

## *CE Faculty Publications (CY 2018)*

### ***Environmental***

#### Jeongdae Im

Sang, H., Hulvey, J., Green, R., Xu, H., Im, J., Chang, T., and Jung, G. A xenobiotic detoxification pathway through transcriptional regulation in filamentous fungi. *mBio*, 9(4).

Green, R.; Sang, H.; Im, J.; Jung, G. Chlorothalonil biotransformation by cytochrome P450 monooxygenases in *Sclerotinia homoeocarpa*. *FEMS Microbiol. Lett.* 365 (19).

#### Alex Mathews

S. S. Vellimedu, and A.P. Mathews, Continuous fermentation of xylose to short chain fatty acids by *Lactobacillus buchneri* under low pH conditions, *Chemical Engineering Journal*, 337, 764-771, 2018.

S. S. Vellimedu, and A.P. Mathews, Exploitation of acid-tolerant microbial species for the utilization of low-cost whey in the production of acetic acid and propylene glycol, *Applied Microbiology and Biotechnology Journal*, 102 (18): 8023-8033, 2018.

S. S. Vellimedu, and A.P. Mathews, A novel low pH fermentation process for the production of acetate and propylene glycol from carbohydrate wastes, *Enzyme and Microbial Technology*, 120, 8-15, 2019, <https://doi.org/10.1016/j.enzmictec.2018.09.006>.

#### Prathap Parameswaran

Lusk, B.G., Colin, A., Parameswaran, P., Rittmann, B.E., Torres, C.I. 2018. Simultaneous fermentation of cellulose and current production with an enriched mixed culture of thermophilic bacteria in a microbial electrolysis cell. *Microbial Biotechnology* 11(1): 63 – 73.

Hobbs, S.R., Landis, A.E., Rittmann, B.E., Young, M.N., Parameswaran, P. 2018. Enhancing anaerobic digestion of food waste through biochemical methane potential assays at different substrate: inoculum ratios. *Waste Management* 71: 612-617.

### ***Geotechnical***

#### Dunja Peric

Miletić, M. and Perić, D. "Effect of Fibers on Onset of Strain Localization in HPFRCC Subjected to Plane Stress Loading," *ASCE Journal of Engineering Mechanics*, June 18, 2018, 04018074-1, 04018074-12.

Perić, D., Cossel, A., and Miletić, M. "Effects of Stratigraphy on the Response of End Bearing Heat Exchanger Pile Subjected to Thermal Load," *Proc. of Int. Foundation Congress and Equipment Expo*, Orlando, Florida, March 5-10, 2018.

Perić, D., G. Gjerapic, D. Znidarcic. "Essential Issues for Testing and Modeling of Tailings Exhibiting Creep," Proc. of Tailings and Mine Waste 18' Conference. October 1-2, 2018 Keystone Resort in Keystone, Colorado.

Perić, D., Cossel, A. and Sarna, S. "Analytical solution for thermally induced axial stress in an end bearing heat exchanger pile embedded in a homogeneous soil," Proc. of 11th International Conference on Structural Integrity and Failure, December 3-6, 2018, Perth, Australia.

### Stacey Tucker-Kulesza

Karim, M.Z. and Tucker-Kulesza, S. "Predicting soil erodibility using electrical resistivity tomography," ASCE Journal of Geotechnical and Geoenvironmental Engineering, 144(4), 04018012. doi.org/10.1061/(ASCE).GT.1943-5606.0001857.

Wang, X., Tao, J., Bao, R., Tran, T., and Tucker-Kulesza, S. "Surficial soil stabilization against water-induced erosion using polymer-modified microbially-induced carbonate precipitation", ASCE Journal of Materials in Civil Engineering, 30(10), 04018267. doi.org/10.1061/(ASCE)MT.1943-5533.0002490

Fitzsimmons, E.J., Tucker-Kulesza, S., and Shofstall, L.\*. "Case study of Class III (short line) system inventory to determine 286,000 lb (129,844 kg) railcar operational status in Kansas, USA. Journal of Rail Transport Planning & Management, 8, 158-166. doi.org/10.1016/j.jrtpm.2018.05.001

Tran, T., Tucker-Kulesza, S., and Bernhardt-Barry, M. "Soil surface roughness and turbidity measurements in erosion testing." Proceedings of ASCE IFCEE 2018, Orlando, FL, 506-515. doi.org/10.1061/9780784481585.049.

Karim, M.Z., Tucker-Kulesza, S., and Derby, M.M.. "Synthesizing hydrophobic sand and comparison of shear strength properties with hydrophilic sand." Proceedings of ASCE IFCEE 2018, Orlando, FL, 75-83. doi.org/10.1061/9780784481585.008

Tucker-Kulesza, S., Liang, G., Fitzsimmons, E., and Zacharakis, J. "Work in Progress: Investigating the role of social responsibility on veteran student retention." Proceedings of the 125th ASEE Annual Conference and Exposition, Salt Lake City, UT, #22366.

