

2023

CIRCUITS

EXPANDING THE RANGE OF ENERGY
AND SENSING TECHNOLOGY, PAGE 6

GRAD STUDENT Q&A, PAGE 14

Mississippi
EPSCOR



WHAT IS EPSCoR?

The Established Program to Stimulate Competitive Research is a science and technology (S&T) research and development program that seeks to enhance research competitiveness for eligible jurisdictions. The program's goals are focused on strengthening STEM capacity through increased research capabilities, pathways for the development of STEM professionals, broadened participation of diverse groups and institutions in STEM, and jurisdictional economic development. All of this is achieved through the support of talented researchers at universities across our state.

CENTER FOR EMERGENT MOLECULAR OPTOELECTRONICS

The Center for Emergent Molecular Optoelectronics (CEMOs) is the latest research infrastructure improvement award from the NSF to the state of Mississippi. This five year, \$20M award will support the project's mission to establish a sustainable statewide interdisciplinary research infrastructure that will enable Mississippi to address fundamental challenges associated with advanced materials, increase the state's competitiveness in optoelectronics research, and drive cross-fertilization of research, education, training, and entrepreneurship to build the STEM workforce.

The project is composed of investigators from each of the state's research institutions who will work to address critical and contemporary optoelectronics challenges in key focus areas of fundamental science and engineering research and education. The work being conducted through this award is vital for the advancement of diverse technologies, such as sustainable energy, electronics, and biomedicine, critical to enhancing the competitiveness of existing industries and attracting new companies in the Mississippi Science and Technology core priority areas of energy, advanced manufacturing, and health. Workforce development efforts are integrated with the research and aimed at attracting, developing, and retaining top research talent and engaging a diverse body of K-14 students in STEM. Research-based education and outreach activities for K-14 students and teachers will help build the pipeline of next-generation STEM students.

Overall, the Center will facilitate the development of research capabilities, infrastructure, and educational opportunities in important fields of optoelectronic, energy, and biotechnology research. These capabilities are critical to sustain and advance nationally competitive research programs, support basic and applied research, increase public awareness of STEM career opportunities, and establish and maintain a solid scientific infrastructure in our university system with the potential to translate into new technologies with the potential for job creation.

TABLE OF CONTENTS

Letter from the Director	4
Annual Mississippi IDeA & EPSCoR Conference	5
CEMOs Collaborations Expanding the Range of Energy and Sensing Technology	6
New CEMOs Faculty: Tristan Clemons	8
CEMOs Students Attend 27nd NSF EPSCoR National Meeting	10
Academic Achievements Could Propel USM Graduate Student to Citizenship	12
Graduate Student Highlight: Q&A with Leigh Anna Hunt	14
Science Advisory Board & Steering Committee	17



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LETTER FROM THE DIRECTOR

Dr. Julie Jordan, Program Director

Mississippi State University Vice President of Research

I hope this letter finds you well during this summertime in Mississippi. I am delighted to share some exciting updates on our EPSCoR-funded research. Our faculty and students have been working tirelessly, achieving remarkable milestones that continue to inspire me. Their unwavering dedication to research and scholarship will make a significant impact not only in Mississippi but across the nation.

Our accomplishments extend far beyond numbers alone. With over 250 publications and presentations, numerous patent applications, extensive research collaborations, millions of dollars in grants awarded, and a multitude of meritorious honors and awards received, including prestigious CAREER awards, our researchers demonstrate their genuine passion for science, technology, engineering, and mathematics (STEM). They go beyond the confines of their laboratories, leading by example, and actively engaging in a wide range of outreach events. Their efforts have touched the lives of nearly 27,000 individuals of all ages, spreading their love for STEM far and wide.

We are currently making preparations for the second annual Mississippi IDeA/EPSCoR meeting, scheduled to take place on July 26-27, 2023 in Hattiesburg, MS. The agenda is packed with engaging sessions and activities, including a student poster session that is always an impressive event. We hope you will make plans to



attend and contribute to the vibrant atmosphere of knowledge exchange and collaboration.

In this issue of Circuits, we proudly showcase a diverse array of experiences and highlight some of the ground breaking research made possible by our innovative faculty, determined students, and dedicated staff. I trust that the articles featured will provide valuable insights and deepen your appreciation of the ongoing efforts taking place to advance Mississippi's research competitiveness.

Thank you for your continued support in our shared mission to advance scientific discovery and create a brighter future for Mississippi and beyond.

