

Prashanth R. Buchireddy

CONTACT INFORMATION

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EDUCATION

Ph.D. in Chemical Engineering, May 2014

Mississippi State University, Starkville, MS.

Dissertation: Steam Reforming of Biomass Gasification Tars using Nickel supported Zeolites and Clays

Advisor: Dr. Mark Bricka

M.S. in Chemical Engineering, August 2004

Mississippi State University, Starkville, MS.

Thesis: Investigation into the effect of various metals' ionic charge and size on their mobility under the influence of electrokinetics.

Advisor: Dr. Mark Bricka

B.S. in Chemical Engineering, August 1998

Siddaganga Institute of Technology, Bangalore University, Tumkur, India

WORK/RESEARCH EXPERIENCE

Assistant Professor,

BORSF Bioprocessing Professorship II,

Department of Chemical Engineering,

University of Louisiana at Lafayette, August 2016 – Current

Director, Cleco Alternative Energy Center, Energy Institute,

University of Louisiana at Lafayette, June 2013 – December 2016

Research Scientist, University of Louisiana at Lafayette, October 2009 – July 2016

- One of the key/instrumental members in establishing Cleco Alternative Energy Center, Crowley, LA. Coordinated with architecture, construction, electrical, engineering, fabrication firms leading to successful deployment of Cleco Alternative Energy Center. Designed/supervised construction, instrumentation procurement and set-up of state of the art analytical laboratory at Cleco Alternative Energy Center. Played a key role in evaluation/selection of several key components of the 3 ton/day pilot scale gasification system including heat exchangers, particulate filters, syngas generator, material handling system, valves, etc. Also, worked very closely with EDG Consulting (Engineering Consulting) during design of the gasification system and in procuring quotes, vendor selection, all the way through system installation. Also, responsible for successful installation and commissioning of 3 ton/day bubbling fluidized bed gasification system in 2013. Responsible for managing over \$5 M funding towards implementation of several R&D projects
- Key member in technology evaluation, selection, procurement, installation, and successful operation of pilot scale indirectly heated rotary torrefaction system at the Cleco Alternative Energy Center.
- Responsible for overall management of the facility including day to day activities including facility maintenance, process operation, supervising staff/students, organizing/demonstrating tours from day one of the Cleco Alternative Energy Center's inception.
- Initiated and established research collaborations with several industries, research centers, and universities including NFR Bioenergy, CT., Teal Seals, Inc., CerX Filters, LLC., Mississippi State University, and Mines Albi and procured several research grants. Also, established research collaboration with SunDrop Fuels, Inc., The Earth Partners, LLC., R3Sciences, LLC., Advanced Applied Research, LLC., EnviroAir, Inc., NorthStar, LLC., Louisiana Biofuel Resources, LLC., and USDA Forest Service Southern Research Station.
- Procured several grants totaling more than \$2.5 M in capacity as both PI and Co-PI on research relating to thermochemical conversion of biomass to energy.

- Evaluated a wide variety of biomass/waste feedstock to produce bio-coal/green-coal/energy pellets using thermal pretreatment process, torrefaction technology. Feedstocks include pine, willow, arundo, pecan shells, bagasse, corn-cobs, switch grass, etc. on bench scale.
- Evaluated the performance of 3 ton/day bubbling fluidized bed gasification system for power production using several feedstock's including pine, banding board chips, OSB using air as an oxidizing medium.
- Investigated bimetallic clay catalysts for hot gas cleanup of biomass syngas produced during biomass gasification (Catalytic steam reforming of tars).
- Evaluated the performance of pilot scale indirectly heated rotary torrefaction reactor using pine as feedstock and the effect of process conditions on the properties of torrefied pine. Currently, evaluating hard wood and energy crop as feedstock.
- Investigated the influence of processing medium including nitrogen, carbon dioxide, flue gases, syngas on bagasse torrefaction process and its properties.
- Investigating the energy contained in volatiles and gases generated during torrefaction process and utilization of these off-gases to supplement fuel for torrefaction process.
- Evaluating the efficiency of combustion of volatiles and gases and effective utilization of this energy to supplement torrefaction process on pilot scale reactor system. A burner system was designed and fabricated to accomplish the above mentioned objectives.
- Investigating the heat of pyrolysis of bagasse to support design of TSI's commercial scale torrefaction reactor.
- Evaluating the performance of 3 ton/day bubbling fluidized bed gasification system for syngas quality and quantity using oxygen/steam as oxidizing medium.