Tavakol, M., Hossain, M. and S. Tucker-Kulesza. "Effects of Fly Ash and Low-Quality Recycled Concrete Aggregate for HMA Subgrade Soil Stabilization." Proceedings of the International Conference on Pavements and Computational Approaches, New Delhi, India, 2018.

### **Materials**

#### Mustaque Hossain

Tavakol, M., Hossain, M. and Heptig, B.M. Minimum Virgin Binder Content Needed in Recycled Superpave Mixtures to Resist Fatigue Cracking and Moisture Damage. ASCE Journal of Materials in Civil Engineering, Vol. 30 (7), July.

Sabahfar, N., Ahmed, A., Aziz, S and Hossain, M. Cracking Resistance Evaluation of Mixtures with High Percentages of Reclaimed Asphalt Pavement. *ASCE Journal of Materials in Civil Engineering*, 29(4):06016022.

Islam, S., A. Sufian, M. Hossain, R. Miller, and C. Leibrock. Mechanistic Empirical Design for Perpetual Pavement. *Journal of Road Materials and Pavement Design*. Volume:  
<https://doi.org/10.1080/14680629.2018.1546218>

Islam, S., M. Hossain, M., and R. Miller. Evaluation of Pavement Surface Texture at the Network Level. *Journal of Nondestructive Testing and Evaluation*. Volume:  
<https://doi.org/10.1080/10589759.2018.1554067>

Islam, S., A. Sufian, M. Hossain, N. Velasquez, and R. Barrett. "Practical Issues in Local Calibration and Implementation of AASHTOWARE Pavement ME Design Procedure for Concrete Pavements." In the 97th Annual Meeting of Transportation Research Board, Washington, D.C, 2018.

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Islam, S., A. Ahmed, and M. Hossain. "Flexible Pavement Design with RAP Mixture." *Proceedings of the International Society for Asphalt Pavement Conference, Fortaleza, Brazil, 2018.*

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Gao, Y., S. Islam, and M. Hossain. "Investigation of Cracking Resistance of Recycled Superpave Mixtures." *Proceedings of the Advances in Materials and Pavement Performance Prediction (AM3P) conference, Doha, Qatar, 2018.*

Islam, S., H. Zahir, M. Hossain, and D. Meggers. "Evaluation of High Friction Surface Treatment." *Proceedings of the International Conference on Pavements and Computational Approaches, New Delhi, India, 2018.*

Tavakol, M., Hossain, M. and S. Tucker-Kulesza. "Effects of Fly Ash and Low-Quality Recycled Concrete Aggregate for HMA Subgrade Soil Stabilization." *Proceedings of the International Conference on Pavements and Computational Approaches, New Delhi, India, 2018.*

Hossain, M., Heptig, B. and R. Barezenisky. "How to Improve Performance of Flexible Pavements – Experience of a State from the United States." *Proceedings of the International Conference on Pavements and Computational Approaches, New Delhi, India, 2018.*

## Parth Panchmatia

**P. Panchmatia**, J. Olek, T. Kim, The influence of air cooled blast furnace slag (ACBFS) aggregate on the concentration of sulfates in concrete's pore solution, *Construction and Building Materials* 168 (2018) 394 – 403.

## Christopher Jones

Mhamankar, S. and Jones, C. "Role of Stress State in Time-Dependent Deformation Characteristics for Cementitious Materials," American Concrete Institute, Research in Progress, Las Vegas, Nevada, October 2018.

## **Structures**

### Bob Peterman

Amir F. Momeni, Robert J. Peterman, B. Terry Beck. "A Prediction Model for Development Length of Indented Prestressing Wires," American Concrete Institute (ACI) Structural Journal; Volume 115, Issue 2, pp 525-534, March.

Yu-Szu Chen, Hayder A. Rasheed, Robert J. Peterman. "Stress-Strain Curves for Modeling Prestressing Wires," American Concrete Institute (ACI) Materials Journal; Volume 115, Issue 5, pp 773-784, September.

Adrijana Savic, B. Terry Beck, Aaron A. Robertson, Robert J. Peterman, Jeremiah Clark, Chih-Hang (John) Wu. "Effects of Cover, Compressive Strength, and Wire Type on Bond Performance in Prismatic Prestressed Concrete Members;" Paper Number JRC2018-6153, Proceedings of the 2018 ASME Joint Rail Conference, April 18-20, 2018, Pittsburgh, PA.

James D. Scott, Robert J. Peterman, B. Terry Beck, Aaron A. Robertson, Chih-Hang John Wu, Kyle A. Riding. "Determining the Remaining Prestress Force in A Prestressed Concrete Railroad Tie Through Loading in Direct Tension" JRC2018-6168, Proceedings of the 2018 ASME Joint Rail Conference (JRC 2018), April 18-20, 2018, Pittsburgh, PA.

