

Amir Yaghoob Farnam, PhD

Curriculum Vitae

Assistant Professor, Drexel University

Department of Civil, Architectural & Environmental Engineering

Department of Materials Science & Engineering, Affiliated Faculty Member

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OVERVIEW

Dr. Farnam's research includes investigations on (1) development of advanced, novel, and sustainable materials for civil infrastructure through fundamental multiscale understanding of the property-structure-performance relation between chemical compositions and physical properties of materials, and (2) enhancement of the durability and resilience of civil infrastructure through advanced understanding of the damage mechanisms exposed to environmental stimuli (e.g., thermal, mechanical, and/or chemical distresses). Dr. Farnam has over ten years of experience working on various areas of infrastructure materials including durability of concrete exposed to deicing and chloride-based salts, development of thermal-responsive asphalt/concrete using phase change materials, multifunctional bioinspired construction materials, microbial self-healing concrete, lightweight aggregate from waste glass and coal combustion ash, and advanced manufacturing of construction materials. He has been involved in several projects related to enhancing the performance of infrastructure materials sponsored by National Science Foundation (NSF), Department of Education (DoE), PA Department of Community and Economic Development, PA Department of Transportation (PennDOT), United Soybean Board, Drexel, and Portland Cement Association (PCA). He is a voting, associate and active member of American Concrete Institute (ACI) and Transportation Research Board (TRB). His professional membership includes ACI, ACerS, AEWG, TRB, ASCE, ASEE, and ASTM organizations.

EDUCATIONS

- Purdue University	West Lafayette, IN	Civil/Materials Engineering	Postdoc, 2016
- Purdue University	West Lafayette, IN	Civil/Materials Engineering	Ph.D., 2015
- University of Tehran	Tehran, Iran	Civil Engineering	M.S., 2008
- K.N.T. University of Technology	Tehran, Iran	Civil Engineering	B.S., 2005

APPOINTMENTS

- Assistant Professor, Department of Civil, Architectural and Environmental Engineering Department, Drexel University, Philadelphia, PA	Sep. 2016 – present
- Affiliated Faculty Member, Department of Materials Science and Engineering, Drexel University, Philadelphia, PA	Apr. 2018 – present
- Visiting Investigator, Louisiana Transportation Research Center (LTRC), Louisiana Department of Transportation and Development, Louisiana State University, Baton Rouge, LA	Summer 2018
- Postdoctoral Fellow, Purdue University, IN	Sep. 2015 – July 2016
- Visiting Instructor, Purdue University, IN	Sep. 2015 – Dec. 2015
- Research/Teaching Assistant and Mentor, Purdue University, IN	Sep. 2012 – Aug. 2015
- Research Scholar, University of Sherbrooke, Sherbrooke, CANADA	Sep. 2010 – Aug. 2012
- Technical/Project Manager, Construction Materials Institute, University of Tehran, IRAN	Feb. 2008 – Aug. 2010

AWARDS AND HONORS

- Drexel University Faculty Summer Research Award, 2018
- Drexel University Coop Office of the Provost Research Award, 2017
- Purdue University College of Engineering Outstanding Research Award, 2015
- Purdue University Civil Engineering Graduate Research Award, 2015
- Portland Cement Association Education Foundation's J. P. Gleason Fellowship, 2014
- Purdue University William L. Dolch Scholarship, 2014
- Quebec MELS Merit Research Fellowship (FQRNT), 2012
- University of Sherbrooke Institutional Scholarship, 2011
- University of Tehran Best Master's Thesis Award, 2008
- American Concrete Institute (ACI) Bowling Ball Student Competition 2nd Place Award, 2004
- American Concrete Institute (ACI) Concrete Cube Student Competition 1st Place Award, 2003
- Honors from the Iranian Minister of Science, Research and Technology, 2004
- Honors from the President of K.N. Toosi University of Technology, 2004

PUBLICATIONS

Scholarly Metrics:	Citations	h-index
Google Scholar:	>1300	21
Scopus:	>770	17
Web of Science:	>630	16

(i) Peer-Reviewed Journal Papers:

Since Joining Drexel University:

- J1. M. Balapour, T. Thway, R. Rao, E.J. Garboczi, Y.G. Hsuan, and **Y. Farnam** (Under Internal Review), A thermodynamic based framework to design lightweight aggregate from off-spec fly ash.
- J2. F. Althoey, M. Balapour and **Y. Farnam** (Under Internal Review), An Insight into the Role of Supplementary Cementitious Materials in Mitigating Damage due to Formation of Sulfate-based Chemical Phase Change in Concrete Exposed to NaCl.
- J3. M. Torelli, **Y. Farnam**, Y.G. Hsuan, S. Spatari, and P. Billen (Under Internal Review), Toward Environmentally Optimized Design of Spherical Porous Reactive Aggregates from Coal Bottom Ash: An Integrated Modeling Approach, *Journal of Resources, Conservation & Recycling*, Elsevier.
- J4. J. He, M. Balapour, and **Y. Farnam** (Under Internal Review), Soy Methyl Ester-Polystyrene (SME-PS) Performance as a Concrete Sealant: A Comparative Literature Review.
- J5. M. Balapour, A.W. Muata, and **Y. Farnam** (Submitted), Evaluating the thermal efficiency of microencapsulated phase change materials for thermal energy storage in cementitious composites, *Construction and Building Materials Journal*, Elsevier.
- J6. F. Althoey, P. Stutzman, M. Steiger, and **Y. Farnam** (Tentatively Accepted), Thermo-Chemo-Mechanical Understanding of Damage Development in Porous Cementitious Materials Exposed to Sodium Chloride Under Thermal Cycling, *Cement and Concrete Research*.
- J7. M. Balapour, R. Rao, E.J. Garboczi, S. Spatari, Y.G. Hsuan, and **Y. Farnam** (2020), Thermochemical principles of the production of lightweight aggregates from waste coal bottom ash, *Journal of the American Ceramic Society*, doi: 10.1111/jace.17458.
- J8. A.W. Mutua, M. Balapour, and **Y. Farnam** (2020), Towards development of nature-inspired thermo-responsive vascular composites: Analysis of polymeric composites, *Construction and Building Materials Journal*, Elsevier, Volume 259, pp. 1-12, doi: 10.1016/j.conbuildmat.2020.120407.

