

Current Research Projects (2014-2016)

1. Project Title: **Demonstration of Water Purification/Treatment/Recycling and Power Generation with Net Metering in a Commercial-Sized University Dairy Operated by the Dairy Industry**
Role: Principal-Investigator (Co-PI: Mark Gillman, Global Restoration, Inc)
Funding Agency: USDA-NRCS-CIG Grant, Washington, DC
Funding Amount: \$783,283 Responsible for \$633,283
Duration: September 29, 2014 – September 30, 2016
2. Project Title: **Determination of Cumulative PM2.5 Emission Factors for Agricultural Operations Using Primary PM2.5 Fraction and CMAC Modeling of Secondary PM2.5**
PI: Dr. Calvin B. Parnell, Jr.
Role: Co-Principal-Investigator Sergio Capareda and Russell McGee
Funding Agency: State Initiative
Funding Amount: [\$61,267/year for 2 years] Responsible for about \$20,000/yr
Duration: September 2015 – Present
3. Project Title: **Development of Small Wind Power Generation Systems for Rural Applications (Robert S. Conley Wind Energy Endowment)**
Role: Principal-Investigator
Funding Agency: Robert S. Conley Wind Energy Endowment
Funding Amount: [\$50,000 Endowment+\$68,907 Interest] Responsible for \$68,907
Duration: September 2005 – Present

Past Research Projects (Energy, Competitive)

1. Project Title: **Optimizing the Logistics of a Mobile Fast Pyrolysis System for Sustainable Bio-Crude Oil Production**
Role: Principal-Investigator (Co-PI: Clyde Munster, Tony Provin, Don Vietor, Marco Palma, Sandun Fernando)
Funding Agency: SUNGRANT Initiatives, North Central Region
Funding Amount: \$890,862 Responsible for (\$306,199+\$306,199=\$612,398)
Duration: July 2009 – December 2012
2. Project Title: **Production of JP-8 (Aviation Fuel) from Lignocellulosic Biomass**
Role: Co-Principal-Investigator (PI: Mark Holtzapple)
Funding Agency: US Department of Defense (DOD)
Funding Amount: \$2,300,916; Responsible for (\$189,221+\$186,498=\$375,719)
Duration: January 2008 – December 2011
3. Project Title: **Development of Skid Mounted Gasification System for Heat and Power Generation**
Role: Principal-Investigator (Co-PI: Dr. Farmer (Texas Tech) and Dr. Theegala (LSU))
Funding Agency: SUNGRANT Initiatives, South Central Region
Funding Amount: \$279,368: Responsible for (\$140,488+\$93,726+\$45,154)
Duration: September 2007 – August 2010
4. Project Title: **Root Cause Analysis of Changes in NOx Emissions Due to Biodiesel**

Combustion in Diesel Engines

Role: Co-Principal Investigator (PI: Dr. Tim Jacobs, ME, TAMU)
Funding Agency: Houston Advanced Research Center (HARC)
Funding Amount: \$600,000: Responsible for \$169,758
Duration: October 2007 – September 2009

5. Project Title: **Demonstration of an Advanced Thermal Gasification and Anaerobic Digestion of Animal Manure to Useful Fuel**

Role: Co-Principal Investigator
Funding Agency: USDA/NRCS/CIG Grant (Co-PI: Dr. Mukhtar and Dr. Engler)
Funding Amount: \$60,000; Responsible for \$17,142
Duration: July 2007 - May 2009

6. Project Title: **Economic Viability of Alternative Bioenergy Feed stocks and Ethanol Production Systems in Texas Under Alternative Policy Provisions.**

Role: Collaborator: PI: Dr. James Richardson
Funding Agency: Texas Agri-Life Research/Texas Legislature
Funding Amount: None to Co-PI
Duration: March 2008 – February 2009

Earmark Research Projects

1. Project Title: **Renewable Energy and Environmental Sustainability Using Biomass from Dairy and Beef Animal Production Facilities.**

Role: Co-Principal Investigator (PI: Dr. Annamalai)
Funding Agency: DOE
Funding Amount: \$3M/yr spread over 5 years: Responsible for \$328,994
Duration: 2005-2010

