

NATIONAL CORN-TO-ETHANOL RESEARCH CENTER AT SIUE

ANNUAL REPORT

JULY 2023 — JUNE 2024



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NCERC at SIUE
Advancing Biorenewables Research

FY 2024 ANNUAL REPORT

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Included in this report is a summary of activities at the National Corn-to-Ethanol Research Center (NCERC) throughout Fiscal Year 2024. This report is published annually in October at its Illinois Ethanol Research Advisory Board Meeting and reflects NCERC's mission to support the research to commercialize products and technologies to be utilized in the biofuels and biotechnology sectors.

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A LETTER FROM THE INTERIM DIRECTOR

To our Advisory Board Members and Stakeholders

Under the leadership of NCERC's previous Executive Director John Caupert, NCERC celebrated its 20th anniversary in October of 2023. This milestone event marked NCERC's achievement during two decades of pioneering research and innovation in the field of biomanufacturing. Established in 2003, NCERC has played a crucial role in advancing the science and technology behind corn-based ethanol production as well as other biofuels and bioproducts research. The 20th-anniversary ceremony was a momentous occasion, attended by private sector & trade industry leaders, researchers, government officials and clients. Thanks to the guidance of SIUE top management, NCERC has become a source of regional pride!

FY24 was one of the busiest years for NCERC. With great efforts from no more than six full-time employees in the pilot plant, and two full-time employees in the lab, NCERC provided excellent contractual service to multiple clients. Regarding research, the low-cost low-carbon intensity conversion technology developed at NCERC to turn various waste materials (municipal solid waste, corn stover, industrial hemp, energy crop, etc.) to ethanol, then to sustainable aviation fuel, has gained wide attention from federal funding agencies and the industry. As a result, we are building a bench-level *Cellulosic Sugar and Ethanol Library*, and are able to produce 100L size hydrolysate to make ethanol, biopolymers, and grow mushrooms for various collaborators in the U.S. Another research breakthrough was assisting the corn to ethanol industry to evaluate the impact of using sorghum to lower the carbon intensity score and increase the production of cellulosic ethanol for the industry.

As with any cutting-edge R&D facilities in the U.S., we constantly face challenges. Recruiting an experienced workforce to cover more projects is the top challenge for NCERC's further development. In addition, we face the urgent need to expand our space to accommodate the growing capacity needs from the clients, expedite the research to increase cellulosic ethanol production to support SAF production in Illinois, and increase collaborative projects that bring biomanufacturing to Southern Illinois.



Many thanks for your support,

A handwritten signature in black ink, appearing to be "Yan Zhang".

Yan Zhang, Ph.D
Interim Executive Director, NCERC
Director of Research

RESEARCH UPDATES

Contractual Research Service

In FY24, the Pilot Plant at NCERC provided contractual research services through 60% of the year for multiple clients. Specifically, for one of the biggest chemical companies in the world, we delivered optimization of the existing processing to make various biopolymers, and produced products in tonnage to support their market development in Europe. Furthermore, NCERC scaled up a new process to make a promising R&D product for the Client, which will enable the Client to come back in FY25 for more optimization work. The lab provided data through the trial per the Client's request, and the data was reviewed even after the plant trial concluded for more scientific exploration.

NCERC also supported the scale-up of a new process for an international client to make an industrial chemical in addition to producing ethanol from corn. NCERC helped to test new equipment design and validated the efficacy of the processing setup, and we helped to harvest the final products for the evaluation of their quality. The lab worked months to develop and validate numerous testing methods in order to accurately quantify the quality of intermediates and final products.

In addition, NCERC provided consulting services for a new technology designed to lower the carbon intensity score for corn-to-ethanol processing, and also provided a lab study to evaluate a new corn hybrid to lead to higher corn oil production for corn-to-ethanol processing.

Grant-Funded Research Projects

Under the guidance of Dr. Jie Dong and Dr. Yan Zhang, both the NCERC research team and the research team from the Department of Chemistry of SIUE have covered bench-scale research subjects from basic science breakthrough to applied science optimization for new technology commercialization.



PRODUCTION OF BUTYRATE, BUTANOL, AND BUTYL BUTYRATE FROM LIGNOCELLULOSIC BIOMASS

***Funded by USDA AFRI;
Collaborators: Ohio State University
Dates: May 2022 to April 2025***

This project focuses on using an integrated process to produce three biochemical (butanol, butyric acid and butyl butyrate) simultaneously. SIUE is working on the production of lipase, an enzyme that catalyzes the synthesis of butyl butyrate.

