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 EXPERIENCE

Thermal Conversion R&D Director,
Facility Director – Cleco Altertnative Energy Center,
The Energy Institute of Louisiana,
University of Louisiana at Lafayette — ***January 2024 - Current***

Assistant Professor,
Department of Chemical Engineering,
University of Louisiana at Lafayette — ***August 2016 - December 2023***

Director, Cleco Alternative Energy Center, Energy Institute,
Univeristy of Louisiana at Lafayette — ***June 2013 - December 2016***

Research Scientist, University of Louisiana at Lafayette — ***October 2009 - July 2016***

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

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

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 – 08/2019
  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: “Production of Carbon Black from Plastic Waste”
  Co-Investigators: William Holmes and Mark E. Zappi
  Project Performance Period: 07/2023 – 06/2026
  Award Amount: $563,199 (BoR - $286,673, UL Lafayette - $136,526, Industry - $140,000);
  Project Sponsor: LA BoR Industrial Ties Research Subprogram (ITRS)

CAPACITY – ***Co-Principal Investigator***

- Project Title: “Commercialization of NorthStar-Cleco Gasifier”
  Principal Investigator: John L. Guillory
  Co-Investigators: 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”
  Principal Investigator: Mark Zappi

Co-Investigators: Prashanth Buchireddy, and John 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”
  Principal Investigator: John L. Guillory
  Co-Investigators: Prashanth Buchireddy, and Mark E. Zappi
  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”
  Principal Investigator: Dilip Depan
  Co-Investigators: Prashanth Buchireddy, Rafael Hernandez, et al.
  Project Performance Period: 06/2020 – 06/2022
  Award Amount: $85,303
  Project Sponsor: LA Board of Regents, Departmental Enhancement

- Project Title: “Automated Particle Accelerator Control System for Science and Engineering Research and Education at the University of Louisiana at Lafayette”
  Principal Investigator: Naresh Deoli
  Co-Investigators: Harry Whitlow, Prashanth Buchireddy, et al.
  Project Performance Period: 06/2021 – 06/2023
  Award Amount: $464,740
  Project Sponsor: LA Board of Regents, Departmental Enhancement

- Project Title: “H2 the Future, Energy Transformation in South Louisiana – Construction Component”
  Principal Investigator: Terrence Chambers
  Co-Investigators: Prashanth Buchireddy, Xiao-Dong Zhou, Mark Zappi, Rafael Hernandez, Jonathan Raush, and Kenneth Ritter.
  Project Performance Period: 10/2022 – 09/2026
  Award Amount: $5,269,000 [U.S. Department of Commerce - 2.25 M, Third party contributions - $2.5 M, University – $0.5 M)
  Percentage Credit: 6.7% ($353,000)
  Project Sponsor: FY 2021 American Rescue Plan Act Build Back Better Regional Challenge, Economic Development Administration, U. S. Department of Commerce

- Project Title: "H2 the Future, Energy Transformation in South Louisiana – Non-Construction"
  Principal Investigator: Terrence Chambers
  Co-Investigators: Prashanth Buchireddy, Xiao-Dong Zhou, Mark Zappi, Rafael Hernandez, Jonathan Raush, and Kenneth Ritter.
  Project Performance Period: 10/2022 – 09/2026
  Award Amount: $4,670,000 [U.S. Department of Commerce – 3.75 M, University – $927,000)
  Percentage Credit: 6.7% ($312,890)
  Project Sponsor: FY 2021 American Rescue Plan Act Build Back Better Regional Challenge, Economic Development Administration, U. S. Department of Commerce

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"
  Role: Co-PI; PI: Rafael Hernandez, et al.

Proposal Submitted: 2015
Requested Funds: $5,999,969
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”
  Role: Co-PI; PI: Rafael Hernandez, et al.
  Proposal Submitted: 2016
  Requested Funds: $5,999,969
  Project Duration: 48 months
  Submitted Agency: Department of Energy-EPSCOR [NSF 16-511]

- Project Title: “Catalyst-Facilitated Gasification of Municipal Solid Waste to Syngas and Post-Gasification Clean-up”
  Role: Co-PI, 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 Bioenergy Technologies Office (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
  Submitted Agency: LA BoR Departmental Enhancement Program

- 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, et al.
  Proposal Submitted: 2019
  Requested Funds: $10 Million
  Project Duration: 60 months
  Submitted Agency: Department of Energy Bioenergy Technologies Office

