Ravi Ranade, PhD, PE

Associate Professor of Civil, Structural and Environmental Engineering
University at Buffalo, State University of New York (SUNY)

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RESEARCH INTERESTS

- Performance-based design and investigation of advanced concrete materials
- Reinforcement corrosion and rehabilitation of reinforced concrete structures
- Impact, blast, and thermal effects on material and structural performance
- Integrated resilience-durability assessments of infrastructure
- 3D printing of concrete and application of machine learning to accelerate materials innovation

RESEARCH IMPACTS

Dr. Ravi Ranade conducts fundamental and applied research in the area of advanced concrete materials. His research on the micromechanics of fiber/matrix interactions in cementitious materials has contributed to the development of concretes that possess extremely high compressive strength and tensile ductility simultaneously. Ranade's students have investigated tensile, shear, and bond behaviors of ultra-high performance concretes (UHPC) and advanced fundamental understanding of these materials at nano/micro-length scales, which has enabled the development of novel materials with multi-scale fiber reinforcement and significantly improved ballistic performance. Ranade and his colleagues have built detailed numerical models to understand the influence of material durability on long-term deterioration and vulnerability of buildings and bridges subjected to seismic activity. Ranade's students have also developed low-cost, ultra-durable, and green concrete materials for promoting the economic and environmental sustainability of our civil infrastructure. Ranade's research has provided new insights into the behavior of cement-based materials and their bond with reinforcement at high temperatures, which will be vital for improving the structural resilience against fire and other high temperature hazards.

EDUCATION

University of Michigan, Ann Arbor, MI

PhD, Civil Engineering (Structural Materials) 2014
Thesis: Advanced Cementitious Composite Development for Resilient and Sustainable Infrastructure
Doctoral advisor: Victor C. Li

Graduate Certificate, Industrial Ecology 2012

Master of Science, Structures and Materials Engineering 2009

Indian Institute of Technology, Mumbai, India

Bachelor of Technology, Civil Engineering 2007

APPOINTMENTS

University at Buffalo, State University of New York

Associate Professor, Civil, Structural and Environmental Eng. Dept. Sep 2020 onward
Assistant Professor, Civil, Structural and Environmental Eng. Dept. Aug 2014-Aug 2020

University of Michigan, Ann Arbor, MI

Post-doctoral Research Fellow, Civil and Environmental Engineering Dept. Jan-July 2014

BRIEF RESEARCH EXPERIENCES

US Army Engineer Research and Development Center (ERDC), Vicksburg, MS
Survivability Division, Geotechnical and Structures Laboratory — 2011, 2012

Delft University of Technology (TU Delft), Delft, Netherlands
Microlab, Department of Civil Engineering and Geosciences — May 2010

Pacific Disaster Center, Kihei, HI
Megacities Project: Profiling Mumbai, India — May-July 2006

AWARDS AND HONORS

- University at Buffalo CSTEP Distinguished Research Mentor Award — 2017
- Society for Experimental Mechanics – Best Paper Award in the area of Dynamic Behavior of Materials — 2016

University of Michigan, Ann Arbor, MI

- "Richard and Eleanor Towner Prize" for the most *Outstanding PhD Research* in the College of Engineering — 2012
- Pre-Doctoral Fellowship, Rackham Graduate School — 2012-13
- Outstanding Student Instructor Award, American Society of Engineering — 2009
- International Student Fellowship, Rackham Graduate School — 2009
- Member of Tau-Beta-Pi Honor Society — 2009-present
- Distinguished Achievement Graduate Fellowship, Civil and Environmental Engineering — 2007-08

RESEARCH GRANTS

Total funding acquired through external grants: $4,428,699
Funding credited to Ranade (weighted by credit %): $1,983,171

1. Title: 3D Printed Advanced Materials to Mitigate Prestressed Concrete Girder End Cracks – Year 2
   Funding Agency: *Tier 1 University Transportation Center, University of Illinois Urbana Champaign*
   Role: PI
   Other investigators: Dr. Chi Zhou (Co-PI), Dr. Pinar Okumus (Co-PI)
   Funding: $150,000 Credit 33%
   Duration: January 2025-December 2025 (Current)

2. Title: Prototype materials and structures with improved penetration resistance
   Funding Agency: *US Army Engineer Research and Development Center*
   Role: Sole PI
   Funding: $210,000 Credit 100%
   Duration: May 2024-January 2026 (Current)

3. Title: LEAP-HI: Compounding Risk Assessment and Mitigation Options for Building Infrastructure Experiencing Coastal Flooding-Related Saltwater Deterioration and Seismic Hazard
   Funding Agency: *National Science Foundation*
   Role: Co-PI
   Other investigators: Dr. Pinar Okumus (PI), Dr. Negar Elhami-Khorasani (Co-PI), Dr. Oceana Francis (Co-PI, University of Hawaii), Dr. Rebekah Paci-Green (Co-PI, Western Washington University)
   Funding: $2,000,000 Credit 20%
   Duration: September 2023-August 2028 (Current)

4. Title: Collaborative Research: CAS: Sunlight- and Oxidant-Induced Transformation of Tire-Derived Contaminants on Roadway-Associated Surfaces
   Funding Agency: *National Science Foundation*
   Role: Senior Personnel
   Other investigators: Dr. Ning Dai (PI), Dr. Prathima Nalam (Co-PI), Dr. Michael Dodd (Co-PI, University of Washington)
   Funding: $298,907 Credit 5%
   Duration: September 2023-August 2026 (Current)

5. Title: 3D Printed Advanced Materials to Mitigate Prestressed Concrete Girder End Cracks
   Funding Agency: *Tier 1 University Transportation Center, University of Illinois Urbana Champaign*
   Role: PI
   Other investigators: Dr. Chi Zhou (Co-PI), Dr. Pinar Okumus (Co-PI)
   Funding: $120,000 Credit 33%
   Duration: September 2023-December 2024

6. Title: Damage classification of reinforced concrete structures for fire: rebar temperature
   Funding Agency: *American Concrete Institute Foundation*
   Role: Co-PI
   Other investigators: Dr. Negar Elhami-Khorasani (PI), Dr. Anthony Tessari (Co-PI)
   Funding: $49,993 Credit 33%
   Duration: January 2023-December 2023

7. Title: Mitigating cracks in concrete members for durable bridge construction
   Funding Agency: *Region 2 University Transportation Center, Rutgers University*
   Role: PI
   Other investigators: Dr. Pinar Okumus (Co-PI)
   Funding: $150,000 Credit 50%
   Duration: October 2022-September 2023

8. Title: Economical, high flexural strength concrete for crack-free precast concrete products
   Funding Agency: *Precast/Prestressed Concrete Institute Jenney Fellowship*
   Role: Co-PI
   Other investigators: Dr. Pinar Okumus (Co-PI), Mi Jin Jung/Furkan Turan (Fellowship recipient)
   Funding: $40,000 Credit 50%
   Duration: September 2022-September 2023

9. Title: Crack-free concrete members for durable bridge construction
   Funding Agency: *Association of Bridge Construction and Design (ABCD)-WNY*
   Role: PI
   Other investigators: Dr. Pinar Okumus (Co-PI)
   Funding: $10,000 Credit 50%
   Duration: September 2022-February 2024

