TriDurLE

National Center for Transportation Infrastructure Durability & Life-Extension

2024 Annual Symposium

Most events (unless indicated) are held in A&M Hotel & Conference Center
Each speaker in lectern sessions will have 15 minutes for the presentation including Q & A.

Day 1 (Sunday) | February 25th, 2024	
4:30 – 7:00 PM	**Registration**
5:00 – 7:00 PM	**Ice Breaker Reception**
Day 2 (Monday) | February 26th, 2024	
8:00 AM – 5:00 PM	**Registration**
7:45 – 8:15 AM	**Breakfast**
8:15 – 8:30 AM	**Welcome Remarks** • Zachary Grasley, Department Head, Zachry Dept. of Civil & Environmental Engineering, Texas A&M • Xianming Shi, TriDurLE Director • Dan Zollinger, Symposium Co-Chair
8:30 – 10:30 AM	**Keynote Panel (Moderator: Dan Zollinger)** • Peter Taylor, Director, CP Tech Center • Charles Greer, Faculty, University of Illinois • Jim Mack, Director, CEMEX • Ryan Barborak, Director, TxDOT
10:30 – 10:45 AM	**Coffee Break**
10:45 AM – 12:00 PM	**Lectern Session I: Asphalt Materials and Pavements (Moderator: Xianming Shi)** • "An Efficient and Explainable Ensemble Learning Model for Asphalt Pavement Condition Prediction Based on LTPP Dataset", **David Wang**, Missouri S&T • "A Machine Learning-Based Approach to Assess Impacts of Autonomous Vehicles on Pavement Roughness", **Jenny Liu**, Missouri S&T

	• "Rheological Test Implementation to Improve the Durability, Longevity and Resilience of Crack and Joint Sealants Produced with Sustainable Materials", **Brian Majeska**, Adventus Material Strategies • "The Impact of SBS Degradation and Base Asphalt Aging on the Rheological Characteristics and Chemical Composition of SBS", **Yanhui Niu**, W. Zhao, X. Li, J. Geng, Chang'an University, China • "Feasibility of Determining Asphalt Pavement Condition from Falling Weight Deflectometer Test and Finite Element Model Updating", **Yong Deng**, Xianming Shi, Washington State University
12:00 – 1:30 PM	**Lunch Break**
1:30 – 3:00 PM	**Lectern Session II: Concrete Pavements and Transportation Geotechnics (Moderator: Jialuo He)** • "Case Study: Resilient, Sustainable & Low Maintenance Concrete Pavements for Local Road", **Corey Zollinger**, CEMEX • "Mechanical and Durability Performance of Concrete with Hybrid Recycled and Manufactured Steel Fibers for Pavement Overlay Applications", **Pratik Gujar**, Precious Aduwenye, Beng Wei Chong, Xijun Shi, Texas State University, Zachary C. Grasley, Texas A&M University • "Mixture Design of Sustainable nano-engineered High-Performance Concrete (nHPC) Overlay for Concrete Bridge Decks in Cold Regions", **Jialuo He**, Xianming Shi, Washington State University • "Efficacy of Underground Aggregate Infiltration Beds under a Permeable Pavement System", **Liv Haselbach**, Mitch Fountain, Golnoosh Toosi, Xing Wu, Lamar University • "Case Studies and Validations of Pile Groups with/without Pile Cap under Soil Lateral Spreading Using the Strain Wedge (SW) Model Technique/Software", **Mohamed Ashour**, Alabama A&M University • "Diamond Grinding and Grooving Bridge Decks", **Larry Scofield**, American Concrete Pavement Association
3:00 – 3:15 PM	**Coffee Break**
3:15 – 5:00 PM	**Student Poster Competition** *(a list of posters attached)*
6:30 – 8:15 PM	**Symposium Banquet** Messina Hof Winery, 4545 Old Reliance Rd, Bryan, TX 77808
Day 3 (Tuesday) | February 27th, 2024	
8:00 – 12:00 PM	**Registration**
8:00 – 8:30 AM	**Breakfast**
8:30 AM– 10:00 AM	**Lectern Session III: Cementitious Materials (Moderator: Jenny Liu)** • "Lowering the Carbon Footprint of Cement using Portland Limestone Cement and other Blended Cements", **Corey Zollinger**, CEMEX