- Project Title: “Advanced Carbon Composites from Hard to Recycle Polymer Wastes”
  Role: Co-PI (Lead from University of Louisiana at Lafayette), PI – Manuel Garcia-Parez, Washington State University
  Proposal Submitted: 2020
  Requested Funds: $10 Million
  Project Duration: 60 months
  Submitted Agency: Department of Energy Bioenergy Technologies Office (DE-FOA-0002203: - Waste Plastics to Products)

- Project Title: “Production of Carbon Black from Plastic Waste”

Role: PI
Proposal Submitted: 2021
Requested Funds: $492,455
Project Duration: 36 months
Submitted Agency: LA BoR Industrial Ties Research Subprogram

- Project Title: “Development of ceramic catalytic filter for removal of tars and particulates produced during biomass gasification”
  Role: PI
  Proposal Submitted: 2021
  Requested Funds: $380,704
  Project Duration: 36 months
  Submitted Agency: LA BoR Industrial Ties Research Subprogram

- Project Title: “National University Consortium for the Next-Generation Power Grid: Enabling A Green and Resilient Power Future for All American by Establishing Tomorrow's Grid Today”
  Role: Co-PI, PI – Mark Zappi
  Proposal Submitted: 2022
  Requested Funds: $21 Million
  Project Duration: 36 months
  Submitted Agency: Department of Energy Office of Energy Efficiency and Renewable Energy (DE-FOA-0002792: – University Research Consortium for Grid Resilience)

- Project Title: “Development of ceramic catalytic filter for syngas cleanup to produce green hydrogen via biomass gasification”
  Role: PI
  Proposal Submitted: 2022
  Requested Funds: $374,953
  Project Duration: 36 months
  Submitted Agency: LA BoR Industrial Ties Research Subprogram

- Project Title: “Production of Carbon Black from Plastic Waste”
  Role: PI
  Proposal Submitted: 2021
  Requested Funds: $563,199
  Project Duration: 36 months
  Submitted Agency: LA BoR Industrial Ties Research Subprogram

- Project Title: “A Novel Concept of Sustainable Aviation Fuel Biorefinery: Pre-pilot Scale-Up, Economic and Lifecycle Assessment”
  Role: Co-PI (Lead from University of Louisiana at Lafayette), PI: Prakash Bhoi, Georgia Southern University
  Proposal Submitted: 2024
  Requested Funds: $1,500,000 (461,735)
  Project Duration: 36 months
  Submitted Agency: Department of Energy Bioenergy Technologies Office (DE-FOA-0003178: Pre-pilot Scale-Up of Integrated Biorefinery Technologies)

- Project Title: "E-RISE RII: SHINE-LOUISIANA: Sustainable Hydrogen Initiative for a New Economy in Louisiana Via The Louisiana Green Hydrogen (LGH2) Collaboratory"
  Role: Co-Lead/Project participant - Thermal Conversion; PI: Mark Zappi
  Proposal Submitted: 2024
  Requested Funds: $4,000,000
  Project Duration: 36 months
  Submitted Agency: NSF E-RISE RII

- Project Title: "Optimizing sustainable carbon black production from end-of-life tires"
  Role: Co-PI with Mark Zappi
  Proposal Submitted: 2025
  Requested Funds: $425,000
  Project Duration: 24 months
  Submitted Agency: LA Environmental Protection Agency

- Project Title: "Thermal conversion of Louisiana biomass assets into products"
  Role: Co-PI with Mark Zappi
  Proposal Submitted: 2025
  Requested Funds: $550,000
  Project Duration: 24 months
  Submitted Agency: Options to submit to LA – LED, DEQ, DENR

- Project Title: "E-RISE RII: SHINE-LOUISIANA: Sustainable Hydrogen Initiative for a New Economy in Louisiana Via The Louisiana Green Hydrogen (LGH2) Collaboratory"
  Role: Co-Lead/Project participant - Thermal Conversion; PI: Mark Zappi
  Proposal Submitted: 2025
  Requested Funds: $7,999,977
  Project Duration: 36 months
  Submitted Agency: NSF E-RISE RII

INTERNAL GRANTS (FUNDED)
*CAPACITY – **Principal Investigator** (University of Louisiana at Lafayette)*

- Project Title: "Inclusion of Gas-Gas and Liquid-Liquid Separation Systems to Unit Operations Laboratory"
  Role: PI
  Co-Investigators: Emmanuel Revellame and Dhan Fortella
  Project Performance Period: 11/2019 – 06/2024
  Award Amount: $37,617
  Grant Type: Enhancement
  Project Sponsor: Student Technology Enhancement Program (STEP Grant), University of Louisiana at Lafayette

TEACHING EXPERIENCE

- Unit operations laboratory in Chemical Engineering (CHEE 403 and CHEE 404) for senior class from 2016 - 2022. Introduced several new experiments and made major changes to the structure of the laboratory.

