Manuel Garcia-Perez ***Résumé***

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AREAS OF EXPERTISE

- Biomass thermochemical conversion (torrefation, pyrolysis, gasification, hydrotreatment and supercritical CO_2 liquefaction)
- Sustainable Aviation Fuels
- Bio-economy
- Bio-oil
- Bio-chars
- Hydrotreatment (Hydrodeoxygenation)
- Biorefineries
- Hydrogen production technologies
- Use of computer techniques, numerical methods, statistical techniques, optimization, modelling and chemical engineering principles to study and improve the performance of chemical plants
- Use of analytical techniques (proximate and elemental analysis, TG/DTG, DSC, GPC, GC, UV-Fluorescence, Karl-Fischer titration, GC/MS, Py-GC/MS, XPS, FTIR, Raman, SEM and TEM, steady and dynamic rheology, ASTM fuel characterization methods, ash characterization techniques etc) to study the behaviour of complex materials in industrial units.

EDUCATION:

2006-07	Post-doc at the Chemical Engineering Department (Monash University, Melbourne, Australia)
2005-06	Post-doc at the Biological and Agricultural Engineering Dept (Univ. of Georgia, Athens, Georgia, USA)
2001-05	Ph.D. in Chemical Engineering (Université Laval, Québec, Canada)
1999-01	M.Sc. in Chemical Engineering (Université Laval, Québec, Canada)
1996-98	M.Eng. in Process Engineering (University of Orient, Santiago de Cuba)
1990-95	BSc in Chemical Engineering (University of Orient, Santiago de Cuba)

LANGUAGE SKILLS: English and Spanish: Proficient, French: Reading and Understanding (advanced), Spoken, and written (basic)

AWARDS AND HONORS:

Invited Professor at the University of Lorraine, France (2025-2029)
CAHNRS Faculty Excellence in Research Award (April, 2025)
Chief Editor: Biomass and Bioenergy (2024-present)
Associate Editor: Biomass and Bioenergy Journal (2013-2024)
Member of the Scientific Advisory Board of the Engineering Research Institute of Aragon, Spain (I3A) (2022-Present)
Honorary Professor National University of Colombia (2021-Present)
Member of the USDA-DOE Biomass Research & Development Technical Advisory Committee (2015-2020)
Reviewer Editor of the Journal of Analytical and Applied Pyrolysis (2020-present)
Editorial Board Member of: Energy and Fuels, Biochar and Journal of Analytical and Applied Pyrolysis
Member of the International Advisory Board of Cenipalma, Colombia (2009-2016)
NSF CAREER AWARD (2012)
Scholarship of the Excellence of Laval University (2002)

PROFESIONAL EXPERIENCE

2020-Present WASHINGTON STATE UNIVERSITY (Pullman, Washington, USA)
Professor and chair Biological Systems Engineering Department

2018-2020 WASHINGTON STATE UNIVERSITY, Tricities (Richland, Washington, USA) Professor at the Biological Systems Engineering Department, Director of the Bioproducts Science and Engineering laboratory.

2015-2015 UNIVERSITY OF HOUSTON (Houston, Texas, USA) Sabbatical Visit. Receiving Training on the use of molecular modeling to study Chemical Reactions.

2013-2018 WASHINGTON STATE UNIVERSITY (Pullman, Washington USA) Associate Professor at the Biological Systems Engineering Department. Working in fundamental studies to understand cellulose and lignin pyrolysis mechanisms. The development of selective pyrolysis reactors and bio-refinery concepts to convert bio-oils into bio-fuels and bio-chemicals.

2007-2013 WASHINGTON STATE UNIVERSITY (Pullman, Washington USA). Assistant Professor at the Biological Systems Engineering Department. Developing a program in Biomass Thermochemical Conversion.

2006-2007 MONASH UNIVERSITY (Melbourne, Australia). Post doctoral research fellow responsible for the improvement of a fast pyrolysis reactor to produce bio-oils from Mallee trees. Characterization, up-grading and combustion of bio-oils and chars. Study of generation of oligomers during pyrolysis.

2005-2006 **UNIVERSITY OF GEORGIA** (Athens, Georgia, USA). In charge of improving and designing of thermochemical reactors and analytical laboratories. Development of new applications for pyrolysis products in the agriculture. Study of fuel properties of bio-oil/bio-diesel blends.

2001-2005 **LAVAL UNIVERSITY** (Quebec City, Canada), **CANMET** (Advanced Combustion Technologies, NRCan) (Ottawa, Canada) and **PYROVAC** (Quebec City, Canada). In charge of a project to study the fuel properties of vacuum pyrolysis oils obtained from wood industry residues. Scholarship of Doctorate from the Laval University Foundation. 1 month of i*nternship at the "CO_2 solution" pilot plant.*

1999-2001 **LAVAL UNIVERSITY and PYROVAC** (Quebec City, Canada)
In charge of projects for the co-pyrolysis under Vacuum of Bagasse and Petroleum Residue for the Production of Bio-fuels.

1995-1999 **UNIVERSITY OF ORIENT** (Santiago de Cuba, Cuba) **and MOA NICKEL S.A.** (Moa, Holguin, Cuba), Assistant professor at the Chemical Engineering department. M.Sc. student in the Process Engineering Program. In charge of a project to simulate the performance of a Hydrogen Unit at the Moa Nickel S.A. complex, Cuba. As part of the Master's studies, 14 post-graduate courses were accredited. Consultant in a project to increase the production capacity of a mineral cooler and liquor coolers in the nickel company "Ernesto Che Guevara" (Moa city, Cuba)

1990-1995 **UNIVERSITY OF ORIENT** (Santiago de Cuba, Cuba)
Undergraduate studies. Graduated with honours. Several interships were made in Cuban industries: Fàbrica de gases industriales (Industrial gases company; oxygen and acetylene units), Santiago de Cuba city, 1990, 1991, 1992, Refinerìa Hermanos Diaz (Hermanos Diaz Refinery, Power Plant), Santiago de Cuba city, 1993, 1994, Moa Nickel S.A. (Hydrogen Unit) Moa city, Cuba 1995.

Peer Reviewed Manuscripts Published or Accepted:

(1) Gagaa M, Esquivel-Garcia R, Velezquez-Hernandez ME, Bermudez-Camps IB, Garcia-Perez M, Rodriguez-Orozco AR, Reyes-Hernandez I, Garcia-Perez ME, Adverse Events and Potential Herb-Drug Interactions of Plants Used for Psoriasis: A Systematic Review. Paper Accepted in Journal of Pharmacy & Pharmacognosy Research, **2026**

(2) Hoque MM, Bin Bakri MK, Chanda A, Yadama V, Garcia-Perez M: Engineering Biochar-Polymer Interactions for Sustainable Composite Applications: A Review. Paper Submitted to Biomass and Bioenergy, **2026**

(3) Sierra-Jimenez V, Garcia A, Garcia-Perez M, Wolcott M: Evaluating Hydrogen Production Through Techno-Economic, Carbon Intensity, and Policy

Perspectives in the U.S. Paper submitted to the International Journal of Hydrogen Energy, **2026**

(4) Landoy RJB, Demafelis R, Bambase M, Capunitan J, Aguila MJ, Macias R, Garcia-Perez M. Unlocking Coconut Oil's Potential for SAF: Co-Hydrotreatment with Waste Cooking Oil for High Selectivity Jet Fuel-Range Hydrocarbon Production. Paper Accepted in Fuel, **2026**

(5) Domes Denson M, Gagaa MH, Carvalho Carregosa J, Garcia A, Alsbou E, Menez Santos R, Wisniewski A, Sierra-Jimenez V, Li W, Olarte M. Mora M, Afrin A, Garcia-Perez M: Chemical Diversity of Oligomers in Biomass Fast Pyrolysis Oils. Part 3: Water Soluble Fraction. Energy & Fuels, **2026**, 40, 1, 440-455

(6) Yu E, Labbe N, Abdoulmoumine N, Garcia-Perez M, Hoyt K, English B, Rials T: Spatial Optimization of the Sustainable Aviation Fuel Supply Chains from Forest Residues via Fast Pyrolysis/Hydrotreatment Considering Feedstock Ash Content Variability, Biomass and Bioenergy, **2026**, Vol. 208, 108793

(7) Alsbou E, Garcia-Perez M, Al Khalyfeh K: A Renewable Bio-Oil Source from Green Feedstock: Anabasis syriaca. *Renewable Energy,* **2026,** Vol. 256, 124443

