Meng Wu
Ph.D. Candidate, Graduate Research Assistant.
Dow 825, Civil, Environmental, and Geospatial Engineering
Michigan Technological University
Houghton, MI 49931, U.S.A.
Email: mewu@mtu.edu
Telephone: +1 9062992905
Personal website: https://mengwus.github.io/

Objective and Intended Area of Research:

My research focuses on developing sustainable asphalt technologies that enhance pavement durability, reduce environmental impact, and promote a circular economy in transportation infrastructure, with an emphasis on high-content crumb-rubber-modified asphalt and other recycled-material-based pavement systems that enable large-scale recovery of resources from waste tires and industrial byproducts.

Education Background:

Michigan Technological University, Since August 2022
Major: Civil Engineering Supervisor: Zhanping You
GPA: 3.94/4.0
Research interests**:** Asphalt binder performance; Crumb rubber-modified asphalt; Superpave volumetric mix design and balanced mix design; Molecular simulation of asphalt material

Southeast University, September 2019 - July 2022
Major: Road and Railway Engineering Supervisor: Weiguang Zhang
GPA: 90.3/100
Master's Thesis: Multi-scale Research on Strength Formation Mechanism of Emulsified Cold Recycled Mixture based on molecular dynamics simulation

RWTH Aachen University, October 2018-April 2019
Grade: Very good
Research project: EDEM Academic- Simulating Granular Materials Behaviors

Chang'an University, August 2015- July 2019
GPA: 90/100 Rank: 2/155

Publication:

[1] **Wu, M.**, M. Li, L. Yin, and Z. You, Asphalt-rubber interaction in crumb rubber modified asphalt: a review. Journal of Cleaner Production, 2026. 546: p. 147766. DOI: 10.1016/j.jclepro.2026.147766

[2] **Wu, M.**, K. A. Boateng, L. Yin, Z. Liu, Z. You, and D. Jin (2025), High-content crumb rubber modified asphalt mixture via wet process: Laboratory evaluation and field application. Construction and Building Materials, 494: p. 143438. DOI: 10.1016/j.conbuildmat.2025.143438

[3] **Wu, M.**, L. Yin, M. Li, Z. You, D. Jin, and K. Xin (2025), A state-of-the-art review of asphalt aging behavior at macro, micro, and molecular scales. Construction and Building Materials, 2025. 460: p. 139738 DOI: 10.1016/j.conbuildmat.2024.139738

[4] **Wu, M.**, Li, M., & You, Z. (2024). Asphalt property prediction through high-throughput molecular dynamics simulation. Computer-Aided Civil and Infrastructure Engineering, 1–15. DOI: 10.1111/mice.13325

[5] **Wu, M.**, You, Z., Jin, D., Yin, L., & Xin, K. (2024). Aging effects on asphalt adhesive properties: molecular dynamics simulation of chemical composition and structural changes. Molecular Simulation, 1–19. DOI:10.1080/08927022.2024.2359568

[6] **Wu, M.** and Z. You. (2023). Molecular dynamics models to investigate the diffusion behavior of emulsified asphalt. Construction and Building Materials, 2023. 409: p. 134061. DOI:10.1016/j.conbuildmat.2023.134061

[7] **Wu, M.**, You, Z., & Jin, D. (2023). Adhesion Performance of Rubber Modified Asphalt in Chip Seal: A Molecular Dynamic Study. Materials, 16(18), 6324. DOI:10.3390/ma16186324

[8] **Wu, M.**, Xu, G., Luan, Y., Zhu, Y., Ma, T., & Zhang, W. (2022). Molecular dynamics simulation on cohesion and adhesion properties of the emulsified cold recycled mixtures. Construction and Building Materials, 333, 127403. DOI:10.1016/j.conbuildmat.2022.127403

[9] Xu, G., Yao, Y., **Wu, M.**, & Zhao, Y. (2023). Molecular simulation and experimental analysis on co-aging behaviors of SBS modifier and asphalt in SBS-modified asphalt. Molecular Simulation, 49(7), 629-642. DOI:10.1080/08927022.2023.2182134 (Corresponding author)

[10] Zhang, W., Ahmad, K. N., Tong, Z., Hu, Z., Wang, H., **Wu, M.**, ... & Mohammad, L. N. (2023). In-Time Density Monitoring of In-Place Asphalt Layer Construction via Intelligent Compaction Technology. Journal of Materials in Civil Engineering, 35(1), 04022386. DOI:10.1061/(ASCE)MT.1943-5533.0004558 (Corresponding author)

[11] Yin, L., **Wu, M.,** Liu, Z., Xin, K., Jin, D., & You, Z. (2026). Impact of extended storage and transportation on the performance and workability of high-content rubber-modified asphalt. International Journal of Pavement Engineering, 27(1), 2627429. DOI: 10.1080/10298436.2026.2627429

[12] Yin, L., Jin, D., **Wu, M.**, Liu, Z., & You, Z. (2025). Performance of high-rubber-content modified asphalt chip seal in wet-freezing environments. Journal of Cleaner Production, 519, 145993. DOI:10.1016/j.jclepro.2025.145993

[13] Xin, K.; **Wu, M.**; Jin, D.; You, Z. A Case Study of Pavement Construction Materials for Wet-Freeze Regions: The Application of Waste Glass Aggregate and High-Content Rubber Modified Asphalt. Buildings 2025, 15, 1637.DOI:10.3390/buildings15101637

[14] Yao, Y., G. Xu, M. Wu, and M. Zhao. (2023). Exploring the influence of cement and cement hydration products on strength and interfacial adhesion in emulsified cold recycled mixture: A molecular dynamics and experimental investigation. Construction and Building Materials, 409: p. 134050. DOI:10.1016/j.conbuildmat.2023.134050