- J9. F. Althoey, and **Y. Farnam** (2020), Performance of Calcium Aluminate Cementitious Materials in the Presence of Sodium Chloride, *ASCE Journal of Materials in Civil Engineering*, ASCE, Vol. 32, Issue 10, pp. 1-10, doi: 10.1061/(ASCE)MT.1943-5533.0003365.
- J10. M. Balapour, W. Zhao, E.J. Garboczi, N.Y. Oo, S. Spatari, G. Hsuan, P. Billen, and **Y. Farnam** (2020), Potential Use of Lightweight Aggregate (LWA) Produced from Bottom Coal Ash for Internal Curing of Concrete Systems, Cement and Concrete Composite, Elsevier, Volume 105, pp. 1-12, doi: 10.1016/j.cemconcomp.2019.103428.
- J11. F. Althoey and **Y. Farnam** (2019), The effect of using supplementary cementitious materials on damage development due to the formation of a chemical phase change in cementitious materials exposed to sodium chloride, *Construction and Building Materials Journal*, Elsevier, Volume 210, pp. 685-695, doi: 10.1016/j.conbuildmat.2019.03.230.
- J12. M. Ksara, R. Newkirk, S.K. Langroodi, F. Althoey, C. Sales, C. Schauer, and **Y. Farnam** (2019) Microbial Damage Mitigation Strategy in Cementitious Materials Exposed to Calcium Chloride Deicing Salts, *Construction and Building Materials Journal*, Elsevier, Volume 195, pp. 1-9, doi: 10.1016/j.conbuildmat.2018.10.033.
- J13. Y. Shields, E. Garboczi, J. Weiss, and **Y. Farnam** (2018), Freeze-Thaw Crack Determination in Cementitious Materials Using 3D X-ray Computed Tomography and Acoustic Emission, *Cement and Concrete Composite Journal*, Elsevier, Volume 89, pp. 120–129, doi: 10.1016/j.cemconcomp.2018.03.004.
- J14. F. Althoey, B. Wisner, A. Kontsos, and **Y. Farnam** (2018), Cementitious Materials Exposed to High Concentration of Sodium Chloride Solution: Formation of A Deleterious Chemical Phase Change, *Construction and Building Materials Journal*, Elsevier, Volume 167, pp. 543–552, doi: 10.1016/j.conbuildmat.2018.02.066.
- J15. L. Nguyen, A.J. Moseson, **Y. Farnam**, and S. Spatari, (2018), Effects of Composition and Transportation Logistics on Environmental, Energy and Cost Metrics for the Production of Alternative Cementitious Binders, *Journal of Cleaner Production*, Elsevier, Volume 185, 1, pp. 628-645, doi: 10.1016/j.jclepro.2018.02.247.
- J16. P. Billen, M. Mazzotti, L. Pandelaers, N. Oo, W. Zhao, Z. Liu, J. Redus, I. Diaz, I. Bartoli, **Y. Farnam**, S. Spatari, Y. Hsuan (2018), Melt ceramics from coal ash: constitutive product design using thermal and flow properties, *Resources, Conservation & Recycling Journal*, Elsevier, Volume 132, pp. 168–177, doi: 10.1016/j.resconrec.2018.01.035.
- J17. H.S. Esmaeeli, **Y. Farnam**, J.E. Haddock, P.D. Zavattieri, J. Weiss (2018), Numerical Analysis of the Freeze-Thaw Performance of Cementitious Composites that Contain Phase Change Material (PCM), *Materials and Design Journal*, Elsevier, Volume 145, pp. 74-87, doi: 10.1016/j.matdes.2018.02.056.
- J18. **Y. Farnam**, H.S. Esmaeeli, P.D. Zavattieri, J. Haddock, J. Weiss (2017), Incorporating phase change materials in concrete pavement to melt snow and ice, *Cement and Concrete Composite*, Elsevier, 84, pp. 134–145, doi:10.1016/j.cemconcomp.2017.09.002.
- J19. **Y. Farnam**, B. Zhang, and J. Weiss (2017), Evaluating the Use of Supplementary Cementitious Materials to Mitigate Damage in Cementitious Materials Exposed to Calcium Chloride Deicing Salt, *Cement and Concrete Composite Journal*, Elsevier, doi: 10.1016/j.cemconcomp.2017.05.003.
- J20. P. Suraneni, J. Monical, E. Unal, **Y. Farnam**, and J. Weiss (2017), Calcium Oxychloride Formation Potential in Cementitious Pastes Exposed to Blends of Deicing Salt, *ACI Materials Journal*, American Concrete Institute, doi: 10.14359/51689607.
- J21. H.S. Esmaeeli, **Y. Farnam**, D. Bentz, P.D. Zavattieri, and J. Weiss (2017), Numerical Simulation of the Freeze-Thaw Behavior of Mortar Containing Deicing Salt Solution, *Journal of Materials and Structures*, Springer, Volume 50 (96), pp. 1-20, doi: 10.1617/s11527-016-0964-8.
- J22. R. Ghantous, **Y. Farnam**, E. Unal, and J. Weiss (2016), The Influence of Carbonation on the Formation of Calcium Oxychloride, *Journal of Cement and Concrete Composite*, Elsevier, Volume 73, pp. 185-191, doi: 10.1016/j.cemconcomp.2016.07.016.

- J23. J. Monical, E. Unal, T. Barrett, **Y. Farnam**, and W. Weiss (2016), Reducing Joint Damage in Concrete Pavements, Quantifying Calcium Oxychloride Formation, Journal of Transportation Research Record, TRB, Volume 2577, doi: 10.3141/2577-03.

Before Joining Drexel University:

- J24. **Y. Farnam**, C. Villani, T. Washington, M. Spence, J. Jain, and J. Weiss (2016), Performance of Carbonated Calcium Silicate based Cement Pastes and Mortars Exposed to NaCl and MgCl₂ Deicing Salt, Journal of Construction and Building Materials, Elsevier, Vol. 111, pp. 63-71, doi: 10.1016/j.conbuildmat.2016.02.098.
- J25. J. Monical, C. Villani, **Y. Farnam**, E. Unal, and W. Weiss (2016), Using Low-Temperature Differential Scanning Calorimetry to Quantify Calcium Oxychloride Formation for Cementitious Materials in the Presence of CaCl₂, Journal of Advances in Civil Engineering Materials, ASTM, Vol. 5, No. 1, pp. 1–15, doi: 10.1520/ACEM20150024.
- J26. L. Liston, **Y. Farnam**, M. Krafcik, J. Weiss, K. Erk, and B. Y. Tao (2016), Binary Mixtures of Fatty Acid Methyl Esters as Phase Change Materials for Low Temperature Applications, Journal of Applied Thermal Engineering, Elsevier, Vol. 96, pp. 501-507, doi: 10.1016/j.applthermaleng.2015.11.007.
- J27. **Y. Farnam**, M. Krafcik, L. Liston, T. Washington, K. Erk, B. Tao, and J. Weiss (2016), Evaluating the Use of Phase Change Materials in Concrete Pavement to Melt Ice and Snow, Journal of Materials in Civil Engineering, ASCE, 28(4), pp. 1-10, doi: 10.1061/(ASCE)MT.1943-5533.0001439.
- J28. **Y. Farnam**, S. Dick, A. Wiese, J. Davis, D. Bentz, and J. Weiss (2015), The Influence of Calcium Chloride Deicing Salt on Phase Changes and Damage Development in Cementitious Materials, Journal of Cement and Concrete Composite, Elsevier, Vol. 64, pp. 1-15, doi: 10.1016/j.cemconcomp.2015.09.006.
- J29. C. Villani, **Y. Farnam**, T. Washington, J. Jain, and J. Weiss (2015), Conventional Portland Cement and Carbonated Calcium Silicate–Based Cement Systems: Performance During Freezing and Thawing in Presence of Calcium Chloride Deicing Salts, Transportation Research Record: Journal of the Transportation Research Board, No. 2508, pp. 48-54. doi: 10.3141/2508-06.
- J30. **Y. Farnam**, M.R. Geiker, D. Bentz, and J. Weiss (2015), Acoustic Emission Waveform Characterization of Crack Origin and Mode in Fractured and Alkali-Silica Reaction (ASR) Damaged Concrete, Journal of Cement and Concrete Composite, Elsevier, Vol. 59, pp. 135-145, doi:10.1016/j.cemconcomp.2015.04.008.
- J31. **Y. Farnam**, H. Todak, R. Spragg, and J. Weiss (2015), Electrical Response of Mortar with Different Degrees of Saturation and Deicing Salt Solutions during Freezing and Thawing, Journal of Cement and Concrete Composite, Elsevier, Vol. 59, pp. 49-59, doi:10.1016/j.cemconcomp.2015.03.003.
- J32. **Y. Farnam**, A. Wiese, D. Bentz, J. Davis, and J. Weiss (2015), Damage Development in Cementitious Materials Exposed to Magnesium Chloride Deicing Salt, Journal of Construction and Building Materials, Elsevier, Vol. 93, pp. 384-392, doi: 10.1016/j.conbuildmat.2015.06.004.
- J33. **Y. Farnam**, T. Washington, and J. Weiss (2015), The Influence of Calcium Chloride Salt Solution on the Transport Properties of Cementitious Materials, Journal of Advances in Civil Engineering, Hindawi, Vol. 2015, pp. 1-13, doi: 10.1155/2015/929864.
- J34. **Y. Farnam**, D. Bentz, A. Sakulich, D. Flynn, and J. Weiss (2014), Measuring Freeze and Thaw Damage in Mortars Containing Deicing Salt Using a Low-Temperature Longitudinal Guarded Comparative Calorimeter and Acoustic Emission, Journal of Advances in Civil Engineering Materials, ASTM, Vol. 3, No. 1, 2014, pp. 316–337, doi:10.1520/ACEM20130095.
- J35. **Y. Farnam**, D. Bentz, A. Hampton, and J. Weiss (2014), Acoustic Emission and Low-Temperature Calorimetry Study of Freeze and Thaw Behavior in Cementitious Materials Exposed to Sodium Chloride Salt, Transportation Research Record: Journal of the Transportation Research Board, No. 2441, pp. 81-90, doi: 10.3141/2441-11.

