Benjamin J. Mohr, Ph.D., P.E.
Department Chair and Associate Professor
Department of Civil and Environmental Engineering
Tennessee Technological University
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Professional Experience

Tennessee Technological University, Department of Civil and Environmental Engineering, Cookeville, TN

Department Chair	*January 2017 – present*
Associate Professor	*August 2010 – present*
Interim Department Chair	*May 2012 – August 2016*
Assistant Professor	*August 2005 – July 2010*

Research interests: nano/microstructure, chemistry, and durability of cement-based materials; fiber-reinforced cementitious composites; early-age behavior of cement and concrete; novel material characterization/analytical techniques.

Highlights:
Have obtained approximately $2.3M in research funding. Previously served as Chair of American Ceramic Society Cements Division and Co-chair of 5th Advances in Cement-Based Materials conference held at TTU 2014, TTU ASCE Student Chapter Faculty Advisor (including hosting 2011 ASCE Southeast Student Conference), CEE Curriculum Committee Chair, and CEE ABET Committee Chair. Received numerous university, state, and national awards and recognitions.

Georgia Institute of Technology, Atlanta, GA *August 2001 – August 2005*
Graduate Research Assistant, School of Civil and Environmental Engineering

University of Delaware, Newark, DE *August 1999 – May 2001*
Undergraduate Teaching Assistant, Department of Civil and Environmental Engineering

Education

Ph.D. in Civil Engineering; *Georgia Institute of Technology*, Atlanta, GA *August 2005*
Major field: Civil Engineering with concentration in materials
Minor field: Materials Science and Engineering
Thesis topic: *Durability of Pulp Fiber-Cement Composites*
Advisor: Dr. Kimberly Kurtis

M.S. in Civil Engineering; *Georgia Institute of Technology*, Atlanta, GA *August 2002*
Advisor: Dr. Kimberly Kurtis

B.S. in Civil Engineering; *University of Delaware*, Newark, DE *May 2001*
Minors: Mathematics and Psychology

Teaching Experience

- ASCE ExCEEd Teaching Workshop Fellow – West Point, NY, July/August 2010

- CEE 3030: Civil Engineering Materials (with laboratory)
- CEE 4610/5610: Pavement Design
- CEE 4800: Geotechnical Engineering
- CEE 4850/5850: Forensic Engineering
- CEE 4950: Senior Design Project
- CEE 6300: Multi-Scale Analysis of Concrete
- CEE 6910: Graduate Seminars
- CEE 7450: Advanced Topics in Concrete Durability (with laboratory)

- HON 4023 Special Problems: Examining Effects of External Sulfate Attack – Fall 2008
- CEE 4990 Special Problems: Concrete Canoe Design Project – Fall 2007-Spring 2008, Spring 2009, Fall 2016
- CEE 6900 Special Problems: Functionally Graded Pavements – Fall 2009
- CEE 6900 Special Problems: Strength and Modulus of LWC – Spring 2010
- CEE 6900 Special Problems: hBN Cementitious Composites – Spring 2016
- CEE 6900 Special Problems: Martian Geopolymers – Fall 2017
- CEE 6980 Directed Studies: Fiber Reinforced Concrete/Engineered Cementitious Composites – Fall 2007
- CEE 6980 Directed Studies: Microstructural Analysis of ECC – Spring 2008
- CEE 7980 Directed Studies: Internal Curing – Fall 2008

Current Research Projects

Early Age Concrete Acceptance (PI)
- Tennessee Department of Transportation, $129,435, August 2023 – July 2024

Development of Tennessee UHPC for Bridge Applications (PI)
- Tennessee Department of Transportation, $221,959, August 2023 – July 2025

Chemical Subgrade Stabilization for Pavements in Tennessee (Co-PI)
- Tennessee Department of Transportation, $170,523, August 2022 – July 2024

University Transportation Assistance Program (Co-PI)
- Tennessee Department of Transportation, contract up to $1,000,000, October 2022 – August 2024

Completed Research Projects

- Comparing Strength and Modulus of Elasticity Values for Prisms Constructed with Lightweight and Normal Weight Grout (Co-PI)
  - National Concrete Masonry Association, $54,280, January 2018 – June 2020
- Preserving Reinforcement in Concrete Through Steel Treatment (PI)
  - TTU CISE Grant, $3800, May – August 2018
- Determining Concrete Chloride Permeability Rapidly and Effectively (Senior Investigator)
  - Tennessee Department of Transportation, $240,000, August 2013 – July 2018
- Expanding the Informational Catalog of TDOT Low Permeability Bridge Deck Mixtures (Senior Investigator)
  - Tennessee Department of Transportation, $130,000, May 2013 – May 2018
- Reducing Stormwater Pollution from Urban and Farm Runoff using Reactive Pervious Concrete (Co-PI)
  - TTU CISE Grant, $3700, May – August 2017
- TDOT Class S Recommended Modifications for New TDOT Class S-LH (Co-PI)
  - Tennessee Department of Transportation, $200,000, January 2012 – December 2016
- Nanoparticles for the Enhancement of Cementitious Materials (PI)
  - TTU CISE Grant, $4000, May – August 2016
- Utilizing Pervious Concrete to Reduce Farm Runoff Pollution (PI)
  - TTU URECA! Grant, $4000, May – August 2013
- The Engineering Specific Education Partnership Program (PI)
  - TTU College of Engineering Strategic Implementation Grant, $25,000, Nov 2012 – December 2013
- Development of a TDOT Class D-LP (Lower Permeability) Concrete Mixture (Co-PI)
  - Tennessee Department of Transportation, $125,000, August 2011 – July 2014
- Nanoscale Characterization of Expansion Due to Delayed Ettringite Formation (PI)
  - National Science Foundation CMS-1030209, $299,943, September 2010 – August 2014
- Optimum Air Content Range (Plastic and Hardened) for TDOT Class D PCC (Co-PI)
  - Tennessee Department of Transportation, $130,000, September 2009 – September 2012
- Higher Volume Fly Ash PCC for Sustainability and Performance (Co-PI)
  - Tennessee Department of Transportation, $130,000, July 2010 – July 2012
- MRI: Acquisition of XRD Attachments for Extending X-Ray Lab Capabilities with Temperature and Atmosphere Control (Senior Personnel)
  - National Science Foundation, $171,083, September 2010 – August 2011
- Infrastructure Materials for a Sustainable Future (Co-PI)
  - Center for Energy Systems Research, TTU, $30,000, August 2010 – December 2011
- Development of Leachate Test for Identifying the Potential for DEF in Cement-Based Materials (PI)
  - Tennessee Tech Faculty Research Development Grant, $10,000, August 2010 – May 2011
- Transport Kinetics of Internal Curing Water in High Performance Concretes (PI)
  - National Science Foundation CMS-0556015, $220,767, August 2006 – July 2010
- Nanoscale Differences Between Early and Late Age Ettringite in Portland Cement-Based Materials (PI)
  - ORAU Ralph E. Powe Junior Faculty Enhancement Award, $10,000, August 2007 – December 2008
- Hands-On Learning Civil Engineering Design Project (PI)

