



Office of Undergraduate Research celebrated the SURF 2021 cohort with the 1st SURF Symposium, on August 10, 2021.

A new academic year of research and scientific discovery in ALL academic areas starts. Be part of this rich experience!

Dear Students, Faculty, and Staff,

The Summer Undergraduate Research Fellowship (SURF) has concluded on August 10 with an amazing first edition of the SURF Symposium, where 16 talented students presented enthusiastically 15 exciting research projects ranging from areas of inter-cultural studies, to business management, speech and mental disorder, kinesiology, applied sciences, engineering, environmental science, microbiology, computer science and IT security. Congratulations to all SURF fellows for their fine work and wishing them great success in the continuation of their academic training. The SURF fellows researched into their projects for several months, starting in early January with an extensive literature review for their proposal, continuing in summer with a careful development of theoretical models, algorithms, and meaningful hands-on experiences in our laboratories at Lamar, and ending with great presentations of their research findings at the SURF symposium in August. The SURF 2021 program showed the potential Lamar University has in offering quality research experience to undergraduates from all academic areas.

Each fall, O.U.R. opens a new OUR grant competition. This year the deadline for submission is Sep. 25 and the winners will be celebrated on Oct. 15, in an O.U.R. awards ceremony hosted in the Galloway bldg. For each grant project, O.U.R. offers \$1,000 in research support and \$500 student stipend. Over the last eight years, more than 150 undergraduate projects have been sponsored by O.U.R. for performing research and creative activities. The legacy of the research led by OUR students stays in valuable contributions to O.U.R. sponsored conferences organized every fall (The Texas STEM conference and HASBSEB conference) and spring (when we offer the largest, most comprehensive undergraduate research exhibition at Lamar, called EXPO). We have collected narratives, videos, and PPTs from our sponsored projects ran over the last two years. They will all be available on the OUR website. The goal is to offer resources and inspire prospect undergraduates to follow on the pathway of discovery and scientific inquiry walked already by their peers before.

The upcoming 9th edition of the Texas STEM conference and 8th edition of the HASBSEB conference will offer new opportunities to learn, present, and enjoy being part of Lamar community. Two great keynote speakers, Dr. Nick Lanning from the Air Force Research Laboratory, and Dr. Juan Nicolau, Marriott Professor of Revenue Management at Virginia Tech, will be our guest speakers at the two fall events.

The OUR programs and events would not be possible without the strong support from President Jamie Taylor and Provost Brenda Nichols to whom everyone in O.U.R. and myself thanks heartily. Special thanks go also to all academic Deans and Chairs for constant support and encouragement to their faculty and students in following on the pathway of research and creativity at Lamar University.

Dr. Cristian Bahrim, Acting Director of O.U.R.

Dr. Cristian Bahrim
Acting Director of O.U.R.

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2021 SUMMER UNDERGRADUATE RESEARCH FELLOWS LISTED BY COLLEGE

COLLEGE OF ENGINEERING - Dean Brian Craig

Kalen Baker | major in Mechanical Engineering and Mathematics |

Mentor: **Dr. Ping He**

Research in Mechanics and Physics “*Theoretical Research on Sintering of Metals based on Results of Molecular Simulations*”

Alexander Bahrim | major in Electrical Engineering |

Mentors: **Dr. Gleb Tscheslavski** and **Dr. Cristian Bahrim**

Research in Electrical Engineering and Physics: “*Development and assessment of hardware model for studying the mechanism of Regenerative Braking System (RBS)*”

Cymone Houston | major in Civil Engineering |

Mentor: **Dr. Thinesh Selvaratnam**

Research in Environmental Engineering “*Biological Treatment of Produced Water*”

Melissa Tan | major in Civil Engineering |

Mentor: **Dr. Thinesh Selvaratnam**

Research in Environmental Engineering “*Studying the Extracellular Polymeric Substances of Galdieria sulphuraria As Flocculation Aid for Improving Algal Harvesting Efficiency*”

Gabriel West | major in Mechanical Engineering |

Mentors: **Dr. Sushil Doranga** and **Dr. Jenny Zhou**

Research in Mechanical Engineering “*Vibration Response Prediction of Printed Circuit Boards used in the Transportation Industry*”



COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT – Dean Robert Spina

Damaris Thrash | major in Health and Kinesiology |

Mentor: **Dr. Shannon Jordan**

Research in Exercise Science *“Effects of Motivational Music on Post-Exercise Recovery”*

COLLEGE OF FINE ARTS AND COMMUNICATIONS – Dean Derina Holtzhausen

Cesar Julian Delgado | major in English and Modern Languages |

Mentors: **Prof. Andres Favors** and **Prof. O’Brien Stanley**

Research in Intercultural Languages *“Cultural Identity and Digital Citizenship: How Do Social Media Consumers and Creators Reconcile their Identities in the Digital World”*

Madison Fondren and **Kinlee Buesing** | major in Speech and Hearing Sciences |

Mentor: **Dr. Jamie Azios**

Research in Speech and Hearing Sciences *“Where are my friends?” A Narrative Inquiry of Friendship Maintenance and Dissolution in the Early Period Post-stroke and Aphasia*

Chloe Smith | major in Speech and Hearing Sciences |

Mentor: **Dr. Monica Harn**

Research in Speech and Hearing Sciences *“A Cross-sectional Study of the Portrayal of Childhood Speech Sound Disorder Interventions in YouTube Videos”*

COLLEGE OF BUSINESS – Dean Dan French

Viviana Denova | major in Business Biology |

Mentor: **Dr. Gevorg Sargsyan**

Research in Business Management and Finances *“The Financial Impact of COVID-19 on Businesses in Dining and Hospitality Industries in Southeast Texas”*



COLLEGE OF ARTS AND SCIENCES – Dean Lynn Maurer

Oluwatomisin Egbewale | major in Computer Sciences |

Mentors: **Dr. Sujing Wang** and **Dr. Xingya Liu**

Research in Computer Science “*Security evaluation of a cloud-based biometric authentication system*”

Callan Noak | major in Computer Sciences |

Mentor: **Dr. Sujing Wang**

Research in Computer Science “*Designing Regression Models for Covid-19 Risk Prediction*”

Nyah Sciarrilla | major in Biology and Speech and Hearing Sciences |

Mentor: **Dr. Matt Hoch**

Research in Biology “*The Effect of Starch Copper Oxide Nanoparticles on Differential Growth of Microbial Populations in Aquatic Environments*”

Carissa Slaughter | major in Biology |

Mentor: **Dr. Ashwini Kucknoor**

Research in Microbiology and Parasite Immunology “*Trichomonas vaginalis induced Toll-like Receptor Gene Expression in Cervical Epithelial*”

Danielle Soileau | major in Biology |

Mentor: **Dr. Ashwini Kucknoor**

Research in Microbiology and Molecular Biology “*Characterization of a Novel Cell Surface Protein Coding Gene, TfAD1 in Trichomonas foetus, a Cattle Pathogen*”

CONGRATULATIONS to ALL for the job well-done!