Sincerely,

A handwritten signature in black ink that reads "Julie Jordan". The signature is fluid and cursive.

Julie Jordan, Ph.D.



**WE HAD A GREAT TIME AT LAST YEAR'S STATE CONFERENCE!
BE SURE TO JOIN US THIS YEAR!**



MISSISSIPPI IDeA EPSCoR CONFERENCE 2023

Venue: Thad Cochran Center, USM - Hattiesburg, MS
Date: July 26-27, 2023
 Register at : msepsc.org





CEMOS COLLABORATIONS EXPANDING

THE RANGE OF ENERGY AND SENSING TECHNOLOGY

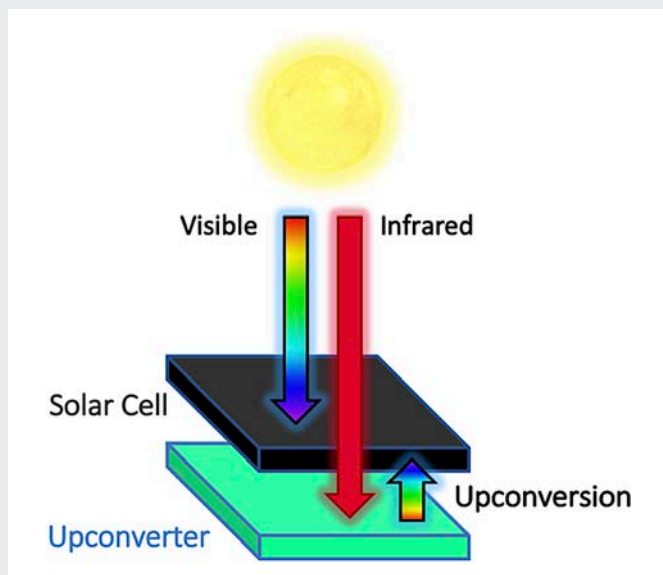
The demand for energy worldwide is projected to double by 2050, according to the U.S. Energy Information Administration. As we face the urgency of climate change and the depletion of fossil fuels, the development of efficient methodologies for renewable energy harvesting becomes imperative. Among the abundant sources of clean energy, solar power stands out. In fact, every second, the sun radiates enough light onto Earth to meet the world's energy needs for over two hours. While factors like materials costs and manufacturing times inherently limit the deployment of photovoltaics, the biggest barrier to widespread implementation remains the efficiency of the electricity-generating process. Mississippi EPSCoR researchers are making remarkable strides in this area by widening the window of operation of current solar cells.

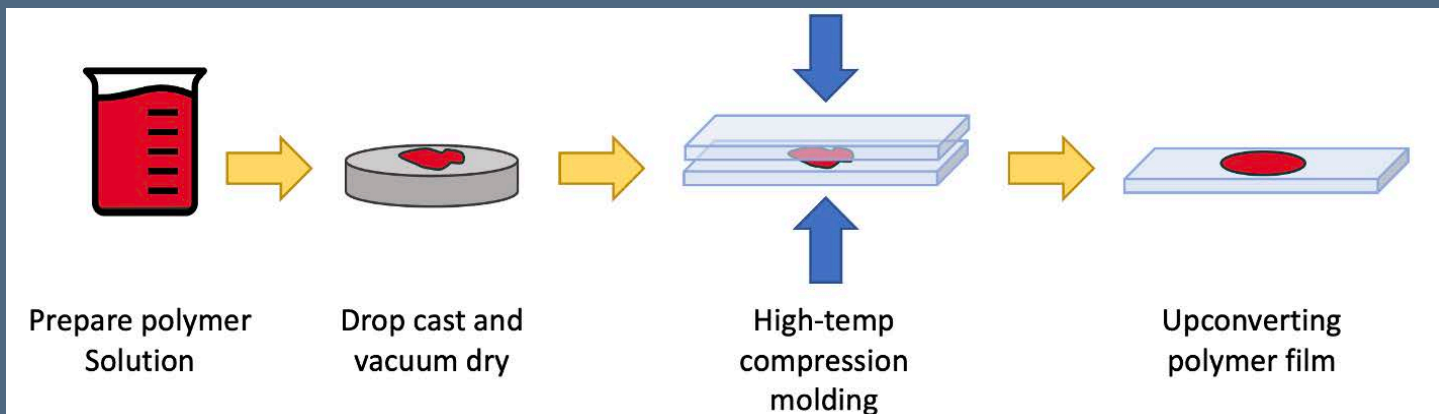
Through a simple process known as light upconversion, low-energy photons (the elementary particles that “carry” light’s energy) are transformed into higher energy photons. This process is of particular interest as approximately 65% of energy losses in solar cells result from their inability to absorb low-energy infrared and high-energy ultraviolet radiations. While solar cells with multiple layers, each absorbing a different range of wavelengths, offer a broader operational range compared to their single-layer counterparts, they remain costly and exhibit suboptimal electricity-generating efficiencies (less than 50%).