10. Title: Motivating Use of Scrap Tire-Derived Asphalt in New York State Roadways
    Funding Agency: *Steven Still Institute of Sustainable Transportation and Logistics*
    Role: Co-PI
    Other investigators: Dr. John Atkinson (PI), Dr. Michael Shelly (PI), and Dr. Aditya Vedantam (PI)
    Funding: $55,250 Credit 25%
    Duration: January 2022-December 2022

11. Title: Constitutive Material Model Prototype for High-Velocity Kinetic Impact
    Funding Agency: *IS4S (DoD contractor)*
    Role: Sole PI
    Funding: $113,458 Credit 100%
    Duration: March 2021-January 2023

12. Title: Linking Physics-Based Deterioration Model to Field-Based Condition Assessments for Improving Asset Management
    Funding Agency: *Region 2 University Transportation Center, Rutgers University*
    Role: PI
    Other investigators: Dr. Pinar Okumus (Co-PI)

Funding: $139,615 Credit 50%
Duration: February 2021-January 2022

13. Title: Structural Hardening Utilizing Advanced Materials
    Funding Agency: *US Army Engineer Research and Development Center*
    Role: Sole PI
    Funding received: $337,545* Credit 100%
    *Original Funding: $511,718 for 3 years, but 3rd year amount of $174,173 not given by sponsor due to COVID-related budget cuts
    Duration: April 2019-March 2021 Original duration was until March 2022

14. Title: Seismic Vulnerability Assessment of Deteriorated Bridges
    Funding Agency: *Region 2 University Transportation Center, Rutgers University*
    Role: PI
    Other investigators: Dr. Pinar Okumus (Co-PI)
    Funding: $141,476 Credit: 50%
    Duration: January 2020-December 2020

15. Title: Sustainable, Rapid Repair Utilizing Advanced Cementitious Materials
    Funding Agency: *Region 2 University Transportation Center, Rutgers University*
    Role: PI
    Other investigators: Dr. Pinar Okumus (Co-PI)
    Funding: $128,416 Credit: 50%
    Duration: October 2018-September 2019

16. Title: Parametric Design Code for Concrete
    Funding Agency: *IS4S (DoD contractor)*
    Role: Sole PI
    Funding: $253,000 Credit: 100%
    Duration: October 2017-March 2019

17. Title: Application of Ductile Concretes in Thin-Walled Concrete Filled Steel Tubes
    Funding Agency: *SEAOI Structural Engineers Foundation*
    Role: Co-PI
    Other investigators: Ketan Ragalwar (my PhD student) (PI) and Dr. Michel Bruneau (Co-PI)
    Funding: $2,500 Credit: 25%
    Duration: One time lump sum award in December 2017

18. Title: Systematic Optimization Method for Penetration-resistant Quasi-brittle Composite Materials
    Funding Agency: *US Army Engineer Research and Development Center*
    Role: Sole PI
    Funding: $146,827 Credit: 100%
    Duration: September 2016-August 2017

19. Title: Development of Penetration-Resistant Ultra-high Performance Concrete (PR-UHPC) with low-cost, local materials

Funding Agency: *Sandia National Laboratories*
Role: Sole PI
Funding: $111,705 Credit: 100%
Duration: November 2015-September 2016

CONSULTING PROJECTS

1. Title: World Trade Center Salt Damage (from Hurricane Sandy) Remediation
   Funding Agency: *Port Authority of NY and NJ*
   Role: Member of the External Advisory Board for WSP, USA
   Duration: July 2020-May 2021

2. Title: Telescopic Structural Flood Walls – Phase II
   Funding Agency: *National Science Foundation: SBIR Phase II Award No. 1758544*
   Role: Consultant
   Other investigators: Jorge Baiz (PI); Other consultants: Dr. Amjad Aref, Dr. Andre Filiatrault, Dr. Anthony Tessari, and Mr. William Coulbourne
   Funding: $749,057 Credit: 5%
   Duration: February 2018-January 2020

3. Title: Telescopic Structural Flood Walls – Phase I
   Funding Agency: *National Science Foundation: SBIR Phase I Award No. 1621727*
   Role: Consultant
   Other investigators: Jorge Baiz (PI); Other Consultants: Dr. Amjad Aref, Dr. Andre Filiatrault, Dr. Joseph Mollendorf, and Mr. William Coulbourne
   Funding: $225,000 Credit: 5%
   Duration: June 2016-May 2017

PUBLICATIONS

Google Scholar: https://goo.gl/dolxO8
ORCID: 0000-0001-6030-8371

Journal Articles (**Students** supervised at UB as Major Advisor shown in bold)

1. Tajik, N., Elhami-Khorasani, N., Ranade, R. and Tessari, A. (2025). "Experimental study of post-fire bond strength between steel reinforcing bars and concrete using beam-end specimens." *Engineering Structures*, Vol. 336, Art. 120450. DOI: 10.1016/j.engstruct.2025.120450

2. **Ragalwar, K.A.**, **Kumar, D.**, Heard, W.F., Williams, B.A. and Ranade, R. (2025). "Influence of matrix constituents and properties on fiber-matrix bond behavior of strain-hardening ultra-high performance concrete." *Construction and Building Materials*, Vol. 462, Art. 139939. DOI: 10.1016/j.conbuildmat.2025.139939

3. **Soliman, A.A.**, Heard, W.F., Williams, B.A., and Ranade, R. (2024). "Shear behavior of ultra-high performance concretes." ASCE Journal of Materials in Civil Engineering, Vol. 37, No. 4, Art. 04025031. DOI: 10.1061/JMCEE7.MTENG-18912

4. **Soliman, A.A.**, **Kumar, D.**, Ranade, R., Heard, W.F., and Williams, B.A. (2024). "Review of flexural behavior and design recommendations for ultra-high performance concrete members." *Structures*, Vol. 62, Art. 106237. DOI: 10.1016/j.istruc.2024.106237

5. **Kumar, D.**, **Soliman, A.A.**, and Ranade, R. (2023). "Influence of cooling methods on high-temperature residual mechanical characterization of strain-hardening cementitious composites." *Fire and Materials*, Vol. 48, No. 3, pp. 338-352. DOI: 10.1002/fam.3187

6. **Scott, D.A.**, Lessel, A.M., Williams, B.A., Horner, W.M., and Ranade, R. (2023). "Fracture process zone characterizations of multi-scale fiber reinforced cementitious composites." *Construction and Building Materials*, Vol. 408, Art. 133713. DOI: 10.1016/j.conbuildmat.2023.133713

7. **Soliman, A.A.**, Heard, W.F., Williams, B.A., and Ranade, R. (2023). "Effects of the tensile properties of UHPC on the bond behavior." *Construction and Building Materials*, Vol. 392, Art. 131990. DOI: 10.1016/j.conbuildmat.2023.131990

8. **Wang, H.**, Ranade, R., and Okumus, P. (2023). "Calibrating a physics-based corrosion model with field-based bridge condition data." *ASCE Journal of Bridge Engineering*, Vol. 28, No. 5, Art. 04023020. DOI: 10.1061/JBENF2.BEENG-5796

9. **Wang, H.**, Ranade, R., and Okumus, P. (2023). "Seismic fragility of reinforced concrete bridge columns utilizing ductile fiber-reinforced concrete covers." *Structure and Infrastructure Engineering*. Vol. 19, No. 5, pp. 708-730. DOI: 10.1080/15732479.2021.1973040

10. Lee, H.W., **Fakhri, H.**, Ranade, R., Basaran, C., Egner, H., Lipski, A., Piotrowski, M., and Mrozinski, S. (2022). "Modeling fatigue of pre-corroded BCC metals with unified mechanics theory." *Journal of Materials and Design*, Vol. 224, Art. 111383. DOI: 10.1016/j.matdes.2022.111383.