2. Project Title: **Bioenergy Alliance High-Tonnage Bioenergy Crop Production and Conversion into Conventional Fuels**

Role: Co-Principal Investigator (PI: Dr. Mark Holtzapple)
Funding Agency: USDOE
Funding Amount: \$3,000,000 for 3 years: Responsible for (\$65,251+\$88,567+\$81,243 = \$235,061)
Duration: 1 June 2008-30 May 2011

Air Quality Project, Multi-Institutional/Multi-PI: Competitive

1. Project Title: **Air Quality: Odor, Dust and Gaseous Emissions from Concentrated Animal Feeding Operations in the Southern Great Plains**

Role: Co-Principal Investigator (PI: Dr. John Sweeten)
Funding Agency: USDA-CSREES
Funding Amount: Total:\$2.1M: Responsible for (\$22,106+\$30,806+\$23,123+\$29,900 +\$30,000+\$35,000+\$23,968=\$194,903)
Duration: 2005-2010 and 2013

2. Project Title: **Improvements of PM₁₀ Emission Factors for Almond Harvesting**

Role: Principal Investigator (Co-PI: Dr. Parnell, Jr.)
Funding Agency: Almond Board of California

Funding Amount: \$24,337 (2003); \$28,000 (2004) \$38,365 (2005); \$83,174 (\$40,592, 2006); \$83,861 (\$27,384, 2007); 82,151 (\$41,612, 2008); (05-09 total = \$200,290)
Duration: July 2003 - 2009

Past Research Project (Mixed Sources; Industry, Texas A&M AgriLife Research, etc.)

1. Project Title: **Integrated and Consolidated Processes for Biofuel Using Low Lignin Sorghum Feedstock**
Role: Co-Principal-Investigator (PI: Dr. Joshua Yuan, TAMU)
Funding Agency: Texas A&M AgriLife Research Seed Grant
Funding Amount: \$200,000 Responsible for \$20,000
Duration: September 2013 – August 30, 2015
2. Project Title: **Gasification of Dairy Manure for Power Generation**
Role: Principal-Investigator
Funding Agency: Texas A&M AgriLife Research Seed Grant
Funding Amount: \$100,000
Duration: September 2013 – August 30, 2014
3. Project Title: **Pyrolysis of Biosolids (Wastewater Sludge)**
Role: Principal Investigator
Funding Agency: Arriba Energy, Houston, Texas
Funding Amount: \$5,000
Duration: 2013-2014
4. Project Title: **Development of Refinery-Grade Biooil with Consistent Properties Using Blended Feedstocks**
Role: Principal-Investigator
Co-PIs: Drs. Sandun Fernando, Clyde Munster, Tony Provin, and Marco Palma
Funding Agency: Texas Agri-Life Research Bio-energy Initiatives Program
Funding Amount: \$200,000 Responsible for (\$85,000+85,000)
Duration: September 2011 – August 2013
5. Project Title: **Gasification of Municipal Solid Wastes (MSW) Demonstration**
Role: Principal Investigator
Funding Agency: SDL Citadel Global, LLC, Dallas, Texas
Funding Amount: \$6,000
Duration: 2012 – 2013
6. Project Title: **National Alliance for Advanced Biofuels and Bio-Products (NAABBP)**
Role: Co-Principal-Investigator (PI: Dr. Jose Olivares)
Funding Agency: USDOE
Funding Amount: \$44 Million: Responsible for \$148,988
Duration: January 2010 – December 2012
7. Project Title: **Fluidized Bed Gasification of Urban Waste (Municipal Solid Wastes, MSW) for Electrical Power Production**
Role: Principal-Investigator

