

William Joseph Sagues

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Updated July 2024

EDUCATION

PhD, Forest Biomaterials North Carolina State University	January 2018 - August 2020
MSc, Chemical Engineering University of Florida	August 2015 - December 2017
MSc, Agricultural & Biological Engineering University of Florida	August 2015 - December 2017
BSc, Agricultural & Biological Engineering University of Florida	August 2009 - May 2012

PROFESSIONAL APPOINTMENTS

Assistant Professor Director of the Biocarbon Utilization & Sequestration (BUS) Laboratory Biological & Agricultural Engineering North Carolina State University	August 2020 - present
Co-Founder Flip Biosystems, Inc.	May 2023 - present
Graduate Student Research (SCGSR) Fellow Office of Science, U.S. Department of Energy Host Site: National Renewable Energy Laboratory	January 2020 - August 2020
Graduate Research Assistant Department of Forest Biomaterials, North Carolina State University	January 2018 - August 2020
Summer Scholar Green Chemistry Summer School, American Chemical Society	July 2019
Technology-to-Market Scholar Advanced Research Projects Agency (ARPA-E), U.S. Department of Energy	May 2018 - August 2018
Graduate Research Assistant Department of Agricultural & Biological Engineering, University of Florida Department of Chemical Engineering, University of Florida	August 2015 - December 2017
Senior Bioprocess Engineer Bioprocess Engineer Stan Mayfield Biorefinery, Cellulosic Research & Demonstration Plant Florida Center for Renewable Chemicals & Fuels, University of Florida In Partnership with Georgia-Pacific LLC	March 2014 - August 2015 May 2012 - March 2014

RESEARCH GRANTS FUNDED
JANUARY 2021 – PRESENT (TOTAL: \$21,825,849)

Full list of proposals (awarded, pending, and rejected) available by request

* indicates interinstitutional grant

Lead Principal Investigator (Total: \$1,786,532)

1. *Bioprocessing Research Support*, Gift from Burnham, 2024, **\$100,000**. PI: **W. Joe Sagues**
2. *Conversion of Cotton Textile Waste to Biochar and Compost*, Cotton Incorporated, 2023, **\$75,000**. PI: **W. Joe Sagues**
3. *Anaerobic Digestion of Industrial Organic Residues*, Burnham RNG, 2023-2024, **\$76,810**. PI: **W. Joe Sagues**
4. KEITS Climate Leaders Award, Kenan Institute of Engineering, Technology, & Science, 2023, **\$5,000** PI: **W. Joe Sagues**
5. Goodnight Early Career Innovator Award. 2022 – 2025. \$22,000 per year for research (**\$66,000** total). PI: **W. Joe Sagues**
6. *Carbon Mineralization via Rock Quarry Fines*, Carolina SunRock, 2022, **\$25,004**. PI: **W. Joe Sagues**, Co-PI: A. Woodley
7. *Electrifying Bioproducts via C1 Fermentation*, USDA, 2022-2023, Hatch Multi-State Grant, **\$5,000**. PI: **W. Joe Sagues**
8. *Electrifying Animal Feed: Leveraging Microbial Communities in Formicine Ants to Produce Single Cell Protein via Assimilation of CO₂-Derived Formic Acid*, Research Innovation Seed Funding, North Carolina State University, 2022-2023, **\$25,000**. PI: **W. Joe Sagues**, Co-PIs: Elsa Youngsteadt, Amy Grunden, Sung Woo Kim, Kelly Zering, & Doug Call
9. *Electrifying Animal & Fish Feed: Leveraging Microbes in Food Waste Anaerobic Digesters to Produce Single Cell Protein via Assimilation of CO₂-Derived Formic Acid*, NC Biotechnology Center, 2022-2023, **\$12,477**. PI: **W. Joe Sagues**, Co-PIs: Jay Cheng & Sung Woo Kim
10. *Bioprocess Development for Pulp Liquor Fermentation*, Rayonier Advanced Materials, 2022-2024, **\$23,187**. PI: **W. Joe Sagues**, Co-PIs: Hasan Jameel & Praveen Kolar
11. *Butanol & Nanocellulose from CRISPR-Edited Poplar*, NC Department of Agricultural & Consumer Services, 2021 – 2023, **\$100,000**. PI: **W. Joe Sagues**, Co-PIs: Wayne Yuan, Jack Wang, & Nathalie Lavoine
12. **Integrating Carbon Capture, Utilization, & Sequestration into Chemical Pulp Mills*, US Department of Energy's Advanced Manufacturing Office, Award Number: DE-EE0009413, 2021 – 2024, **\$1,273,054**. PI: **W. Joe Sagues**, Co-PIs: Fanxing Li, Rachel Cook, Sunkyu Park, & Hasan Jameel

Co-Principal Investigator (Total: \$20,039,317)

1. *Enhanced Weathering for Carbon Sequestration in High Disturbance Organic Systems: An Evaluation on Climate Change Potential, Soil Fertility, and Agronomic Implications*. USDA, 2024 – 2029, **\$999,979**. PI: Alex Woodley, Co-PIs: **W. Joe Sagues**, Luciano Gatiboni, David Suchoff, and Binwanath Dari.
2. *Advanced Separation and Processing Technologies for Enhanced Product Recovery and Improved Water Utilization, Cost Reduction, and Environmental Impact of an Integrated*

- Lithium-Ion Battery Recycling System*, US DOE, 2023 – 2027, **\$606,156**. PI: Ryan Melsert, American Battery Technology Company. Co-PIs: **W. Joe Sagues**, Sunkyu Park.
3. **Sargassum and Wood Waste for Aviation Fuel and Graphite (SWAG)*, US DOE, 2022 – 2026, **\$2,250,000**. PI: Sunkyu Park, Co-PIs: **W. Joe Sagues**, Richard Venditti, Stephen Kelley, Margaret Blanchard.
 4. **Biocatalyst Interactions with Gases (BIG) Collaboration*, Novo Nordisk Foundation, 2022 – 2027, **\$7,000,000**. PI: Sonja Salmon, Co-PIs: **W. Joe Sagues**, Amy Grunden, Doug Call, Igor Bolotnov, Nathan Crook, Fanxing Li, Flora Meilleur, & Yaroslava Yingling
 5. *New Methods for Methane Pyrolysis*, Eastman Chemical Company, 2022 – 2024, **\$556,536**. PI: Fanxing Li, Co-PIs: **W. Joe Sagues**, Jian Dou, & Wenpei Gao
 6. *A Feasibility Assessment of Waste Cotton to Bioenergy with Carbon Removal*, Cotton Incorporated, 2022 – 2024, **\$52,000**. PI: Richard Venditti. Co-PI: **W. Joe Sagues**
 7. *Equipment Grant*, NCSU College of Agriculture and Life Science, 2022, **\$80,000**, PI: Jay Cheng. Co-PI: **W. Joe Sagues**, Shuijin Hu, Francois Birgand, Lingjuan Wang-Li, Praveen Kolar, and Wenqiao Yuan
 8. **Roads to Removal – Options for Negative Emissions in the United States*, US Department of Energy, 2021 – 2024, **\$4,400,000**. PI: Roger Aines (Lawrence Livermore National Laboratory), Co-PIs: **W. Joe Sagues**, Jennifer Pett-Ridge, Sarah Baker, Eric Slessarev, Simon Peng, Corinne Scown, Hanna Brunig, Matt Langholtz, Dan Sanchez, Mark Ashton, Mark Ducey, Mark Bradford, Phil Robertson, Keith Paustian, Dermot Hayes, Jerome Dumortier, Mark Wright, Helen Pilorge, & Susan Hovorka
 9. *Enzyme Enhanced Anaerobic Digestion of Source Separated Organics and Municipal Solid Waste*, Novozymes, 2021 – 2022, **\$94,708**. PI: Jay Cheng, Co-PIs: **W. Joe Sagues** & Praveen Kolar.
 10. **Scaling Up Biocrude Derived Anode Material (BDAM)*, US Department of Energy’s Bioenergy Technology Office, DE-FOA-0002203 SCUBA, Control Number: 2203-1679, 2021 – 2025, **\$3,999,938**. PI: Sunkyu Park, Co-PIs: **W. Joe Sagues**, Mark Nimlos (NREL), Steve Kelley, Hasan Jameel, Sang-Don Han (NREL), Yuan Yao (Yale)