- Tennessee Tech Quality Enhancement Plan; $4000, August 2007 – May 2008

- Long-Term Resistance of Fly Ash Concrete to Alkali-Silica Reaction (PI)
  - Tennessee Tech Faculty Research Initiation Grant, $8000, August 2007 – May 2008
- Rapid Repair of Highway and Airfield Pavements (Co-PI)
  - Federal Highway Administration (FHWA), April 2006 – March 2008
- Fractography of Fiber-Cement Composites via Laser Scanning Confocal Microscopy (PI)
  - Tennessee Tech Faculty Research Initiation Grant, $8000, August 2006 – May 2007

Honors / Awards

- TN Professional Engineer, TN #00116651, 2013-Present
- ASCE Tennessee Section Peter G. Hoadley Award for Outstanding Engineering Educator, 2011
- Best Paper Award, ICCMS-2022, for Islam, M.S., Mohr, B.J. "Hydration Kinetics of Clinoptilolite Zeolite Blended Ternary Cementitious Materials with Fly Ash and Metakaolin." 2nd International Conference on Construction Materials and Structures, December 2022.
- TTU Kinslow Award, 2011, for Mohr, B.J., Hood, K.L. "Influence of Bleed Water Reabsorption on Cement Paste Autogenous Deformation." *Cement and Concrete Research,* 2010; 40(2):220-225.
- ACI Outstanding University for 2010-2012, 2014
- ASCE ExCEEd Teaching Workshop Fellow – West Point, NY, July/August 2010
- ORAU Ralph E. Powe Junior Faculty Enhancement Award, 2007-2008
- TTU Sigma Xi Research Award, 2007, for Mohr, B.J., Biernacki, J.J., Kurtis, K.E. "Microstructural and Chemical Effects of Wet/Dry Cycling on Pulp Fiber-Cement Composites." *Cement and Concrete Research*, 2006; 36(7): 1240-1251.
- ASEE Southeastern Section New Faculty Research Award, 2nd place, 2007
- Georgia Institute of Technology President's Fellow, 2002–2005
- Sigma Xi, The Scientific Research Society, 2006
- Tau Beta Pi, National Engineering Honor Society, 2000
- Chi Epsilon, National Civil Engineering Honor Society, 2000

Professional Affiliations

- American Concrete Institute (ACI)
  - ACI Outstanding University, 2010-2012, 2014
  - Voting Member, ACI Committee 231, Properties of Concrete at Early Ages, 2006–
  - Voting Member, ACI Committee 236, Materials Science of Concrete, 2005–
    - Concrete Research Council project liaison, 2016
  - Associate Member, ACI Committee 308, Curing Concrete, 2007–
- RILEM (International Union of Laboratories and Experts in Construction Materials, Systems and Structures)
  - Member, RILEM Committee TC196-ICC, Internal Curing of Concrete, 2006–2007
- American Ceramic Society (ACerS), Cements Division
  - Program Chair, 2013 – 2014
  - Chair, Cements Division, 2012-2013
  - Chair-Elect, Cements Division, 2011-2012
  - Secretary, Cements Division, 2010-2011
- American Society of Civil Engineers (ASCE)
  - ASCE ExCEEd Teaching Workshop Fellow – West Point, NY, July/August 2010
  - Faculty advisor for TTU Chapter of American Society of Civil Engineers (ASCE), 2006–2020
    - Letter of Honorable Mention for chapter activities, 2014-2020
    - Letter of Commendation for Community Service, 2013
    - Organized 2011 ASCE Southeast Student Conference at TTU

Professional Scholarly Activities

- Conference session moderator/chair
  - Early Age Properties, *ACerS Cements Division*, July 2013
  - Alternative Binders Based on Calcium Sulfoaluminates and Calcium Carbonates, *ACerS Cements Division*, June 2012
  - Novel Sensing Applications in Cement-Based Materials, *ACerS Cements Division*, July 2010
  - Nanostructure Characterization, *3rd International Symposium on Nanotechnology in Construction*, June 2009
  - Internal Curing of High Performance Concretes: Laboratory and Field Experiences, *ACI*, October 2007
  - Testing Methodologies, *CEAT Workshop on Moisture and Temperature Modeling for Concrete Pavements*, July 2007

- Conference organizer
  - 5th ACerS Cements Division, Cookeville, TN, July 2014
  - ACI convention session: Internal Curing of High Performance Concretes: Laboratory and Field Experiences, Fajardo, Puerto Rico, October 2007

- Journal/Conference Manuscript Reviewer
  - ACI Concrete International, ACI Materials Journal, ASCE Journal of Materials in Civil Engineering, Cement and Concrete Research, Cement and Concrete Composites, Construction and Building Materials, Journal of ASTM International, ACI-SP270 – Advances in the Material Science of Concrete, ACI SP-266 – Modeling as a Solution to Concrete Problems, ACI SP-256 – Internal Curing of High Performance Concretes: Laboratory and Field Experiences, ACI SP-241 – Concrete Heat Development: Monitoring, Prediction, and Management, GeoShanghai 2010

