

Curriculum Vitae

Rafael Hernandez

Date of Birth: October 24, 1970

Dave C. Swalm School of Chemical Engineering

Mississippi State University

Mississippi State, MS 39762

Tel. (662)325-0790; Fax: (662)325-2482)

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Education:	BS Chemical Engineering	University of Puerto Rico	June 1993
	MS Chemical Engineering	University of Puerto Rico	June 1996
	Ph.D. Engineering	Mississippi State University	December 2002

Experience

8/2009 - Present	Associate Professor, Dave C. Swalm School of Chemical Engineering, Mississippi State University, Box 9595, MSU, MS 39762
1/2010-Present	Texas Olefins Professorship, Dave C. Swalm School of Chemical Engineering, Mississippi State University, Box 9595, MSU, MS 39762
1/2010-Present	Interim Associate Director of the Sustainable Energy Research Center, MSU
9/2010-Present	Associate Director of the Sustainable Energy Research Center, MSU
5/2003-8/2009	Assistant Professor, Dave C. Swalm School of Chemical Engineering, Mississippi State University, Box 9595, MSU, MS 39762
1/2002 – 5/2003	Instructor of Chemical Engineering, Dave C. Swalm School of Chemical Engineering, Mississippi State University, Box 9595, MSU, MS 39762
6/97 – 12/98	Instructor of Chemical Engineering, Department of Chemical Engineering, University of Puerto Rico, Box 9046, Mayaguez, PR 00681-9046
9/95 – 5/97	Chemical Engineer-Contract Graduate Student, Environmental Engineering Division, Environmental Laboratory, US Army Corps of Engineers – Waterways Experiment Station, Vicksburg, MS

RESEARCH ACTIVITIES DURING MSU TENURE

Patents

1. U.S. Patent Disclosure No. 05-0811-175, filed 10/05
2. U.S. Patent Disclosure No. 05-0308-138, filed 4/05
3. U.S. Patent Disclosure No. 05-0114-130, filed 3/05
4. U.S. Patent Application, Docket No. 2343-187-27, Filed 10/4/2004, Awarded 12/2009

Peer-Reviewed Manuscripts Submitted, Published, or Accepted for Publications

(*Corresponding Author)

(1-5-Accepted for publication in 2010)

1. Andro H. Mondala, Rafael Hernandez*, W. Todd French*, Jorge W. Santo Domingo, Mark Meckes, Linda McFarland, Hodon Ryu, and Brandon Iker, ““Enhanced Lipid and Biodiesel Production from Glucose-Fed Activated Sludge: Kinetics and Microbial Community Analysis” AICHE Journal, Accepted November 2010.
2. Patrisha J. Pham, Rafael Hernandez*, William T. French, Benjamin G. Estil, and Andro Mondala, “A Spectrophotometric Method for Quantitative Determination of Xylose in Fermentation Medium,” *Biomass and Bioenergy*, Accepted January 2011.
3. G. Zhang, *French, WT., Hernandez, R., Alley, E., and Paraschivescu, M., "Lipid Production from Acid Hydrolysate of Lignocellulosic Biomass by *Rhodotorula glutinis*," *Biomass and Bioenergy* 2011, Vol. 35, p. 734-740.

3. Revellame, E., *Hernandez, R., *French, W. T., Holmes, B., and Alley, E. "Production of Biodiesel from Wet Activated Sludge", *Journal of Chemical Technology and Biotechnology*.
4. Hall, J. I., Hetrick, M., French*, W. Todd; Hernandez*, Rafael A.; Donaldson, Janet; Mondala, Andro; Holmes, William, "Oil Production by a consortium of oleaginous microorganisms grown on primary effluent wastewater", *Journal of Chemical Technology and Biotechnology*. Accepted August 1, 2010.
5. Mondala, A., Hernandez*, R., Hall, J., French*, W. T. and Estevez, A. "Preozonation of primary-treated municipal wastewater for reuse in biofuel feedstock generation", *Environmental Progress and Sustainable Energy*
6. Sparks, D.L., L.A. Estévez, Hernandez*, R., McEwen, J., and T. French, 2010, Solubility of Small-Chain Carboxylic Acids in Supercritical Carbon Dioxide," *Journal Chemical Engineering Data*.
7. Revellame, E., *Hernandez, R., French, W. T., White, M., Holmes, B. "Biodiesel from Activated Sludge via *In situ* Transesterification", *Journal of Chemical Technology and Biotechnology* 2010, Vol. 85(5), p. 614-620.
6. Sparks, DL, Estevez, LA, and *Hernandez, R., "Supercritical-fluid-assisted oxidation of oleic acid with ozone and potassium permanganate," *Green Chemistry*, Vol. **11**, No.7, Pages: **986-993**.
7. Benson, T.J., *Hernandez, R., French, W.T., Alley, E., and Holmes, W.E., "Elucidation of the catalytic cracking pathway for unsaturated mono-, di-, and triacylglycerides on solid acid catalysts," *Journal of Molecular Catalysis A-Chemical*, Vol. 303, No. 1-2, Pages: 117-123
8. Sparks, D., *Hernandez, R., and Estevez, L.A., 2008, "Evaluation of density-based models for the solubility of solids in supercritical carbon dioxide and formulation of a new model," *Chemical Engineering Science*, Vol. 63, Issue 17, pp. 4292-4301.
9. Benson, T., *Hernandez, R., French, T., Alley, E., and Holmes, W., 2007, Reactions of Fatty Acids in Superacid Media: Identification of Equilibrium Products, *Journal of Molecular Catalysis A*, Volume: **274** Issue: **1-2** Pages: **173-178**.
10. Mondala, A., Liang, K., Toghiani, H., *Hernandez, R., and French, T., "Biodiesel Production by *In-Situ* Transesterification of Municipal Primary and Secondary Sludges," *Bioresource Technology*, Vol. 100, No. 3, Pages: 1203-1210.
11. Benson, T., Hernandez, R., White, M., French, T., Alley, E., Holmes, W., and Thompson, B., 2008, "Heterogeneous Cracking of an Unsaturated Fatty Acid and Reaction Intermediates on H+ZSM-5 Catalyst, *CLEAN* 36 (8), 652 – 656.
12. Benson, T.J., Holmes, W.E., White, M.G., French, W.T., Alley, E.G., and *Hernandez, R., 2007, "Development of a Heterogeneous Catalytic Cracking Reactor Utilizing Online Mass Spectrometry Analysis," *Journal of Chromatography A*, Vol. 1172, Issue 2, pp. 204-208.
13. Sparks, D., *Hernandez, R., Estevez, L.A., Barlow, K., and French T., "Solubility of Pelargonic Acid in Supercritical Carbon Dioxide," *Journal of Chemical Engineering Data*, Vol. 53, Issue 2, pp. 407-410.
14. Paraschivescu, M.C., Alley, E.G., French, W.T., *Hernandez, R, and Armbrust, K., "Determination of Methanol in Biodiesel by Headspace Solid-Phase Microextraction," *Bioresource Technology*, Accepted for Publication, September 2007.
15. Thomas, J.M., *Hernandez, R., and Kuo, C.H., "Single-Step Treatment of 2,4-Dinitrotoluene via Zero-Valent Metal Reduction and Chemical Oxidation," *Journal of Hazardous Waste*, 2nd submission on September 2007.
16. *French, W.T., Hernandez, R., Easterling, Licha, M., E., Ford, J., Zappi, M., Morrison, C., Brown, L.R., "A System for Cultivating Anaerobic CO Utilizing Microorganisms," *Bioresource Technology*, Volume: **99** Issue: **3** Pages: **638-643**.
17. Sparks, D., *Hernandez, R., Estevez, L.A., Meyer, N., and French, T., 2007, "Solubility of Azelaic Acid in Supercritical Carbon Dioxide," *Journal of Chemical Engineering Data*, In Press
18. Sparks, D., *Hernandez, R., Zappi, M., Blackwell, D., and Fleming, T., 2006, "Extraction of Rice Bran Oil Using Supercritical Carbon Dioxide and Propane," *Journal of the American Oil Chemist Society*, Vol. 83, No. 10.

19. Dufreche, S., *Hernandez, R., French, T., Sparks, D., Zappi, M., and Alley, E., 2007, "Extraction of Lipids from Municipal Wastewater Plant Microorganisms for Production of Biodiesel," *J. Amer Oil Chem Soc*, 84, 181-187.
20. Singh, A.K., *Fernando, S., and Hernandez, R., 2007, "Base-Catalyzed Fast Transesterification of Soy Bean Oil Using Ultrasonication," *Energy & Fuels*, 21, 1161-1164.
21. *Hernandez R., Sparks, D., Zappi, M., Blackwell, D., and Fleming, T., "Extraction of Rice Bran Oil Using Supercritical Carbon Dioxide and Propane," *Journal of the American Oil Chemist Society*, Accepted for Publication October 2006.
22. *Fernando, S., Karra, P., Hernandez, R., Jha, S.K., "Effect of Incompletely Converted Soybean Oil on Biodiesel Quality," *Energy*, Accepted for Publication October 2006
23. *Hernandez, R., Jeffreys, T., Marwaha, A., Thomas, M., and Woods, M., "Plant Design Project: Biodiesel Production Using Acid Catalyzed Transesterification of Yellow Grease," *Journal of Chemical Engineering Education*, Volume 40, Number 3, Summer 2006.
24. Ford, J., *Hernandez, R., Zappi, M., "A Bench Scale Evaluation of Advanced Oxidation Processes for Treatment of a Cyanide Contaminated Wastewater from an Engine Manufacturing Facility," *Environmental Progress*, Published on the Website (www3.interscience.wiley.com/cgi-bin/abstract/111089750/abstract) for early view on October 2005, Vol. 25, No. 1.
25. *Hernandez, R., Zappi, M., Kuo, C-H., 2004, "Chloride Effect on TNT Degradation by Zero-Valent Iron or Zinc During Water Treatment," *Environmental Science & Technology*, 38, 5157.