PEER-REVIEWED PUBLICATIONS

[Google Scholar](#)

Published:

1. S. C. Dey, L. Lower, T. Vook, M. N. Islam, **W. J. Sagues**, S. D. Han, M. Nimlos, S. S. Kelley, and S. Park. 2024. “Catalytic graphitization of pyrolysis oil for anode application in lithium-ion batteries”. *Green Chemistry (IF: 9.3)*, 26, 15, 8840-8853
<https://doi.org/10.1039/D4GC01647E>
2. R. Wu, E. Carrejo, M. S. Reza, E. Woods, S. Razavi, S. Park, F. L., **W. J. Sagues**. 2024. “Kinetic Assessment of Pulp Mill-Derived Lime Mud Calcination in High CO₂ Atmosphere” *Fuel (IF: 7.4)*, 373, 132372
<https://doi.org/10.1016/j.fuel.2024.132372>
3. N. Rafsan, S. B. Haque, S. Shah, **W. J. Sagues**, R. Ding, J. Ferraris, P. Kolar. 2024. “Poultry litter-derived biochar for supercapacitor applications” *Next Energy*
4. S. T. Pires, A. Williams, J. Daystar, **W. J. Sagues**, K. Lan, and R. Venditti. 2024. “Evaluating cotton apparel with dynamic life cycle assessment: the climate benefits of

- temporary carbon storage”. *Bioresources* (IF: 1.75)
DOI: 10.15376/biores.19.3.5074-5095
5. S. C. Dey, B. Worfolk, L. Lower, **W. J. Sagues**, M. Nimlos, S. S. Kelley, and S. Park. 2024. “Phenolic resin derived hard carbon anode for sodium-ion batteries: A review”. *ACS Energy Letters* (IF: 22.0), 9, 2590 – 2614
 6. E. Woods, V. R. Berrio, P. Berlin, Y. Qiu, N. Clauser, and **W. J. Sagues**. 2024. “Biomass Composting with Gaseous Carbon Dioxide Capture” *RSC Sustainability*
<https://doi.org/10.1039/d3su00411b>
 7. T. Vook, S. C. Dey, J. Yang, M. Nimlos, S. Park, S. D. Han, and **W. J. Sagues**. 2023. “Sustainable Li-ion anode material from Fe-catalyzed graphitization of paper waste” *Journal of Energy Storage* (IF: 9.4), 73, 109242
<https://doi.org/10.1016/j.est.2023.109242>
 8. L. Lower, S. C. Dey, T. Vook, M. Nimlos, S. Park, and **W. J. Sagues**. 2023. “Catalytic graphitization of biocarbon for Li-ion anodes: A mini-review” *ChemSusChem* (IF: 9.14), e202300729
<https://doi.org/10.1002/cssc.202300729>
 9. J. P. Dees, **W. J. Sagues**, E. Woods, H. M. Goldstein, A.J. Simon, & D. L. Sanchez. 2023. “Leveraging the Bioeconomy for Carbon Drawdown” *Green Chemistry* (IF: 11.034), 25, 2930-2957
<https://doi.org/10.1039/D2GC02483G>
 10. W. Peng, H. Bao, Y. Wang, E. Cote, **W. J. Sagues**, H. H. Weaver, J. Gao, D. Xiao, and Z. Tong. 2023. “Selective Depolymerization of Lignin Towards Isolated Phenolic Acids Under Mild Conditions” *ChemSusChem* (IF: 9.14)
<https://doi.org/10.1002/cssc.202300750>
 11. E. R. Molina, T. Vook, **W. J. Sagues**, K. Kim, N. Labbé, S. Park, S. S. Kelley. 2023. “Green Needle Coke Production from Pyrolysis Biocrude toward Bio-based Anode Material Manufacture: Biochar Fines Addition Effect as “Physical Template” on the Crystalline Order” *ACS Sustainable Chemistry & Engineering* (IF: 8.4), 11, 8, 6944-6955
<https://doi.org/10.1021/acssuschemeng.2c06952>
 12. L. M. Lower, J. Cunniffe, J. J. Cheng, **W. J. Sagues**. 2022. "Coupling Circularity with Negativity in Food & Agriculture Systems" *Journal of the American Society of Agricultural & Biological Engineers*
doi: 10.13031/ja.14908
 13. **W. J. Sagues**, H. Jameel, D. L. Sanchez, and S. Park. 2020. “Prospects for Bioenergy with Carbon Capture & Storage (BECCS) in the United States Pulp and Paper Industry” *Energy & Environmental Science* (IF: 33.250), 13, 8, 2243-2261
<https://doi.org/10.1039/D0EE01107J>
 14. **W. J. Sagues**, C. A. Assis, P. Hah, D. L. Sanchez, Z. Johnson, M. Acharya, H. Jameel, and S. Park. 2020. “Decarbonizing Agriculture through the Conversion of Animal Manure to Dietary Protein and Ammonia Fertilizer” *Bioresource Technology* (IF: 5.807), 297
<https://doi.org/10.1016/j.biortech.2019.122493>
 15. **W. J. Sagues**, J. Yang, N. Monroe, S. D. Han, T. Vinzant, M. Yung, H. Jameel, M. Nimlos, & S. Park. 2020. “A Simple Method for Producing Bio-Based Anode Materials for Lithium-Ion Batteries” *Green Chemistry* (IF: 9.405), 22, 7093 – 7108
<https://doi.org/10.1039/D0GC02286A>

16. H. Bao, **W. J. Sagues**, Y. Wang, W. Peng, L. Zhang, S. Yang, D. Xiao, and Z. Tong. 2020. “Depolymerization of Lignin into Monophenolics by Ferrous/Persulfate Reagent Under Mild Conditions” *ChemSusChem* (IF: 7.962)
<https://doi.org/10.1002/cssc.202002240>
17. **W. J. Sagues**, H. Jameel, S. Park, D. L. Sanchez. 2019. “Enhanced Carbon Dioxide Removal from Coupled Direct Air Capture-Bioenergy Systems” *Sustainable Energy & Fuels* (IF: 4.912), 3, 3135-3146
<https://doi.org/10.1039/C9SE00384C>
18. **W. J. Sagues**, A. Jain, D. Brown, S. Aggarwal, A. Suarez, M. Kollman, S. Park, D. S. Argyropoulos. 2019. “Are Lignin-Derived Carbon Fibers Graphitic Enough?” *Green Chemistry* (IF: 9.405), 21, 4253-4265
<https://doi.org/10.1039/C9GC01806A>
19. **W. J. Sagues**, H. Bao, J. Nemenyi, Z. Tong. 2018. “Lignin-First Approach to Biorefining: Utilizing Fenton’s Reagent and Supercritical Ethanol for the Production of Phenolics and Sugars” *ACS Sustainable Chemistry & Engineering* (IF: 6.140), 6, 4, 4958-4965
<https://doi.org/10.1021/acssuschemeng.7b04500>
20. E. Castro, I. U. Nieves, V. Rondon, **W. J. Sagues**, M. T. Fernandez-Sandoval, L. P. Yomano, S. W. York, J. E. Erickson, W. Vermerris. 2017. “Potential for ethanol production from different sorghum cultivars” *Industrial Crops and Products* (IF: 3.849), 109, 367-373
<https://doi.org/10.1016/j.indcrop.2017.08.050>
21. K. Gubicza, Z. Barta, I. U. Nieves, **W. J. Sagues**, K. T. Shanmugam, L. O. Ingram. 2016. “Techno-economic analysis of ethanol production from sugarcane bagasse using a Liquefaction plus Simultaneous Saccharification and Co-Fermentation process” *Bioresource Technology* (IF: 5.807), 208, 42-48
<http://dx.doi.org/10.1016/j.biortech.2016.01.093>
22. E. Castro, I. U. Nieves, M. T. Mullinnix, **W. J. Sagues**, R. W. Hoffman, M.T. Fernandez-Sandoval, Z. Tian, B. Tamang, L. O. Ingram. 2014. “Optimization of dilute-phosphoric-acid steam pretreatment of *Eucalyptus benthamii* for biofuel production” *Applied Energy* (IF: 7.900), 125, 76-83
<http://dx.doi.org/10.1016/j.apenergy.2014.03.047>
23. C. C. Geddes, M. T. Mullinnix, I. U. Nieves, R. W. Hoffman, **W. J. Sagues**, S. W. York, K. T. Shanmugam, J. E. Erickson, W. Vermerris, L. O. Ingram. 2013. “Seed train development for the fermentation of bagasse from sweet sorghum and sugarcane using a simplified fermentation process” *Bioresource Technology* (IF: 5.807), 128, 716-724
<https://doi.org/10.1016/j.biortech.2012.09.121>