OFFICE OF UNDERGRADUATE RESEARCH LAMAR UNIVERSITY

COLLEGE OF ENGINEERING

2021 SURF Symposium

KALEN BAKER
Major in Mechanical Engineering

Mentor: Dr. Ping He
Assistant Professor of Mechanical Engineering

Research in Mechanical Engineering and Physics
"Theoretical Research on Sintering of Metals Based on Results of Molecular Simulations"

Essence of my research:

My project has been studying the process underlying sintering so that it can be better understood. Sintering itself is the fusing of a powdered material into a single object at relatively low temperatures. I'm looking at the simpler version of sintering but here in the Beaumont and Houston area it provides an important means of coating materials and in the world, it makes a variety of metallic, ceramic and polymer substances need for everyday life.

KALEN BAKER

MARCH 24, 2021

Kalen's Testimonial:

Working for the OUR has been a great time, it has provided resources to make conducting research at Lamar enjoyable. I have thoroughly enjoyed being able to present what I've worked on because sometimes the questions you asked give ideas that you wouldn't otherwise have. It's a great place to start if you think you want to do research even if you have no idea what you want to do the OUR can direct you in the right direction.

KALEN BAKER AND DR. PING HE

AUGUST 5, 2021

Dr. He's Thoughts:

Kalen has conducted a numerical study of sintering metals using molecular dynamics and theoretical models. He has run hundreds of sintering simulations, and researched single or binary metals of aluminum, copper, and titanium below and near their melting points. Several force fields have been compared, and mass diffusivities are computed and compared with literature data. His work is potentially transformative in the development of sintering technology as well as 3D metal printing.



OFFICE OF UNDERGRADUATE RESEARCH LAMAR UNIVERSITY

COLLEGE OF ENGINEERING



2021 SURF Symposium



ALEXANDER BAHRIM
Major in Electrical Engineering

Mentor(s): Dr. Gleb Tcheslavski
Associate Professor and Chair of Electrical Engineering
Dr. Cristian Bahrim
Professor of Physics

Research in Electrical Engineering and Physics
"Development and assessment of hardware model for studying the mechanism of Regenerative Braking System (RBS)"

Essence of my research:

My project allowed to build a Regenerative Braking System (RBS) model to demonstrate the functionality of an RBS and meet the critical efficacy of 16%, desired for the automotive industry. My analysis led us to build and test an efficient experimental configuration with 30% efficiency at 1,000 RMP. Our results predict a possible efficiency of 51% for real-world applications at 2,000 RPM. This research helped demonstrate that electric vehicles can meet range demands.



ALEXANDER BAHRIM



MARCH 24, 2021

Alexander's Testimonial:

I am very honored to have been selected to participate and contribute to my Lamar University experience by learning invaluable lessons in SURF and progressing in my passion for the Electrical Engineering field. I hope to continue my interest in the electric vehicle industry alongside with my mentors in further studies and into graduate school. SURF has enriched my skills in analytical thinking and given me the opportunity to "put to use" what I have learned from my professors.

ALEXANDER BAHRIM
DR. GLEB TCHESLAVSKI
DR. CRISTIAN BAHRIM



AUGUST 5, 2021

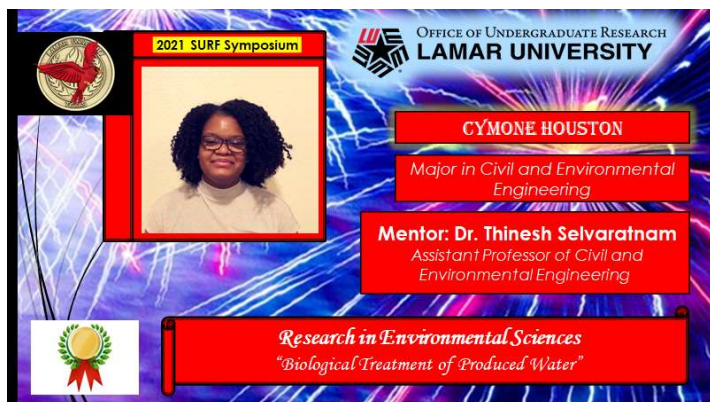
Dr. Bahrim's Thoughts:

The project is having significance in the electric car's industry and I believe will interest many people in the creative and development branch of companies which produce electric vehicles. Alex ran a complex project starting from designing an open box PSMS system, building it with an ingenious flywheel system, and creating a charging circuit for which he thoroughly studied its efficiency in storing energy on a capacitor. This is one of the most complex undergrad projects I have seen lately.



OFFICE OF UNDERGRADUATE RESEARCH LAMAR UNIVERSITY

COLLEGE OF ENGINEERING



Essence of my research:

Produced water (PW), the largest waste stream generated in oil and gas industries, is traditionally treated using chemical, physical, and mechanical methods that are neither eco-friendly nor cost-effective. Therefore, the utilization of PW as an algal growth medium has a great potential to treat PW in the environmentally beneficial manner. Our research developed an on-site, algal-based cultivation system to bioremediate PW and focused on obtaining experimental data to validate the system in laboratory-scale reactors.



Cymone's Testimonial:

My experience with research this summer was great! I had a chance to continue my work from the OUR grant. I had the opportunity of working with a phenomenal research team and mentor. I gained knowledge that I know helps me today to see my major in a different light. This opportunity also introduced me to new areas of interest in my major that I never thought I would be interested in before. This indeed was an experience I will never forget! I use this opportunity to thank the OUR at Lamar.



Dr. Selvaratnam's Thoughts:

I had the pleasure to have Cymone Houston in my algal research lab for the last two years. Cymone has been a great asset to my research team and successfully gotten three undergraduate research scholarships during the previous two years. She was a co-author of a peer-reviewed published research article on the bioremediation of produced water using an algal-based system.



OFFICE OF UNDERGRADUATE RESEARCH LAMAR UNIVERSITY

COLLEGE OF ENGINEERING



2021 SURF Symposium



MELISSA TAN
Major in Civil and Environmental Engineering
Mentor: Dr. Thinesh Selvaratnam,
Assistant Professor of Civil and Environmental Engineering

Research in Environmental Sciences
"Studying the Extracellular Polymeric Substances of *Galdieria Sulphuraria* as Flocculation Aid for Improving Algal Harvesting Efficiency"

Essence of my research:

Extracellular polymeric substances (EPS) is a biopolymer secreted by algae into the surrounding environment that contains several biomolecules with a wide range of potential applications. One specific application of these biomolecules lies in the flocculation processes for algal separation. In this study, EPS was extracted from the microalga *Galdieria sulphuraria*, which is then characterized for potential biomolecules and then used for flocculation experimentation of the same algae to assess the feasibility of using the EPS to improve algal harvesting efficiency.



MELISSA TAN



MARCH 24, 2021

Melissa's Testimonial:

I am very grateful to have been chosen as a SURF recipient. This experience has been like no other, and the best part of this research project was working as a team to obtain results. The experiments were very meticulous, but we worked hard to produce results. My mentor, Dr. Thinesh, was helpful in every way possible as he guided me throughout this project. This project also would not have been possible without the support of OUR at Lamar. This research project has helped me broaden my future educational and career paths.