- Proposal Reviewer
  - NSF CMMI-SAE, NSF CMMI-SAEM, NSF CMMI-MEP, NSF CMMI-ECI
  - NSF CBET-EES
  - NSF STTR Phase I
  - NSF CBET-EES CAREER, NSF CMMI-SMM CAREER
  - ORAU Nazarbyev FDCRGP
  - US Army ERDC
  - Vanderbilt Discovery Grant, Vanderbilt Research Scholar Grant

Service Activities

- Faculty advisor for TTU Chapter of American Society of Civil Engineers (ASCE), 2006 – 2020
  - Organized 2011 ASCE Southeast Student Conference (SESC) at TTU (~800 students from ~25 universities)
  - Student chapter awarded Letter of Commendation for Service, 2013
  - Student chapter awarded Honorable Mention for chapter activities, 2014-2019

- Attended ASCE Department Heads Conference, University of Oklahoma, April 2014

- Attended ABET Program Assessment Workshop, Baltimore, MD, October 27, 2012

- Committees
  - University
    - Faculty Senate, 2018 – 2019
    - Academic Council, 2018 – 2019
    - Curriculum, 2012 –
    - Building and Grounds, 2017 – 2020
    - Graduate Executive Committee, 2012 – 2014
    - URECA! (Undergraduate Research and Creative Activity), 2012 – 2013
    - Undergraduate Research Implementation, 2011 – 2012
    - Undergraduate Research, 2007 – 2009
    - Learning About Learning Program, 2010 – 2011
    - Director of Sponsored Programs and Creative Activities, Search Committee, 2012 – 2013
  - College of Engineering
    - CHE Chair Search Committee Chair, 2021 – 2022
    - ECE Chair Search Committee Chair, 2017 – 2018; 2018 – 2019
    - Alumnus of the Year, 2013 –
    - Young Alumnus of the Year, 2013 –
    - Graduate Executive Committee, 2012 – 2017
    - Center for Energy Systems Research, Faculty Search Committee, 2010 – 2011
  - CEE Department
    - Chair, Search Committee, 2011 – 2012
    - Chair, ABET, 2012 – 2016; 2019 – 2020
    - Chair, Curriculum, 2011 – 2013
    - Recruitment and Retention, 2007 – 2016
    - Facilities, 2005 – 2016

Consulting Activities

- Graphic Packaging International – Industrial concrete slab-on-grade cracking, November – December 2015
- GAF Corporation, Seminar (all day) – "Durability of Pulp Fiber-Cement Composites," Atlanta, GA, August 2005

Graduate Research Assistants

- Md. Shariful Islam, Fall 2018 – Summer 2023
  - Ph.D. Dissertation: *Utilization and Modification of Natural Zeolite in Cementitious Systems*

Completed Graduate Theses/Dissertations

- Tyler Green, Spring 2020 – Summer 2022
  - M.S. Non-Thesis Project: *Preserving Reinforcement in Concrete Through Steel Treatment*
- Daniel Rikli, Spring 2018 – Fall 2020 (co-advised with Dr. Henderson)
  - M.S. Thesis: *Strength and Modulus of Lightweight Masonry Grout*
- Sudipto Chakraborty, Fall 2016 – Summer 2019
  - M.S. Thesis: *Geopolymerization of Simulated Martian Soil*
- Yamini Shekar, Spring 2015 – Summer 2017
  - M.S. Thesis: *Nano-scale Model of Delayed Ettringite Formation*
- Jared Thompson, Spring 2012 – Fall 2016
  - M.S. Thesis: *Physical Air Entrainment for Marginal Fly Ash Concretes*
- Jojo France-Mensah, Fall 2012 – Summer 2014
  - M.S. Thesis: *Identification of Potential for Delayed Ettringite Formation via Early Age Leachate Testing*
- Daniel Keaton, Spring 2011 – Summer 2012
  - M.S. Thesis: *Nano-scale Pore Analysis of Cementitious Mortars Subject to Delayed Ettringite Formation*
- Joshua Ojo, Fall 2008 – Spring 2012
  - Ph.D. Dissertation: *Transport Kinetics of Internal Curing Water in High Performance Cement-Based Materials*
- Lindsay Bryant, Summer 2010 – Summer 2011
  - M.S. Thesis: *Expansion of Cementitious Mortars Due to Delayed Ettringite Formation*
- Steven Matheny, Summer 2009 – Fall 2010
  - M.S. Thesis: *Freeze-Thaw Durability of Internally Cured High Performance Lightweight Concrete*
- Charlie Thomason, Spring 2009 – Fall 2009
  - M.S. Thesis: *Development of High Performance Structural Lightweight Concrete*
- Avinash Veeresha, Spring 2007 – Summer 2008 (co-advised with Dr. George Buchanan)
  - M.S. Thesis: *Thermo-Mechanical Assisted Moisture Diffusion*
- Kristen Hood, Spring 2007 – Spring 2008
  - M.S. Thesis: *Experimental Analysis of Internal Curing Materials for the Mitigation of Autogenous Shrinkage in High Performance Cement-Based Materials*

Undergraduate Research Assistants

- Zachary Fisher, Summer 2023
- Allison Vance, Summer 2019
- Roy (Chip) Stone, Summer 2018 (CISE Grant)
- Joseph Brockwell, Summer 2017 (CISE Grant)
- Guillermo Neumer-Hernandez, Fall 2016
- Uthman Mohammed-Ali, Spring 2016 – Spring 2017 (Summer 2016 CISE Grant)
- Michael Whittenburg, Summer 2014 – Spring 2015
- Kayla Cornett, Summer 2014
- Amanda Vieira, Summer 2014 (Exchange student)
- Eric James, Fall 2013
- Blakeslee Eagan, Summer 2013 – Fall 2013
- Stephen Salaman, Summer 2013
- Brad Montgomery, Summer 2013 (URECA! Grant)
- Charles Batson, Spring 2013 – Summer 2013 (URECA! Grant)
- Clifford Dye, Spring 2013 – Fall 2013
- Chelsea Burton, Spring 2013 – Fall 2014
- Jake Wilson, Spring 2013
- Nathan Reidel, Fall 2012
- Amy Rauch, Spring 2012 – Spring 2013
- Jared Thompson, Fall 2011
- Jordan Cleek, Spring 2011 – Spring 2012
- Kayla Kelly, Spring 2011
- Aaron Crowley, Summer 2010 – Fall 2010
- Daniel Keaton, Fall 2009 – Fall 2010
- Lindsay Smith, Spring 2007 – Spring 2010
- Emily Shrum, Fall 2008 – Spring 2009
- Charlie Thomason, Spring 2008 – Fall 2008
- Steven Matheny, Fall 2007 – Spring 2009
- Kristen Hood, Summer 2006 – Fall 2006
- Dustin Scruggs, Spring 2006 – Summer 2006