- J36. H. Gandomi, S.K. Babanajad, A.H. Alavi, and **Y. Farnam** (2012), A Novel Approach to Strength Modeling of Concrete under Triaxial Compression, *Journal of Materials in Civil Engineering*, ASCE, 2012, Vol. 24, No. 9, pp. 1132-1143, doi: 10.1061/(ASCE)MT.1943-5533.0000494.
- J37. S.K. Babanejad, **Y. Farnam**, and M. Shekarchi (2012), Failure Criteria and Triaxial Behavior of HPFRC Containing High Reactivity Metakaolin and Silica Fume, *Journal of Construction and Building Materials*, Elsevier, Vol. 29, pp. 215-229, doi:10.1016/j.conbuildmat.2011.08.094.
- J38. **Y. Farnam**, M. Moosavi, M. Shekarchi, S.K. Babanajad, and A. Bagherzadeh (2010), Behavior of Slurry Infiltrated Fiber Concrete (SIFCON) under Triaxial Compression, *Journal of Cement and Concrete Research*, Elsevier, Vol. 40, Issue 11, pp. 1571-1581, doi:10.1016/j.cemconres.2010.06.009.
- J39. **Y. Farnam**, S. Mohammadi, and M. Shekarchi (2010), Experimental and Numerical Investigations of Low Velocity Impact Behavior of High-Performance Fiber-Reinforced Cement Based Composite, *International Journal of Impact Engineering*, Elsevier, Vol. 37, Issue 2, pp. 220-229, doi:10.1016/j.ijimpeng.2009.08.006.

(ii) Book Chapters and Technical Reports:

1. P. Suraneni, J. Monical, E. Unal, **Y. Farnam**, C. Villani, T.J. Barrett, W.J. Weiss (2016), Performance of Concrete Pavement in the Presence of Deicing Salts and Deicing Salt Cocktails (p. 13), Joint Transportation Research Program, Indiana Department of Transportation and Purdue University, SPR 3864, FHWA/IN/JTRP-2016/25, doi: 10.5703/1288284316350.
2. Weiss, J. and **Y. Farnam**. 2015. Concrete Pavement Joint Deterioration: Recent Findings to Reduce the Potential for Damage. Map Brief, CP Road Map. National Concrete Pavement Technology Center, Ames, IA.
3. A. Wiese, **Y. Farnam**, W. Jones, P. Imbrock, B. Tao, and J. Weiss (2015), Evaluation of Sealers and Water proofers for Extending the Life Cycle of Concrete (p. 35), Joint Transportation Research Program, Indiana Department of Transportation and Purdue University, SPR 3523, doi: 10.5703/1288284316002.
4. D. Harris, **Y. Farnam**, R. Spragg, P. Imbrock, and J. Weiss (2015), Early Detection of Joint Distress in Portland Cement Concrete Pavements (p. 39), Joint Transportation Research Program, Indiana Department of Transportation and Purdue University, SPR 3623, doi: 10.5703/1288284315531.
5. J. Olek, T. Kim, M. Pour-Ghaz, **Y. Farnam**, Y.C. Chiu, C. Balachandran, J. Weiss, N. Whiting, and T. West (2014), Alkali-Silica Reaction (ASR) Mechanisms and Detection: An Advanced Understanding (p. 243). Federal Highway Administration, FHWA-HRT-14-078.
6. W. Jones, **Y. Farnam**, P. Imbrock, J. Sprio, C. Villani, J Olek, and J Weiss (2013), An Overview of Joint Deterioration in Concrete Pavement: Mechanisms, Solution Properties, and Sealers (p. 58), Joint Transportation Research Program, Indiana Department of Transportation and Purdue University, doi: 10.5703/1288284315339.
7. Co-Author in Code No. 446; Introduction to Heavy Construction Machinery; Editors: E. Forsatkar, M. Parchami, and Y. Forouzanfar; Office of deputy for strategic supervision; Bureau of Technical Execution System; 2009; ISBN 978-964-179-067-9 (In Farsi).
8. Co-Author in Code No. 447; Site Safety Management; Office of deputy for strategic supervision; Editors: E. Forsatkar, M. Parchami, and Y. Forouzanfar; Bureau of Technical Execution System; 2009; ISBN 978-964-179-070-9 (In Farsi).

(iii) Conference Papers and Presentations (* Indicates Presenting Author)

- C1. M. Balapour*, W. Zhao, E.J.Garhoczi, N.Y. Oo, S. Spatari, Y.G. Hsuan, P. Billen, and **Y. Farnam** (2020), Potential use of lightweight aggregate (LWA) produced from bottom coal ash for internal curing of concrete systems, Pennsylvania Concrete Conference, Harrisburg, February 19-20, 2020.
- C2. K. J. O'Hare, G. Pizzulli, M. Torelli, M. Balapour, **Y. Farnam**, Y.G. Hsuan, P. Billen, and S. Spatari* (2020), Life Cycle Assessment of Lightweight Aggregates from Coal Ashes: A Cradle-to-Gate Analysis, in: International RILEM Workshop on Concrete Durability and Service Life Planning

