

CURRICULUM VITAE

**Kejun Wen, Ph.D., E.I.T**

Assistant Professor  
Department of Civil and Environmental Engineering  
Jackson State University  
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**EDUCATION**

**Ph.D. Civil and Environmental Engineering**

Jackson State University, Jackson, MS

**Aug. 2014 – Dec. 2017**

**M.S. Civil and Environmental Engineering**

Jackson State University, Jackson, MS

**Aug. 2013 – Apr. 2016**

**B.S. Civil Engineering**

Huaihai Institute of Technology (Jiangsu Ocean University), China

**Sept. 2009 – Jun. 2013**

**RESEARCH INTEREST**

Soil Improvement through Innovative Technology, Bio-inspired Material Development, Bridge Scour Mitigation, Coastal Restoration, Natural-based Solution for Geohazard, Smart Cities Development, Intelligent Soil-Structure Communication Network

**EXPERIENCE**

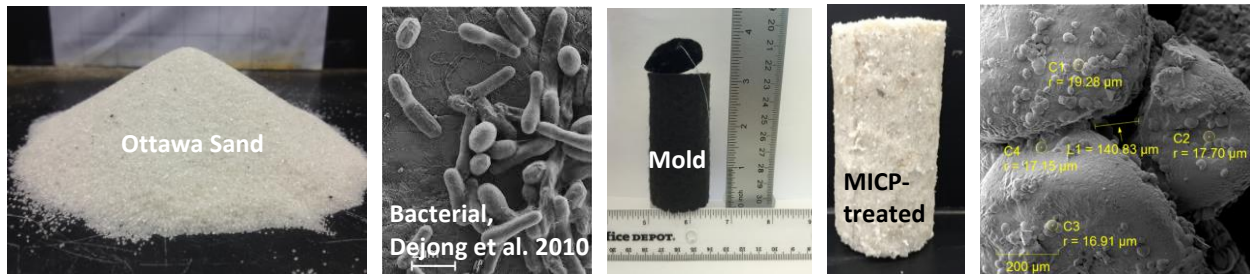
***Work Experience***

- **Assistant Professor (August 2019-Present):** Serve as full-time Department faculty 1) advising undergraduate students and graduate students; 2) teaching both undergraduate and graduate level classes at Jackson State University; 3) developing active advanced research activities.
- **Director of Mississippi Summer Transportation Institute in JSU (2019- Present):** Served as director of MSTI program. Schedule a two-week residential summer program for high school students. The MSTI Program aims at introducing a diverse group of motivated pre-college students to the transportation industry. During the two-week residential program, students will participate in academic and enhancement activities designed to improve their skills in Science, Technology, Engineering, and Mathematics (STEM) and leadership. (*Funding Agency: Mississippi Department of Transportation Research Division*)
- **Post-Doctoral Research Associate, Adjunct Faculty (Jan. 2018-May 2019):** Served as research associate in civil engineering area and teach both undergraduate and graduate level classes at Jackson State University.

*Research Experience:*

**Geotechnical and Geoenvironmental Engineering:**

- **Bio-mediated Improvement on Sandy Soil (2013-current):** Mainly focus on improving the mechanical properties of sandy soil through Microbial Induced Calcite Precipitation (MICP) and conducting laboratory experiments to improve the efficiency of MICP treatment and to develop guideline to control the normalization of MICP process on the engineering application.



- **Bio-inspired Construction Materials:** Applied the MICP treatment to develop construction materials includes bio-beams and bio-bricks.



**Coastal Engineering**

- **Coastal Restoration with Recycled Glass Sand and Biopolymers (2021-present):** Biopolymers are polymers produced by living organisms. As one of the emerging soil improvement techniques, the biopolymer can bond soil grains together and improve the engineering properties of soil. Soil erosion induced by flowing water tends to alter the stability of geotechnical engineering structures. Coastal areas keep changing with erosion and sand movement with time. Human activities may accelerate erosion and it may become a problem when the buildings and roadways are close enough to the ocean. By improving the cohesion of the sandy soil, the biopolymer can significantly reduce sand erosion in coastal areas.