Patents

- Benjamin J. Mohr, Kimberly E. Kurtis, Hiroki Nanko. "Methods for Internally Curing Cement-Based Materials and Products Made Therefrom," US patent application #11/738,906 filed by Georgia Tech Research Corporation/Georgia Institute of Technology on April 23, 2007.

Proceedings Edited

- ACI SP-256CD – "Internal Curing of High Performance Concretes: Laboratory and Field Experiences", Mohr, B.J., Bentz, D.P., Eds., 2008.
  ISBN: 978-1-60560-724-5

Refereed Publications

1. Islam, M.S., Biernacki, J.J., Mohr, B.J. "Hydration Kinetics of Cation Exchanged Clinoptilolite Zeolite Based Cementitious Materials." *Cement and Concrete Composites*, submitted March 2023.

2. Islam, M.S., Mohr, B.J. "Long-term Properties and Microstructural Characterization of Natural Clinoptilolite Zeolite Based Cementitious Materials." *Innovative Infrastructure Solutions*, submitted October 2022, accepted March 2023.

3. Islam, M.S., Mohr, B.J. "Impact of Calcined Natural Clinoptilolite Zeolite on Hydration Kinetics and Shrinkage of Cementitious Materials." *ASTM Advances in Civil Engineering Materials*, submitted October 2022.

4. Islam, M.S., Mohr, B.J. "Hydration Kinetics of Clinoptilolite Zeolite Blended Ternary Cementitious Materials with Fly Ash and Metakaolin." *2nd International Conference on Construction Materials and Structures (ICCMS 2022)*, *Materials Today: Proceedings*, 2023.
   https://doi.org/10.1016/j.matpr.2023.03.468

5. Islam, M.S., Mohr, B.J. "Effect of Treated Clinoptilolite Zeolite on Alkali-Silica Reaction." *2nd International Conference on Construction Materials and Structures (ICCMS 2022), Materials Today: Proceedings,* 2023.
   https://doi.org/10.1016/j.matpr.2023.04.029

6. Islam, M.S., Mohr, B.J. "Performance of Clinoptilolite Zeolite after Milling as a Pretreatment on Hydration Kinetics, Shrinkage, and Alkali-Silica Reaction of Cementitious Materials." *CEMENT*, 2023: 100069.
   https://doi.org/10.1016/j.cement.2023.100069

7. Mohr, B.J., Islam, M.S., France-Mensah, J. "Leachate Testing for Delayed Ettringite Formation Potential in Cementitious Systems." *CEMENT*, 2023; 12: 10060.
   https://doi.org/10.1016/j.cement.2023.100060

8. Islam, M.S., Mohr, B.J. "Freeze-thaw Resistance of Concrete Made with Natural Clinoptilolite Zeolite." *ASCE Journal of Cold Regions Engineering*, 2023; 37 (4).
   https://doi.org/10.1061/JCRGEI/CRENG-681

9. Henderson, R.C., Mohr, B.J., Bennett, R., Rikli, D., Thompson, J. "Comparing Strength and Modulus of Elasticity Values for Prisms Constructed with Lightweight and Normal Weight Grout." *ASCE Journal of Civil Engineering Materials,* 2023; 35 (8),
   https://doi.org/10.1061/JMCEE7.MTENG-15000

10. Islam, M.S., Mohr, B.J. "Early Age Properties and Microstructural Characterization of Zeolite Based Cementitious Materials." *ASTM Advances in Civil Engineering Materials*, 2022; 11(1): 300-320.
    https://doi.org/10.1520/ACEM20210131

11. Islam, M.S., Mohr, B.J., VandenBerge, D. "Performance of Natural Clinoptilolite Zeolite in Cementitious Materials: A Comparative Study with Metakaolin, Fly Ash, and Blast Furnace Slag." *Journal of Building Engineering*, 2022 (53). https://doi.org/10.1016/j.jobe.2022.104535

12. Mohr, B.J., Hood, K.L. "Factors Influencing Mitigation Strategies for Autogenous Shrinkage." *ASTM Advances in Civil Engineering Materials, Special Issue on Advances in Internal Curing of Cementitious Materials*, 2018; 7(4). https://doi.org/10.1520/ACEM20170139

13. Esfahani, A.R., Reisi, M., Mohr, B.J. "Investigation of the Effect of Magnetized Water on Compressive Strength and Amount of Superplasticizers and Water in Self-Compacting Concrete." *ASCE Journal of Materials in Civil Engineering*, 2018; 30(3). https://doi.org/10.1061/(ASCE)MT.1943-5533.0002174

14. Mohr, B.J., Bryant, L.B. "Utilization of Quarry By-Products for Reduction of Expansion Due to Alkali-Aggregate Reaction." *Cement and Concrete Composites*, 2016; 73: 235-240. http://dx.doi.org/10.1016/j.cemconcomp.2016.07.014

15. Mohr, B.J., Hood, K.L. "Influence of Bleed Water Reabsorption on Cement Paste Autogenous Deformation." *Cement and Concrete Research,* 2010; 40(2):220-225. http://dx.doi.org/10.1016/j.cemconres.2009.10.014