Graduate Advisees

- Stephen Douglas Tolar, Adsorption of Water Contaminants onto Kenaf Fibers, Completed Thesis on July 2006.
- J. Matthew Thomas, Single Step Treatment of 2,4-Dinitrotoluene via Zero Valent Metal Reduction and Chemical Oxidation, Thesis Completed on August 29, 2006
- W. Jeffrey Horne, Evaluation and Optimization of Control Strategies for Management of Disinfection Byproduct Precursors Within the Northeast Mississippi Water District, Thesis Completed on August 2005. Student advised jointly with Dr. Mark Zappi, Dean of Engineering, University of Louisiana, Lafayette. Jeff is currently a PhD student at the Department of Chemical and Biological Engineering, Alabama, Tuscaloosa.
- David Edward Neaves, Evaluation of Fatty Acid Fraction Derived from Tall Oil as a Feedstock for Biodiesel Production, Thesis Completed on March 2007. Davis currently works for Omnova Corporation in Columbus, MS.
- Darrel Lynn Sparks, Ph.D., Oxidation of Lipids in a Supercritical-Fluid Medium, May 2008.
- Tracy John Benson, Ph.D., Elucidation of Reaction Pathways for Catalytically Cracked Unsaturated Lipids, May 2008.
- Stephen T. Dufreche, Ph.D., Effect of Phosphorus Poisoning on the Catalytic Cracking of Lipids for Green Diesel Production, May 2008. Stephen is currently a faculty member at the Department of Chemical Engineering, University of Louisiana, Lafayette.
- Scott David Crymble, MS, OPTIMIZATION AND REACTION KINETICS OF THE PRODUCTION OF BIODIESEL FROM CASTOR OIL VIA SODIUM METHOXIDE-CATALYZED METHANOLYSIS, May 2010
- Andro Mondala-Hernandez, Ph.D., ENHANCED LIPID PRODUCTION AND BIODIESEL YIELDS FROM ACTIVATED SLUDGE VIA FERMENTATION OF LIGNOCELLULOSE HYDROLYZATE, December 2010.
- Emmanuel Revellame, Ph.D. Student (In progress-plan graduation December 2011)
- Adebola Coker, Ph.D. Student started Fall 2009 (In progress-plan graduation Summer 2012)
- Lader Lerma, Ph.D. Student will begin Fall 2011

Member of PhD Graduate Student Committees

Jackeline Hall (Dave C. Swalm School of Chemical Engineering-In progress)

Javeed Mohammad (Dave C. Swalm School of Chemical Engineering-May 2010)
 Saroj Kumar (Agricultural and Biological Engineering-Graduate May 2007)
 Aloc Kumar (Agricultural and Biological Engineering-Graduated May 2008)
 Lin Wei (Agricultural and Biological Engineering-In progress)
 Prashanth Buchireddy (Dave C. Swalm School of Chemical Engineering-In progress)
 John Harden (Dave C. Swalm School of Chemical Engineering-Graduated Ph.D. on April 2006)

Member of MS Graduate Student Committees

John McGillivray (Food Sciences- completed)
 Anirudha Marwaha (Dave C. Swalm School of Chemical Engineering-In progress)

Research Team Staff

Dr. Patrisha Pham - Postdoctoral Appointment (2009-Present)
 Scott David Crymble – Research Associate (2009-Present)
 Dr. Andro Mondala-Hernandez- Postdoctoral Appointment (2011-Present)
 Dr. Alexei Iretski – Visiting Professor (August 2009 – August 2010)
 Dr. Antonio Estevez – Visiting Professor (January 2008 – January 2009)
 Linda Mafarland – ASTM Technician (2005-Present)
 Dr. Earl Alley – Emeritus Professor and Senior Chemist (2005-Present)
 Dr. Karen Liang – Postdoctoral Appointment (2006-2007)
 Dr. Darrell Sparks - Postdoctoral Appointment (2008-2010)- Dr. Sparks accepted a tenure track faculty position in the biochemistry department of Mississippi State University. His appointment began August 2010.
 Dr. Tracy Benson - Postdoctoral Appointment (2008-2010) – Dr. Benson accepted a tenure track faculty position in the chemical engineering department of Lamar University, Beaumont, Texas. His appointment began August 2009.
 Maria Paraschivescu – Chemist (2006-2008)
 Jimmie Cain – Technician (2005-Present)
 Nick Hatten – Associate Research Assistant (2006-2008)

Undergraduate Research Assistants

Undergraduate Students in Research

<u>Name</u>	<u>Project Title</u>
Marlene Trillo (UPRM)	Disinfection of Primary Effluent to Establish a Growth Media for Oleaginous Microorganisms
Dianne Acevedo (UPRM)	Production of Biodiesel Using Ionic Liquids
Ervin Vargas (UPRM)	Preparation of Ternary Equilibrium Diagrams for Microbial Oil Extraction Applications
Achorn, Frank	Extraction of FAMES from Sewage Sludge
Alex, Leni	Wastewater to Biofuels
Bandi, Ranjita	Development of Heterogeneous Catalyst for Biodiesel Production
Barlow, Richard	Solubility of Azelaic Acid in Supercritical Carbon Dioxide
Bonner, Rachel	Effect of Pitting Corrosion on the Kinetics of ZVI Water Treatment
Carroll, John	Solubility of Azelaic Acid in Supercritical Carbon Dioxide
Castillo, Cesar	Effect of Chlorides on the Treatment of DNT Contaminated Water Using ZVI
Dixon, Marleaha	<i>In-Situ</i> Esterification of Sewage Sludge
Ellis, Kaitlyn	Generation of Microbial Oils from Glycerol
Elmore, Kathryn	Solubility of Diacids in Supercritical Carbon Dioxide
Estill, Benjamin	Spectrophotometric Method for Quantitative Determination of Xylose in Fermentation Medium
Fisher, Jared	Treatment of DNT Contaminated Water Using Zero Valent Metals

Forks, Allison	Application of the Quadra C for Heterogeneous Catalyst Testing
Gurtowski, Richard	Disinfection of Primary Effluent Wastewater using Ozonation
Hales, Halston	Wastewater to Biofuels
Holt, Ashley	Evaluation of Superacid for Cracking Triglycerides
Leonard, Justin	Development of Analytical Methods for Biofuel Related Compounds
Lutz, Joseph	Production of Biodiesel from Sewage Sludge
Malone, Otis	Wastewater to Biofuels
McEwen, Jason	Solubility of Pelargonic Acid in Supercritical Carbon Dioxide
Slay, John	Extraction of Rice Bran using Supercritical Fluids
Velasquez, Roberto	Biodiesel Production from Tall Oil
Verzwyvelt, Alvaro	Esterification Kinetics of Free Fatty Acids and Triglycerides
Wall, Mitchell	Wastewater to Biofuels
Williams, Vicdaly	Evaluation of Heterogeneous Catalyst for Biodiesel Production

Other undergraduate assistants

Levell Hairston	Shawn McGregor
Trent Jeffreys	Elizabeth Brugier
Tuesday Lindsey	Justin Leonard
Jason Riley	
Krystal Roberts	
Greg Mayer	
Cedric Cole	
Michael Bestor	
Cesar Castillo	

Funded and Pending Proposals as Principal Investigator (Total Funded Amount: ~ \$13,000,000)

TITLE: Wastewater to Biofuels
 SPONSOR: General Atomics
 ROLE ON PROJECT: Principal Investigator
 AMOUNT FOR CONTRACT DURATION: \$600,000
 PERCENT RESPONSIBILITY FOR CONTRACT: 70%

TITLE: Biocrude Pilot System Design and Operation
 SPONSOR: DOE-SERC
 ROLE ON PROJECT: Principal Investigator
 AMOUNT FOR CONTRACT DURATION: \$2,300,000
 PERCENT RESPONSIBILITY FOR CONTRACT: 70%

TITLE: BIOCRUDE GENERATION FROM GUAM WASTEWATER TREATMENT OPERATIONS FOR THE PRODUCTION OF TRANSPORTATION FUELS, POWER, AND CHEMICALS
 Role in Project: Principal Investigator
 SPONSOR: NAVFAC
 AMOUNT FOR: \$10,000,000 (Pending)
 % Responsibility: 35%

TITLE: Production of Biodiesel Feedstocks from Agricultural-Based Industrial Wastewaters
 Role in Project: Principal Investigator
 SPONSOR: USDA/DOE

AMOUNT FOR: \$4,800,000 (pending)
% Responsibility: 40%

TITLE: 2010 MSU Biofuels Conference: Fueling America and the World with the Next Generation of Biofuels
Role in Project: Principal Investigator
SPONSOR: National Science Foundation
AMOUNT FOR: \$10,000
% Responsibility: 75%

TITLE: Biocrude Pilot System Design and Operation
SPONSOR: DOE SERC
AMOUNT FOR: \$2,300,000

TITLE: Evaluation of Wastewater Containing Lignocellulosic Sugars as a Medium to Grow Oil Accumulating Microbes
SPONSOR: NSF
STARTING DATE: October 2008
END DATE: November 2009
AMOUNT FOR: \$99,979

TITLE: 2009 MSU Biofuels Conference: The Next Generation of Biofuels
SPONSOR: NSF
STARTING DATE: June 2009
END DATE: October 2009
AMOUNT FOR: \$10,000

TITLE: Production of Biocrude via Integration of Wastewater Treatment and the Sugar Platform for Producing Green Transportation Fuels
SPONSOR: Department of Energy
STARTING DATE: January 2008
END DATE: December 2010
AMOUNT FOR: \$2,305,702

