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2013 Scholarly Productivity Report

Missouri University of Science and Technology

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Scholarly Productivity Report

Civil, Architectural and
Environmental Engineering

2013



Building the best

Civil, Architectural and
Environmental Engineering

DEPARTMENT MISSION:

*We shape the future of built and natural
environments of our global society through
creative research and education.*



Dr. Lesley Sneed's concrete class received an up close and personal tour of the new chemical and biochemical engineering building, James E. Bertelsmeyer Hall. The building is scheduled for completion in summer 2014.

Missouri University of Science and Technology



Civil Engineering

The Department of Civil, Architectural and Environmental Engineering at Missouri S&T has a rich tradition of preparing the best “street-ready” engineers to address global challenges.

With our world-class facilities, renowned researchers and dedicated faculty, we are proud to be the only civil engineering program in Missouri to have been ranked as a top 25 undergraduate program by *U.S. News & World Report*. Educated in specialized areas such as materials, geotechnical and water resources engineering, and pollution control, our graduates recognize the importance of improving our national security, safeguarding human health and maintaining our country's aging infrastructure.



Architectural Engineering

By integrating research and teaching, our graduates will be equipped to excel in an ever-changing world. Whether they are designing an infrastructure with a zero energy footprint, bringing clean water to a remote village, leading a multinational team of social entrepreneurs, or building a suspension bridge with advanced engineering materials, they will have the flexibility, fluency and foresight to lead.

You are invited to browse the following pages and to discover the many accomplishments of our outstanding faculty and students.



Environmental Engineering

Faculty Profiles



Dan Abbott

Lecturer, Mechanics

Education: M.S., Mechanical Engineering, Missouri University of Science and Technology
Courses Taught: Engineering Mechanics: Statics, Materials Testing, Introduction to Engineering Design



Chien-Chung Chen, Ph.D.

Assistant Teaching Professor,

Structural Engineering

Education: Ph.D. Civil Engineering, Pennsylvania State University
Research Interests: Composite members, Force protection, Bridge engineering



Bate Bate, Ph.D.

Assistant Professor, Geotechnical Engineering

Education: Ph.D. Civil Engineering, Georgia Institute of Technology
Research Interests: Contaminant containment and site remediation, In situ soil improvement, Beneficial reuse of industrial waste materials, Modeling of fundamental soil behavior using discrete element method, Unsaturated soil mechanics



Genda Chen, Ph.D., P.E., F.ASCE

Professor, Structural Engineering

Education: Ph.D. Civil Engineering, State University of New York at Buffalo
Research Interests: Structural health monitoring, Interface mechanics and deterioration of composite structures, Adaptive passive dampers and systems, Multi-hazards assessment and mitigation, Forensic study, Seismic analysis and retrofit, Soil-structure interaction, Bridge engineering



Stuart Baur, Ph.D., A.I.A.

*Assistant Chair, Architectural Engineering,
 Associate Professor, Architectural Engineering*

Education: Ph.D. Civil Engineering, Missouri University of Science and Technology
Research Interests: Design cost effective clean alternative energy, Develop new building technologies and practices through the use of materials and methodology, Generate intelligent responsive building systems



Mohamed ElGawady, Ph.D.

Associate Professor, Structural Engineering

Education: Ph.D., Structural Engineering, Swiss Federal Institute of Technology (EPFL) Lausanne, Switzerland
Research Interests: Seismic behavior of unreinforced masonry (URM) structures, Application of Fiber Reinforced Polymers (FRP) in strengthening and repair of masonry/reinforced concrete structures, Seismic behavior of reinforced concrete bridges, Damage-free bridge columns, Segmental construction, Rocking mechanics and the use of sustainable materials in seismic prone regions



Jerry Bayless, P.E., F.ASCE

Associate Professor, Civil Engineering

Education: M.S. Civil Engineering, Missouri University of Science and Technology
Courses Taught: Structural Analysis, Reinforced Concrete Design, Elementary Fluid Mechanics



Dimitri Feys, Ph.D.

Assistant Professor, Materials Engineering

Education: Ph.D., Civil Engineering, Ghent University, Ghent, Belgium
Research Interests: Behavior of highly workable concrete in the fresh state, Rheology of complex materials and suspensions, Suspension flow and sedimentation, Fluid mechanics and flow modeling, Concrete made with recycled materials and advanced sustainability



Joel Burken, Ph.D., P.E., BCEE, AAEE *Associate Department Chair, Civil, Architectural and Environmental Engineering*

Education: Ph.D. Civil and Environmental Engineering, University of Iowa
Research Interests: Phytoforensics, Phytoremediation and natural treatment systems, Biological wastewater treatment, Constructed wetlands, Green remediation



Mark Fitch, Ph.D.

Assistant Chair, Environmental Engineering

Associate Professor, Environmental Engineering

Education: Ph.D. Chemical Engineering, University of Texas at Austin
Research Interests: Constructed wetlands/ Biochemical reactors for metals removal, Biofiltration/Membrane biofiltration, Nutrient uptake in streams



Kamal Khayat, Ph.D., P.E., F.ACI
*Vernon and Maralee Jones Professor,
 Materials Engineering
 Director, Center for Infrastructure
 Engineering Studies
 Director, Center for Transportation
 Infrastructure and Safety*

Education: Ph.D. Civil Engineering, University of California, Berkeley
Research Interests: Design and performance of advanced structural materials, including high-performance concrete with adapted rheology, self-consolidating concrete and specialty grouts, Repair and rehabilitation of civil engineering infrastructure, Rheology and workability of cement grout, mortar and concrete, Physico-chemical interaction of chemical admixtures and modern hydraulic binders, Microstructure and properties of cement-based materials, Mechanical properties, visco-elastic properties and structural performance of specialty concrete, Durability and deterioration of cement-based materials in aggressive environments, Use of chemical admixtures, supplementary cementitious materials and fibers in concrete



John Myers, Ph.D., P.E., F.ACI, F.ASCE
*Professor, Structural Engineering
 Director, Structural Engineering
 High-Bay Laboratory
 Associate Director, Center for Transportation
 Infrastructure and Safety*

Education: Ph.D. Civil Engineering, University of Texas at Austin
Research Interests: Structures/high performance concrete (HPC) behavior and durability performance, Fiber-reinforced polymers (FRP) in structural repair and strengthening applications with an emphasis related to concrete and masonry structures, and their durability performance, Development of environmentally sensitive construction materials, Hybrid materials and enhanced systems for blast resistant structures



Ronaldo Luna, Ph.D., P.E., F.ASCE
*Assistant Chair, Civil Engineering
 Professor, Geotechnical Engineering*

Education: Ph.D. Civil Engineering, Georgia Institute of Technology
Research Interests: Soil mechanics and foundation engineering, Geotechnical earthquake engineering, Liquefaction of soils, Geographic information systems and remote sensing



Daniel Oerther, Ph.D., P.E., BCEE, AAEF, F.ASCE
*John & Susan Mathes Professor,
 Environmental Engineering*

Education: Doctor of Philosophy, University of Illinois, Urbana
Research Interests: Environmental biotechnology, Urban sustainability, Global development



Timothy Philpot, Ph.D., P.E.
Associate Professor, Structural Engineering

Education: Ph.D. Civil Engineering, Purdue University
Research Interests: Development of interactive educational software for the introductory engineering mechanics courses



Cesar Mendoza, Ph.D.
*Associate Professor,
 Water Resources Engineering*

Education: Ph.D. Civil Engineering, Colorado State University
Research Interests: Hydraulics, Hydrology, Fluid mechanics, Sediment transport, Stream mechanics, Environmental hydraulics, Mathematical modeling



David Richardson, Ph.D., P.E.
Associate Professor, Materials Engineering

Education: Ph.D. Civil Engineering, Missouri University of Science and Technology
Research Interests: Properties of pavement materials (asphalt, concrete, granular base, stabilized soil, subgrades), Properties of building materials (concrete, masonry, aggregate), Pavement design and analysis, Materials testing (methods and evaluation)



Glenn Morrison, Ph.D., F.ISIAQ
Professor, Environmental Engineering

Education: Ph.D. Civil Engineering, University of California, Berkeley
Research Interests: Indoor air pollution, Indoor surface chemistry, Pollutant transport, Exposure analysis, Building science