BETAMETHYLVALEROLACTONE (BMVL) PRODUCTION AND DOWNSTREAM PROCESSING

***Funded by Bioindustrial Manufacturing and Design Ecosystem (BioMADE);
Collaborators: Valerian Materials (University of Minnesota)
Dates: September 2022 to September 2024***

This project had three main objectives: optimize the fermentation process using glucose derived from waste feedstocks to achieve high yield; optimize the production of anhydromevalolactone, with industrial-friendly processing conditions, while maintaining a high yield at NCERC; and optimize the purification of anhydromevalolactone, with environmental-friendly and low-cost reagents, while maintaining a high yield.

METABOLIC AND PROCESS ENGINEERING OF SOLVENTOGENIC CLOSTRIDA FOR STABLE, CONTINUOUS N-BUTANOL PRODUCTION FROM LIGNOCELLULOSIC BIOMASS HYDROLYSATE

***Funded by DOE BETO;
Collaborators: Ohio State University, University of Cincinnati, ABPDU, Tuskegee University
Dates: October 2022 to September 2025***

This project works on a continuous fermentation process for butanol production from lignocellulosic biomass. SIUE is working on optimizing and scaling up the biomass hydrolysis and providing enough hydrolysates for the continuous fermentation process and studying the potential inhibitors in the hydrolysates.

FMS G: INTEGRATED BIOPROCESS AND SYNTHETIC BIOLOGY FOR FUTURE BIOMANUFACTURING OF INDUSTRIAL PRODUCTS

*Funded by NSF FMSG;
Collaborators: Ohio State, Tuskegee University
Dates: October 2023 to September 2025*

This project focuses on understanding and modulating microbial lifespan genes and regulatory pathways in selected non-model but versatile microbes to produce chemicals and biofuels from renewable resources. This approach will integrate cell recycling to achieve high cell density and high volumetric productivity in continuous or semi-continuous (sequential batch/fed-batch) fermentation. SIUE is focused on student and workforce training on bioprocessing.

EXPANDQISE: TRACK 1: INVESTIGATING BIOMASS PRETREATMENT WITH NANODIAMOND QUANTUM SENSORS.

*Funded by NSF ExpandQISE;
Collaborators: Washington University
Dates: October 2023 to September 2025*

The overarching goal is to exploit quantum-enabled sensing technology based upon nanodiamonds containing nitrogen-vacancy (NV) spin defects and other color centers to investigate change of lignocellulosic biomass during the pretreatment process, a crucial step toward the production of sustainable biofuels.

OPTIMIZING THE SUBMERGED FERMENTATION OF MUSHROOM MYCELIUM TO MAKE NUTRITIONAL PRODUCTS

*Funded by Bioindustrial Manufacturing and Design Ecosystem (BioMADE);
Collaborators: Finger Lakes Community College
Dates: April 2024 to August 2024*

This project focuses on optimizing the production of fungal mycelial biomass and mycelial-based macromolecules in submerged fermentation systems, utilizing a variety of media formulations that are sourced from corn stover and municipal solid waste hydrolysates. During Phase II, NCERC will scale up the best fermentation conditions.

WORKFORCE TRAINING

NCERC is a land of opportunity for anyone - student, recent graduate, or beyond – to gain training and experience that will propel their careers forward. With the unique opportunity for hands-on industry experience working on scaling up biomanufacturing technologies, NCERC attracts students from SIUE, nearby community colleges, and universities across the country.

From July 2023 through June 2024, NCERC hosted:

10 INTERNS

3 GRADUATE ASSISTANTS

2 VISITING RESEARCH FELLOWS

Internships

Whether a student is pursuing a Certificate of Completion in Process Technology from Lewis and Clark Community College or an undergraduate degree in STEM from Southern Illinois University Edwardsville, NCERC can provide hands-on experience in their field. Students can shadow, assist and lead while still going to school due to NCERC's flexible work schedules and experienced research staff who serve in advisory roles to each and every student employee.

NCERC's 2024 summer interns, Richard Disher and Evan Blind, both came to NCERC from Lewis & Clark Community College. As interns in the pilot plant, their day-to-day tasks vary greatly depending on the needs of the plant, which allows them to gain experience in a variety of areas including maintenance, electrical work, and assisting in running processes.