MELISSA TAN AND DR. THINESH SELVARATNAM



AUGUST 3, 2021

Dr. Selvaratnam's Thoughts:

I had the pleasure to identify and select Melissa from my freshman class last Fall and introduced her to undergraduate student research opportunities at Lamar. Just in two semesters, Melissa has gotten two undergraduate research scholarships and is an integral part of my research lab. Over the past year, she has been developing into a good undergraduate researcher while keeping an excellent academic standing.



OFFICE OF UNDERGRADUATE RESEARCH LAMAR UNIVERSITY

COLLEGE OF ENGINEERING

2021 SURF Symposium

GABRIEL WEST
Major in Mechanical Engineering

Mentor(s): Dr. Sushil Doranga
Visiting Assistant Professor of Mechanical Engineering
Dr. Jenny Zhou
Professor & Interim Chair, Mechanical Engineering

Research in Mechanical Engineering
"Vibration Response Prediction of Printed Circuit Boards Used in the Transportation Industry"

Essence of my project:

My research is over the dynamic response of six-layer Printed Circuit Boards in order to determine the mechanical properties such as the Young's Modulus and Poisson's ratio so in future works (research and industry in general) will no longer have to take the time and spend the money on simulations for their PCBs.

GABRIEL WEST

MARCH 24, 2021

Gabriel's Testimonial:

This project was very taxing mentally and physically. Despite all the late night spent in the lab and the shop, I learned a great deal about how to conduct an engineering project. Through this work I also found that the area of vibrations truly fascinates me, and I found the topic I am choosing to pursue for my master's degree. I am so thankful that OUR and Dr. Doranga gave me the opportunity to conduct this research project. I truly will never forget the lessons I learned this past.

GABRIEL WEST

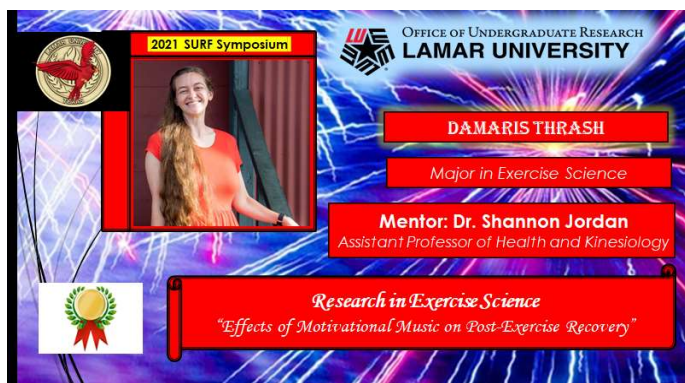
AUGUST 6, 2021

Dr. Doranga's Thoughts:

The research conducted by Gabriel is interesting and a rarely addressed issue. It represents scientific key information to the audience working in the electronics industry. Gabriel concludes that isotropic modelling of PCBs is not enough to predict PCB dynamics. This research can be expanded in the future by considering the dynamics of added components in the PCBs and PCBAs.



COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT



Essence of my project:

Analyzing the relationship between music and exercise is crucial, as research has shown that listening to motivational music while exercising can enhance athletes' performances, as well as have potential health benefits for clinical populations. While this study focuses on the average college student, it is also significant as it is one of the few of its kind - it analyzes the physiologic effects of listening to music during the exercise recovery period. Understanding this could potentially lead to improved exercise recovery. Results could also provide insight to plan future studies for other populations (i.e., professional athletes).



Damaris' Testimonial:

This experience fueled my interests for this topic and my love for the study of exercise science in general. Not only has it made me more confident in my abilities and what I want my future career to revolve around, but it has created a much more curious mind and stimulated a great and newfound appreciation for research within me as well. If I had known how much I would come to enjoy research through this experience beforehand, I would have applied for SURF and all the opportunities it offers sooner. As it is, I cannot wait for future chances to conduct more studies.

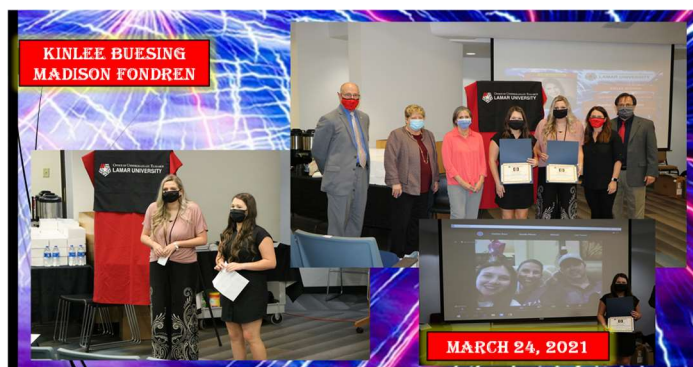
Dr. Jordan's Thoughts:

Throughout the process of conception of the project, data collection, and analysis, Damaris has played an active role. There were many processes unfamiliar to Damaris that she stepped up and mastered. What I have enjoyed the most about working with Damaris on this project is her inquisitive nature. She wants more than a set of instructions. She wants to know the framework of a concept or process and to play an active role in all facets of the project. Being part of the marching band at Lamar helped foster the love of music and being an exercise science major fostered the curiosity to form a hypothesis and design this study. With the partial data set analyzed, we have found no difference in exercise recovery data between the three music conditions. However, we have several more participants who have since completed the study and we will soon have the entire data set analyzed for presentation at the Texas STEM Conference.





COLLEGE OF FINE ARTS AND COMMUNICATIONS



Kinlee's Testimonial: I have had a wonderful experience with SURF and the office of undergraduate research. I am grateful to be given the opportunity to do research over aphasia. Through our project I was able to learn very valuable information that will greatly help me in my future career as a SLP. I now have a great understanding of friendships within aphasia, and it has impacted me on a personal level. I highly recommend doing a research project and going through this experience!

Madison's Testimonial: I take away with me many things I learned throughout this process. Many of the things I learned will not only affect me as a future clinician but will also affect me personally as an individual. I am very appreciative for this opportunity to participate in this research and the additional skills and knowledge that I have learned that will assist me throughout my career.

Essence of our project:

As a future speech language pathologist, research regarding aphasia is critical in our field. Aphasia is a common disorder that effects many people, but there is little research about this topic. The research that Dr. Azios, Kinlee, and I examined regarded how friends are affected throughout this disorder. Aphasia is a communication disorder that affects one's ability to communicate with others. However, aphasia is more than just a language disorder. There are many factors that we noticed throughout our project that are persistent throughout this disorder. Without communication, it is hard for relationships to prosper. Therefore, due to the lack of research, we examined how friendships are affected through aphasia in hopes of bringing awareness and help clinicians know how to better assist one suffering from this disorder.

Dr. Azios' Thoughts: People with aphasia often tell you that they lose all of their friends after having a brain injury. This research project helped us understand why and how that happens, and also helped us to identify some qualities of friends that hung around after the brain injury and aphasia. The data analyzed in this study is integral to our end goal of developing communication partner training programs for friends of people with aphasia. Aphasia is an isolating condition, but it doesn't have to be. With this research, Kinlee and Madison have contributed to the knowledge base on social relationships after aphasia and were able to make some recommendations for clinicians interested in integrating friends into a treatment program for people with aphasia. I am so proud of their work!