(8) Sierra-Jimenez V, Chejne F, Garcia-Perez M: First Principles and Neural Network-Driven Biochar Spectral Database: Raman, XPS, IR, and NMR. FlaChem, **2025**, Vol. 54, 100960

(9) David GF, Moreno-Parra RR, Haber-Perez V, da Costa Silveira T, Garcia Silveira E, Rodriguez Justo O, Garcia-Perez M: Coupled Effect of Pyrolysis Temperature and HNO3 Pretreatment on Sugarcane Bagasse Fast Pyrolysis for Levoglucosan Production. *Biomass and Bioenergy*, **2025**, Vol. 203, 108372

(10) De Guzman AI, Mateo W, Denson M, Villota E, Garcia-Perez M: Synthesis and evaluation of rice straw-derived biochar as cement replacement for concrete. *Journal of Building Engineering*, **2025**, Vol. 111, 113617

(11) Mora M, Garcia A, Manrique R, Sierra-Jimenez V, Fabregas E, Puy N, Clingenpee A, Garcia-Perez M: Chemical Diversity of Oligomers in Biomass Fast Pyrolysis Oils: Part 1 – Dimers, Extractives, Humin-Like Compounds and Hybrid Oligomers from Dichloromethane Soluble Pyrolytic Lignin. *Energy & Fuels*, **2025,** 39, 44, 21310-21329

(12) Manrique R, Denson M, Afrin A, Gagaa MH, Garcia A, Haghighi-Mood S, Alsbou E, Sierra-Jimenez V, Carvalho Carregosa J, Wisniewski A, Mora M, Clingenpeel A, Rojas M, Chejne F, Olarte M, Garcia-Perez M: Chemical Diversity of Oligomers in Biomass Fast Pyrolysis Oils: Part 2 – Heavy Lignin-Derived Molecules and Highly Dehydrated Sugars from Dichloromethane-Insoluble Pyrolytic Lignin. *Energy & Fuels*, **2025**, 39, 44, 21330-21344

(13) Sierra-Jimenez V, Voellinger T, Carre V, Chejne F, Schramm S, Aubriet F, Garcia-Perez M: Exploring Cellulose Fast Pyrolysis Secondary Reactions Through Reactive Molecular Dynamics and DIP FT-ICR MS. *Energy and Fuels* **2025**, 39, 21, 9860-9873

(14) Sierra-Jimenez V, Macias RJ, Mathews JP, Carre V, Leclerc S, Budai A, Chejne F, Castro-Gutierrez J, Celzard A, Fierro V, Garcia-Perez M: Influence of acid-catalyzed dehydration and pressure on woody biomass carbonization: Exploring

carbon yield, heteroatom functionalities and biochar atomistic structure. *Carbon* **2025**, Vol. 242, 120474
(15) Mainalis K, Sarker M, Sharma BK, Hoque M, Han Y, Mullen Ch, Garcia-Perez M: Thermal Treatment and Densification of Manure and Biomass Blends to Produce Stabilized Soil Amendments. *Journal of Environmental Management*, 373, **2025**, 123594
(16) Hertzog J, Tews I, Haghghi-Mood S, Aubriet F, Carre V, Garcia-Perez M: performance of catalytic wet oxidation on thermochemical aqueous effluents assessed by FT-ICR-MS. *Journal of Environmental Chemical Engineering*, 12, 5, **2024**, 113721
(17) Rojas Salas M, Fonseca F, Araujo A, Garcia-Perez M, Funke A: Liquid-liquid equilibrium prediction in fast pyrolysis bio-oil systems: A framework for incorporating bio-oil complexity. *Energy & Fuels*, **2024**, 38, 19, 18769-18780
(18) Garcia A, Sierra-Jimenez V, Brandt K, Martinez-Valencia L, Wolcott M, Male J, Garcia-Perez M: Holistic Methodology to Guide the Evolution of Sustainable Aviation Fuel Production Technologies. *Energy & Fuels*, **2024**, 38, 18, 17706-17716
(19) Mainali K, Haghghi Mood S, Chen S, Garcia-Perez M, Partial wet oxidation of dairy manure as a pretreatment process to produce acetic acid 'a Source Growth of Methanogens'. *Waste Management & Research: The Journal for a Sustainability Circular Economy.* Volume 42, 3, **2024,** 206-217
(20) Sierra-Jimenez V, Mathews JP, Yoo P, Budai A, Chejne F, Dufour A, Garcia-Perez M: Biochar data into structure: A methodology for generating large-scale atomistic representations. *Carbon,* 228, **2024**, 119391
(21) Haghighi Mood S, Pelaez-Samaniego MR, Han Y, Mainalis K, Garcia-Perez M: Iron and Nitrogen Modified Biochar for Nitrate Adsorption from Aqueous Solution, *Sustainability,* **2024**, 16, 13, 5733
(22) Gagaa M, Koehler H, Garcia-Perez ME, Garcia-Perez M: Anti IL-17 Bioactivity-Guided Fractionation of a Pine Bio-Oil: Chemical Characterization and Impact on HaCaT Human Keratinocytes Gene Expression. *Bioresource Technology Reports*, **2024**, 26, 101844
(23) Mainalis K, Garcia-Perez M, Sarker M, Mullen Ch: Production of N-Mg Doped Biochar for Phosphate Adsorption from Renewable Resources. *Biomass and Bioenergy*, 185, **2024**, 107221
(24) Domes Denson M, Marique R, Olarte M, Garcia-Perez M: Co-hydrotreatment of Bio-oil and Waste Cooking Oil to Produce Transportation Fuels, *Energy Fuels*, **2024**, 38, 8, 6982-6991
(25) Manrique R, Chejne F, Olarte M, Garcia-Perez M: Co-hydrotreatment of Pyrolytic Lignin and Waste Cooking Oil to Produce Hydrocarbons. *Energy Fuels,* **2024**, 38, 9, 7917-7928
(26) Sierra-Jimenz V, Mathews JP, Chejne M, Chejne F, Dufour A, Garcia-Perez M: Atomistic Modeling of Lignocellulosic and Carbonaceous Fuels and Their Pyrolysis Reactions: A Review. *Energy & Fuels*, **2023**, 37, 23, 18408-18550
(27) Mainali K, Mullen CA, Sierra Jimenez V, Garcia-Perez M, Sarker M: Statistical Optimization of N and C Efficiency in Biochar Production from Model

Compounds: A Response Surface Approach. *Bioresource Technology Reports*. **2023,** 24, 101646
(28) Domes-Denson M, Terell E, Kostetskyy, P, Olarte M, Broadbelt L, Garcia-Perez M: Theoretical Insights on the Fragmentation Reaction of Oligomeric Sugars to Remove Acetol and Glycoaldehyde. Paper to accepted to *Energy & Fuels*, **2023**
(29) Ellison C, Garcia-Perez M, Mullen C, Madhav Y: Thermochemical Behaviour of Alkali treated biomass: A Thermogravimetric and Py-GC-MS/FID study. Paper Accepted *Sustainable Energy & Fuels*, **2023**
(30) Martinez-Smit C, Chejne F, Garcia-Perez M: Novel Strategy to Produce Polyaromatic Compounds at Low Temperature for the Production of Secondary Chars. *Journal of Analytical and Applied Pyrolysis*, **2023,** 106135
(31) Mainalis K, Haghighi Mood S, Pelaez-Samaniego MR, Sierra-Jimenez V, Garcia-Perez M: Production and Applications of N-doped Carbons from Bio-Resources: A Review. *Catalysis Today*, 423, **2023**, 114248
(32) Strawn DG, Crump A, Peak D, Garcia-Perez M, Moller G: Reactivity of Fe-amended biochar for phosphorous removal and recycling from wastewater. *PLOS Water*, **2023,** https://doi.org/10.1371/journal.pwat.0000092
(33) Domes-Denson M, Terell E, Kostetskyy P, Olarte M, Broadbelt L, Garcia-Perez M: Elucidation of Structure and Physical Properties of Pyrolytic Sugar Oligomers driveded from Cellulose Depolymerization/Dehydration reactions: A Density Functional Theory Study. Accepted in *Energy & Fuels*, **2023**
(34) Pinheiro-Pires AP, Garcia-Perez M, Olarte M, Denson M, Terrell E, Han Y: Comparison of the Chemical Composition of Liquids from the Pyrolysis and Hydrothermal Liquefaction of Lignocellulosic Materials, Accepted in *Energy & Fuels*, **2023**
(35) Manrique R, Terrell E, Kostetskyy P, Chejne F, Olarte M, Broadbelt L, Garcia-Perez M: Elucidating Biomass-Derived Pyrolytic Lignin Structures from Demethylation Reactions Through Density Functional Theory Calculations. Paper Published in *Energy & Fuels*, **2023**
(36) Martinez-Valencia L, Peterson S, Brant K, King AB, Garcia-Perez M, Wolcott M: Impact of Services in the Supply Chain Configuration of Sustainable Aviation Fuel. Accepted in the *Journal of Cleaner Production*, **2023**
(37) Quinn K, Haghighi-Mood S, Cervates E, Garcia-Perez M, Abu-Lail N: Forces Governing the Transport of Pathogenic and Nonpathogenic Escherichia Coli in N and Mg Doped Bio-char Amended Sand Columns, *Microbiology research*, **2023**, 14, 1, 218-228
(38) De Oliveira DC, Lora ES, Venturini O, Maya DMY, Garcia-Perez M: Biomass gasification gas cleaning systems integrated to Fischer-Tropsch – a review of impurities removal and cleaning pathways. *Renewable and Sustainable Energy Reviews,* **2023,** 172, 113047
(39) Pinheiro-Pires AP, Olarte M, Garcia-Perez M, Han Y: Co-hydrotreatment of Yellow Greases and Pyrolysis Oil Water Insoluble Fraction: Part I: Experimental Design to Increase Kerosine Yield and Reduce Coke Formation. *Energy & Fuels*, **2023,** 37, 3, 2100-2114