Richard Disher and Evan Blind, 2024 Summer Interns

Not only does NCERC's pilot plant provide incredible opportunities for undergraduate students to get a taste of working in an industrial setting, NCERC's laboratories also serve as a training ground for students with diverse career aspirations. Violet Swanson, an SIUE senior majoring in chemistry, came to NCERC for experience in a laboratory. After two years working on a variety of projects at NCERC, Violet will be graduating in the Fall 2024 semester and going on to pursue a master's in chemistry from Bradley University in the spring.



"Working in the lab at NCERC has awarded me the opportunity to learn so many new analytical techniques through different research projects. I am grateful that the people I work with are such great mentors who have been so supportive of my science career journey. I cannot wait to utilize all of the skills I have acquired here at NCERC."

–Violet Swanson, Lab Intern

Graduate Assistants

The diversity of the projects at NCERC provides valuable learning opportunities for graduate students who want to specialize in their field or expand their research portfolios. Graduate assistants work directly with NCERC's research team to explore new technologies, providing them with an in-depth experience they could use in future careers.

In the lab, graduate assistants mainly focus their time on grant-funded projects. Rutvik Sureja, joined NCERC as an environmental science graduate student who wanted to learn more about resource conservation and biofuels. His graduate thesis was based on an NCERC project funded by BioMADE, and Rutvik has gone on to accept a job in the industry post-graduation.

In the pilot plant, Uche Opara thrived as an engineering graduate assistant by being responsible for a variety of safety and maintenance tasks that kept the plant running safely and efficiently. After graduation, Uche has gone on to accept a job in the industry.



Uche Opara, Graduate Assistant



Rutvik Sureja, Graduate Assistant

Visiting Research Fellows

The Visiting Research Fellowship program is an unrivaled learning opportunity for recent graduates of an associate's, bachelor's, or master's degree who are interested in pursuing a career in biomanufacturing. Funded by the Illinois Corn Marketing Board, NCERC's nine-month fellowship program provides training and hands-on experience to prepare the next generation of engineers and scientists for work in mid- to high-skill jobs in the bioeconomy. This past year, NCERC had the privilege to hire two visiting research fellows in the plant and labs: Krystin Polhemus and Lucas Clayton.



"NCERC was the first step in my career after college. The visiting research fellowship not only gave me experience in the labs, but also outside of it. No matter how much you learn in a classroom, it doesn't always translate to a workplace. I am able to take the knowledge that I gained from NCERC and apply it to my future career."

– Krystin Polhemus, Lab Visiting Research Fellow



“The fellowship position allowed me to get my foot in the door and gain industrial experience. In my role as a pilot plant fellow, I had to learn a lot of different skills very quickly in order to keep up with the fast-paced research environment. I’m thankful for the opportunity to be involved in a variety of different research projects that have a positive impact on so many.”

– Lucas Clayton, Pilot Plant Visiting Research Fellow

After completing their fellowships, both Krystin and Lucas took the next step in their careers by advancing to full-time employment at NCERC. Krystin Polhemus is now the Scientific Analyst in charge of project coordination in NCERC’s labs. As an Assistant Research Engineer, Lucas Clayton’s responsibilities include supporting pilot- and demonstration- scale projects as well as project management.

Workforce Development Projects

In addition to the internships, graduate assistantships, and fellowships, NCERC also has a number of projects funded by BioMADE that target workforce development for biomanufacturing.

NCERC has partnered with the University of Hawai’i at Hilo (UH Hilo) to form ALAKA’I, Applied Life-Science Academy: Knowledge Advancing Industry, a project that establishes a bioeconomy academy to accelerate climate change solutions by developing industry-relevant training for delivery in Hawaii and across the United States. This partnership with UH Hilo continues with another BioMADE-funded project that focuses on establishing a tropical sustainability center in Hawaii, including training students to run the center.

In addition, NCERC has been funded by BioMADE to partner with Finger Lakes Community College (FLCC). NCERC will provide observational training to students from FLCC while completing a collaborative project on growing mushroom mycelium from hemp and corn stover hydrolysate.



Dr. Yan Zhang talks with Steven Hospro at the ALAKA’I Conference



The NCERC team visits the students of FLCC

NCERC ACTIVITY HIGHLIGHTS

NCERC and University of Hawaii Hilo Host Tropical Bioeconomy Conference

July 2023

Indigenous Hawaiian and Pacific Island Applied Life-Science Academy: Knowledge Advancing Industry - aka ALAKA'I hosted its first bootcamp at the University of Hawai'i at Hilo the week of July 17 through a series of engagements inside and outside of the classroom. The classroom training coincided with three events that were focused on showcasing the cultural and natural assets of the state of Hawaii, including a walking tour of the Hawai'i Tropical Bioreserve & Garden, a farm-to-table dinner at Onomea Country Market and Cafe, and a Polynesian Voyaging Canoe experience.