OFFICE OF UNDERGRADUATE RESEARCH LAMAR UNIVERSITY

COLLEGE OF FINE ARTS AND COMMUNICATION

2021 SURF Symposium

CHLOE SMITH
Major in Speech and Hearing Sciences

Mentor: Dr. Monica Harn
Professor and Chair of the Department of Speech and Hearing Sciences

Research in Speech and Hearing Sciences
"A Cross-Sectional Study of the Portrayal of Childhood Speech Sound Disorder Interventions in YouTube Videos"

Essence of my research:

This study examined meta-data, source, intervention type, evidence, understandability and actionability of YouTube content related to speech sound intervention (SSD) for children. Through analyzing the videos, professionals can begin to understand the existing beliefs clients may have about certain interventions. In turn, more professionals can develop their own quality videos or instruct their clients on how to evaluate videos from the internet.

CHLOE SMITH

MARCH 24, 2021

Chloe's Testimonial:

My SURF research experience has allowed me to gain a deeper understanding and appreciation of my future career. In addition, I have learned several skills, including professional research writing and data collection. I feel better prepared for graduate school, where I plan to pursue an M.S. in Speech-Language Pathology.

CHLOE SMITH

AUGUST 5, 2021


Dr. Harn's Thoughts:

Increasingly, families turn to the internet for information to help them understand their child's disorder and treatment options. Chloe's work will be very beneficial in supporting speech-language pathologists as they counsel families who use internet information.




OFFICE OF UNDERGRADUATE RESEARCH LAMAR UNIVERSITY

COLLEGE OF ARTS AND SCIENCES



2021 SURF Symposium



OLUWATOMISIN EGBEWALE
Major in Computer Science

Mentor(s): Dr. Sujing Wang
Associate Professor of Computer Science
Dr. Xingya Liu
Assistant Professor of Computer Science

Research in Computer Science
"Security evaluation of a cloud-based biometric authentication system"

Essence of my research:

The SURF grant gave me the opportunity to pursue an unorthodox approach in the exploitation of biometric authentication systems. This approach is especially significant in the Cybersecurity field (my chosen career path) as it opened up questions that could potentially be explored in the field for several years to come.



OLUWATOMISIN EGBEWALE

MARCH 24, 2021

Tomisin's Testimonial:

To say the least, my Summer Undergraduate Research experience is irreplaceable, academically and career-wise. Then, personally, I gained a decent level of hands-on experience which simply taking classes may not afford a student. My appreciation goes to my two mentors, Dr. Sujing Wang and Dr. Xingya Liu, as well as the Director of the Office of Undergraduate Research, Dr. Bahrim.



**OLUWATOMISIN EGBEWALE,
DR. SUJING WANG AND
DR. XINGYA LIU**

AUGUST 3, 2021


Dr. Wang's Thoughts:

Tomisin is a self-motivated and working-hard student. He is very interested in the area of cybersecurity. His SURF project was completed successfully as planned. The outcome of his project was good. I believe that Tomisin has learned a lot from the SURF experience. It will benefit his future study as well.




OFFICE OF UNDERGRADUATE RESEARCH LAMAR UNIVERSITY

COLLEGE OF ARTS AND SCIENCES




2021 SURF Symposium



CALLAN NOAK
Major in Computer Science
Mentor: Dr. Sujing Wang
Associate Professor of Computer Science

Research in Computer Science
"Design Regression Models for Covid-19 Risk Prevention"



Essence of my research:

My project focused on analyzing data related to Covid-19 and creating regression models that can accurately predict the data. We were able to create regression models using Support Vector Regression. Our models can be used to make more informed decisions related to the pandemic. This project is significant to me as this is the first research project that I have ever participated in.

CALLAN NOAK



MARCH 24, 2021

Callan's Testimonial:

Participating in the SURF program was a great experience for me personally. I got to expand my knowledge on a subject I was really invested in. I got to learn many tricks and techniques that I will be able to use in the future. I was also able to make connections that I will be able to utilize as I continue in my career.

CALLAN NOAK AND DR. SUJING WANG



AUGUST 2, 2021

Dr. Wang's Thoughts:

Callan has an outstanding academic performance with 4.0 overall GPA. He has done an excellent work and completed this project successfully as we proposed. As his faculty mentor, I am very proud of his performance. I believe that participating the SURF will benefit Callan in many other ways as well.



OFFICE OF UNDERGRADUATE RESEARCH LAMAR UNIVERSITY

COLLEGE OF ARTS AND SCIENCES

2021 SURF Symposium

NYAH SCIARRILLA
Majors in Biology & Speech and Hearing Sciences

Mentor: Dr. Matthew Hoch
Associate Professor of Aquatic and Microbial Ecology
Center for Coastal and Marine Studies

Research in Biology
"The Effect of Starch Copper Oxide Nanoparticles on Differential Growth of Microbial Populations in Aquatic Environments"

Essence of my research:

My research involved observing starch copper oxide nanoparticles (SCuONPs) and their effect on the composition and function of microbial communities in rice crop irrigation water. Mineral CuONPs are currently used as herbicides for agriculture, but they are harmful to the environment. SCuONPs are potentially a cleaner, more effective alternative, but their effects on aquatic microbes are unknown.

NYAH SCIARRILLA

MARCH 24, 2021

Nyah's Testimonial:

Through my SURF project, I learned how to operate multiple instruments that I had never used before, and I became adept at many new techniques and skills, such as a technique called bio-orthogonal noncanonical amino acid tagging (BONCAT). Finally, I got to contact an international author of an article that we utilized, which I would have never done before this project.

NYAH SCIARRILLA
DR. MATT HOCH

AUGUST 5, 2021

Dr. Hoch's Thoughts:

Nyah's dedication and persistence has demonstrated her preparation for graduate studies in any field. Impressively, she mastered the operation of advanced instrumentation (e.g., flow cytometry) and implemented a cutting-edge cell-specific protein synthesis assay. Her application of these skills and methods to her experiments on nanoparticle-microbe interactions will make a new and unique contribution to the field.



OFFICE OF UNDERGRADUATE RESEARCH LAMAR UNIVERSITY

COLLEGE OF ARTS AND SCIENCES

2021 SURF Symposium

CARISSA SLAUGHTER

Major in Biology

Mentor: Ashwini S. Kucknoor
Associate Professor of Biology

Research in Microbiology and Parasite Immunology
"Trichomonas Vaginalis Induced Toll-like Receptor Gene Expression in Cervical Epithelial Cells"

Essence of my research:

Our project is significant because over 180,000 people are infected with *Trichomonas vaginalis* globally. Surprisingly, men can also contract this protozoan through venereal transmission. During the 2021 Lamar University Summer Undergraduate Research program we were able to determine gene expression of Toll-Like receptors in cervical epithelial cells, understand cytokine expression, compare differences in cytokine responses, analyze TLR activation, study innate immune responses induced by *Trichomonas vaginalis*, and understand the pathways that could provide potential targets against *Trichomonas* infections for chemotherapy.