TITLE: Novel Processes and Feedstocks for Producing Biodiesel
SPONSOR: Department of Energy
START DATE: June 2006
END DATE: June 2008
AMOUNT FOR: \$2,065,670

TITLE: Propane Production from Syngas and Model Lipids
SPONSOR: Propane Education and Research Council
AMOUNT: \$15,000
DATES: 9/07-12/07

TITLE: Conversion of Wastewater Treatment Facilities into Biorefineries
SPONSOR: Environmental Protection Agency
AMOUNT: \$200,000
DATES: 10/1/2007-10/1/2009

TITLE: Development a Bioadsorbent for the Biodiesel Industry

SPONSOR: Mississippi Technology Alliance/Department of Energy
AMOUNT: \$250,000
DATES: 8/1/06-3/31/08

TITLE: Novel Processes and Feedstocks for Producing Biodiesel
SPONSOR: Department of Energy
AMOUNT: \$2,065,670
DATES: 6/1/06-11/1/08

TITLE: Mississippi State Biodiesel Production Project: Development and Optimization of Novel Biodiesel Production Techniques.
SPONSOR: Department of Energy
AMOUNT: \$1,875,000
DATES: 8/05-8/06

TITLE: Phase II: Commercialization of Kenaf Based Biosorptive Process for Use in the Treatment of Contaminated Aqueous Streams
SPONSOR: Kengro Corporation/Environmental Protection Agency
AMOUNT: \$88,000
DATES: 7/05-7/06

TITLE: Hybrid Reductive/Oxidative Process (ROP) for Treating NACs Contaminated Waters
SPONSOR: Oak Ridge Associated Universities
AMOUNT: \$10,000
DATES: 5/05-5/06

TITLE: Testing Magneson Effectiveness for Biodiesel Cleaning
SPONSOR: World Biodiesel
AMOUNT: \$3,188
DATES: 10/05-12/05

TITLE: Effect of Corrosion Promoters on the Treatment of 2-Nitrotoluene Contaminated Water Using Manganese/Iron Bimetallic Species.
SPONSOR: Office of the Vice-President of Research, MSU
AMOUNT: \$10,000
DATES: 1/05-12/05

TITLE: Tuning Sorptive Capacity and Reactivity of Zero-Valent Metals Integrated to Lighted Advanced Oxidation Techniques for Treating Nitroaromatics Contaminated Waters
SPONSOR: Gulf Coast Hazardous Substance Research Center
AMOUNT: \$40,000
DATES: 1/05-12/05

TITLE: Effect of Pitting Corrosion Promoters on the Treatment of Water Contaminated with Nitroaromatic Compounds Using Integrated Reductive/Oxidative Processes
SPONSOR: Gulf Coast Hazardous Substance Research Center
AMOUNT: \$30,000
DATES: 12/03-11/04

TITLE: Evaluation of Propane to Extract Lipids from Multiple Feedstocks for Biodiesel Production

SPONSOR: Agra Pure, Inc./Department of Energy

AMOUNT: \$50,000

DATES: 11/03-5/04

TITLE: Commercialization of Kenaf-Based Biosorptive Process for Use in the Treatment of Contaminated Aqueous Streams

SPONSOR: Kengro Corporation/U.S. Environmental Protection Agency

AMOUNT: \$21,899

DATES: 3/2004-11/2004

Funded Proposals as Co-Principal Investigator

TITLE: Wastewater to Biofuels

Role in Project: Co-Principal Investigator

INVESTIGATORS: Drs. Todd French, Rafael Hernandez, and Mark White

SPONSOR: General Atomics

AMOUNT FOR: \$2,200,000

% Responsibility: 45%

TITLE: Sewage Derived Biofuels: Phase 1

SPONSOR: General Atomics

INVESTIGATORS: Drs. Todd French, Rafael Hernandez, and Mark White

AMOUNT: \$1,200,000

DATES: 7/09-10/10

% RESPONSIBILITY: 40%

TITLE: Conversion of Seafood Processing Waste into Triglycerides a Biodiesel Feedstock

SPONSOR: Mississippi Alabama Sea Grant

INVESTIGATORS: Drs. Todd French, Rafael Hernandez, Hossein Toghiani,

AMOUNT: \$200,000

DATES: 1/08-1/09

% RESPONSIBILITY: 30%

TITLE: Characterization of Proprietary Hydrocarbon Liquids using the Quadra C – GC/MS Micro Reactor

SPONSOR: LS9

INVESTIGATORS: Drs. Mark G. White and Rafael Hernandez

AMOUNT: \$30,747

DATES: 8/07-12/07

% RESPONSIBILITY: 40%

TITLE: Conversion of Lignocellulosic Biomass to Ethanol Using Novel Processes

SPONSOR: DOE-Sustainable Energy Center

INVESTIGATORS: Drs. Todd French, Rafael Hernandez, Hossein Toghiani, Clifford George, Mark Bricka, Bill Elmore, James Warnock, Dwane Braasch, Yean-Sun Jung, Lewis Brown.

AMOUNT: \$688,251

DATES: 1/06-5/07

% RESPONSIBILITY: 10%

TITLE: Use of Microorganisms to Reduce Improve Oil Production and Reduce Carbon Dioxide in the Biosphere.
SPONSOR: Department of Energy
DATES: 1/06-12/09
AMOUNT FOR: \$200,000
% RESPONSIBILITY: 30%

TITLE: Mississippi State Biodiesel Production Project: Development and Optimization of Novel Biodiesel Production Techniques.
SPONSOR: Department of Energy
AMOUNT: \$1,225,627
DATES: 8/04-8/05
% RESPONSIBILITY: 30%

TITLE: An Engineering Assessment of Key Unit Processes Associated with Biodiesel Production for Application Toward Mississippi Derived Bioproducts with Implications Toward Commercialization
SPONSOR: Mississippi Biomass Council
AMOUNT: \$9851
DATES: 2/2003-5/2003
% RESPONSIBILITY: 50%

Submitted Proposal (Not Funded)

- TITLE: Wastewater as a Sustainable Source of Oil to Produce Biofuels
SPONSOR: NSF
INVESTIGATORS: Drs. Rafael Hernandez, Todd French, and Antonio Estevez
AMOUNT FOR: \$574,656
ROLE: Principal Investigator
- TITLE: Evolving Wastewater Treatment for Sustainable Production of Second Generation Biofuels and Power.
SPONSOR: European Union
INVESTIGATORS: Drs. Rafael Hernandez, Todd French, and Mark White
COLLABORATORS: Neste Oil, University of Hohenheim, Graz University of Technology, Growdiesel Climate Care Council, Tampere University of Technology, Jyväskylä University
DATES: 3/2009-8/2012
ROLE: Principal Investigator
AMOUNT: \$5,700,000
- TITLE: Tall Oil: An Alternative Source of Better Quality Biodiesel
SPONSOR: Environmental Protection Agency
INVESTIGATORS: Drs. Rafael Hernandez, Todd French, and Sandun Fernando
ROLE: Principal Investigator
DATES: 10/06-9/07
AMOUNT: \$100,000
- TITLE: An Innovative Syngas Based Biorefinery Concept: Development of a Biocatalyst for the Production of Biodiesel from Synthesis Gas
SPONSOR: USDA-DOE
INVESTIGATORS: Drs. Todd French, Rafael Hernandez, Mark Bricka Dwaine Braasch
ROLE: Co-Principal Investigator
DATES: 6/06-6/09
AMOUNT: \$736,140
% RESPONSIBILITY: 30%

- TITLE: Integration of Electro Fenton's Reaction and Biodegradation to Treat 1,2,3-Trichloropropane and 1,4-Dioxane Contaminated Groundwater
 SPONSOR Strategic Environmental Research and Development Program
 INVESTIGATORS: Drs. Rafael Hernandez, Mark Bricka, and Todd French
 ROLE: Principal Investigator
 DATES: 1/05-12/07
- TITLE: Treatment of Contaminated Aqueous Streams Using Biobased Adsorbents
 SPONSOR: US Department of Energy
 INVESTIGATORS: Drs Rafael Hernandez and Mark Zappi
 ROLE: Principal Investigator
 DATES: 10/04-8/07
- TITLE: BIOBASED PRODUCT DEVELOPMENT CENTER
 SPONSOR: National Science Foundation
 INVESTIGATORS: Multiple Investigators (Oklahoma State University and MSU)
 ROLE: Co-Principal Investigator
 DATES: 10/05-9/10
- TITLE: Extraction of Functional Compounds from Mississippi Fruits and Their By Products to Develop Added Value Products/Ingredients
 SPONSOR: MAFES
 INVESTIGATORS: Juan Silva, Donna Marshall, James Spiers, John Braswell, and Rafael Hernandez
 ROLE: Co- Principal Investigator
 AMOUNT: \$37,000
 SUBMISSION DATE: 12/2003
- TITLE: Integration of Non-Traditional Disinfectants and Chlorine or a Reactive Adsorbent and Chlorine to Reduce the Formation of Disinfection ByProducts in Non-Complying Mississippi Drinking Water Facilities.
 SPONSOR: Water Resources Research Institute
 INVESTIGATOR: Rafael Hernandez
 ROLE: Principal Investigator
 AMOUNT: \$45,000
 SUBMISSION DATE: 11/3003
- TITLE: Generation of Value-Added Products from Soybean Oil as an Alternative to Improve the Economic Feasibility of Biodiesel
 SPONSOR: Office of Research, Mississippi State University
 INVESTIGATOR: Rafael Hernandez
 ROLE: Principal Investigator
 AMOUNT: \$10000
 SUBMISSION DATE: 10/16/2003
- TITLE: Generation of Nutritional Products and Alternative Fuels from Rice Bran Extracts
 SPONSOR: Agra Pure, Inc.
 INVESTIGATORS: Rafael Hernandez, Juan Silva, Mark Zappi
 ROLE: Principal Investigator
 AMOUNT: \$260701
 SUBMISSION DATE: 10/23/2003
- TITLE: Pitted Metal Electron Sink and Nano Scale Electron Sources Integrated to Lighted Advanced Oxidation Processes for the Treatment of Nitroaromatic Contaminated Waters
 SPONSOR: National Science Foundation
 INVESTIGATOR: Rafael Hernandez
 ROLE: Principal Investigator