11. **Wang, H.**, Ranade, R., and Okumus, P. (2022). "Estimating chloride exposure of reinforced-concrete bridges using vehicle spray and splash mechanisms." *Structure and Infrastructure Engineering*. Published online. DOI: 10.1080/15732479.2022.2052910.

12. Mehrabi, R., Atefi-Monfared, K., **Kumar, D.**, **Deshpande, A.A.**, and Ranade, R. (2022). "Thermo-mechanical assessment of heated bridge deck under internal cyclic thermal loading from various heating elements: pipe, cable, rebar." *Cold Regions Science and Technology*, Vol. 194, Art. 103466. DOI: 10.1016/j.coldregions.2021.103466

13. Arunothayan, R., Nematollahi, B., Ranade, R., Bong S.H., Khayat, K., and Sanjayan, J. (2022). "Digital fabrication of eco-friendly ultra-high performance fiber-reinforced concrete." *Cement and Concrete Composites*, Vol. 125, Art. 104281. DOI: 10.1016/j.cemconcomp.2021.104281

14. Hua, N., Elhami-Khorasani, N., Tessari, A., and Ranade, R. (2022). "Experimental study of fire damage to reinforced concrete tunnel slabs." *Fire Safety Journal*, Vol. 127, Art. 103504. DOI: 10.1016/j.firesaf.2021.103504

15. Choi, J-I., Nguyễn, H.H., Park, S., Ranade, R., Li, V.C. and Lee, B.Y. (2021). "Effects of fiber hybridization on mechanical properties and autogenous healing of alkali-activated slag-based composites." *Construction and Building Materials*, Vol. 310, Art. 125280. DOI: 10.1016/j.conbuildmat.2021.125280

16. **Kumar, D.** and Ranade, R. (2021). "Influence of matrix-modification and fiber-hybridization on high-temperature residual mechanical performance of strain-hardening cementitious composites." *Construction and Building Materials*, Vol. 302, Art. 124157. DOI: 10.1016/j.conbuildmat.2021.124157

17. Nguyễn, H.H., Luong, Q-H., Choi, J-I., Ranade, R., Li, V.C. and Lee, B.Y. (2021). "Ultra-ductile behavior of fly ash-based engineered geopolymer composites with a tensile strain capacity up to 13.7%." *Cement and Concrete Composites*, Vol. 122, Art. 104133. DOI: 10.1016/j.cemconcomp.2021.104133

18. Arunothayan, R., Nematollahi, B., Ranade, R., Bong S.H., Sanjayan, J., and Khayat, K. (2021). "Fiber orientation effects on ultra-high performance concrete formed by 3d printing." *Cement and Concrete Research*, Vol. 143, Art. 106384. DOI: 10.1016/j.cemconres.2021.106384

19. **Kumar, D.** and Ranade, R. (2021). "Development of strain hardening cementitious composites utilizing slag and calcium carbonate powder." *Construction and Building Materials*, Vol. 273, Art. 122028. DOI: 10.1016/j.conbuildmat.2020.122028

20. **Fakhri, H.**, Fishman, K., and Ranade, R. (2021). "Rapid determination of critical chloride content in cement-based composites." *Construction and Building Materials*, Vol. 268, Art. 121148. DOI: 10.1016/j.conbuildmat.2020.121148

21. **Fakhri, H.**, Fishman, K., and Ranade, R. (2020). "A novel experimental method to determine the critical chloride content in cement-based composites." *Construction and Building Materials*, Vol. 263, Art. 120101. DOI: 10.1016/j.conbuildmat.2020.120101.

22. Arunothayan, R., Nematollahi, B., Ranade, R., Bong S.H. and Sanjayan, J. (2020). "Development of 3d-printable ultra-high performance fiber-reinforced concrete for digital construction." *Construction and Building Materials*, Vol. 257, Art. 119546. DOI: 10.1016/j.conbuildmat.2020.119546

23. **Ragalwar, K.A.**, Heard, W.F., Williams, B.A. and Ranade, R. (2020). "Significance of the particle size distribution modulus for strain-hardening-ultra-high performance concrete (SH-UHPC) matrix design." *Construction and Building Materials*, Vol. 234, Art. 117423. DOI: 10.1016/j.conbuildmat.2019.117423

24. **Deshpande, A.A.**, **Kumar, D.** and Ranade, R. (2020). "Temperature effects on the bond behavior between deformed steel reinforcing bars and hybrid fiber-reinforced strain-hardening cementitious composite." *Construction and Building Materials*, Vol. 233, Art. 117337. DOI: 10.1016/j.conbuildmat.2019.117337

25. **Ragalwar, K.A.**, Heard, W.F., Williams, B.A., **Kumar, D.** and Ranade, R. (2020). "On enhancing the mechanical behavior of ultra-high performance concrete through multi-scale fiber reinforcement." *Cement and Concrete Composites*, Vol. 105, Art. 103422.

DOI: 10.1016/j.cemconcomp.2019.103422

26. **Kumar, D.**, **Deshpande, A.A.**, and Ranade, R. (2019). "Influence of fiber length on the mechanical behavior of steel-PVA hybrid fiber-reinforced strain-hardening cementitious composites at high temperatures." Special Edition of *Indian Concrete Journal* on SHCC, Vol. 93, pp. 30-38.

27. **Fakhri, H.** and Ranade, R. (2019). "On the use of strain-hardening cementitious composite covers to mitigate corrosion in reinforced concrete structures." *Construction and Building Materials*, Vol. 224, pp. 850-862. DOI: 10.1016/j.conbuildmat.2019.07.052

28. **Deshpande, A.A.**, **Kumar, D.** and Ranade, R. (2019). "Influence of high temperatures on the residual mechanical properties of a hybrid fiber-reinforced strain-hardening cementitious composite." *Construction and Building Materials*, Vol. 208, pp. 283-295. DOI: 10.1016/j.conbuildmat.2019.02.129

29. Nematollahi, B., Ranade, R., Sanjayan, J. and Ramakrishnan, S. (2017). "Thermal and mechanical properties of sustainable lightweight strain hardening geopolymer composites." *Archives of Civil and Mechanical Engineering*, Vol. 17, No. 1, pp. 55-64. DOI: 10.1016/j.acme.2016.08.002

30. Ranade, R., Li, V.C., Heard, W.F. and Williams, B.A. (2017). "Impact resistance of high strength-high ductility concrete." *Cement and Concrete Research*, Vol. 98, pp. 24-35. DOI: 10.1016/j.cemconres.2017.03.013