Under peer review:

1. Y. Qiu, L. Lower, V. R. Berrio, J. Cunniffe, P. Kolar, J. Cheng & **W. J. Sagues**. 2024. “Elucidating the impacts of municipal and industrial organic waste components on the kinetics and potentials of biomethane production via anaerobic digestion” *Waste and Biomass Valorization*

2. L. Lower, Y. Qui, R. C. Sarto, **W. J. Sagues**, J. Cheng, 2024. “Kinetic Modeling of Thermophilic Anaerobic Digestion of Lemnaceae for Biogas Production” *Bioenergy Research*

In preparation:

1. L. Lower, S. Rowland, M. Regula, Z. A. Combs, S. Park, T. Vries, T. Vries, M. Nimlos, and **W. J. Sagues**. 2024. “Non-Catalytic Graphitization of Bio-Oil into High Performance Lithium-ion Battery Anode Material and Sustainable Aviation Fuel”
2. E. Carrejo, H. Jameel, S. Park, & **W. J. Sagues**. 2024. “Carbon Removal at Pulp Mills via Sodium Spiking”
3. S. Afroze, N. T. Garland, L. Lower, S. C. Dey, M. Nimlos, S. Park, & **W. J. Sagues**. 2024. “Non-catalytic graphitization of bio-based materials for energy applications”
4. N. Clauser, W. Li, A. Aui, C. Scown, J. Pett-Ridge, S. Baker, & **W. J. Sagues**. 2024. “A techno-economic comparison of carbon dioxide removal pathways via lignocellulose fermentation to biofuels and bioplastics”
5. J. Morizet-Davis, Y. Qiu, J. Daystar, **W. J. Sagues**, R. A. Venditti. 2024. “Environmental Life Cycle Assessment and Techno-Economic Assessment of Electricity from Textile Waste Combustion with Carbon Capture and Storage”
6. M. S. Reza, N. Garland, A. Ferris, S. Razavi, J. Daystar, R. Venditti, V. Augustyn, F. Li, & **W. J. Sagues**. 2024. “Upcycling Cotton-Polyester Textile Waste into High Surface Area Carbon for Energy Storage Applications”
7. V. R. Berrio, E. Youngsteadt, M. Kirchner, D. Call, N. Crook, S. Salmo, A. Grunden, & **W. J. Sagues**. 2024. “Formic acid assimilation via a microbial community extracted from formicine ants”
8. J. Cunniffe, N. Lavoine, J. Wang, and **W. J. Sagues**. 2024. “Co-Production of a Crystalline Cellulose Material and Biofuels from CRISPR-Edited Biomass.”
9. J. Cunniffe, V. R. Berrio, S. Salmon, A. Grunden, N. Crook, and **W. J. Sagues**. 2024. “Techno-Economic Analysis of Industrial Production and Purification of Redox Enzymes for a Circular Bioeconomy”
10. N. Garland, W. J. Sagues. 2024. “Carbon-Negative Energy Storage Systems via Biocarbon Gigacapacitors”

NATIONAL REPORTS

1. Jennifer Pett-Ridge, Hamed Ziad Ammar, Alvina Aui, Mark Ashton, Sarah E. Baker, Bruno Basso, Mark Bradford, Alexander P. Bump, Ingrid Busch, Edna Rodriguez Calzado, Jackson W. Chirigotis, Nicolas Clauser, Sinéad Crotty, Nicholas Dahl, Tao Dai, Mark Ducey, Jerome Dumortier, Nathan C. Ellebracht, Ramon Gil Egui, Ames Fowler, Katerina Georgiou, Diamantoula Giannopoulos, Hannah Goldstein, Thomas Harris, Dermot Hayes, Chad Hellwinckel, Alina Ho, Mu Hong, Susan Hovorka, Elwin Hunter-Sellers, Whitney Kirkendall, Sara Kuebbing, Matthew Langholtz, Mark Layer, Ian Lee, Reid Lewis, Wenqin Li, Weier Liu, Jimena Terrazas Lozano, Abby Lunstrum, Allegra C. Mayer, Kimberley K. Mayfield, Wilson McNeil, Peter Nico, Anastasia O’Rourke, Simon H. Pang, Keith Paustian, George Peridas, Helene Pilorge, Maxwell Pisciotta, Lydia Price,

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Peter Psarras, G. Philip Robertson, **William Joe Sagues**, Daniel L. Sanchez, Corinne D. Scown, Briana Mordick Schmidt, Eric W. Slessarev, Noah Sokol, Alexander J. Stanley, Amy Swan, Crystal Toureene, Andrew A. Wong, Mark Mba Wright, Yuan Yao, Bingquan Zhang, Yao Zhang, and Roger D. Aines. *Roads to Removal: Options for Carbon Dioxide Removal in the United States*, December 2023, Lawrence Livermore National Laboratory, LLNL-TR-852901.

<https://roads2removal.org/>

<https://doi.org/10.2172/2301853>

NON-PEER REVIEWED PUBLICATIONS

1. W. J. Sagues, A. Woodley. 2022. “Building a Biotechnology Innovation Ecosystem to Mitigate Climate Change” –Report, University-Industry Demonstration Partnership (UIDP)
<https://uidp.org/custom-type/innovation-in-the-bioeconomy-mitigating-climate-change/>

PATENTS

Pending

1. **William Joseph Sagues** & Ethan Woods. METHODS, DEVICES, AND SYSTEMS FOR BIOMASS COMPOSTING AND CO₂ CAPTURE. 2023. North Carolina State University. PCT/US23/31060. 08/24/2023.
2. **William Joseph Sagues**, Sunkyu Park, Shaikat Chandra Dey, Brian Worfolk, and Mark Nimlos. LOW-TEMPERATURE PROCESSING OF BIO-OIL FOR COMMERCIAL GRAPHITE PRODUCTION. U.S. 63/627,169. 01/31/2024

PUBLISHED DATA

1. J.N. Welch, I.U. Nieves, E. Castro, V. Rondon Berrio, W. Vermerris, K.T. Shanmugam, L.O. Ingram, **W.J. Sagues**. 2021. SMDemoBioref: Data from the Stan Mayfield Demonstration Biorefinery. <https://doi.org/10.5281/zenodo.5682712>