(40) Mainali K, Garcia-Perez M: Effect of H_3PO4 and NaOH Additives on the Co-Carbonization of Cellulose and N-containing Compounds to Produce N-Doped Chars. *Journal of Analytical and Applied Pyrolysis*, **2023**, 169, 105837
(41) Mainali K, Garcia-Perez M: Understanding Organic N / Cellulose Integration During Pyrolysis / Carbonization to Produce N-Doped Carbon Materials. *Journal of Analytical and Applied Pyrolysis*. **2023**, 169, 105791
(42) Martinez-Smit C, Bastidas-Barranco M, Chejne F, Garcia-Perez M: Perspectives of the formation of Carbon Nanostructures from Biomass Gasification Tar Compounds- A Mini-Review. *Energy & Fuels*, **2022,** 36, 20, 12475-12490
(43) Chejne F, Florez WF, Maya JC, Ordonez-Loza J, Garcia-Perez M: Physical Mathematical Modeling and Simulation Based on Hyperbolic Heat Transfer for High Heating Rate Processes in Biomass Pyrolysis. *Journal of Non-Equilibrium Thermodynamics*, **2022**, 47, 4, 395-414
(44) Esquivel-Garcia R, Seker A, Abu-Lail N, Garcia-Perez M, Ochoa-Zarzosa A, Garcia-Perez ME: Ethanolic extract, solvent fractions and bio-oils from *Urtica subincica* aerial parts: A comparative analysis of their chemical composition, toxicity and anti-Il-17 activity on HaCaT keratinocytes. *Journal of Herbal Medicine*, **2022,** 36, 100599
(45) Avalos-Viveros M, Esquivel-Garcia R, Garcia-Perez M, Torres-Garcia E, Bartolome-Camacho MC, Santes V, Garcia-Perez ME: Updated view of tars for psoriasis: what have we learned over the last decade? *International Journal of Dermatology*, **2022**, https://doi.org/10.1111/ijd.16193
(46) Mainalis K, Haghighi MS, Chen S, Garcia-Perez M: Partial Wet Oxidation of Dairy Manure as a Pretreatment Process to Produce Acetic Acid as Source Growth of Methanogens. Waste Management & Research. **2022**
(47) Mood SH, Pelaez-Samaniego MR, Garcia-Perez M: Engineered Biochar for Environmental Applications: A review. Energy & Fuels, **2022,** 36, 15, 7940-7986
(48) Tanzil AH, Brandt K, Zhang X, Wolcott M, Silva-Lora E, Stockle C, Garcia-Perez M: Evaluation of Biorefinery Alternatives to Produce Sustainable Aviation Fuels in Sugarcane Mill. *Fuel* **2022**, 321, 123992
(49) Ayiania M, Garcia A, Haghighi S, McEwen JS, Garcia-Perez M: Novel Amorphous Carbons for the Adsorption of Phosphate: Part I. Elucidation of Chemical Structure of N-Metal Doped Chars. *ACS Omega*, **2022,** 7, 17, 14490-14504
(50) Tews IJ, Terrell E, Mood SH, Garcia-Perez M: Wet Oxidation of Thermochemical Aqueous Effluent Utilizing Char Catalysts in Microreactors. *Journal of Cleaner Production*, **2022**, 351, 131222
(51) Wensel PC, Bule M, Davis WC, Hiscox W, Yu L, Gao A, Kirchhoff G, Pelaez-Samaniego MR, Garcia-Perez M, Chen S: Biorefinery Integrating Thermo-biochemical pretreatment and hydrolysis of Wheat-Straw and Anerobic Digestion of Food Waste with two-stage microalgal cultivation. *Applied Sciences*, **2022**, 12(3) 1485
(52) Tews I, Garcia-Perez M: Advanced Oxidative Techniques for the Treatment of Liquid Effluents from Biomass Thermochemical Conversion Processes: A Review. *Energy and Fuels*, **2022,** 36, 1, 60-79

(53) Palazzolo MA, Garcia-Perez M: Microbial Lipid Biosynthesis from Lignocellulosic Biomass Pyrolysis Products. *Biotechnology Advances*, **2022,** 54, 107791
(54) Tanzil A, Brandt K, Zhang X, Wolcott M, Stockle C, Garcia-Perez M: Evaluation of Petroleum Refinery Concepts for the Production of Sustainable Aviation Fuels. *Frontiers in Energy Research*, **2022**
(55) Marzougui A, Rajendran A, Mattinson SD, Ma Y, McGee RJ, Garcia-Perez M, Ficklin SP, Sankaran S: Evaluation of biogenic merkers based phenotyping for resistance to Aphanomyces root rot in field pea. Information Processing in Agriculture, **2022,** 9 (1), 1-10
(56) Riley M., Green-Miller A, Leigh Wolfe M, Garcia-Perez M, Howel T, Nokes S: Circular Systems for Animal Production and Processing, Resources Magazine, 28 (2), 30-32, **2021**
(57) Martinez-Valencia L, Garcia-Perez M, Wolcott MP: Supply Chain Configuration of Sustainable Aviation Fuel: Review, Challenges and Pathways for Including Environmental and Social Benefits. *Renewable & Sustainable Energy Reviews*, **2021,** 152, 111680
(58) Pinheiro Pires AP, Martinez-Valencia LM, Tanzil AH, Garcia-Perez M, Garcia-Ojeda JC, Bertok B, Heckl I, Argoti A, Friedler F: Exploring new Pyrolysis Oil Based Biorefineries using p-graph. *Energy and Fuels*, **2021**, 35, 13159-13169 https://doi.org/10.1021/acs.energyfuels.1c01299
(59) Cao H, Milan YJ, Mood SH, Ayiania M, Zhang S, Gong X, Silva Lora EE, Yuan Q, Garcia-Perez M: A novel elemental composition based prediction model for biochar aromaticity derived from Machine learning. *Artificial Intelligence in Agriculture*. Vol. 5, **2021**, 133-141
(60) Font I, Atianza-Martinez M, Cartensen HH, Benes M, Pinheiro Pires AM, Garcia-Perez M, Bilbao R: Thermodynamic and physical properties estimation of compounds derived from the fast pyrolyss of lignocellulosic materials. *Energy and Fuels*, **2021**, 35, 21, 17114-17137
(61) Martinez-Valencia L, Camenzind D, Wigmosta M, Garcia-Perez M, Wolcott M: Biomass Supply Chain Equipment for Renewable Fuels Production: A Review. *Biomass and Bioenergy*, **2021**, 148, 106054
(62) Haghighi-Mood S, Ayiania M, Cao H, Marin-Flores O, Jefferson Milan Y, Garcia-Perez M: Nitrogen and Magnesium Co-doped Biochar for Phosphate Adsorption. *Biomass Conversion and Biorefinery*, **2021,** https://doi.org/10.1007/s13399-021-01404-1
(63) Tews I, Garcia Bram A, Ayiania M, Haghighi Mood S, Mainali K, McEwen JS, Garcia-Perez M: Nitrogen-doped char as catalyst for Wet Oxidation of Phenol Contaminated Water. *Biomass Conversion and Biorefinery*, **2021,** https://doi.org/10.1007/s13399-020-01184-0
(64) Tanzil AH, Zhang X, Wolcott M, Brandt K, Stockle C, Murthy G, Garcia-Perez M: Evaluation of Dry Corn Ethanol Bio-refinery Concepts for the Production of Sustainable Aviation Fuel. *Biomass and Bio-energy*, Volume 146, March **2021**, 105937
(65) Ordonez-Loza J, Valdes C, Chejne F, Garcia-Perez M, Zhnag W, Abdul-Hamid E, Sarathy SM: Effect of Carbon Dioxide Environment on the thermal

behaviour of Sugarcane pyrolysis oil. *Journal of Analytical and Applied Pyrolysis*, **2021,** 154, 105000