- (ConcreteLife), pp. 47-51, RILEM Bookseries, vol 26. Springer, Cham. https://doi.org/10.1007/978-3-030-43332-1_10.
- C3. M. Ksara, R. Newkirk, S.K. Langroodi, F. Althoey, C.M. Sales, C.L. Schauer, and **Y. Farnam*** (2019), Using Microbial Induced Calcite Precipitation to Mitigate Salt-Induced Damage in Concrete Exposed to CaCl_2 , 2019 ACI Fall Convention, Cincinnati, OH, October 20-24, 2019.
 - C4. M. Balapour, P. Billan, R. Rao, E. Garboczi, S. Spatari, G. Hsuan, and **Y. Farnam*** (2019), A Sustainable Strategy to Utilize Waste Coal Combustion Ash (CCA): Producing CCA-Based Lightweight Aggregate, in: 2019 World of Coal Ash Conference, Saint Louis, MO, May 2019.
 - C5. F. Althoey*, and **Y. Farnam** (2019), Reducing Damage Due to Chemical Reactions in Concrete Exposed to Sodium Chloride: Quantification of a Deleterious Chemical Phase Change Formation, in: 2019 Tran-SET Conference, San Antonio (TX), April 2019.
 - C6. M. Balapour, and **Y. Farnam*** (2019), Are Micro-Capsulated Phase Change Materials Efficient for Thermal Energy Management of Concrete Structures?, in: 2019 ACI Spring Convention, Quebec City (QC), Canada, March 2019.
 - C7. F. Althoey*, and **Y. Farnam** (2019), Damage Development in Cementitious Materials Due to Chemical Phase Change Formation in the Presence of NaCl : The Effect of Using Supplementary Cementitious Materials, in: PennConcrete Conference, Harrisburg (PA), Feb 2019.
 - C8. **Y. Farnam***, C. Villani, J. Jain, and J. Weiss (2018), Durability Performance of Carbonated Calcium Silicate-Based Cementitious Materials Exposed to Freezing and Thawing and Chloride-Based Salt, in: 2018 ACI Fall Convention, Las Vegas (NV), October 2018.
 - C9. **Y. Farnam*** (2018) Advanced Materials for Enhancing Resilience, Durability and Sustainability of Transportation Infrastructure, in: 2018 Research Symposium, September 27-28, 2018, Pennsylvania Department of Transportation Bureau of Planning and Research, Harrisburg, PA.
 - C10. D. Christe*, J.J. Bhatt, C.M Sales, and **Y. Farnam** (2018) Empowering Underrepresented Groups to Excel in STEM Through Research Sprints, in: 2018 ASEE Annual Conference & Exposition, June 24-27, 2018, Salt Lake City, UT.
 - C11. F. Althoey*, and **Y. Farnam** (2018) The Effect of Temperature Variations on the Chemical Stability of Cementitious Materials Exposed to NaCl Solution, in: 9th Advances in Cement-Based Materials Conference (Cements 2018), ACerS, June 11-12, 2018, Pennsylvania State University, State College, PA.
 - C12. M. Balapour*, W. Zhao, E. Garboczi, S. Spatari, G. Hsuan, and **Y. Farnam** (2018) Characterization of Spherical Porous Lightweight Aggregate Made Using Waste Coal Combustion Bottom Ash, in: 9th Advances in Cement-Based Materials Conference (Cements 2018), ACerS, June 11-12, 2018, Pennsylvania State University, State College, PA.
 - C13. M. Ksara*, R. Newkirk, S.K. Langroodi, F. Althoey, C. Sales, C. Schauer, **Y. Farnam** (2018) Can Microbes Be Used to Mitigate Damage in Concrete due to Calcium Oxychloride Formation? in: National Collegiate Research Conference, NCRC 2018, January 18-20, 2018, Harvard University, Cambridge, MA.
 - C14. F. Althoey, **Y. Farnam*** (2017), An Advanced Understanding of the Source of the Chemical Damage in Concrete Pavement Exposed to Sodium Chloride Deicing Salt, in: 11th University Transportation Centers Spotlight Conference, Rebuilding and Retrofitting the Transportation Infrastructure, September 26-27, 2017, Washington, DC.
 - C15. P. Suraneni, C. Qiao, V. Azad, **Y. Farnam**, J. Monical, E. Unal, C. Villani, B. Isgor, and J. Weiss* (2017), A review of recent work on deicing salt damage to concrete pavements and its mitigation. International Conference on Advances in Construction Materials and Systems 2017, Chennai, India, 3 - 8 September 2017, pp 1-15.
 - C16. **Y. Farnam***, H. Shagerdi, P. Zavattieri, J. Haddock, and J. Weiss (2017), Concrete Pavement Containing Phase Change Materials to Melt Snow and Ice, in: International Conference on Highway Pavement and Airfield Technology, Philadelphia, PA, August 27-30.

- C17. M. Ksara, S.K. Langroodi, E. Mayerberger, F. Althoey, C.M. Sales, C. Schauer, and **Y. Farnam*** (2017), Evaluating the Potential Use of Alginate to Enable Microbial Self- Healing in Concrete. 6th Int. Conf. Self-Healing Mater., Friedrichshafen, Germany, June 25-28, pp 1–5.
- C18. **Y. Farnam***, H.S. Esmaeeli, P.D. Zavattieri, J. Haddock, and J. Weiss; Incorporating Phase Change Materials in Concrete Pavement to Melt Ice and Snow (2016); in: ACI Fall 2016 Convention, Philadelphia, PA, October 19-27.
- C19. **Y. Farnam***, J. Monical, E. Unal, and W. J. Weiss; Development of a Low-Temperature Calorimetry Method to Quantify the Potential of Calcium Oxychloride Formation in Cementitious Materials; in: 7th Advances in Cement-Based Materials (Cements 2016), Northwestern University, Evanston (IL), July 10-13, 2016.
- C20. H. S. Esmaeeli*, **Y. Farnam**, P. D. Zavattieri, J. Weiss; Numerical Simulation of Freeze-Thaw Behavior of Cementitious Systems Containing Phase Change Materials; in: 7th Advances in Cement-Based Materials (Cements 2016), Northwestern University, Evanston (IL), July 10-13, 2016.
- C21. H. S. Esmaeeli, **Y. Farnam**, D. P. Bentz, P. D. Zavattieri and J. Weiss*; The Influence of Pore Size and Freezing Rate on Ice Formation in Concrete; in: 2016 International Concrete Sustainability Conference, RILEM Symposium on Self-Compacting Concrete and North American Conference on Design and Use of Self-Consolidating Concrete, Washington (DC), May 15-18, 2016.
- C22. J. Weiss*, **Y. Farnam**, and J. Jain; Performance of Carbonated Calcium Silicate Concrete Exposed to NaCl, CaCl₂, and MgCl₂ Deicing Salt; in: 2016 ACI Spring Convention, Milwaukee (MI), April 2016.
- C23. J. Monical, E. Unal, T. Barrett, **Y. Farnam***, and W. Weiss; Reducing Joint Damage in Concrete Pavements: Quantifying Calcium Oxychloride Formation for Concrete Made Using Portland Cement, Portland Limestone Cement, Supplementary Cementitious Materials, and Sealers; in: Transportation Research Board 95th Annual Meeting, Washington (DC), January 2016.
- C24. **Y. Farnam**, H.S. Esmaeeli, D. Bentz, P. Zavattieri, and J. Weiss*; Experimental and Numerical Investigation on the Effect of Cooling/Heating Rate on the Freeze-Thaw Behavior of Mortar Containing Deicing Salt Solution; in: International Conference on the Regeneration and Conservation of Concrete Structures (RCCS), Nagasaki (Japan), June 2015, pp. 1-12.
- C25. **Y. Farnam***, D. Bentz, and J. Weiss; The Influence of Deicing Salts on Damage Development and Phase Changes in Concrete, 2015 PEGASAS Annual Meeting, Federal Aviation Administration, West Lafayette (IN), May 2015.
- C26. **Y. Farnam***, H. Todak, R. Spragg, and J. Weiss; Using Acoustic Emission and Electrical Resistivity to Assess Freeze-Thaw Damage in Concrete; in: AEWG 57th Conference on Acoustic Emission, Chicago (IL), May 2015.
- C27. **Y. Farnam** and J. Weiss*; A New Look at an Old Problem: Reexamining the Saltwater Phase Diagrams to Better Describe Concrete Durability; in: 2015 ACI Spring Convention, Kansas City (MO), April 2015.
- C28. C. Villani, **Y. Farnam**, T. Washington, J. Jain, and J. Weiss*; Performance of Conventional Portland Cement and Calcium Silicate Based Carbonated Cementitious Systems During Freezing and Thawing in the presence of Calcium Chloride Deicing Salts; in: Transportation Research Board 94th Annual Meeting, Washington (DC), January 2015, pp. 1–16.
- C29. **Y. Farnam*** and J. Weiss; Service-Life and Freeze-Thaw Deterioration: What Classic Phase Diagrams Tell us and Where They Fall Short for Cements; in: Anna Maria Workshop XV: Durability and Service-Life Prediction, Anna Maria (FL), November 2014.
- C30. M. Krafcik*, **Y. Farnam**, L. Liston, J. Weiss, B. Tao, and K. Erk; Phase Change Materials for Use in Self-heating Concrete to Prevent the Buildup of Ice and Snow on Pavement Surfaces; in: Materials Science & Technology 2014: Nanotechnology for Energy, Environment, Electronics, and Industry, Pittsburgh (PA), October 2014.
- C31. L. Liston, M. Krafcik, **Y. Farnam***, B. Tao, K. Erk, and J. Weiss; Toward the Use of Phase Change Materials (PCM) in Concrete Pavements: Evaluation of Thermal Properties of PCM; in: 2014 FAA Worldwide Airport Technology Transfer Conference: Innovations in Airport Safety and Pavement