Graduate Research Assistant, Mississippi State University, August 2001- August 2009

- Designed and fabricated a flow reactor for the generation and destruction of tar components
- Evaluated different zeolites and clays as catalysts for removal of tars from biomass synthetic gas and identified a relatively cost effective means for cleanup of syngas
- Investigated the effect of zeolite acidity and pore size on tar removal, and evaluated the effect of nickel supported zeolites as tar removal catalysts
- Investigated the use of various transition metal zeolites as tar removal catalysts
- Evaluated the use of montmorillonite, bentonite, and nickel supported clays as tar removal catalyst
- Investigated the effect of syngas composition on catalytic tar removal
- Conducted catalyst characterization studies using, XRD, XPS, TGA, BET, TPR, FTIR, ICP-OES, and SEM
- Developed, fabricated, and successfully installed a tar sampling system in accordance with the Guideline for sampling and analysis of tars and particulates in biomass producer gases, Energy project ERK6-CT1999-20002
- Investigated the effects of gasifier (CPC Biomax Gasification Unit) operating conditions to increase the composition of carbonmonoxide and hydrogen in syngas
- Evaluated the effect of different feedstocks on the tar production (Qualitative and Quantitative Analysis), and syngas quality
- Investigated the feasibility of using electrokinetic technology to remediate Copper, Chromium, and Arsenic contaminated soils
- Designed and fabricated an electrokinetic soil remediation system, with a provision for online soil solution sampling and voltage measurement.
- Evaluated the effect of charge and size on ionic movement under the influence of an electric field in sandy soil

Process Engineer, Fusion Chemicals, Hyderabad, India, May 1999- May 2000

- Monitored process unit operations for the production of Sodium and Potassium Silicate
- Assisted in the development and implementation of an improved processes for optimal production of electronic grade Sodium and Potassium Silicate

Project Trainee, Dr.Reddys Laboratories, Hyderabad, India, February 1998- May 1998

- Involved in the design of reactor vessels, heat exchangers and centrifugal pumps for unit process and operations in pharmaceutical industry.
- Executed computer simulations using HYSYS software

EXTERNAL GRANTS (FUNDED)

CAPACITY – Principal Investigator (University of Louisiana at Lafayette)

- Project Title: "Assessment of Torrefaction Technologies"
Co-Investigators: John L. Guillory and Mark E. Zappi
Project Performance Period: 09/2010 – 12/2011

Award Amount: \$20,000
Project Sponsor: Cleco Power, LLC.

- Project Title: "The Development and Evaluation of a Cost Effective Catalyst for the Treatment of Syngas Tars Produced from a Woody Biomass"
Investigators: Mark Bricka (PI - Mississippi State University)
Project Performance Period: 07/2011 – 06/2013
Award Amount: \$180,969
University of Louisiana Sub-award: \$43,000
Project Sponsor: Southeast Sungrant Program, US DOT. Collaboration with Mississippi State University
- Project Title: "Pilot Scale Investigation of Biomass Torrefaction Technology Using an Indirectly Heated Reactor"
Co-Investigators: John L. Guillory and Mark E. Zappi
Project Performance Period: 06/2012 – 06/2016
Award Amount: \$396,269 (BoR - \$227,499, UL Lafayette - \$51,490, Industry - \$117,280)
Project Sponsor: LA BoR, Industrial Ties Research Subprogram, Contract No.- LEQSF(2012-15)-RD-B-07
- Project Title: "Biomass Gasification: Development and Evaluation of a Cost Effective Bimetallic Clay Catalyst for Woody Biomass Syngas Tar Destruction"
Investigators: Mark Bricka (PI - Mississippi State University)
Project Performance Period: 10/2013 – 06/2015
Award Amount: \$130,000
University of Louisiana Sub-award: \$44,000
Project Sponsor: Southeast Sungrant Program, USDA, Collaboration with Mississippi State University
- Project Title: "Design and Installation of Tar Reforming Module on 3 ton/day Biomass Gasification System"
Co-Investigators: John L. Guillory and Mark E. Zappi
Project Performance Period: 09/2014 – 08/2018
Award Amount: \$63,600
Project Sponsor: Cleco Power, LLC.
- Project Title: "Influence of Torrefaction on Fuel Properties of Bagasse"
Co-Investigators: John L. Guillory and Mark E. Zappi
Project Performance Period: 04/2014 – 03/2015
Award Amount: \$49,872
Project Sponsor: NFR Bioenergy, LLC., NY
- Project Title: "Evaluation of the energy content in volatiles and gases liberated during bagasse torrefaction"
Co-Investigators: John L. Guillory and Mark E. Zappi
Project Performance Period: 05/2015 – 12/2015
Award Amount: \$8,000
Project Sponsor: Teal Seals, Inc., WA.
- Project Title: "Evaluation of heat of pyrolysis during torrefaction of bagasse"
Co-Investigators: John L. Guillory, William Holmes, and Mark E. Zappi
Project Performance Period: 10/2015 – 03/2016
Award Amount: \$15,000
Project Sponsor: Teal Seals, Inc., WA.
- Project Title: "Pilot scale evaluation of torrefaction operating process parameters on fuel properties of bagasse"
Co-Investigators: John L. Guillory, William Holmes, and Mark E. Zappi
Project Performance Period: 06/2016 – 12/2018
Award Amount: \$42,883
Project Sponsor: American Biocarbon, CT LLC., LA.
- Project Title: "Evaluation of process operational parameters on production of densified bio-coal from bagasse, using pilot and demonstration scale torrefaction systems"