16. Ojo, J.O., Mohr, B.J. "A Review of the Analysis of Cement Hydration Kinetics via ^{1}H Nuclear Magnetic Resonance." In: Proceedings of the *3rd International Symposium on Nanotechnology in Construction (NICOM3)*, Prague, Czech Republic, May 31-June 2, 2009, Eds. Bittnar, Z., Bartos, P.J.M., Nemecek, J., Smilauer, V., Zeman, J., 2009: 107-112. http://dx.doi.org/10.1007/978-3-642-00980-8_13

17. Mohr, B.J., Hood, K.L., Kurtis, K.E. "Mitigation of Alkali-Silica Expansion in Pulp Fiber Mortar Composites." *Cement and Concrete Composites*, 2009; 31(9):677-681. http://dx.doi.org/10.1016/j.cemconcomp.2009.06.006

18. Mohr, B.J., Biernacki, J.J., Kurtis, K.E. "Supplementary Cementitious Materials for Mitigating Kraft Pulp Fiber-Cement Composite Degradation." *Cement and Concrete Research*, 2007; 37(11): 1531-1543. http://dx.doi.org/10.1016/j.cemconres.2007.08.001

19. Mohr, B.J., Hood, K.L. "Internal Curing Water Movement in High Performance Cement-Based Materials." In: Proceedings of the *Material Science and Technology 2006 – Advances in Cement-Based Materials: Manufacture, Hydration, Admixture Interaction, Properties, and Degradation***,** V. 4: Processing, 2006: 13-24. ISBN: 978-0-87339-646-2

20. Mohr, B.J., Hood, K.L., Buchanan, G.R. "Mitigation of Autogenous Shrinkage in Mortars: Analysis and Modeling of Water Migration and Comparison of Various Internal Curing Materials." In: Proceedings of the *International RILEM Conference on Volume Changes of Hardening Concrete: Testing and Mitigation*, Lyngby, Denmark, RILEM Proceedings PRO 52, Eds. Jensen, O.M., Lura, P., Kovler, K., 2006: 127-136. http://dx.doi.org/10.1617/2351580052.014

21. Mohr, B.J., Biernacki, J.J., Kurtis, K.E. "Microstructural and Chemical Effects of Wet/Dry Cycling on Pulp Fiber-Cement Composites." *Cement and Concrete Research*, 2006; 36(7): 1240-1251. http://dx.doi.org/10.1016/j.cemconres.2006.03.020

22. Mohr, B.J., Kurtis, K.E. “Fractography of Fiber-Cement Composites Via Laser Scanning Confocal Microscopy,” *Proc. 16th European Conference on Fracture*, Measuring, Monitoring, and Modeling Concrete Properties: in Honor of Surendra P. Shah, Ed. M.S. Konsta-Gdoutos, Alexandroupolis, Greece, July 3-7, 2006, 503-508.
http://dx.doi.org/10.1007/978-1-4020-5104-3_61

23. Mohr, B.J., Nanko, H., Kurtis, K.E. “Aligned Kraft Pulp Fiber Sheets for Reinforcing Mortar.” *Cement and Concrete Composites*, 2006; 28(2): 161-172.
http://dx.doi.org/10.1016/j.cemconcomp.2005.08.004

24. Mohr, B.J., Nanko, H., Kurtis, K.E. “Durability of Thermomechanical Pulp Fiber-Cement Composites to Wet/Dry Cycling.” *Cement and Concrete Research*, 2005; 35(8): 1646-1649.
http://dx.doi.org/10.1016/j.cemconres.2005.04.005

25. Mohr, B.J., Nanko, H., Kurtis, K.E. “Durability of Kraft Pulp Fiber-Cement Composites to Wet/Dry Cycling.” *Cement and Concrete Composites* 2005; 27(4): 435-448.
http://dx.doi.org/10.1016/j.cemconcomp.2004.07.006

26. Mohr, B.J., Premenko, L., Nanko, H., Kurtis, K.E. “Examination of Wood-Derived Powders and Fibers for Internal Curing of Cement-Based Materials.” In: Proceedings of the *4th International Seminar on Self-Desiccation and Its Importance in Concrete Technology*, Eds. Persson, B., Bentz, D., Nilsson, L.O., 2005: 229-244.

27. Justice, J.M, Kennison, L.H., Mohr, B.J., Beckwith, S., McCormick, L., Wiggins, B., Zhang, Z.Z., Kurtis, K.E. “Comparison of Two Metakaolins and Silica Fume Used as Supplementary Cementitious Materials.” In: Proceedings of the *ACI 7th International Symposium on Utilization of High-Strength/High Performance Concrete*, SP-228, Detroit: American Concrete Institute, 2005: 213-235.

28. El-Ashkar, N.H., Mohr, B.J., Nanko, H., Kurtis, K.E. “Durability of Pulp Fiber-Cement Composites to Wet/Dry Cycling.” In: Proceedings of the *International Conference on Advances in Building Technology*, Eds. Anson, M., Ko, J.M., Lam, E.S.S., 2002: 233-237.
ISBN: 978-0-08-044100-9

Non-Refereed Publications/Technical Reports

1. Crouch, L.K., Crowley, A., Badoe, D., Jeffries, S., Mohr, B.J. "Higher Volume Fly Ash (HVFA) Portland Cement Concrete (PCC) for Sustainability and Performance." TDOT Technical Report, 2015 (accepted).

2. Crouch, L.K., Browning, A., Badoe, D., Crowley, A., Kelly, K., Mohr, B.J. "Optimum Air Content Range (Plastic and Hardened) for TDOT Class D Portland Cement Concrete (PCC). TDOT Technical Report, 2015 (accepted).

3. Crouch, L.K., Badoe, D., Crowley, A., Kelly, K., Rogers, C., Mohr, B.J. "Development of TDOT Class D-LP (Lower Permeability) Concrete Mixture." TDOT Technical Report, 2015 (accepted).

4. Crouch, L.K., Rogers, C., Badoe, D., Dillon, S., Crowley, A., Mohr, B.J. "Expanding the Informational Catalog of TDOT Lower Permeability Bridge Deck Concrete Mixtures." TDOT Technical Report, 2015 (accepted).