**Transportation Engineering:**

- **Application of Paving Fabrics to Reduce the Reflective Cracking (2014-2016):** Mainly focus on using paving fabrics in pavement rehabilitation programs to reduce the reflective cracking on pavement surface. Field studied the performance of paving fabrics in 1-mile-long county highway and analyzed the benefits of life-cycle cost.
- **Bridge Scour Mitigation with Bio-Cementitious Materials (2022-current):** 1) it provides an understanding of the mechanism of biopolymer treatment for different soils; 2) it provides a comprehensive analysis of the mechanical behavior of biopolymer-treated soil from lab-scale testing to field applications; 3) it establishes a fundamental protocol to apply the biopolymer treatment in a water-rich environment.

**AWARDED GRANTS**

1. “Targeted Infusion Project: Earlier Access to Cutting-Edge Research Experiences for Undergraduate STEM Education at Jackson State University” 2021-2024, **PI: Kejun Wen**; Co-PI: Dr. Amini Farshad, Dr. Jianjun Yin. Total Amount: \$399,693; Funding Agency: National Science Foundation (NSF).
2. “2022 MS Summer Transportation Institute” 2022. **PI: Kejun Wen**; Total Amount: \$64,945; Funding Agency: Federal Highway Administration (FHWA), Mississippi Department of Transportation (MDOT), and STRIDE.
3. “Innovative Soil Improvement through Bio-Cementitious Materials to Mitigate Bridge Scour” 2022-2025, **PI: Kejun Wen**; Co-PI: Amini Farshad. Total amount: \$199,872; Funding Agency: Mississippi Department of Transportation (MDOT).
4. “NSF Convergence Accelerator Track E: Using Recycled Glass Sand to Promote Resilience and the Blue Economy in Coastal Communities” 2021-2025, Lead Institution: Tulane University, **PI: Julie Albert** Co-PI: **Kejun Wen (JSU)**, Franziska Trautmann, Katie Russell, Ehab Meselhe. Total Amount: \$5M; Funding Agency: National Science Foundation (NSF).
5. “2021 MS Summer Transportation Institute” 2021. **PI: Kejun Wen**; Total Amount: \$47,207; Funding Agency: Federal Highway Administration (FHWA) and Mississippi Department of Transportation (MDOT).
6. “NASA STEM 2020-2021” 2020-2021. **PI: Kejun Wen**; Total Amount: \$10,000; Funding Agency: National Aeronautics and Space Administration (NASA).
7. “Applications of Bio-inspired Construction Materials in Space” 2019-2020. **PI: Kejun Wen**; Total Amount: \$28,714; Funding Agency: National Aeronautics and Space Administration (NASA)
8. “Workshops: Broadening Participation of Historically Black Colleges and Universities in the NSF Research Traineeship and Innovations in Graduate Education Programs” 2021-2022, (Lead Institution: Jackson State University, **PI: ConSandra McNeil** **Co-PI: Kejun Wen**; Total Amount: \$99,879; Funding Agency: National Science Foundation (NSF).
9. “Increasing Awareness of Natural Disasters through the Implementation of Newly Emerging Technology in Research and Education” 2021-2024. **PI: Dr. Dunajun Lu.** **Co-PI: Kejun Wen, Huiru Shih**; Total Amount: \$469,577; Funding Agency: Department of Homeland Security (DHS).