- Technologies, Federal Aviation Administration (FAA), Galloway (Oceanville), New Jersey, USA, August 2014, pp. 1-13.
- C32. Y. Qian, **Y. Farnam***, J. Weiss; Using Acoustic Emission to Quantify Freeze-Thaw Damage of Mortar Saturated with NaCl Solutions, In: 4th International Conference on the Durability of Concrete Structures, West Lafayette, Indiana, USA, July 2014, pp. 1-7.
- C33. A. Miller*, R. Spragg, F. Antico, W. Ashraf, T. Barrett, A. Behnood, Y. Bu, Y. Chiu, B. Desta, **Y. Farnam**, H. Jeong, W. Jones, C. Lucero, D. Luo, F. Macobatti, C. Nickel, P. Panchmatia, K. Pin, S. Qiang, C. Qiao, H. Shagerdi, Q. Tian, R. Tokpotayeva, C. Vilani, A. Wiese, S. Woodard, and W. J. Weiss, "Determining the Moisture Content of Pre-Wetted Lightweight Aggregate: Assessing the Variability of the Paper Towel and Centrifuge Methods, In: 4th International Conference on the Durability of Concrete Structures, West Lafayette, Indiana, USA, July 2014, pp. 1-5.
- C34. **Y. Farnam**, D. Bentz, A. Hampton, and J. Weiss*; Acoustic Emission and Low Temperature Calorimetry Study of Freeze and Thaw Behavior in Cementitious Materials Exposed to NaCl Salt; in: Transportation Research Board 93rd Annual Meeting, Washington, DC, USA, January 2014, pp. 1-19.
- C35. **Y. Farnam***, D. Bentz, A. Sakulich, D. Flynn, and J. Weiss; Evaluation of Freeze and Thaw Damage in Mortars Containing Deicing Salt Using A Low Temperature Guarded Comparative Longitudinal Calorimeter and Acoustic Emission; in: 4th Advances in Cement-based Materials: Characterization, Processing, Modeling and Sensing, University of Illinois at Urbana-Champaign, Urbana, IL, USA, July 8-10, 2013.
- C36. **Y. Farnam***, D. Bentz, A. Sakulich, D. Flynn, and J. Weiss; Using Acoustic Emission to Quantify Damage in Cementitious Materials Exposed to Freezing and Thawing; in: AEWG 55th conference on acoustic emission, Anaheim/Los Angeles, CA, USA, June 11-13, 2013.
- C37. T. Rahmani*, B. Kiani, F. Sami, B.N. Fard, **Y. Farnam**, M. Shekarchi, Durability of glass, polypropylene and steel fiber reinforced concrete, in: Proceedings of 12th International Conf. on Durability of Building Materials and Components, Porto (Portugal), April 2011, Article No. T31, pp. 1-8.
- C38. **Y. Farnam***, A. Behrouzikhah, F.S. Sabet, S.M Jalili, M. Shekarchi, The effect of cement content on concrete durability with respect to environmental compatibility, in: Proceedings of 4th International Conf. on Construction Materials (ConMat'09), Nagoya (Japan), August 2009, pp. 289-294.
- C39. **Y. Farnam***, S. Mohammadi, A. Bagherzadeh, S.K. Babanejad, Numerical simulation of concrete beam under low velocity impact, in: Proceedings of 4th International Conf. on Construction Materials (ConMat'09), Nagoya (Japan), August 2009, pp. 185-190.
- C40. **Y. Farnam***, M. Shekarchi, A. Mirdamadi, Experimental investigation of impact behaviour of high strength fiber reinforced concrete panels, in: Proceedings of the 2nd International Symposium on Ultra High Performance Concrete, Kassel (Germany), March 2008, pp. 751-758.
- C41. **Y. Farnam**, M. Mahoutian, S. Mohammadi, M. Shekarchi*, Experimental and numerical studies of impact behavior of fiber lightweight aggregate concrete, in: Proceedings of ASCE & SEI 2008 Structures Conf., Vancouver (Canada), April 2008, pp. 1-10.
- C42. **Y. Farnam***, S. Mohammadi, M. Shekarchi M, Study of impact behavior of slurry-infiltrated fiber concrete, in: Proceedings of the 4th National Congress in Civil Engineering, Tehran (Iran), May 2008, pp. 1-8 (in Farsi).

INVITED TALKS

- 1- Infrastructure Materials for 21st Century: Exploring Advanced and Sustainable Materials, and Improving Concrete Durability in Cold Environment, University of Delaware, Newark, DE (March 2020).
- 2- Advanced Materials Development to Enhance Resilience, Durability and Sustainability of Civil Infrastructure, Louisiana State University, Baton Rouge, LA (January 2019).
- 3- Snow Melting Concrete, Taste of Science-Philadelphia, Philadelphia, PA (April 2018).

- 4- Advanced Construction Materials for Enhancing Resilience, Durability and Sustainability of Civil Infrastructure, University of Southern California, Los Angeles, CA (March 2018).
- 5- An Overview of Drexel ASIM Research on Improving Durability and Sustainability of Civil Engineering Materials, Pennsylvania State University, State College, PA (Feb 2018).
- 6- Towards a Sustainable Solution to Melt Snow and Ice on Concrete Pavement: Use of Phase Change Materials, Eastern Pennsylvania and Delaware American Concrete Institute Chapter, King of Prussia, PA (Nov. 2017).
- 7- Use of Sustainable and Innovative Construction Materials to Enhance Civil Engineering Practices, Temple University, Philadelphia, PA (Oct. 2017).
- 8- Freeze-Thaw Durability of Concrete Pavements: Physical/Chemical Sources of Damage and Methods for Damage Mitigation, Federal Highway Administration (FHWA) Turner-Fairbank Highway Research Center, McLean, VA, (June, 2017).
- 9- Advanced Understanding of Concrete Durability Exposed to Freezing and Thawing and Chloride-Based Deicing Salts, Rutgers University, Piscataway, NJ (April 2017).
- 10- Developing Resilient and Sustainable Concrete for Transportation Infrastructure, Pennsylvania Department of Transportation (PennDOT), Harrisburg, PA (Nov. 2016).
- 11- Towards Developing Resilient and Sustainable Infrastructure: Service Life Assessment/Improvement, and Advanced Materials Development, University of Pittsburgh, Pittsburgh, PA (Feb 2016).