5. Mohr, B.J., El-Ashkar, N.H., Kurtis, K.E. "Fiber-Cement Composites for Housing Construction: State-of-the-Art Review." In: Proceedings of the *NSF Housing Research Agenda Workshop*, February 12-14, 2004, Orlando, FL. Eds. Syal, M, Mullins, M., and Hastak, M. V. 2, 2004. http://www.pathnet.org/si.asp?id=1075

6. Mohr, B.J., Kurtis, K.E., Nanko, H. "PATHWAYS Innovation Grant Final Report: Investigation of Aligned Pulp Fiber Sheets as Reinforcement in Cement-Based Materials," May 2003.

Presentations (Presenting author in red)

1. Islam, M.S., Mohr, B.J. "Hydration Kinetics of Clinoptilote Zeolite Blended Ternary Cementitious Materials with Fly Ash and Metakaolin." *2nd International Conference on Construction Materials and Structures (ICCMS 2022)*, December 14-18, 2022. *Best Paper Award*

2. Islam, M.S., Mohr, B.J. "Effect of Treated Clinoptilolite Zeolite on Alkali-Silica Reaction." *2nd International Conference on Construction Materials and Structures (ICCMS 2022)*, December 14-18, 2022.

3. Islam, M.S., Mohr, B.J. "Effect of pH on the Hydration Kinetics and Early Age Properties of Clinoptilotite Zeolite-Based Cementitious Materials." *ACI Research in Progress*, October 2022.

4. Islam, M.S., Mohr, B.J. "Durability and Pore Structure of Zeolite-Based Cementitious Materials." *American Ceramic Society, Cements Division, 11th Advances in Cement-Based Materials*, Virtual, June 23-25, 2021.

5. Brockwell, J., Mohr, B.J., Datta, T. "Reducing Stormwater Pollution from Urban and Farm Runoff Using Reactive Pervious Concrete." (Poster presentation), TTU CISE Program, August 2017.

6. Mohammed-Ali, U., Mohr, B.J. "Nanoparticles for the Enhancement of Cementitious Materials" (Poster presentation), TTU CISE Program, October 2016.

7. Mohr, B.J. "Chemistry of Cement" (Invited). Department of Chemistry, Mississippi State University, August 11, 2016.

8. Shekar,Y., Mohr, B.J. "Nanoscale Characterization of Expansion Due to Delayed Ettringite Formation" (Poster presentation), *TTU Research Day*, April 2016.

9. Esfahani, E.R., Mohr, B.J. Investigation of the Effect of Magnetized Water on Compressive Strength and Amount of Used Superplasticizers and Water in Self-Compacting Concrete," *TTU Research Day*, April 2016.

10. Shekar,Y., Mohr, B.J. "Nanoscale Characterization of Expansion Due to Delayed Ettringite Formation" (Poster presentation), *TTU Research Day*, April 2015

11. France-Mensah, J., Mohr, B.J. "Development of Leachate Test for Delayed Ettringite Formation Potential in Cementitious Materials." *American Ceramics Society, Cements Division, 5th Advances in Cement-Based Materials*, Cookeville, TN, July 9-11, 2014.

12. Mohr, B.J.. Ojo, J.O. "Characterization of Relaxation Time Models for Internally Cured Mortars." *American Ceramics Society, Cements Division, 5th Advances in Cement-Based Materials*, Cookeville, TN, July 9-11, 2014.

13. Mohr, B.J.. Ojo, J.O. "Broadband Dielectric Spectroscopy: A Powerful and Versatile Experimental Tool for Studying Cementitious Materials." *American Ceramics Society, Cements Division, 5th Advances in Cement-Based Materials*, Cookeville, TN, July 9-11, 2014.

14. France-Mensah, J., Mohr, B.J. "Development of Leachate Test for Delayed Ettringite Formation Potential in Cementitious Materials" (Poster Presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 2014.

15. Thompson, J.M., Mohr B.J. "Use of Superabsorbent Polymers as Physical Air-Entrainer With Use of Marginal Fly Ash" (Poster Presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 11, 2013.

16. France-Mensah, J., Mohr, B.J. "Development of Leachate Test for Delayed Ettringite Formation Potential in Cementitious Materials" (Poster Presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 11, 2013.

17. Mohr, B.J. "Nanoscale Characterization of Expansion Due to Delayed Ettringite Formation" (Poster presentation). *2012 NSF CMMI Grantee Conference*, Boston, MA, July 11-13, 2012.

18. Mohr, B.J.. Ojo, J.O. "Broadband Dielectric Study of Mortars at Early Ages Containing Internal Curing Materials." *American Ceramic Society, Cements Division, 3rd Advances in Cement-based Materials: Characterization, Processing, Modeling and Sensing*, Austin, TX, June 10-12, 2012.

19. Keaton, D.G., Mohr, B.J. "Nanoscale Pore Structure Analysis of Mortars Undergoing Delayed Ettringite Formation." *American Ceramic Society, Cements Division, 3rd Advances in Cement-based Materials: Characterization, Processing, Modeling and Sensing*, Austin, TX, June 10-12, 2012.

20. Ojo, J.O., Mohr, B.J. "Effect of Internal Curing Materials on Dielectric Relaxation Spectrum of Concrete" (Poster presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 11, 2012.

21. Keaton, D.G., Mohr, B.J. "Nano-scale Pore Analysis of Cementitious Mortars Due to Delayed Ettringite Formation" (Poster presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 11, 2012.

22. Mohr, B.J. "Mechanisms of Expansion Due to Delayed Ettringite Formation." *American Concrete Institute, Multi-Type Durability Attack*, Cincinnati, OH, October 19, 2011.

23. Mohr, B.J., Bryant, L.B. "Elucidating the Mechanisms of Degradation Due to Delayed Ettringite Formation" (Poster presentation). *Expansive Reactions in Cement-Based Materials*, Oregon State University, Corvallis, OR, July 27-29, 2011.