31. Choi, J-I., Lee, B.Y., Ranade, R., Li, V.C. and Lee, Y. (2016). "Ultra-high-ductile behavior of a polyethylene fiber-reinforced alkali-activated slag-based composite." *Cement and Concrete Composites*, Vol. 70, pp. 153-158. DOI: 10.1016/j.cemconcomp.2016.04.002

32. Ranade, R., Li, V.C. and Heard, W.F. (2015). "Tensile rate effects in high strength-high ductility concrete." *Cement and Concrete Research*, Vol. 68, pp. 94-104. DOI: 10.1016/j.cemconres.2014.11.005

33. Zhang, Q., Ranade, R. and Li, V.C. (2014). "Feasibility study on fire-resistive engineered cementitious composites." *ACI Materials Journal*, Vol. 111, No. 6, pp. 651-660. DOI: 10.14359/51686830

34. Ranade, R., Zhang, J., Lynch, J.P. and Li, V.C. (2014). "Influence of micro-cracking on the composite resistivity of ecc." *Cement and Concrete Research*, Vol. 58, pp. 1-12. DOI: 10.1016/j.cemconres.2014.01.002

35. Felekoglu, B., Tosun-Felekoglu, K., Ranade, R., Huang, X. and Li V.C. (2014). "Influence of matrix flowability, fiber mixing procedure, and curing conditions on the mechanical performance of HTPP-ECC." *Composites Part B: Engineering*, Vol. 60, pp. 359-70. DOI: 10.1016/j.compositesb.2013.12.076

36. Tosun-Felekoglu, K., Felekoglu, B., Ranade, R., Lee, B.Y. and Li, V.C. (2014). "The role of flaw size and fiber distribution on tensile ductility of PVA-ECC." *Composites Part B: Engineering*, Vol. 56, pp. 536-45. DOI: 10.1016/j.compositesb.2013.08.089

37. Huang, X., Ranade, R., Zhang, Q., Ni, W. and Li, V.C. (2013). "Mechanical and thermal properties of green lightweight engineered cementitious composites." *Construction and Building Materials*, Vol. 48, pp. 954-60. DOI: 10.1016/j.conbuildmat.2013.07.104

38. Ranade, R., Li, V.C., Stults, M.D., Heard, W.F. and Rushing, T.S. (2013). "Composite properties of high strength-high ductility concrete." *ACI Materials Journal*, Vol. 110, No. 4, pp. 413-22. DOI: 10.14359/51685788

39. Ranade, R., Li, V.C., Stults, M.D., Rushing, T.S., Roth, J. and Heard, W.F. (2013). "Micromechanics of high strength-high ductility concrete." *ACI Materials Journal*, Vol. 110, No. 4, pp. 375-84.

DOI: 10.14359/51685784

40. Huang, X., Ranade, R., Ni, W. and Li, V.C. (2013). "Development of green engineered cementitious composites using iron ore tailings as aggregates." *Construction and Building Materials*, Vol. 44, pp. 757-64. DOI: 10.1016/j.conbuildmat.2013.03.088

41. Huang, X., Ranade, R., Ni, W. and Li, V.C. (2013). "On the use of recycled tire rubber to develop low modulus ecc for durable concrete repairs." *Construction and Building Materials*, Vol. 46, pp. 134-41. DOI: 10.1016/j.conbuildmat.2013.04.027

42. Huang, X., Ranade, R. and Li, V.C. (2012). "Feasibility study of developing green ECC using iron ore tailings (IOTs) powder as cement replacement." *Journal of Materials in Civil Engineering*, Vol. 25, No. 7, pp. 923-31. DOI: 10.1061/(ASCE)MT.1943-5533.0000674

43. Sahmaran, M., Lachemi, M., Hossain, K., Ranade, R. and Li, V.C. (2009). "Influence of aggregate type and size on the ductility and mechanical properties of ECC." *ACI Materials Journal*, Vol. 106, No. 3, pp. 308-16. DOI: 10.14359/56556

Peer-reviewed Conference Papers

1. **Benson, E.W.**, Ranade, R., Okumus, P., Elhami-Khorasani, N., Francis, O., and Paci-Green, R. (2025) "Saltwater flooding-induced corrosion and lateral strength of reinforced concrete structures." Editors: Bernhard Pichler, Christian Hellmich, and Philipp Preinstorfer. In proceedings of *12th International Conference on Fracture Mechanics for Concrete and Concrete Structures* (FRANCOS-XII), 23-25 April 2025, Vienna, Austria, pp. 680-690. DOI: 10.21012/FC12.1343

2. **Singh, P.**, Gadde, V.S., Zhou, C., Okumus, P., and Ranade, R. (2024) "Development of 3D printable strain hardening cementitious composites for bridge-related applications." Editors: Viktor Mechtcherine, Cesare Signorini, and Dominik Junger. In proceedings of *11th International Symposium on Fiber Reinforced Concrete* (BEFIB-2024), 15-18 September 2024, Dresden, Germany, pp. 451-458. DOI: 10.1007/978-3-031-70145-0_55

3. Tajik, N., Elhami-Khorasani, N., Ranade, R. and Tessari, A. (2024) "Post-fire bond strength of steel reinforcing bars to concrete using beam-end specimens." In Proceedings of *13th International Workshop on Structures in Fire* (SiF 2024), 19-21 June 2024, Coimbra, Portugal.

4. Tajik, N., Elhami-Khorasani, N., Ranade, R., Tessari, A. and Szasdi-Bardales, F. (2024) "Post-fire damage classification of reinforced concrete structures using thermal analysis." In Proceedings of *13th International Workshop on Structures in Fire* (SiF 2024), 19-21 June 2024, Coimbra, Portugal.

5. **Ragalwar, K.**, **Soliman, A.A.** and Ranade, R. (2023). "Cycling behavior of concrete filled steel tubes utilizing advanced FRC." In Proceedings of *International Workshop on Fiber Reinforced Concrete: from Design to Structural Applications* (FRC 2023), 18-20 September 2023, Tempe, AZ.

6. **Soliman, A.A.** and Ranade, R. (2023). "Rebar development length of reinforced UHPC." In Proceedings of *3rd International Interactive Symposium on UHPC*, 4-7 June 2023, Wilmington, DE, Article No. 27. DOI: 10.21838/uhpc.16655

7. **Kumar, D.**, **Deshpande, A.A.**, **Soliman, A.** and Ranade, R. (2022). "High-temperature residual bond behavior of strain-hardening cementitious composites." Editors: Jan Hoffman and Giovani Plizzari. In Proceedings of *5th International Conference on Bond in Concrete* (BIC-2022), 25-27 July 2022, Stuttgart, Germany, pp. 452-463.

8. **Soliman, A., Kumar, D.**, Heard, W.F., Williams, B.A. and Ranade, R. (2022). "Effect of material properties on the bond failure mode of fiber-reinforced cementitious composites." Editors: Jan Hoffman and Giovani Plizzari. In Proceedings of *5th International Conference on Bond in Concrete* (BIC-2022), 25-27 July 2022, Stuttgart, Germany, pp. 315-326.