Through the project funded by BioMADE, Indigenous Hawaiian and Pacific Islander perspectives were explored to define principles, values, and frameworks of sustainability in Pacific Island systems. The bootcamp training focused on a variety of bioeconomy relevant topics including Feedstocks & Sustainable Agriculture, Industrial Fermentation, Downstream Processing & Chemical Conversion, Communication Best Practices for Bioeconomy Professionals, and others.

NCERC Attends the 2023 North American SAF Conference

August 2023

In August of 2023, the NCERC team consisting of Dr. Yan Zhang, Dr. Mingjun Ma, and Steve Ward traveled to Minneapolis to attend the 2023 North American SAF Conference and Expo. Interim Center Director Dr. Yan Zhang gave a presentation on NCERC's research on cellulosic ethanol that can be used as a feedstock for SAF.



The NCERC booth at the 2023 North American SAF Conference



Dr. Yan Zhang presents NCERC's research on SAF

NCERC Celebrates Its 20th Anniversary

October 2023

On October 12, 2023, NCERC celebrated its 20th anniversary. This milestone event marked two decades of pioneering research and innovation in the field of renewable energy and sustainable agriculture. Established in 2003, NCERC has played a crucial role in advancing the science and technology behind corn-based ethanol production and other biofuels and bioproducts research. The 20th-anniversary ceremony was a momentous occasion, attended by private sector & trade industry leaders, researchers, government officials and clients.

Additionally, attendees heard a brilliant keynote address from the 2023 Global Bioeconomy Leadership Award winner, Eric McAfee, founder and CEO of Aemetis, a low-carbon ethanol biorefinery and the leader on reducing carbon intensity score for the first generation biofuel production in the U.S. The anniversary celebration featured recognition of past executive directors as well as those instrumental in bringing the dream of NCERC to reality over 20 years ago.

Looking forward, the NCERC at SIUE is poised to continue its leadership in developing innovative and environmentally responsible solutions for the nation and world, making biofuels and bioproducts.



Top left: The event was hosted outside of NCERC's facilities. Top right: John Caupert, Chancellor James T. Minor, Eric McAfee, and President Daniel F. Mahoney. Bottom left: Dr. Yan Zhang, President Mahoney, and Dr. Mingjun Ma, Bottom Middle: John Caupert and Chancellor Minor pose in front of an ethanol-fueled car. Bottom right: NCERC staff present their research.

NCERC Hosts IDCEO and IL Corn Marketing Board Members along with SIU System President

January 2024

In January, NCERC hosted the Illinois Department of Commerce and Economic Opportunity's Entrepreneurship, Innovation & Technology Lead Kristi Dula and Illinois Corn Board's Director of Biofuels and Research Dave Loos to display NCERC's progress of utilizing the Wet Lab Expansion Grant. NCERC has been busy updating the Fermentation Suite and wanted to showcase new equipment.



Dr. Yan Zhang, Dave Loos, Cameron Rylance, Kristi Dula, and Jeff Bailey

SIU System President Dan Mahony, Director of Governmental Affairs John Charles, along with NCERC clients from Elemental Enzymes and Bluestem were in attendance to discuss future plans and have open an conversation about state funding that could assist NCERC, our clients, and the SIU system as a whole. This event also marked the first official meeting lead by Interim Executive Director Dr. Yanhong Zhang

Following the meeting, the NCERC team and IL DCEO Kristi Dula toured a nearby ethanol plant, Crysalis Biosciences Inc. Located in Sargeut, IL, Crysalis is focused on launching a sustainable aviation fuel project. After the introduction by NCERC, Crysalis now receives incentives from the Reimagining Energy and Vehicles in Illinois (REV Illinois), a program sponsored by IL DCEO.

NCERC Staff Visits Millipore Sigma Site

February 2024

In February, Millipore Sigma invited NCERC staff to tour its facility in St. Louis. During our visit, Dr. Yan Zhang, Terry Lash, Dr. Mingjun Ma, and Dr. Jie Dong gave presentations to introduce NCERC to other group leads at MilliporeSigma. This allowed NCERC to network and expand the reach of the Center to local companies.