CARISSA SLAUGHTER

MARCH 24, 2021

Carissa's Testimonial:

The Lamar University Undergraduate Research Fellowship was a good learning experience. Researching through professional literature was interesting, however, by being in the laboratory and having my hands on the materials I learned so much. Keeping a daily journal was part of the significant growth. Looking back to the first day I started the journal to now, my biological vocabulary has increased. Recently, I was reading respectable literature, and understood the processes written because I have done them here in our Lamar University laboratories. I am so thankful for the opportunity to grow so much over a small amount of time.

CARISSA SLAUGHTER
DR. ASHWINI KUCKNOOR

AUGUST 5, 2021



OFFICE OF UNDERGRADUATE RESEARCH LAMAR UNIVERSITY

COLLEGE OF ARTS AND SCIENCES

2021 SURF Symposium

DANIELLE SOILEAU

Major in Biology

Mentor: Ashwini S. Kucknoor
Associate Professor of Biology

Research in Microbiology and Parasite Immunology
"Characterization of a Novel Cell Surface Protein Coding Gene, TfAD1 in *Tritrichomonas Foetus*, a Cattle Pathogen"

Essence of my research:

I worked with Dr. Ashwini Kucknoor this summer to characterize a novel cell surface protein coding gene, TfAD1 in *Tritrichomonas foetus*, a cattle pathogen. Bovine trichomoniasis is caused by the protozoan *T. Foetus* and is a common disease in the beef industry, costing US cattle ranchers an estimated \$650 million annually. The significance of this research, if successful, will provide the functional role of adhesion proteins in host parasite interaction. The results will potentially identify novel therapeutic targets for Bovine Trichomoniasis, which is otherwise a neglected parasitic disease in the cattle industry.

DANIELLE SOILEAU

MARCH 24, 2021

Danielle's Testimonial: SURF was one of the best experiences I have had at Lamar, and I would do it over again in a heartbeat! Over the course of the summer, I had the opportunity to learn how to use all types of lab equipment and processes, make new friends, and develop a love and appreciation for research in general. I did have to view the opportunity as a second job because there were some days I had to spend many hours in the lab. The research itself was too interesting to actually feel like a job though, and there was rarely a dull moment in the lab. For anyone interested in the program, I highly recommend it!

DANIELLE SOILEAU
DR. ASHWINI KUCKNOOR

AUGUST 5, 2021



OFFICE OF UNDERGRADUATE RESEARCH LAMAR UNIVERSITY

COLLEGE OF BUSINESS



2021 SURF Symposium



VIVIANA DENOVA
Major in Finances and Business Management

Mentor: Dr. Gevorg Sargsyan
Assistant Professor of Finance

Research in Finances and Business Management
"The Financial Impact of COVID-19 on Businesses in Dining and Hospitality Industries in Southeast Texas"

Essence of my research:

My research study is meaningful to the Southeast Texas community because it will provide insight on how to navigate similar situations in the future. The data collected can be used in several different ways. I also plan to present my research at conferences outside of Lamar. In doing so, my presentation can bring attention to Lamar University and create a good perception of our university.



VIVIANA DENOVA



MARCH 24, 2021

Viviana's Testimonial:

I am very grateful to have participated in the Summer Undergraduate Research Fellowship. This was such an awesome experience because I was able to learn so much about myself and the research field. It allowed me to improve my networking and communicating skills. I encountered various types of people and there were different approaches I had to develop in order to collect better results.



VIVIANA DENOVA
DR. GEVORG SARGSYAN

AUGUST 1, 2021

Dr. Sargsyan's Thoughts:

SURF and OUR semester-long grants are having a great impact on College of Business students. All my mentees succeeded in their project and now they are taking graduate courses or working in their fields. This outstanding opportunity that Lamar University provides to undergraduate students is unique in many senses. I consider the OUR programs a "gate" to success and I am sure that next-generation students will continue to benefit from undergraduate research.



OFFICE OF UNDERGRADUATE RESEARCH
LAMAR UNIVERSITY

**ALL SURF 2021 FELLOWS WILL PRESENT THEIR RESEARCH AT:
THE 9TH TEXAS STEM CONFERENCE – OCTOBER 30, 2021 – ARCHER BLDG.**

Calendar for the 9th Texas STEM Conference

Oct 11 (Mon) – Workshop about **TX STEM** and HASBSEB conf. (UG and GRAD students are invited) 12pm

Oct 15 (Fri) – Submission deadline to Texas STEM Conference

Oct 18 – 22 – Organizational week for TX STEM Conference

Oct 18 (Mon) – Notification for acceptance of submissions

Oct 20 (Wed) – Registration deadline

Oct 22 (Fri) – Panel Discussion about presentations to the 9th TX STEM conference (UG and GRAD students are invited)

Oct 30 (Sat) – The 9th Texas STEM Conference (full day from 8:30am – Archer bldg.)

OR

THE 8TH HASBSEB CONFERENCE – NOVEMBER 20, 2021 – GALLOWAY BLDG.

Calendar for HASBSEB Conference

Oct 11 (Mon) – Workshop about TX STEM and **HASBSEB** conferences (UG and GRAD students are invited) Zoom meeting from 12 to 1:30pm

Nov 5 (Fri) – Submission deadline to the 8th HASBSEB Conference

Nov 8 – 12 – Organizational week for HASBSEB Conference

Nov 8 (Mon) – Notification for acceptance of submissions

Nov 10 (Wed) – Registration deadline

Nov 12 (Fri) – Panel Discussion about presentations to the 8th HASBSEB Conference (UG and GRAD students are invited)

Nov 20 (Sat) – The 8th HASBSEB Conference (full day from 8:30am – Galloway bldg.)

**UNDERGRAD AND GRAD STUDENTS ARE CORDIALLY INVITED TO
PRESENT THEIR RESEARCH OR ATTEND THE PRESENTATIONS**

NO REGISTRATION FEES!

COME AND ENJOY THESE RESEARCH CONFERENCES!



THE 9TH TEXAS STEM CONFERENCE – OCTOBER 30, 2021 – ARCHER BLDG.

**PLENARY GUEST SPEAKER
at the 9th Texas STEM Conference - Lamar University**

Dr. Nicholas Lanning
Research Physicist
Air Force Research Laboratory,
Directed Energy Directorate,
Space Electro-Optics Division,
Kirtland AFB, New Mexico



R. Nicholas Lanning received a BS degree in physics and another BS in mathematics from Lamar University in 2012. He received his PhD in physics from Louisiana State University in 2018, under the guidance of the late Jonathan P. Dowling. Dr. Lanning is a theorist specializing in the spectral and transvers-spatial mode structure of photons created in nonlinear-optical interactions, the design of entangled-photon sources, and quantum communication over free-space channels. He is the PI of the quantum communication group at the Air Force Research Lab – Directed Energy Directorate – Space Electro-Optics Division (AFRL/RDS) at Kirtland AFB, NM.



OCTOBER 30, 2021

PLENARY GUEST SPEAKER

The 9th Texas STEM Conference
Lamar University – Archer - Physics bldg.