Co-Investigators: John L. Guillory, William Holmes, and Mark E. Zappi
Project Performance Period: 07/2017 – 01/2019
Award Amount: \$234,614
Project Sponsor: American Biocarbon, CT LLC., LA.

- Project Title: "Evaluation of switch grass filter socks to mitigate pollution resulting from highway storm water and construction runoff"
Co-Investigators: Daniel Gang and Mark E. Zappi
Project Performance Period: 07/2018 – 06/2019
Award Amount: \$29,908
Project Sponsor: Louisiana Transportation Research Center (LTRC), TIRE Subprogram.
- Project Title: "Inclusion of Gas-Gas and Liquid-Liquid Separation Systems to Unit Operations Laboratory"
Co-Investigators: Emmanuel Revelamme and Dhan Fortela
Project Performance Period: 11/2019 – 06/2024
Award Amount: \$37,617
Grant Type: Enhancement
Project Sponsor: STEP Grant, University of Louisiana at Lafayette

CAPACITY – Co-Principal Investigator (Percentage Effort -25 to 50 %)

- Project Title: "Commercialization of NorthStar-Cleco Gasifier"
Investigators: John L. Guillory, Prashanth Buchireddy, and Mark E. Zappi
Project Performance Period: 01/2010 – 12/2012
Award Amount: \$753,540
Project Sponsor: Cleco Power, LLC.
- Project Title: "Cleco Gasifier Monitoring Set-Up and Start-Up"
Investigators: Mark E. Zappi, Prashanth Buchireddy, and John L. Guillory
Project Performance Period: 10/2011 – 01/2012
Award Amount: \$271,294
Project Sponsor: Cleco Power, LLC.
- Project Title: "Thermochemical Conversion of Biomass to Energy via Pilot Scale Bubbling Fluidized Bed Gasification"
Investigators: Mark E. Zappi, Prashanth Buchireddy, and John L. Guillory
Project Performance Period: 01/2013 – 12/2018
Award Amount: \$1,639,836
Project Sponsor: Cleco Power, LLC.
- Project Title: "Northstar Biomass Gasification System"
Role: Contributed to the proposal technical component (Proposal was submitted by Cleco Power, LLC.)
Project Performance Period: 06/2010 – 05/2012
Award Amount: \$1,000,000
Project Sponsor: Louisiana Department of Natural Resources, EmPower Louisiana-Renewable Energy Grant Program.
- Project Title: "Acquisition of FTIR Microscope for Advancement in Chemical Materials, and Biological Science Research and Education"
Investigators: Dilip Depan, Prashanth Buchireddy, Rafael Hernandez, et al.
Project Performance Period: 06/2020 – 06/2021
Award Amount: \$85,303
Grant Type: Enhancement
Project Sponsor: Louisiana Board of Regents, Contract No.- LEQSF(2020-21)-ENH-DE-20

EXTERNAL GRANTS (SUBMITTED)