AWARDED GRANTS

(i) [Drexel University \(Sep. 2016 – Present\)](#)

Title	Sponsor	Budget	Duration	Role	Collaborators
Internal Curing with Fine Light Weight Aggregate (FLWA) Created from Unsuitable Coal Combustion Ash	Pennsylvania Department of Transportation	\$211,290	Under Negotiation	PI	-
Engineering Bioinspired Multifunctional Microbial Polymeric Fiber (BioFiber) for Concrete Self-Healing	National Science Foundation	\$555,589	12/2020-11/2023	PI	Co-PIs: - C. Schauer, - C. Sales - A. Najafi
Developing Phase Change Materials for Concrete Deicing Applications	Compass Minerals Inc.	\$176,833	09/2020-08/2022	PI	-
Effectiveness of Soybean-Based Sealant to Reduce Deicing Salt Damage in Concrete	United Soybean Board and Indiana Soybean Alliance	Phase I: \$60,000	11/2019-10/2020	PI	-
		Phase II: \$75,000	10/2020-09/2021		
		Phase III: TBD	TBD		
Advanced Manufacturing of Architected Fiber-Reinforced Cementitious Composite	Pennsylvania Department of Community and Economic Development	\$129,754	02/2020-05/2021	PI	-
PFI-TT: Development of Scalable Lightweight	National Science Foundation	\$321,000	07/2019-12/2021	PI	-

Aggregate Manufacturing from Waste Coal Combustion Ash					
Graduate Assistance in Areas of National Need (GAANN) on “Materials for Environmental Sustainability”	US Department of Education	\$1.3 M	10/2018-Present	Senior Personnel	PI: C. Schauer
I-Corps: Production of Lightweight Aggregate from Waste Bottom Ash	National Science Foundation	\$50,000	01/2018-05/2019	PI	-
EAGER: Spherical Porous Reactive Aggregates from Coal Bottom A	National Science Foundation	\$185,000	09/2016-08/2019	Co-PI	PI: S. Spatari
Microbial Self-Healing Cementitious Composite	Drexel University Office of Research	\$7,000	06/2018-09/2018	PI	-
Acquisition of Ultrasonic Pulse Velocity and Electrical Resistivity Instruments for Education in the Area of Construction Materials	Drexel University	\$9,932	04/2018-07/2018	PI	-
Concrete with Robust Microbial-Based Self-Healing Functionality	Drexel Steinbright Career Development Center	\$7,250	09/2017-12/2017	PI	-

(ii) Before Joining Drexel University

Title	Sponsor	Budget	Duration	Role	Collaborators
Damage in Cementitious Materials Exposed to Deicing Salts	Portland Cement Association, USA	\$20,000	05/2014-05/2015	Awardee	- Jason Weiss
Effect of Rheology on Mechanical Performance, Fatigue Resistance and Bond Strength of Fiber Reinforced Self-Consolidating Concrete	Quebec Ministry of Education, Recreation and Sports, Canada	\$33,334	2011-2012	Awardee	
Chemical Analysis Lab for Construction Materials, Construction Materials Institute, University of Tehran	Mosharaf Foundation, Iran	\$10,000	2010	Co-Awardee	Awardee: M. Shekarchi
Impact Behavior of Ultra-High-Performance Concrete	Ministry of Defense, Iran	\$1,500	2007	Awardee	Co-Awardee: S. Mohammadi

EDUCATIONAL ACTIVITIES

(i) Course Taught

- ENGR 111: Introduction to Engineering Design & Data Analysis, 3 Credits, Co-Instructor, Drexel University, PA
- CIVE 615: Infrastructure Condition Evaluation, 3 Credits, Co-Instructor, Drexel University, PA

- CIVE 520: Advanced Concrete Technology, 3 Credits, Drexel University, PA
- CIVE 250-A: Construction Materials, 3 Credits, Drexel University, PA
- CIVE 250-001: Construction Materials Laboratory, 1 Credits, Drexel University, PA
- CE 331: Engineering Materials II, 3 Credits, Purdue University, IN
- CE 331 (3-6-7-9): Engineering Materials II Laboratory, Purdue University, IN
- CE 530: Properties, Production and Performance of Concrete, Purdue University, IN
- Workshop courses: (1) Significance and Applicability of High-Performance Concrete (HPC), (2) Mix Design for HPC, and (3) Production Methods for HPC, University of Tehran, IRAN

(ii) Mentorship

- Founder and Faculty Advisor, Drexel American Concrete Institute (ACI) Student Chapter, Drexel University, PA, Since 2017.
- Faculty Advisor, Drexel American Society of Highway Engineers (ASHE) Student Chapter, Drexel University, PA, Since 2017.
- CIVE 477, and 478: Senior Seminar, 3 Credits, Drexel University, PA
- CAE 491, 492, and 493: Senior Design Project, 9 Credits, Drexel University, PA

(iii) Dissertation Committee

- Long Nguyen, Ph.D., Advisor: Sabrina Spatari, Thesis title: Life Cycle Environmental and Cost Aspects of High-Density Polyethylene and Alternatives in Drainage Applications, Drexel University (Graduated: Spring 2017)
- Michelle Torelli, MS, Advisor: Sabrina Spatari, Thesis title: A Thermodynamic Modeling Approach for Environmentally Optimized Prospective Design of Spherical Porous reactive Aggregate, Drexel University (Graduated: Fall 2018)
- Siavash Vahidi, Ph.D. Student, Advisor: Grace Hsuan, Thesis title: The Failure Mechanism of High Density Polyethylene (HDPE) under Mechanical Loads and Photo-Chemical Degradation, Drexel University (Expected Graduation: Summer 2019)
- Hadi Shagerdi Esmaeeli, Ph.D. Student, Advisor: Pablo Zavattieri, Purdue University (Expected Graduation: Fall 2018)
- Mohsen Foroughi, Ph.D. Student, Advisor: James Lo, Drexel University (Expected Graduation: Fall 2020)

(iv) Outreach Activities

- Taste of Science-Philadelphia, Guest Speaker, April 24, 2018, Philadelphia Science Festival.
- Organizing and Technical Committee Member, K-12 STEM Scholar Workshop: Engineer Your City with Self-Healing Infrastructure, Summer 2017, Franklin Institute STEM Scholar and Elsevier.
- Organizing Member, Middle School STEM Girls Summer Camp, Summer 2017, Girls Inc. Philadelphia.

STUDENTS ADVISED/MENTORED

(i) Postdoctoral Associates

Current:

- **Jialuo He**, PhD
Research Area: Effectiveness of Soybean-Based Sealant to Reduce Deicing Salt Damage in Concrete

(ii) PhD Students

Current:

- **Alejandro Ochoa**, PhD Student, Expected Graduation Date: Summer 2024
- **Angela Mutua**, PhD Student, Expected Graduation Date: Summer 2024
- **Parsa Namaki Araghi**, PhD Candidate, Expected Graduation Date: Summer 2023
Research Area: Advanced manufacturing of bio-inspired microvascular thermal-responsive composites
- **Mohammad Balapour**, PhD Candidate, Expected Graduation Date: Summer 2021
Research Area: Sustainable Lightweight Aggregate for Construction from Waste Coal Ash

Former:

- **Fadi Althoey**, PhD, Graduation Date: June 2019
Thesis title: Understanding and Mitigating Damage Development in Cementitious Materials Exposed to Sodium Chloride

(iii) MSc Students

Current:

- **Rathin Rao**, Expected Graduation Date: Fall 2020

Former:

- **Dane Bell**, Graduation Date: Summer 2020
Thesis title: Using Additive Manufacturing to Develop Shape Topology Optimization of Internal Structures for Reinforced Concrete Designs
- **Mohammad Balapour**, Graduation Date: December 2019
Thesis title: Characterizing physical properties of lightweight aggregate made from waste coal ash using x-ray computed tomography
- **Maissoun Ksara**, Graduation Date: June 2018
*Thesis title: Evaluating the Use of *S. pasteurii* on Mitigating the Damage Response of Cementitious Materials Exposed to Calcium Chloride*
- **Weijin Zhao**, Graduation Date: Dec 2017
Thesis title: Evaluation of Potential Use of Spherical Porous Reactive Aggregate (SPoRA) for Internal Curing of Cementitious System
- **Yasmina Shields**, Graduation Date: June 2017
Thesis title: Freeze-thaw crack determination in cementitious materials using 3D X-ray computed tomography and acoustic emission