The collaborative research teams led by Dr. Yoan Simon and Dr. Xiaodan Gu at the University of Southern Mississippi (USM) and Dr. Nathan Hammer from the University of Mississippi (UM) are investigating innovative approaches to mitigate these energy losses. They are focusing on converting infrared low-energy photons into the visible range, which is compatible with current solar cell technology. Rather than completely redesigning the solar cell stack with multiple intricate active layers, this approach involves

adding a single extra layer capable of harnessing the previously inaccessible infrared photons. Creating this additional layer to meet the strict requirements of photovoltaic cells in terms of range, transparency, and efficiency demands expertise in a unique combination of synthetic chemistry, photophysics, and materials processing.

Dr. Simon’s pioneering work in the implementation of photon upconversion via triplet-triplet annihilation (TTA-UC) in glassy polymeric materials, relies on a cascade of energy transfers. This process mimics the pathways found in plants during photosynthesis, but performing it in glassy materials presents unique challenges due to limited molecular motion. TTA-UC typically involves a sensitizer molecule that absorbs photons from an incident light source and an annihilator/emitter that emits higher energy light after a complex series of energy exchanges. In solution, these intermolecular exchanges readily occur via molecular diffusion, allowing energy to be transported. However, solid-state glasses require energy hopping from molecule to molecule until encountering the appropriate partner for light emission, posing challenges.





In the approach described above, the annihilator also plays the role of the light-emitting molecule. The researchers posited that decoupling the annihilation and emission functions and assigning each role to two different molecules carefully positioned within the polymer will improve upconversion efficiency by maximizing the number of energy transfers that can take place. Sonia T. Stanciu, a graduate student co-advised by Drs. Simon and Gu, has been instrumental in developing new fluorescent molecules called singlet sinks. These molecules efficiently absorb the energy of the annihilator and emit light, reducing unwanted energy losses.

Leveraging the collaborative opportunities facilitated by the Mississippi EPSCoR CEMOs project, the researchers have formed a natural alliance to synthesize materials (Simon), optimize their assembly (Gu), and characterize their optical properties (Hammer). Early results obtained through the NSF EPSCoR-funded Research Experience for Undergraduates (REU) program

have provided a method to validate this research direction, holding the potential to revolutionize the field of solar energy harvesting, sensing technology, and biomedical imaging technology. By precisely tuning the energy levels of the molecules and controlling their arrangement in the upconverting layer, the team has unlocked possibilities for fabricating next-generation optoelectronic devices.

As this research progresses, the team will delve into the importance of structure and morphology on upconversion efficiency. They will continue to develop these projects by harnessing the unique capabilities at partner institutions, including Jackson State University and Mississippi State University. Through their efforts, the team aims to bridge the gap between fundamental research and practical applications, furthering Mississippi's leadership in the field.



Green-to-blue upconverting film of doped PMMA



Graduate Student Sonia Stanciu working in the lab

CEMOS FACULTY: TRISTAN CLEMONS

Some of the investments EPSCoR has made to the state of Mississippi include the hiring of new junior faculty at each of the four research institutions. Dr. Tristan Clemons is one of the newest members of the Center for Emergent Molecular Optoelectronics (CEMOs). He recently joined the team at the University of Southern Mississippi as an assistant professor in the Thames Polymer Science Research Center.

Professional athlete, entrepreneur, and family man, Dr. Tristan Clemons from Perth, Australia, has found his calling in research. Clemons became part of the CEMOs research team at The University of Southern Mississippi in Fall 2021.

After completing his Bachelor of Science in Nanotechnology at Curtin University of Technology, Clemons had a solid foundation to focus his Ph.D. studies which he conducted at the University of

Western Australia. When his close friend, Jess, suffered a tragic car accident that left her a quadriplegic, Clemons dedicated his education and research to learning about tissue regeneration in hopes of helping people like Jess with damage to their central nervous system. His primary focus was on regrowing nervous system tissue, but Clemons also researched topics such as burn injuries, cancer, and cardiovascular treatments during his Ph.D.