(continued on the next page)

Faculty Profiles



William Schonberg, Ph.D., P.E.,
F.ASCE, F.ASME, Assoc F.AIAA
*Department Chair, Civil, Architectural and
Environmental Engineering*
Professor, Aerospace Engineering
Education: Ph.D. Civil Engineering,
Northwestern University
Research Interests: Armor/anti-armor and
penetration mechanics, Spacecraft vulnerability/
survivability, Spacecraft shielding against meteoroid
and orbital debris impacts, Hypervelocity impact
phenomena, Building collapse/rubble modeling



Eric Showalter, Ph.D., P.E.
*Associate Teaching Professor,
Construction Engineering*
Education: Ph.D. Civil Engineering,
Purdue University
Research Interests: Information technology
applications in construction, Environmental
remediation, Productivity simulation,
Cost effectiveness of technology



Lesley Sneed, Ph.D., P.E.
Assistant Professor, Structural Engineering
Education: Ph.D. Civil Engineering,
Purdue University
Research Interests: Reinforced and prestressed
concrete structural members and systems,
Structural models and experimental methods,
Innovative methods of repair and strengthening
of structures subjected to seismic loading or other
extreme hazards, Structural hazard mitigation,
Design codes and construction specifications for
structural concrete



Richard Stephenson, Ph.D., P.E.
Chancellor's Professor, Geotechnical Engineering
Education: Ph.D. Civil Engineering,
Oklahoma State University
Research Interests: Foundation design, Engineering
behavior of soils, Embankment dams, Foundation
engineering, Geotechnical engineering



Jeffery Thomas, Ph.D., P.E.
Associate Teaching Professor, Mechanics
Education: Ph.D. Engineering Mechanics,
Missouri University of Science and Technology
Research Interests: Engineering education,
Mechanics of biological materials, Design of
percussion instruments, Residential construction



Jianmin Wang, Ph.D., P.E.
Associate Professor, Environmental Engineering
Education: Ph.D. Civil Engineering,
University of Delaware
Research Interests: Sustainable technologies
for advanced wastewater treatment, Synergistic
toxic effect of nanoparticles and heavy metals,
Fate and transport of heavy metals in natural and
engineered systems

A teacher affects eternity; he can never tell where his influence stops.

— Henry Brooks Adams (1838-1918)

Tenure, Promotions

Three faculty members, pictured right, received promotions or tenure in 2013.



Glenn Morrison
Professor

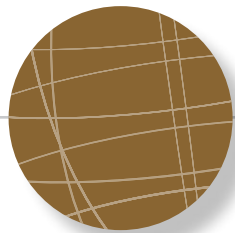


John Myers
Professor



Jeffery Thomas
Associate Teaching
Professor

Journal Publications



JOURNALS

Bate, B., and Zhang, L.M., "Use of Vacuum for the Stabilization of Dry Sand Slopes," *Journal of Geotechnical and Geoenvironmental Engineering*, Vol. 139, No. 1, pp. 143-151, 2013.

Bate, B., Choo, H.W., and Burns, S.E., "Dynamic Properties of Fine-Grained Soils Engineered with a Controlled Organic Phase," *Soil Dynamics and Earthquake Engineering*, Vol. 53, pp.176-186, 2013.

Baur, S.W., and Wermager, S., "Modeling Analysis of a Solar House in the Midwest," *Journal of Energies*, Vol. 6, No. 12, pp. 6373-6390, 2013.

Carlile, C., Nadiger, S., and **Burken, J.G.**, "Effect of Fly Ash on Growth of Mustard and Corn," *Biosciences Biotechnology Research Asia*, Vol. 10, No. 2, pp. 551-557, 2013.

Limmer, M.A., Shetty, M., Markus, S.A., Kroeker, R., Parker, B., and **Burken, J.G.**, "Directional Phytoscreening: Contaminant Gradients in Trees for Plume Delineation," *Environmental Science and Technology*, Vol. 47, No. 16, pp. 9069–9076, 2013.

Odom, L., **Burken, J.G.**, and Newman, L.A., "Distribution and Accumulation of Trichloroethylene and Trichloroacetic Acid in Hybrid Poplars," *Journal of Environmental Engineering*, Vol. 139, No. 9, pp. 1162-1167, 2013.

Henry, H.F., **Burken, J.G.**, Maier, R.M., Newman, L.A., Schnoor, J.L., Rock, S., and Suk, W.A., "Phytotechnologies – Preventing Exposures, Improving Public Health," *International Journal of Phytoremediation*, Vol. 15, No. 9, pp. 889-899, 2013.

Wilson, J., Bartz, R., Limmer, M.A., and **Burken, J.G.**, "Plants as Bio-Indicators of Subsurface Conditions: Impact of Groundwater Level on BTEX Concentrations in Trees," *International Journal of Phytoremediation*, Vol. 15, No. 9, pp. 900-910, 2013.

Burken, J.G., "Natural Treatment Systems: More than Just a Solution to Pollution – Introduction to Special Issue on Natural Treatment Systems," Editorial, *Journal of Environmental Engineering*, Vol. 139, No. 4, pp. 461, 2013.

Chen, C.-C., "Accuracy of AISC Methods in Predicting Flexural Strength of Concrete Encased Composite Members," *Journal of Structural Engineering*, Vol. 139, No. 3, pp. 338-349, 2013.

Wang, Z., and **Chen, G.**, "Analytical Mode Decomposition with Hilbert Transform for Modal Parameter Identification of Building under Ambient Vibration," *Engineering Structures*, doi:10.1016/j.engstruct.2013.10.020, 2013.

Wang, Z., and **Chen, G.**, "Analytical Mode Decomposition of Time Series with Decaying Amplitudes and Overlapping Instantaneous Frequencies," *Smart Materials and Structures*, Vol. 22, No. 9, pp. 1-14, 2013.

Huang, Y., Chen, B., **Chen, G.**, Xiao, H., and Khan, S.U., "Simultaneous Detection of Liquid Level and Refractive Index with a Long Period Fiber Grating Based Sensor Device," *Measurement Science and Technology*, Vol. 24, No. 9, pp. 10ff, 2013.

Huang, Y., Cao, Z., **Chen, G.**, and Xiao, H., "Long Period Fiber Grating Sensors Coated with Nano Iron/Silica Particles for Corrosion Monitoring," *Smart Materials and Structures*, Vol. 22, No. 7, doi:10.1088/0964-1726/22/7/075018, 2013.

Wang, Z., Ren, W., and **Chen, G.**, "Time-Varying Linear and Nonlinear Structural Identification with Analytical Mode Decomposition and Hilbert Transform," *Journal of Structural Engineering*, doi: 10.1061/(ASCE)ST.1943-541X0000832, 2013.

Wang, Z., **Chen, G.**, Yen, P.W., and Buckle, I., "Cardinal Raúl Silva Henríquez Bridge during the 2010 Chile Earthquake – Failure Analysis and Retrofit Strategy," *Journal of the Transportation Research Board*, Paper No. 13-3048, Vol. 2, No. 2332, pp. 13-19, 2013.

Fakharifar, M., Lin, Z., Wu, C., Mahadik-Khanolkar, S., Leventis, N., and **Chen, G.**, "Microstructural Characteristics of Polyurea and Polyurethane Xerogels for Concrete Confinement with FRP System," *Advanced Materials Research*, Vol. 742, pp. 237-242, 2013.

Wang, Z., Ren, W., and **Chen, G.**, "Time-varying System Identification of High Voltage Switches of a Power Substation with Slide-window Least-squares Parameter Estimations," *Smart Materials and Structures*, Vol. 22, No. 6, pp. 1-13, 2013.

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Wu, C., **Chen, G.**, **Volz, J.S.**, Brow, R.K., and Koenigstein, M.L., "Global Bond Behavior of Enamel-Coated Rebar in Concrete Beams with Spliced Reinforcement," *Construction and Building Materials*, Vol. 40, pp. 793-801, 2013.

Huang, Y., Fang, X., Zhou, Z., **Chen, G.**, and Xiao, H., "Large-Strain Optical Fiber Sensing and Real-Time FEM Updating of Steel Structures under the High Temperature Effect," *Smart Materials and Structures*, Vol. 22, No.1, doi:10.1088/0964-1726/22/1/015016, 2013.