MEDIA & PRESS RELEASES

1. W. J. Sagues, T. Howell. 2023. “The Lead”, interviewed on a podcast hosted by the American Society of Agricultural & Biological Engineers (ASABE)
2. W. J. Sagues. 2023. “The Quest for Net Zero” interviewed on the “Farm, Food, and You” podcast hosted by NCSU College of Agriculture and Life Sciences
<https://farmsfoodyou.buzzsprout.com/1095827/14021098-the-quest-for-net-zero>
3. W. J. Sagues, J. Daystar. 2023. “Threaded Together – Sustainability and Cotton”, interviewed on a podcast hosted by Ecotextile News
<https://www.ecotextile.com/2023102031319/materials-production-news/podcast-thread-together-sustainability-and-cotton.html>
4. S. Jones, W. J. Sagues. 2023. “The Quest for Net Zero” article published the NCSU’s College of Agriculture & Life Sciences (CALs) <https://cals.ncsu.edu/news/joe-sagues-carbon-recycling/>
5. W. J. Sagues, D. Thompson, & S. Lommel. 2023. Live segment on CBS My Carolina “Long-Term Carbon Sequestration” <https://www.cbs17.com/my-carolina/my-carolina-videos/monday-february-20th-cheerwine-noda-brewing-partner-to-create-cheerwine-ale/>

6. J. Hart., W. J. Sagues. 2023. “Carbon bathtub filling up too fast”. Southeast Farm Press. <https://www.farmprogress.com/conservation-and-sustainability/carbon-bathtub-filling-up-too-fast>
7. S. Jones, W. J. Sagues. 2022. “\$2.25M DOE Grant Awarded to Develop Sustainable Aviation Fuel and Graphite from Waste Streams”, <https://cals.ncsu.edu/news/2-25m-grant-awarded-to-develop-sustainable-energy-products-from-waste-streams/>
8. W. J. Sagues. 2022. Interviewed by WRAL-TV (NBC) in Raleigh, NC on the sustainable practice of converting sunflower residues into biodiesel fuel: <https://www.wral.com/dix-park-sunflowers-turned-into-biofuel-after-they-wilt/20376732/>
9. E. Packard, “NC State Announces 2021-22 Goodnight Early Career Innovators”, <https://news.ncsu.edu/2022/04/nc-state-announces-2021-22-goodnight-early-career-innovators%E2%80%9C/>
10. K. A. Askey, J. Welch, B. Wilson, & W. J. Sagues. 2022 “Bioenergy – Data Boost”, ORNL press release, <https://www.ornl.gov/news/bioenergy-data-boost>
11. W. J. Sagues & M. Grattiri. 2021 “Merging Industry, Academia and National Labs at the Electrosynthesis of Chemicals & Fuels Session”, ACS Nexus, <https://communities.acs.org/t5/GCI-Nexus-Blog/Merging-Industry-Academia-and-National-Labs-at-the/ba-p/85819>
12. W. J. Sagues. 2021. “The Farming We Need”, Indigo Ag Monthly Newsletter, personal quote included in newsletter sent to over 4,000 sustainability officers
13. D. Shore, W. J. Sagues. 2021 “New Faculty Focus: A Focus on Carbon” NCSU press release, <https://www.bae.ncsu.edu/news/2021/new-faculty-focus-a-focus-on-carbon/>
14. W. J. Sagues, 2019, “Forest Biomaterials Joe Sagues Awarded Prestigious US DOE Fellowship”, <https://cnr.ncsu.edu/fb/news/2019/09/forest-biomaterials-joe-sagues-awarded-prestigious-u-s-doe-fellowship/>

TEACHING

Student evaluations available upon request

(All evaluations for 2021 are qualitative due to COVID-19 protocols)

North Carolina State University, 2021 – present

1. BAE 321: Bioprocess Engineering Fundamentals (3 credits, fall, lead instructor)
2. BAE 315: Engineering Properties of Biological Materials (1 credit, spring, lead instructor)
3. BAE 495/590: Biocarbon Utilization & Sequestration (3 credits, spring, lead instructor)
4. PSE 295/FB 595: Engineering Concepts for the Production of Bio-Based Materials, Chemicals, & Energy (3 credits, every other spring, co-instructor)

USDA-Sponsored Extension Foundation, 2020 - present

1. The Sustainable Bioeconomy – Free online course (co-instructor)
 - a. <https://campus.extension.org/enrol/index.php?id=1641>
2. Biomass Conversion for Bioproducts & Bioenergy – Free online course (co-instructor)
 - a. <https://campus.extension.org/enrol/index.php?id=1642>

MENTORING

Postdoctoral Advising

Md Sumon Reza, PhD, 2023 - present

Yaojing Qi, PhD, 2022 - present
Nicolas Clauser, PhD, 2022 - 2023
Ruochen Wu, PhD, 2021 - 2022

Graduate Student Advising

PhDs in progress as Chair or Co-Chair (Total = 5)

1. Lillian Lower, BAE, NCSU, 2023 – 2027, *Catalytic Graphitization of Sargassum (seaweed) Waste into Li-ion Anode Material*
2. Vanessa Rondon Berrio, BAE, NCSU, 2021 – 2024, *Decoupling Land Use from Protein Production via Microbial Assimilation of CO₂-Derived Formic Acid*
3. Ethan Woods, BAE, NCSU, 2021 – 2025, *Atmospheric Carbon Removal via Engineered Composting of Food Waste with CO₂ Capture and Soil Carbon Mineralization*
4. Julia Cunniffe, BAE, NCSU, 2021 – 2023, *Selective Enzyme Hydrolysis to Enhance Cellulose Crystallinity & Generate Fermentable Carbon Substrates*
5. [NEW STUDENT ON USDA GRANT WILL START FALL 2024 OR SPRING 2025]

MS graduates as Chair or Co-Chair (Total = 3)

1. June Khongpatimakorn, BAE, 2022 – 2024, *A Feasibility Assessment of Waste Cotton to Carbon-Negative Bioproducts*
2. Lillian Lower, BAE, NCSU, 2021 – 2023, *Thermophilic Anaerobic Digestion of Lemnaceae Biomass for Biogas Production*
3. Trevor Vook, BAE, NCSU, 2020 – 2022, *Catalytic Graphitization of Biocarbon for Green Battery Anodes*

PhD graduates as Committee Member (Total = 3)

1. Hyeonji Park, Forest Biomaterials, NCSU, 2020 – 2023, *Valorization of Sludge-derived Hydrolysate into Furan Chemicals*
2. Rodrigo Tello Buitrago, Forest Biomaterials, NCSU, 2018 – 2022, *Life-Cycle Environmental and Economic Assessment of Diverse Pulp Grades – Targeting Energy Efficiency and GHG Reductions based on Process Simulation*
3. Eliezer Reyes Molina, Forest Biomaterials, NCSU, 2018 – 2022, *Graphite Nucleation Induced by Biochar Particles in Bio-Oil*

PhDs in progress as Committee Member (Total = 6)

1. Ishita Kamboj, Chemical Engineering, NCSU, [FILL IN DATES], [FILL IN DISSERTATION TITLE]
2. Maria Higueta, Forestry & Environmental Resources, NCSU, 2023 – 2027, *Building a synthetic ectomycorrhizal community based on the ectomycorrhizal species associated with Loblolly pine*
3. Steven Pires, Forest Biomaterials, NCSU, [FILL IN DATES], [FILL IN DISSERTATION TITLE]
4. Jingjing Wang, BAE, NCSU, 2022 – 2025, *Redox-enhanced bio-succinic acid fermentation*
5. Shaikat Chandra Dey, Forest Biomaterials, NCSU, 2020 – 2024, *Catalytic Graphitization of Biocrude for Green Lithium-Ion Batteries*

6. Edgar Carrejo, Forest Biomaterials, NCSU, 2021 – 2025, *Retrofitting Kraft Pulp Mills with Carbon Capture and Sequestration*

MS graduates as Committee Member (Total = 2)

1. Nur-Al-Sarah Rafsan, Biological & Agricultural Engineering, NCSU, 2021 – 2023, *S-doped Biochar for Supercapacitors*
2. Matthew Byington, Forest Biomaterials, NCSU, 2020 – 2022, *Optimization of the Graphite Exfoliation & Compression Process*

