: Characterization of Combustion Chemistry, Physical Properties and Pollutant Formation of Next Generation Aquatic Biofuels”, NIST, \$1,493,920.

“Superior Specific Fuel Consumption Power Supply for Space Applications”, Busek Co./NASA STTR, \$33,500.

“Nanoparticle-Enhanced Ignition and Emission Reduction for Advanced Propulsion Systems”, Advanced Cooling Technologies, Inc./NASA SBIR, \$50,000.

“ Estimating the Toxicity of Diesel-Based Aerosols Using a Novel Lab-on-a-Chip Biosensor”, NIH, \$963,000. Chuck Henry, PI.

“Lean, Superturbocharged, Variable Cylinder, Engine for Distributed Energy Generation”, California Energy Commission, \$900,000.

“Effect of Biodiesel Blends on Particulate Matter and Gaseous Emissions from a John Deere 6068H Engine with a Diesel Particulate Filter”, John Deere, \$132,000.

“Design and Development of a High Altitude, 2-Stroke, Direct Injection C₃H₈-N₂O Internal Combustion Engine”, Busek Company (DARPA SBIR Subcontract), \$208,000.

“Combustion Chemistry and Pollutant Emissions from Algae-Derived Biofuels", Colorado Center for Biofuels and Biorefining, \$50,000.

“Combustion and Pollutant Formation Studies on Algae-Derived Biofuels”, NSF, \$355,000. Not Funded.

“Biodiesel Droplet Ignition and Prompt NO_x Characterization Studies”, NSF Energy for Sustainability, \$410,000.

“NIRT: Tailoring Flame Synthesis of Carbon-based Nanostructures for Multifunctional Devices and Systems”, NSF-NIRT, \$1.5 Million (Rowan PI- \$300,000)

“Evaluation of Autoignition Characteristics of Hydrocarbon Electrosprays for the Development of Direct Injection Diesel Engines from COTS Model Aircraft Engines”, U.S. Army, \$220,000.

“Chemical Kinetic Development for Design Optimization of Next Generation Biodiesel HCCI Engines”, Honda Initiation Grant, 2003, \$50,000.

- “Spherically Symmetric Ignition of Charring and Non-Charring Polymers: Microgravity Experiments and Detailed Kinetic Modeling”, NASA Microgravity Combustion Science, 2003, \$400,000.
- “The BlackLight Rocket Engine – Phase 2”, Principal Investigator, NASA Institute for Advanced Concepts, 2002, \$497,000.
- “Stimulating Undergraduate Research Using the Engineering Clinics”, NSF CISE, 2002. \$586,000.
- “Invention, Communication and Documentation: Assessing the Impact of Writing as a Multi-Function Design Tool”, NSF ASA, 2002. \$116,000.
- “Fire Investigation, Research and Survivability Laboratory at Rowan University”, Principal Investigator, New Jersey Commission on Science and Technology, 2002. \$1,379,000.
- "Rowan Alliance for Product Innovation and Development", *New Jersey Commission on Higher Education*. 2002-2005, \$2,000,000.
- "Aircraft Wing Rock: An Undergraduate Research Experience", Co-Investigator (Raul Ordonez, P.I.). *NSF REU*. 2001-2003. \$179,000.
- "Rowan Alliance for Product Innovation and Development", *New Jersey Commission on Higher Education*. 2001-2004, \$4,000,000.
- "Concurrent Design and Communication", Co-Investigator, *NSF CCLI*, 2000. \$75,000. Not Funded.
- "Integrating Aerospace Engineering Design into a Bold New Engineering Curriculum", Principal Investigator, *ALAA Foundation Professorship*, 2000. \$60,000. Not Funded.
- “Studies of NO_x Production in Spherically Symmetric Fuel-Bound Nitrogen Flames: Experiments and Detailed Kinetic Modeling”, Principal Investigator, *NASA Microgravity Combustion*, 1999. \$200,000.
- "Innovative Product Development for Nondestructive Evaluation: Forging Strategic Partnerships", Co-Investigator, (Shreekanth Mandayam, P.I.). *NJ Commission on Science and Technology*, \$892,607.
- "Collaborative, Hands-on Courses in Heat Transfer and Combustion: Proof of Concept", Co-Investigator NSF CCLI, 1999, \$75,000.
- "Integration of Active and Visual Learning into Core Engineering Courses through the Development and Use of Experimental Benches", Co-Investigator, NSF CCLI, 1999, \$46,000.
- "Projects in Reverse Engineering to Enhance the High School Science Curriculum", Co-Investigator, US Dept. of Education, FIPSE, 1999. \$244,500.
- "Microscale Systems - Research and Curriculum Development", Co-Investigator, NSF CRCD, 1999. \$356,836.
- "Multidisciplinary Design and Communication: A Pedagogical Vision", Co-Investigator, NSF CCLI, 1999, \$107,000.
- “Combustion Studies of Mars-Based Metallized Rocket Propellants”, Principal Investigator, NSF CAREER Award, 1998. \$200,000.
- “Microgravity Studies of NO_x Production in Droplet Combustion of Fuel-Bound Nitrogen Mixtures”, Principal Investigator, NASA Microgravity Combustion Science, 1998. \$368,150.
- "CreATE: Creative Audio Technology Environment at Rowan University", Principal Investigator, NSF CCLI, 1998, \$48,000.
- "Multidisciplinary Design and Communication: A Pedagogical Vision", Co-Investigator, NSF CCLI, 1998, \$107,000.

- "Integration of Active and Visual Learning into Core Engineering Courses through the Development and Use of Experimental Benches", Co-Investigator, NSF CCLI, 1998, \$46,000.
- "A Design Studio Integrating Real and Virtual Prototyping", Co-Investigator, NSF CCLI, 1998, \$198,000.
- "A Collaborative, Hands-On Course in Combustion and Air Pollution", Co-Investigator, 1998. \$232,301. Dept. of Education, FIPSE.
- "Development of a Microwave Nondestructive Evaluation Laboratory", Co-PI, NSF Major Research Instrumentation, 1998. \$103,558.
- "Clustered Omnidirectional Communications Array Nanosatellites", Co-Investigator, AFOSR BAA 98-6: University Nanosatellite Program, 1998. \$100,000.
- "A Microwave Nondestructive Evaluation Laboratory for Research and Education", Co-PI, NSF Physical Foundations of Enabling Technologies Program, 1998. \$100,000.
- "Combustion Studies of Mars-Based Metallized Rocket Propellants", Principal Investigator, NSF CAREER Award, 1997. \$200,000.
- "A Multidisciplinary Compliance Engineering Laboratory", Co-Investigator, NSF Instrumentation and Laboratory Improvement, 1997. \$102,110.
- "World-Wide Laboratory for Freshman Engineers", Co-Investigator, NSF Instrumentation and Laboratory Improvement, 1997. \$96,000.
- "Student Launch - Microgravity Combustion", Principal Investigator, NASA Student Launch Program, 1996. \$35,000.
- "World Wide Laboratory for Freshman Engineers", Co-Investigator, NSF Instrumentation and Laboratory Improvement, 1996. \$200,000.
- "Improvement of the New Jersey Environment by Reduced Emissions from Combustion Processes", Co-Investigator, New Jersey Commission on Science and Technology, 1996. \$632,000.