Wang, Z., and **Chen, G.**, "A Moving-Window Least-Squares Fitting Method for Crack Detection and Rigidity Identification of Multi-Span Bridges," *Structural Control and Health Monitoring*, Vol. 20, No. 3, pp. 387-404, 2013.

Pant, D., Wijeyewickrema, A., and **ElGawady, M.A.**, "Appropriate Viscous Damping for Nonlinear Time-History Analysis of Base-Isolated Reinforced Concrete Buildings," *J. Earthquake Engineering and Structural Dynamics*, Vol. 42, No. 15, pp. 2321-2339, 2013.

Ichikawa, S., Nakamura, K., Matsuzaki, H., **ElGawady, M.A.**, Kanamitsu, Y., Yamanobe, S., and Kawashima, K., "Enhancement of the Seismic Performance of Bridge Columns using Ultra-High Strength Fiber Reinforced Concrete Segments," *Journal of the Japanese Society of Civil Engineers A1*, Vol. 69, No. 4, 2013.

Dawood, H., and **ElGawady, M.A.**, "Performance-based Seismic Design of Unbonded Precast Post-tensioned Concrete Filled GFRP Tube Piers," *Composites Part B: Engineering*, Vol. 44, No. 1, pp. 357-367, 2013.

Feys, D., J.E. Wallevik, A. Yahia, **Khayat, K.H.**, and Wallevik, O.H., "Extension of the Reiner-Riwlin Equation to Determine Modified Bingham Parameters Measured in Coaxial Cylinders Rheometers," *RILEM Materials and Structures*, Vol. 46, pp. 289-312, 2013.

Long, W.J., **Khayat, K.H.**, and Hwang, S.D., "Mechanical Properties of Prestressed Self-Consolidating Concrete," *RILEM Materials and Structures*, Vol. 46, No. 9, pp. 1473-1487, 2013.

Hwang, S.D., **Khayat, K.H.**, and Youssef, D., "Effect of Moist Curing and Use of Lightweight Sand on Characteristics of High-Performance Concrete," *RILEM Materials and Structures*, Vol. 46, No. 1-2, pp. 35-46, 2013.

Omran, A.F., and **Khayat, K.H.**, "Portable Pressure Device to Evaluate Lateral Formwork Pressure Exerted by Fresh Concrete," *Journal of Materials in Civil Engineering*, Vol. 25, No. 6, pp. 731-740, 2013.

Wang, S., **Luna, R.**, and Yang, J., "Post-cyclic Behavior of Low-Plasticity Silt with Limited Excess Pore Pressures," *Soil Dynamics and Earthquake Engineering*, Vol. 54, pp. 39-46, 2013.

Shetty, M., Limmer, M., Waltermire, K., **Morrison, G.C.**, and **Burken, J.G.**, "In planta Passive Sampling Devices for Assessing Subsurface Chlorinated Solvents," *Chemosphere*, DOI:10.1016/j.chemosphere.2013.10.084, 2013.

Gall, E., Darling, E., **Morrison, G.C.**, Siegel, J.A., and Corsi, R.L., "Evaluation of Common Green Building Materials for Ozone Removal, Primary and Secondary Emissions," *Atmospheric Environment*, Vol. 77, pp. 910-918, 2013.

Arezoumandi, M., **Volz, J.S.**, Ortega, C.O., and **Myers, J.J.**, "Shear Behavior of High-Volume Fly Ash Concrete versus Conventional Concrete – Experimental Study," *Journal of Structural Engineering*, pp. 1506-1513, [http://dx.doi.org/10.1061/\(ASCE\)MT.1943-5533.0000700](http://dx.doi.org/10.1061/(ASCE)MT.1943-5533.0000700), 2013.

Myers, J.J., and Bloch, K.E., "Comparison of Pre-stress Losses for Pedestrian Bridges Constructed with HSC and HS-SCC," *Journal of Bridge Engineering*, pp. 871-878, ([http://dx.doi.org/10.1061/\(ASCE\)BE.1943-5592.0000431](http://dx.doi.org/10.1061/(ASCE)BE.1943-5592.0000431)), 2013.

Myers, J.J., and Tinsley, M., "Impact Resistance of a Blast Mitigation Material Using a Modified ACI Drop-Weight Impact Test," *Materials Journal*, Vol. 110, No. 3, pp. 339-348, 2013.

Arezoumandi, M., **Volz, J.S.**, Ortega, C.O., and **Myers, J.J.**, "Effect of Total Cementitious Content on Shear Strength of High-Volume Fly Ash Concrete," *Materials and Design Journal*, Vol. 46, pp. 301-309, 2013.

Arezoumandi, M., **Volz, J.S.**, and **Myers, J.J.**, "Effect of High-Volume Fly Ash on Shear Strength of Concrete Beams," *Transportation Research Record – Concrete Materials*, pp.1-9, 2013.

Greene, C.E., and **Myers, J.J.**, "Flexural and Shear Behavior of Reinforced Concrete Members Strengthened with a Discrete Fiber-Reinforced Polyurea (DFRP) System," *Journal of Composites in Construction*, Vol. 17, No. 1, pp. 108-116, 2013.

Lamendella, R., Li, K., **Oerther, D.B.**, and Santo Domingo, J.W., "Molecular Diversity of Bacteroidales in Fecal and Environmental Samples and Swine-Associated Sub-Populations," *Applied and Environmental Microbiology*, Vol. 79, No. 3, pp. 816-824, 2013.

Divelbiss, D., Boccelli, D., Sucop, G., and **Oerther, D.B.**, "Environmental Health and Household Demographics Impacting Biosand Filter Maintenance and Diarrhea in Guatemala: an Application of Structural Equation Modeling," *Environmental Science and Technology*, Vol. 47, No. 3, pp. 1638-1645, 2013.

Schonberg, W.P., Evans, S., and Bjorkman, M.D., "Hypervelocity Impact Testing of Multi-Wall Targets Using Multiple Simultaneously Launched Projectiles," *Journal of Spacecraft and Rockets*, Vol. 50, No. 2, pp. 358-364, 2013.

Williamsen, J.E., **Schonberg, W.P.**, and Evans, H.J., "Generic Module Wall Damage Prediction Equations for Habitable Spacecraft Crew Survivability Evaluations," *International Journal of Impact Engineering*, Vol. 56, pp. 71-81, 2013.

He, R., Grelle, S., **Sneed, L.H.**, and Belarbi, A., "Rapid Repair of a Severely Damaged RC Column Having Fractured Bars Using Externally Bonded CFRP," *Journal of Composite Structures*, Vol. 101, pp. 225-242, 2013.

Grelle, S.V., and **Sneed, L.H.**, "Review of Anchorage Systems for Externally-Bonded FRP Laminates," *International Journal of Concrete Structures and Materials*, Vol. 7, No. 1, pp. 17-33, 2013.

He, R., **Sneed, L.H.**, and Belarbi, A., "Rapid Repair of Severely Damaged RC Columns with Different Damage Conditions – An Experimental Study," *International Journal of Concrete Structures and Materials*, Vol. 7, No. 1, pp. 35-50, 2013.

Liu, G., and **Wang, J.**, "Long-Term Low DO Enriches and Shifts Nitrifier Community in Activated Sludge," *Environmental Science and Technology*, 47, pp. 5109-5117, 2013.

Dan, Y., Zimmerman, C., Liu, K., Shi, H., and **Wang, J.**, "Increased Leaching of As, Se, Mo, and V from High Calcium Coal Ash Containing Trona Reaction Products," *Energy and Fuels*, Vol. 27, pp. 1531-1537, 2013.

2013 Highlights

Bridge Project *Jefferson City, Missouri*

Just east of Jefferson City, Mo., on Highway 50, sits one of the nation's first bridges to incorporate an unusual concrete mix in its girders and support structure. The three-span bridge is outfitted with various sensors and instrumentation to collect data on how well the bridge performs over time. It's another milestone for Dr. John J. Myers and his team, working with the Missouri Department of Transportation and S&T's National University Transportation Center.