Undergraduate Research Assistant Advising

1. Caleb Carter, CBE, NCSU, 2024
2. Perry Berlin, BAE, NCSU, 2022 – present
3. Chloe Lum, BAE, NCSU, 2022 – present
4. June Khongpatimakorn, BAE, NCSU, 2022
5. Julianne Mahley, CBE, NCSU, 2022 – 2023
6. Shomari Presswood, BAE, NCSU, 2022
7. Paige Seibert, BAE, NCSU, 2021 – 2022
8. Delani McKee, BAE, NCSU, 2021 – 2022
9. Luke Szoch, BAE, NCSU, 2021 – 2022
10. Nicholas Monroe, Forest Biomaterials, NCSU, 2019 – 2020
11. Thomas Cluen, Forest Biomaterials, NCSU, 2018 – 2019
12. John Nemenyi, ABE, UF, 2015 – 2017
13. Zhonglin Lai, ABE, UF 2015 - 2016

Undergraduate Senior Design Mentorship

1. Team Mentor, Fall & Spring, 2024, Team: Rosie Maloney, Brendon Sadlowski, Shomari Presswood, and Hannah Wall. *Food waste composting reactor with CO₂ capture*. Under confidentiality agreement with Flip Biosystems, Inc.

Awards received by graduate and undergraduate research assistants

1. Ethan Woods (PhD Student), William Walton and Emily Inscoe Stevens Fellowship for Plant, Soil, and Environmental Stewardship, NCSU, 2024
2. Julia Cunniffe (PhD Student), Graduate Student Sustainability Award, College of Agriculture and Life Sciences (CALs), NCSU, 2024
3. Julia Cunniffe (PhD Student), Presentation Excellence Award, Annual International Meeting, American Society of Agricultural & Biological Engineers, 2023
4. Lillian Lower (PhD Student), Presentation Excellence Award, Annual International Meeting, American Society of Agricultural & Biological Engineers, 2023
5. Vanessa Rondon Berrio (PhD Student), Presentation Excellence Award, Annual International Meeting, American Society of Agricultural & Biological Engineers, 2023
6. Lillian Lower (PhD Student): KEITS Climate Leaders Student Fellow, Kenan Institute of Engineering, Technology, & Science, 2023 – 2024
7. Lillian Lower (PhD Student): Center for Environmental Farming Systems (CEFS) Graduate Fellow, NCSU, 2023 – 2024
8. Ethan Woods (PhD Student): Accepted into NCSU's competitive "Long View Project" <https://provost.ncsu.edu/university-interdisciplinary-programs/longview/>

9. Lillian Lower (PhD Student): First place, Student Research Poster Competition, Society for Industrial Microbiology (SIMB) Symposium on Bio-materials, fuels, and chemicals (SBFC), 2023
10. Paige Seibert (Undergraduate): Science Undergraduate Laboratory Internship (SULI) at the National Renewable Energy Laboratory (NREL), 2023
11. Julia Cunniffe (PhD Student): Summer fellowship with the Bipartisan Policy Center, 2023
12. Julia Cunniffe (PhD Student): KEITS Climate Leaders Student Fellow, Kenan Institute of Engineering, Technology, & Science, 2022 – 2023
13. Julia Cunniffe (PhD Student): College of Engineering Dean’s Doctoral Fellowship, 2022-2023
14. Ethan Woods (PhD Student): Technology-to-Market Scholar for the Department of Energy’s Advanced Research Projects Agency (ARPA-E), 2022
15. Ethan Woods (PhD Student): Consulting Intern, Aemetis Bioenergy, 2022
16. Julia Cunniffe (MS Student): Consulting Intern, Aemetis Bioenergy, 2022
17. Ethan Woods (PhD Student): Student Delegate, Consortium for Advanced Bioeconomy Leadership Education (CABLE), USDA, 2021 - 2022
18. Julia Cunniffe (MS Student): Student Delegate, Consortium for Advanced Bioeconomy Leadership Education (CABLE), USDA, 2021 – 2022
19. Trevor Vook (MS Student): 2nd place, Research Competition, NC Agricultural & Life Sciences, NCSU, 2021
20. Trevor Vook (MS Student): Outstanding Student Presentation, Annual International Meeting, American Society of Agricultural & Biological Engineers, 2021
21. Vanessa Rondon Berrio (PhD Student), Robert O. Evans Fellowship, BAE, NCSU, 2021
22. Luke Szoch (Undergraduate Student): REEP Scholar, BAE, NCSU, 2021 – 2022
23. Paige Seibert (Undergraduate Student): Summer Research Fellow, Office of Undergraduate Research, NCSU, 2021
24. John Nemenyi & Zhonglin Lai (Undergraduate Students): 1st place, Research Competition, ABE, UF, 2016

Student Organization Advising

1. Mentor, Grand Challenges Scholar Program, NCSU, 2022 – present
2. Mentor, CHE 497/498 Chemical Engineering Projects I & II, NCSU, 2024
3. Mentor, Senior Design Group in MBA 585: Current Topics in Biosciences Management, NCSU, 2022
4. Mentor, Graduate Student Association, Dept. of Biological & Agricultural Engineering, NCSU, 2021 – present
5. Mentor, Undergraduate Senior Design, Dept. of Chemical Engineering, University of British Columbia, 2020 – 2021

SELECT HONORS & AWARDS

International/National Recognition:

1. KIETS Climate Leaders Faculty Fellow, Kenan Institute of Engineering, Technology, & Science, 2023 – 2024
2. Superior Paper Award “Coupling Circularity With Carbon Negativity in Food and Agriculture Systems”, 2023, American Society of Agricultural & Biological Engineers
3. Finalist, NCSU Graduate School Outstanding Graduate Faculty Mentor Award, 2023

4. KIETS Climate Leaders Faculty Fellow, Kenan Institute of Engineering, Technology, & Science, 2022 – 2023
5. Goodnight Early Career Innovator, NCSU, 2022
6. Honorary Advisor, Consortium for Advanced Bioeconomy Leadership Education (CABLE), USDA, 2021
7. Graduate Student Research (SCGSR) Fellowship, Office of Science, U.S. Department of Energy, 2020
8. CIBA Research Award, American Chemical Society - Green Chemistry Institute, 2018
9. 1st Place – Boyd Scott Graduate Research Award, Annual International Meeting, American Society of Agricultural and Biological Engineers, 2017
10. 1st Place – 5-Minute Rapid Fire Presentation + Poster Competition, International Bioproducts Conference, Technical Association of the Pulp & Paper Industry, 2016
11. 1st Place – Outstanding Student Presentation in Applied Research 38th Symposium on Biotechnology for Fuels & Chemicals, Society for Industrial Microbiology and Biotechnology, 2016
12. Awards Finalist – New Faces of Engineering, New Faces of Engineering – Professional Edition, DiscoverE, National Society of Professional Engineers, 2016
14. Finalist, Andrews Launch Accelerator Startup Competition, Entrepreneurship Clinic, North Carolina State University, 2020
15. Graduate School Fellowship, College of Natural Resources, North Carolina State University, 2018
16. 1st Place – Research Poster Symposium, University of Florida’s Chemical Engineering Department, 2017
17. 2nd Place – Research Poster Symposium, University of Florida’s Agricultural and Biological Engineering Department, 2017
18. Service Award, Florida Section of the American Society of Agricultural & Biological Engineers, 2016
19. Graduate Student Travel Grant, Graduate Student Council, University of Florida, 2016
20. Graduate Research Fellowship, Informatics Institute, University of Florida, 2016
21. Graduate School Fellowship, College of Engineering, University of Florida, 2015