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(67) Han Y, Pinheiro Pires AP, Denson M, McDonald A, Garcia-Perez M: Ternary Phase Diagram of Water / Bio-oil / Organic Solvent for Bio-oil Fractionation. *Energy and Fuel*, **2020,** 34, 12, 16250-16264

(68) Terrell E, Garcia-Perez M: Vacuum Pyrolysis of Hybrid Poplar Milled Wood Lignin with FT-ICR-MS analysis of feedstock and products for the Elucidation of Pyrolytic Lignin formation Mechanism and Chemistry, *Energy and Fuel*, **2020**, 34, 11, 14249-14263

(69) Cao H, Wu X, Syed-Hassan SSA, Zhang S, Mood SS, Jefferson-Milan Y, Garcia-Perez M: Characteristics and mechanisms of phosphorous adsorption by rape straw-derived biochar functionalized with calcium from eggshell. *Bioresources Technology*, **2020**, 318, 124063

(70) Terrell E, Garcia-Perez M: Novel Strategy to Analyze FT-ICR MS Data of Biomass Pyrolysis Products for Oligomeric Structure Assignment. *Energy and Fuels*, **2020, 34,** 7, 8466-8481

(71) Bartolomei E, Le Brench Y, Dufour A, Carre V, Aubriet F, Terrell E, Garcia-Perez M, Arnoux P: Lignin depolymerization: a comparison of methods to analyze monomers and oligomers. *ChemSusChem*, **2020,** 13 (17), pp.4633-4648.

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(73) Mainali K, Garcia-Perez M: Identification and Quantification of Trace Oxygenatd Compounds in Alternative Jet Fuels: Fluorescence Methods for Fast Detection of Phenolic Compounds in Operational Field Conditions. Fuel, 2020, Volume 271, 1 July **2020**, 117652

(74) Ayiania M, Weiss-Hortala E, Smith M, McEwen JS, Garcia-Perez M: Microstructural Analysis of Nitrogen Doped Char by Raman Spectroscopy: Raman Analysis from First Principles. *Carbon*, **2020,** 167, 15, 559-574

(75) Terrell E, Carre V, Dufour A, Aubriet F, Le Brench Y, Garcia-Perez M: Contributions to Lignomics: Stochastic Generation of Oligomeric Lignin Structures for interpretation of MALDI-FT-ICR-MS Results. Published in *ChemSusChem*, **2020**

(76) Ayiania M, Smith M, Hensley AJR, Scudiero L, McEwen JS, Garcia-Perez M: Deconvoluting the XPS Spectra for Nitrogen-Doped Chars: An Analysis from First Principles. *Carbon*, 162, **2020**, 528-544

(77) Liaw S-S, Haber-Perez V, Westerhof RJM, Ferreira David G, Garcia-Perez M: Biomethane from pyrolytic aqueus phase: biomass acid washing and condensation temperature effect on the bio-oil and aqueous phase composition. *Bioenergy Research Journal*, **2020**, 13: 878-886

(78) Terrel E, Dellon LD, Dufour A, Bartolomei E, Broadbelt LJ, Garcia-Perez M: A Review on Lignin Liquefaction: Advanced Characterization of Structure and Micro-kinetic Modeling. *Industrial and Engineering Chemistry Research*, **2020,** 59, 526-555
(79) Geleynse S, Jian Z, Brandt K, Garcia-Perez M, Wolcott M: Pulp Mill Integrarion with Alcohol-to-Jet Conversion Technology. Paper Submitted to *Fuel Processing Technology*, **2020,** 201, 106338
(80) Han Y, Pires A, Garcia-Perez M: Co-hydrotreatment of Bio-oil lignin-rich fraction and Vegetable oil. *Energy & Fuels*, **2020,** 34, 516-529
(81) Esquivel-Garcia R, Ayiania M, Abu-lail N, Lopez-Meza JE, del Rio RE, Garcia-Perez M Ochoa-Zarsosa A, Garcia-Perez ME: Pyrolytic Oil from Amphipterygium Adstringens Bark Inhibits IL-8 Production of IL-17-stimulated HaCaT Keratinocytes. *Journal of Analytical and Applied Pyrolysis*, **2020,** 145, 104749
(82) Haghighi Mood S, Ayiania M, Jefferson-Milan Y, Garcia-Perez M: Nitrogen doped char from anaerobically digested fiber for phosphate removal in aqueous solutions. *Chemosphere*, **2020,** 240, 124889
(83) Han Y, Gholizadeh M, Tran C-C, Kaliaguine S, Li C-Z, Olarte M, Garcia-Perez M: Hydrotreatment of pyroysis bio-oil: A review. *Fuel Processing Technology*, 195, **2019**, 106140
(84) Ayiania M, Hensley AJR, Groden K, Garcia-Perez M, McEwen JS: Thermodynamic Stability of Nitrogen Functionalities and Defects in Graphene and Graphene Nanoribbons from First Principles. *Carbon,* **2019,** 715-726
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Book Chapter:

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(2) Chejne-Janna F, Maya JC, Sierra-Jimenez V, Sánchez M, Garcia-Perez M: Single particle models. Thermochemical Conversion of Lignocellulosic Materials, **2025**, 409-461
(3) Manrique R, Denson M, Garcia-Perez M, Chejne-Janna F: Introduction to thermochemical reactions. Thermochemical Conversion of Lignocellulosic Materials, **2025**, 303-348
(4) Pelaez-Samaniego MR, Garcia A, Martínez-Valencia L, ...Garcia-Perez M: The role of biomass to address global energy and environmental challenges. Thermochemical Conversion of Lignocellulosic Materials, **2025**, 1-31
(5) Terrell E, Chejne-Janna F, Pérez-Mena R, Garcia-Perez M: Introduction to thermochemical reactors, Thermochemical Conversion of Lignocellulosic Materials, **2025**, 73-123
(6) Martínez-Valencia L, Valle JA, Jessup E, Galarza MP, Chejne-Janna F, ...Garcia-Perez M: Biomass resources and supply chains, Thermochemical Conversion of Lignocellulosic Materials, **2025**, 33-72
(7) Alkoussa J, Valdés C, Chejne-Janna F, Dufour A, M Garcia-Perez M: Experimental techniques to study thermochemical reactions: Thermochemical Conversion of Lignocellulosic Materials, **2025**, 249-302
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(12) *Garcia-Perez M*. Chapter 23 Pyrolysis. In: Bioenergy: Principles and Applications. Editors: Yebo Li, Samir Kumar Khanal **2013**
(13) Laird D.A., Rogovska N.P., *Garcia-Perez M*, Collins H.P., Streubel J.D., Smith M : Chapter 16 : Pyrolysis and Biochar – Opportunities for Distributed Production and Soil Quality Enhancement. In : Sustainable Alternative Fuel Feedstock Opportunities, Challenges and Roadmaps for Six U.S. Regions. Proceedings of the Sustainable Feedstocks for Advanced Biofuels Workshop. Edited by Ross Braun, 2011, Doug Karlen and Dewayne Johnson. Web site : http://www.swcs.org/documents/resources/Chapter_16__Laird__Pyrolysis_and_Bi_96E09F2679C2B.pdf
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(15) *Garcia-Perez M*, Das K.C., Adams T.T: Chapter 26: Thermo-chemical Conversion of Biomass in Bio-refineries. In: Conversao Termoquimica de Biomassa

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Patents:

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(2) Walter JC, Garcia-Perez M : Methods and System for Performing Thermochemical Conversion of a Carbonaceous Feedstock to Reaction Product. US Patent US 2014/0275668 A1, Sep. 2014, Method and system for performing thermochemical conversion of a carbonaceous feedstock to a reaction product. US Patent Dec. 4, **2018**