AMOUNT: \$400002

SUBMISSION DATE: 7/16/03

- TITLE: Generation of Biodiesel and Value-Added Products from Oils Extracted from Soy Seeds Using Innovative Separation, Transesterification, and Oxidation Techniques.
SPONSOR: United States Department of Agriculture and Department of Energy
INVESTIGATORS: Rafael Hernandez, Mark Zappi, and Hossein Toshiani
ROLE: Principal Investigator
AMOUNT: \$574531
SUBMISSION DATE: 5/14/03
- TITLE: Generation of Biodiesel and Value-Added Products from Oil Extracted from Chinese Tallow and Soy Seeds Using Innovative Separation and Oxidation Techniques
SPONSOR: Department of Energy, Office of Science
INVESTIGATORS: Rafael Hernandez
ROLE: Principal Investigator
AMOUNT: \$450000
SUBMISSION DATE: 4/14/03
- TITLE: Development of a Single Stage Extractive/Reactive Processing Technique for the Production of Biodiesel from Traditional and Non-Traditional Sources.
SPONSOR: National Science Foundation
INVESTIGATORS: Rafael Hernandez and Mark Zappi
ROLE: Principal Investigator
AMOUNT: \$374915
SUBMISSION DATE: 2/21/03
- TITLE: Production of Biodiesel and Biodiesel/Petro-Diesel Blends Derived from Mississippi Feedstock Oils
SPONSOR: Mississippi Alternative Energy Enterprise
INVESTIGATORS: Donald Thomas, Trey Fleming, Sumesh Arora, Mark Zappi, Todd French, and Rafael Hernandez
ROLE: Co-Principal Investigator
AMOUNT: \$500000
SUBMISSION DATE: 1/2003

Invited Presentations

NAME	DESCRIPTION	DATES	LOCATION	INVITEE
ACS SERMACS	Invited Presentation	12/1-2/2010	New Orleans, LA	Dr. Mark White
AICHe 2010	Invited Presentation	11/2010	Utah	Dr. Jerry King
Bioenergy Symposium	Biofuels Presentation	April, 2008	San Juan, PR	Organizing Committee
Baptist Church	Biodiesel Presentation	July 3, 2008	Starkville	Baptist Church
National Biodiesel Conference and Expo	Paper Presentation	2/3/08-2/6/08	Orlando	National Biodiesel Board
National Renewable Energy	DOE-EPsCOR	7/24/2007	Denver, CO	DOE-EPsCOR

Lab (NREL)

Auburn University	Paper Presentation	10/10/2007	Auburn, Al	Dr. Y.Y. Lee
National Biodiesel Board	Paper Presentation	10/16/2007	Chicago, Il	Dr. Robert McCormick
Hinds Community College (See Tech. Pres.)	Energy Summit	8/25/2006	Pearl, MS	Congressman Charles W. Pickering
MS Senate Ag. Committee (See Tech. Pres.)	Hearing	6/5/2006	Jackson, MS	Sen. Perry Lee (State Senator)
97 th American Oil Society Meeting (See Tech. Pres.)	Paper Presentation	5/02/06	St. Louis, MO	Dr. Fred Eller (USDA)
Southeast Diesel Collaborative (See Tech. Pres.)	Paper Presentation	4/26/06	Atlanta, GA	Mr. Dale Aspy (EPA)
MS Young Farmers Association (See Tech. Pres.)	Paper Presentation	1/21/2006	Jackson, MS	Mr. Brent Bailey (MS Farm Bureau)
Southern Seed Association	Paper Presentation	1/15/2006	San Antonio, TX	Dr. Dick L. Auld (Texas Tech)
Graduate Seminar	Paper Presentation	11/10/2005	Univ. Alabama	Dr. Heath Turner
Graduate Seminar	Paper Presentation	10/13/2005	TN Tech	Dr. Donald P. Visco
Graduate Seminar	Paper Presentation	10/14/2004	CHE Clemson	Dr. Andrew Metters
Graduate Seminar Borazjani	Paper Presentation	9/9/2004	MSU Forest Products	Dr. Hammid

Technical Presentations at National and State Conferences

1. Hernandez, R., Revellame, E., Mondala, A., French, W.T., and Holmes W., 2010 A New Feedstock for Renewable Diesel: Advantages, Processing, and Future Strategies,” SERMAC ACS 2010, New Orleans December 2, 2010.
2. Coker, A., Iretskii, A., Hernandez, R., White, M., French, W.T. Effect of Water On Esterification of Palmitic Acid Using ZSM-5 and Faujasite Zeolite Catalysts. Presented at the 2010 AIChE Annual meeting. Salt Lake City, UT. November 7-12, 2010.

3. Pham, P., Hernandez, R., Estill, B., Mondala, A., French, W.T. A Spectrophotometric Method for Quantitative Determination of Xylose In Fermentation Medium. Presented at the 2010 AIChE Annual meeting. Salt Lake City, UT. November 7-12, 2010.
4. Pham, P., Hernandez, R., Acevedo Vélez, D.M., French, W.T. Transesterification of Activated Sludge Oil by Ionic Liquid Supported Acid Catalysis. Presented at the 2010 AIChE Annual meeting. Salt Lake City, UT. November 7-12, 2010.
5. Pham, P., Hernandez, R., Revellame, E., French, W.T. Activated Sludge Oil: Identification and Characterization of Components. Presented at the 2010 AIChE Annual meeting. Salt Lake City, UT. November 7-12, 2010.
6. Pham, P., Hernandez, R., Revellame, E., French, W.T. Activated Sludge Oil: Identification and Characterization of Components. Presented at the 2010 AIChE Annual meeting. Salt Lake City, UT. November 7-12, 2010.
7. Mondala, A., Hernandez, R., French, W.T., Santo Domingo, J., Ryu, H., McFarland, L., Iker, B. Lipid Accumulation Kinetics and Microbial Community Analysis of Activated Sludge Microbiota. Presented at the 2010 AIChE Annual meeting. Salt Lake City, UT. November 7-12, 2010.
8. Lerma-Cañedo, L., Estévez, L.A., Hernandez, R., French, W.T., Holmes, W. Phase Diagram of Two Ternary Systems Water + Triacetin + Alkane by a Novel Experimental Technique. Presented at the 2010 AIChE Annual meeting. Salt Lake City, UT. November 7-12, 2010.
9. Revellame, E., Hernandez, R., French, W.T., Alley, E., Holmes, W. The Conversion of Lipids Derived From Activated Sludge Into Biofuels. Presented at the 2010 AIChE Annual meeting. Salt Lake City, UT. November 7-12, 2010.
10. Revellame, E., Coker, A., Iretski, A., Hernandez, R., French, W.T., White, M., Holmes, W. In-Situ Biodiesel Production from Microbial Lipids Using Supercritical Methanol. Presented at the 2010 AIChE Annual meeting. Salt Lake City, UT. November 7-12, 2010.
11. French, T., Hernandez, R., Mondala, A., Hall, J., Zhang, G., White, M., Alley, E. and Holmes, B., Microbial Oils Derived from Oleaginous Microorganisms. Presented at the 2010 MSU Biofuels Conference. Jackson, MS. Aug. 12-13, 2010.
12. Zhang, G., French, W., Hernandez, R., Sparks, D., Holmes, W. and Alley, E. A Biodiesel Feedstock of Microbial Oils from Seafood Processing Waste and Glycerol. Presented at the 101st AOCS Annual Meeting & Expo. Phoenix, AZ, USA. May 16-19, 2010.
13. Hetrick, M., Zumbro, C., Holmes, B., Donaldson, J., Hernandez, R. and French, W. The Extraction of *Rhodotorula glutinis* from Aqueous Media Using the Solvent Extraction Technique. Presented at the 101st AOCS Annual Meeting & Expo. Phoenix, AZ, USA. May 16-19, 2010.
14. Mondala, A., Hernandez, R., French, W., McFarland, L., and Holmes, W. Effect of Lignocellulosic Inhibitory Compounds on Growth and Lipid Accumulation of Municipal Sewage Activated Sludge Microflora. Presented at the 101st AOCS Annual Meeting & Expo. Phoenix, AZ, USA. May 16-19, 2010.
15. Revellame, E., Hernandez, R., French, W., Alley, E., and Holmes, W. Green Diesel from Lipidic Materials obtained from Activated Sludge. Presented at the 101st AOCS Annual Meeting & Expo. Phoenix, AZ, USA. May 16-19, 2010.
16. Mondala, A. Utilization and Modification of Municipal Sewage Treatment Plant Sludge and Wastewater Streams for the Production of Lipid-Based Biofuels. Presented at the 2010 AIChE Annual meeting's meet the faculty candidate poster session. Salt Lake City, UT. November 7-12, 2010.
17. Adkins, A.S., Kirk, V., Zhang, G., French, W., Hernandez, R. and Holmes, W., Lipid productions by *Rhodotorula glutinis* from Lignocellulosic Sugars as A Renewable Biodiesel Feedstock. Poster presentation presented at the 2010 MSU Biofuels Conference. Jackson, MS. Aug. 12-13, 2010.
18. Alex, L.R., Mondala, A., Sparks, D., Hernandez, R., French, W., McFarland, L. and Holmes, W., Evaluation of batch, fed-batch, semi-continuous, and continuous fermentation of artificial lignocellulose hydrolyzate by activated sludge for biodiesel feedstock lipids production. Poster presentation presented at the 2010 MSU Biofuels Conference. Jackson, MS. Aug. 12-13, 2010.