9. **Kumar, D.**, **Soliman, A.** and Ranade, R. (2022). "Effects of fly ash content and curing age on high temperature residual compressive strength of strain-hardening cementitious composites." In Proc. of *10th RILEM International Conference on Fiber Reinforced Concrete* (BEFIB-2021), Improvements and Innovations II 20-22 September 2021, Valencia, Spain, RILEM Book series, Vol. 36., pp. 3-12. DOI: 10.1007/978-3-030-83719-8_1

10. **Wang, H.**, Ranade, R. and Okumus, P. (2021). "Incorporating vehicle spray of deicing salts in the estimation of corrosion initiation time of highway bridges." Paper No. TRBAM-21-01533. In Proc. of the *100th Transportation Research Board* Annual Meeting, 23-27 January, 2021, Washington D.C.

11. Arunothayan, R., Nematollahi, B., Sanjayan, J., Ranade, R., Bong, S.H., and Khayat, K. (2020). "Quantitative evaluation of orientation of steel fibers in 3D-printed ultra-high performance concrete." In Proc. of *2nd RILEM International Conference on Concrete and Digital Fabrication* (DC2020), 6-9 July, Eindhoven, Netherlands, pp. 389-397. DOI: 10.1007/978-3-030-49916-7_40.

12. **Kumar, D.**, **Ragalwar, K.A.** and Ranade, R. (2020). "Influence of maximum aggregate size on the optimum distribution modulus for achieving dense particle packing in UHPC." In Proc. of *HiPerMat-5 Conference*, 11-13 March 2020, Kassel, Germany.

13. Arunothayan, R., Nematollahi, B., Bong, S.H., Sanjayan, J., and Ranade, R. (2019). "Hardened properties of 3D printable ultra-high performance fiber-reinforced concrete for digital construction applications." In Proc. of *2nd RILEM International Conference on Rheology and Processing of Construction Materials (RheoCon2)*, 8-11 September, Dresden, Germany, pp. 355-362. DOI: 10.1007/978-3-030-22566-7_41

14. **Kumar, D.**, **Deshpande, A.A.**, Ranade, R. and Khorasani, N.E. (2018). "Effects of elevated temperatures on residual bond strength of steel rebar with strain hardening cementitious composites." In Proc. of *3rd R.N. Raikar Memorial Int'l Conference*, 14-15 December 2018, Mumbai, India, Vol. 2, pp. 36-45.

15. **Deshpande, A.A.**, **Kumar, D.**, **Mourougassamy, A.** and Ranade, R. (2017). "Development of a steel-PVA hybrid fiber SHCC." In Proc. of *4th RILEM Conference on SHCC*, 18-20 September 2017, Dresden, Germany, pp. 195-202. DOI: 10.1007/978-94-024-1194-2_23

16. **Fakhri, H.**, **Han, Y.** and Ranade, R. (2017). "Influence of damage on the effectiveness of SHCC covers for reducing corrosion rates in reinforced-concrete structural elements" In Proc. of *4th RILEM Conference on SHCC*, 18-20 September 2017, Dresden, Germany, pp. 608-615. DOI: 10.1007/978-94-024-1194-2_70

17. **Ragalwar, K.A.**, **Nguyen, H.**, Ranade, R., Heard, W.F. and Williams, B.A. (2017). "Influence of distribution modulus of particle size distribution on rheological and hardened properties of an ultra-high-strength SHCC." In Proc. of *4th RILEM Conference on SHCC*, 18-20 September 2017, Dresden, Germany, pp. 221-229. DOI: 10.1007/978-94-024-1194-2_26

18. Ranade, R., **Fakhri, H.** and **Ragalwar, K.A.** (2016). "Feasibility of utilizing ductile concrete cover to mitigate rebar corrosion in reinforced-concrete bridge piers." In Proc. of *9th RILEM International Conference on Fiber Reinforced Concrete* (BEFIB-9), 19-21 September 2016, Vancouver, Canada, pp. 521-531.

19. **Ragalwar, K.A.**, **Prieto, V.**, **Fakhri, H.**, Heard, W.F., Williams, B.A. and Ranade, R. (2016). "Development of environmentally sustainable ultra high performance concrete." In Proc. of *HiPerMat-4 Conference*, 9-11 March 2016, Kassel, Germany.

20. Ranade, R., Heard. W.F. and Williams, B.A. (2016). "Multi-scale mechanical performance of high strength-high ductility concrete." In Proc. of *SEM-2015 Conference*, 8-11 June 2015, Costa Mesa, CA, pp. 93-101. DOI: 10.1007/978-3-319-22452-7_15 (*Received the **Best Paper Award** in the area of Dynamic Behavior of Materials at SEM-2015 Conference*)

21. Ranade, R. and Li, V.C. (2015). "Interfacial bond tailoring for crack width reduction in high strength-high ductility concrete (HSHDC)." In Proc. of *RILEM HPRCC-7*, 1-3 June 2015, Stuttgart, Germany, pp. 359-366.

22. Ranade, R. and Li, V.C. (2014). "Material model for simulating SHCC in LS-Dyna." In Proc. of *RILEM SHCC-3*, 3-5 November 2014, Dordrecht, Netherlands, pp. 235-242.

23. Ranade, R., Stults, M.D., Li, V.C., Rushing, T.S., Roth, J. and Heard, W.F. (2011). "Development of high strength-high ductility concrete." In Proc. of *RILEM SHCC-2*, 12-14 December 2011, Rio de Janeiro, Brazil, pp. 1-8.

24. Ranade, R., Stults, M.D., Lee, B.Y. and Li, V.C. (2011). "Effects of fiber dispersion and flaw size distribution on the composite properties of PVA-ECC." In Proc. of *RILEM HPRCC-6*, 19-22 June 2011, Ann Arbor, MI. pp. 106-113.

25. Li, M., Ranade, R., Kan, L. and Li, V.C. (2010). "On improving the infrastructure service life using ECC to mitigate rebar corrosion." In Proc. of *RILEM 2nd International Symposium on Service Life Design for Infrastructure*, 4-6 October 2010, Delft, Netherlands. pp. 773-781.

26. Stults, M.D., Ranade, R., Li, V.C. and Rushing, T.S. (2010). "Mechanical effects of rice husk ash in ultra-high performance concretes: a matrix study." In Proc. of *Advances in Cement-Based Materials*, 17-19 November 2009, Stellenbosch, South Africa. Leiden, Netherlands: CRC Press/Balkema, pp. 307-312.

Workshop/Symposium Papers/Posters

1. **Benson, E.**, Okumus, P., Ranade, R., Elhami-Khorasani, N., Francis, O., and Paci-Green, R. (2024). "Impact of Coastal Flooding-Induced Corrosion on Lateral Strength of RC Structures." Poster presentation at the American Geophysical Union's Annual Meeting (AGU24), 9-13 December, 2024, Washington, D.C.

2. Lee, H.W., Fakhri, H., Ranade, R.; Basaran, C., Egner, H., Lipski, A., Piotrowski, M., Mroziński, S., Bin Jamal, M.N., Rao, C.L. (2022). "Application of unified mechanics theory to constitutive modeling of gigacycle fatigue." Poster presentation at the 24th International Conference on Computer Methods in Mechanics and 42nd Solid Mechanics Conference, 5-8 September, 2022, Świnoujście, Poland.

3. **Fakhri, H.**, Fishman, K.L., and Ranade, R. (2021). "Durability Assessment of Reinforced-SHCC Structures During Initiation and Propagation Phases of Corrosion." In Proc. of Corrosion 2021 Virtual Conference, Paper No. 16491, April 19-30, 2021.