Green Roof *Emerson Hall*

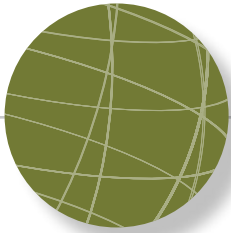
The Missouri S&T Green Roof atop Emerson Hall features 16,000 plants arranged in the shape of a shamrock and provides research and teaching opportunities for faculty and students. The roof is divided into three sections, each covered with different roofing materials, which will allow S&T researchers to compare the water runoff control, water quality and thermal properties of each material.

Steel Bridge Team *Nationally-Ranked*

S&T's Steel Bridge Team qualified for the national competition for the second time in five years by taking second place at the American Society of Civil Engineers' Mid-Continent Student Conference at Southern Illinois University-Edwardsville.



Conference Papers & Presentations



CONFERENCE

Kang, X., Zhao, X., and **Bate, B.**, "Microscopic and Physicochemical Studies of Fly Ash-Kaolinite Suspensions," International Workshop in Experimental Micromechanics for Geomaterials, Hong Kong, China, May, 2013.

Kang, X., Zhao, X., and **Bate, B.**, "Sedimentation Behavior of Fly Ash-Kaolinite Mixtures," The 7th International Conference on Case Histories in Geotechnical Engineering, Chicago, IL, May, 2013.

Burken, J.G., "Phytoforensics: Soil and Groundwater Sampling Without Soil or Groundwater!" The 7th International Conference on Case Histories in Geotechnical Engineering, Chicago, IL, May, 2013 (invited).

Robison, J.L., Hotz, R.D., and **Chen, C.-C.**, "Emerging Technologies: A Suggested Design Method for Curved, Jacked Steel Pipe," ASCE Pipelines 2013 Conference, Fort Worth, TX, June 2013.

Chen, G., and Huang, Y., "Real-Time Monitoring and Assessment of Large-Scale Infrastructure with Statistically Correlated, Hybrid Instrumented/ Computational Simulations," Proceedings of the 6th of International Conference on Structural Health Monitoring of Intelligent Infrastructure, Hong Kong, China, December, 2013 (invited).

Chen, G., "New Perspectives on Structural Health Monitoring of Transportation Infrastructure," 3rd International Association of Chinese Infrastructure Professionals' Annual Workshop on Emerging Issues in Transportation

Infrastructure Design, Inspection and Maintenance at the 92nd Transportation Research Board Annual Meeting, Washington D.C., January, 2013 (keynote presentation).

ElGawady, M.A., Ryu, D., and Wijeyewickrema, A.C., "In-Plane Behaviour of Post-Tensioned Masonry Walls," 12th Canadian Masonry Symposium, Vancouver, Canada, June, 2013.

ElGawady, M.A., and Dawood, H., "Design of Unbonded Precast Post-Tensioned Piers Constructed Using Concrete Filled FRP Tubes," PCI Convention and National Bridge Conference, Grapevine, Texas, September, 2013.

Youssef, O., and **ElGawady, M.A.**, "Finite Element Modeling of FRP Encased

Rubberized Concrete," 20th International Congress on Modelling and Simulation, Adelaide, South Australia, December, 2013.

Youssef, O., and **ElGawady, M.A.**, "Behavior of Sustainable Concrete Made With Scrap Rubber," International Concrete Sustainability Conference, San Francisco, May, 2013.

Hassanli, R., and **ElGawady, M.A.**, "The Accuracy of In-Plane Shear Strength of PGM Walls in Different International Standards," 12th Canadian Masonry Symposium, Vancouver, Canada, June, 2013.

Gillis, W., "Understanding The Design Impacts Among LEED Certification Credits," Industrial And Systems Engineering Research Conference, IIE



Dr. Mohamed A. ElGawady, associate professor (at right) and graduate student, Ahmed Ghani, are currently testing new masonry blocks made with ground tires.

Annual Conference and Expo, San Juan, Puerto Rico, May, 2013.

Khayat, K.H., "State-of-the-Art Report on Mechanical Properties of SSCC," 7th International RILEM Symposium on Self-compacting Concrete, Paris, France, September, 2013 (keynote).

Kassimi F., and **Khayat K.H.**, "Flexural Creep of Fiber-Reinforced Self-Consolidating Concrete for Repair of Infrastructure Concrete," 7th International RILEM Symposium on Self-compacting Concrete, Paris, France, September, 2013 (invited).

Kassimi, F., and **Khayat, K.H.**, "Design and Performance of Fiber-Reinforced SSCC," 7th International RILEM Symposium on Self-compacting Concrete, Paris, France, September, 2013.

Feys, D., and **Khayat, K.H.**, "Comparison and Limitations of Different Concrete Rheometers," 7th International RILEM Symposium on Self-compacting Concrete, Paris, France, September, 2013.

Feys, D., **Khayat, K.H.**, Wallevik, J.E., and Wallevik, O.H., "Determination of Concrete Yield Stress: Application of Linear or Non-Linear Rheological Models," 7th International RILEM Symposium on Self-compacting Concrete, Paris, France, September, 2013.

Pan, J., **Khayat, K.H.**, and Wirquin, E., "Effect of Temperature and Agitation on Fresh Properties of Self-Consolidating Concrete," 7th International RILEM Symposium on Self-compacting Concrete, Paris, France, September, 2013.

Khayat, K.H., "Overview of the Five-Year NSERC Industrial Chair on HPC with Adapted Rheology," 5th North American Conference on the Design and Use of Self-Consolidating Concrete, Chicago, IL, May, 2013 (keynote).

Kassimi F., and **Khayat K.H.**, "Effect of Fiber and Admixture Types on Restrained Shrinkage Cracking of Self-Consolidating Concrete," 5th North American Conference on the Design and Use of Self-Consolidating Concrete, Chicago, IL, May, 2013 (invited).

Khayat K.H., "Rheological and Tribological Properties of Highly Workable Concrete, in View of Estimating Pumping," 5th North American Conference on the Design and Use of Self-Consolidating Concrete, Chicago, IL, May, 2013 (invited).

Feys, D., and **Khayat, K.H.**, "Comparing Rheological Properties of SCC Obtained with the ConTec and ICAR Rheometers, SCC2013," 5th North American Conference on the Design and Use of Self-Consolidating Concrete, Chicago, IL, May, 2013.

Esmailkhanian, B., **Khayat, K.H.**, Yahia, A., and **Feys, D.**, "Characterization of Dynamic Stability of Self-Consolidating Concrete," 5th North American Conference on the Design and Use of Self-Consolidating Concrete, Chicago, IL, May, 2013.

Mueller, F.V., Wallevik, O.H., and **Khayat, K.H.**, "Linking solid particle Packing of ECO-SCC to Material Performance," 5th North American Conference on the Design and Use of Self-Consolidating Concrete, May 2013, Chicago, IL, May, 2013 (invited).

Feys, D., **Khayat, K.H.**, Perez-Schell, A., and Katib, R., "Relation between Rheological and Tribological Properties of Highly Workable Concrete, in View of Estimating Pumping," 5th North American Conference on the Design and Use of Self-Consolidating Concrete, Chicago, IL, May, 2013 (invited).

Omran, A., and **Khayat, K.H.**, "Effect of Concrete Constituents and Mixture Parameters on Thixotropy and Formwork

Pressure of SCC," ACI Spring 2013 Convention, Minneapolis, MN, April, 2013 (invited).

Khayat, K.H., and Omran, A., "Test Methods to Evaluate Structural Build-up of SCC and Influence on Formwork Pressure," ACI Spring 2013 Convention, Minneapolis, MN, April, 2013 (invited).

Deng, M., and **Luna, R.**, "Probability of failure for Slopes with Sensitivity Analysis," ASCE GeoCongress, GSP 231, pp. 952-961, (ISBN: 978-0-7844-1278-7), San Diego, CA, 2013.

Rocco, N.T., and **Luna, R.**, "Mixtures of Clay/EPS Particulates and Undrained Shear Strength," ASCE GeoCongress 2013, GSP 231, pp. 2066-2075, (ISBN: 978-0-7844-1278-7), San Diego, CA, 2013.

Morrison, G.C., **Oerther, D.B.**, Schriener, A.W., Puckett, M.J., and Briggs, L.J., "Window Opening Behavior and Exposure," Proceedings of the U.S. Environment and Health – Bridging South, North, East and West Conference of ISEE, ISES and ISIAQ, Basel, Switzerland, August, 2013.

