

JUNE - AUGUST 2020
Awards Newsletter

TEXAS A&M UNIVERSITY-KINGSVILLE



this is
YOUR TIME
TEXAS A&M UNIVERSITY-KINGSVILLE



Dear Reader,

The Office of Research and Graduate Studies has been busy. The faculty at Texas A&M University-Kingsville have not slowed down during our COVID-19 pandemic when it came to submitting grants and contracts. The pre-award office processed over 234 grants and contracts during 2020. They did a wonderful job keeping up with the different grants particularly during the last six months which was complicated by our COVID work alterations. We appreciate the faculty and the pre-award staff and thank them for all the work they did to adjust to our new COVID work environment and still get these grants submitted.

Faculty were so successful with these submitted grants that post-award worked with them to process over \$19 million of annually funded research and sponsored programs. This is up \$6 million compared to last year. While the awards shown in this newsletter only represent the latest quarter, Texas A&M-Kingsville faculty and staff have had a record year. I want to thank the post-award staff for all they did to keep the research grants moving forward. Again, we greatly appreciate the help of our A&M-Kingsville researchers who worked with us through the year and particularly as we all had to adjust to our COVID work environment.

We are continuing our training on potential grant funding, grant submission and grant award management through this fall and in the spring. While we would like to do these face-to-face, they are all in a virtual format this fall. We will reassess the spring to determine if these trainings will stay virtual or if we add some face-to-face trainings. We encourage all of you to look at our web site for the dates and times.

Please stay safe and be respectful of others as we continue with this COVID work environment.

*Sincerely,
Dr. G. Allen Rasmussen*



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Multilevel Cybersecurity for Photovoltaic Systems

U.S. Department of Energy (DoE) | Solar Energy Technologies Office Fiscal Year 2019 Funding Program | Three Years | \$326,565

Kim, T. | Frank H. Dotterweich College of Engineering

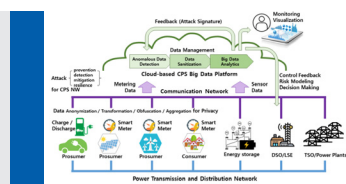
This project aims to address photovoltaic (PV) system cybersecurity at both the inverter and system levels, and field test the solutions at a solar farm under the advising and review of a US-based solar inverter manufacturer and a PV systems operator. A two-level cyberattack defense approach is formulated whereby the first level, the solar inverter level, hardens individual devices and achieves a deeply cyber-secure inverter; the second level, the system level, addresses intrusion detection and restoration involving an ensemble of inverters and relevant systems.

Development of Cybersecurity Technology for Cloud-based Big Data Platform

Inst. For Info. And Comm. Tech. Planning & Ev. | NIH | One Year | \$84,034

Kim, T. | Frank H. Dotterweich College of Engineering

The goal of this project is to study a new framework of a cloud-based Big Data platform for smart grid monitoring, control, infrastructure protection, but also improve cybersecurity.



Numerical Simulation on Gas EOR for an Unconventional Formation

Dongying Hongxiang Petroleum Geology Technology Ltd. | One Year | \$22,000

Fan, Z. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

This is a numerical simulation work. The data used in the model will be provided by the sponsor. The main tasks are as follows. (1) Characterize the provided geological model and simplify the grids. (2) Import the geological model to the STARS-CMG software. (3) Based on the literature data, generate the WINPROP model in CMG. (4) Import the WINPROP model into the STARS. (5) Perform the history matching simulation. (6) Simulate the gas injection process for a period of one-year gas injection. (7) Predict the oil and gas production rates and pressure profile in the reservoir. (8) Optimize the injection scheme.

Ocelot and Jaguarundi Monitoring Project: Evaluating the Effectiveness of Wildlife Crossings, Cattle Guards, and Fencing on Farm-to-Market 1847, Cameron County

Texas Department of Transportation (TXDOT) | Two Years | \$637,680

Tewes, M. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

The research being conducted is designed to gather information on whether these crossings are used by endangered cats (i.e., ocelot, jaguarundi), and if so, then to characterized the patterns of that use. Remote cameras will record wildlife use of the crossings and associated guide fences.



Estimating Elk Abundance and Herd Demographics in Virginia

Virginia Tech University / Virginia Department of Wildlife Resources | Three Years, 10 Months | \$106,246

Cherry, M. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

For this research, the lead PI in Virginia is using GPS telemetry data, and visual surveys of marked and unmarked elk extending methods described in Chandler and Royle (2013) to estimate abundance of elk in Virginia. The Co-PI at Texas A&M-Kingsville is responsible for analyzing the survey data, developing the recommendations for the monitoring program, and providing the final report.

The Estimation of Global Warming Potential from Beef Cattle and its implications for the U.S. Beef Industry

National Cattlemen's Beef Association | Two Months | \$19,282

Sawyer, J. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

The overarching goal of this project is to develop a report, which addresses several topics relevant to the consideration of methane emissions and carbon cycling. By doing so, one will be able to identify the knowledge gaps and potential future needs. Moreover, it will serve to inform and advise key stakeholders and to identify opportunities to improve the roles and status of the US beef industry as a positive force in a sustainable food production system.

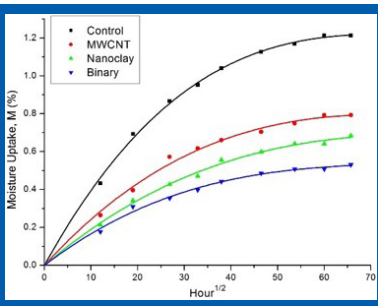


Invasive Rose-ringed Parakeet Distribution and Culling on Kauai

U.S. Department of Agriculture (USDA) APHIS-NWRC | Wildlife Services | One Year | \$36,000

Anderson, C. J., Brennan, L. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

In this research, the PI and her team will evaluate the efficacy of culling efforts of invasive parakeets on the island of Kauai. They will collect measurements of culled animals, calculate age and sex ratio of animals removed, and calculate removal rate per effort. Also, they will develop a habitat suitability model, which will be used to predict future parakeet spread. This research is aimed to assist managers in Hawaii to control this invasive population.