(iv) Undergraduate Students

- Thiha Thway, Drexel University (Fall 2019-Present)
- Angela Mutua, Drexel University (Winter 2018-Present)
- Rayna Newkirk, Drexel University (STAR Scholar, Summer 2017-Fall 2017)
- Patrick Stoehr, Drexel University (Fall 2017-Present)
- Nay Ye Oo, Drexel University (Winter-Summer 2017)
- Robert Howell, Drexel University (STAR Scholar, Summer 2017)
- Bochen Zhang, Purdue University (SURF Fellow, Summer 2014)
- Allison Hampton, Purdue University (SURF Fellow, Summer 2013)
- Taylor Washington, Purdue University (2013-2016)
- Khalela El-Naggar, Purdue University (2015-2016)
- Mitchell Rector, Purdue University (Fall 2015)
- Sarah Dick, Purdue University (2012-2013)
- Martin Bobcek, Purdue University (2012-2013)

(v) K-12 STEM Scholars

- Jaiquan Boykins, Lankenau Environmental Science Magnet High School (Summer 2017)
- Jannat Williams, Freire Charter High School (Summer 2017)

PROFESSIONAL AND SERVICE ACTIVITIES

(i) University Service Activities

- Speaker, Lettuce Talk About Research, Drexel ASCE Student Organization Speaker, March 2020.
- Member, Drexel CAEE Curriculum Committee, 2020-2021.
- Organizer, PennDOT Visit from College of Engineering, August 2019.
- Drexel CAEE Department Faculty Representative, Undergraduate Open House, Sunday, Feb 16, 2020.
- Member, Drexel College of Engineering Strategic Planning: Talent Cultivation Working Team, 2019-2020.
- Drexel CAEE Department Faculty Representative, Undergraduate Open House, Saturday, August 18, 2019
- CAEE Department One-on-One Perspective Student Meeting, July 2019.
- Drexel CAEE Department Construction Materials Teaching Lab Update, Summer 2018.
- Drexel CAEE Department Faculty Representative, Undergraduate Open House, Saturday, March 3, 2018
- Drexel College of Engineering Strategic Planning for Research, Cyber-Physical Infrastructure and Advanced Manufacturing, 2017-2018.
- Drexel ASCE Student Organization Speaker, 2017 and 2018.
- CIVE 375 Curriculum Review Committee Member, Fall 2017, Drexel University, PA
- Member of CAEE Department Recruitment and Outreach Activities, Fall 2016 - Spring 2017, Drexel University, PA
- Drexel CAEE Department Representative, Graduate Open House, Saturday, March 18, 2017
- Drexel CAEE Department Representative, Graduate Open House, Saturday, October 22, 2016

(ii) Professional Committee Activities

- Visiting Board Member, Eastern Pennsylvania and Delaware Chapter, American Concrete Institute
- Voting Member, ACI Committee 242: Alternative Cements, American Concrete Institute
- Voting Member, ACI Committee 564: 3-D printing with Cementitious Materials, American Concrete Institute
- Voting Member, ACI Committee 123: Research and Current Developments, American Concrete Institute
- Associate Member, ACI Committee 236: Material Science of Concrete, American Concrete Institute
- Associate Member, ACI Committee 201: Durability of Concrete, American Concrete Institute
- Committee Communications Coordinator, TRB AFN 10: Standing Committee on Basic Research and Emerging Technologies Related to Concrete, National Research Council, The National Academies of Sciences, Engineering, and Medicine
- Associate Member, TRB AFN 30: Standing Committee on Durability of Concrete (AFN 30), National Research Council, The National Academies of Sciences, Engineering, and Medicine
- Associate Member, TRB A0040T: Design and Construction Group Younger Member Subcommittee, National Research Council, The National Academies of Sciences, Engineering, and Medicine

(iii) Professional Membership

- Member of American Concrete Institute (ACI)
- American Ceramic Society (ACerS)
- Acoustic Emission Working Group (AEWG)

- Transportation Research Board (TRB)
- American Society of Civil Engineering (ASCE)
- American Society of Engineering Education (ASEE)
- American Society for Testing and Materials (ASTM International)

(iv) Professional Conference/Workshop Activities

- Session Moderator, ACI 123 Concrete Research Poster Session, ACI Fall 2020 Convention, Virtual, October 25-29, 2020.
- Session Moderator, ACI 123 Concrete Research Poster Session, ACI Fall 2019 Convention, Cincinnati, OH, October 20-24, 2019,
- Session Moderator, ACI 123 Concrete Research Poster Session, ACI Spring 2019 Convention, Quebec City, QC, March 23–27, 2019.
- Conference Scientific Committee Member, 2019 Tran-SET Conference, San Antonio (TX), April 11-12, 2019.
- Session Organizer and Chair, 3D Printing of Cement-Based Materials: Recent Advancements, Potential Challenges and Future Opportunities for Transportation Industry, Transportation Research Board Meeting, National Research Council, Jan 2019, Washington DC.
- Conference Session Chair, Hard Matter Self-Healing Materials 8, 6th International Conference on Self-Healing Materials, Friedrichshafen, Germany, June 25-28, 2017.
- Member of Organizing Committee, International Conference on Advances and Innovations in Engineering, Firat University, Faculty of Engineering in Elazığ, Turkey, May 10-12, 2017.
- Member of Scientific and Technical Committee, International Conference on Advances and Innovations in Engineering, Firat University, Faculty of Engineering in Elazığ, Turkey, May 10-12, 2017.
- Webinar Organizer and Moderator, Advances in Concrete Pavement Joint Durability, Transportation Research Board Meeting, National Research Council, March 2017.
- Conference Session Chair, Performance of Accelerated Concrete: Practical Applications and How They are Working, Transportation Research Board Meeting, National Research Council, Jan 2017, Washington DC.
- Organizing Team Assistant, 4th International Conference on the Durability of Concrete Structures, West Lafayette, Indiana, July 2014
- Organizing Team Assistant, 4th North American Conference on the Design and Use of SCC and 6th International RILEM Symposium on Self-Compacting Concrete: Design, Production, and Placement of SCC, Montreal, Canada, September 2010

(v) Professional Journals/Conferences Activities

Editorial Board Member:

- Transportation Research Record, Journal of Transportation Research Board
- Journal of Sustainability, MDPI

Reviewer:

- Journal of Cement and Concrete Composite (Elsevier)
- Journal of Cement and Concrete Research (Elsevier)
- Journal of Construction and Building Materials (Elsevier)
- Journal of Materials and Structures (Springer)
- ACS Sustainable Chemistry & Engineering (ACS)
- Advances in Civil Engineering Materials (ASTM International)
- Journal of Materials in Civil Engineering (ASCE)

- Journal of Nondestructive Evaluation (Springer)
- Transportation Research Record: Journal of the Transportation Research Board (TRB)
- American Concrete Institute (ACI) Journals and Special Publications
- International Journal of Impact Engineering (Elsevier)
- International Conference on New Material and Chemical Industry

SELECTED PROFESSIONAL TRAINING

- 2nd NIST Workshop on Cementitious Materials Characterization (July 2017), National Institute of Standards and Technology (NIST), Gaithersburg, MD.
- EPFL Laboratory of Construction Materials 2nd Doctoral School (May 2016), École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland.
- Purdue University Teaching Academy Day (Sep. 2015), Purdue University, West Lafayette, IN.
- PCA Professor's Training: Teaching Materials, Structures, and Pavements (July 2015), Portland Cement Association (PCA), Skokie, IL.
- Non-Destructive Testing and Advanced Methods for Evaluation of Concrete (May 2015), Germann Instruments, Evanston, IL.