	• "Innovative Self-Healing Concrete for Sustainable Infrastructure", **Xiong "Bill" Yu**, Case Western Reserve University • "Graphene Oxide-Pretreated Waste Medical Mask Microfiber-Reinforced Cement Composites: Frost Damage Modeling and Chloride Migration", **Xianming Shi**, Zhipeng Li, Zhigang Zhang, Jialuo He, Washington State University • "Demonstrating Multiple Approaches to Enabling Carbon-Negative Concrete through the Beneficial Use of Biochar", **Zhipeng Li**, Xianming Shi, Washington State University • "Use of PVA Fibers as Shear Reinforcement of GFRP-reinforced Concrete Beams", **Christian Carloni**, Case Western Reserve University
10:00 – 10:15 AM	**Coffee Break**
10:15 – 11:45 AM	**Lectern Session IV: Structure Engineering (Moderator: Francisco Presuel-Moreno)** • "Numerical Modeling of Eccentrically Loaded RC Columns Strengthened with NSM FRP Technique", **Akram Jawdhari**, Ali Hadi Adheem, Majid M. A. Kadhim, South Dakota State University • "Innovative Performance Corrosion Resistance Reinforcing Bars for Extending Service Life of Reinforced Concrete Structures in North America", **Ben Sadawi**, CMC • "Quasi-Static and Fatigue Response of GFRP Bar-reinforced Concrete Bridge Decks", **Christian Carloni,** Case Western Reserve University • "Computational Modeling for Corrosion Prediction of Bridge Columns", **Jimmy Kim**, University of Colorado Denver • "Galvanostatic Pulse Method Used to Assess Corrosion Resistant Rebars after Prolonged Outdoor Exposure", **Francisco J. Presuel-Moreno**, Redmayne Taylor, Florida Atlantic University • "Estimation of Bridge Vibration Frequencies Using Dynamic Responses from Passing Vehicles", **Brett Story**, Jase Sitton, Southern Methodist University
11:45 AM – 1:00 PM	**Lunch Break**
1:00 – 2:30 PM	**Lectern Session V: Cross-cutting Technologies (Moderator: Mostafa Tazarv)** • "Evaluating the Potential of Connected and Autonomous Vehicles on Freeway Work Zone Capacity", **Fahmida Rahman**, Rowan University • "Deep Learning for Pavement Condition Evaluation Using Satellite Imagery", **Lu Gao**, University of Houston • "Drone Based Bridge Displacement Measurements", **Mostafa Tazarv,** Giovanni Lavezzi, Marco Ciarcia, Kwanghee Won**,** South Dakota State University • "Supporting UAV-Based Pavement Crack Detection Using QoS-Aware Deep Learning", **Xinghui Zhao,** Washington State University Vancouver • "Detecting and Characterizing Strikes to Low-Clearance Bridges", **Brett Story**, Hussam Khresat, Southern Methodist University

	• "Evaluating Factors of Interstate Crashes in New Jersey", **Fahmida Rahman**, Rowan University
3:00 – 5:00 PM	**Center for Infrastructure Renewal (CIR) Tour** The Texas A&M University System RELLIS Campus, 1041 Rellis Pkwy, Bryan, TX 77807