PROFESSIONAL SERVICE

Grant Program Workshop Participation

1. US NSF FEWSUS: Food-Energy-Water Bioeconomies for Net-Zero Transition (2024)
2. US DOE FECM Program on Biomass Carbon Removal & Storage (2023)
3. US DOE ARPA-E Program on Carbon Farming (2022)
4. US DOE ARPA-E Program on Carbon Sequestering Building Materials (2021)
5. US DOE ARPA-E Program on Decarbonizing the Steel Industry (2021)
6. US DOE BETO Program on Utilizing Biorefinery Data (2020)

Grant Proposal Reviewer

1. NSF EPSCoR Advancing climate change research and resilience capacity to expand opportunities for disproportionately affected communities (2023)
2. USDA SBIR/STTR 8.1 Forests and Related Products (2022)
3. US DOE ARPA-E Program on Entrepreneurship in Clean Energy (2021)
4. North Dakota Industrial Commission Program on CO₂ Capture & Utilization (2021)

5. North Dakota Industrial Commission Program on CO₂ Capture & Utilization (2020)
6. US DOE ARPA-E Program on Direct Air Capture and Ocean Capture (2020)

Manuscript Reviewer

1. *Nature Reviews Earth & Environment* (2024)
2. *ACS Sustainable Chemistry & Engineering* (2023)
3. *ACS Applied Energy Materials* (2023)
4. *iScience* (2022)
5. *Biofpr: biofuels, bioproducts, and biorefining* (2022)
6. *Biofpr: biofuels, bioproducts, and biorefining* (2021)
7. *Frontiers in Climate* (2021)
8. *Biofpr: biofuels, bioproducts, and biorefining* (2020)

Technical Committee Leadership & Membership

1. Board Member, NCSU's Sustainability Fund, 2023 – present
2. Elected Member, American Society of Agricultural and Biological Engineers (ASABE) Nominating Committee, 2024 – 2026
3. Chair, Working Group 1, Circular Bioeconomy Systems Task Force, American Society of Agricultural & Biological Engineers (ASABE), 2021 - 2023
4. Member, Student Competition Committee P-120, American Society of Agricultural & Biological Engineers (ASABE), 2021 - present
5. Invited Technical Advisor & Writer, Leveraging Biotechnologies to Mitigate Climate Change – Workshop & Report, University-Industry Demonstration Partnership (UIDP), 2021 - 2022
6. Chair, Bioprocess Startup Competition, American Society of Agricultural & Biological Engineers (ASABE), 2021 - present
7. Member, ASE-16, Engineering for Sustainability, American Society of Agricultural & Biological Engineers (ASABE), 2021 - present
8. Secretary, Florida Section of the American Society of Agricultural & Biological Engineers, 2015 – 2017

Conference Leadership

1. Chair, Graduate Student Oral Presentations & Rapid Fire Poster Presentations, 2024, Society for Industrial Microbiology (SIMB) Symposium on Bio-materials, fuels, and chemicals (SBFC)
2. Co-Chair, Section on Biodegradable Polymers from Renewable & Waste Resources and Biocomposites, American Institute of Chemical Engineers (AIChE) 2023 Annual Conference
3. Chair, Emerging Research Showcase: *Long-Term Carbon Sequestration*, 2023, NCSU College of Agriculture & Life Sciences <https://www.eventbrite.com/e/emerging-research-showcase-long-term-carbon-sequestration-tickets-467644085047>
4. Organizer and Moderator, Workshop on Circular Bioeconomy Systems, The American Society of Agricultural & Biological Engineers' 2022 Annual International Meeting
5. Symposia Director, The American Chemical Society Green Chemistry Institute's 2021 Annual Green Chemistry & Engineering Conference -- Symposia: Electrosynthesis of Chemicals & Fuels (co-sponsored by iScience)

6. Convener and Moderator, Session on Electrosynthesis of Chemicals & Fuels, The American Chemical Society Green Chemistry Institute's 2021 Annual Green Chemistry & Engineering Conference

Seminar Leadership

1. Coordinator, research seminar by visiting professor Dr. Daniel Sanchez from UC Berkeley. 2023. "Markets for Biomass Carbon Removal"
2. Coordinated meeting to present advancements in carbon capture in the pulp and paper sector. 2023. Attendance: 25. Attendees from UC Berkeley, US Department of Energy, Indigo Ag, Cotton Incorporated, Andritz, and Westrock.
3. Coordinator, webinar series on carbon dioxide removal, NCSU, 2021

Student Engagement

1. Guest lecturer, Introduction to Sustainable Materials Technology (SMT 200), Lecture Dr. Perry Peralta, NCSU, 2020, 2021, 2022, 2023
2. Guest lecturer, Introduction to Engineering and Problem Solving (E101), NCSU, 2022, 2023
3. Invited judge, Research Poster Competition, 2023, Society for Industrial Microbiology (SIMB) Symposium on Bio-materials, fuels, and chemicals (SBFC)
4. Invited Judge, Poster Competition, American Institute of Chemical Engineers – Bioenergy Conference, 2020
5. Professional Development Group Leader, Forest Biomaterials Graduate Student Association, North Carolina State University, 2019
6. Founder & President, Technical Association of the Pulp and Paper Industry Student Chapter, University of Florida, 2016 – 2017
7. President, Biological Engineering Graduate Student Organization, University of Florida, 2016 – 2017
8. Treasurer, Chemical Engineering Graduate Student Organization, University of Florida, 2016 – 2017
9. Pen-Pal, Letters to a Pre-Scientist, 2015 – 2017
10. Invited Judge, State Science & Engineering Fair, Florida Foundation for Future Scientists, 2016
11. Invited Judge, Future City Competition, DiscoverE's National Science Fair, 2016

Professional Society Membership

1. Electrochemical Society, 2024 – present
2. American Society of Agricultural & Biological Engineers, 2015 – present
3. American Institute of Chemical Engineering, 2015 – present
4. Society for Industrial Microbiology & Biotechnology, 2015 – present
5. Institute of Biological Engineers, 2015 – 2022
6. American Chemical Society, 2017 – 2021
7. Technical Association of the Pulp and Paper Industry, 2015 – 2020

SELECT PRESENTATIONS

** indicates invited presentation*

1. ***W. J. Sagues**. 2024. "Circular Battery Anodes via Catalytic Graphitization of Biomass" US NSF workshop on FEWSUS: Food-Energy-Water Bioeconomies for Net-Zero Transition