4. **Wang, H.**, Ranade, R., and Okumus, P. (2020). "Influence of Improved Durability with a Ductile Fiber-reinforced Concrete on the Resilience of a Reinforced-concrete Bridge." Presentation at the *99th Transportation Research Board* Annual Meeting, 12-16 January, 2020, Washington D.C.

5. **Wang, H.**, Okumus, P., and Ranade, R. (2019). "Seismic Fragility of Bridges Subjected to Corrosion." In Proc. of 10th New York City Bridge Conference, 26-27 August 2019, New York City, NY.

6. **Deshpande, A.A.**, **Kumar, D.**, Ranade, R., and Whittaker, A.S. (2019). "Advanced Concretes for High Temperature Applications." In Proc. of IABSE Congress, 4-6 September 2019, New York City, NY, pp. 328-332.

7. Ranade, R., Basaran, C., and **Fakhri, H.** (2017). "Ductile Fiber-reinforced Concrete for Corrosion Mitigation in Reinforced Concrete Structures: Experiments and Theory." In Proc. of ASNE MEGARUST, 20-22 June 2017, Newport News, VA.

8. Soltan, D., Ranade, R., and Li, V.C. (2014). "A Bio-Inspired, Cementitious Composite for High Energy Absorption." In Proc. of *13th International Symposium on Multiscale, Multifunctional and Functionally Graded Materials*, 19-22 October 2014, Sao Paulo, Brazil, pp. 1-4.
9. Rushing, T.S., Burroughs, J.F., Williams, B.A., Heard, W.F., Ranade, R., and Li, V.C. (2012). "Both High Strength and High Ductility Achieved with Concrete." *56th Int'l SAMPE Symposium*, 21-24 May 2012, Baltimore, MD.

Presentations, Reports, and Book Chapters

1. Ranade, R., Okumus, P., and Turan, F. (2024). "An Innovative Approach Utilizing Steel Wool for Enhancing Concrete's Cracking Resistance." Presentation at ABCD-WNY Spring Conference, Batavia, NY, April 12, 2024.
2. Ranade, R., Okumus, P., and Wang, H. (2023). "Assessment of Reinforced Concrete Bridge Columns for Seismic and Corrosion Induced Damage." Presentation at NYSSPE 2023 E-week seminar series, Buffalo, NY, Feb 24, 2023.
3. Williams, B.A., Graham, S.S., Heard, W.F., Grotke, M.J., Burroughs, J.F., Songer, B.P., Ratliff, K.J., Scott, D.A., and Ranade, R. (2022). "Development and Characterization of 3MR Ultra-High-Performance Concrete." Report No. ERDC/GSL TR-22-7, Defeat of Complex Attack, US Army Engineer Research and Development Center, Vicksburg, MS.
4. Ranade, R., Okumus, P., and Wang, H. (2021). "Seismic Vulnerability Assessment of Deteriorated Bridges". Report No. CAIT-UTC-REG 29, Region 2 University Transportation Center, Rutgers University, NJ.
5. Ranade, R., Okumus, P., and Wang, H. (2019). "Sustainable, Rapid Repair Utilizing Advanced Cementitious Materials". Report No. CAIT-UTC-REG 2B, Region 2 University Transportation Center, Rutgers University, NJ.
6. Ranade, R. (2019). "SHCC for Improving Infrastructure Resilience." Invited talk at Summer School at TU Dresden sponsored by the German Research Foundation (DFG), July 14-19, 2019.
7. Ragalwar, K. and Ranade, R. (2018). "Systematic Optimization Method for Penetration-resistant Quasi-brittle Composite Materials". Submitted to US Army Engineer Research and Development Center.
8. Ranade, R. (2018). "Advanced Concrete Materials Design and Testing." Invited talk at GRK 2250 program at TU Dresden sponsored by the German Research Foundation (DFG), June 18-22, 2018.
9. Ranade, R. (2018). "Structural Applications of Advanced Concrete Materials." Presentation at Erie-Niagara Chapter of NY State Society of Professional Engineers Symposium, Buffalo, NY (Feb 23, 2018).
10. Ranade, R. (2017). "Advanced Concrete Materials." Presentation at the 77th NY State Association of Transportation Engineers (NYSATE), Buffalo, NY (Jun 1, 2017).
11. Ranade, R. (2017). "Advanced Concrete Materials." Presentation at Erie-Niagara Chapter of NY State Society of Professional Engineers Symposium, Buffalo, NY (Feb 24, 2017).
12. Ranade, R. and Picard, J. (2016). "Patching I-86 Bridge Deck with Field-mixed ECC." Presentation at IBE-NYSDOT Bridge Maintenance Office Meeting, Buffalo, NY (Oct 6, 2016).
13. Ranade, R. (2015). "Ductile Concrete for Durable Bridge Construction and Maintenance." Presentation at IBE-NYSDOT Bridge Maintenance Office Meeting, Watkins Glen, NY (Sep 23, 2015).

14. Ranade, R. (2015). "Utilizing Ductile Concrete Cover to Improve the Durability and Speed-up Construction of Bridge Columns." Presentation at IBE-FHWA Meeting, Turner Fairbank Highway Research Center, McLean, VA (Jun 22, 2015).

15. Johnson, N., Ranade, R., Mahgoub, M. and Lynch, J.P. (2014). "SHM Technologies." Book chapter in Special Publication of ACI 444.1.

16. Martinez, M., Plata, I.R., Ranade, R., Zhang, Q. and Li, V.C. (2012). "Feasibility Study of Novel Lego-like Construction Method using ECC." Poster Presentation at the *SROP Symposium*, UM Rackham Building, Ann Arbor, MI (Jul 25, 2012).

17. Ranade, R. and Li, V.C. (2012). "Advanced Cementitious Composite Development for Resilient and Sustainable Infrastructure." Poster Presentation at the *Graduate Education Day*, State Capitol Building, Lansing, MI (Mar 29, 2012).

18. Yang, E.H., Garcez, E. O., Li, V.C. and Ranade, R. (2011). "Pigmentable Engineered Cementitious Composites." Paper presentation at the *2nd International Conference on Strain Hardening Cementitious Composites* (SHCC2), Rio de Janeiro, Brazil (Dec 12, 2011).

19. Ranade, R., Lin, V.W.J., Li, M., Li, V.C. and Lynch, J.P. (2011). "Mechanical and Electrical Characterization of Self-sensing Carbon Black ECC." Paper Presentation at the *ACI Fall Convention*, Cincinnati, OH (Oct 18, 2011).

20. Ranade, R., Stults, M.D. and Li, V.C. (2010). "Micromechanics-Based Tailoring of Cement-Based Composites to Achieve High Performance and Environmental Sustainability through Multi-Scale Modeling." Presentation at the *Microlab Colloqium*, TU Delft, Netherlands (May 27, 2010).

21. Li, V.C., Ranade, R. and Stults, M.D. (2009). "Development of High Strength High Ductility Concrete." *UM/ERDC Annual Report* submitted to the US Army Corps of Engineers, Vicksburg, MS. Ann Arbor, MI: University of Michigan (Dec 31, 2009).

