BAISHAKHI BOSE

Assistant Professor | Civil & Construction Engineering and Management
The University of Texas at Tyler | bbose@uttyler.edu

RESEARCH INTERESTS

Sustainable and resilient infrastructure materials; low-carbon cementitious materials; internal curing and custom synthesized hydrogel-modified concrete; circular materials and carbon management; life-cycle assessment (LCA), techno-economic analysis (TEA), and material flow analysis of building materials; K–12 STEM education; innovative pedagogies for undergraduate engineering education.

EDUCATION

2017–2021	Ph.D., Materials Engineering, Purdue University, West Lafayette, IN.
2014–2017	M.S., Civil & Structural Engineering, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh.
2009–2014	B.S., Civil Engineering (Major: Environmental Engineering), Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh.

ACADEMIC & RESEARCH APPOINTMENTS

2026–Present	Assistant Professor, Dept. of Civil and Construction Engineering and Management, The University of Texas at Tyler.
2025–2026	Lecturer, Dept. of Engineering Education, The Ohio State University.
2024–2025	Postdoctoral Affiliate, University of California, Berkeley.
2021–2025	Postdoctoral Scholar, Lawrence Berkeley National Laboratory.
2014–2017	Lecturer, Dept. of Civil Engineering, BUET.

SELECT SPONSORED / COLLABORATIVE PROJECTS

- Co-PI, Engineering for US All (e4usa) curriculum development, National Science Foundation-supported project, The Ohio State University and Vanderbilt University (2026).

HONORS & AWARDS

2026	Rising Star Faculty Grant, The University of Texas System
2026	Travel Grant for National Effective Teaching Institute Workshop at Swarthmore College, PA, Department of Engineering Education, The Ohio State University.
2026	Travel Grant for National Effective Teaching Institute Workshop at Swarthmore College, PA, College of Engineering, The Ohio State University.
2026	KEEN Professional Learning Community Professional Development Fund, The Ohio State University.
2026	Professional Development Incentive for Teaching Endorsement on Building AI Fluency, The Ohio State University.
2023	Travel Grant, Women in Engineering Division, American Society for Engineering Education.
2022	Outstanding Effort in K-12 Outreach, K-12 STEM Education Program, Lawrence Berkeley National Laboratory.
2021	Best Student Poster, ACI 123 Concrete Research Poster Session, ACI Spring Convention.
2020	Outstanding Service Award, Engineering Undergraduate Research Office, Purdue University.
2019	Materials Engineering Graduate Student Robert M. Briney Achievement Award, Purdue University.
2019	Best Student Poster, 10th Advances in Cement-Based Materials, American Ceramic Society.
2011	Silver Standard Award, International Award for Young People, Duke of Edinburgh, UK.
2011	Contribution towards Primary Education for All, Volunteer for Bangladesh.
2010	Bronze Standard Award, International Award for Young People, Duke of Edinburgh, UK.
2009-2014	Dean's List Fellowship, Dean of Engineering, Bangladesh University of Engineering and Technology (BUET).
2009-2014	Undergraduate Merit Scholarship, Department of Civil Engineering, Bangladesh University of Engineering and Technology (BUET).

PEER-REVIEWED JOURNAL PUBLICATIONS

- Z. Wang, S. Cheong, H. Wang, J. Demarteau, A. Epstein, **B. Bose**, et al. “Engineered Polyketide synthases enable a microbial chassis for recyclable plastics with tunable properties.” *Nature Biotechnology*, **2026**.
- A.B. Thaneya, A.B., A.P. Gursel, S. Kane, E. Van Roijen, **B. Bose,** Hendrickson, T. P., ... & Horvad, A. “Missed opportunities forgo one-third of mass timber’s carbon storage potential”. *Environmental Science & Technology,* **2026**. (Accepted)

- **B. Bose**, T.P. Hendrickson, S.L. Nordahl, S. Kane, J. Fan, S.A. Miller & C.D. Scown. "Life-cycle carbon footprint and total production potential of cross-laminated timber from California's wildland-urban interface," *Environmental Research Letters*, **2025**.
- S. Kane, **B. Bose**, T.P. Hendrickson, J. Fan, S.L. Nordahl, C.D. Scown & S.A. Miller. "A framework for ground-up life cycle assessment of novel, carbon-storing materials," *Energy & Environmental Science*, **2025**.
- E. Van Roijen, S. Kane, J. Fan, JA. Olsson, **B. Bose** et al. "Dynamic Accounting of Carbon Uptake in the Built Environment," *Environmental Science & Technology*, 59:13, 6556–6566, **2025**.
- S. Kane, A.B. Thaneya, P. Gursel, J. Fan, **B. Bose** et al. "Uncertainty in determining carbon dioxide removal potential of biochar," *Environmental Research Letters*, 20(1), 014062, **2024**.
- D. Mikhalev, S.F. Nejad, S. Ng, **B. Bose** et al. "Practical Insights and Advances in Concrete Pumping," *RILEM Technical Letters*, 9, 1-9, **2024**.
- T.P. Hendrickson, **B. Bose**, N. Vora, T. Huntington, S.L. Nordahl, B.A. Helms, C.D. Scown, "Paths to circularity for plastics in the United States," *One Earth*, 7(3), pp.520-531, **2024**.
- C.J. Adams, **B. Bose**, E. Mann, J. Olek, K.A. Erk, "Effect of binder characteristics on workability, hydration, and strength of 0.42 w/b cementitious systems with superabsorbent polymer admixtures," *Materials and Structures*, 57:1, **2024**.
- J. Demarteau, B. Cousineau, Z. Wang, **B. Bose**, S. Cheong, G. Lan, N.R. Baral et al. "Biorenewable and circular polydiketoenamine plastics," *Nature Sustainability*, 6: 11, 1426-1435, **2023**.
- C.J. Adams, **B. Bose**, J. Olek, K.A. Erk, "Evaluation of mix design strategies to optimize flow and strength of mortar internally cured with superabsorbent polymers," *Construct. and Build Mat*, 324, 126664, **2022**.
- **B. Bose**, C.R. Davis, and K.A. Erk, "Microstructural refinement of cement paste internally cured by polyacrylamide composite hydrogel particles containing silica fume and nanosilica" *Cement and Concrete Research*, 143, **2021**.
- M.J. Krafcik, **B. Bose**, and K.A. Erk, "Synthesis and characterization of polymer-silica composite hydrogel particles and influence of hydrogel composition on cement paste microstructure," *Advances in Civil Engineering Materials*, 7, 4, **2018**.