19. Callahan, R., Revellame, E., Pham, P., Hernandez, R., Holmes, W. and French, W., Analysis of Polyhydroxyalkanoates from Raw Activated Sludge. Poster presentation presented at the 2010 MSU Biofuels Conference. Jackson, MS. Aug. 12-13, 2010.
20. Coker, A., Iretskii, A., Hernandez, R., White, M. and French, W., Effect of Water on Esterification of Free Fatty Acids using Zeolite Catalysts. Poster presentation presented at the 2010 MSU Biofuels Conference. Jackson, MS. Aug. 12-13, 2010.
21. Gent, E., Holmes, W., Sweet, W., Sparks, D., Mondala, A., French, W. and Hernandez, R., Rapid Analysis of Sugars, Furfural, and Acetic Acid from Lignocellulose Hydrolysate. Poster presentation presented at the 2010 MSU Biofuels Conference. Jackson, MS. Aug. 12-13, 2010.
22. Hall, J., French, W., Hernandez, R., Holmes, W. and Sparks, D., Oil Production for Biofuels via Oleaginous Microorganism Consortium. Poster presentation presented at the 2010 MSU Biofuels Conference. Jackson, MS. Aug. 12-13, 2010.
23. Lerma-Caicedo, L., Hernandez, R., Estevez, L.A., French, W. and Holmes, W., Equilibrium study of Three Ternary Systems Water + Decane + Lipids by a Microsampling Technique. Poster presentation presented at the 2010 MSU Biofuels Conference. Jackson, MS. Aug. 12-13, 2010.
24. Nguyen, H., Pham, P., Mondala, A., Hernandez, R. and French, T., Simultaneous Extracellular Polymeric Substance (EPS) and Lipid Production by Activated Sludge *via* Fermentation of Glucose. Poster presentation presented at the 2010 MSU Biofuels Conference. Jackson, MS. Aug. 12-13, 2010.
25. Paul, D., Kumar, R., Nanduri, B., French, T., Pendarvis, K., Brown, A., Lawrence, M. and Burgess, S., Growth associated changes in proteome and membrane fatty acid composition of *Oligotropha carboxidovorans* OM5. Poster presentation presented at the 2010 MSU Biofuels Conference. Jackson, MS. Aug. 12-13, 2010.
26. Revellame, E., Hernandez, R., French, W., Holmes, W., Alley, E., and Callahan, R., Biodiesel from Wet Activated Sludge. Poster presentation presented at the 2010 MSU Biofuels Conference. Jackson, MS. Aug. 12-13, 2010.
27. Sparks, D., Cherry, W., Hernandez, R. and French, W. Solubility of Lipids in Supercritical propane. Presented at the 101st AOCS Annual Meeting & Expo. Phoenix, AZ, USA. May 16-19, 2010.
28. Coker, A., Iretski, A., Hernandez, R., White, M. and French, W. Effect of Water on Esterification of Free Fatty Acids using Zeolite Catalysts. Presented at the 101st AOCS Annual Meeting & Expo. Phoenix, AZ, USA. May 16-19, 2010.
29. Hall, J., French, W., Hernandez, R., Holmes, W. and Sparks, D. Oil Production for Biofuels via Oleaginous Microorganism Consortium. Presented at the 101st AOCS Annual Meeting & Expo. Phoenix, AZ, USA. May 16-19, 2010.
30. Benson, T., Forks, A., Holmes, W., French, W.T., Hernandez, R. Conversion of phospholipids to renewable diesel: reaction pathways and effects on hydrotreating catalysts. Presented at the 2009 AIChE Annual meeting. Nashville, TN. Nov. 8-13, 2009.
31. Crymble, S., Hernandez, R., French, W.T., Optimization and reaction kinetics of the production of biodiesel from castor oil. Presented at the 2009 AIChE Annual meeting. Nashville, TN. Nov. 8-13, 2009.
32. Hall, J., French, T.W., Hernandez, R., Holmes, W., Mondala, A. Conversion of wastewater treatment facilities into biorefineries. Presented at the 2009 AIChE Annual meeting. Nashville, TN. Nov. 8-13, 2009.
33. Mondala, A., Hernandez, R., French, T., Alley, A., McFarland, L. Lipid accumulation in municipal sewage activated sludge microflora via fermentation of lignocellulose hydrolysate. Presented at the 2009 AIChE Annual meeting. Nashville, TN. Nov. 8-13, 2009.
34. Sparks, D. Generation of renewable fuels and chemicals from fatty acids via supercritical fluid extraction. Presented at the 2009 AIChE Annual meeting. Nashville, TN. Nov. 8-13, 2009.
35. Sparks, D., Estevez L.A., Hernandez, R., French, T. Processing of unsaturated fatty acids in supercritical carbon dioxide. Presented at the 2009 AIChE Annual meeting. Nashville, TN. Nov. 8-13, 2009.

36. Sparks, D., Benson, T., Brown, A., Holmes, W., Hernandez, R. Analytical chemistry for chemical engineers. Presented at the 2009 AIChE Annual meeting. Nashville, TN. Nov. 8-13, 2009.
37. Zhang, G., French, T., Hernandez, R., Alley, E., Holmes, W. Microbial oils from seafood processing. Presented at the 2009 AIChE Annual meeting. Nashville, TN. Nov. 8-13, 2009.
38. Burgett, R., Brown, A.E., Forks, A.L., Sparks, D.L., Benson, T.L., Holmes, W.E., Hernandez, R.A. "Online Automated Oxidation of Low Molecular Weight Organics and FAME's Coupled to GC/MS for Product Identification". Presented at the 100th Annual Meeting & Expo of the American Oil Chemists' Society (AOCS). Rosen Shingle Creek, Orlando, Florida, USA. May 3-6, 2009.
39. Cain, J.D., Alley, E.G., Hernandez, R.A., French, W.T., Paraschivescu, M.C., Holmes, W.E. "Rates of Heterogeneous Acid Catalyzed Methanolysis of Trilaurin, Trimyristin, Tripalmitin, Triolein, and Mixed Triglycerides". Presented at the 100th Annual Meeting & Expo of the American Oil Chemists' Society (AOCS). Rosen Shingle Creek, Orlando, Florida, USA. May 3-6, 2009.
40. Revellame, E.D., Hernandez, R.A., French, W.T., Alley, E.G. "Biodiesel from Activated Sludge via in situ Transesterification". Presented at the 100th Annual Meeting & Expo of the American Oil Chemists' Society (AOCS). Rosen Shingle Creek, Orlando, Florida, USA. May 3-6, 2009.
41. Hall, J.I., French, W.T., Hernandez, R.A., Alley, E.G., White, M., Holmes, W.E., Brown, A., Mondala, A.H. "Conversion of Wastewater Treatment Facilities into Biorefineries". Presented at the 100th Annual Meeting & Expo of the American Oil Chemists' Society (AOCS). Rosen Shingle Creek, Orlando, Florida, USA. May 3-6, 2009.
42. Zhang, G., French, W.T., Hernandez, R.A., Paraschivescu, M.C., Alley, E.G. "Microbial Conversion of Seafood Processing Waste into Triglycerides a Biodiesel Feedstock". Presented at the 100th Annual Meeting & Expo of the American Oil Chemists' Society (AOCS). Rosen Shingle Creek, Orlando, Florida, USA. May 3-6, 2009.
43. Forks, A.L., Benson, T.L., Alley, E.G., White, M., Hernandez, R.A. "Reaction Kinetics for the Homogeneous Catalytic Cracking of a Saturated Triglyceride". Presented at the 100th Annual Meeting & Expo of the American Oil Chemists' Society (AOCS). Rosen Shingle Creek, Orlando, Florida, USA. May 3-6, 2009.
44. Sparks, D.L., Hernandez, R.A., Estévez, L.A., French, W.T. "Small-Chain Fatty Acid Solubility in Supercritical Carbon Dioxide". Presented at the 100th Annual Meeting & Expo of the American Oil Chemists' Society (AOCS). Rosen Shingle Creek, Orlando, Florida, USA. May 3-6, 2009.
45. Mondala, A.H., Hernandez, R.A., French, W.T., Alley, E.G., McFarland, L., Paraschivescu, M.C. "Lipid Accumulation in Municipal Sewage Sludge Microorganisms Growing On a Synthetic Wastewater Medium with Glucose as the Carbon Source". Presented at the 100th Annual Meeting & Expo of the American Oil Chemists' Society (AOCS). Rosen Shingle Creek, Orlando, Florida, USA. May 3-6, 2009.
46. Thomas, J.M., Hernandez, R.A., French, W.T., Holmes, W.E., Alley, E.G. "Conversion of Glycerol to Lipids via Oleaginous Microorganisms". Presented at the 100th Annual Meeting & Expo of the American Oil Chemists' Society (AOCS). Rosen Shingle Creek, Orlando, Florida, USA. May 3-6, 2009.
47. Benson, T.L., Forks, A.L., White, M., Alley, E.G., Hernandez, R.A. "Heterogeneous Catalytic Cracking of Phospholipids to Renewable Fuels Using Co-Mo and Ni-Mo γ -Al₂O₃ Catalysts". Presented at the 100th Annual Meeting & Expo of the American Oil Chemists' Society (AOCS). Rosen Shingle Creek, Orlando, Florida, USA. May 3-6, 2009.
48. Mondala, A.H., Hernandez, R.A., French, W.T., Alley, E.G., McFarland, L. "Lipid Accumulation in Municipal Wastewater Activated Sludge Microflora using Glucose as Carbon source". Presented at the 52nd Annual Meeting and Technical Conference of Mississippi Water Environment Association (MWEA). Bay, St. Louis, MS, USA. June 2-5, 2009
49. Hall, J.I., French, W.T., Hernandez, R.A., Holmes, W.E., Mondala, A.H. "Wastewater Treatment Facilities – The New Biorefineries". Presented at the 52nd Annual Meeting and Technical Conference of Mississippi Water Environment Association (MWEA). Bay, St. Louis, MS, USA. June 2-5, 2009