(3) *Garcia-Perez M*, Frear C: Processing Biomass Using Thermochemical Processing and Anaerobic Digestion in Combination. United States Patent Number : US 9,790,115B2, Oct. **2017**

(4) Garcia-Perez M, Walter JC : Method and System for recycling pyrolysis tail gas through conversion into formic acid. US Patent 20180273846 : Sep. 27, **2018**, China Patent No. ZL 2018800207003, No of grant announcement : CN110461810B

(5) Garcia-Perez M, Apasiku MAA, Haghighi Mood S, McEwen JS : Novel Amorphpous carbons for phosphate removal. US provisional Patent Application, No. 63/079,343, filed September 16, **2020**, awarded December 2025

(6) Suliman W, Hopkins BK, Garcia-Perez M, Carbon-rich micro-particles for protecting beeds and overcoming colony collapse disorder. PCT/US2019/014224, **2022**

Grants Awarded:

1. Bio-refinery concept to convert softwood bark to transportation fuels. PIs: Manuel Garcia-Perez, Shulin Chen
Total Award: $ 119,905
Funding agency: Washington State (Department of Ecology)
Period: January 2008 – June 2009

2. Use of bio-char from the pyrolysis of waste organic material as a soil amendment. PIs: David Granatstein, Harold Collins, Manuel Garcia-Perez, Jonathan Yoder.
Total Award: $ 116, 078
Funding Agency: Washington State (Department of Ecology)
Period: January 2008- June 2009

3. High quality transportation bio-fuels from Australian and American biomasses via pyrolisis and bio-oil refinery. PIs: Chun-Zhu Li, Manuel Garcia-Perez

Total Award: $ 237,772
Funding Agency: International Science Linkages. Australian Government
Period: January 2009-January 2011

4. A Pyrolysis Bio-refinery for Transportation Fuels and Adhesives Markets. PIs: Karl R Englund, Marie-Pierre Laborie, Manuel Garcia-Perez
Total Award: $ 180,000
Funding Agency: Sun Grant-DOT
Period: May 2009- May 2012

5. New Concepts to Obtain high Yields of Pyrolytic Sugars for Ethanol Production. PIs: Manuel Garcia-Perez, Shulin Chen
Total Award: $ 120,000
Funding Agency: Sun Grant-DOT
Period: May 2009-May 2012

6. Use of Biochar Produced from Agricultural and Forest Wastes from the State of Washington to Recover Ammonia and Phosphorous from Effluents of Anaerobic Digesters
PI: Manuel Garcia-Perez
Total Award: $ 60,000
Funding Agency: Washington State Department of Agriculture
Period: June 2009 – June 2011

7. Understanding Cellulose Thermochemical Reactions to Enhance the Yields of anhydro-saccharides from Fast Pyrolysis PIs: Manuel Garcia-Perez, Armando McDonald
Total Award: $ 299,930
Funding Agency: US National Science Foundation
Period: January 2010 – December 2012

8. Feasible Pyrolytic Methods for Producing Bio-char and Advanced Bio-fuels in the State of Washington. PI: Manuel Garcia-Perez
Total Award: $ 110,000
Funding Agency: Washington State Department of Ecology
Period: January 2010- June 2011

9. Optimization and Low Energy production of Woody Biomass. PIs: Manuel Garcia-Perez, Shulin Chen
Total Award: $ 30,000
Funding Agency: US Department of Energy
Period: January 2011-June 2011

10. Production of methane and lipids from C1-C4 oxygenated compounds from pyrolysis and torrefaction of lignocellulosic materials. PIs: Manuel Garcia-Perez, Shulin Chen, Craig Frear

Total Award: $ 199,915
Funding Agency: Western SunGrant – DOT
Period: November 2011 – November 2013

11. Bio-oil/bio-char slurry from biomass for co-combustion in coal power plants: achieving power generation with a significant reduction of CO2 emission. PIs: Hongwei Wu, Manuel Garcia-Perez,
Total Award: 210,000 AUD (To be used in Australia)
Funding Agency: International Science Linkages. Australian Government
Period: January 2011- January 2013

12. Waste 2 Fuels 2011-2013
PIs: Chad Kruger, Shulin Chen, Craig Frear, Manuel Garcia-Perez*,
Total Award: $225,000
Funding Agency: *Washington State Department of Ecology*
Period: September 2011 – September 2013

13. NSF CAREER: An Integrated Research and Educational Plan to Develop Selective Pyrolysis Reactors and improve the Capacity of Students to Work in Multidisciplinary Teams.
PI: Manuel Garcia-Perez
Total Award: $ 400,000
Funding Agency: US National Science Foundation
Period: May, 2012 – May 2017

14. US Dairy Adoption of Anaerobic Digestion Systems Integrating Multiple Emerging Clean Technologies: Climate, Environmental & Economic Impacts. PIs: Craig Frear, Harold Collins, Manuel Garcia-Perez, Chad Kruger, C Shumway, Claudio Stockle
Total Award: $749,920
Funding Agency: USDA-NIFA-AFRI Climate Variability.
Period: July 2012 – July 2015

15. PMU: Acquisition of in situ X-Ray Powder Diffraction System for Advancing Biomass Conversion to Aviation Fuels
PIs: Yong Wang, Manuel Garcia-Perez, Su Ha, Grant Norton
Total Award: 242,639
Funding Agency: MURDOCK Foundation
Period: January 2013 – December 2013

16. WSDOE MOA: 50 lb/hr Auger Pyrolyser Equipment
PIs: Chad Kruger, Manuel Garcia-Perez
Total Award: $ 40,000
Funding Agency: Washington State Department of Ecology
Period: June 2013 – July 2013

17. Waste to Fuels Technology 2013-2015
PIs: Chad Kruger, Shulin Chen, Craig Frear, Manuel Garcia-Perezm James Jensen, David Sjoding
Total Award: $ 225,000
Funding Agency: Washington State Department of Ecology
Period: November 2013-June 2015

18. Preliminary Evaluation of a Novel Supercritical CO2 (sCO2) liquefaction for the production of Fuels and Chemicals
PI: Manuel Garcia-Perez
Funding Agency: TERRAPOWER
Total Award: $ 70,366
Period: December 2013 – June 2014

19. Elucidation and Evaluation of Strategies to Mitigate Secondary Reactions in Cellulose and Lignocellulose Pyrolysis for Enhanced Production of Anhydrosugars
PI: Manuel Garcia-Perez
Funding Agency: NSF
Total Award: $ 160,341
Period: September 2014-September 2017

20. Production and testing of Aviation Fuel formed by blends of hydrotreated renewable jet and Hydrotreated Pyrolytic Oil Cuts.
PI: Manuel Garcia-Perez
Funding Agency: JCATI
Total Award: $ 70,772
Period: June 2014-June 2015

21. Prelim Evaluation of a Novel Supercritical CO2 Liquefaction Technology
PI: Manuel Garcia-Perez
Funding Agency: TERRAPOWER
Total Award: $ 75,478
Period: May 2014-December 2014

22. Alternative Jet Fuel Supply Chain Analysis
PI: Michael Wolcott, Michael Gaffney, Manuel Garcia-Perez, Xiao Zhang
Funding Agency: DOT-FAA
Total Award: $ 400,000
Period: August 2014-August 2015

23. Effect of Residual Oxygenated Functional Groups on the behavior of alternative Jet Fuel Properties
PI: Manuel Garcia-Perez, Philip Malte, John Kramlich
Funding Agency: DOT-FAA
Total Award: $ 80,000

Period: May 2015-May 2016

24. Elucidation and Evaluation of Strategies to Mitigate Secondary Reactions in Cellulose and Lignocellulose for enhanced Production of Anhydrosugars
PI: Manuel Garcia-Perez
Funding Agency: NSF
Total Award: $ 160,000
Period: September 2015 – September 2017

25. Production of Activated Carbons from Lignin rich materials (Sub-project of the Northwest Advanced Renewable Aliance, NARA)
PI: Mike Wolcott, Manuel Garcia-Perez
Funding Agency: USDA
Total Award: $ 420,000
Period: September 2014-September 2016

26. Terra Power Project III
PI: Manuel Garcia-Perez
Funding Agency: Terra Power
Total Awards: $ 80,000
Period: June 2015-Sep 2016

27. Alternative Jet Fuel Supply Chain Analysis
PIs: Michael Wolcott, Michael Gaffney, Manuel Garcia-Perez, Xiao Zhang
Funding Agency: Federal Aviation Administration
Total Award: $ 370,000
Period: August 2015-August 2016