Dr. Tristan Clemons working in his lab



Dr. Tristan Clemons with his wife Claire and daughters Mackenzie (left) and Matilda (right)

While pursuing his academic career, Clemons had become a top professional field hockey athlete in Australia. With the 2016 Rio Olympics on his mind, he decided to take a fellowship in Perth and chase two dreams at once: field hockey and nanotechnology research. However, when the chance to play in Rio had passed, Clemons refocused his attention on research and took the opportunity to add entrepreneur to his resume. Clemons saw a market opportunity for flap hats, which look like baseball hats with a connected fabric to cover the neck. He and his wife decided to re-vamp the flap hat trend under the hot Australian sun and all it took was a trip to the fabric store to get their idea started. They had their first prototype made that day and shortly began selling flap hats in various patterns online across the country. Three and a half years later and more than 10,000 flap hats sold across Australia, the Clemons sold their business to embark on a US adventure.

Having sold his flap hat business and retiring from field hockey completely, Clemons joined a research group at Northwestern University as a postdoctoral fellow. There, the research group focused on utilizing bioactive polymeric scaffolds for the regeneration of tissue and the central nervous system, which aligned with his own research goals from early in his Ph.D. studies.

Weary of the cold Chicago weather and ready for some true southern hospitality, Clemons and his family made their way south to the University of Southern Mississippi, where he found an opportunity to start a polymer science research lab of his own and share his love of polymer materials with a whole department of faculty, graduate students, and undergraduate students. While his lab is still growing, Clemons is anxious to get a jump start on advancing his research to improve drug delivery, biosensing, and diagnostic applications; his friend, Jess, still the inspiration behind his research goals.

One day, Clemons hopes to see his work implemented in the clinical setting, the goal is to use polymeric materials to provide minimally invasive therapies which can stimulate the body to heal following severe injury or disease. If successful, his work would have enormous implications for individuals suffering from a wide range of physical disabilities.

When he is not busy in the lab, you can find Clemons teaching impromptu ballet lessons to his two young daughters, brainstorming new business ideas with his wife and friends, and sharing his Australian lingo and culture with the rest of the state.

CEMOS-FUNDED GRADUATE STUDENTS SHINE AT THE 27TH NSF EPSCoR NATIONAL MEETING

BY CLAIRE CLEMONS

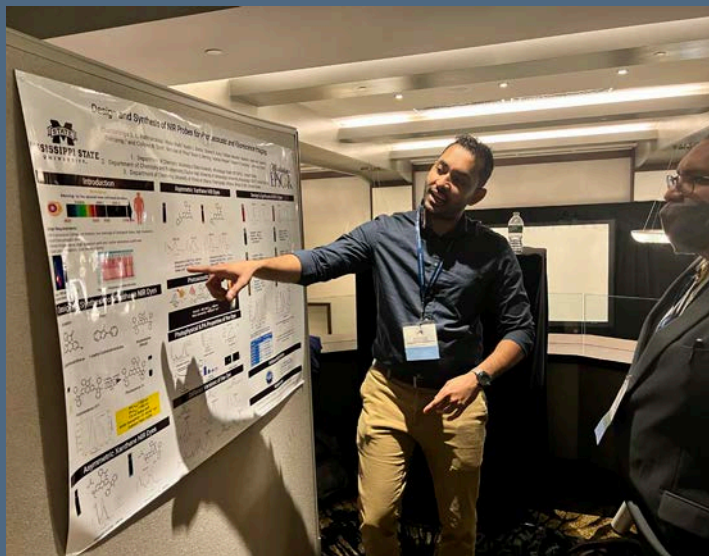
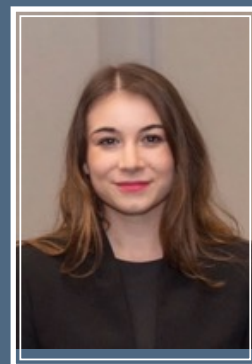
Last November, a group of exceptional graduate students from CEMOs-funded institutions made their way to Portland, Maine to participate in the 2022 NSF EPSCoR National Meeting. Chaturanga Rathnamalala from Mississippi State University, Sonia Stanciu from the University of Southern Mississippi, Kimberly Madison from Jackson State University, and Sreya Malayam Parambath from the University of Mississippi showcased their research through engaging poster presentations. This was a great opportunity for these graduate students to further refine their poster presenting skills to a new audience, learn from a wide variety of plenary speakers, and engage with other NSF EPSCoR supported students from across the country.