Dr. Nicholas Lanning

Research Physicist

Air Force Research Laboratory

Directed Energy Directorate

Space Electro-Optics Division

Kirtland AFB, New Mexico

Daytime Space-Earth Quantum Networking

Progress toward daytime space-Earth quantum networking includes many seminal demonstrations conducted over terrestrial free-space quantum channels. However, these experiments were all conducted under ambiguous atmospheric and channel radiance conditions, leaving their relevance to actual space-Earth links unsubstantiated. I will discuss our field experiment which validated our method for solving the daytime space-to-Earth quantum-networking problem, our optimal quantum-channel wavelength analysis, and methods for generating photon pairs optimal for daytime space-Earth channels.

References:

<https://arxiv.org/abs/2107.08070>,

<https://arxiv.org/abs/2104.10276>,

<https://arxiv.org/abs/2006.07745>



THE 8TH HASBSEB CONFERENCE – NOVEMBER 20, 2021 – GALLOWAY BLDG.

PLENARY GUEST SPEAKER
at the 8th HASBSEB Conference - Lamar University

Dr. Juan Luis Nicolau
Marriott Professor of Revenue Management
Graduate Director PhD Program
Virginia Tech University



Juan Luis Nicolau is currently the J. Willard and Alice S. Marriott Professor of Revenue Management at Virginia Tech. Prior to joining Virginia Tech in 2017, he was Full Professor of Marketing and Dean of the College of Economics and Business at University of Alicante, Spain. Included in the top-25 international researchers in tourism in the ranking published by *Tourism Management Perspectives*, he has been the recipient of 21 awards (19 research awards and 2 teaching excellence awards) and published more than 130 research articles (105 of them included in the *Journal of Citation Reports* of the Web of Science), two books and five book chapters. His research appears in top hospitality and tourism journals as well as general management and marketing journals such as *Strategic Management Journal*, *Omega*, and *Marketing Letters*. He is member of 13 editorial review boards of scientific journals, including Associate Editor of *Journal of Travel Research*, *Tourism Management*, *Annals of Tourism Research* and *Tourism Economics*. He is included in the World's Top 2% most cited scientists according to the Stanford University ranking. He has received the MVP award for research excellence (Annual Faculty Award for Excellence in Research awarded by the Virginia Tech Pamplin College of Business) in two consecutive years—2020 and 2021.



NOVEMBER 20, 2021

PLENARY GUEST SPEAKER

The 8th HASBSEB Conference
Lamar University – Galloway - Business bldg.

Dr. Juan Luis Nicolau

Marriott Professor of Revenue Management
Graduate Director Ph.D. Program
Directed Energy Directorate,
Virginia Tech University

APPLICATIONS OF BIG DATA TO TOURISM AND HOSPITALITY RESEARCH

As more and more customers tend to post online where they have been to, what they did while visiting a destination and how satisfactory the experience was, tourism and hospitality researchers can take advantage of the posts these customers write. As the focus of research is to advance our knowledge of a specific field and find solutions for issues that may relate to society in general and an industry in particular, the existence of big data is a great opportunity if we are able to exploit the potentialities that this large amount of information provides. In this session, we will see some applications of user-generated content in the context of tourism and hospitality. Beyond the typical analysis of online numerical ratings through which we can see how satisfied people are with the service provided in, say, a hotel, a restaurant, or an airline, we can also look at different facets of that content; facets from which we can unearth and observe new relationships between certain variables of interest. For example, from the reviews themselves—which is a qualitative input—we can conduct a sentiment analysis and determine how customers feel about a service—which is a quantitative output. Also, from some characteristics of the photos posted we can try to observe some effects on other variables, and from the searches that potential customers conduct on the Internet we can see different behavioral patterns when making the decision about, for instance, an accommodation type. To sum up, in this session we will talk about the opportunity that the use of big data represents for research on the tourism and hospitality industry by providing examples of empirical applications.



OUTSTANDING LAMAR UNDERGRADUATE SCHOLARS

Lamar Alumni in prestigious graduate schools



“Mr. Dylan Palmer enriched his undergraduate experience by participating in undergraduate research. Dylan joined Dr. Yao’s research group in Fall 2019. He received an award from the Office of Undergraduate Research and presented his work in the prestigious Gulf Coast Undergraduate Research Symposium hosted by Rice University in 2020. Dylan is self-motivated for conducting research. Currently, Dylan is a Ph.D. student at Colorado School of Mines in Fall 2021.”, Dylan’s mentor Dr. Yao, an Assistant Professor of Mechanical Engineering said.



“Mr. Tyler Nelson gained a growing research interest and became more productive after working on OUR research project, “*Development of 3D Printed Substrate for β -islet Cell Culturing.*” Tyler was an outstanding student at Lamar and succeeded in many engineering classes. Based on his undergraduate research experience, Tyler found his academic path. Currently, Tyler is a Ph.D. student at Rice University started in Fall 2020.”, Tyler’s mentor Dr. Yao, an Assistant Professor of Mechanical Engineering said.



OUTSTANDING LAMAR TALH SCHOLARS

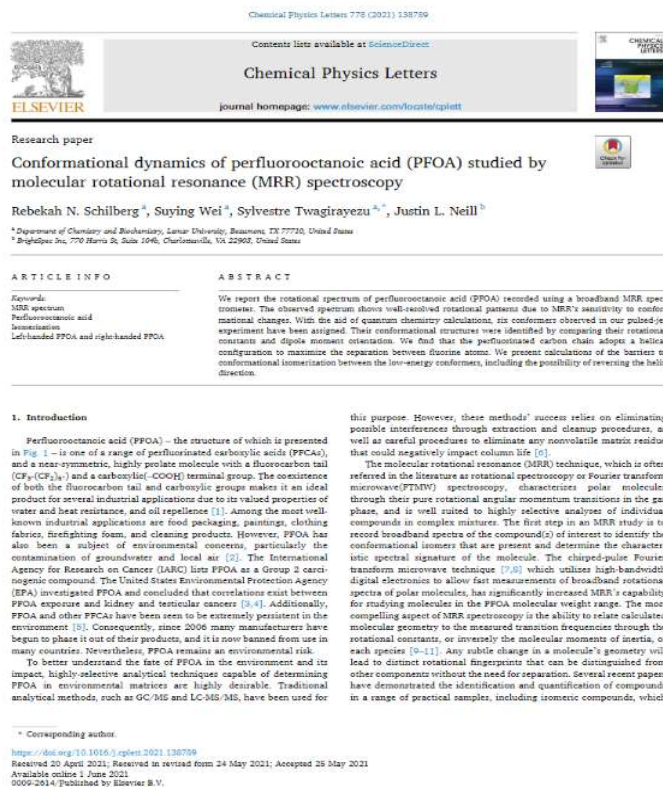
An OUR grantee can publish his/her findings in a peer-reviewed journal!