Aref Shafiei Dastgerdi, Kyle A. Riding, Robert J. Peterman, B. Terry Beck. "Material Characteristics Evaluation of Existing Pre-Stressed Concrete Railroad Ties After Service Period" JRC2018-6168, Proceedings of the 2018 ASME Joint Rail Conference (JRC 2018), April 18-20, 2018, Pittsburgh, PA.

### Hayder Rasheed

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Ahmadi, H., and Rasheed, H. A., "Lateral Torsional Buckling of Anisotropic Laminated Thin-Walled Simply Supported Beams Subjected to Mid-Span Concentrated Load," *Composite Structures*, 185, 2018, pp. 348-361.

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Chen, Y.-S., Rasheed, H. A. and Peterman, R. J., "Stress-Strain Curves for Modeling Prestressing Wires," *ACI Materials Journal*, Vol. 115, No. 5, Sept.-Oct. 2018, pp. 773-784.

Rasheed H. A. "Nonlinear Angle-Ply Model for Stay In Place Tubes by Inverse Mechanics Approach," *ACI Special Publication*, SP 327-11, Nov. 2018.

Kramer, K. W. and Rasheed, H. A. "Analytical Load-Deflection Behavior of Prestressed Concrete Girders Strengthened with FRP," *ACI Special Publication*, SP 327-13, Nov. 2018.

Abd El Fattah, A. M., Azeez, M. and Rasheed, H. A. "Behavior of Circular Concrete Columns under the Confinement of Lateral Steel Hoops and FRP," *ACI Special Publication*, SP 327-49, Nov. 2018.

Rasheed, H. A. and Charkas, H. "Robust Modeling of Angle-Ply Laminate Response for Strengthening Applications," *Proceedings of the 9th International Conference on Fiber Reinforced Polymer (FRP) Composites in Civil Engineering*, July 17-19, 2018, Paris, France.

Zaki, M. A., Rasheed, H. A., and Dural, E. "Performance of Strengthened Reinforced Concrete Beams Using CFRP Sheets Secured with Innovative Anchorage Devices," *Proceedings of the 4th International Conference on Natural and Engineering Sciences*, Oct. 9-12, 2018, Bodrum, Turkey.

## ***Transportation***

### Hussain Aziz

Aziz, H. M. A., Park, B.H., Morton, A., Stewart, R.N., Hilliard, M. and Maness, M. A high-resolution agent-based model to support walk-bicycle infrastructure investment decisions: A case study with New York City. *Transportation research part C: emerging technologies*, 86, pp.280-299.

Aziz, H. M. A., Zhu, F., Ukkusuri, S. V. Learning-based traffic signal control algorithms with neighborhood information sharing: An application for sustainable mobility. *Journal of Intelligent Transportation Systems*, 22(1), 40-52.

Aziz, H.M.A., and Ukkusuri, S.V. A novel approach to estimate emissions from large transportation networks: Hierarchical clustering-based link-driving-schedules for EPA-MOVES using dynamic time warping measures. *International Journal of Sustainable Transportation*, 12(3), pp.192-204.

Islam, SMA. B. Al, H. M. A. Aziz, H. Wang, and S. E. Young. Minimizing energy consumption from connected signalized intersections by reinforcement learning. 2018 IEEE Intelligent Transportation Systems Conference (ITSC).

Park, B. H., H. M. A. Aziz, A. Morton, and R. Stewart. High performance Data Driven Agent-based Modeling Framework for Simulation of Commute Mode Choices in Metropolitan Area. 2018 IEEE Intelligent Transportation Systems Conference (ITSC).

Zhu, Lei, Venu Garikapati, Yuche Chen, Yi Hou, H M A Aziz, and Stanley Young. Quantifying the Mobility and Energy Benefits of Automated Mobility Districts Using Micro-scopic Traffic Simulation. In proceedings of ASCE International Conference on Transportation and Development Institute, 2018.

Park, B. H., Aziz, H. M. A., Morton, A., Stewart, R. N. A novel graph partitioning technique for high-performance agent-based simulation of travel mode choices. Paper no. 18-05808. In the proceedings of the Transportation Research Board 97th Annual Meeting, Washington, D. C., January 7-11, 2018.

#### Eric Fitzsimmons

Fitzsimmons, E.J., S.E. Tucker - Kulesza, and L.M. Shofstall. Case Study of Class III (Short Line) System Inventory to Determine 286,000-lb. (129,844 kg) Railcar Operational Status in Kansas, USA. *Journal of Rail Transport Planning and Management*, 8, 158-166. doi.org/10.1016/j.jrtpm.2018.05.001.

#### **Water Resources**

##### Landon Marston

Marston, L., Ao, Y., Konar, M., Mekonnen, M. M., & Hoekstra, A. Y. High-Resolution Water Footprints of Production of the United States. *Water Resources Research*, 54(3), 2288-2316.

Cai, X., Wallington, K., Shafiee-Jood, M., & Marston, L. (2018). Understanding and managing the food-energy-water nexus—opportunities for water resources research. *Advances in Water Resources*, 111, 259-273.