22. Li V.C. and Ranade, R. (2009). "Material Research for Sustainability, Structural Safety, and Infrastructure Durability at ACE-MRL." Presentation at the *15th CNSF Annual Exhibition*, Rayburn House Office Building, Washington, DC (Mar 24, 2009).

23. Ranade, R. and Li, V.C. (2008). "Modeling Engineered Cementitious Composites." Presentation at the *19th ACBM/NIST Workshop*, Gaithersburg, Maryland (Jun 17, 2008).

24. Ranade, R. and Hasan, A. (2006). "Increasing Storm Water Drainage Capacity of Mithi River and Mumbai City Drains." *3cd Sound Practice*, Pacific Disaster Center, Hawaii (Jul 31, 2006).

TEACHING EXPERIENCE

University at Buffalo, State University of New York, Buffalo, NY

CIE 327 Civil Engineering Materials (Theory + Lab): 4	Every Fall 2014 to 2017
Enrollment ≈ 100-150	Every Spring 2018 to 2022 Summer 2021, 2022
CIE 572 Advanced Concrete Materials: 3 credits Enrollment ≈ 7-25	Every Spring 2015 to 2017 and Fall 2018 to 2021, 2023, 2024
CIE 500 Industrial Ecology: 3 credits Enrollment ≈ 7-25	Fall 2020, 21 Spring 2023 to 2025

My teaching evaluation scores for all the courses were higher than the School and Department averages in almost all the semesters.

University of Michigan, Ann Arbor, MI

Graduate Student Instructor, Course: CEE 351 Civil Eng. Fall 2008*, 2009, 2010
*****Received the **"Outstanding Student Instructor Award"** for this course from the American Society of Engineering Education

PROFESSIONAL AFFILIATIONS AND CERTIFICATIONS

- Licensed Professional Engineer (PE) – Civil: Structural, State of Michigan 2017-present
- Associate member of ACI Committee 544: Fiber Reinforced Concrete 2014-present
- Associate member of ACI Committees 239 UHPC & 408 Rebar-concrete bond 2018-present
- Member of ACI, ASCE, PCI, and RILEM 2007-present
- University of Michigan Training Certificate for *Responsible Conduct of Research and Scholarship* 2013
- University of Michigan *Graduate Teacher Certificate* 2012

STUDENT ADVISING

PhD Students (directly advised as Major or Co-Major Advisor)

1. Pranay Singh (Major Advisor), PhD Student, Started in Fall 2023
   Research Topic: "3D Printed Advanced Materials to Mitigate Prestressed Concrete Girder End Cracks"
2. Abhinav (Major Advisor), PhD Student, Started in Fall 2023
   Research Topic: "Developing concretes with superior ballistic penetration resistance"
3. Erik Benson (Co-Major Advisor), PhD Student, Started in Fall 2023
   Research Topic: "Seismic vulnerability of coastal reinforced-concrete buildings undergoing saltwater corrosion"
4. Dylan A. Scott (Major Advisor), Graduated in May 2025
   Research Topic: "Fracture Characterizations of Multi-Scale Fiber Cementitious Composites"
5. Amr Soliman (Major Advisor), Graduated in Feb 2023
   Research Topic: "Optimizing the Design of UHPC Flexural Elements"
6. Hanmin Wang (Co-Major Advisor), Graduated in Feb 2022
   Research Topic: "Influence of Corrosion on the Resilience and Sustainability of Reinforced-concrete Bridges"
7. Dhanendra Kumar (Major Advisor), Graduated in Feb 2021
   Research Topic: "Stain-hardening Cementitious Composites for Fire Resilient Infrastructure"
8. Ketan A. Ragalwar (Major Advisor), Graduated in July 2019
   Research Topic: "Systematic Development of Strain-hardening Ultra-high Performance Concrete"
9. Hamidreza Fakhri (Major Advisor), Graduated in June 2019

Research Topic: "Corrosion Mitigation in Reinforced Concrete Structures Using Engineered Cementitious Composites"

10. Alok A. Deshpande (Co-Major Advisor), Graduated in June 2019
    Research Topic: "A Multiscale Study of Concrete Subjected to Elevated Temperatures"

PhD Students (advised as Committee Member)

11. Elham Mousania, Graduated in Spring 2025
    Research Topic: "Improving Plastic Sustainability through Life Cycle and Geospatial Analyses: Materials, Infrastructure, and Equity"
12. Mohammad Syed, Graduated in Spring 2022
    Research Topic: "Tessellated Structural-Architectural (TeSA) Shear Walls"
13. Nan Hua, Graduated in Fall 2021
    Research Topic: "Experimental and Numerical Assessment of Fire Damage to Reinforced Concrete Tunnel Liners"
14. Enrico Wölfel, **TU Dresden, Germany** (External Committee Member) Graduated in Nov 2020
    Research Topic: "Fibre-matrix interaction in mineral-bonded composites under dynamic loading"
15. Iurie Curosu, **TU Dresden, Germany** (External Committee Member) Graduated in July 2017
    Research Topic: "Influence of Fiber Type and Matrix Composition on the Tensile Behavior of Strain-Hardening Cement-Based Composites Under Impact Loading"
16. Jorge Mario Baiz, Graduated in Fall 2016
    Research Topic: "Linear Elastic Behavior of Telescopic Structural Walls Subjected to Axial and Lateral Quasi-Static Loads"
17. Li Junxia, **Nanyang Tech. Univ., Singapore** (External Comm. Member) Graduated in Dec 2016
    Research Topic: "Probabilistic Micromechanics Model of ECC and Application for Mix Design of SHCC"

MS Thesis/Project Students

1. Collins Lawrence (Thesis Advisor) Spring-Fall 2024
   Research Topic: Review of corrosion models for steel structures
2. Xinrui Yi (Project Advisor) Spring 2021 (Graduated)
   Research Topic: Bond Behavior of UHPC with Conventional Steel Reinforcement
3. Jun Zhang (Thesis Advisor) Summer 2017-Summer 2018 (Graduated)
   Research Topic: Influence of Air-entraining Admixtures on the Freeze-thaw Durability and Mechanical Properties of SHCC"
4. Akhilesh Allanki (Project Advisor) Fall 2017-Spring 2018 (Graduated)
   Research Topic: Mechanical Characterization of Ultra-high Performance Concrete
5. Spandana Tadivaka (Project Advisor) Fall 2017-Spring 2018 (Graduated)
   Research Topic: Development of Strain-Hardening Cementitious Composites with Slag as the Secondary Cementitious Material"
6. Siddhant Mehta (Project Advisor) Spring 2017-Fall 2017 (Graduated)

Research Topic: Application of Machine Learning to Accelerate the Development of Advanced Concrete Materials

7. Shravani Venkata (Thesis Advisor) Summer 2016-Spring 2017 (Graduated)
   Research Topic: Systematic Collection of Material-Properties Data of Ultra-high Performance Concretes for Materials Informatics