Chaturanga Rathnamalala, a fifth-year graduate student under the guidance of Dr. Colleen Scott at Mississippi State University, delves into the design and synthesis of near infrared dyes for biological imaging and optoelectronic applications. Post-graduation, Chaturanga aspires to work in a startup company. His advice to first-year graduate students

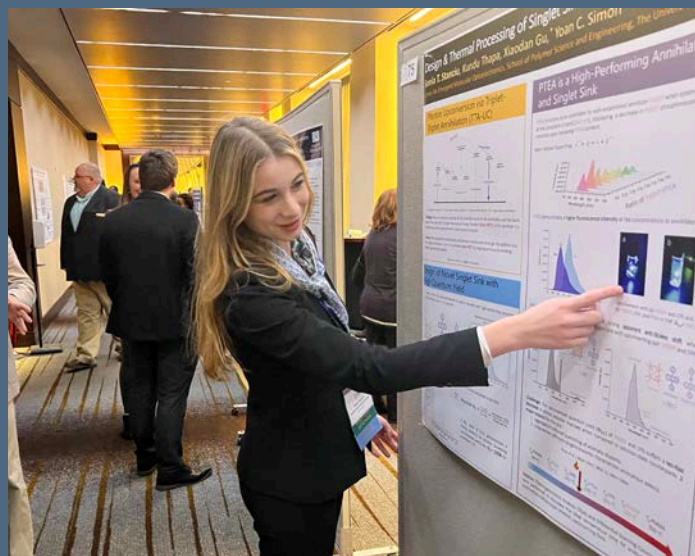


is simple yet profound: “Choose the right project that you are truly passionate about!” At the NSF EPSCoR National Meeting, Chaturanga relished the opportunity to connect with professionals working across diverse research domains.

Sonia Stanciu, a fourth-year student in the Polymer Science and Engineering Graduate Program at the University of Southern Mississippi, collaborates with her mentors, Dr. Xiaodan Gu and Dr. Yoan Simon, in designing bulk glassy polymer films capable of photon upconversion (converting low to high energy radiation). Her enthusiasm peaked during the poster session, where she interacted with undergraduates and gained a glimpse into the things that the next generation of graduate students are passionate about. Sonia’s advice to first-year graduate students centers on self-care and fostering a supportive network: “Take care of yourself because the first year can be so overwhelming! Find a healthy routine and embrace opportunities to bond with fellow graduate students. Building a strong support system can be life-changing.”



Chaturanga Rathnamalala



Sonia Stanciu



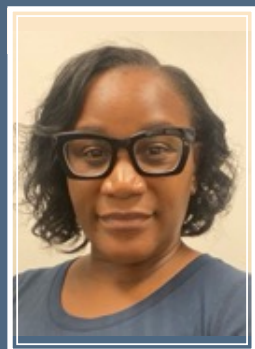
Kimberly Madison



Sreya Malayam Parambath

“CHOOSE THE RIGHT PROJECT THAT YOU ARE TRULY PASSIONATE ABOUT!”

Kimberly Madison, now in her fourth year of Graduate School at Jackson State University, works under the mentorship of Dr. Glake Hill in collaboration with Dr. Jared Delcamp. Her computational work aids researchers in developing organic-based dyes for dye-sensitive solar cells (DSSCs). Throughout the event, Kimberly actively engaged in



every opportunity to learn, expand her professional network, and fully immerse herself in the rich experiences the meeting had to offer. Her guiding principle for first-year graduate students is to pursue what they love and find a mentor who aligns with their personality and goals. Her message is clear: “Do what you love and love what you do!”

Sreya Malayam Parambath, a fifth-year graduate student at the University of Mississippi, conducts her research under the supervision of Dr. Saumen Chakraborty as part of a CEMOs-funded seed grant. Her project explores the potential of a multi-metal binding thiol rich protein called metallothionein for hydrogen evolving reactions both photochemically and electrochemically. The NSF EPSCoR Conference

provided Sreya with a platform to forge new connections and expand her professional network. She offers a motivating piece of advice to fellow graduate students: “The journey of five years is not easy. We all experience ups and downs, but it is crucial to persevere until the finish line. Believe in yourself.” Sreya’s post-graduation aspirations include securing a rewarding job in her field.



As these remarkable students continue their academic journey, we eagerly anticipate witnessing their growth as they forge new discoveries and make lasting impacts in their respective fields. Their participation in the NSF EPSCoR National Meeting not only showcased their exceptional and diverse talent, but also highlighted the vibrant academic community within Mississippi and the invaluable contributions of the CEMOs program. We are proud to support their endeavors and look forward to the continued success and impact they will undoubtedly achieve.