- Funding Agency: SDL Citadel Global, LLC, Dallas, Texas
Funding Amount: \$318,597 Responsible for (\$318,597)
Duration: September 2011 – August 2012
8. Project Title: **Enhancing the Quality of Marketable Products from Mobile Fast Pyrolysis of Ligno-Cellulosic Biomass**
Role: Principal-Investigator (Co-PIs: Dr. Munster, Dr. Fernando)
Funding Agency: Texas A&M AgriLife Research Bioenergy Initiatives Program
Funding Amount: \$100,000 (2009-2010); \$100,000 (2010-2011) Responsible for \$43,000 YR1 + \$45,000 YR2
Duration: September 2009 – August 30, 2011
9. Project Title: **Development of Switchgrass and Rice Cultivars for Bio-energy Feedstock**
Role: Co-Principal-Investigator
PI: Dr. Rodante E. Tabien
Funding Agency: Texas Agri-Life Research Bio-energy Initiatives Program
Funding Amount: \$198,119 Responsible for (\$14,000)
Duration: September 2009 – August 2011
10. Project Title: **Benefits of Onsite Energy Production (from Cotton Gin Trash)**
Role: Co-Principal-Investigator (PI: Calvin B. Parnell, Jr.)
Funding Agency: Cotton Incorporated
Funding Amount: \$50,000 Responsible for (\$30,000)
Duration: September 2010 – August 2011
11. Project Title: **Upgrade of BETA Lab Online Gas Analyzers**
Role: Principal Investigator
Funding Agency: Permanent University Funds (PUF-COALS)
Funding Amount: \$12,500
Duration: Sept 2008 – August 2010
12. Project Title: **Development of Mobile Fast Pyrolysis Technology**
Role: Principal Investigator
Funding Agency: Permanent University Funds (PUF-COALS)
Funding Amount: \$70,000
Duration: Sept 2009 – August 2010
13. Project Title: **Upgrade of Beta Lab Ethanol Fermentation System**
Role: Principal Investigator
Funding Agency: Permanent University Funds (PUF-COALS)
Funding Amount: \$25,000
Duration: Sept 2008 – August 2009
14. Project Title: **Gasification of Rice Straw**
Role: Principal Investigator
Funding Agency: Chevron, CA
Funding Amount: \$38,700
Duration: 2009-2010

15. Project Title: **Upgrade of BAEN Dynamometer Lab**
Role: Principal Investigator
Funding Agency: Permanent University Funds (PUF-COALS)
Funding Amount: \$15,000
Duration: Sept 2007 – August 2008
16. Project Title: **Gasification of Cotton Gin Trash for Heat and Power Generation**
Role: Principal Investigator
Funding Agency: Cotton Foundation
Funding Amount: \$15,000; 15,000; 11,250
Duration: Sept 2005 – August 2008
17. Project Title: **Manufacture of Biodiesel and Biodiesel Blends from Cottonseed Oil and Evaluation of Exhaust Emissions and Improving Cold Flow Properties**
Role: Co-Principal Investigator; PI: Dr. Muhammad S. Alam (FPRDC)
Funding Cost: \$11,690 Responsible for (\$8,240)
Funding Agency: Texas Department of Agriculture
Duration: September 2006- August 2007
18. Project Title: **Upgrade of Waters High Performance Liquid Chromatography (HPLC)**
Role: Principal Investigator
Funding Agency: Permanent University Funds (PUF-COALS)
Funding Amount: \$6,000
Duration: Sept 2006 – August 2007
19. Project Title: **Gasification of Wood Chips**
Role: Principal Investigator
Funding Agency: Mississippi State University c/o Dr. Lester Pordesimo
Funding Amount: \$2,000
Duration: 2008-009
20. Project Title: **Oil Seed Press for Biodiesel Project**
Role: Principal Investigator
Funding Agency: Bruce Roth
Funding Amount: \$2,000
Duration: 2007 –2008
21. Project Title: **Gasification of Chicken Manure**
Role: Principal Investigator
Funding Agency: American Heat and Power, LLC c/o Dr. Dareen Habetz
Funding Amount: \$5,000
Duration: 2007 – 2008
22. Project Title: **Development of an Innovative Protocol to Determine Reactive Organic Gases (ROG) in Animal Farms**
Role: Principal-Investigator
Funding Agency: Texas Cattle Feeders Association (TCFA)
Funding Cost: \$16,000
Duration: October 2004 - December 2005

Teaching Related Projects

1. Project Title: **Preparing Underrepresented Scholars for Challenges in Bioenergy Systems Engineering and Sustainability – A Research and Leadership PhD Program**
Role: Principal-Investigator
Co-PIs: Drs. Clyde Munster, Sandun Fernando, Don Vietor, Tony Provin and Manuel Pina
Funding Agency: USDA, Washington, DC
Funding Amount: \$234,000+\$58,500
Duration: September 2012 – August 2013

2. Project Title: **Sloan Fellowship for Underrepresented Minorities**
Role: Mentor and Co-PI
Co-PIs: Dr. Clyde Munster, Dr. Patricia Smith
Funding Agency: Sloan Foundation, New York
Funding Amount: \$34,000/student x 3 students
Duration: September 2012 – August 2013