**PROFESSIONAL LICENSE**

- EIT: State of Mississippi
- PE: State of Texas

## HONORS AND AWARDS

- **Outstanding Ph.D. Student Award**, 2017, Jackson State University
- **Graduation with Highest Honors**, 2013, Huaihai Institute of Technology
- **National Encouragement Scholarship**, 2011, Department of Education, Jiangsu Province, China

## PUBLICATIONS (Selected)

### *Journals Publications (\*corresponding author)*

1. Zhu, L., Li, M., **Wen, K.** and Wan, Y., 2022. Dynamic Shear Strength Characteristics of Lightweight Clay-EPS Soil. *Geotechnical and Geological Engineering*, pp.1-9.
2. Liu, S., Du, K., **Wen, K.**, Armwood-Gordon, C. and Li, L., 2022. Influence of rainfall-induced erosion on the stability of sandy slopes treated by MICP. *Advances in Civil Engineering*, 2022.
3. Yang, Y., Li, M., Tao, X., Zhang, S., He, J., Zhu, L. and **Wen, K.**, 2022. The effect of nucleating agents on enzyme-induced carbonate precipitation and corresponding microscopic Mechanisms. *Materials*, 15(17), p.5814.
4. Zhu, L., Lang, C., Li, B., **Wen, K.** and Li, M., 2022. Characteristics of soybean urease induced CaCO<sub>3</sub> precipitation. *GEOMECHANICS AND ENGINEERING*, 31(3), pp.281-289.
5. Liu, S., Du, K., Huang, W., **Wen, K.**, Amini, F. and Li, L., 2021. Improvement of erosion-resistance of bio-bricks through fiber and multiple MICP treatments. *Construction and Building Materials*, 271, p.121573.
6. Zhang, J., **Wen, K.** and Li, L., 2021. Bio-modification of coal fly ash using urease-producing bacteria. *Fuel*, 286, p.119386.
7. Liu, S., Du, K., Huang, W., **Wen, K.**, Amini, F. and Li, L., 2021. Enhanced erosion resistance of cement-treated bricks using multiple biological surface treatments. *Advances in Cement Research*, 33(12), pp.540-549.
8. Li, Y., **Wen, K.\***, Li, L., Huang, W., Bu, C. and Amini, F., 2020. Experimental investigation on compression resistance of bio-bricks. *Construction and Building Materials*, 265, p.120751.
9. **Wen, K.**, Li, Y., Amini, F., and Li, L., 2020. Impact of bacteria and urease concentration on precipitation kinetics and crystal morphology of calcium carbonate. *Acta Geotechnica*, 15(1), 17-27
10. Zhang, J., Su, P., **Wen, K.**, Li, Y., and Li, L. 2020. Mechanical Performance and Environmental Effect of Coal Fly Ash on MICP-Induced Soil Improvement. *KSCE J Civ Eng* 24, 3189–3201.
11. **Wen, K.**, Li, Y., Wei H., Li, L., and Amini, F., 2019, Mechanical Behaviors of Hydrogel-treated Sand, *Construction and Building Materials*, 270: 174-180.
12. **Wen, K.**, Li, L., Li, Y., L, M., Li, C., and Amini, F., 2019, Effects of Multiple MICP Treatment on Sandy Soil with Lower Cementation Media Concentration, *Journal of Geotechnical and Geological Engineering*, DOI: 10.1007/s10706-018-0669-6.
13. **Wen, K.**, Li, Y., Liu, S., Bu, C., and Li, L., 2019, Evaluation of Microbial Induced Calcite Precipitation Treatment Efficiency with pH change in Urea Hydrolyzed Process, *Environmental Geotechnics*, doi.org/10.1680/jenge.17.00108.
14. **Wen, K.**, Li, L., Zhang, R., Li, Y., and Amini, F., 2019, Micro-Scale Analysis of Microbial-Induced Calcite Precipitation in Sandy Soil through SEM/FIB Imaging, *Microscopy Today*, 27(01):24-29.
15. Huang, W., **Wen, K.\*** Li D., Deng X., Li L., and Amini F., 2019, Experiment study of lateral unloading stress path and excess pore water pressure on creep behavior of soft soil, *Advances in Civil Engineering*, DOI: 10.1155/2019/9898031.