- Project Title: "Pyrolysis of lipid extracted microalgae for the production of value added bio-oil"
Role: Project Leader; CO-PI; PI: Mark Zappi, et al.
Proposal Submitted: 2011
Requested Funds: \$150,000 for this component of the project
Project Duration: 48 months
Submitted Agency: Department of Energy-EPSCOR
- Project Title: "Evaluation of indirectly heated pilot scale reactor for biomass torrefaction"
Role: Co-PI; PI: John L. Guillory.
Proposal Submitted: 2011
Requested Funds: \$50,000
Project Duration: 24 months
Submitted Agency: Louisiana Board of Regents, OPT-IN Program
- Project Title: "IGRERT: An Interdisciplinary Educational Strategy for Production of Valuable Fuels and Chemicals from Renewable Resources – A Molecules to Market Approach"
Role: Project Leader; PI: Rakesh Bajpai, et al.
Proposal Submitted: 2012
Requested Funds: \$3,497,267
Project Duration: 60 months
Submitted Agency: NSF Integrative Graduate Education and Research Traineeship Program [NSF 11-533]
- Project Title: "Microbial Lipids from Industrial Wastes and Agricultural Residues"
My Component: "Pyrolysis of cake and lignin for production of value added bio-oil"
Role: Project Leader; PI: Rakesh Bajpai, et al.
Proposal Submitted: 2014
Requested Funds: \$3,800,000 (\$252,908 for this component of project)
Project Duration: 60 months
Submitted Agency: Department of Energy-EPSCOR
- Project Title: "Developing Energy Independent Water, Carbon, and Nutrients Regional Reclamation Centers Within Urban Areas"
My Component: "Biomass Carbon Reclamation: Thermochemical conversion of selected grasses"
Role: Co-PI; PI: Rafael Hernandez, et al.
Proposal Submitted: 2015
Requested Funds: \$5,999,969 (\$315,202 for this component of project)
Project Duration: 60 months
Submitted Agency: Department of Energy-EPSCOR [NSF 15-517]
- Project Title: "Developing Energy Independent Water, Carbon, and Nutrients Regional Reclamation Centers Within Urban Areas"
My Component: "Biomass Carbon Reclamation: Thermochemical conversion solid materials – crops and wood waste"
Role: Co-PI; PI: Rafael Hernandez, et al.
Proposal Submitted: 2016
Requested Funds: \$5,999,969 (\$325,000 for this component of project)
Project Duration: 48 months
Submitted Agency: Department of Energy-EPSCOR [NSF 16-511]
- Project Title: "Catalyzing torrefaction process by effective utilization of urban waste streams"
Role: PI
Proposal Submitted: 2016
Requested Funds: \$200,000
Project Duration: 36 months
Submitted Agency: Louisiana Board of Regents, Research Competitiveness Subprogram (RCS)

- Project Title: "Development of cyclone catalytic filter assembly for hot gas removal of tars and particulates"
Role: PI
 Proposal Submitted: 2016
 Requested Funds: \$50,000
 Project Duration: 12 months
 Submitted Agency: Louisiana Board of Regents, Proof of Concept/Prototype Initiative (PoC/P)
- Project Title: "Catalyst-Facilitated Gasification of Municipal Solid Waste to Syngas and Post-Gasification Clean-up"
Role: Co-PI (Lead from University of Louisiana at Lafayette), PI: Pradeep Agrawal, Michigan Technological University
 Proposal Submitted: 2018
 Requested Funds: \$1,306,655 (433,738)
 Project Duration: 36 months
 Submitted Agency: Department of Energy (DE-FOA-0001926: Process Development for Advanced Biofuels and Biopower)
- Project Title: "Enhancing Chemical Engineering Laboratory: Graduate students with exceptional quality ready to transition to work environment"
Role: PI
 Proposal Submitted: 2018
 Requested Funds: \$722,556
 Project Duration: 60 months
- Project Title: "Biorefinery System for Urban/Suburban Waste Conversion into Energy and Value-Added Co-Products: An Alliance of US Universities Interfacing with Canadian and Mexican Universities to Develop Cost-Effective Design Options While Providing an Educational Pipeline for Future Green Energy Professionals"
Role: Co-PI, PI – Mark Zappi, University of Louisiana at Lafayette
 Proposal Submitted: 2019
 Requested Funds: \$10 Million
 Project Duration: 60 months
 Submitted Agency: Department of Energy-BETO-AOI NO.6
- Project Title: "Advanced Carbon Composites from Hard to Recycle Polymer Wastes"
Role: Co-PI (Lead from University of Louisiana at Lafayette), PI – Manuel Garcia-Perez, Washington State University
 Proposal Submitted: 2020
 Requested Funds: \$10 Million
 Project Duration: 60 months
 Submitted Agency: Department of Energy (FOA# DE-FOA-0002203)