ACADEMIC ACHIEVEMENTS COULD PROPEL USM GRADUATE STUDENT TO CITIZENSHIP

OFFICE OF UNIVERSITY COMMUNICATIONS, UNIVERSITY OF SOUTHERN MISSISSIPPI

Sonia Stanciu hopes three minutes of her time help make her dream of becoming an American citizen reality.

Stanciu, a doctoral candidate in The University of Southern Mississippi (USM) School of Polymer Science and Engineering, used her monetary prize from winning the USM Graduate School's 3MT® (Three-Minute Thesis) 2021 competition to pay fees associated with applying for U.S. citizenship.

A third-year graduate student in the USM School of Polymer Science and Engineering, Stanciu works in the research labs of Dr. Yoan Simon and Dr. Xiaodan Gu (The Simon and Gu Research Groups), where her research focuses on photophysics and materials engineering, which involves the fabrication of polymer materials capable of harvesting energy from light, or "photon upconversion." This process involves the combining of energy from the particles of light known as photons, with the goal of creating even more energetic light.

Stanciu employed her research for the 3MT® competition last year in her presentation titled "Upconversion – A Roller Coaster of Light" to conceptualize the journey upconversion leads us along the many different energies of light, visible and

invisible, that exist in the universe.

The 3MT® Competition is an annual communication skills development event and among the most important professional skills-development activities the USM Graduate School hosts. It requires participating students to present the significance of their research in a manner that can be understood by a general audience within three minutes, compelling them to deeply consider the value and broader impacts of their work. The 3MT® grand champion earns a \$1,000 prize, as well as \$250 as winner of their competition category.

"The reason increasing the energy of light is so valuable lies in the future of solar energy harvesting," Stanciu explained. "For every second the sun shines light onto Earth, we could fulfil the entire world's energy demands for over two hours, but our current solar technologies operate nowhere near efficiently enough to utilize the broad spectrum of light we receive from our sun every day. If we could tailor light to whatever energy we want, it would be much easier to use for individualized purposes."

Stanciu had not previously participated in the 3MT® competition before last year, and says she loved the experience. "I didn't realize how challenging it was going to be to condense months of hard work and many experimental failures into just three minutes," she said. "But the reality is that when it comes to publicizing our research, few will ever see all those ups and downs. 3MT® was the perfect opportunity to thin out some of the weeds in my research to really figure out just what was most valuable about my project's contribution to its field."

The opportunity to engage in that same competition at the next level recently availed itself for Stanciu at the 3MT competition, held recently during the Conference of Southern Graduate Schools (CSGS) in Raleigh, North Carolina. There, Stanciu shined again, finishing as one of the competition's top finalists.

"Getting to travel to Raleigh and compete among other regional 3MT® champions was one of my most memorable experiences in graduate school to date," Stanciu said. "Every single individual in that competition was so dedicated to their craft, and willing to try to prove to a huge room of strangers what their research meant to the world. I was so honored to make it to the final round of presentations, as there wasn't a single participant who wasn't deserving."

"It was a joy to get to know Sonia a little better when we attended CSGS together last month," said USM Associate Provost and Dean of the USM Graduate



Sonia Stanciu, right, and USM Associate Provost and Dean of the Graduate School Dr. Karen Coats celebrate Stanciu's finalist award at the Conference of Southern Graduate Schools' Three-Minute Thesis Competition.

School, Dr. Karen Coats. “She took full advantage of all the conference had to offer for graduate students in attendance, including networking and professional development, and her performance in the 3MT® competition was simply flawless. Sonia was very successful in distilling her research down to the most important concepts and then explaining it to a very broad audience.

“I wasn’t at all surprised when she made it to the finals competition. We can all be proud of how well she represented Southern Miss.”

A native of Halifax, Nova Scotia, Stanciu moved with her parents to the United States in 2003, settling in Indianapolis, Indiana. She grew up in a multicultural home, with her father being a native of Romania who moved to Canada in the early 1990s, and her mother, who is Scottish-Canadian. She attended school at nearby Hanover College, where she initially majored in anthropology, influenced by her curiosity about the diverse cultures of the world.

But after becoming concerned about the impact climate change is having on developing nations around the world, she decided to change her major to chemistry to explore what research she could engage in that could help alleviate those negative impacts on the planet.