16. Huang, W., **Wen, K.**\* Liu D., and Amini F., 2020, Experimental study on influence of excess pore water pressure and unloading ratio on unloading mechanical properties of marine sedimentary soft soils, *Ocean Engineering*, 195, p.106680.
17. Liu, S., **Wen, K.**, Armwood, C., Bu, C., Li, C., Amini, F., & Li, L., 2019. Enhancement of MICP-Treated Sandy Soils against Environmental Deterioration. *Journal of Materials in Civil Engineering*, 31(12), 04019294.
18. Liu, S., Du, K., **Wen, K.**, Huang, W., Amini, F., & Li, L., 2019. Sandy Soil Improvement through Microbially Induced Calcite Precipitation (MICP) by Immersion. *Journal of visualized experiments: JoVE*, (151).
19. **Wen, K.**, Bu, C., Liu, S., Li, Y., and Li, L., 2018, Experimental Investigation of Flexure Resistance Performance of Bio-Beams Reinforced with Discrete Randomly Distributed Fiber and Bamboo, *Construction and Building Materials*, 176: 241-249.
20. **Wen, K.**, Amini, F., and Ahlrich, R., 2018, Long-term Field Performance of Paving Fabrics on Reduction of Reflective Cracking, *International Journal of Pavements*, *Accept*.
21. Zhou, Y., Li, M., **Wen, K.**, and Tong R. 2018, Dynamic Stress-strain relationships of Lightweight Clay-EPS Soil with Marine soft clay, *Geomechanics and Engineering*, *Accept*.
22. Li, M., **Wen, K.**, Li, Y. and Zhu, L., 2018, Impact of oxygen availability on microbially induced calcite precipitation (MICP) treatment. *Geomicrobiology Journal*, 35(1):15-22.
23. Bu, C., **Wen, K.**, Liu, S., Ogbannaya, U., Li, L. and Amini, F., 2019, Development of a Rigid Full Contact Mold for Preparing Bio-Beams through Microbial Induced Calcite Precipitation, *Geotechnical Testing Method*, 42(3), DOI: 10.1520/GTJ20170148.
24. Bu, C., **Wen, K.**, Liu, S., Ogbonnaya, U. and Li, L., 2018, Development of bio-cemented constructional materials through microbial induced calcite precipitation. *Materials and Structures*, 51(1): 30.
25. Li, Y., Su, P., Li, Y., **Wen, K.**, Bi, G. and Cox, M., 2018. Adsorption-desorption and degradation of insecticides clothianidin and thiamethoxam in agricultural soils, *Chemosphere*, 207: 708-714.
26. Li, M., Zhou, Y., Tong, R., and **Wen, K.**, 2018, Deformation Characteristics of Lightweight Clay-EPS Soil under Dynamic load, *Advances in Civil Engineering*, DOI: 10.1155/2018/8093719.
27. Li, M., **Wen, K.**, Li, L. and Tian, A., 2017, Mechanical Properties of Expanded Polystyrene Beads Stabilized Lightweight Soil, *Journal of Geomechanics and Geoengineering*, 13(3): 459-474.
28. Li, M., Li, L., Ogbonnaya, U., **Wen, K.**, Tian, A., and Amini, F., 2015, Impacts of Randomly Distributed Discrete Fiber on Geomechanical Properties of MICP-treated Sand, *Journal of Materials in Civil Engineering*, ASCE, DOI: 10.1061/(ASCE)MT. 1943-5533. 0001442.