Vijayakumar, N.S., Parker, K., and **Morrison, G.C.**, "Methamphetamine Contamination in Household Materials and the Effect of Skin Oil," Proceedings of the U.S. Environment and Health – Bridging South, North, East and West Conference of ISEE, ISES and ISIAQ, Basel, Switzerland, August, 2013.

Loehr, J.E., Bowders, J., Rosenblad, B., **Luna, R.**, Maerz, N., **Stephenson, R.W.**, Likos, W., and Ge, L., "Implementation of LRFD Methods to Quantify Value of Characterization Activities," Proceedings of the 18th International Conference on Soil Mechanics and Geotechnical Engineering, Paris, 2013.

Abeol Seoud, M.A., and **Myers, J.J.**, "Implementation of Hybrid Composite Beam Bridges in Missouri, USA," 4th Asia-Pacific Conference on FRP in Structures (APFIS-13), Melbourne, Victoria, Australia, December, 2013.

(continued on the next page)

Abeol Seoud, M.A., Earley, C.E., and **Myers, J.J.**, "Structural Behavior of Hybrid Composite Beam Bridges in Missouri, USA," Advanced Composites in Construction Conference (ACIC-13), Belfast, Northern Ireland, September, 2013 (invited keynote paper).

Earley, C.E., Abeol Seoud, M.A., and **Myers, J.J.**, "Early-age Behavior and Construction Sequencing of Hybrid Composite Beam (HC Beam) Bridges in Missouri, USA," 1st International Conference on Concrete Sustainability (FRPRCS-11), Guimaraes, Portugal, June, 2013.

Sells, E., **Myers, J.J.**, and **Volz, J.S.**, "Image Characterization of Aggregate Interlock Interface of Self-Consolidating Concrete (SCC) Push-off Specimens," The 7th International Structural Engineering and Construction Conference, Honolulu, HI, June, 2013.

Sells, E., **Myers, J.J.**, and **Volz, J.S.**, "Aggregate Interlock Push-off Test Results of Self-Consolidating Concrete (SCC) for use in Infrastructure Elements," The 7th International Structural Engineering and Construction Conference, Honolulu, HI, June, 2013.

Arezoumandi, A., **Volz, J.S.**, and **Myers, J.J.**, "Experimental Study on Shear Strength of High-Volume Fly Ash Concrete versus Conventional Concrete," 1st International Conference on Concrete Sustainability (ICCS 2013), Tokyo, Japan, May, 2013.

Holman, K., **Volz, J.S.**, and **Myers, J.J.**, "Comparative Study on the Mechanical and Durability Behavior of High-Volume Fly Ash Concrete (HVFA) versus Conventional Concrete (CC)," 1st International Conference on Concrete Sustainability (ICCS 2013), Tokyo, Japan, May, 2013.

Looney, T.J., Arezoumandi, M., **Volz, J.S.**, and **Myers, J.J.**, "Bond Behavior of High-Volume Fly Ash Concrete," 1st International Conference on Concrete Sustainability (ICCS 2013), Tokyo, Japan, May, 2013.

Sells, E., **Myers, J.J.**, and **Volz, J.S.**, "Shear Behavior of Mid-Scale Precast Prestressed (PC) Members Fabricated with Self-Consolidating Concrete (SCC) and High-Strength Self-Consolidating Concrete (HS-SCC)," 5th North American Conference on the Design and Use of Self-Consolidating Concrete (SCC), Chicago, IL, May, 2013 (keynote paper).

Holman, K., **Myers, J.J.**, and **Volz, J.S.**, "Mechanical and Durability Behavior of Self-Consolidating Concrete (SCC) versus Conventional Concrete (CC)," 5th North American Conference on the Design and Use of Self-Consolidating Concrete (SCC), Chicago, IL, May, 2013.

Zheng, W., and **Myers, J.J.**, "Adhesion Tests and Failure Modes Study on Structural Steel Coatings," The Society for Protective Coatings (SSPC) Annual Meeting, San Antonio, TX, January, 2013.

Thiagarajan, G., Nalagotla, J., Muncy, N., **Myers, J.J.**, and Halmen, C., "Field Performance of Cost Efficient Cast-in-Place and Precast Prestressed Bridge Approach Slabs," Proceedings for the Transportation Research Board 2013 Annual Meeting, Washington, D.C., January, 2013.

Arezoumandi, M., **Volz, J.S.**, and **Myers, J.J.**, "Effect of High-Volume Fly Ash on Shear Strength of Concrete Beams," Proceedings of the Transportation Research Board 2013 Annual Meeting Washington, D.C., January, 2013.

Matar, G., Zhang, K., **Oerther, D.B.**, and Saikaly, P.E., "Microbial Characterization of Primary Colonizers in MBR Plants," International Water Association, Proceedings of the 10th International Leading Edge Technology Conference on Water and Wastewater Technologies, CD-ROM, 2013.

Schriner, A., and **Oerther, D.B.**, "PulaCloud: Human Computation for Economic Development," Institute of Electrical and Electronics Engineers, Proceedings of the Global Humanitarian Technology Conference, pp. 474 - 478, October, 2013.

Oerther, D.B., "Transdisciplinary Instruction in the MDGs," AEESP 2013 – Environmental Engineers and Scientists of 2050: Education, Research, and Practice, Golden, CO, July, 2013.

Matar, G., Zhang, K., **Oerther, D.B.**, and Saikaly, P.E., "Characterization of Biofouling Communities in Full Scale Wastewater Treatment Plants," International Water Association, Proceedings of the 9th International Conference on Biofilm Reactors, Paris, France, May, 2013.

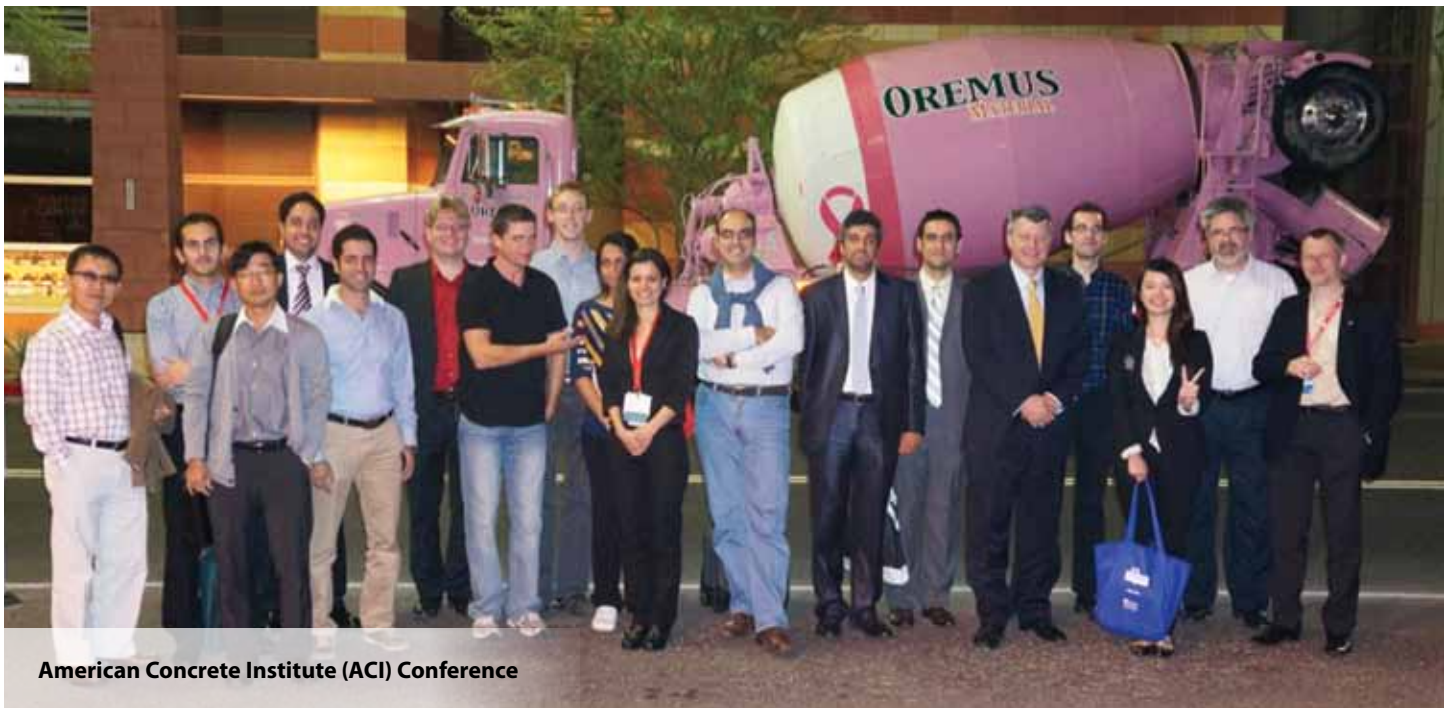
Oerther, D.B., "Modified Mastery Learning," AEESP 2013 – Environmental Engineers and Scientists of 2050: Education, Research, and Practice, Golden, CO, July, 2013.