- Renewable Energy (440G) – From Fall 2016 to Fall 2021

- Biomass to Energy (440G) – Fall 2022

- Engineering Theromodynamics (ENGR 301), Fall 2017 semester.

- 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 - Summers 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.

STUDENTS SUPERVISED/MENTORED/ADVISED

- High School Students (2) - Christina K., Megan Castille

- Undergraduate Students (35) - 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, Payne Touchet, Adhwa Al Uraimi, Kha Pham, John Paul Burgeron, Sarah Watson, Joshua Broussard, Paul Robicheaux, Charles LaFleur, Timmy Duhon, Joshua Broussard, Hailey Mohamed, Jordan Richard, Laelah Credeur, Rylan Guidry, Eli Meaux, Austin Walker.

  Graduate Students [Capacity: Advisor]:

  1) Joseph Vutukuri, M.S. - Chemical Engineering, Project Title: “Biomass Gasification: Effect of sulfur compounds in catalytic tar removal from the biomass-derived syngas using Ni-Montmorillonite catalyst”, Graduation – Fall 2014.

  2) Puneeth Ayireddy, M.S. – Mechanical Engineering, Project Title: “Effect of Torrefaction Operational Parameters on the Fuel Properties of Bagasse”, Graduation - Fall 2016,

  3) Prithvi Morampudi, M.S. – Chemical Engineering, Project Title: “Pilot Scale Evaluation of Torrefaction Operating Process Parameters on Thermal Properties of Biomass”, Graduation – Summer 2019

4) Suchandra Hazra, M.S. – Chemical Engineering, Project Title: Design Simulation and Economic Analysis of Pine Wood Torrefaction Plant for Bio-coal Production" Graduation – Spring 2022

5) 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", Graduation – Fall 2022

6) Timothy Boudreaux, M.S. – Chemical Engineering, Project Title: "Evaluation of sewage sludge as a potential substitute for coal", Expected Graduation – Fall 2025

7) Ndeloa Asonganyi, M.S. – 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 2026

8) Kunle Aknkuade, M.S. (Co-Advisor) – Chemical Engineering, Project Title: "Optimization of operational processing conditions to maximize production of aromatic rich biooil from plastic waste", Expected graduation – Fall 2026

9) Joseph Vutukuri, Ph.D. –Systems Engineering, Project Title: "Evaluation of the catalytic effect of ash on torrefaction process", Expected Graduation – 2027

10) Agilan Ravindran, Ph.D. (Co-Advisor) – Systems Engineering, Project Title: "Production of carbon black from hard to recycle plastic waste", Expected Graduation – 2028

11) Benett Narby, Ph.D. (Co-Advisor) – Systems Engineering, Project Title: "Production of fossil fuel substitute for steel industry", Expected Graduation – 2029

12) Hayden Hulin, M.S. (Co-Advisor) – Mechanical Engineering, Project Title: "Design of a mobile gasification system: EMBER – Emergency Mobile Biomass to JP-8 Equipment Refueler", Expected Graduation - 2027

Graduate Students [Capacity: Committee Member]:

1) Oladapo S Akinyemi, Mechanical Engineering (Ph.D.) - Graduated
2) Tuan Le, Chemical Engineering (Ph.D.) - Graduated
3) Siddhardha Gurram, Chemical Engineering (M.S.) - Graduated
4) Zaki Uddin Ahmad, Civil Engineering (MS) - Graduated
5) Qiyu Lian, Civil Engineering (M.S.) - Graduated
6) Myriam C. Dorcena, Industrial Technology (M.S.) - Graduated
7) Sheila Holmes, Industrial Technology (M.S.) – Graduated
8) Percival Soni Castro, Chemical Engineering (M.S.) – Graduated
9) Serenity Broussard (M.S.) – Graduated

10) The vu Vu, Ph.D., Chemical Engineering (Ph.D.) – Graduated
11) Lingyiqian Luo, Chemical Engineering (Ph.D.) – Graduated
12) Fayz Almudarra (M.S.) - Graduated
13) Chelsea Zeringer (Ph.D.) – Graduated
14) Serenity Broussard (Ph.D.) - Ongoing
15) Ibrahim Isa (Ph.D.) – Ongoing
16) Percival Soni Castro (Ph.D.) – Ongoing