[15] Zhu, Y., Ma, T., Xu, G., Fan, J., Zhang, Y., & **Wu, M.** (2023). Study of the Mixing between Asphalt and Rejuvenator in Hot In-Place Recycled Layer. Journal of Transportation Engineering, Part B: Pavements, 149(2), 04023005. DOI:10.1061/JPEODX.PVENG-1033

[16] Luan, Y., Ma, T., Wang, S., Ma, Y., Xu, G., & **Wu, M.** (2022). Investigating mechanical performance and interface characteristics of cold recycled mixture: Promoting sustainable utilization of reclaimed asphalt pavement. Journal of Cleaner Production, 369, 133366. DOI:10.1016/j.jclepro.2022.133366

[17] Fu, Y., **Wu, M.**, Hei, T., Dong, Z., Hu, J., & Zhang, W. (2022). Research on the Adhesion and Self-healing Properties of Bio-asphalt Based on Molecular Simulation. Advance Researches in Civil Engineering, 4(2), 24-43. DOI:10.30469/arce.2022.157270

[18] Zhang, W., Luan, Y., Ma, T., Wang, S., Chen, J., Li, J., & **Wu, M.** (2021). Multilevel analysis of the aging mechanisms and performance evolution of rubber-modified asphalt. Journal of Materials in Civil Engineering, 33(12), 04021365. DOI:10.1061/(ASCE)MT.1943-5533.0004000

[19] Zhang, W., Lee, J., Ahn, H. J., Le, Q., **Wu, M.**, Zhu, H., & Zhang, J. (2019). Field Investigation of Clay Balls in Full-Depth Asphalt Pavement. Materials, 12(18), 2879. DOI:10.3390/ma12182879

Academic Conference Activity:

[1] **Meng Wu**, Lei Yin, Zhongda Liu, Zhanping You. 105th Transportation Research Board (TRB) Annual Meeting, Washington, D.C., January 2026. Poster Title: Effects of Thermal Curing on High-Content Crumb Rubber Modified Asphalt: Binder Evaluation and Field Mixture Performance.

[2] Zhongda Liu, Dongzhao Jin, Lei Yin, **Meng Wu**, Zhongqi Fan, Zhanping You. 105th Transportation Research Board (TRB) Annual Meeting, Washington, D.C., January 2026. Poster Title: Laboratory and Field Evaluation of Soybean Oil-Based Dust Suppressants for Unpaved Roads: Performance and Durability.

[3] Dongzhao Jin, Sepehr Mohammad, Lei Yin, Zhongda Liu, **Meng Wu**, Stephen Techtmann, Zhanping You. 105th Transportation Research Board (TRB) Annual Meeting, Washington, D.C., January 2026. Poster Title: Cold In-Place Recycling with 100% RAP Rejuvenated by Soybean Oil: Laboratory and Field Evaluation.

[4] Dongzhao Jin, Zhongda Liu, Kwadwo Ampadu Boateng, **Meng Wu**, Zhanping You. 105th Transportation Research Board (TRB) Annual Meeting, Washington, D.C., January 2026. Poster Title: Laboratory and Field Performance of Bridge Asphalt Overlay in Wet-Freeze Climate: A Case Study of the Mackinac Bridge in Michigan.

[5] **Meng Wu**, Kwadwo Ampadu Boateng, Lei Yin, Dongzhao Jin, Kai Xin, Zhanping You. 104th Transportation Research Board (TRB) Annual Meeting, Washington, D.C., January 2025. Poster Title: Laboratory Evaluation of Mixture Performance of High-Content Rubber Asphalt Using Wet Process.

[6] Lei Yin, Dongzhao Jin, Qi Ren, **Meng Wu**, Zhanping You. 104th Transportation Research Board (TRB) Annual Meeting, Washington, D.C., January 2025. Poster Title: Impact of Lubricating Oil-Treated Crumb Rubber (LOCR) on Asphalt Overlay Performance.

[7] Dongzhao Jin, Sepehr Mohammadi, Kai Xin, Lei Yin, **Meng Wu**, Qi Ren, Zhanping You. 104th Transportation Research Board (TRB) Annual Meeting, Washington, D.C., January 2025. Poster Title: Enhancing Asphalt Pavement Durability with Rubber Pellets: A Case Study in Michigan.

[8] **Meng Wu**, Miaomiao Li, Zhanping You. Association of Asphalt Paving Technologists (AAPT) Annual Meeting & Technical Sessions, Chicago, Illinois, September 2024. Poster Title: Asphalt Property Prediction Through High-Throughput Molecular Dynamics Simulation.

[9] Kai Xin, Lei Yin, **Meng Wu**, Zhanping You. 103rd Transportation Research Board (TRB) Annual Meeting, Washington, D.C., January 2024. Poster Title: Adhesion Characteristics Between Epoxy Binder and Recycled Glass.

Peer Review Service:

Construction & Building Materials
Journal of Building Engineering
Journal of Materials in Civil Engineering
Journal of Molecular Liquids
Journal of Road Engineering
Case Studies in Construction Materials
Results in Engineering
Cleaner Materials
Journal of Cleaner Production
Colloids and Surfaces A: Physicochemical and Engineering Aspects
Journal of Traffic and Transportation Engineering (English Edition)
Applied Surface Science
KSCE Journal of Civil Engineering
International Journal of Adhesion and Adhesives
Polymer Degradation and Stability

Total review records: 80 times

Google Scholar citation:

https://scholar.google.de/citations?user=67O3Z3YAAAAJ&hl=en
Citations. 324
h-index 9
i10-index. 9