Stanciu’s first contact with USM was through its Research Experience for Undergraduates (REU, funded by the National Science Foundation) before deciding to pursue her graduate degree at the Hattiesburg campus. “It was through the REU I fell in love with polymer science and transitioned from studying antibiotic resistance and chemistry to the field of engineering,” she explained.

She points to her participation in the Mississippi-EPSCoR-funded Center for Emergent Molecular Optoelectronics (CEMOs) as being among the most meaningful experiences she has had since coming to USM, where Stanciu gets to spend every day working with development of technology of the future through manufacturing unique polymers with electronic properties.

Stanciu plans to work in the clean energy sector after graduation, either in the private sector or with a government agency that focuses on device engineering and solar energy. “We only have approximately 50 years remaining to utilize the world’s petroleum reserves, and the sun is arguably the most renewable source of energy we have access to every single day,” she said.

Stanciu takes inspiration from her father, who moved to Nova Scotia, Canada after the Romanian revolution in 1989. He spoke almost no English when he first moved to Halifax and knew no one outside of Romania, she said. Despite having a master’s degree in physical chemistry, he faced difficulties finding

employment in his field, so he worked at a variety of odd jobs while doing research for the local university.

After learning English and doing any research job he could in Canada, Stanciu’s father was finally offered a position as a scientist for a private American company. The company sponsored visas for Stanciu and her parents, and after five years of living in Indiana the family was able to apply for permanent residency in the United States. Stanciu then began saving money to apply for her American citizenship when she started getting a stipend as a graduate assistant at USM.

“He’s my biggest hero,” she said of her dad. “He never got the opportunity to finish his Ph.D., so he was really excited when I was accepted into this (USM) program.”

As soon as Stanciu won the 3MT® competition at USM and received her prize, she sat down with her father and filled out her citizenship application paperwork. She was recently notified that her application is now pending review.

“The process can take anywhere from a few months to a couple years, so I’m trying my best to be patient,” she said. “I’ve always been very involved in extracurriculars (Greek Life, volunteering, etc.) so I’m excited to finally be able to vote in an election.

“Becoming a citizen also means I’ll have the ability to apply for internships or careers in governmental agencies like the Department of Energy, which does a lot of work toward sustainable energy harvesting. Regardless, if I get any positions like those, this country has been my home for many years, so I’ll just be happy to make it official.”

For more information about the USM Graduate School’s 3MT® competition, visit [Three-Minute Thesis Details | Graduate School | The University of Southern Mississippi \(usm.edu\)](#); for information about the USM School of Polymer Science and Engineering, visit [School of Polymer Science and Engineering | The University of Southern Mississippi \(usm.edu\)](#).



USM doctoral student Sonia Stanciu presents for the Three-Minute Thesis competition at the Conference of Southern Graduate Schools.

GRADUATE STUDENT HIGHLIGHT: Q & A WITH LEIGH ANNA HUNT

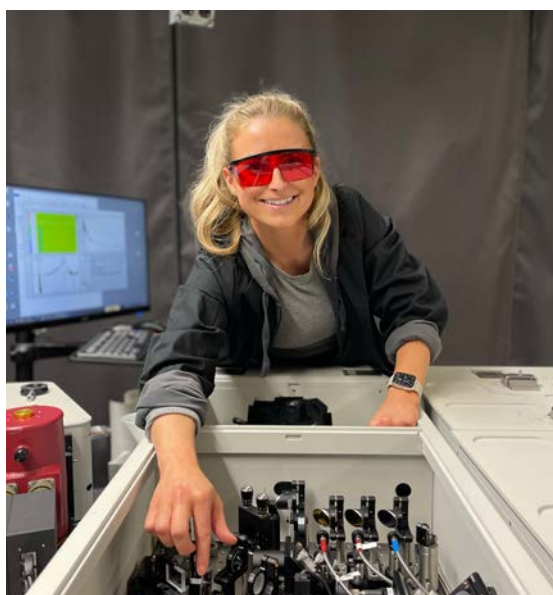
University of Mississippi graduate student Leigh Anna Hunt didn't set out to become a chemistry researcher until an undergraduate credit requirement put her on a new career path. Now, her CEMOs research experience has opened doors for her in Sweden.

Where you are from and what are you doing now?

I'm originally from Grenada, MS, which is only about an hour from Oxford, MS. It's a small, rural town that's not known for much. I completed my Bachelor of Arts at The University of Mississippi and am currently in graduate school there as well.

What led you to do research?