REFEREED PUBLICATIONS

Journals

- Prashanth R. Buchireddy, R. Mark Bricka, and David B. Gent, "*Electrokinetic remediation of wood preservative contaminated soil containing copper, chromium, and arsenic"***,** Journal of Hazardous Materials, 2009, 162(1): 490-497. *[IF – 10.5]*

- 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. *[IF – 0.89]*

- Prashanth R. Buchireddy, R. Mark Bricka, Jose Rodriguez, and William Holmes, "*Biomass Gasification: Catalytic Removal of Tars over Zeolites and Nickel Supported Zeolites",* Energy and Fuels, 2010, 24(4): 2707-2715. *[IF – 4.6]*

- John L. Guillory, Prashanth R. Buchireddy, Stan O. Barskov, and Mark 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, 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. *[IF – 2.9]*

- 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. *[IF – 5.5]*

- 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. *[IF – 2.8]*

- S. O. Barskov, M. E. Zappi, P. R. Buchireddy, D. D. Gang, R. Hernandez, R. Bajpai, J. L. Guillory, J. Baudier, R. Cooper, and R. Sharp, "Torrefaction of biomass: A review of production methods for biocoal from cultured and lignocellulosic feedstocks", Renewable Energy, 2019, 142(c), 624-642. *[IF – 8.6]*

- P. R. Buchireddy, D. Peck, M. E. Zappi, and R. M. Bricka, "*Catalytic Hot Gas Cleanup of Biomass Gasification Producer Gas via Steam Reforming Using Nickel-Supported Clay Minerals"*, Energies, 2021, 14 (7), 1875 -1896. *[IF – 3.2]*

- P. R. Buchireddy and M. E. Zappi, "Farm Waste to Energy, Chapter 3. Part B: Torrefaction of lignocellulosic agricultural waste into biocoal", Book Title: Biomass and Waste Energy Applications, ASME, 2021, ISBN: 9780791883679

- D. Peck, M. Zappi, D. D. Gang, J. Guillory, R. Hernandez, and P. R. Buchireddy, Review of porous ceramics for hot gas cleanup of biomass syn-gas using catalytic ceramic filters to produce green hydrogen/fuels/chemicals", Energies, 2023, 16(5), 2334 – 2366. [IF – 3.2]

- S. Hazra, P. Morampudi, J. C. Prindle, D. L. B. Fortela, R. M. Zappi, R. Hernandez, and P. R. Buchireddy, "Torrefaction of pine using pilot scale rotary reactor: Experimentation, kinetics, and process simulation using Aspen Plus", Clean Technologies, 2023, 5 (2), 675 – 695. [IF – 3.7]

- D. Peck, W. Holmes, D. D. Gang, M. Zappi, R. Hernandez, and P. R. Buchireddy, "Novel Nickel Ceramic Filter for Hot Gas Cleanup of Tars from Syngas", Fuel Processing Technology, 2023, 244, 107708 – 107722. [IF – 8.1]

- P. S. Castro, G. M. Zuniga, W. Holmes, P. R. Buchireddy, D. D. Gang, E. Revellame, M. Zappi, and R. Hernandez, "Review of Adsorbents/Catalysts for the Removal of Sulfur Compounds from Natural Gas", Gas Science and Engineering, 2023, 115 [IF – 5.8]

- D. Peck, N. Deoli, W. Holmes, M. Zappi, D. D. Gang, R. Hernandez, and P. R. Buchireddy, "Evaluation of a novel nickel ceramic filter prepared by urea precipitation method for removal of tars from biomass syngas using naphthalene as tar model compound", Journal of the Energy Institute, 2024, 114, 101563. [IF – 6.4]

- G. M. Zuniga, S. Antwi, P. S. Castro, O. Olayiwola, M. Chuprin, W. Holmes, P. R. Buchireddy, D. D. Gang, E. Revellame, M. Zappi, and R. Hernandez, "Methyl Mercaptan Removal from Methane Using Metal-Oxides and Aluminosilicate Materials", Catalysts, 2024, 14 (12), 907. [IF – 4.0]

Papers under review/preparation:

- R. Kumar, V. Kumar, P. R. Buchireddy, and M.E. Zappi, "Enhancing Biofuel Properties of Biomass through Torrefaction: Optimization, Kinetic Modelling, and Thermodynamic Analysis", Renewable Energy, Under review
- Vimal Kumar, M.Zappi, and P. R. Buchireddy, "Torrefaction of mixed hard wood: Combustion behavior, kinetics, and thermodynamics of torrefied mixed hard wood produced from pilot scale rotary reactor"
- P. R. Buchireddy, A. Ravindran, K. Akinkuade, Vimal Kumar, W. Holmes, and M. Zappi, "Pyrolysis of plastics: Kinetics and Thermodynamic Analysis"
- A. Ravindran, P. R. Buchireddy, K. Akinkuade, Vimal Kumar, W. Holmes, and M. Zappi, "Sustainable carbon black: Review of current state of art on carbon black production from fossil, renewable, and sustainable sources"