Book Chapters:

- D. Jiao, S. Ng, D. Feys, Y. Wang, D. Mikhalev, **B. Bose** et al. "Effects of pumping on concrete properties." In: D. Feys and G. De Schutter (eds) *Pumping of concrete. RILEM State-of-the-Art Reports*, Springer, Cham. **2026**. (In preparation).
- C.R. Davis, **B. Bose**, A.M. Alcaraz, C.J. Martinez, and K.A. Erk, "Altering the crosslinking density of polyacrylamide hydrogels to increase swelling capacity and promote calcium hydroxide growth in cement voids," *3rd International Conference on the Application of Superabsorbent Polymers (SAP) and Other New Admixtures Towards Smart Concrete*. RILEM Bookseries, 24, Springer, Cham. **2020**.
- K.A. Erk and **B. Bose**, "Using polymer science to improve concrete: superabsorbent polymer hydrogels in highly alkaline environments," *Gels and Other Soft Amorphous Solids,* American Chemical Society Symposium Series - 1296, pp 333-356. **2018**.

Reports & Licenses:

- BLDAP Intro to Python/Data Science Curriculum v1, *Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA (United States); University of California, Berkeley,* Oct **2025**.
- Superabsorbent Polymers for Internally Cured Concrete, *Joint Transport Research Program, Indiana Department of Transportation*, Dec **2021**.
- Acceptance of imported aggregates from India for use in concrete works, *Bureau of Research Testing & Consultation,* Department of Civil Engineering, BUET, Sep **2016**.
- Acceptance of imported aggregates from Malaysia for use in concrete works, *Bureau of Research Testing & Consultation,* Department of Civil Engineering, BUET, Apr **2016**.

SELECT LEADERSHIP & SERVICE

June-Aug 2026	Mentor, Engineering Academic Career Club, Purdue University.
Feb 2026	Mentor, GradBridge: Engineering Career Mentoring Circles, Purdue University and UC Berkeley.
Apr 2025	Technology Advisory Committee, Rocket Fund, California Institute of Technology.
Mar 2025	Grant Review Committee for Undergraduate STEM Education grants, National Science Foundation.
Jan 2022-Sep 2025	Lab Ambassador, Talent Outreach Program, Lawrence Berkeley National Laboratory.
Jan 2022-Sep 2025	Empowerment Chair, Women's Support and Empowerment Council, Lawrence Berkeley National Laboratory.
Jan 2022-Aug 2026	Fellowship Application Review Committee, Association for Women in Science (AWIS) East Bay.
June 2022-Mar 2025	Spotlight Team Chair, ASEE Commission on Diversity, Equity and Inclusion.
Apr 2022-Apr 2023	Social Program Chair, ASCE Structural Engineering Institute-Oregon Section.
Mar 2022-Apr 2023	Strategic Plan Development, ASEE Commission on Diversity, Equity and Inclusion.
Mar 2022-Present	Member, RILEM Technical Committee on Pumping of Concrete.
Dec 2021-Dec 2023	Chief Administrative Officer, Asian Pacific Islander Employee Resource Group, Lawrence Berkeley National Laboratory.

July 2021-Aug 2022	Year of Impact on Racial Equity (YERI) Engineering Student Organization Taskforce, ASEE Commission on Diversity, Equity and Inclusion.
July 2021-Aug 2023	Collegiate Member, Conference Advisory Board, Society of Women Engineers.
Aug 2017-Aug 2021	Leadership Team Staff, Women in Engineering Program, Purdue University.
Aug 2018-Aug 2021	TGA Superuser, Soft Materials Characterization Lab, Purdue University.
Aug 2019-July 2020	Safety Chair, Materials Engineering Graduate Students Association, Purdue University.
May 2019-June 2020	Cultural Secretary, Bangladesh Students Association, Purdue University.
Aug 2014-June 2017	Faculty Advisor, Dance Club, Bangladesh University of Engineering and Technology (BUET).
June 2012-July 2014	Unit Face Member, Engineering Students' Association of Bangladesh.
June 2013	Support Ambassador, Furusato Kodomo Yume School, Fukushima, Japan.
June 2009-June 2011	General Secretary, SHEBA Students Organization, Bangladesh University of Engineering and Technology (BUET).