50. M. Paraschivescu, E. Alley, R. Hernandez, T. French, and K. Armbrust, "Headspace Solid Phase Microextraction of Methanol in Biodiesel," 99th American Oil Chemist Society Annual Meeting and Expo, Seattle, WA, 2008.
51. A. Brown, W. Holmes, T. Benson, D. Sparks, and R. Hernandez, "Online Mass Spectrometry Analysis of Oxidized Lipids Generated in Situ via Ozonolysis," 99th American Oil Chemist Society Annual Meeting and Expo, Seattle, WA, 2008.
52. Thomas, R. Hernandez, T. French, E. Alley, and W. Holmes, "Growth of Oleaginous Microorganisms Utilizing Glycerol as the Sole Carbon Source," 99th American Oil Chemist Society Annual Meeting and Expo, Seattle, WA, 2008.
53. T. French, R. Hernandez, J. Hall, A. Mondala, G. Zhang, B. Holmes, E. Alley, and H. Toghiani, "Conversion of Lignocellulosic Biomass into Triglycerides Using Municipal Wastewater Treatment Infrastructure," 99th American Oil Chemist Society Annual Meeting and Expo, Seattle, WA, 2008.
54. Earl G. Alley, Rafael Hernandez, Todd French, Jimmy Cain, and Bill Holmes, "Rates of Homogeneous and Heterogeneous Acid Catalyzed Transesterification Reactions of Tri-, Di- and Mono-Glycerides," 99th American Oil Chemist Society Annual Meeting and Expo, Seattle, WA, 2008.
55. A. Mondala, R. Hernandez, T. French, L. Estevez, and J. Hall, "Pre-Ozonation of Primary Municipal Wastewater Effluent for the Cultivation of Oleaginous Microorganisms," 99th American Oil Chemist Society Annual Meeting and Expo, Seattle, WA, 2008.
56. T. Benson, R. Hernandez, T. French, M. White, and W. Holmes, "Elucidation of Mechanism for the Cracking of Unsaturated Lipids Using a Benchmark Catalyst and Commercial Catalysts," 99th American Oil Chemist Society Annual Meeting and Expo, Seattle, WA, 2008.
57. W. Holmes, T. Benson, T. French, and R. Hernandez, "Evaluation of Mass Spectrometry Analyzers Coupled to an Online Catalytic Cracking System," 99th American Oil Chemist Society Annual Meeting and Expo, Seattle, WA, 2008.
58. A.T. Ford, W.T. French, R. Hernandez, and B. Holmes, "Oil Accumulation by Sewage-Grown Oleaginous Microorganisms," 99th American Oil Chemist Society Annual Meeting and Expo, Seattle, WA, 2008.
59. J. Hall, T. French, R. Hernandez, A. Mondala, M. White, B. Holmes, and A. Brown, "Conversion of Wastewater Treatment Facilities into Biorefineries," 99th American Oil Chemist Society Annual Meeting and Expo, Seattle, WA, 2008.
60. D. Sparks, R. Hernandez, A. Estévez, E. Alley, and T. French, "Utilization of a Supercritical Fluid Medium for the Generation of Renewable Chemicals from Oleic Acid," 99th American Oil Chemist Society Annual Meeting and Expo, Seattle, WA, 2008.
61. Stephen Dufreche, Rafael Hernandez, Todd French, Mark G. White, Earl Alley, and William E. Holmes, "Influence Of Phosphorous On The Heterogeneous Catalytic Cracking Of Lipids For Green Diesel Production," 2007 Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah.
62. Andro H. Mondala, Rafael Hernandez, William Todd French, and Jaclyn Hall, "Ozone Disinfection And Biodegradability Enhancement Of Primary Wastewater Effluent," 2007 Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah.
63. Stephen Dufreche, Rafael Hernandez, Todd French, Mark G. White, Earl G. Alley, and William E. Holmes, "Effect of Phosphorus on Acid Cracking of Lipids for the Production of Green Diesel," 2007 Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah.
64. Todd French, Rafael Hernandez, Lew Brown, Guochang Zhang, and Lynn Prewitt, "Combining Microbially Enhanced Oil Recovery With CO₂ Sequestration," 2007 Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah.
65. Nicholas Hatten, Rafael Hernandez, Hossein Toghiani, William Holmes, and Earl Alley, "Removal of Free Glycerine and Lipids from the Water-Washing Step within the Biodiesel Production Process," 2007 Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah.

66. Guochang Zhang, William T. French, Rafael Hernandez, Hossein Toghiani, Jack Carmical, William Homes, Ashli Brown, and Brian Baldwin "Lipid Production from Acid Hydrolysate of Lignocellulosic Biomass Using *Rhodotorula Glutinis*," 2007 Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah.
67. Kaiwen Liang, Hossein Toghiani, and Rafael Hernandez, "Supercritical CO₂ Extraction of Lipids And Phospholipids From Sewage Sludge," 2007 Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah.
68. Kaiwen Liang, Rafael Hernandez, Hossein Toghiani, and Todd French, "Biodiesel From Sewage Sludge," 2007 Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah.
69. Tracy J. Benson, William E. Holmes, Rafael Hernandez, William T French, Mark G. White, and Earl G. Alley, "Development Of A Laboratory Scale Catalytic Cracking Reactor," 2007 Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah.
70. Jaclyn Hall, W. Todd French, Rafael Hernandez, Andro Mondala, Earl Alley, Mark White, Bill Holmes, and Ashli Brown, "Conversion of Wastewater Treatment Facilities into Biorefineries," 2007 Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah.
71. Darrell L. Sparks, Rafael Hernandez, L. Antonio Estévez, Todd French, and Earl Alley, "Synthesis Of Renewable Chemicals From Oleic Acid," 2007 Annual Meeting of the American Institute of Chemical Engineers, Salt Lake City, Utah.
72. J. Hall, T. French, R. Hernandez, M. Licha, E. Easterling, and A. Mondala, "Cultivating Oleaginous Yeast using Municipal Wastewater," 98th American Oil Chemist Society Annual Meeting and Expo, Quebec, Canada, 2007.
73. T. Benson, R. Hernandez, M. White, T. French, W. Holmes, and E. Alley, "Cracking of Fatty Acids over H-ZSM-5 Catalyst: Elucidation of Reaction Mechanisms," 98th American Oil Chemist Society Annual Meeting and Expo, Quebec, Canada, 2007.
74. K. Liang, R. Hernandez, H. Toghiani, T. French, S. Dufreche, A. Mondala, and D. Sparks "In-Situ Transesterification of Biodiesel from Sewage Sludge," 98th American Oil Chemist Society Annual Meeting and Expo, Quebec, Canada, 2007.
75. K. Liang, H. Toghiani, R. Hernandez, and D. Sparks, "Supercritical CO₂ Extraction for Lipid and Phospholipid Recovery from Sewage Sludge," 98th American Oil Chemist Society Annual Meeting and Expo, Quebec, Canada, 2007.
76. T. French, R. Hernandez, J. Hall, A. Mondala, M. White, and M. Bricka "Wastewater Treatment Facilities: A Novel Biorefinery for the Production of BioCrude," 98th American Oil Chemist Society Annual Meeting and Expo, Quebec, Canada, 2007.
77. W. Holmes, T. Benson, R. Hernandez, M. White, T. French, and E. Alley, "Online Mass Spectrometry Analysis of a Catalytic Cracking Reactor," 98th American Oil Chemist Society Annual Meeting and Expo, Quebec, Canada, 2007.
78. S. Dufreche, R. Hernandez, T. French, M. White, E. Alley, W. Holmes, and M. Zappi "Influence of Phosphorous on the Heterogeneous Catalytic Cracking of Phospholipids for Green Diesel Production," 98th American Oil Chemist Society Annual Meeting and Expo, Quebec, Canada, 2007.
79. D. Sparks, L. Estevez, R. Hernandez, T. French, H. Toghiani, R. Toghiani, E. Alley, and M. Zappi, "Kinetics of Oleic Acid Oxidation in a Supercritical Fluid," 98th American Oil Chemist Society Annual Meeting and Expo, Quebec, Canada, 2007.
80. French, W.T., Hernandez, R., Zappi, M., Dufreche, S.T., Sparks, D.L., "Production of Biodiesel from Wastewater Treatment Sludge," World Renewable Energy Congress IX, 19-25 August 26 Florence, Italy.
81. Hernandez, R., "Novel Processes and Feedstocks for Producing Biodiesel," Energy Summit Sponsored by Congressman Chip Pickering, Pearl, Mississippi.
82. Hernandez, R., Sparks, D., French, T., Toghiani, H., Toghiani, R., Zappi, M., "Production of Value-Added Chemicals via Oxidation of Lipids in Supercritical Carbon Dioxide," 97th AOCS Annual Meeting & Expo, April 30-May 3, 2006, St.Louis, Missouri.