TEACHING EXPERIENCE

- Unit operations laboratory in Chemical Engineering (CHEE 403 and CHEE 404) for senior class in 2016, 2017, 2018, 2019, and 2020. Introduced several new experiments, procured grant to upgrade laboratory with new experimental units (membrane separation and liquid-liquid separation) and made major changes to the laboratory implementation structure/format.
- Renewable Energy (CHEE 440G), Fall 2019 and 2020.
- Engineering Thermodynamics (ENGR 301), Fall 2017.
- Co-taught Thermodynamics (ENGR 301), at University of Louisiana at Lafayette with Dr. Terry Chambers during summer 2011.
- Guided and assisted undergraduate students in developing business/marketing models on torrefaction and gasification technologies for a project in marketing class offered by Dr. Geoffrey Stewart during fall 2011.
- Invited lectures in Environmental Technology (ITEC 415) class taught by Dr. G. H. Massiha during summer 2013, 2014, and 2015.
- Invited lectures in an alternative energy program class during 2014/2015 (Alternative energy program at the South Louisiana Community College, Crowley campus, Program Director: Dr. Barbara Benson). Also, demonstrated operation of pilot scale gasification and torrefaction systems.

- Graded homework, quizzes and tests for undergraduate courses Mass Transfer Operations, Process Control, and Process Design at Mississippi State University. Substitute teacher in the above mentioned courses.

STUDENTS SUPERVISED/MENTORED/ADVISED

- High School Students (2) - Christina K., Megan Castille
- Undergraduate Students (31) - Adam Sellers, Philip Aucoin, Ethan Wymble, Robert Bentley, Harshavardhan Sattineni, Neha Kammula, Jacob Chu, Kelly Guiberteau, Molly Ducas, Jake Seiber, Ryan Gary, Nicholas Sykes, Lawrance Manuel, Timothy Boudreaux, Dominique Lorentz, Michael Michot, John Pippins III, Dylan Williams, Derek Richard, Derrick Jenkins, Joshua Fontenot, Joshua Worley, Adhwa Al Uraimi, Kha Pham, John Paul Burgeron, Joshua Broussard, Paul Robicheaux, Charles LaFleur, Timmy Duhon, Joshua Broussard, Hailey Mohamed, Jordan Richard and Payne Touchet.

Graduate Students [Capacity: Advisor]:

- 1) Joseph Vutukuri, Graduated Fall 2014 with MS in Chemical Engineering, Currently employed at NFR Bioenergy, CT.
- 2) Puneeth Ayireddy, MS – Mechanical Engineering, Graduated Fall 2016, Project Title: “Effect of Torrefaction Operational Parameters on the Fuel Properties of Bagasse”.
- 3) Prithvi Morampudi, MS – Chemical Engineering, Project Title: “Evaluation of Biocoal production using an indirectly heated rotary pilot scale (0.25 tons/day) reactor”, Expected Graduation – Spring 2019
- 4) Ndeloa Asonganyi, MS – Chemical Engineering, Project Title: “Evaluation and performance of 3 ton/day pilot scale bubbling fluidized bed gasification system using pine as feed”, Expected Graduation – Summer 2021
- 5) Timothy Boudreaux, MS – Chemical Engineering, Project Title: “Evaluation of sewage sludge as a potential substitute for coal”, Expected Graduation – Summer 2021
- 6) Devin Peck, Ph.D. – Systems Engineering, Project Title: “Development and evaluation of novel Ni-supported ceramic filter for the removal of both tars and particulates from biomass gasification synthesis gas”, Expected Graduation – Summer 2022
- 7) Joseph Vutukuri, Ph.D. –Systems Engineering, Project Title: “Evaluation of the catalytic effect of ash on torrefaction process”, Expected Graduation – Spring 2023
- 8) Suchandra Hazra, MS – Chemical Engineering, Project Title – Technoeconomic Analysis: Production of biocoal from bagasse”, Expected Graduation – Fall 2022

Graduate Students [Capacity: Committee Member]:

- 1) Siddhardha Gurram, Chemical Engineering (M.S.) - Graduated
- 2) Zaki Uddin Ahmad, Civil Engineering (MS) - Graduated
- 3) Oladapo S Akinyemi, Mechanical Engineering (Ph.D.) - Graduated
- 4) Qiyu Lian, Civil Engineering (M.S.) - Graduated
- 5) Myriam C. Dorcena, Industrial Technology (M.S.) - Graduated
- 6) Tuan Le, Chemical Engineering (Ph.D.) - Graduated
- 7) Sheila Holmes, Industrial Technology (M.S.) - Graduated
- 8) Melanie Sanders, Chemical Engineering (Ph.D.) - Ongoing
- 9) Ashley Mikolajczyk, Chemical Engineering (Ph.D.) - Ongoing
- 10) Lingyiqian Luo, Chemical Engineering (Ph.D.) - Ongoing
- 11) Xiaobo Lei, Civil Engineering (Ph.D.) - Ongoing