Schriner, A.W., Briggs, L.J., Puckett, M.J., **Oerther, D.B.**, and **Morrison, G.C.**, "Using Human Computation and Good Streetview to Assess Window-Opening Frequency and Catalyze Sustainable Economic Growth," AEESP – 2013 Environmental Engineers and Scientists of 2050: Education, Research, and Practice, Golden, CO, July, 2013.

Ghosh, S., and **Oerther, D.B.**, 2013, "Exploring the Interaction of Diet and Environmental Determinants of the Obesity Epidemic," AEESP – 2013 Environmental Engineers and Scientists of 2050: Education, Research, and Practice, Golden, CO, July, 2013.

Voth-Gaeddert, L., Divelbiss, D., and **Oerther, D.B.**, "Monitoring and Evaluation of Biosand Filters and Diarrhea in Enseado Do Aritapera, Para, Brazil Utilizing Structural Equation Modeling," International Water Association, Proceedings of the 17th International Symposium on Health-Related Water Microbiology, Florianapolis Island, Santa Catarina, Brazil, September, 2013.

Oerther, S., and **Oerther, D.B.**, 2013, "Innovations that Improve Lives: Minds in Action," Sigma Theta Tau International 42nd Biennial Convention, Indianapolis, IN, November, 2013.



American Concrete Institute (ACI) Conference

Oerther, D.B., Oerther, S., and Manjrekar, P., "Teaching the MDGs: the Role of the Nurse in Multidisciplinary Project Based Instruction," Sigma Theta Tau International 42nd Biennial Convention, Indianapolis, IN, November, 2013.

Oerther, S., Manjrekar, P., and **Oerther, D.B.**, "Maternal Health Perceptions and Practices: Results from a Discovery Study in Western India," Sigma Theta Tau International 42nd Biennial Convention, Indianapolis, IN, November, 2013.

Schriner, A., Brem, E., Bick, T., and **Oerther, D.B.**, "Wanted: More Nails for the Hammer – An Investigation into the Application of Human Computation," Proceedings of the First AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2013), Hartman, B., and Horvitz, E., eds, November, 2013, Palm Springs, CA, Association for the Advancement of Artificial Intelligence, Technical Report CR-13-01, pp. 85-86.

Schonberg, W.P., Guo, Y.P., and Maclay, T., "Space Situational Awareness: It's Not Just About the Algorithms," Proceedings of the 6th IAASS International Space Safety Conference, Montréal, Canada, May, 2013.

Schonberg, W.P., Bjorkman, M.D., and Evans, S., "A Comment on Interaction Effects in Hypervelocity Impact Testing Using Multiple Simultaneously Launched Projectiles," Proceedings of the 27th International Ballistics Symposium, Freiburg, Germany, April, 2013.

Schonberg, W.P., Evans, H.J., and Williamsen, J.E., "Some Further Comments on the New W-S Habitable Module Wall Damage Prediction Equations," Proceedings of the 6th European Conference on Space Debris, Darmstadt, Germany, April, 2013.

Schonberg, W.P., Evans, S., and Bjorkman, M.D., "A Comment on the Use of Simultaneously Launched Projectiles in the Development of Ballistic Limit Curves for Multi-Wall Targets," Proceedings of the 6th European Conference on Space Debris, Darmstadt, Germany, April, 2013.

Williamsen, J.E., **Schonberg, W.P.**, and Evans, H.J., "Spacecraft Module Hole Size and Crack Length Prediction Following a Penetrating Debris Particle Impact," *Procedia Engineering*, Vol. 58, pp. 11-20, 2013.

Schonberg, W.P., "MOOCs: Are They the End of the World as We Know It?" 2013 STEM Carib Conference, University College of the Cayman Islands, Grand Cayman, BWI, October, 2013.

Shaw, D., and **Sneed, L.H.**, "Influence of Unit Weight on the Shear Transfer of Concretes Cast at Different Times," PCI Convention/National Bridge Conference Proceedings, Dallas, TX, September, 2013.

D'Antino, T., Carloni, C., **Sneed, L.H.**, and Pellegrino, C., "Fiber-Matrix Interaction in PBO FRCM Composites," Anidis 2013 – L'ingegneria Sismica in Italia (Anidis 2013 – Earthquake Engineering in Italy), Padova, Italy, July, 2013.

D'Antino, T., **Sneed, L.H.**, Carloni, C., and Pellegrino, C., "Bond Behavior of the FRCM-Concrete Interface," FRPRCS11, 11th International Symposium on Fiber Reinforced Polymers for Reinforced Concrete Structures, Guimarães, Portugal, June, 2013.

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Carlioni, C., **Sneed, L.H.**, and D'Antino, T., "Interfacial Bond Characteristics of Fiber Reinforced Concrete Mortar for External Strengthening of Reinforced Concrete Members," FraMCoS-8, 8th International Conference on Fracture Mechanics of Concrete and Concrete Structures, Toledo, Spain, March, 2013 (keynote).

Carlioni, C., D'Antino, T., **Sneed, L.H.**, and Pellegrino, C., "A Study of the Debonding of FRCM Composites From Concrete," Conference of the ASCE Engineering Mechanics Institute Conference, American Society of Civil Engineers, Evanston, IL, CD-ROM, August, 2013.

Goodwin, B., Torgashov, E., Li, M., Khamzin, A., Varnavina, A., **Sneed, L.H.**, and Anderson, N., "Bridge Deck Core Control," 26th Annual Symposium on the Application of Geophysics for Engineering and Environmental Problems (SAGEEP), The Environmental and Engineering Geophysical Society, Denver, CO, CD-ROM, March, 2013.

Li, M., Torgashov, E., Varnavina, A., Khamzin, A., Goodwin, B., **Sneed, L.H.**, and Anderson, N., "Ultra-Sonic Surface Wave Investigations," 26th Annual

Symposium on the Application of Geophysics for Engineering and Environmental Problems (SAGEEP), The Environmental and Engineering Geophysical Society, Denver, CO, CD-ROM, March, 2013.

Varnavina, A., Torgashov, E., Khamzin, A., Li, M., Goodwin, B., Elkry, A., Dera, A., **Sneed, L.H.**, and Anderson, N., "Bridge Deck Investigations," 26th Annual Symposium on the Application of Geophysics for Engineering and Environmental Problems (SAGEEP), The Environmental and Engineering Geophysical Society, Denver, CO, CD-ROM, March, 2013.

Elkry, A., Torgashov, E., Dera, A., Li, M., Khamzin, A., Varnavina, A., Goodwin, B., **Sneed, L.H.**, and Anderson, N., "Pavement Investigations," 26th Annual Symposium on the Application of Geophysics for Engineering and Environmental Problems (SAGEEP), The Environmental and Engineering Geophysical Society, Denver, CO, CD-ROM, March, 2013.

Goodwin, B., Varnavina, A., Khamzin, A., Torgashov, E., **Sneed, L.H.**, and Anderson, N., "Comparison of Bridge

Deck Deterioration Found by NDT Methods and Hydro-demolition," 2013 Midwest Bridge Preservation Partnership, Indianapolis, IN, November, 2013 (invited).

Yang, Y., **Sneed, L.H.**, Saiidi, M., and Belarbi, A., "Repair of Earthquake Damaged Bridge Columns with Fractured Bars and Interlocking Spirals," ACI Fall 2013 Convention, Phoenix, AZ, October, 2013.

