

Current CE Extramural Research Projects

Environmental

1. Biologically Mediated Abiotic Degradation (BMAD) of Bisphenol A. Im, J., PI. Sponsor: American Chemistry Council.
2. EAGER: A Novel Bioprocess for the Valorization of Wastes and Biomass. Mathews, A., PI. Sponsor: National Science Foundation.
3. Novel Platform for Channelized Nutrient Product Sequestration from Agricultural Wastewaters through Optimized Anaerobic Bioprocesses. Paresmeswaran, P., PI.; Hettiarachchi, G. and Hutchinson, S., Co-PI. Sponsor: US Department of Agriculture.
4. Smart Adaptation of Enriched Microbiomes in Recovered Nutrient Products (bio-fertilizers) from Anaerobic Wastewater Treatment to the Native Soil. Paresmeswaran, P., PI. Sponsor: National Science Foundation.
5. Understanding Mechanisms of Membrane Biofouling in Anaerobic Membrane Bioreactors using Polymer Surface Dissection, Paresmeswaran, P., PI. and Hansen, R., Co-PI. Sponsor: National Science Foundation.
6. RII Track-2 FEC: Building Field-based Ecophysiological Genome-to-Phenome Prediction. Paresmeswaran, P. et al. National Science Foundation.
7. NRT-INFEWS: Preparing Future Leaders: Rural Resource Resiliency (R3), Paresmeswaran, P. et al. National Science Foundation.

Geotechnical

1. Use of Vegetation Enhanced by Green Soil Stabilization for Protection of Kansas Roadsides against Erosion, Peric, PI; Hoyle, Co-PI. Sponsor: Kansas Department of Transportation.
2. Determining Acceptable California Bearing Ratio (CBR) Value for Kansas Subgrades Based on Pavement Distress Data, Peric, D. Sponsor: Kansas Department of Transportation.
3. Research Initiation: Investigating the Role of Social Responsibility on Veteran Student Retention. Kulesza, PI; Fitzsimmons, Liang, and Zacharakis, Co-PI. Sponsor: National Science Foundation.
4. Unsaturated Characteristics of Fouled Ballast to Support In Situ Identification of Fouling using Ground Penetrating Radar – Phase I. Kulesza, PI. Sponsor: Federal Railroad Administration.
5. Predicting Critical Shear Stress of Fine-Grained Soils in Kansas. Kulesza, PI. Sponsor: Kansas Department of Transportation.
6. Measuring Corrosion Conditions in MSE Walls. Kulesza PI. Sponsor: Kansas Department of Transportation.
7. Extending the Useable Lifetime of the Ogallala Aquifer by Filling it Through Riverbeds. Kulesza, PI; Steward and Welch, Co-PI. Sponsor: US Department of Agriculture.
8. EAGER SitS: Sustainable Biosensor Integration for Precision Management of Agricultural Soils. Welch, PI; Hansen; Hettiarachchi, Kulesza, Paresmeswaran, Co-PI. Sponsor: National Science Foundation.

9. Building Field Based Ecophysiological Genome-to-Phenome Prediction. Welch, PI; Asebedo, Flippo, Duke, Alvarez Santos, Hettiarachchi, Fritz, Poland, Albin, Bellow, Dunn, Kulesza, Co-PI. National Science Foundation.
10. Implementation AASHTOWare Pavement ME Design Software for KDOT. Hossain, M., PI; Kulesza, Co-PI. Kansas Department of Transportation.
11. Evaluation of the Geomorphological Adjustments of a Meandering, Alluvial River Subject to Streambank Stabilization Structures. Moore, PI; Keane, Kulesza, Bigham, CO-PI. Sponsor: Kansas Water Resources Institute.
12. Erodibility of Claypan Soils: Identifying Erosion Mechanisms for Sustainable Reduction of Sediment Loss. Sassenrath, PI; Kulesza, Hallaq, Co-PI. National Science Foundation.
13. Galvanized and Aluminized Pipe Durability Field Review and Evaluation. Kulesza, S., PI, Kansas Department of Transportation.
14. RII Track-2 FEC: Building Field-based Ecophysiological Genome-to-Phenome Prediction. Kulesza et al., National Science Foundation.
15. Water Management to Sustain the Economic Activity from the Ogallala Aquifer on the Southern High Plains - KSU. Kulesza et al., US Department of Agriculture.