UG Research Students

- Summer interns from abroad: Devesh Kumar (2025), Atal Gupta (2024), Heet Patel (2017), and Dharmendra Kumar (2016) from Indian Institute of Technology, Gandhinagar, India and Kirill Kryzhanovskiy (2019) from Kazakhstan.
- UB students (23): Zeynep Sislioglu (Summer 2025), Brandon Alexander (Summer 2024), Mina Coutsoucos (Summer 2024), Dana Sahib (Summer 2024), Matthew Gonzales (Summer 2023), Rachel Williams (Fall 2022-Spr 2023), Benjamin Pidel (Fall 2021), Qiao Lin (Sum-Fall 2019), Ming Chen (Sum 2019-Spr 2021), Ngima Sherpa (Sum 2018), Moshfaq Ahmed (Sum 2018), Cedric Wrobel (Spr-Fall 2018), Anthony Tintera (Spr 2018), Michael Durant (Spr 2018), Yunduo Lin (Fall 2017-Spr 2018), Yao Han (Fall 2016-Spr 2017), Hung Nguyen (Fall 2016-Spr 2017), Anandharam Mourougassamy (Fall 2016-Spr 2017), Trung Truoung (Spr 2017), Adetunji Adesina (Spr 2016), Philip Gladwin (Spr 2016), Faris Karahasanovic (Spr 2016), and Valeria Prieto (Spr 2016)

  These outstanding undergraduate students have worked in the lab with my graduate students on various research tasks, which provide them valuable skills and knowledge related to design, mixing, casting, and mechanical testing of advanced concrete materials. This experience has been one of the main drivers for most of the above students to pursue graduate studies in Civil Engineering.

SERVICE ACTIVITIES

Professional Service

- Scientific Committee Member for 4th International Interactive Symposium on UHPC (4IISUHPC), Des Moines, Iowa, USA, from June 14-17, 2026.
- Technical Committee Member for 1st Interdisciplinary Symposium on Smart & Sustainable Infrastructures (ISSSI 2023), Vancouver, Canada, September 4-8, 2023.
- International expert and invited speaker for the Summer School at TU Dresden sponsored by the German Research Foundation (DFG), June 26-29, 2023.
- Scientific Committee Member for the Third International Interactive Symposium on Ultra-High Performance Concrete, Wilmington, Delaware, June 4-7, 2023.
- National Science Foundation Panel Reviewer (3 times)
- Associate Editor, ASCE Journal of Materials in Civil Engineering, Since May 2020
- Scientific Committee Member for the Tenth International Symposium on Fiber Reinforced Concrete (BEFIB-2020), Universitat Politècnica, Valencia, Spain, September 20-22, 2021.
- International expert and invited speaker for the Summer School at TU Dresden sponsored by the German Research Foundation (DFG), July 14-19, 2019.
- Scientific Committee Member for the First International Conference on 3D Construction Printing (3DCP), Swinburne University of Technology, Melbourne, Australia, November 26-28, 2018.
- International expert and invited speaker for the GRK 2250 program at TU Dresden sponsored by the German Research Foundation (DFG), June 18-22, 2018.

- Scientific Committee Member for the 4th International Conference on Strain-hardening Cement-based Composites (SHCC-4), Dresden, Germany, September 18-20, 2017.
- Department of Energy – Consolidated Innovative Nuclear Research Panel Reviewer (3 times)
- Technical Committee Member for the 9th RILEM International Symposium on Fiber Reinforced Concrete (BEFIB – 9), Vancouver, Canada, September 19-21, 2016.
- Member of ACI Committees 239: Ultra-high performance concrete; 408: Rebar-concrete bond; 544: Fiber-reinforced concrete
- Friend of TRB Committees AKT50: Bridge and structures management; AKM60: Concrete and constituent materials; AKM70: Concrete durability
- Technical reviewer for the following publications (Google Scholar Civil Engineering Journal ranking by h5 index given in bracket)
    - Construction and Building Materials (#1)
    - Cement and Concrete Research (#3)
    - Cement and Concrete Composites (#4)
    - Materials and Structures (#6)
    - ASCE Journal of Structural Engineering (#9)
    - ASCE Journal of Materials in Civil Engineering (#11)
    - Journal of Bridge Engineering
    - Journal of Materials and Design
    - International Journal of Concrete Structures and Materials
    - Ceramics International
    - Journal of Hazardous Materials
    - ASTM Journal of Testing and Evaluation
    - Composites Part B: Engineering Journal
    - American Concrete Institute (ACI) Committee Report 232.2R
    - ACI Special Publication: Joint ACI-FIB International Workshop
    - ACI Committee 544: A review of impact resistance of fiber-reinforced concretes

University at Buffalo, State University of New York

- Senator, UB Faculty Senate, Fall 2023-Summer 2025
- Director of Graduate Studies, Department of Civil, Structural and Environmental Engineering, Jan 2023-June 2024
- Search Committee for Faculty position in Clean Energy/Sustainability, Spring-Summer 2023
- Search Committee for Empire Innovation Program Faculty position in Geological Hazards, Fall 2021-Spring 2023
- Representative of structural engineering, materials, and computational mechanics groups in the Department's Graduate Studies Committee, Summer 2019-Summer 2022
- Departmental Space Committee for allocation and management of spaces assigned to students and laboratories within the department, Spring 2019
- Departmental Lab Committee for allocation of funds and other items related to undergraduate laboratories within the department, Fall 2018-2022
- Department's representative in the Presidential Fellowship Selection Committee, Spring 2019
- Departmental Search Committee for the Director of the Institute of Bridge Engineering, Spring 2020
- Organizer for the departmental engineering seminar, Spring 2018 to Spring 2019.

During my tenure as the seminar organizer, we invited a diverse mix of renowned faculty from top universities, including members of the National Academy of Engineers, department heads, and industry professionals, which has enriched the learning experience of our graduate students and improved the visibility of our department.

- Departmental Faculty Search Committee for Structures Faculty Recruitment, Spring 2017
- Faculty Judge for the 10th Annual CSTEP Research Poster Symposium, 2016
- Departmental Faculty Search Committee for Materials Faculty Recruitment, Spring 2016
- Reorganization of CIE 327: Civil Engineering Materials Course to be consistent with General Education requirements and SUNY-wide seamless transfer, 2015-2016
- Institute of Bridge Engineering Faculty Panel: Master's degree and Advanced Certificate curriculum, 2015-2016
- Undergraduate student advising (both departmental and EAS 202: about 10-15 students every semester)

NY State Department of Transportation

In a demonstration project with the NY State DOT in September 2016, an advanced concrete material developed by my students at UB was applied for patching of the I-86 bridge over Chautauqua Lake near Bemus Point, NY. The new material is intended to enhance the durability of bridge repairs.

COMMUNITY OUTREACH

Research Associate, Buffalo Museum of Science Since June 2022

Research Associates help the Buffalo Museum of Science (BMS) in their effort to develop and promote science literacy in the community and help the public understand both the process and products of science. Research Associates engage in collaborative work with the Collections Department, community outreach, and public engagement.

Science is Elementary Program at Westminster School, Buffalo Sep 2015-2019

Working with UB volunteers at a local K-8 school with majority of students from minority and underprivileged sections of our community. Through hands-on experiments, this program aims to facilitate self-learning of science among the school students.

Community Resource Volunteers/ Bates Elementary Bridge Program 2011-2014

Worked with the University of Michigan Civil and Environmental Engineering Faculty Members to generate enthusiasm and interest among school students for science and engineering through hands-on experiments and demonstrations.