Dr. Twagirayezu's thoughts about Rebekah's performance: Rebekah is a very engaging research member. As I reflect on her accomplishments, self-motivation, and desire to learn a new subject were the main driving forces to her success. She is one of those students willing to take an extra step and hunt insights from a scientific Journal! In this project, Rebekah took on the first rotational spectroscopic analysis of perfluorooctanoic acid (PFOA) using a combination of both spectroscopic tools and computational chemistry packages. This project's main goal was to obtain the rotational signature of PFOA that will allow its detection and fate in a complex environment. Not only did she find the rotational signature, but she also extracted rich conformational dynamics hidden in the spectrum. These findings are now published in the Journal of Chemical Physics Letters. Congratulations Rebekah!

Ms. Rebekah Schilberg is a former TALH student at Lamar University, now undergraduate in Aerospace Engineering at UT Austin. While at Lamar, Rebekah published her work done under an OUR grant with her mentor Dr. Sylvestre Twagirayezu, in the prestigious Chemical Physics Letters, as first author.

"As a participant in the Lamar OUR, I was given the opportunity to work with an amazing faculty mentor, Dr. Twagirayezu, to develop a robust chemical detection technique. Not only was I able to experience the process of publishing our work in Chemical Physics Letters, but I now have the confidence to pursue a future in the professional research field." Rebekah's said.

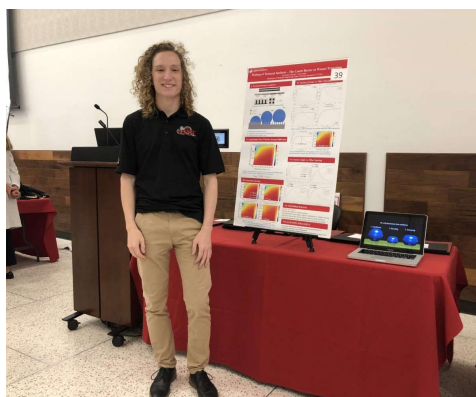




OUTSTANDING LAMAR UNDERGRADUATE SCHOLARS

Mr. Chae Rohrs was sponsored by the Office of Undergraduate Research Grant in 2018-19, when he was a junior student majoring in Mechanical Engineering. Chae had been thoroughly trained in Dr. He's group to conduct theoretical and numerical research on wetting phenomena. Within one year, he had made significant progress and co-published three research papers with Dr. He, one of which was *independently* led and *first* authored by him (Rohrs, Azimi, He, *Wetting on Micropatterned Surfaces: Partial Penetration in the Cassie State and Wenzel Deviation Theoretically Explained*, **Langmuir**, **35**, 15421-15430, 2019).

In this paper, Chae has developed a theoretical model and a set of computational codes written in MATLAB to analyze the wetting of a water droplet on superhydrophobic micropatterned surfaces made of micropillars at varied pillar spacings. The theoretical model Chae has developed is unique in the aspects of (1) capturing detailed transitions of liquid sagging on top of the micropillars as well as approaching the bottom of micropillars that proves partial penetration is not favorable in the Cassie-Baxter state for straight micropillars, and (2) more importantly, revealing an important phenomenon, for the first time theoretically explained in the open literature, named the Wenzel deviation, which happens for the Wenzel state when the micropatterns become large in the size ($\sim 100 \mu\text{m}$) and the wetting equilibrium condition in reality will largely deviated from the well-known Wenzel theory. This paper together with its journal cover art has been published in 2019 in **Langmuir**, "the leading journal focusing on the science and application of systems and materials in which the interface dominates structure and function". Up to date just in two years, Chae's *Langmuir* paper has been cited for 8 times. Chae has presented his findings in several national and regional conferences, including the 2019 American Physical Society (APS) March Meetings, the largest most important conference in the United States.



After graduation (in 2019), Chae chose to be an engineer at Basler Electric Company in Taylor, TX. Since 2020, Chae has been an engineer at Mondo Ventures in Georgetown, TX.



O.U.R. SPONSORS OUTSIDE RESEARCH EXPERIENCES

Two OUR Grant recipients experienced firsthand what it's like to work in a cleanroom. Ms. Katherine Correa is a member of the Honors College majoring in Drawing and Biology. Her research in conserving museum pieces led her to Rice University's Cleanroom where she used an optical profilometer to scan and collect topographic data on some of the medals awarded to sports hero Babe Zaharias including the recent Presidential Medal of Freedom. Katherine's advisor on the project is Dr. Kelley Bradley, Assistant Professor of Industrial and Systems Engineering. For Dr. Bradley, the visit to Rice was a return to old stomping ground. "This is the building where our lab was when I was a graduate student here," he said. "I have friends here too; for many years Dr. Guo and I managed the cleanroom at the University of Houston." Dr. Jing Guo is now at Rice, and one of the tools she manages is a 2-photon stereolithography system, a type of 3D printer that can make 3-dimensional objects smaller than the width of a human hair. Lac Nguyen, now a senior majoring in Industrial Engineering, used the system for his OUR Grant research. He is working with Dr. Bradley to design a microscopic carder, a tool to mechanically align fibers. The carder will be used to align single wall carbon nanotubes. "I have learned a lot from this undergraduate research, specifically, I have developed my research skills for studies of single wall carbon nanotubes and gained a deeper understanding of using the 2-photon stereolithography system", commented Lac. Both students are continuing to do research. Katherine is working with a new 3D scanner that was purchased by O.U.R. Dr. Bradley was awarded a CICE grant allowing him to further develop the carding project with Lac and graduate student Maryam Bahrami.



Katherine and Dr. James Kerwin from the Makerspace at Rice University SEA Cleanroom.



Dear Students, Faculty, and Staff,

Since 2013, O.U.R. grant program has offered rich experience to undergraduate students from all academic areas. This year the proposal submission deadline is September 25. By October 15, we will know the cohort of student recipients, who will start on November 1 an exciting and rewarding journey of discovery.

YOU can be the next OUR grant winner and beneficiary of \$500 stipend and up to \$1,000 in research support from university funds. Three dozen faculty are anticipated to review this year's grant proposals using rubrics posted online at <https://www.lamar.edu/undergraduate-research/research-and-funding/undergraduate-research-grant.html> - "Research Grants for the Fall and Spring Semesters of the Current Academic Year". Any grant submitted should have a mentor who agrees with the content of the proposal and supports the student and his/her proposal with a strong letter of commitment. The results of the research efforts and findings will be presented at the Annual Undergraduate Research Exhibition, called EXPO 2022, on April 15, 2022. In the academic year 2020-21, there were 14 proposals sponsored with 15 awardees. The awardees, their projects and mentors are listed below. We hope this list offers you inspiring topics and extraordinary mentors dedicated to your success. Please check on online, the OUR archive with examples of narratives, PPTs, and videos from previous OUR research projects. They represent post-grant reports submitted at the end of a sponsored program.