28. Waste to Fuels Technology 2015-2017, PIs: Chad Kruger, Shulin Chen, Manuel Garcia-Perez, David Sjoding,
Total Award: $ 225,000,
Funding Agency: Washington State Department of Ecology,
Period: January 2016-June 2017

29. WA Ecology, PIs: Yorgey G, Gang D, Garcia-Perez M, Kruger Ch:
Total Award: $98,800,
Funding Agency: Washington State Department of Ecology
Period: March 2017 – June 2017

30. Terra Power Project IV Novel Supercritical CO_2 Liquefaction
PI: Manuel Garcia-Perez
Funding Agency: Terra Power
Total Awards: $ 59,443
Period: February 2017-December 2017

29. A Novel Bio-based Material for Confronting Honey Bee Colony Collapse Disorder (CCD) Related to Agro-Chemicals.
PIs: Suliman W, Garcia-Perez M, Hopkins B.
Total Award: $ 47,775,
Funding Agency: Commercialization Gap Fund.
Period: January 2018-December 2018

30. Alternative Jet Fuel Supply Chain Analysis.
PIs: Wolcott M, Garcia-Perez M, Season H, Sanders Ch, Zhang X:
Total Award: $ 396,037,
Funding Agency: Federal Aviation Administration.
Period: August 2017 – August 2018

31. Waste to Fuels Technology Partnership.
PIs: Yorgey G, Amonette J, Bradly M, Bronstead E, Collins D, Garcia-Perez M, Jobson B, Seefeldt S
Total Award: $ 225,000
Funding Agency: WA Ecology
Period: December, 2017-June, 2019

32. Experimental Studies and Computational Calculations to Advance our Understanding of Biochar Surface Chemical Functionalities Responsible for Pollutant Removal.
PIs: Garcia-Perez M, McEwen JS
Total Award: $ 326,000,
Funding Agency: NSF
Period: September 2017-September 2020

33. Alternative Jet Fuel Supply Chain Analysis.
PIs: M. Wolcott, X. Zhang, M. Garcia-Perez
Total Awards: $ 377,136
Fuding Agency : DOT-FAA
Period: August 2018-September 2019

34. Hybrid HEFA-HDCJ Process for the Production of Jet Fuel Blendstocks
PIs: M. Garcia-Perez, M. Wolcott, X. Zhang
Total Award: $ 2,762,482
Funding Agency: DOE
Period: Jan 2019-Jan 2022

35. Title: Engineered biochars to enhance the profitability of distributed energy systems and reduce the environmental impact of Anaerobic digesters
PIs: M. Garcia-Perez, G. Moller, D. Strawn

Total Award: $ 318,000 ($ 168 k for WSU)
Funding Agency: DOT-Sun Grant
Period: June 2018-June 2019

36. Title : Collaborative Research : Towards a Generalized Microkinetic Description of Lignin Liquefaction.
PIs : L. Broadbelt (Northwestern University), M. Garcia-Perez
Total Award : $ 330,000 ($ 140 k for WSU)
Funding Agency : NSF
Period : August 2019-August 2022

37. Title : Acid Carbonization Process to Maximize Carbon Conversion Efficiency : Novel path for Carbon Storage and Bio-fuel production.
PI : M. Garcia-Perez
Total Award : $ 29,295
Funding Agency : USDA/University of Tennessee
Period : April 2020-December 2022

38. Title : Alternative Jet Fuel Supply Chain Analysis
PI : Michael Wolcott, ….Manuel Garcia-Perez
Total Award : $ 383,084 ($ 28,400 for Garcia-Perez's group)
Funding Agency : US Department of Transportation – FAA
Period : August 2020-September 30, 2021

39. Title : Alternative Jet Fuel Supply Chain Analysis
PI : Michael Wolcott, …. Manuel Garcia-Perez
Total Award : $ 290,511 ($ 45,221 for Garcia-Perez's group)
Funding Agency : US Department of Transportation- FAA
Period : October, 2021- October 2022

40. Title : Hydrogen production alternatives for sustainable aviation fuel (SAF) production
PI : Manuel Garcia-Perez, Michael Wolcott, ….
Total Award : $ 450,000 ($ 199,578 for Garcia-Perez's group)
Funding Agency : US Department of Transportation-FAA
Period : October 2021-October 2022

41. Title : Waste to Fuels Technology Partnership : two-year continuation
PI : Georgine Yorgey, ….Manuel Garcia-Perez
Total Award : $ 450,000 (101,300 for Garcia-Perez's group)
Funding Agency : Washington State Department of Ecology
Period : January 2022-July 2023

42. Title : Studies Supporting the Development and use of Engineered Biochars to reduce odors from composting facilities
PI : Manuel Garcia-Perez
Total Award : $ 40,000
Funding Agency : Washington State Department of Commerce
Period : 3/2022-6/2022

43. Title : Hydrogen production alternatives for sustainable aviation fuel (SAF) production
PI : Manuel Garcia-Perez, Michael Wolcott
Total Award : $ 458,026
Funding Agency : US Federal Aviation Administration (US DOT)
Period : 10/10/2022-9/30/2023

44. Title : Alternative Jet Fuel Supply Chain Analysis
PI : Michael Wolcott, …Manuel Garcia-Perez
Total Award : $ 469,136
Funding Agency : Us Federal Aviation Administration (US DOT)
Period : 8/11/2020 – 9/30/2023

45. Title : ASCENT 93 Collaborative Research Network for Global SAF Supply Chain Development; Latin America and Caribbean (LAC) case
PI : Manuel Garcia-Perez
Total Award :$ 306,586
Funding Agency : US Federal Aviation Administration (US DOT)
Period : 1/1/2023-12/31/23

46. Title : Hydrogen and Power to Liquid (PtL) Concepts for SAF Production
PI : Manuel Garcia-Perez
Total Award :$ 458,026
Funding Agency : US Federal Aviation Administration (US DOT)
Period : 3/15/2024-3/14/25

47. Title : ASCENT 93 Collaborative Research Network for Global SAF Supply Chain Development; Latin America and Caribbean (LAC) case
PI : Manuel Garcia-Perez
Total Award :$ 306,586
Funding Agency : US Federal Aviation Administration (US DOT)
Period : 3/15/2024-3/14/25

48. Title : ASCENT 93 Collaborative Research Network for Global SAF Supply Chain Development; Latin America and Caribbean (LAC) case

PI : Manuel Garcia-Perez
Total Award :$ 350,000
Funding Agency : US Federal Aviation Administration (US DOT)
Period : 3/15/2024-3/14/25

49. Title : Integrated Strategy for Developing Detailed Représentations of Pyrolysis Oils
PI : Manuel Garcia-Perez
Total Award :$ 600,000
Funding Agency : Exxon Mobile
Period : 1/1/2024-12/31/26

50. Title : Waste to Fuels Technology Partnership : two-yer continuation
PI : Georgine Yorgey, Manuel Garcia-Perez
Total Award :$ 450,000
Funding Agency : Washington State Department of Ecology
Period : 9/1/2023-6/30/25

Donations:

1.- Berry Family (2009): To support New Faculty to Grow a Cluster in Sustainable Energy Technology. Funds received: $ 21,000

2.- Portland General Electric (2011): To support studies on the Torrefaction of Arundo Donax. Funds received: $ 15,000

3.- Portland General Electric (2012): To Support the growth of Biomass Torrefaction Capabilities: Funds received: $ 11,000

4.- Portland General Electric (2013): To Support the growth of Biomass Torrefaction Capabilities. Funds received: $ 19,000

5.- Portland General Electric (2013): Analytical Balance for Biomass Thermochemical Conversion Laboratory. Funds received: $ 3,000

6.- Portland General Electric (2013): Vacuum Mesh Reactor Pressure Gauge and Associated Components for Thermochemical Research: Funds received: $ 2,713

Main Thesis Advisor:

Current Students:
1. Veronica Crow, PhD student Biological Systems Engineering
2. Mohammad Mezbah Hoque, PhD student, Biological Systems Engineering
3. Claudia Marcela Valderrama-Rios, PhD student, Biological Systems Engineering

4. Paulina A. Echeverria Paredes, PhD Biological Systems Engineering
5. Micaela Del Rocio Peralta, PhD Biological Systems Engineering
6. Raul Perez, PhD Biological Systems Engineering
7. Brandon Lewis, PhD Biological Systems Engineering
8. Rayman Angulo, PhD Biological Systems Engineering
9. Maryam Edrisi, PhD Biological Systems Engineering