Goodwin, B., Varnavina, A., Khamzin, A., Torgashov, E., **Sneed, L.H.**, and Anderson, N., "Evaluation of GPR to Determine Bridge Deck Deterioration – Case Study Results," ACI Fall 2013 Convention, Phoenix, AZ, October, 2013.

He, R., and **Sneed, L.H.**, "Response of CFRP-Repaired RC Bridge Columns Containing Buckled and Fractured Reinforcement," ACI Fall 2013 Convention, Phoenix, AZ, October, 2013.

He, R., **Sneed, L.H.**, Belarbi, A., "Torsional Repair of a Severely Damaged Column Using CFRP," ACI Spring 2013 Convention, Minneapolis, MN, April, 2013.

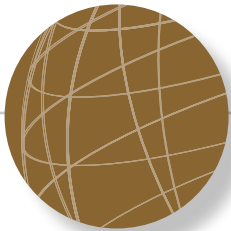
Sneed, L.H., D'Antino, T., and Carlioni, C., "Experimental Investigation of the FRCM-Concrete Interfacial Debonding," ACI Spring 2013 Convention, Minneapolis, MN, April, 2013.

Shaw, D. and **Sneed, L.H.**, "Shear Transfer Across an Interface of Lightweight Concretes Cast at Different Times," ACI Spring 2013 Convention, Minneapolis, MN, April, 2013.

Yang, Y., **Sneed, L.H.**, Saiidi, M., and Belarbi, A., "Repair of Earthquake-damaged Reinforced Concrete Bridge Columns with Interlocking Spirals and Fractured Longitudinal Bars," ACI Spring 2013 Convention, Minneapolis, MN, April, 2013.

Dan, Y., Zimmerman, C., Liu, K., Shi, H., and **Wang, J.**, "Increased Leaching of As, Se, Mo and V from Trona Injected Coal Fly Ash," PITTCO 2013, Philadelphia, PA, March, 2013.

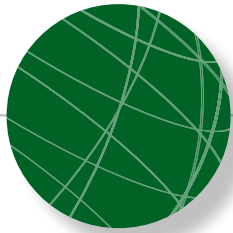
Scholarly Monographs & Chapters



PUBLISH

Carey, N.L., **Myers, J.J.**, "Blast Testing of Three Types of Panels with External Strengthening Systems," in Dynamic Behavior of Materials, Volume 1, Springer Publishing Company, New York, NY, 2013, ISBN 978-1-4614-4237-0, pp. 417-424.

Contracts, Grants & Fellowships



RESEARCH

Bate, B. (PI), "Volume Reuse of Fly Ash in Geotechnical Engineering," UM Research Board, January 2013 to December 2013; \$28,710.

Bate, B. (PI) and **Khayat, K.H.** (Co-PI), "Using Shear Wave Velocity to Monitor the Curing Process of High Performance," Department of Transportation, May 2013 to December 2013; \$16,052.

Baur, S.W. (PI), "A Climate-Responsive Adaptive Control for a Combination Passive Solar Shading and Natural Ventilation," Environmental Protection Agency, August 2013 to August 2014; \$15,000.

Burken, J.G. (PI), "Graduate Research Fellowship-Matt Limmer," National Science Foundation, June 2010 to November 2014; \$25,361.

Burken, J.G. (PI) and Westenberg, D.J. (Co-PI), "Collaborative Study on Contaminant Fate: Phytoremediation Mass Flux and Biodegradation Assessment for DOW Midlands," Dow Chemical, March 2013 to March 2014; \$50,346.

Burken, J.G. (PI) and Westenberg, D.J. (Co-PI), "Collaborative Study on Contaminant Fate: Phytoremediation Mass Flux and Biodegradation Assessment for DOW Midlands-Off Campus," Dow Chemical, March 2013 to March 2014; \$24,654.

Burken, J.G. (PI), "Phytoforensics: Dow Chemical Palestine Texas," Dow Chemical, June 2012 January 2013; \$35,827.

Burken, J.G. (PI), **Morrison, G.C.** (Co-PI) and Samaranayake, V.A. (Co-PI), "Plants as Pollution Sentinels for Improved Health in the Built Environment," National Science Foundation, October 2013 to September 2015; \$252,711.

Chen, G. (PI), "Unbonded Portland Cement Concrete/Pavement Monitoring with Integrated Grating (Local) and Scattering (Global) Optical Fiber Sensors," Department of Transportation, March 2013 to May 2014; \$429,260.

Chen, G. (PI), "MATC Administrative, Education and Tech Transfer at Missouri S&T-FY 2014," University of Nebraska, Lincoln, July 2013 to December 2014; \$35,775.

Chen, G. (PI), "Unbonded Concrete Pavement/Overlay Monitoring," University of Nebraska, Lincoln, July 2013 to December 2014; \$100,000.

Chen, G. (PI), "Distributed Optical Fiber Sensor Network for Monitoring and Assessment of Large-Scale Structures Subjected to Fire," National Institute of Standards and Technology, September 2013 to August 2016; \$303,278.

ElGawady, M.A. (PI) and **Khayat, K.H.** (Co-PI), "Life Cycle Maintenance Cost Analysis of RC Columns," Department of Transportation, January 2013 to May 2014; \$117,263.

ElGawady, M.A. (PI), "Strength of Unbonded Post-Tensioned Walls," Department of Transportation, January 2013 to May 2014; \$12,539.

ElGawady, M.A. (PI) and **Bate, B.** (Co-PI), "Dilation Characteristics of Rubberized Concrete," Department of Transportation, May 2013 to December 2013; \$16,052.

ElGawady, M.A. (PI) and Chandrashekhara, K. (Co-PI), "Mechanical Characteristics of Low-Cost Hybrid Fiber Reinforced Polymer," Department of Transportation, May 2013 to December 2013; \$16,052.

ElGawady, M.A. (PI), "Behavior of Double-Skin Bridge Columns," Department of Transportation, January 2013 to May 2014; \$49,660.

ElGawady, M.A. (PI), "Acquisition of a Uniaxial Shaking Table for Dynamic Testing of Structural Elements," Department of Transportation, August 2013 to December 2013; \$105,000.

ElGawady, M.A. (PI), "Accelerating Bridge Construction (ABC) of Bridge Piers," Missouri Department of Transportation, October 2013 to December 2014; \$51,405.

ElGawady, M.A. (PI), "Precast Columns for Accelerating Bridge Construction," University of Nebraska, Lincoln, October 2013 to December 2014; \$56,545.

Feys, D. (PI), "Influence of Mixing Procedure on Robustness of Self-Consolidating Concrete," Department of Transportation, October 2012 to December 2013; \$123,415.

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Feys, D. (PI) and Park, J. (Co-PI), "Optimization of Rheological Properties of Self-Consolidating Concrete by Means of Numerical Simulations, to Avoid Formwork Filling Problems in Presence of Reinforcement Bars," Department of Transportation, May 2013 to December 2013; \$16,052.

Fitch, M.W. (PI) and Niyogi, D.K. (Co-PI), "Pond Water Quality Improvement for Fort Hays Municipal Golf Course," Aquatech Engineering Consultants, July 2013 to December 2013; \$2,000.

Khayat, K.H. (PI), "Self-Consolidating Concrete for Connecting Precast Concrete Deck Panels and I-Girders," Department of Transportation, January 2013 to December 2013; \$149,778.

Khayat, K.H. (PI), "Recycled Concrete Aggregate Field Implementation-MRB Project," Department of Transportation, January 2013 to December 2013; \$265,000.

Khayat, K.H. (PI), "Automated Measurement of Concrete Slump Using the Verifi System," Department of Transportation, February 2013 to December 2013; \$77,580.



Dr. Lesley Sneed and Ph.D. students, Ruili He and Yang Yang, testing a concrete column.

Khayat, K.H. (PI), "Second Annual Transportation Infrastructure Engineering Conference," Department of Transportation, July 2013 to December 2013; \$19,565.

Khayat, K.H. (PI), "Acquisition of Specialized Testing Equipment for Advance Cement-based Materials," Department of Transportation, May 2012 to December 2013; \$102,156.

Khayat, K.H. (PI), "Roller Compacted Concrete – Ripley county Rt. 160," Department of Transportation, July 2013 to December 2013; \$220,713.