2. ***W. J. Sagues**. 2024. “Emerging Biomass Carbon Removal & Storage Technologies” Invited seminar for the Clean Air Task Force (CATF)
3. M. S. Reza, N. Garland, A. Ferris, S. Razavi, J. Daystar, R. Venditti, V. Augustyn, F. Li, & **W. J. Sagues**. 2024. “Upcycling Cotton-Polyester Textile Waste into High Surface Area Carbon for Energy Storage Applications” Poster presentation at the TC Biomass: International Conference on Thermochemical Conversion Science: Biomass & Municipal Solid Waste to RNG, Biofuels, & Chemicals
4. M. R. Nimlos, S. M. Rowland, K. Iisa, A. Dutta, S. C. Dey, L. Lower, **W. J. Sagues**, B. J. Tremolet de Villers, R. K. Bhardwaj, S. S. Kelley, B. Freel, G. Hopkins, T. Vries, T. Vries, M. Regula, Z. A. Combs, S. Park, C. Fagerholm. 2024. “Pyrolysis oil coking: producing high value carbon and renewable fuel” Oral presentation at the TC Biomass: International Conference on Thermochemical Conversion Science: Biomass & Municipal Solid Waste to RNG, Biofuels, & Chemicals.
5. E. Carrejo, R. Wu, H. Jameel, F. Li, S. Park, **W. J. Sagues**. 2024. “Decarbonizing Lime Kilns at Pulp Mills via Electrification.” Oral presentation at the American Chemical Society spring meeting
6. S. C. Dey, L. Lower, **W. J. Sagues**, B. Tremolet, S. D. Han, M. R. Nimlos, S. S. Kelley, S. Park. 2024. “Low Temperature Processing of Bio-Oil for Graphite Production” Oral presentation at the American Institute of Chemical Engineers (AIChE) Annual Conference
7. **W. J. Sagues**. 2024. “Roads to Removal: A National Assessment of Biomass Carbon Removal & Storage (BiCRS)” Oral presentation at the American Society of Agricultural & Biological Engineers Annual International Meeting
8. L. Lower, S. Rowland, M. Regula, Z. Combs, S. Park, T. Vries, T. Vries, M. Nimlos, and **W. J. Sagues**. 2024. “Valorizing Polycyclic Aromatic Hydrocarbons from BTX Production: a Pathway for Lithium-Ion Anode Materials and Sustainable Aviation Fuel” Oral and poster presentations at the American Society of Agricultural & Biological Engineers Annual International Meeting
9. V. R. Berrio, , E. Youngsteadt, M. Kirchner, D. Call, N. Crook, S. Salmon, A. Grunden, and **W. J. Sagues**. 2024. “Microbial assimilation of formic acid and C1 casebon metabolism via an ant-derived community” Oral and poster presentations at the American Society of Agricultural & Biological Engineers Annual International Meeting
10. J. Cunniffe, V. R. Berrio, S. Salmon, A. Grunden, N. Crook, and **W. J. Sagues**. 2024. “Techno-Economic Analysis of Industrial Enzyme Production and Purification” Oral and poster presentations at the American Society of Agricultural & Biological Engineers Annual International Meeting
11. E. Woods, **W. J. Sagues**. 2024. “Carbon Dioxide Capture and Methan Emission Reduction in Composting” Poster presentation at the American Society of Agricultural & Biological Engineers Annual International Meeting
12. S. M. Rowland, M. R. Nimlos, S. Chandra Dey, L. Lower, **W. J. Sagues**, B. J. Tremolet de Villers, R. K. Bhardwaj, S. S. Kelley, B. Freel, G. Hopkins, T. Vries, T. Vries, M. Regula, Z. A. Combs, S. Park. 2024. Production of Battery-Grade Graphite from Fast- and Catalytic Fast Pyrolysis Oils. Production of Battery-Grade Graphite from Renewable Carbon Sources. Oral presentation at the Clearwater Clean Energy Conference
13. V. R. Berrio, E. Youngsteadt, M. Kirchner, D. Call, N. Crook, S. Salmon, A. Grunden, and **W. J. Sagues**. 2024. “A Microbial Community from Formicine Ants with Potential

- for Formatotrophy” Oral and poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
14. E. Woods, **W. J. Sagues**. 2024. “Biomass and Textile Waste Composting Coupled with CO₂ Capture.” Oral and poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
 15. J. Cunniffe, N. Lavoine, J. Wang, and **W. J. Sagues**. 2024. “Co-Production of a Crystalline Cellulose Material and Biofuels from CRISPR-Edited Biomass.” Oral and poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
 16. L. M. Lower, **W. J. Sagues**, R. C. Sartor, J. J. Cheng. 2024. “Thermophilic Anaerobic Co-Digestion of Lemnaceae Biomass and Swine Wastewater for Biogas Production” Oral presentation at the International Water Association’s World Conference on Anaerobic Digestion
 17. ***W. J. Sagues**. 2023. “The Shifting Role of Bioproducts in Circular Systems and the Importance of Interdisciplinarity” Invited Key Note presentation. American Society of Agricultural & Biological Engineers Circular Bioeconomy Systems Day as part of the Annual International Meeting
 18. ***W. J. Sagues**. 2023. “The Potential for Biomass Carbon Removal & Storage in the US Bioeconomy” Invited Key Note presentation. Kenan Institute for Engineering, Technology & Science (KIETS) Research Symposium.
 19. * **W. J. Sagues**. 2023. “Valorizing atmospheric CO₂ via Flipped Composting”. NC Chapter of the Solid Waste Association of North America
 20. **W. J. Sagues**, J. Cunniffe, J. Wang, and N. Lavoine. 2023. “Co-production of crystalline cellulose and biofuels from poplar” Oral presentation at NC Department of Agriculture and Consumer Services Research Symposium.
 21. E Woods, **WJ Sagues**. 2023. “Carbon dioxide removal via flipped composting” Poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
 22. L Lower, **WJ Sagues**, J Cheng. 2023. “Thermophilic anaerobic co-digestion of swine waste and lemnaceae for biogas production” Poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
 23. J Cunniffe, N Lavoine, W Yuan, J Wang, **WJ Sagues**. 2023. “Co-production of crystalline cellulose and biofuels from CRISPR-edited biomass” Poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
 24. VR Berrio, **WJ Sagues**, A Grunden, D Call, E Youngsteadt. 2023. “Formate discovery and evolution for CO₂ utilization” Poster presentation at the Society for Industrial Microbiology (SIMB) Symposium on Biomaterials, Fuels, and Chemicals (SBFC)
 25. E. Carrejo, H. Jameel, F. Li, R. Wu, S. Park, **W. J. Sagues**. 2023. “Decarbonizing Lime Kilns at Pulp Mills Via Oxy-Fuel Combustion/Electrification” Oral presentation at American Institute of Chemical Engineers (AIChE) 2023 Annual Conference
 26. S. C. Dey, L. Lower, **W. J. Sagues**, B. Tremolet, S. D. Han, M. R. Nimlos, S. S. Kelley, S. Park. 2023. Oral presentation at “Pyrolysis Oil: A Promising Anode Precursor for Lithium-ion Batteries”. American Institute of Chemical Engineers (AIChE) 2023 Annual Conference

27. **W. J. Sagues**, E. Woods, V. R. Berrio, and Y. Qiu. 2023. “Carbon-negative biomaterials via engineered composting with carbon capture” Oral presentation at American Institute of Chemical Engineers (AIChE) 2023 Annual Conference
28. S. C. Dey, T. Vook, W. J. Sagues, S.D. Han, M. Nimlos, S. S. Kelley, S. Park. 2022. “Catalytic Conversion of Bio-oil into Rechargeable Battery Anode” Oral & poster presentation at the 2022 Frontiers in Biorefining conference
29. S. C. Dey, **W. J. Sagues**, S. Park. 2022. “Iron-Catalyzed Conversion of Bio-Oil into Lithium-Ion Battery Anode.” Oral presentation at the 28th North American Catalysis Society
30. ***W. J. Sagues** 2022. “Circular Bioeconomy Systems & Carbon Dioxide Removal”. Keynote speaker at ASABE’s tri-state section meeting between SC, NC, and VA.
31. ***W. J. Sagues**. 2022. “The Biocarbon Utilization & Sequestration Lab”. Oral presentation at NCSU Bioenergy symposium hosting the Idaho National Laboratory
32. ***W. J. Sagues**, A. Woodley. 2022. “Highlights of the UIDP Workshop: Leveraging Biotechnologies to Mitigate Climate Change” UIDP webinar series
33. T. Vook, S. D. Han, S. Park, M. Nimlos, & **W. J. Sagues**. 2022. “Catalytic Graphitization of Biomass for Green Battery Anodes” oral presentation at TC Biomass Conference
34. ***W. J. Sagues**. 2022. “Bioeconomy Supply Chains & Conversion Processes for Carbon Removal”. Oral presentation at US Department of Energy’s Advanced Research Projects Agency’s Workshop on Carbon Farming
35. ***W. J. Sagues**. 2022. “Opportunities for Industrial Carbon Mineralization”. Oral presentation to the company Nouryon.
36. P. Seibert, V. Rondon Berrio, D. McKee, **W. J. Sagues**. 2022. “Biological Conversion of Cotton Residues to Bioplastic & Proteins via Wild Fermentation”. Poster presentation at NCSU’s Undergraduate Research Symposium
37. ***W. J. Sagues**. 2022. “Findable, Accessible, Interoperable, and Reusable (FAIR) Data from the Stan Mayfield Demonstration Cellulosic Biorefinery”. Oral presentation at the US Department of Energy’s Bioenergy Technology Systems Development and Integration Office
38. ***W. J. Sagues**. 2022. “Carbon Dioxide Removal via Engineered & Natural Biosystems”. Oral presentation at the University of Florida’s Biocomplexity Research Group’s monthly seminar series
39. **W. J. Sagues**, H. Jameel, S. Park, D. L. Sanchez. 2022. “Integrating Biomass Carbon Removal & Storage (BiCRS) in Chemical Pulp Mills” Poster presentation at the Gordon Research Conference on Carbon Removal
40. ***W. J. Sagues**. 2022. “A Carbon-Negative Bioeconomy”. Oral presentation at NCSU Student Energy Club’s monthly meeting
41. ***W. J. Sagues**. 2022. “Opportunities for CO₂ Removal in the Pulping Industry” Oral presentation at the International Symposium on Wood, Fiber, and Pulping Chemistry (cancelled due to COVID reasons)
42. ***W. J. Sagues**, T. Vook, V. Rondon, E. Woods, J. Cunniffe, & L. Lower. 2021. “Going Carbon Negative – An Opportunity for Agricultural & Biological Engineers” Oral presentation at the American Society of Agricultural & Biological Engineers Annual North Carolina State Section Meeting