Students Graduated as Main Advisor or co-advisor

PhD student:

1. Valentina Sierra, PhD student, Biological System Engineering
2. Marwan Hsni Gagaa, PhD student, Biological Systems Engineering, 2023
3. Melba Denson, PhD student, Biological System Engineering, 2023
4. Raiza Manrique, National University of Colombia, Chemical Engineering, 2023 (Co-advised with Farid Chejne)
5. Mainali Kalidas, PhD student Biological Systems Engineering 2022
6. Sohrab haghighi, PhD student Biological Systems Engineering 2022
7. Iva Tews, PhD student, WSU Biological Systems Engineering 2022
8. Lina Martinez,.PhD student, Biological Systems Engineering 2022
9. Anamaria Paiva, PhD student, Biological Systems Engineering 2022
10. Tanzil Abid, PhD student, WSU Biological Systems Engineering, 2020
11. Yinglei Han, PhD student, WSU Biological Systems Engineeing, 2020
12. Michael Ayania. PhD student Biological Systems Engineering, 2020
13. Evan Terrell, PhD student Biological Systems Engineering, 2020
14. Filip Stankovic, PhD student, WSU Biological Systems Engineering, 2017
15. Michael Brennan Pecha, PhD student, WSU Chemical Engineering, 2017
16. Jorge Ivan Montoya, Energy Systems, 2017, National University of Colombia (Co-advised with Prof. Farid Chejne)
17. Geraldo Ferreira David, Process Engineering, 2016, State University of Northern of Rio de Janeiro (UENF) (Co-advised with Prof. Victor Haber Perez)
18. Matthew Smith, PhD student, WSU Chemical Engineering, 2016
19. Daniel Howe, PhD, WSU Chemical Engineering, 2015
20. Jesus Alberto Garcia, PhD, WSU Biological Systems Engineering, 2015
21. Waled Suliman, PhD, WSU Soil Sciences, 2015
22. Shi-Shen Liaw, PhD, WSU Biological Systems Engineering 2014
23. Shuai Zhou, PhD, WSU Biological Systems Engineering, Graduated 2013
24. Zhouhong Wang, PhD, WSU Biological Systems Engineering, 2013
25. Jieni Lian, PhD, WSU Biological Systems Engineering, 2013 (Co-advised with Prof. Shulin Chen)

MSc Student:

1.Matthew Smith, MS, WSU Biological Systems Eng., Graduated 2011
2. Oisik Das, MS WSU Biological Systems Engineering, Graduated 2010
3. Robert Johnson Lee, MS, WSU Biological Systems Engineering, Graduated 2009
4. Daniel Negru, MS, University of Bologna (Exchange student), Italy, Graduated 2009

5. Anamaria Paiva Pinheiro, MSc, WSU Chemical Engineering, 2016
6. Gabriela Ferraz Pereira, MSc, WSU Biological Systems Engineering, 2016
7. Alex Dunsmoor, MSc, WSU Biological Systems Engineering, 2016
8. Kalidas Mainali, MSc, WSU Biological Systems Engineering, 2018
9. Alia Nais, MSc, WSU Biological Systems Engineering, 2020
10. Yaime Jefferson, MSc WSU Biological Systems Engineering, 2021
11. Jose Almodovar, MSc WSU, Biological Systems Engineering, 2021
12. Anika Afrin, MSc, WSU, Biological Systems Engineering, 2025

Current Committee Member of the following Graduate Students

Committee Members Graduated:

1. Tianyan Guo (MSc, Biological Systems Engineering, WSU)
2. Ling Zhang (PhD, Biological Systems Engineering, WSU)
3. Abdelsalam Aldrmon (PhD Soil Science, WSU)
4. Xiangyu Gu (PhD, Chemical Engineering, WSU)\
5. Jose Martinez-Fernandez (PhD Biological Systems Engineering, WSU)
6. Senthil Subramaniam (PhD Engineering Science, WSU)
7. Yuxiao Xie (PhD, Biological Systems Engineering, WSU)
8. Baran Arslan (PhD Chemical Engineering, WSU) (2017)
9. Jason Selwitz (PhD Biological Systems Engineering WSU) (2017)
10. Ali Abghari (PhD Biological Systems Engineering, WSU) (2017)
11. Rishkesh Ghogare (PhD Biological Systems Engineering, WSU) (2017)
12. Sujala Bhattarai (PhD, Biological Systems Engineering, WSU) (2017)
13. Rokib Islam (PhD, Electrical Engineering, WSU) (2016)
3. Mohammadali Azadfar (PhD Biological Systems Engineering, WSU) (2015)
4. Carlos Alvarez-Vasco (PhD Chemical Engineering, WSU) (2015)
5. Jose Salomon Fernandez-Martinez (MSc, Biological Systems Engineering, WSU) (2015)
6. Charles Degan (MSc Biological Systems Engineering, WSU) (2014)
7. Xiao Miao (PhD Biological Systems Engineering, WSU) (2014)
8. Zheting Bi (PhD Biological Systems Engineering, University of Idaho) (2014)
9. Difeng Gao (PhD Biological Systems Engineering, WSU) (2014)
10. Lishi-Yan (PhD Biological Systems Engineering, WSU-Tri-cities) (2014)
11. Tingting Li (MSc Biological Systems Engineering, WSU) (2014)
12. Diwakar Rana (PhD Chemical Engineering, WSU-Tri-cities, 2013)
13. Dong Tao (PhD Biological Systems Engineering, WSU, 2013)
14. Amir Sahaf (PhD Materials Science and Engineering, WSU, 2013)
15. Liang Yu (PhD, Biological Systems Engineering, WSU) (2012)
16. Nicholas Kennedy (MSc Biological Systems Enginering, WSU) (2012)
17. Difeng Gao (MSc Biological Systems Engineering, WSU) (2012)
18. Erik Wemlinger (PhD , Electrical Engineering, WSU) (2012)
19. Allan Gao (MSc Biological Systems Engineering, WSU) (2012)
20. Jijiao Zeng (PhD, Biological Systems Engineering, WSU) (2012)
21. Chao Miao (MSc Biological SystemsEngineering, WSU) (2011)

22. Mythreyi Chandoor (MSc, Biological Systems Engineering, WSU) (2010)
23. Yubin Zheng (MSc, Biological Systems Engineering, WSU) (2010)
24. Xiochen Yu (MSc, Biological Systems Engineering, WSU) (2010)
25. Isabela Reinati (MSc Chemical Engineering, WSU) (2009)
26. Maryam Davaritouchaee (PhD Chemical Engineering, WSU)
27. Ayca Seker (PhD, Biological Systems Engineering, WSU)
28. Renan Stefanini (PhD Biological Systems Engineering, WSU)
29. Kely Proctor (PhD, Oregon State University)

Supervised visiting scholars:

1. Prof. Shangyu Liu (Visiting Professor from Taiyuan University of Technology, Six months supported by China's funds)
2. Prof. Victor Haber Perez (Visiting Professor from UENF/ CCTA/ LTA, Supported by CAPES, Brazil)
3. Prof. Oselys Rodriguez Justiz (Visiting Professor from Brazil, Sponsored by CAPES, Brazil)
4. Prof. Electo Silva Lora (Fulbright Scholar, Federal University of Itajuba, Brazil)
5. Prof. Juan Fernando Perez-Bayer (Visiting professor from the University of Antioquia, Colombia)
6. Prof. Juan Fernando Espinal Lopez (Visiting professor from the University of Antioquia)
7. Dr. Nancy Acelas (Researcher from the University of Antioquia, Colombia)
8. Dr. Ian Dalmeyer (NARA scholar)
9. Prof. Martin Gamarra (University of Brazilia, Brazil)
10. Rupam Kataki (Tezpur University, India)
11. Prof. Bikram Borkotoki (Assam Agriculture University, India)

Summer Internship Students advised:

1. Seth Jordan (Heritage High School Student 2010) (Imagine Tomorrow Student)
2. Gregory Makar (Heritage High School Stud. 2010) (Imagine Tomorrow Student)
3. Alex Pien (Camas High School Student 2010) (Imagine Tomorrow Student)
4. Trevor Lewis (Civil Engineeing, WSU, 2010-2011)
5. Joran Boegborn (Chemical Eng. Student Twente University, Netherlands, 2011)
6. Jeroen Degraaf (Chemical Eng. Twente University, Netherlands, 2011)
7. Connor Heinz (Heritage High School Student 2011) (Imagine Tomorrow Student)
8. Aloren Martin (Heritage High School Student 2011) (Imagine Tomorrow Student)
9. Michiel van Kuppevelt (Chem. Eng. Student Twente University, Netherlands, 2012)
10. Tim Hilbers (Chem. Eng. Student Twente University, Netherlands, 2012)
11. Dylan Quinn (Moscow High School, 2012) (Imagine Tomorrow Student)
12. Ashley Rodrigues (Biotech. Engineering, Universidad Politecnica de Costa Rica, 2012)
13. Pablo Arauzo (Chemical Engineering, University of Zaragoza, 2013, 2014)

14. Raul Pelaez-Garcia (Pullman High School, 2014)
15. Kersten Anderson (Pullman High School, 2014) (Imagine Tomorrow Student)
16. Cooper Gross (Pullman High School, 2014) (Imagine Tomorrow Student)
17. Rhya Sablani (Pullman High School, 2015)
18. Kelly Welsch (Undegraduate student, Chemical Engineering, WSU 2014-2015)
19. Zoey Henson (Undergraduate student, Chemical Engineering, WSU, 2014-2015)
20. Patrick Enslow (Undergraduate student, Chemical Engineering, WSU 2014-2015)
21. Marisol Contreras (Undergraduate student, Chemical Engineering, WSU 2014-2015)
22. David Matthew Tobin (Undergraduate student, Chemical Engineering, WSU 2014-2015)
23. Kristen Fork (Undergraduate Chemical Engineering, WSU, 2015-2016)
24. Rosemary Nicholson (Undergraduate student, Pen State University, summer 2017)
24. Erendira Valencia Aviles (Universidad Michoacana de San Nicolas de Hidalgo) (Septiembre 2017-May 2018)
25. Roberto Esquivel-Garcia (Universidad Michoacana de San Nicolas de Hidalgo) (July 2017-July 2018)
26. Carlos David Martinez-Smit (Universidad Nacional de Colombia, Medellin, September 2021-December 2021)
27. John Vincent Nate (Central Luzon State University) (September 2021-Janaury 2022)
28. Raiza Johanna Manrique Waldo (University Nacional de Colombia, Medellin, November, 2021-December 202

Mentoring Undergraduate Students in Competitions:

Pecha B, Chambers EJ, Levengood C, Bair J, Liaw S-S : CougsCARE Clean and Renewable Energy at WSU. Washington State University's CHHP System Design and Report. April 2, 2012 (Advisors : Jacob Leachman, Su Ha, Manuel Garcia-Perez)

Graduate visiting students supervised:

1. Geraldo Ferreira David (State University of the North Fluminense Darcy Ribeiro, Brazil)
2. Lucia Botella (Universidad de Zaragoza, Spain)
3. Janet Arenas (Universidad Michoacana de San Nicolas de Hidalgo, Mexico)

Invited presentations and courses:

1. Voiland School of Chemical Engineering and Bioengineering WSU, USA (2008)

2. Wood Materials and Engineering Laboratory, WSU, USA (2008)

2. Chemical Engineering Department at Autonomous University of Nuevo Leon, Mexico, (2009)

3. Curtin University of Technology, Perth, Australia, (2009)

4. Pacific Northwest Bio-char Conference, Richland, Washington (2009)

5. Forestry Department, University of Idaho, USA (2010)

6. Invited to teach two courses at the Master Program in Energy Planning and Management at the University of Cuenca, Ecuador (2010)

7. Invited speaker to the 11th Annual Northwest Conference: Harvesting Clean Energy Boise, Idaho, USA (2011)

8. Organized and moderated a session called: Thermochemical Conversion for Renewable Energy, Fuels and Stable Carbon: at the Future Energy Conference. Seattle, USA (2011)

9. Invited Speaker at the Hybrid Processing for Biorenewable Fuels & Chemicals Production Symposium, Iowa State University, USA (May: 2012),

10. Invited Speaker at the Workshop on Lignocellulosic Biofuels using Thermochemical Conversion. Auburn University, USA (June: 2012), Invited Speaker at the XVII International Oil Palm Conference, Cartagena, Colombia (September: 2012),

11. Biomass thermochemical Conversion Course at the University of Zaragoza Spain (November: 2012)

12. Universidad Nacional de Colombia (sede Medellin), Colombia (September 2014)

13. National Renewable Laboratories (Golden, Colorado) (September 2014)

14. University of Morelia (Mexico) (September 2014)

Professional service activities:

1. Member of the USDA-DOE Biomass Research and Development Technical Advisory Committee (May 2015-2021).
2. Associate Editor: Biomass and Bioenergy (January 2013-2024)
3. Chief Editor: Biomass and Bioenergy (2024-Present)
3. Member of Editorial Advisory Boards: (2) Energy and Fuels, (2) Journal of Analytical and Applied Pyrolysis and (3) Biochar
4. Member of the American Chemical Society and *Professional Associations:* American Chemistry Society, Chemical Institute of Canada, ASABE
5. Jury of the Imagine Tomorrow Competition: (Washington State University, 2008 and 2009, 2010, 2011, 2012, 2013 and 2014).

6. Reviewer to peer reviewed Journals: *Journal of Analytical and Applied Pyrolysis*, *Energy and Fuels*, *Fuel*, *Industrial and Engineering Chemistry Research*, *Applied Energy*, *Fuel Processing Technology*, *Environmental Science and Technology*, *Green*

Chemistry, *Bio-molecules*, *Bio-resource Technology*, *Fuel Safety and Environmental Protection*, *Transactions of ASABE*, *Applied Bio-chemistry and Biotechnology*, *International journal of Greenhouse Gas Control*, *Energy Conservation and Management*, *Catalysis Science & Technology*, *Catalysis Science & Technology*, *Chemical Engineering Journal*, *Renewable Energy*.

7. Reviewer of Proposals: *US Department of Energy, California Energy Commission, Washington State Department of Natural Resources, US National Science Foundation, US Department of Agriculture, Sun Grant Initiative, U.S. Civilian Research & Development Foundation:, DoE/SERDP Waste to Energy Converters for Overseas Contingency Operations, Natural Sciences and Engineering Council of Canada (NSERC) (Canada), NSERC Canada Research Chair (Canada), Australian Research Council (ARC) (Australia), Colciencias (Colombia), Fund Nature et Technologie (Quebec Canada).*

8. Main coordinator and manager of the Departmental Central Analytical Laboratory (For eight years). http://www.bsyse.wsu.edu/core/Research/servicecntrs/CACL-service-cntr/caclhome.html.

9. Participating in the Provost's Leadership Academy

10. Examiner of International MSc and PhD theses (Twente University (Netherlands), Curtin University (Australia), Melbourne University (Australia), University of Zaragoza (Spain), Laval University(Canada))

11. Member of the International Advisory Committee of Cenipalma (Research Center of the Palm Oil industry of Colombia) (2009-present)

12. Member of the WSU Latin America Interest Group (Work actively with the International Program in the development strategies to increase the recruitment of Latin American Students to our graduate Program)

13. Coordinator of the Departmental Biomass Processing and Bio-products graduate program.

14. Mentored four BS students from Twente University (Netherlands), University of Zaragoza (Spain), Technological Institute of Costa Rica (Costa Rica)

15. Co-Chair Bioenergy IV: Innovation in Biomass Conversion for Heat, Power, Fuels and Chemicals. An ECI Conference. June 9-14, 2013. Basiliani Resort, Otranto, Italy.

16. Co-Chair Pyroliq 2019: Pyrolyis and Liquefaction of Biomass and Wastes, ECI Conference, Cork, Ireland, June 16-20, 2019

17. Co-chair Biochar I: Production, Characterization and Applications, ECI Conference, Alba, Italy, August 20-25, 2017

18. Co-chair Biochar II: Production, Characterization and Applications, ECI Conference Series, Cetraro, Calabria, Italy, September 15-20, 2019

19. Co-chair Biochar III. Production, Characterization and Applications, ECI Conference Series, Tomar, Portugal, September 17-22, 2023

21. Co-chair Pyroliq I: Pyrolysis and Liquefaction of Biomass and Wastes Cork Ireland, 2019

22. Co-chair Pyrlliq II: Pyrolysis and Liquefaction of Biomass and Wastes, Schloss, Hernstein, Austria, 2023
20. Co-chair Pyroliq III. Pyrolysis and Liquefaction of Biomass and Wastes, Cetraro, Calambria, Italy, September 14-19, 2025