

Benjamin J. Mohr, Ph.D., P.E.

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or (including hosting 2011 ASCE Southeast Student Conference), CEE

E ABET Committee Chair.

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)

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- 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

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- x

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 DepartmentbÖÜ*1qFDN#”n#”1789

Under

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. “

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.jobbe.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.

22. Mohr, B.J., Kurtis, K.E. "Fractography of Fiber-Cement Composites Via Laser Scanning Confocal Microscopy," *Proc. 16*

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, O10.84Td(O)4h0.00a-2.3 (hk)10.2ae2

Presentations (Presenting author in red)

1. **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)*, 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 Clinoptilolite 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 6 (ol)6.3 -4.6 (r)-4 (u)10n 6 (ol)6.3 -4.6 (r)-4 (u)10n 6

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 Spectroscopy of Cementitious Materials.” *American Ceramic Society, Cements Division, 3rd Advances in Cement-based Materials: Characterization, Processing, Modeling and Sensing*, Austin, TX, June 10-12, 2012.

30. Ojo, J.O., **Mohr B.J.** “Broadband Dielectric Spectroscopy: A Gateway for Future Cementitious Materials Testing and Measurement” (Poster presentation).

45. **Smith, L.B.**, Mohr, B.J. “Expansion of Cementitious Mortars Due to Delayed Ettringite Formation” (Poster presentation). *Tennessee Technological University Student Research Day*,

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