### **Conference Paper**

1. Bennett, V.G., Hartevelde, C., Zastavker, Y.V., Abdoun, T., Hossein, M., Omidvar, M., **Wen, K.** and Wirth, X., 2021. A Mixed-Reality Pedagogical Innovation in the Reality of a New Normal. In IFCEE 2021 (pp. 170-178).
2. Li, L., **Wen, K.**, Bu, C. and Amini, F., 2020, February. Enhancement of Bio-Sandy Brick through Discrete Randomly Distributed Fiber. In *Geo-Congress 2020: Biogeotechnics* (pp. 39-45). Reston, VA: American Society of Civil Engineers.
3. **Wen, K.** and Amini, F., 2020, February. Effect of Paving Fabric on Reduction of Reflective Cracking. In *Geo-Congress 2020: Geotechnical Earthquake Engineering and Special Topics* (pp. 418-425). Reston, VA: American Society of Civil Engineers.
4. Zhang J., **Wen, K.**, and Li L., 2019, Leaching Assessment of MICP-Treated Coal Combustion Products in Roadways Embankment, *Eighth International Conference on Case Histories in Geotechnical Engineering (Geo-Congress 2019) American Society of Civil Engineers*, pp. 273-279.

5. **Wen, K.**, Li, Y., Li, L., Amini, F. 2018, Development of a Multiple Treatment Laboratory Method to Enhance Microbial-induced Soil Stabilization, *Geotechnical Special Publication*, 12-18, IFCEE.
6. Bu, C., Dong, Q., **Wen, K.**, and Li, L., 2018. Development of Innovative Bio-beam Using Microbial Induced Calcite Precipitation Technology. *GeoShanghai International Conference* (pp. 491-498). Springer, Singapore.
7. Li, L., **Wen, K.**, Li, C. and Amini, F., 2017, FIB/SEM Imaging of Microbial Induced Calcite Precipitation in Sandy Soil. *Microscopy and Microanalysis*, 23(S1), DOI: 10.1017/S1431927617002239.
8. Li, L., Li, M., Ogbonnaya, U., **Wen, K.**, Xu, Y., and Amini, F., 2017, Study of a Discrete Randomly Distributed Fiber on the Tensile Strength Improvement of Microbial-Induced Soil Stabilization, *Geotechnical Special Publication*, No. 280: 12-19, ASCE.
9. Li, L., Li, M., Ogbonnaya, U., **Wen, K.**, Li, C., and Amini, F., 2016, Experimental Investigation of the Mechanical Properties of MICP-Treated Sands Reinforced with Discrete Randomly Distributed Fiber, *Geotechnical Special Publication*, No. 269: 52-61, ASCE.
10. Li, L., Amini, F., Zhao, Q., Li, C., **Wen, K.**, Li, M., and Ogbonnaya, U., 2015, Development of a Flexible Mold for Bio-Mediated Soil Materials, *Geotechnical Special Publication*, No. 256: 2339-2348, ASCE.

### ***Professional Report***

1. Li, L., Liu, S., and **Wen, K.**, 2017. Innovative bio-mediated particulate materials for sustainable maritime transportation infrastructure. Final Report, Jackson State University. Report submitted to Maritime Transportation Research and Education Center.
2. Amini, F., **Wen K.**, 2016, Long-Term Field Monitoring of Paving Fabric Interlayer Systems to Reduce Reflective Cracking. Final Report, Report No. FHWA/MS-DOT-RD-16-184, Jackson State University. Report submitted to Mississippi Department of Transportation