REFEREED PUBLICATIONS

- P. R. Buchireddy, R. M. Bricka, and D. B. Gent, “*Electrokinetic remediation of wood preservative contaminated soil containing copper, chromium, and arsenic*”, Journal of Hazardous Materials, 2009, 162(1): 490-497.
- P. Yang, E. P. Columbus, J. Wooten, W. D. Batchelor, P. R. Buchireddy, X. Ye, L. Wei, “*Evaluation of Syngas Storage under Different Pressures and Temperatures*”, Applied Engineering in Agriculture, 2009, 25(1): 121-128.

- P. R. Buchireddy, R. M. Bricka, J. Rodriguez, and W. Holmes, “*Biomass Gasification: Catalytic Removal of Tars over Zeolites and Nickel Supported Zeolites*”, Energy and Fuels, 2010, 24(4): 2707-2715.
- J. L. Guillory, P. R. Buchireddy, S. O. Barskov, and M. E. Zappi, “*A Simplified Process Engineering Model for Evaluation of Biomass Gasification Performance via Mass/Energy Balances as Modeled Using a Spreadsheet Platform*” Journal of Bioprocessing and Biotechniques, 2015, 5(11): 1-5.
- O. S. Akinyemi, L. Jiang, S. O. Barskov, P. R. Buchireddy, J. L. Guillory, and W. Holmes, “Energy recovery through combustion of volatiles for a torrefaction system fed by pine wood chips”, Spring Technical Meeting, Central States Section of the Combustion Institute, May 2016, Knoxville, TN.
- O. S. Akinyemi, L. Jiang, P. R. Buchireddy, S. O. Barskov, J. L. Guillory, and W. Homes, “Investigation of Effect of Biomass Torrefaction Temperature on Volatile Energy Recovery Through Combustion”, Journal of Energy Resources Technology, 2018, 140(11): 11203-11214.
- Z. U., Ahmed, Q. Lian., M. E. Zappi, P. R. Buchireddy, and D. D. Gang, “, Adsorptive removal of resorcinol on a novel ordered mesoporous carbon (OMC) employing COK-19 silica scaffold: Kinetics and equilibrium study”, Journal of Environmental Sciences, 2019, 75: 307-317.
- Z. U., Ahmed, Q. Lian., P. R. Buchireddy, M. E. Zappi, and D. D. Gang, “*Adsorptive Removal of Resorcinol onto Surface Modified Ordered Mesoporous Carbon (OMC): Kinetics and Equilibrium Study*”, Environmental Progress and Sustainable Energy, 2019, 38(S1): S386-S397.
- S. O. Barskov, P. R. Buchireddy, D. D. Gang, R. Hernandez, R. Bajpai, J. L. Guillory, and M. E. Zappi, “Torrefaction of Biomass: A review of production methods for biocoal from cultured and lignocellulosic feedstocks”, Renewable Energy, 2019, 142(c), 624-642.
- P.R. Buchireddy and M. E. Zappi, “Farm Waste to Energy, Part 2: Torrefaction of lignocellulosic agricultural waste into biocoal”, Book Chapter, Book Title: Renewable Energy Book Series (Book 2), Editor-in-chief – K.R. Rao, ASME Publication, In Press
- P. R. Buchireddy, D. Peck, and R. Mark Bricka, “*Catalytic removal of tars from biomass syngas using Nickel supported Clay Catalyst*”, Under Revision, Energies