MEDIA COVERAGE

- **Physics Today**, Recycled coal ash makes better concrete, November 1, 2019, by: Mark Wilson, link: <https://physicstoday.scitation.org/doi/10.1063/PT.6.1.20191101a/full/>, doi: 10.1063/PT.6.1.20191101a
- **Sustainability Matters**, Rising from coal ash waste to cure concrete, November 8, 2019, link: <https://www.sustainabilitymatters.net.au/content/waste/article/rising-from-coal-ash-waste-to-cure-concrete-1050673907>.
- **New Atlas**, Coal-ash spheres keep concrete from cracking, October 29, 2019, by: Ben Coxworth, link: <https://newatlas.com/environment/spora-coal-ash-concrete/>.
- **DrexelNow**, Ashes to Concrete, October 29, 2019, by Britt Faulstick, link: <https://drexel.edu/engineering/news-events/news/archive/2019/October/ashes-to-concrete/>
- **Fox News**, Scientists hope bacteria could be the cure for potholes, February 5, 2019, by: Talia Kirkland, link: <https://www.foxnews.com/science/new-technology-makes-pothole-proof-roads-a-reality>.
- **The Inquirer**, To protect concrete from road salt, Drexel engineers have an odd idea: bacteria, January 21, 2019, by: Tom Avril, link: <https://www.philly.com/health/road-salt-melt-snow-drexel-20190121.html>.
- **ASCE Civil Engineering Magazine**, Concrete Additive Proven to Melt Snow Without Deicing Salts, December 2017, by: Catherine A. Cardno, link: <http://www.asce.org/cemagazine/>.
- **The Inquirer**, Hate shoveling? This pavement melts snow by itself, December 14, 2017, by: Tom Avril, link: <http://www.philly.com/philly/health/hate-shoveling-pavement-melts-drexel-20171214.html>.
- **Drexel CAEE Department Newsletter**, Exploring Advanced and Sustainable Infrastructure Materials, Fall 2017, by: Yaghoob Farnam, link: <http://drexel.edu/cae/news-events/newsletters/>.
- **The American Ceramic Society**, Paraffin offers superior solution to road salt for melting snow, ice, September 26, 2017, by: Faye Oney, link: <http://ceramics.org/ceramic-tech-today/paraffin-offers-superior-solution-to-road-salt-for-melting-snow-ice>.
- **CBS**, Scientists Create Road That Melts Ice And Snow By Itself, September 19, 2017, by: Chris Melore, link: <http://philadelphia.cbslocal.com/2017/09/19/road-melts-ice-snow-science/>.
- **StudyFinds**, No More Salty Messes? Scientists Create Road Surfaces That Melt Snow, Ice On Their Own, September 19, 2017, by: Calum Mckinney, link: <https://www.studyfinds.org/snow-ice-winter-self-melting-road/>.

- **Forbes**, Scientists Just Developed Snow-Melting Concrete, September 18, by: Trevor Nace, link: <https://www.forbes.com/sites/trevornace/2017/09/18/scientists-just-developed-snow-melting-concrete/#75d00668493f>.
- **Newsworks**, With help from Drexel prof, snow-melting concrete may someday clear wintry roads, September 15, 2017, by: Alan Yu, link: http://www.newsworks.org/index.php/homepage-feature/item/107237-with-help-from-drexel-prof-snow-melting-concrete-may-someday-clear-winty-roads?linktype=hp_impact.
- **DrexelNow Newsletter**, Wax On Melt Off, September 13, 2017, by: Britt Faulstick, link: <http://drexel.edu/now/archive/2017/September/self-melting-concrete-roads/>.
- **NewsWise**, American Concrete Institute (ACI), Blends of Deicing Salts Can Help Increase Concrete Pavement Service Life, July 12, 2017, Article ID: 677752, <http://www.newswise.com/articles/blends-of-deicing-salts-can-help-increase-concrete-pavement-service-life>.
- **Giatic Concrete News**, Road Salt Meets its Match, June 6, 2017, link: https://www.giaticscientific.com/knowledge-center/concrete-news/road-salt-meets-its-match/?utm_source=Giatic+Scientific+Inc&utm_campaign=fedba24c60-EMAIL_CAMPAIGN_2017_06_02&utm_medium=email&utm_term=0_70e0ef79db-fedba24c60-342270121.
- **Upworthy**, Eco-friendly concrete could make your morning commute a lot smoother, May 25, 2017, by Helaina Hovitz, link: <http://www.upworthy.com/eco-friendly-concrete-could-make-your-morning-commute-a-lot-smoother?g=2>
- **MaterialsgateNEWS**, Germany, A Recipe For Concrete That Can Withstand Road Salt Deterioration, May 24, 2017, by Dr.-Ing. Christoph Konetschny, link: <https://www.materialsgate.de/en/mnews/42308/A+Recipe+For+Concrete+That+Can+Withstand+Road+Salt+Deterioration.html>
- **ChemEurope**, A recipe for concrete that can withstand road salt deterioration, by Dr. Björn Lippold, May 22, 2017, link: <http://www.chemeuropa.com/en/news/163310/a-recipe-for-concrete-that-can-withstand-road-salt-deterioration.html>
- **60-Second Science**, ScientificAmerican, New Concrete Recipes Could Cut Cracks, by Christopher Intagliata, May 19, 2017, link: <https://www.scientificamerican.com/podcast/episode/new-concrete-recipes-could-cut-cracks/>
- **Science News**, Phys.org, A Recipe for Concrete that Can Withstand Road Salt Deterioration, May 18, 2017, by Drexel University, link: <https://phys.org/news/2017-05-recipe-concrete-road-salt-deterioration.html>
- **DrexelNow Newsletter**, A Recipe for Concrete that Can Withstand Road Salt Deterioration, May 18, 2017, by Britt Faulstick, link: <http://drexel.edu/now/archive/2017/May/new-cement-recipe-stops-road-salt-degradation/>
- **DrexelNow Newsletter**, Q+A: How Do Winter's Mood Swings Affect Our Roads? February 9, 2017, by Britt Faulstick, link: <https://newsblog.drexel.edu/2017/01/26/qa-how-do-winters-mood-swings-affect-our-roads/>
- **NBC-10 News**, February 8, 2017, by Drew Smith, link: <http://mms.tveyes.com/MediaCenterPlayer.aspx?u=aHR0cDovL21lZGllhY2VudGVyLnR2ZXllcy5jb20vZG93bm93YWRnYXRld2F5LmFzcHg%2FVXNlcklEPTIyODQwNiZNRlEPTczODkwMTgmTURTWVkpTEExNDgmVHlwZTlNZWRpYQ%3D%3D>
- **PureTemp Newsletter**, Paraffin, Methyl Laurate Show Promise in Melting Snow, Ice on Concrete, August 19, 2016, by Ben Welter, link: <http://www.puretemp.com/stories/phase-change-matters-newsletter-aug-19-2016>
- **Joint Transportation Research Program**, Interaction of Chloride-Based Deicing Salts with Concrete, 2016, by Yaghoob Farnam, Dale Bentz, and Jason weiss <https://engineering.purdue.edu/JTRP/Highlights/interaction-of-chloridebased-deicing-salts-with-concrete2>