24. Mohr, B.J., Bryant, L.B. "Elucidating the Mechanisms of Degradation Due to Delayed Ettringite Formation." *American Ceramic Society, Cements Division, 2nd Advances in Cement-based Materials: Characterization, Processing, Modeling and Sensing*, Nashville, TN, July 24-26, 2011.

25. Mohr, B.J., Guo, T., Ojo, J.O. "Dielectric Determination of Bound Water Relaxation-Time and Evolution in Early-Age Cementitious Materials." *American Ceramic Society, Cements Division, 2nd Advances in Cement-based Materials: Characterization, Processing, Modeling and Sensing*, Nashville, TN, July 24-26, 2011.

26. Bryant, L.B., Mohr, B.J. "Concrete Expansion Due to Delayed Ettringite Formation" (Poster presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 7, 2011.

27. Ojo, J.O., Mohr, B.J. "Broadband Dielectric Spectroscopy: A Green and Sustainable Testing Technique for Cementitious Materials" (Poster presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 7, 2011.

28. Keaton, D.G., Mohr, B.J. "Age of Cracking and Induced Tensile Stress Characteristics of Internally Cured Concrete due to Restrained Drying Shrinkage" (Poster presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 7, 2011.

29. Bryant, L.B., Mohr, B.J. "Expansion of Mortas Due to Delayed Ettringite Formation" (Poster presentation). *NSF CMMI Grantee Conference*, Atlanta, GA, January 4-7, 2011.

30. Ojo, J.O., Mohr B.J. "Broadband Dielectric Spectroscopy: A Gateway for Future Cementitious Materials Testing and Measurement" (Poster presentation). *NSF CMMI Grantee Conference*, Atlanta, GA, January 4-7, 2011.

31. Mohr, B.J. "Curing Concrete from the Inside Out: Advances in Internal Curing" (**Invited**). Department of Civil and Environmental Engineering, Vanderbilt University, October 11, 2010.

32. Mohr, B.J., Guo, T., Ojo, J.O. "Early Prediction of Concrete Durability Using Broadband Time-Domain Reflectometry Dielectric Spectroscopy." *American Ceramic Society, Cements Division, Advances in Cement-based Materials: Characterization, Processing, Modeling and Sensing***,** West Lafeyette, IN, July 13, 2010.

33. Ojo, J.O., Mohr, B.J. "Early Prediction of Concrete Durability Using Broadband Time-Domain Reflectometry Dielectric Spectroscopy" (Poster presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 15, 2010.

34. Smith, L.B., Mohr, B.J. "Expansion of Mortas Due to Delayed Ettringite Formation" (Poster presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 15, 2010.

35. Matheny, S.R., Mohr, B.J. "Effects of Lightweight Aggregates and Curing Methods on Concrete Freeze-Thaw Durability" (Poster presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 15, 2010.

36. Keaton, D.G., Mohr, B.J. "Age of Cracking and Induced Tensile Stress Characteristics of Internally Cured Concrete due to Restrained Drying Shrinkage" (Poster presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 15, 2010.

37. Mohr, B.J. "Curing Concrete from the Inside Out: Advances in Internal Curing" (**Invited**). Department of Civil and Environmental Engineering, School of Engineering and Applied Science, The George Washington University, November 16, 2009.

38. Mohr, B.J., Ojo, J.O. "Analysis of Cement Hydration and Transport Kinetics at Early Ages" (**KEYNOTE**). *3rd International Symposium on Nanotechnology in Construction (NICOM3)*, Prague, Czech Republic, June 1, 2009.

39. Ojo, J.O., Mohr, B.J. "Proton NMR: A Novel Approach for Characterizing the Durability of High Performance Concrete." *Tennessee Technological University Student Research Day,* Cookeville, TN, March 31, 2009.

40. Smith, L.B., Mohr, B.J. "Concrete Expansion Due to Delayed Ettringite Formation." *Tennessee Technological University Student Research Day,* Cookeville, TN, March 31, 2009.

41. Thomason, J.C., Mohr, B.J. "High Performance Lightweight Concrete." *Tennessee Technological University Student Research Day,* Cookeville, TN, March 31, 2009.

42. Smith, L.B., Mohr, B.J. "Expansion of Concrete Due to Delayed Ettringite Formation" (Poster presentation). *4th Annual Undergraduate Research Posters at the Capital*, Nashville, TN, February 11, 2009.

43. Smith, L.B., Mohr, B.J. "Expansion of Cementitious Mortars Due to Delayed Ettringite Formation." *19th Annual Argonne Symposium for Undergraduates in Science, Engineering, and Mathematics, Argonne National Laboratory*, Argonne, IL, November 7, 2008.

44. Mohr, B.J. "Curing High Performance Concrete from the Inside Out: Advances in Internal Curing" (**Invited**). Division of Engineering, Colorado School of Mines, August 25, 2008.

45. Smith, L.B., Mohr, B.J. "Expansion of Cementitious Mortars Due to Delayed Ettringite Formation" (Poster presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 1, 2008.

46. Hood, K.L., Mohr, B.J. "Internal Curing Water Movement in High Performance Cement-Based Materials." *American Concrete Institute, Internal Curing of High Performance Concretes: Laboratory and Field Experience,* Fajardo, Puerto Rico, October 15, 2007.

47. Mohr, B.J. "Multi-Scale Structure of Portland Cement-Based Materials" (**Invited**). TTU Sigma Xi Luncheon Seminar, September 20, 2007.

48. Biernacki, J.J., Mikel, S.E., Mohr, B.J., Gnaeupel-Herold, T., Almer, J. Residual Strain in Hydrating Portland Cement, *Material Science and Technology 2007 – Advances in Cement-Based Materials: Manufacturing, Hydration, Admixture Interaction, Properties/Characterization, Modeling and Degradation/Durability*, Detroit, MI, September 18, 2007.

49. Mohr, B.J. "Internal Curing and Autogenous Shrinkage Testing Methodologies" (**Invited**). *CEAT Workshop on Moisture and Temperature Modeling for Concrete Pavements,* University of Illinois, Urbana-Champaign, IL, July 10, 2007.