TECHNICAL PRESENTATIONS

- “Oxygen enriched air gasification of pine using a 3 ton/day bubbling fluidized bed gasification system” Devin Peck, Prashanth R. Buchireddy, John L. Guillory, and Mark E. Zappi, IEEE Green Technologies Conference, April 2019, Lafayette, LA.
- “Evaluation of a novel Nickel-Ceramic filter for hot gas removal of tars and particulates from biomass syngas”, John L. Guillory, Prashanth R. Buchireddy, Stephen Dufreche, and Mark E. Zappi, IEEE Green Technologies Conference, April 2019, Lafayette, LA.
- “Torrefaction of biomass and non-lignocellulosic waste to produce biocoal”, Prashanth R. Buchireddy, John L. Guillory, and Mark E. Zappi, IEEE Green Technologies Conference, April 2019, Lafayette, LA.
- “*Biomass Conversion Technologies*”, Prashanth R. Buchireddy, Biopower Opportunities and Challenges in Mississippi Work Session, Mississippi Public Service Commission, August 2018, Jackson, MS. (Invited Talk)
- “*Production of Solid Fuels from Carbonaceous Waste and Lignocellulosic Feedstock Using a Pilot Scale Torrefaction System*”, J. Leblanc, Prashanth R. Buchireddy, John L. Guillory, and Mark E. Zappi, North American Waste-To-Energy Conference, May 2018, Lancaster, PA.
- Prashanth R. Buchireddy, “*Torrefaction: A near-term promising technology to produce energy dense bio-coal from lignocellulosic and carbonaceous waste materials using pilot scale rotary reactor*”, LAGCOE, October 2017, Lafayette, LA.
- Odalapo S. Akinyemi, Lulin Jiang, , Prashanth Buchireddy, Stanislav Barskov , John Guillory, and William Homes, “*Investigation of Torrefaction Pretreatment Temperature of Biomass on Volatile Composition and Energy Recovery*”, ASME 2017 Turbomachinery Technical Conference and Exposition, June 2017, Charlotte, NC.
- “*Energy Recovery through Combustion of Volatiles for a Torrefaction System Fed by Pine Wood Chips*”, Odalao S. Akinyemi, Lulin Jiang, Stanislav Barskov, Prashanth R. Buchireddy, John L. Guillory, William Holmes, Central States Section of the Combustion Institute Spring Technical Meeting, May 2016, Knoxville, TN.
- “*Experimental Results from Gasification of Pine*”, Md Waliul Islam, Prashanth R. Buchireddy, John L. Guillory, and Mark E. Zappi, AIChE Annual Meeting, November 2015, Salt Lake City, UT.
- “*Green coal production from biomass*”, Stanislav Barskov, Prashanth R. Buchireddy, John L. Guillory, and Mark E. Zappi, AIChE Annual Meeting, November 2015, Salt Lake City, UT.