List of Student Posters

1. “Prediction of Thermal Cracking of Asphalt Mixtures: An Artificial Neural Network-Based Approach”, **Abdullah Al Mamun**, University of Utah
2. “Intelligent Prediction of Asphalt Concrete Air Voids during Service Life Using Cubist and GBRT Ensemble Learning Approaches Hybridized with Equilibrium Optimizer Algorithm”, **Amir Tavana Amlashi**, University of Texas at San Antonio
3. “Developing Stone Matrix Asphalt (SMA) Mixtures with Locally Available Aggregates using Balanced Mix Design Method”, **Bo Lin**, Missouri University of Science and Technology
4. “Comparison of Methods for Evaluating Moisture Susceptibility of Asphalt Mixtures”, **Ping Jiang**, Missouri University of Science and Technology
5. “A Phase Change Material-Based Heat-Absorbing Surface Covering to Reduce Thermal Cracking Risk in Concrete Pavements”, **Alif Hussain**, Texas State University
6. “Physics-Guided Neural Network for Predicting Asphalt Mixture Rutting with Balanced Accuracy, Stability and Rationality”, **Yong Deng**, Washington State University
7. “A Comparison of Novel Hybrid Ensemble Learners to Predict the Compressive Strength of Green Engineering Materials: A Case of Concrete Composed of Rice Husk Ash”, **Amir Tavana Amlashi**, University of Texas at San Antonio
8. “Laboratory assessment and modelling of self-healing concrete with lightweight aggregates encapsulated by modified PVA coating”, **Jialuo He**, Washington State University
9. “3D Printable $Ca(OH)_2$-Based Geopolymer Concrete with Steel Fiber Reinforcement”, **Youssef Mortada**, Texas A&M University
10. “Rheological, Mechanical, and Microscopic Properties of Polypropylene Fiber Reinforced-Geopolymer Concrete for Additive Manufacturing”, **Laith Masoud**, Texas A&M University
11. “Laboratory and Field Modulus Measurement of Missouri Coarse-Grained Soils Using Zorn Lightweight Deflectometers”, **Chuanjun Liu**, Missouri University of Science and Technology
12. “Unraveling the Impact of Agro-Based Additives on Chloride Salt Migration in Sandy Loam Soils along Roadsides”, **Taiwo Akinleye**, Washington State University
13. “Small anodic polarization as a mean to modestly accelerate rebar corrosion”, **Gabrielle Pimentel**, Florida Atlantic University
14. “Corrosion at the atmospheric zone of bridges exposed to marine environment in Florida”, **Ingrid Santillan**, Florida Atlantic University
15. “Feature Importance Analysis for Bridge Deterioration Forecasting”, **Rumana Sultana**, The University of Colorado Denver
16. “Experimental Performance and Analysis of Corroded Precast Concrete Columns Repaired with CFRP Shell and Headed Steel Bars”, **Sayal Shrestha**, University of Utah
17. “Nano-Modified Fly Ash-Based Geopolymer Concrete Filled CFRP Tube Composite Mechanical Model and Life Cycle Assessment”, **Zhipeng Li**, Washington State University
18. “Recycled Mask Polypropylene Microfibers Benefit Tensile Properties and Prevent Thermally Induced Spalling of High-Strength Engineered Cementitious Composite”, **Zhipeng Li**, Washington State University

19. “Quasi-static Cyclic Experiment of a Bridge Bent with Stretch Length Anchors as an External Energy Dissipator”, **Suman Neupane**, University of Utah
20. “Assessing and Enhancing the Fire Performance of Reinforced Concrete Bridges in Changing Environments”, **Vishnupriya Jonnalagadda**, Washington State University
21. “Advancing Infrastructure Assessment with Artificial Intelligence and Augmented Reality: Automated Detection and Quantification of Structural Defect”, **Jamiu Lateef**, Case Western Reserve University
22. “Improving One Class Classification for Early Wildfire Detection Using Data Augmentation”, **Wenle Hong**, Washington State University
23. “Cracking Performance Assessment and Fatigue Characterization of Modified Asphalt Mixtures: A Comparative Study of Polymer and Crumb Rubber Modifications”, **Nathan Upton**, State University of New York at Canton.

List of Student Driven Solutions Competition Teams

1. “Reduction of Heat Absorption of a Pavement”, **Beng Wei Chong** and **Precious Aduwenye**, Texas State University, **Ping Jiang**, Missouri University of Science and Technology
2. “Reduction of Heat Absorption of a Pavement”, **Amir Tavana Amlashi**, University of Texas at San Antonio
3. “Nondestructive Assessment of Voids in an Aggregate System”, **Tianjie Zhang**, Boise State University
4. **Jamiu Lateef**, Case Western Reserve University