83. Sparks, D., Hernandez, R., Zappi, M., French, T., Toghiani, H., Toghiani, R., Alley, E., "Kinetics of Oleic Acid Oxidation in Supercritical Carbon Dioxide," 97th AOCS Annual Meeting & Expo, April 30-May 3, 2006, St.Louis, Missouri (**Darrel Sparks was awarded the 2006 Outstanding Paper Award by the Processing Division**).
84. Dufreche, S., Hernandez, R., Zappi, M., French, T., Sparks, D., Alley, E., "Production of Low-Cost Biodiesel Using a Novel Bacterial-Based Feedstocks," 97th AOCS Annual Meeting & Expo, April 30-May 3, 2006, St.Louis, Missouri.
85. Hernandez, R., "Biodiesel from Non-Traditional Feedstocks," Southeast Diesel Collaborative Meeting Sponsored by the Environmental Protection Agency, April 26, Atlanta, GA.
86. Hernandez, R., French, T., Dufreche, S., Sparks, D., Zappi, M., "MSU Biodiesel Production Process," 2006 Bioproducts Conference Sponsored by the Mississippi Biomass Council, April 23, 2006, Philadelphia, Mississippi.
87. Hernandez, R., and French, W.T., "Overview of the Biodiesel Industry," Mississippi Young Farmers Association, 21st January, 2006, Jackson MS.
88. Hernandez, R., French, T., Sparks, D., Dufreche, S., "Biodiesel Production Using Alternative Feedstocks," 87th Annual Convention of the Southern Seed Association," January 15, 2006, San Antonio, TX.
89. Sparks, D., Hernandez, R., Zappi, M., French, T., Toghiani, H., Toghiani, R., and Alley, E., "Oleic Acid Oxidation in Supercritical Carbon Dioxide," Presented at the 2005 AIChE Annual Meeting, Cincinnati OH.
90. Neaves, D., Hernandez, R., Zappi, M., and French, T., "Impact of Blending Traditional and Non-traditional Lipid Feedstocks for the Production of Biodiesel," Presented at the 2005 AIChE Annual Meeting, Cincinnati OH.
91. Crymble, S., Hernandez, R., Zappi, M., French, T., and Baldwin, B., "Utilization of Triadica Sebifera as a Novel Biodiesel Feedstock," Presented at the 2005 AIChE Annual Meeting, Cincinnati OH.
92. Benson, T., Hernandez, R., French, T., and Zappi, M., "Production of Biodiesel from Wastes Associated with Meat Butchering Processes," Presented at the 2005 AIChE Annual Meeting, Cincinnati OH.
93. French, T., Hernandez, R., Easterling, E., and Zappi, M., "Extraction and Production of Value-Added Products from Waste Feedstocks," Presented at the 2005 AIChE Annual Meeting, Cincinnati OH.
94. Dufreche, S., Hernandez, R., French, T., Zappi, M., Sparks, D., and Alley, E., "Production of Low-Cost Biodiesel Using a Novel Bacterial-Based Feedstock," Presented at the 2005 AIChE Annual Meeting, Cincinnati OH.
95. Hernandez, R., Zappi, M., French, T., Whitlock, J., and Alley, E., "Production of Biodiesel Using an Integrated Extraction Reaction Method," Presented at the 2005 AIChE Annual Meeting, Cincinnati OH.
96. Hernandez, R., Thomas, M., Marwaha, A., and Jeffreys, T., "Plant Design Project: Biodiesel Production Using Acid-Catalyzed Transesterification of Yellow Grease," Presented at the 2005 AIChE Annual Meeting, Cincinnati OH.
97. Thomas, M., Hernandez, R., and Kuo, C-H., "Treatment of Nitroaromatic Contaminated Groundwater with Zero-Valent Metals and Advanced Oxidation Processes," Presented at the 2005 AIChE Annual Meeting, Cincinnati OH.
98. Hernandez, R., "Effective Use of Ozone and GAC in Water Treatment," Presented at the Alabama-Mississippi Section of the American Water Works Association 2005 Annual Conference, Choctaw, MS.
99. Thomas, M. and Hernandez, R., "Effect of Chloride on the Treatment of 2,4-Dinitrotoluene Using Zero-Valent Metals," Presented at the Mississippi Water Environment Association 48th Annual Meeting and Technical Conference, Gulfport, MS (**The Student Matthew Thomas Won 1st Prize for the Presentation**).

100. Tolar, D., Hernandez, R., and Zappi, M., "Treatment of Contaminated Wastestreams Using Bio-based Adsorbents," Presented at the Mississippi Water Environment Association 48th Annual Meeting and Technical Conference, Gulfport, MS.
101. Hernandez, R., Thomas, M., and Kuo, C-H., "Effect of Pitting Corrosion Promoters on the Treatment of 2,4-Dinitrotoluene Contaminated Water Using Integrated Reductive/Oxidative Processes," 2005 DOE/NSF EPSCoR Conference, Morgantown, WV
102. Hernandez, R., Sparks, D., Zappi, M., Fleming, T., and Blackwell, D., "Extraction of Valuable Products from Rice Bran Using Non-traditional Processes," 2005 DOE/NSF EPSCoR Conference, Morgantown, WV.
103. Sparks, D., Hernandez, R., Zappi, M., French, T., and Alley E., "Extraction of Rice Bran Lipids Using Compressed Gases or Supercritical Carbon Dioxide for the Generation of Value Added Chemicals," Presented at the 2005 American Oil Chemist Society Annual Meeting and Exposition, Salt Lake City, Utah (**Darrel Sparks was awarded the 2005 Student Excellent Award by the Processing Division**).
104. Tappi, R. Aufdenkampe, S., and Hernandez, R., "Modeling, Sizing, and Economic Evaluation of an Azelaic Acid Production Facility," 2005 American Society for Engineering Education Southeast Conference, Chattanooga, TN.
105. Tolar, S.D., Zappi, M., Hernandez, R., French, W.T., Subramani, A., Moller, M.G., and Brasher, B., "A Development of a Kenaf-Based Biosorptive Water Treatment Process," American Institute of Chemical Engineers Annual Meeting, Austin, TX, November 2004.
106. Zappi, M., Hernandez, R., Sparks, D.L., Horne, J., French, W.T., Dufreche, S., Brough, M., Arora, S., Motsenbocker, D., "A Review of the Engineering Aspects of the Biodiesel Industry," American Institute of Chemical Engineers Annual Meeting, Austin, TX, November 2004.
107. Sparks, D.L., Hernandez, R., Zappi, M., Jeffreys, T., Fleming, T., Blackwell, D., "Extraction of Rice Bran Lipids Using Compressed Gases or Supercritical Carbon Dioxide for the Generation of Value-Added Chemicals," American Institute of Chemical Engineers Annual Meeting, Austin, TX, November 2004.
108. Hernandez, R., Zappi, M., Kuo, C-H., Roberts, J., "Effect of Pitting Corrosion Promoters on the Treatment of 2,4-Dinitrotoluene Contaminated Water Using and Integrated Reductive/Oxidative Process," American Institute of Chemical Engineers Annual Meeting, Austin, TX, November 2004.
109. Zappi, M., Hernandez, R., Sparks, D.L., Horne, J., French, W.T., Dufreche, S., Brough, M., Arora, S., Motsenbocker, D., "A Review of the Engineering Aspects of the Biodiesel Industry," Mississippi Biomass Conference, Biloxi, MS, March 2004.
110. Taconi, K. A., Hernandez, R., Zappi, M. E., and Kuo, C-H., "Treatment of Vapor-Phase Toluene Within Airstreams Using Irradiated Oxidation Processes," American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, November 2003.
111. Hairston, L., Hernandez, R., Zappi, M., "Effect of Corrosion Enhancing Agents on 2,4,6-Trinitrotoluene Degradation via the Integration of Zero-Valent Metals and Advanced Oxidation Processes," American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, November 2003, **Awarded 3rd Place** in Poster Competition.
112. Ford, J., Zappi, M., Hernandez, R., Kuo, C-H., "Treatment of Industrial Wastewater Contaminated with Cyanide Using Advanced Oxidation Processes," American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, November 2003.
113. Hernandez, R., "Reactor Design Course Experiences Before and After the Chemical Engineering Summer School," American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, November 2003.
114. Hernandez, R., Zappi, M. E., and Kuo, C-H., "Effect of Corrosion Enhancing Agents on 2,4,6-Trinitrotoluene Degradation via the Integration of Zero-Valent Metals and Advanced Oxidation Processes," American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, November 2003.

115. Hernandez, R., and Zappi, M. E., and Kuo, C-H., "Contaminated Water Treatment Using Zero Valent Metals," American Water Works Association, Biloxi, MS, October, 2003 (Invited)
116. Horne, J., Hernandez, R., Zappi, M. E., Orr, M., and Shindala, A., "Evaluation and Optimization of Control Strategies for Management of Disinfection By-Product Precursors Within North East Mississippi Regional Supply District," American Water Works Association, Biloxi, MS, October 2003 (Invited).
117. Levell, H., Hernandez, R., Zappi, M. E., "Use of a Reductive/Oxidative Integrated Technology to Treat 2,4,6-Trinitrotoluene Contaminated Water," Southern States Annual Environmental Conference and Exhibition, Biloxi, MS, Student Paper Competition, **Awarded 3rd Place**, September 2003 (Invited).
118. Hernandez, R., Zappi, M. E., Thomas, D., and Fleming, T., "Oil Extraction and Transesterification Technologies for the Production of Biodiesel," Mississippi Biomass Conference, Jackson, MS, March 2003 (Invited).
119. Thomas, D., Fleming, T., Hernandez, R., Zappi, M., "Biodiesel Development from Feedstocks Available in Mississippi," Mississippi Biomass Conference, Jackson, MS, March 2003 (Invited).