- *"Production of Energy from Biomass Using a Novel Thermal Processes"*, Prashanth R. Buchireddy, John L. Guillory, and Mark E. Zappi, Southeast Symposium on Contemporary Engineering Topics, September 2015, New Orleans, LA.
- *"Thermochemical Conversion Options for Waste Wood"*, John L. Guillory, Prashanth R. Buchireddy, and Mark E. Zappi., Vertech Symposium, November 2014, Victoriaville, Quebec, Canada.
- *"Biomass Gasification: Effect of Sulfur Compounds On Catalytic Tar Removal Activity Using Nickel-Clay Catalysts"*, Joseph Vutukuri, Prashanth R. Buchireddy, John L. Guillory, and Mark E. Zappi, AIChE Annual Meeting, November 2013, San Francisco, CA.
- *"Optimization of a 3ton/Day Biomass Fed Bubbling Fluidized Bed Gasification System"*, Prashanth R. Buchireddy, John L. Guillory, Mark E. Zappi, and Joseph Vutukuri, AIChE Annual Meeting, November 2013, San Francisco, CA.
- *"Torrefied Biomass: Superior Fuel for Co-Firing in Pulverized Coal Fired Power Generation Facilities"*, Prashanth R. Buchireddy, John L. Guillory, and Mark E. Zappi, AIChE Annual Meeting, November 2013, San Francisco, CA.
- *"Recovery of Phenolic Compounds From Pyrolysis Wastewater By Adsorption to Kenaf: Comparison of Different Kenaf Pre-Treatments"*, William Holmes, Emmanuel Revalement, Rafael Hernandez, and Prashanth Buchireddy, AIChE Annual Meeting, November 2013, San Francisco, CA.
- *"Design and Performance of a 3 ton/day Biomass-Fed Bubbling Fluidized Bed Gasification System"*, John L. Guillory, Prashanth R. Buchireddy, and Mark E. Zappi., Gasification Technologies Council, October 2013, Colorado Springs, CO.
- *"Torrefaction for Production of New Bio-based Feedstock"*, Prashanth R. Buchireddy, John L. Guillory, Mark E. Zappi, Ben Russo, and Keith Krump, VerTech Alternative Energy Conference, November 2012, Crowley, LA.
- *"Torrefaction of Biomass as for Use as an Alternative Power Plant Feedstock as Compared to Coal"*, Prashanth R. Buchireddy, John L. Guillory, Mark E. Zappi, Ben Russo, and Keith Krump, 34th Industrial Energy Technology Conference, May 2012, New Orleans, LA.
- *"Torrefaction of Wood as a Potential Means of Improving Biomass as Renewable Fuel for Use in the Power Production Industry"*, Prashanth R. Buchireddy, John L. Guillory, and Mark E. Zappi. 33rd Industrial Energy Technology Conference, May 2011, New Orleans, LA.
- *"Biomass Gasification: Catalytic Tar Removal using Nickel Supported Montmorillonite"*, Prashanth R. Buchireddy, Bricka R. Mark, AIChE Annual Meeting, November 2009, Nashville, TN.
- *"Development and Testing of a Proposed Protocol for Tar Sampling for a Biomass Gasification System"*, Bricka R. Mark and Prashanth R. Buchireddy, AIChE Annual Meeting, November 2009, Nashville, TN.
- *"Biomass Gasification: Catalytic Tar Removal using Ni-Zeolite Catalysts"*, Prashanth R. Buchireddy, Bricka R. Mark, AIChE Annual Meeting, November 2008, San Francisco, CA.
- *"Feedstock effects on syngas quality and production in a downdraft gasifier"*, Pordesimo, L. O., J. R. Wooten, P. R. Buchireddy, C. Igathinathane, L. Wei, and R. M. Bricka. 2008, Paper No. 084474. ASABE Annual International Meeting, Providence, Rhode Island, June 29-July 2. St. Joseph, Michigan: ASABE
- *"Production of Clean Synthetic Gas from Biomass Using a Downdraft Gasifier"* Prashanth R. Buchireddy, Bricka, R. Mark, Wooten, James, and Columbus, Eugene, P. 2006. 2006, AIChE Annual Meeting, November 2006, San Francisco, CA
- *"The Effects of Ash Content on the Burning of Biomass in a Downdraft Gasifier Wooten"*, James, R., Prashanth R. Buchireddy, and Eugene P. Columbus, Annual International Meeting of ASABE, Minneapolis, MN, June 2007, Paper no. 076198
- *"A Switchgrass Gasification System"*, Columbus Eugene P., William D. Batchelor, Lin Wei, Brian S. Baldwin, James R. Wooten, Sumito D. To, and Prashanth R. Buchireddy. 5th International Conference on Sustainable Energy Technologies, September 2006, Vicenza, Italy.
- *"Production of Clean Synthetic Gas from Biomass using a Downdraft Gasifier"* Prashanth R. Buchireddy, Mark Bricka, James Wooten, Wei Lin, and Eugene Columbus, AIChE Annual Meeting, November 2005, Cincinnati, OH.
- *"Electrokinetic Treatment of Copper, Chromium and Arsenic Contaminated Soil from Wood Preservative Industries"* Prashanth R. Buchireddy and Mark R. Bricka, October 2004, The International Conference on Soils, Sediments and Water, Amherst, MA and December 2004 at International Conference on Soil and Ground Water Contamination, Hyderabad, India
- *"Effect of varying current on the electrokinetic remediation of Copper, Chromium, and Arsenic contaminated soil"*, Prashanth R. Buchireddy and Mark R. Bricka, September 2003 at the Southern States Environmental Conference, Biloxi, MS

- “Investigation of the effect of charge and size on ionic movement under the influence of an electric field in soils”, Prashanth R. Buchireddy, November 2002, AIChE Annual Meeting, Indianapolis, IN

SYNERGISTIC ACTIVITIES

- Active reviewer for Journal of Waste and Biomass Valorization, Fuel, and Biofuels, Bioproducts, and Biorefining, Agronomy Research, and Biomass Conversion and Biorefinery, Environmental Progress and Sustainable Energy.
- Secured over \$1 Million as a lead investigator and over \$4 Million as Co-Investigator in research grants (funds) with research focus in the area of thermochemical conversion of biomass/waste to energy from various state and federal agencies as well as industries.
- Collaborated with several industries and provided technical guidance, support and relevant process information for scale up and design of torrefaction processes and systems.
- Session Chair: Louisiana Energy R&D Forum, Louisiana Gulf Coast Oil Exposition (LAGCOE), Lafayette, LA., October 2017.
- Session Chair: IEEE Green Technologies Conference, Lafayette, LA., April 2019.

ORGANIZATIONAL AFFILIATIONS

- Member of AIChE and ACS