Studies on the Mechanical Behavior of Woven Hybrid Fiber Reinforced Polymer Nanocomposites Subjected to Marine Environmental Conditions

Department of Defense (DoD) | Fiscal Year 2020 Department of Defense Basic Research Program for Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MI) | Three Years | \$659,999

Hosur, M. | Frank H. Dotterweich College of Engineering

Through this research, the PI and his team are developing a lightweight fiber reinforced composite materials made using combination of woven glass and carbon fabrics reinforcing thermoset polymer enhanced by incorporating nanoclay for naval applications. In doing so, they will provide solutions to naval structures, particularly to withstand harsh moisture and temperature extremities that a typical naval structure is subjected to.

Improving the Long-term Mechanical and Tribological Performances of Polymers for Total Joint Replacement Applications

National Institutes of Health (NIH) | Support of Competitive Research (SCORE) Research Continuance (SC3) | Four Years | \$291,500

Hossain, M. | Frank H. Dotterweich College of Engineering

The overarching goal of this project is to increase the longevity of total joint replacement (TJR) prostheses, specifically total hip replacement (THR) and total knee replacement (TKR), by improving the long-term mechanical and tribological behaviors of polymers. The project seeks to improve the hydrophobic properties as well as long-term mechanical and tribological performances of polymers in lubricated environments through addition of micro-texture on polymer surfaces.

Rancho La Union Video Finalization

Guadalupe and Lilia Martinez Foundation | Seven Months | \$12,480

Glusing, J., Lucas, T. | Frank H. Dotterweich College of Engineering

This project entails research on the history of Rancho La Union® and early life in the South Texas region. The Institute of Architectural Engineering Heritage (IAEH) will continue to work on their research to edit and publish a video based on the history of their findings. The goal is make the vision a reality while maintaining the historic and cultural identity of Rancho La Union®.



Rancho La Union Book Publication

Guadalupe and Lilia Martinez Foundation | Seven Months | \$4,000

Glusing, J., Rodriguez, A. | Frank H. Dotterweich College of Engineering

This project entails research on the impact of Rancho La Union® on the South Texas region. The Institute of Architectural Engineering Heritage (IAEH) will continue to work on their research to publish a book based on their research. The IAEH seeks to incorporate the vision of Rancho La Union® as a center of multidisciplinary education.

Collaborative Research: Dry-Wet Phase Inversion Pathway of Graphene Oxide (GO)- Based Mixed-Matrix Membranes for Mineral Ions Separation by Membrane Distillation

National Science Foundation (NSF) | Interfacial Engineering (IE) | Three Years | \$300,043

Camacho, L. | Frank H. Dotterweich College of Engineering

The main goal of this collaborative research is studying and validating the fundamental behavior of a dry-wet phase inversion Graphene oxide (GO)-based membranes for the separation of mineral ions from impaired waters, such as produced water. By completing this research, it will provide the tools to engineer membranes that will help advance membrane distillation as a feasible process for treating highly complex impaired water.

SHF: Small: GOALI: Formal Equivalence Checking for Quasi-Delay-Insensitive Circuits

North Dakota State University (NDSU) /National Science Foundation (NSF) (additional funding) | Computing and Communication Foundations (CCF): Core Programs | Nine Months | \$10,357

Smith, S. | Frank H. Dotterweich College of Engineering

The objective of this research is to develop a formal equivalence checker to verify the correctness of Quasi-Delay-Insensitive (QDI) circuits. The researchers are developing highly-automated algorithms and techniques to ensure tractability, efficiency, and scalability of QDI equivalence checking.

Microbial control of Candidatus Liberibacter asiaticus

USDA | FY2020 (Annual) Implementation Plan for Section 7721 | One Year | \$200,251

Kunta, M. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

In this research study, the PI aims to augment trees with beneficial bacteria to inhibit invasion of CLAs and/or suppress the symptoms of HLB. The researcher and his team will compare the microbial communities of survivor trees (i.e. never infected) to the communities associated with trees infected early, middle, and late in our previous study. Because of their previous work, they already have disease progression histories and DNA extracts from all of these trees. This data will allow them to identify individual species associated with delayed infection and "resistant" trees.



California Quails Fragmentation Effects

Tall Timbers | Two Years | \$96,659

Brennan, L., Perotto, H. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

The purpose of this research is to identify statewide analysis of quail population trends and to identify areas with stable and declining populations. To achieve these goals, a hierarchical approach with three scales : state, county, and home range will be utilized.

Managing White-tailed Deer Density on Federal Land Adjacent to Falcon Reservoir to Control Cattle Fever Ticks

U.S. Department of Agriculture (USDA) - Agricultural Research Service | 11 Months | \$40,026

Hewitt, D. | Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources

The objectives of this cooperative research are to: 1) Remove 300 female white-tailed deer (WTD) from the IBWC lands and monitor deer movements and tick infestations after removal, and 2) Determine effect of sprayer treatments on Cattle Fever Tick-infested WTD.

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Did you know?

Did you know that Export Controls goes far beyond than just working with an international collaborator? For more specific information, please visit:

<https://www.tamuk.edu/osr/Research-Compliance/index.html>

or contact researchcompliance@tamuk.edu

The Awards Newsletter is devoted to the University's research. Please share your feedback and suggestions for future issues by emailing us at osr@tamuk.edu