Honors and Awards

- 2010 Hearnin
- 2010 State Pride Award
- 2010 Texas Olefin Professorship
- Selected for 2010 SECAC Academic Leadership Program.
- 2009 ECFC Research Award
- 2005 Ralph E. Powe Junior Faculty Enhancement Award
- 2004 MSU Initiation Grant

Consulting

- World Class University sponsored by the Korean Science Foundation, Review Panel Chair, 2010
- National Science Foundation, Environmental Sustainability, Review Panel , 6/4-5/2008
- National Science Foundation, Environmental Sustainability, Review Panel , 6/4-5/2007
- National Science Foundation, IGERT, Review Panel , 6/19-20/2007
- National Science Foundation Course Curriculum and Laboratory Improvement Program Review Panel, 3/19/2006-3/21/2006
- National Council of Examiners for Engineering and Surveying, FE Standard Setting Study, December 10, 2005
- National Science Foundation CAREER Review Panel, 11/17/2004-11/19/2004

Scientific and Professional Societies

American Institute of Chemical Engineers, American Chemical Society, Sigma Xi, The Scientific Research Society, Association of Environmental Engineering and Science Professors, and American Society for Engineering Education.

TEACHING ACTIVITIES DURING MSU TENURE

Teaching Philosophy

I have implemented innovative teaching techniques to motivate and facilitate the students' learning process. I used teaching objectives based on the Bloom's taxonomy, cooperative learning, one minute quizzes, and open-ended problems. For example, most of my course lectures include group (2 or 3) exercises (3-5 minutes). The in-class problems provide immediate feedback to determine if the course content is being understood and maintained the students involved in the class. In most of my courses, students plan and conduct laboratory experiments as part of a class project. Students become interested about the practical application of the class theoretical concepts. Many of the comments in student evaluations indicate an appreciation of the interactive manner in which class is conducted and the clarity of the objective and class goals.

Additionally, I developed a new course jointly with Dr. Adrienne Minerick that provides structured guidance on writing an NSF research proposal. Course development was guided by personal

communications with David F. Ollis from North Carolina State University and his 1995 article in Chemical Engineering Education on “The Research Proposition.” The enduring premise of this proposal-based qualifying exam is that writing a research proposal is a learning tool that teaches tangible research skills which students do not gain in their traditional graduate coursework. This course was focused on first to second year Ph.D. graduate students in chemical engineering and doubled as the Ph.D. qualifying exam. This semester-long course included incremental milestones for the student and regular feedback from the instructors. The final product of the course was a 15 page NSF style research proposal and a 20-minute oral presentation on the proposal before a faculty committee. As students progress through the course, they are taught and then asked to demonstrate the tools, skills and knowledge to:

- Assimilate information from a comprehensive (yet succinct and thorough) literature review on a given research topic,
- Identify and articulate knowledge missing from the research field,
- Develop a well-defined hypothesis that probes an important and relevant research problem,
- Describe a detailed method of approach (experimental or otherwise) to obtain the missing knowledge,
- Outline data analysis / interpretation as well as the nature and impact of expected results,
- Contextualize the importance of their proposed idea within the larger research field,
- Craft supporting documents such as the Budget, Biosketch, and Facilities and Resources.

In addition to evaluations of each student by a committee of faculty, the students and faculty were asked to complete formative assessment surveys. All surveys, procedures, and tools were approved by Mississippi State University’s Institutional Review Board for the protection of human subjects. The 6 students enrolled in the summer 2009 course were asked to complete pre-course and post-course surveys on their self-measured skills and attitudes. Individual responses were recorded and paired between pre and post surveys; group trends were then compiled. Responses for questions were all cast on a 5 point Likert scale with 5 being the highest rating, 3 as neutral and 1 as the lowest rating. The faculty were asked to assess the student performances and to compare them to prior years where students were required to write a research proposal, but were not given guidance on developing the proposal.

Student Evaluations

CHE 4234 – Plant Design (Fall 2003) – **4.30/5.00**
CHE 8123 – Advanced Reactor Design (Spring 2004) – **4.21/5.00**
CHE 4234 – Plant Design (Fall 2004) – **4.52/5.00**
CHE 8123 - Advanced Reactor Design (Spring 2005) – **4.44/5.00**
CHE 8011 – Graduate Seminar (Spring 2005) – **3.89/5.00**
CHE 4113 – Reactor Design (Fall 2005) – **4.73/5.00**
CHE 4423 – Industrial Corrosion (Spring 2006) – **4.70/5.00**
CHE 2114-Mass and Energy Balance (Spring 2007) – **4.19/5.00**
CHE 4113- Reactor Design (Fall 2007) – **4.56/5.00**
CHE 4113 – Reactor Design (Fall 2008) – **4.3/5.00**
CHE 8113 –Advanced Reactor Design (Spring 2008) – **4.2/5.0**
CHE 8113 – Advanced Reactor Design (Spring 2009) – **4.4/5.0**
CHE 3113 – Thermodynamics I (Fall 2009) – **4.7/5.0**
CHE 3113 - Thermodynamics I (Spring 2010) – **4.2/5.0**

Undergraduate Students Presentations

1. Jeffreys, T., and Thomas, M., April 2004“Plant Design Project: Biodiesel Production Using Acid-Catalyzed Transesterification of Yellow Grease,” Senior Presentation Competition, AIChE Memphis Chapter. **The students won 1st prize.**
2. Hairston, L., Hernandez, R., Zappi, M., “Effect of Corrosion Enhancing Agents on 2,4,6-Trinitrotoluene Degradation via the Integration of Zero-Valent Metals and Advanced Oxidation Processes,” American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, November 2003, **Awarded 3rd Place** in Poster Competition.

3. Levell, H., Hernandez, R., Zappi, M. E., "Use of a Reductive/Oxidative Integrated Technology to Treat 2,4,6-Trinitrotoluene Contaminated Water," Southern States Annual Environmental Conference and Exhibition, Biloxi, MS, Student Paper Competition, **Awarded 3rd Place**, September 2003.
4. Tappi, R. Aufdenkampe, S., and Hernandez, R., May 2005, "Modeling, Sizing, and Economic Evaluation of an Azelaic Acid Production Facility," American Society for Engineering Education Southeast Conference, Chattanooga, TN.

SERVICE ACTIVITIES DURING MSU TENURE

In the last 5 years, I have organized the MSU Biofuels Conferences. The first conference (2006) attracted over 200 people from Mississippi, Louisiana, Alabama, Georgia, Tennessee, and Arkansas who attended the workshop. Attendees considered it a great success. Speakers covered most aspects of biodiesel production: oil feedstock and refining, tax incentives, production technologies, by-product handling, and industrial success stories. The 2nd MSU Biofuels Conference took place on August 27, 2007, in the Bost Extension Building and the Hunter Henry Center at Mississippi State University. The conference included tracks on Biodiesel, Green Diesel, Bio-oil, and Ethanol. There were over 250 people, 50 research posters, and 28 corporate and academic sponsors (web site: Mississippi Biomass Council). In 2008 we built on the success of previous years by organizing a two-day conference. The 3rd MSU Biofuels Conference (see www.biofuelsconference.msstate.edu) took place on August 14-15, 2008 in McCool Auditorium, Mississippi State University.

The main sponsor of the conference over the last two years has been the National Science Foundation. We have moved the conference to Jackson, Mississippi. The MSU Biofuels Conference has become one of the main conferences in the Southeast where participants can learn of energy efforts going on nationally and internationally. Experts from industry and academia discuss their progress on the science and engineering fundamentals for biofuel technologies, including algae biodiesel/renewable diesel, extraction of energy from wastewater treatment operations, and conversion of lignocelluloses into fuels using thermochemical or sugar fermentation platforms. They discuss the challenges with each of these technologies associated with process fundamentals, scale-up, regulatory compliance, negotiations with stakeholders, feedstock logistics, and fuel distribution. Graduate and undergraduate students from numerous disciplines, the future leaders of the renewable energy industry, present research projects in a poster competition. Next year we are planning a multi-university conference to expand dissemination our educational and research and development biofuels efforts to other students and universities in the Southeast.

Technical Sessions Organized at National or State Conferences

<u>Meeting</u>	<u>Dates</u>	<u>Place</u>	<u>Type of Participation</u>
2010 MSU Biofuels Conference	8/6-7/2010	Jackson, MS	Organizer
2010 AOCS	5/15-19/2010	Phoenix, Arizona	Chair of Session and Presentations
2009 AIChE	11/09	Nashville, TN	Chair Session on Green Chemistry
2008 AOCS	5/08	Seattle, WA	Organized Session on Feedstocks for renewable fuels.
2007 AIChE	11/07	Salt Lake City, Utah	Organized Session on Green Chemistry
2006 AIChE	11/06	San Francisco, CA	Chair/Co-Chair 2 Sessions
MSU Biofuels	8/08,09,10	Starkville, MS	Organizer

Conference

MSU Biofuels Conference	8/07	Starkville, MS	Organizer
1st MSU Biodiesel Workshop	8/24/2006	Starkville, MS	Organizer
Southern Bio-Products Conference	March 2006	Philadelphia, MS	Session Chair
2005 ASEE Southeast Conference	4/3-5/05	Chattanooga, TN	Session moderator
2005 AIChE	11/2005	Cincinnati, MS	Chair/Co-Chair 2 Sessions
2004 AIChE	11/2004	Austin, TX	Chair/Co-chair 2 Sessions
2003 AIChE	11/2003	San Francisco, CA	Chair 1 Session
2003 ChemCad Workshop for Faculty and Students	9/2003	Starkville, MS	Organizer

Departmental Committees

- Graduate Coordinator
- Department Head Search Committee

College Committees

- College Tenure and Promotion Committee
- Graduate Council

Technical Reviewer

Bioresource Technology

Journal of Environmental Engineering

Environmental Science and Technology

Polymer International

Chemosphere

US Civilian Research & Development Foundation

Student Activities

- Advisor of the Society of Hispanic Professional Engineers-MSU Chapter.
- Advisor of the Hispanic Student Association. This organization provides motivational, cultural, and professional activities for Hispanic students.
- Organize graduate student recruitment visits to the University of Puerto Rico, Mayaguez, and the Polytechnic University of Puerto Rico.