Dr. Yan Zhang, Lilia Ban, Steve Ward, Krystin Polhemus, Terry Lash, Dr. Jie Dong, and Dr. Mingjun Ma

NCERC Attends SIU System Day

March 2024

In March, NCERC Interim Executive Director Dr. Yan Zhang and Business Manager Barb Randle traveled to the Illinois State Capitol for Southern Illinois University System Day. Students, faculty, and campus leaders shared information about the innovative research, teaching, and programs available across the SIU System.

NCERC showcased our unique position to pursue self-initiated research while also serving clients and providing students with opportunities to gain hands-on experience in the biofuel industry.



Dr. Yan Zhang at NCERC's booth



SIU System Day was hosted at the Capitol Building

Staff Spotlight – Welcome Robert Arnold and Rebecca Damuth

At the beginning of 2024, NCERC welcomed two new additions to our staff: Robert Arnold and Rebecca Damuth.



Robert started in February as the office support specialist. He assists in ensuring the Center runs smoothly through performing various administrative tasks. Arnold's organizational skills and attention to detail have already made a positive impact, allowing the Center to focus more on research.



In April, Rebecca Damuth joined as the publicity promotion associate. She improves NCERC's communications by developing marketing materials, assisting with client relations, managing an online presence, and representing NCERC at events.

We are excited to have both Robert and Rebecca as part of the NCERC team!

NCERC Performs a Site Acceptance Test For New 100L Bioreactor

April 2024

In the last week of April, staff from ABEC visited NCERC to complete the site acceptance test (SAT) for a new 100L bioreactor in the Fermentation Suite. From ideation to installation, the acquisition process for the new bioreactor took two years and nearly a million dollars to complete, from part of a Wet Lab Expansion Grant provided by the Illinois Department of Commerce and Equal Opportunity.

"I know this equipment will open opportunities for NCERC to innovate new ways to treat biomass in the Fermentation Suite," said Process Design and Electrical Control Systems Engineer Terry Lash.

The Fermentation Suite is the bridge between the Fermentation Laboratory and the Pilot Plant. Equipped with pharmaceutical grade bioreactors sized from 30-1500 L and staffed by leading engineers and scientists with decades of experience in the biorenewables industry, it is the ideal environment for work immediately preceding full-scale piloting.



**Left: Lucas Clayton, Jared Burns, Terry Lash, and Dr. Mingjun Ma stand in front of the new 100L after the SAT
Top: Dr. Mingjun Ma and Jared Burns learn about the bioreactor from ABEC personnel
Bottom: The new 100L bioreactor is part of NCERC's fermentation suite designed to scale up new technologies**

Staff Spotlight – Celebrating Terry Lash

Longtime staff member Terry Lash has retired after 20 years of service to NCERC. Terry joined NCERC in 2004 as a pilot plant engineer before construction was finished on the facility. He played an instrumental role in the Center's development by leveraging his past experience in the oil industry and agriculture biotechnology industry to acquire state-of-the-art equipment, design and improve processing, optimize data acquisition, and attract clients.



"It wasn't about the money for me," recalled Terry. "I wanted to be a part of a new company's development, to build something from the ground up. I like to work on new things with clients, understand it, build it, and then keep moving forward."

Over the years, Terry contributed to countless successes for NCERC. He is proudest of securing and installing the new 100L bioreactor in the Fermentation Suite this year. We are grateful for everything Terry accomplished during his years at NCERC and wish him the best in his retirement.

Finger Lakes and Lewis & Clark Community Colleges Connect at NCERC

May 2024

Director of Biotechnology and Biomanufacturing at Finger Lakes Community College (FLCC) Dr. Jim Hewlett visited NCERC. During the visit, Jim toured NCERC's facilities and brainstormed ideas for future collaboration.



Dr. Jie Dong, Jim Hewlett, Dr. Mingjun Ma, Dr. Yan Zhang, Jim Witt, Barb Randle, Paul Kuebrich, Tom Steinmann, and Misty Newman

NCERC and FLCC also connected with Lewis and Clark Community College (L&C) Dean of Science, Technology, Engineering, and Math Tom Steinmann, and Assistant Professors of Industrial Electricity Jim Witt and Paul Kuebrich. The group also toured the L&C N.O. Nelson campus to learn about the Process Operations Technology program. The visit gave NCERC the opportunity to network with community colleges with the goal of building a larger workforce training program.