For me, this is a very nuanced question. I feel that many of the answers that I've seen have a response like, "When I was six years old, I decided I wanted to be an astronaut." I think a story like that is incredible, but it isn't my story. I never dreamed of becoming a scientist when I was young. I think the only relatable memory I have as a child is always wanting to be outside, which



Graduate Student Leigh Anna Hunt

is ironic because now I do research in a basement. When I started with Dr. Hammer, I didn't really know what scientific research entailed. Since then, my biggest motivator has been the intellectual challenge that scientific research presents. My experience started with "I don't know" responses but has developed into a response of "I don't know yet."

How did you get connected with your mentor?

I wanted research hours to fulfill credit requirements at the end of my undergraduate studies. After looking into the research groups in our chemistry department, I decided to reach out to Dr. Hammer. We met, and he offered to advise me. After a few months of research in his group, he suggested I stay for graduate school.

What year are you in school and what are you studying? Is your research different from your academic studies?

I'm in my final year of graduate school and will graduate in May. It's been a long time since I've taken courses, but I never took a graduate class that truly emphasized the subject of my current research. The classes that I did take were very beneficial for a fundamental understanding of chemistry. In the research portion, I have mostly taught myself with direction from both colleagues and mentors.

Tell me about your experience working on EPSCoR. When did you first start working on CEMOs? What are you researching right now?



Graduate Student Leigh Anna Hunt working with Dr. Nathan Hammer

My first experience with EPSCoR was part of a collaborative NSF EPSCoR Track-2 award to address multi-disciplinary challenges in energy research. I have been a part of CEMOs from the very beginning of 2018.

What are your plans after you graduate?

I recently accepted a postdoctoral research position with Leif Hammarström at Uppsala University in Uppsala, Sweden. Leif is a recognized world leader in the mechanistic investigations of artificial photosynthetic systems, which is congruent with my CEMOs research experience.

Do you have a goal for after your postdoc or where you want to work?

I genuinely have no idea what I want to do next. I love the research I do, and I'm really excited to continue my research career as a postdoc. From there, I'm open to industry or academia, but for now, I'm focused on learning as much as I can in my next position.

What has helped you be successful? Do you have a role model?

I don't know that there is a simple answer to this question. The Ph.D. journey is difficult, but I wouldn't have accomplished what I have thus far without continuing to try and put in the effort each day. I have worked very hard for what I have accomplished, and I firmly believe that any other accomplishments in my career will be achieved with the same effort.

I couldn't name a role model, but there are certainly specific traits that I admire about people. I have some great mentors and colleagues, but I believe that a large

part of maturing is better understanding the fallibility of people. For me, it's important to experience things and come to your own conclusions as an individual.

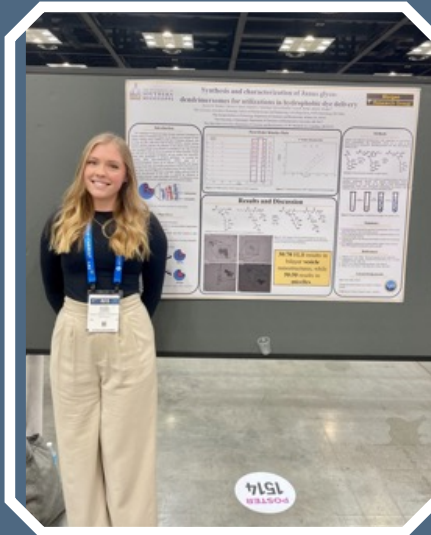
What experience can you share as a young female in STEM?

I could write a thesis on this. There's a reason that groups and programs that advocate for women in STEM exist. There's a reason that grants promote them, and there's a reason that this question is part of our interview. As a woman in STEM, there are often unique hurdles, and it can sometimes be discouraging to try and enter a field that men have historically dominated. Lack of women representation in this field is a multifaceted issue that's difficult to address in a single interview question. As a woman in STEM, it is easy to get frustrated because we tend to have to fight more "invisible" battles than our male colleagues. I consider myself lucky to be part of a department where the culture has changed, and it is both diverse and inclusive, but I shouldn't have to deem my experience as "lucky" just because I'm a woman.

What advice would you give to your younger self or other young women?

Take time to choose your mentor(s). This person doesn't necessarily have to be your principle investigator. A good mentor can bring huge benefits, especially for women in sometimes unbalanced environments, like in STEM. But as you move forward, you will learn to find people, both women and men, who will mentor you and advocate for you. The confidence that follows will be your driving force.

MEMORABLE MOMENTS



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