43. T. Vook, P. Kolar, **W. J. Sagues**. 2021 “Statistical Optimization of Catalytic Graphitization of Paper Towel Waste” Oral presentation at the American Society of Agricultural & Biological Engineers Annual International Meeting
44. ***W. J. Sagues**, J. Cunniffe, L. Lower, & J. Cheng. 2021 “Coupling Circularity with Negativity in Food & Agriculture Systems” Oral presentation at the American Society of Agricultural & Biological Engineers Member Hour
45. **W. J. Sagues**, M. Yung, H. Jameel, M. Davis, B. Donohoe, M. Nimlos, and S. Park. 2021. “Catalytic Graphitization of Biomass for Green Battery Anodes” Oral presentation at the Institute of Biological Engineering’s Annual Conference
46. **W. J. Sagues**, H. Jameel, S. Park, D. L. Sanchez. 2021. “Integrating CO₂ Capture, Utilization, and Storage at Pulp & Paper Mills in the United States” Oral presentation at the Institute of Biological Engineering’s Annual Conference
47. ***W. J. Sagues** 2021 “The Grand Challenge of Carbon Sequestration” Oral presentation to the NCSU course E102: Engineering in the 21st Century
48. ***W. J. Sagues** 2021 “Introduction to Biocarbon Utilization & Sequestration” Oral presentation for the Sustainable Materials & Technology program at NCSU
49. ***W. J. Sagues** 2021 “Introduction to the Bioeconomy and Carbon Sequestration” Oral presentation to the Environmental Science program at North Carolina Central University
50. ***W. J. Sagues** 2021 “Emerging Opportunities for Biological Carbon Sequestration” Oral presentation at the Consortium for Advanced Bioeconomy Leadership Education (CABLE) Annual Conference
51. ***W. J. Sagues** 2021 “Carbon Sequestering Building Materials” Oral presentation at the workshop on Carbon Accounting in Land Development, hosted by Dr. Bill Hunt at NCSU
52. **W. J. Sagues**, S. D. Han, S. Park, & M. Nimlos. 2020. “Catalytic Graphitization of Biomass for Green Battery Anodes” Oral presentation at the 2020 AIChE Bioenergy Conference
53. **W. J. Sagues**, D. Sanchez, H. Jameel, & S. Park. 2020. “Catalytic Graphitization of Biomass for Green Battery Anodes” Poster presentation at the 2020 AIChE Bioenergy Conference
54. **W. J. Sagues**, D. Sanchez, H. Jameel, & S. Park. 2020. “Integrating CO₂ Capture, Utilization, & Sequestration at Kraft Pulp Biorefineries” Poster presentation at the 2020 AIChE Bioenergy Conference
55. ***W. J. Sagues** 2020. “Biocarbon Utilization & Sequestration” Oral presentation at Cotton Incorporated
56. ***W. J. Sagues** 2020. “Integrating Carbon Capture, Utilization, & Sequestration into Pulp & Paper Mills” Oral presentation as Horizon Lecture Series Speaker at Kimberly-Clark
57. ***W. J. Sagues** 2020. “Integrating Carbon Capture, Utilization, & Sequestration into Pulp & Paper Mills” Oral presentation at UC Berkeley & Carbon 180’s Conference on Bioenergy with Carbon Capture & Storage
58. ***W. J. Sagues** 2020. “Scale-Up Data: A Hidden Asset” Oral presentation at the DOE Bioenergy Technology Office Data Workshop
59. **W. J. Sagues**, M. Yung, H. Jameel, M. Davis, B. Donohoe, M. Nimlos, and S. Park. 2020. “Catalytic Graphitization of Lignin for Green Battery Anodes” Oral presentation at the Society for Industrial Microbiology and Biotechnology’s Symposium on Biomaterials, Fuels, and Chemicals (*Cancelled due to COVID-19*)

60. **W. J. Sagues**, D. L. Sanchez, H. Jameel, and S. Park. 2020. “Integrating CO₂ Capture, Utilization, & Storage at Pulp & Paper Mills in the United States” Poster presentation at the Society for Industrial Microbiology and Biotechnology’s Symposium on Biomaterials, Fuels, and Chemicals (*Cancelled due to COVID-19*)
61. **W. J. Sagues**, M. Yung, H. Jameel, M. Davis, B. Donohoe, M. Nimlos, and S. Park. 2020. “Catalytic Graphitization of Biomass for Green Battery Anodes” Oral presentation at the Institute of Biological Engineering’s Annual Conference (*Cancelled due to COVID-19*)
62. **W. J. Sagues**, H. Jameel, S. Park, D. L. Sanchez. 2020. “Integrating CO₂ Capture, Utilization, and Storage at Pulp & Paper Mills in the United States” Oral presentation at the Institute of Biological Engineering’s Annual Conference (*Cancelled due to COVID-19*)
63. **W. J. Sagues**, H. Jameel, S. Park, D. L. Sanchez. 2019. “Enhanced Carbon Dioxide Removal from Coupled Direct Air Capture-Bioenergy Systems” Oral presentation at the Applied Energy Symposium at MIT
64. **W. J. Sagues**, H. Jameel, S. Park. 2019. “Catalytic Graphitization of Lignocellulosic Biomass” Oral presentation at the ACS Annual Green Chemistry & Engineering Conference
65. **W. J. Sagues**, K. McCance, S. L. McAlexander, M. Blanchard, R. Venditti. 2019. “An Interdisciplinary Educational Program to Promote Interest in the Circular Bioeconomy” Oral presentation at the ACS Annual Green Chemistry & Engineering Conference
66. **W. J. Sagues**, Z. Tong. 2017. “Production of Phenolic Monomers and Free Sugars from Sweet Sorghum Bagasse via Fenton Modification & Supercritical Ethanol” Oral presentation at the American Society of Agricultural & Biological Engineers’ Annual International Meeting
67. **W. J. Sagues**, Z. Tong. 2016. “Ironing out the kinks: A ferric catalyzed process for selective monomerization of lignin from whole biomass while leaving the cellulosic fraction in high purity” Oral presentation at the Technical Association of the Pulp and Paper Industry’s International Bioenergy and Bioproducts Conference
68. **W. J. Sagues**, Z. Tong. 2016. “Overcoming the blend wall: Ethanol as a green solvent for thermochemical conversion of whole biomass into high-value aromatics and purified cellulose” Oral presentation at the American Society of Agricultural & Biological Engineers’ Annual International Meeting