Materials

1. Calibration and Implementation of the AASHTOWare Pavement ME Design for Rehabilitation. Hossain, M., PI., US Department of Transportation.
2. Optimum AC Overlay Thickness over FDR of Existing AC Pavements. Hossain, M. PI. Sponsor: Kansas Department of Transportation.
3. Evaluation of Carbon Char in Hot-Mix Asphalt Mixture. Hossain, M. PI. Sponsor: Kansas Department of Transportation.
4. Implementation AASHTOWare Pavement ME Design Software for KDOT. Hossain, M., P.I, Tucker-Kulesza, S., Co-PI. Sponsor: Kansas Department of Transportation.
5. Durable High Early Strength Concrete. Jones, C., PI. Sponsor: Kansas Department of Transportation.
6. Exploring a Rapid Test for Aggregate Qualification for 40-year Pavement Life. Jones, C., PI. Sponsor: Kansas Department of Transportation.
7. Support for Ongoing V&V Assessment for CASL/VERA. Jones, C., PI. Sponsor: US Department of Energy.
8. PHASE 1 - Initial Mechanical Testing for PLAZROCK Aggregates. Jones, C., PI. Sponsor: Wenger Manufacturing, Inc.
9. Evaluation of Coal Combustion Products in Hot-Mix Asphalt Mixture. Hossain, M., P.I, Jones, C., Co-PI. Sponsor: Kansas Department of Transportation.
10. Understanding Air Content Measurement Techniques for Durability Prediction. Jones, C., PI. Sponsor: Kansas Department of Transportation.

Structures

1. Developing Qualification Tests to Ensure Proper Selection and Interaction of Pretensioned Concrete Railroad Tie Materials. Peterman, R.J., P.I. and Beck, T., Co-PI; Sponsor: Federal Railroad Administration.
2. Settlement Stabilization Through Structural Strengthening and Monitoring of KDOT Bridge 059-045 Shawnee Drive over I-135. Rasheed, H., PI. Sponsor: Kansas Department of Transportation.
3. Initial Analytical Investigation of Overhead Sign Trusses With Respect to Remaining Fatigue Life and Predicted Methods for Inspection. Rasheed, H., PI. Sponsor: Kansas Department of Transportation.
4. New Carbon Fiber Anchor to Secure CFRP Flexural and Shear Strengthening Sheets. Rasheed, H., PI. Sponsor: Kansas Department of Transportation.
5. New Carbon Fiber Anchor to Secure CFRP Flexural and Shear Strengthening Sheets. Rasheed, H., PI. Sponsor: Structural Technologies.

Transportation

1. Calibrating the HSM Safety Prediction Tools for Kansas Freeways, Interchanges, and Urban and Suburban Arterial Intersections. Dissanayake, S., PI. Sponsor: Kansas Department of Transportation.
2. Research Initiation: Investigating the Role of Social Responsibility on Veteran Student Retention. Fitzsimmons et al. Sponsor: National Science Foundation.
3. Understanding Overweight / Oversize Freight Flow and Safety in Kansas Using KTRIPS. Fitzsimmons, E., PI and Dissanayake, S., Co-PI. Sponsor: Kansas Department of Transportation.
4. Developing Vehicle Speed Profiles for Typical Kansas Work Zones with Unseen Hazards or Sudden Changes in Horizontal Alignment after Advance Warning. Fitzsimmons, E., PI. Sponsor: Kansas Department of Transportation.
5. Traffic Assistance for Kansas (TASK) Program (FY 2018-2020). Fitzsimmons, E., PI. Sponsor: US Department of Transportation & Kansas Department of Transportation.
6. Guardrail Evaluation for Embankments and Culvert for Kansas Low-Volume Rural Roads. Fitzsimmons, E., PI and Dissanayake, S. Co-PI. Sponsor: Kansas Department of Transportation.
7. Reducing Traffic Related Officer Fatalities and Injuries Through Technology Enhancement and Policy. Fitzsimmons, E., PI. Sponsor: US Department of Justice.
8. Evaluation of Wrong-Way Driving Countermeasures at Kansas Urban and Rural Interstates Ramps. Fitzsimmons, E., PI and Dissanayake, S. Co-PI. Sponsor: Kansas Department of Transportation.

Water Resources

1. Reanalyzing and Predicting U.S. Water Use using Economic History and Forecast Data; an experiment in short-range national hydro-economic data synthesis. Marston et al. Sponsor: United States Geological Survey.
2. INFEWS/Track 1: Mesoscale Data Fusion to Map and Model the U.S. FEW system (INFEWSion). Marston et al. Sponsor: National Science Foundation.