### ***Conference Presentations***

1. Li, L., **Wen, K.**, Bu, C. and Amini, F., 2020, February. Enhancement of bio-sandy brick through discrete randomly distributed fiber. Geo-Congress 2020, Minneapolis, MN, Feb. 25-28.
2. Bu, C., Dong, Q., **Wen, K.**, and Li, L., 2018, Development of Innovative Bio-beam Using Microbial Induced Calcite Precipitation Technology, oral presentation at the GeoShanghai 2018, Shanghai, China, May 27-30, 2018.
3. **Wen, K.**, Li, Y., Li, L., and Amini, F., 2018, Development of a Multiple Treatment Laboratory Method to Enhance Microbial-Induced Soil Stabilization, oral presentation at IFCEE 2018, Orlando, FL, March 5-10, 2018.
4. **Wen, K.**, Li, L., and Cole, K., 2018, Advanced Immersing Bio-inspired Treatment to Stabilize Sandy Soil, oral presentation at the 97<sup>th</sup> TRB, Washington DC, January 7-11, 2018.
5. Li, L., **Wen, K.**, Li, C., and Amini, F., 2017, FIB/SEM Imaging of Microbial Induced Calcite Precipitation in Sandy Soil, oral presented at the Microscopy & Microanalysis 2017, St. Louis, MO, August 6-10, 2017.
6. Li, L., Li, M., Ogbonnaya, U., **Wen, K.**, Xu, Y. and Amini, F., Study of a Discrete Randomly Distributed Fiber on the Tensile Strength Improvement of Microbial-Induced Soil Stabilization. Oral presented at Geotechnical Frontiers, Orlando, FL, March 12-15, 2017.
7. Li, L., Li, M., Ogbonnaya, U., **Wen, K.**, Li, C., and Amini, F., 2016, Experimental Investigation of Mechanical Properties of MICP-Treated Sands Reinforced with Discrete Randomly Distributed Fiber, at the GeoChicago, Chicago, IL, August 14-18, 2016.

8. Li, L., Li, M., Ogbonnaya, U., **Wen, K.**, and Amini, F., 2016, Experimental Investigation of Discrete Randomly Distributed Fiber on the Mechanical Properties of Microbial-Induced Soil Improvement, oral presented at the ASCE Geotechnical & Structural Engineering Congress, Phoenix, AZ, February 14-17, 2016.
9. Li, L., Amini, F., Zhao, Q., Li, C., **Wen, K.**, Li, M., and Ogbonnaya, U., 2015, Development of a Flexible Mold for Bio-Mediated Soil Materials, oral presented at IFCEE 2015, San Antonio, Texas, March 17-21, 2015.

### **PROFESSIONAL AFFILIATION**

- Associate Editor: Arabian Journal of Geosciences, 2019-present
- Associate Editor: Biogeotechnics, 2023-present
- Proposal Reviewer for NSF HBCU-UP BPR Panel, 2022 and MSSGC Graduate Fellowship Program, 2021-present
- Faculty Advisor: Mississippi Engineering Society (MES) and Institute of Transportation Engineers (ITE) student chapter in Jackson State University, 2019-present
- Faculty Advisor: American Society of Civil Engineering (ASCE) student chapter in Jackson State University, 2022-present
- Associate Editor in Arabian Journal of Geosciences, 2019-present
- Undergraduate Research Advisor
- American Society of Civil Engineers, Member, 2013-present
- Member, United States Universities Council on Geotechnical Education and Research (USUCGER), 2019-present

### **PROFESSIONAL SERVICES**

- Paper reviewer for *Journal of Materials in Civil Engineering*, ASCE
- Paper reviewer for *Construction and Building Materials*
- Paper reviewer for *Environmental Science and Pollution Research*
- Paper reviewer for *Water*
- Paper reviewer for *Environmental Geotechnics*
- Paper reviewer for *Journal of Testing and Evaluation*
- Paper reviewer for *Waste and Resource Management*
- Paper reviewer for *ASCE GeoShanghai 2018*
- Paper reviewer for *Geotechnical and Geological Engineering*
- Paper reviewer for *Applied Sciences*

### **COMPUTER SKILLS**

RocScience; PLAXIS 2D; GeoStudio; LPILE; PTV Vissim; Hec-RAS; GAMS; Hydrus 2D; RAM Structural; AutoCAD.

### **LABORATORY SKILLS**

Triaxial Strength Testing, Consolidation Testing, Direct Shear Testing, Unconfined Compression Strength Testing, Hydraulic Conductivity Testing, Index Testing, Focus Ion Beams, Scanning Electron Microscopy.