- S. Broussard, W. Holmes, A. Gallo, R. Herannadez, D. Fortela, D. Gang, P. R. Buchireddy, and M. Zappi, "1-4 Dioxane: Environmental occurrence, regulatory landscape, and developments in advanced oxidation process

Conference Papers

- 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. Holmes, "*Investigation of effect of biomass torrefaction temperature on volatile energy recovery through combustion*", Paper Number – GT2017-64941, Proceedings of ASME Turbo Expo 2017, Charlotte, NC.

- P. R. Buchireddy, T. Boudreaux, W. Holmes, and M. E. Zappi, "Thermal pretreatment of sewage sludge to produce a solid fuel for potential use in thermochemical processes" 17th SWWS and 9th ROS Conference, 2024, Curitiba, Brazil.

Patents

- M. E. Zappi, R. Hernandez, D. L. Fortela, P. R. Buchireddy, E. Revellame, W. Sharp., J. Guillory, D. Gang., and W. Holmes, "Integrated Biorefinery System and Method, United States Patent Application 20220403423, 2022

- P. R. Buchireddy, M. E. Zappi, W. Holmes, and D. D. Gang, "Methods For Making Carbon Black", United States Patent Application No **63/789,427 (**Utility – provisional application number), 2025

REFEREED PATENTS (Under Review)

- D. D. Gang, A. Imran, M. E. Zappi, W. Holmes, X. Lei, D. Shoemaker, P. R. Buchireddy, "Adsorption of perfluorocarboxylic acids and other pollutants within aqueous media using polyethyleneimine-modified biochars and polyethyleneimine-modified biocoals".

TECHNICAL PRESENTATIONS (2024 onwards)

P. R. Buchireddy, T. Boudreaux, W. Holmes, and M. E. Zappi, "Thermal pretreatment of sewage sludge to produce a solid fuel for potential use in thermochemical processes", 17th IWA Conference on Small Water and Wastewater Systems (SWWS) and 9th IWA Conference on Resource Oriented Sanitation (ROS), **N**ovember 10 -14th 2024, Curitiba, Brazil

P. R. Buchireddy and M. E. Zappi, "Torrefaction of biomass to produce BIOCOAL: Promising potential to extend the lifeline of coal fired power plants", 41st United States

Association for Energy Economics (USAEE) North American Conference, November 3-6th 2024, Baton Rouge, LA.

PROFESSIONAL SOCIETY REVIEWER AFFILIATIONS

- Peer reviewer for
    - Journal of Waste and Biomass Volarization
    - Fuel
    - Biofuels, Bioproducts, and Biorefining
    - Agronomy Research
    - Biomass Conversion Biorefinery
    - Environmental Progress and Sustainable Energy.

- Reviewer for U.S. Department of Energy, Bioenergy Technologies Office (2021-2022)
    - Reviewed proposals submitted to Feedstock Technologies & Algae FOA subprogram – 2021
    - Reviewed proposals submitted to Waste Feed stocks & Conversion R&D - 2022

SYNERGISTIC ACTITIVITIES

- Secured over $1 Million as a lead investigator and over $10 Million as Co-Investigator in research grants (funds) in the area of thermochemical conversion of biomass/waste to energy from various state and federal agencies as well as industries.

- Collaborated and provided technical guidance and support oriented towards establishing full scale biomass based industries in Louisiana. Industries supported include American Biocarbon, CT., Teal Seals Inc., and Delta Biofuels.

- Supporting and providing technical guidance/advise to new industries/entrepreneurs within Louisiana – Fusion One Technologies, Palm Star Energy, Precision Partners, LA Biofuels, and more

- Outreach – Organized, presented, and supported numerous events at the Cleco Alternative Energy Center to showcase the project activities to a wide range of audiences including politicians, economic development entities, faculty, students, community members, etc. to over 1,000 plus individuals

- Session Chair: Louisiana Energy R&D Forum, Louisiana Gulf Coast Oil Exposition (LAGCOE), Lafayette, LA., October 2017 and Session Chair: IEEE Green Technologies Conference, Lafayette, LA., April 2019.