2020-21 O.U.R. Grant Winners

Kalen Baker | major in Mechanical Engineering and Mathematics |

Mentor: **Dr. Ping He**

Research in Mechanical Engineering on the "*Evaluation of Pair Potentials at Different Temperatures for Molecular Dynamics Simulation of Sintering*"

Megan Cooper | major in Biology |

Mentor: **Dr. Ian Y. Lian**

Research in Biology on the "*Analysis of Cell Growth and Therapeutic Efficacy of Pancreatic Cancer Cells under Varying Oxygen Environments*"

Katherine Correa | major in Drawing and Biology |

Mentor: **Dr. Kelley Bradley**

Research in 3D Printing and Model Development on "*Using Non-Contact Surface Profiling for the Protected Replication of Babe Zaharias' AAU Medals*"

Viviana Denova | major in Business Management and Finances |

Mentor: **Dr. Gevorg Sargsyan**

Research in Finance "*The Impact of COVID-19 on Small and Medium Enterprises in SE Texas*"



2020-21 O.U.R. Grant Winners

Kelvin Elgar | major in Chemical Engineering |

Mentor: **Dr. Clayton Jeffryes**

Research in Chemical Engineering on the *“Conversion of Corn Ethanol Waste to Value-Added Products by Algae”*

Cymone J. Houston | major in Civil and Environmental Engineering |

Mentor: **Dr. Thinesh Selvaratnam**

Research in Environmental Engineering on the *“Development of Algal-based System for Produced Water Bioremediation”*

Sierra Kondos | major in History and Communications |

Mentor: **Dr. Brendan Gillis**

Research in History on *“Political Responses to the Satanic Panic Phenomenon in Texas”*

Katelyn Maxwell | major in Mechanical Engineering and Mathematics |

Mentors: **Dr. Sushil Doranga** and **Dr. Kendrick Aung**

Research in Mechanical Engineering – Vibration on *“Development of New Generation Electronic Chassis to Suppress Vibration during Transportation”*

Lac Nguyen | major in Industrial Engineering |

Mentor: **Dr. Robert Kelley Bradley**

Research in Alignment of Single Wall Carbon Nanotubes on *“Carding to Align Dry As-Produced Single Wall Carbon Nanotubes”*

Katia Ortiz and Carlee Quinn | major in Speech and Hearing Sciences |

Mentor: **Dr. Nandhu Radhakrishnan**

Research in Voice Science – Speech Language Pathology on *“Acoustic and Auditory Effects of COVID-19 Masks and Face Shield on Speech/Voice”*



2020-21 O.U.R. Grant Winners

Sarah Roden | major in Nursing |

Mentor: **Dr. Gina Hale**

Research in Nursing on *“Standardized Patients’ Perception of Student Nurse Care Compared to Registered Nurse Care”*

Nathan Rose | major in Mechanical Engineering |

Mentors: **Dr. Sushil Doranga** and **Dr. Kendrick Aung**

Research in Mechanical Engineering – Thermal System Design on the *“Design and Prototyping of Thermal Insulation System for Event Data Recorder Used in Transportation Industry”*

Rebekah N. Schilberg | major in Chemistry and Biochemistry |

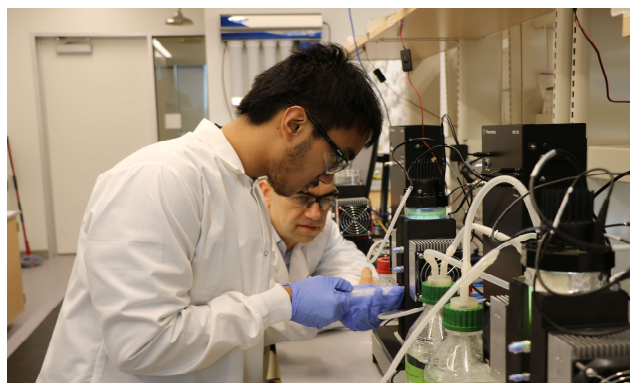
Mentors: **Dr. Suying Wei** and **Dr. Sylvestre Twagirayezu**

Research in Chemistry Analysis on the *“Rotational Signature of Perfluorooctanoic Acid(PFAO) as Revealed by Molecular Rotational Resonance Spectroscopy”*

Talon Weaver | major in Physics and Civil Engineering |

Mentors: **Dr. Evgeny Romashets** and **Dr. Cristian Bahrim**

Research Space Sciences on *“The Identification of Solar Sources for the Strongest Geomagnetic Storms”*



Kelvin Edgar

(experimental chemical engineering research)



Talon Weaver

(computational space science research)



Join our student organization: Lamar University Undergraduate Research Association (LURA)

"LURA was founded in fall 2019 to fulfill the need for a community *by and for* undergraduate students to discuss, collaborate, and learn how effectively one can conduct research. The consistent quality and volume of research conducted by undergraduate students at Lamar University has made it clear that there is a need for an organization to act as a vital resource for building young researchers. Thus, LURA provides an academic forum that connects all level students from freshmen to seniors with their professors and mentors and facilitates communication between Lamar undergraduates and their peers around the nation.

LURA is a platform for offering panel discussions about

- Research opportunities inside and outside Lamar,
- Better ways to deliver undergraduate research results in poster and oral presentations,
- Ways to perform peer mentoring,
- Organizing workshops on various topics, including how to successfully apply to graduate schools.

LURA is the premier student organization at Lamar University for any undergraduate student interested in doing research. The Office of Undergraduate Research provides strong support and offers logistics to this student organization." Please contact URALamar@gmail.com.

Menna Elsaka – LURA President



"I am beyond grateful for the opportunities that Lamar's Office of Undergraduate Research has presented me. Through the OUR Grant and the SURF program, I was able to do hands-on research on a topic that deeply interests me. I benefitted greatly from OUR resources such as panel discussions that helped enhance my writing and presentation skills. All of which prepared me present my research "Effect of Akkermansia muciniphila on cytokine gene expression in intestinal epithelial cells" at multiple research conferences such as the Gulf Coast Undergraduate Research Symposium at Rice University, the National Council on Undergraduate Research, and the Annual Biomedical Research Conference for Minority Students. Witnessing other presenters share their work enabled me to gain new insights into alternative methods and presentation styles." said Ms. Menna Elsaka, on August 22, 2021.



OFFICE OF UNDERGRADUATE RESEARCH **LAMAR UNIVERSITY**

Call for OUR grant proposals is September 2021

The O.U.R. is seeking competitive proposals from undergraduate students to support their research and creative activities. The O.U.R. grants are meant to encourage undergraduates from all academic areas to participate in scholarly work mentored by at least one faculty. Each grant has allocated \$1,500, with \$1,000 going in research support and \$500 in student stipend.

Deadline for proposal submission is September 25

The 9th Texas STEM Conference – October 30, 2021

This conference is opened to undergraduate and graduate level research, including doctoral level done at Lamar University and outside. In the last three years we had among our presenters several Lamar alumni, now in prestigious graduate schools from Alabama, Louisiana, and Texas. Also, we have welcomed guests from various schools, such as The University of Texas at Rio Grande Valley, Louisiana Tech University, University of Houston, to list a few.

Abstracts and Registration are due by October 15

The 8th HASBSEB Conference – November 20, 2021

The HASBSEB conference welcomes undergraduate and graduate students from all academic levels, doing research at Lamar University or elsewhere. Among presenters from other schools, who participated to HASBSEB in the recent past, we had guests from Indiana University, Kent State University, and as far as universities in Bangladesh.

Abstract and Registration are due by November 5



LAMAR UNIVERSITY
MEMBER THE TEXAS STATE UNIVERSITY SYSTEM™

**YOUR
Moment
IS HERE**