NCERC Attends the Annual BioMADE Member Meeting

May 2024

On May 29th and 30th, Dr. Yan Zhang and Rebecca Damuth represented NCERC at the third annual BioMADE Member Meeting in Minneapolis. BioMADE supports biomanufacturing innovation, collaboration, and education through various project calls, under which NCERC has several funded projects.



Rebecca Damuth shares information about NCERC's Cellulosic Sugar and Ethanol Library

Dr. Zhang presented NCERC's research on building a Cellulosic Sugar and Ethanol Library using low temperature pretreatment technology at the BioMADE Start-Up Showcase. NCERC was also featured as a collaborator on one of BioMADE's key successful projects, ALAKA'I: Applied Life-Science Academy. NCERC was also voted as committee members for both the Education and Workforce Development committee and the 4S (Safety, Security, Sustainability, and Social Responsibility) committee.

NCERC Appears On-Stage at Fuel Ethanol Workshop

June 2024

From June 10 to June 12, the NCERC team consisting of Dr. Yan Zhang, Dr. Mingjun Ma, Erin Ferris, and Rebecca Damuth traveled to Minneapolis to attend the 2024 International Fuel Ethanol Workshop and Expo. Dr. Zhang made multiple appearances on-stage, updating the ethanol industry with the results of NCERC initiated research. NCERC also was an exhibitor in the expo hall.



Dr. Mingjun Ma and Erin Ferris at the NCERC booth



Dr. Yan Zhang gave two presentations at FEW

Dr. Zhang's first presentation at the innovation stage in the expo hall highlighted an NCERC developed technology that makes cellulosic ethanol, which feeds the sustainable aviation fuel industry. During a panel presentation, she also reported the findings of an NCERC-initiated research project that examined the effects of mixing sorghum with corn as the feedstock in the ethanol production process.

ON THE HORIZON – FY25

As we look ahead to the upcoming year, NCERC is excited to share a series of pivotal events and initiatives designed to enhance the Center's growth.

Showcasing Research at Industry Meetings

As part of our commitment to being a leader of research in the bioindustry, NCERC attends a wide variety of meetings and conferences throughout the year. Speaking engagements and exhibits not only elevate NCERC's profile but also foster valuable networking opportunities. Most notably in FY25, NCERC's Interim Executive Director Dr. Yan Zhang has been invited by BioMADE to sit on a panel related to scale-up fermentation at the Alternative Fuels and Chemicals Coalition Global Biobased Economy Conference from November 20-22, 2024. Bringing years of scale-up experience at NCERC, Dr. Zhang was also invited to present to the BioMADE Fermentation Scale-up subcommittee on delivering the most scientifically sound analytical data to industry experts.

New Projects and Proposals

In FY25, NCERC will also begin work on new BioMADE funded projects. In collaboration with the University of Hawaii Hilo, NCERC will analyze different tropical feedstocks to determine their potential for cellulosic ethanol production. The ultimate goal of the project is to create a Tropical Sustainability Center at Hilo. The second funded projects includes developing a curriculum in collaboration with Binghamton University for a biomanufacturing project manufacturing certificate. The curriculum will include a one-week long on-site training program hosted at NCERC.

NCERC continues to look for opportunities to write proposals with collaborators. One of the most exciting pending proposals includes utilizing NCERC's low-cost and low-energy process to convert industrial hemp to sugars and subsequent fermentation to ethanol, which will be utilized as a feedstock for SAF production. The process will be scaled up to 0.5 dry tons per day of feedstock for a continuous 500 hours and the data will be used for building a database of techno-economic analysis and life cycle analysis.

Plans for Expansion

In response to the growth from the last 20 years and the need for increased research capabilities, NCERC has requested to expand our facilities. The proposed expansion plan not only addresses current industry needs for increase our capacity as a contractual research organization and advancing SAF research, but also positions NCERC for future growth in the next 20 years as we continue to train talent, conduct innovative research, and serve our clients effectively.

In conclusion, NCERC is optimistic about the upcoming year and the opportunities it presents. These events and initiatives reflect NCERC's dedication to innovation, sustainability, discovery, and excellence. We look forward to keeping you updated on our progress in FY25.

STAFF DIRECTORY



Yan Zhang, Ph.D.
Interim Executive Director /
Director of Research



Garret Smith
Visiting Research
Fellow



Mingjun Ma, Ph.D.
Research Assistant
Professor



Andrew Platto
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Fellow



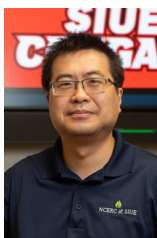
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NCERC at SIUE

Advancing Biorenewables Research