50. Mohr, B.J. "Measuring and Monitoring Internal Curing Water Moisture Transport" (**Invited**). *CEAT Workshop on Moisture and Temperature Modeling for Concrete Pavements,* University of Illinois, Urbana-Champaign, IL, July 9, 2007.

51. Mohr, B.J. "Modeling Internal Curing Water Moisture Transport" (**Invited**). *CEAT Workshop on Moisture and Temperature Modeling for Concrete Pavements,* University of Illinois, Urbana-Champaign, IL, July 9, 2007.

52. Hood, K.L., Mohr, B.J. "Hydration and Transport Kinetics of Internal Curing Water in High Performance Cementitious Systems." 18th ACBM/NIST Computer Modeling Workshop, Gaithersburg, MD, June 25, 2007.

53. Mohr, B.J., Biernacki, J.J., Kurtis, K.E. "Supplementary Cementitious Materials for Mitigating Kraft Pulp Fiber-Cement Composite Degradation" (**Invited**). *American Concrete Institute, Natural Fiber-Cement Composites*, Atlanta, GA, April 23, 2007.

54. Mohr, B.J., Nanko, H., Kurtis, K.E. "Internal Curing Using Wood-Derived Materials" (**Invited**). *American Concrete Institute, Natural Fiber-Cement Composites*, Atlanta, GA, April 23, 2007.

55. Hood, K.L, Mohr, B.J. "Internal Curing Materials to Mitigate Early Age Shrinkage in High Performance Portland Cement-Based Materials" (Poster presentation). *Tennessee Technological University Student Research Day,* Cookeville, TN, April 5, 2007.

56. Hood, K.L., Mohr, B.J. "Evaluation of Internal Curing Materials to Mitigate Early Age Shrinkage in High Performance Portland Cement-Based Materials" (Poster presentation). *2nd Annual Undergraduate Research Posters at the Capital*, Nashville, TN, February 7, 2007.

57. Kurtis, K.E., Mohr, B.J. "Durability of Cellulosic Fiber-Cement Composites." *Conference on Non-conventional Materials and Technologies (Brasil-NOCMAT),* Salvador-Bahia, Brazil, October 29-November 1, 2006.

58. Mohr, B.J., Hood, K.L. "Transport Kinetics of Internal Curing Water in High Performance Cement Pastes" (**Invited**). *Material Science and Technology 2006 – Advances in Cement-Based Materials: Manufacture, Hydration, Admixture Interaction, Properties, and Degradation***,** Cincinnati, OH, October 17, 2006.

59. Mohr, B.J., Hood, K.L., Buchanan, G.R. "Mitigation of Autogenous Shrinkage in Mortars: Analysis and Modeling of Water Migration and Comparison of Various Internal Curing Materials." *International RILEM*

Conference: Volume Changes of Hardening Concrete - Testing and Mitigation, BYG-DTU, Lyngby, Denmark, August 21, 2006.

60. Mohr, B.J., Kurtis, K.E. "Fractography of Fiber-Cement Composites via Laser Scanning Confocal Microscopy." *16th European Conference on Fracture, Measuring, Monitoring and Modeling Concrete Properties: In Honor of Surendra P. Shah*, Alexandroupolis, Greece, July 6, 2006.

61. Mohr, B.J., Premenko, L., Nanko, H., Kurtis, K.E. "Examination of Wood-Derived Powders and Fibers for Internal Curing of Cement-Based Materials." *4th International Seminar on Self-Desiccation and Its Importance in Concrete Technology*, Gaithersburg, MD, June 20, 2005.

62. Mohr, B.J., Nanko, H., Kurtis, K.E. "Aligned Kraft Pulp Fiber Sheets for Reinforcing Cement-Based Materials." *American Concrete Institute, Research in Progress*, New York, NY, April 18, 2005.

63. Mohr, B.J., Biernacki, J.J., Kurtis, K.E. "Microstructural and Chemical Changes in Pulp Fiber-Cement Composites Due to Wet/Dry Cycling." *107th Annual Meeting & Exposition of the American Ceramic Society*, Baltimore, MD, April 13, 2005.

64. Mohr, B.J., Biernacki, J.J., Kurtis, K.E. "Supplementary Cementitious Materials for Mitigating Kraft Pulp Fiber-Cement Composite Degradation" (Poster presentation). *107th Annual Meeting & Exposition of the American Ceramic Society*, Baltimore, MD, April 13, 2005.

65. Mohr, B.J. "Durability of Pulp Fiber-Cement Composites to Environmental Exposure" (**Invited**). Department of Chemical Engineering, Tennessee Technological University, Cookeville, TN, March 20, 2004.

66. Mohr, B.J., El-Ashkar, N.H., Kurtis, K.E. "Fiber-Cement Composites for Housing Construction: State-of-the-Art Review." *NSF-PATH Workshop*, Orlando, FL, February 14, 2004.

67. Mohr, B.J. "Durability of Pulp Fiber-Cement Composites to Wet/Dry Cycling." Georgia Tech Structural Engineering, Mechanics and Materials Seminar, September 30, 2003.

68. Fisher, A., Mohr, B.J., Kurtis, K.E., Nanko, H. "Understanding the Durability of Pulp Fibers in a Cement Matrix", *EMERGE Conference*, Atlanta, GA, April 25, 2003.

69. Mohr, B.J., Bradford, A., Fisher, A., El-Ashkar, N.H., Nanko, H., Kurtis, K.E. "Durability of Pulp Fiber-Cement Composites to Wet/Dry Cycling." *American Concrete Institute, Research in Progress*, Vancouver, BC, Canada, April 4, 2003.

70. Mohr, B.J., Bradford, A., El-Ashkar, N.H., Nanko, H., Kurtis, K.E. "Durability of Pulp Fiber-Cement Composites to Wet/Dry Cycling." *International Conference on Advances in Building Technology*, Hong Kong, China, December 4, 2002.

71. Mohr, B.J. "Fracture Behavior of Concrete." Georgia Tech Structural Engineering, Mechanics and Materials Seminar, October 29, 2002.