Khayat, K.H. (PI) and **Feys, D.** (Co-PI), "Admixture Compatibility of Alternative Supplementary Cementitious Materials for Pavement and Structural Concrete," Department of Transportation, April 2013 to December 2013; \$105,523.00

Khayat, K.H. (PI), **Feys, D.** (Co-PI), **Myers, J.J.** (Co-PI) and **Volz, J.S.** (Co-PI), "University Transportation Center Tier 1: Research on Concrete Applications for Sustainable Transportation (RE-CAST)," Department of Transportation, September 2013 to September 2017; \$1,414,100.

LaBoube, R. (PI) and **Yu, W.-W.** (Co-PI), "Center for Cold-Formed Steel Structures," Metal Building Manufacturers Association, January 2013 to December 2013; \$5,000.

LaBoube, R. (PI) and **Yu, W.-W.** (Co-PI), "Center for Cold-Formed Steel Structures," American Iron and Steel Institute, January 2013 to December 2013; \$52,500.

LaBoube, R. (PI) and **Yu, W.-W.** (Co-PI), "Center for Cold-Formed Steel Structures," Rack Manufacturers Institute, Inc., January 2013 to December 2013; \$5,000.

LaBoube, R. (PI) and **Yu, W.-W.** (Co-PI), "Center for Cold-Formed Steel Structures," Steel Stud Manufacturers Association, January 2013 to December 2013; \$5,000.

LaBoube, R. (PI) and **Yu, W.-W.** (Co-PI), "Center for Cold-Formed Steel Structures," Steel Framing Industry Association, January 2013 to December 2013; \$5,000.

LaBoube, R. (PI) and **Yu, W.-W.** (Co-PI), "Center for Cold-Formed Steel Structures," Metal Construction Association, January 2013 to December 2013; \$5,000.

LaBoube, R. (PI) and **Yu, W.-W.** (Co-PI), "Center for Cold-Formed Steel Structures," Metal Construction Association, January 2013 to December 2013; \$5,000.

Luna, R. (PI) and He, X. (Co-PI), "Reliability-based Optimization Design of Geosynthetic Reinforced Road Embankment," Department of Transportation, May 2013 to December 2013; \$16,052.

Luna, R. (PI), "Evaluation of Pile Load Tests for Use in Missouri LRFD Guidelines Project TRyy1266," Missouri Department of Transportation, February 2012 to May 2014; \$17,357.

Morrison, G.C. (PI), "Sherwin Williams Ozone Samples," Sherwin Williams Company, July 2013 to November 2013; \$12,000.

Morrison, G.C. (PI), "Collaborative Research: Particle Mediated Enhanced Transport of Semi-volatile Organic Compounds in Indoor Environments," National Science Foundation Division of Chemical, Biological & Environmental, September 2013 to August 2016; \$134,028.

Myers, J.J. (PI), "Field Evaluation of Hybrid-Composite Girder Bridges in Missouri," Department of Transportation, June 2013 to June 2014; \$3,909.

Myers, J.J. (PI), "NUTC/Implementation of RFID Sensors for Monitoring of Bridge Deck Corrosion in Missouri," Department of Transportation, May 2013 to December 2013; \$16,052.

Myers, J.J. (PI) and O'Keefe, M.J. (Co-PI), "Long-term Behavior of GFRP Reinforced Panels After Eight Years of Field Exposure," Department of Transportation, May 2013 to December 2013; \$16,052.

Long, S.K. (PI), **Myers, J.J.** (Co-PI) and Qin, R. (Co-PI), "Quantifying Economic Benefits for Rail Infrastructure Projects," University

of Nebraska, Lincoln, July 2013 to December 2014; \$29,800.

Schonberg, W.P. (PI) and **Khayat, K.H.** (Co-PI), "Adding Faculty in the Areas of Transportation-Civil," Department of Transportation, January 2013 to December 2013; \$100,954.

Sneed, L.H. (PI), "Numerical Simulation of CFRP-Repaired Reinforced Concrete Columns," Department of Transportation, May 2013 to December 2013; \$16,052.

Sneed, L.H. (PI) and Anderson, N.L. (Co-PI), "Air-Launched GPR Evaluation for Rapid Assessment of MoDOT Bridge Decks," Missouri Department of Transportation, September 2013 to September 2014; \$22,547.

Sneed, L.H. (PI) and Anderson, N.L. (Co-PI), "Air-Launched GPR Evaluation for Rapid Assessment of MoDOT Bridge Decks," Department of Transportation, September 2013 to December 2013; \$3,958.

Stephenson, R.W. (PI), **Luna, R.** (Co-PI), **Bate, B.** (Co-PI) and Turner, L.S. (Co-PI), "Soil Mechanics for Dam Safety," Association of State Dam Safety Officials, January 2013 to December 2013; \$6,120.

Stephenson, R.W. (PI), **Luna, R.** (Co-PI), **Bate, B.** (Co-PI) and Turner, L.S. (Co-PI), "Soil Mechanics for Dam Safety," Association of State Dam Safety Officials, January 2013 to December 2013; \$2,645.

Stephenson, R.W. (PI), **Luna, R.** (Co-PI), **Bate, B.** (Co-PI) and Turner, L.S. (Co-PI), "Soil Mechanics for Dam Safety," Association of State Dam Safety Officials, January 2013 to December 2013; \$17,426.

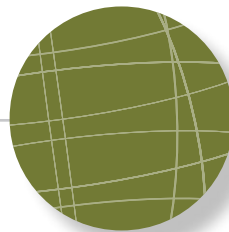
Volz, J.S. (PI), "NUTC/Development and Testing of Synthetic Riprap Constructed from Coal Combustion Products (CCPS)," Department of Transportation, January 2013 to December 2013; \$20,000.

Volz, J.S. (PI), "NUTC/Extending the Usage of High Volume Fly Ash in Concrete," Department of Transportation, October 2012 to December 2013; \$187,618.



Dr. Ronaldo Luna visits earthquake site to work on joint report with EERI and AGIES.

Technical Reports



COMPLETE

Lin, Z., Fakhairfar, M., Wu, C., **Chen, G.**, Bevans, W., Gunasekaran, A.V.K., Sedighsarvestani, S., Design, Construction and Load Testing of the Pat Daly Road Bridge in Washington County, MO, with Internal Glass Fiber Reinforced Polymers Reinforcement, Publication No. NUTC-R275, Center for Transportation Infrastructure and Safety, January 2013.

Ventura, C., et al. with **Luna, R.**, "The November 7, 2012 M7.4 Guatemala Earthquake and its Implications for Disaster Reduction and Mitigation," *A Joint Report of EERI and AGIES*, EERI, Oakland, CA, 2013.

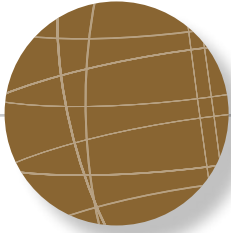
Thiagarajan, G., **Myers, J.J.**, Halmen, C., Nalagotla, J., Muncy, N., Bridge Approach Slabs for Missouri DOT: Field Evaluation of Alternative and Cost Effective Bridge Approach Slabs, Final Report MoDOT TRyy0915, Missouri Department of Transportation, Jefferson City, Missouri, May, 2013.

Sneed, L.H., Shaw, D., Lightweight Modification Factor for Shear Friction Influence of Unit Weight on the Shear Transfer of Concretes Cast at Different Times, Report NUTC R276/R317, Center for Transportation Infrastructure and Safety/NUTC Program, Missouri University of Science and Technology, October, 2013.

Witushynsky, N., **Sneed, L.H.**, Evaluation of the Orientation of 90° and 180° Reinforcing Bar Hooks in Wide Members, CRSI Research Note RN-2009-2, October, 2013.

Wang, J., Shi, H., Effect of Trona on the Leaching of Trace Elements from Coal Fly Ash, EPRI Project Final Report, July, 2013.

Graduate Students Completed



ADVISE

Master of Science (with thesis)

Dixon, D., "Monitoring Micropile Foundations of a Bridge During Construction," Advisor: **R. Luna**

Harper, G., "Green Roof Water Quality Impacts and Physicochemical Stability," Advisor: **J.G. Burken**

Muncy, N., "Field Performance of Alternative and Cost Efficient Cast in Place and Precast Prestressed Concrete Bridge Approach Slabs," Advisor: **J.J. Myers**

Reichle, C., "Effects of Mix Parameters on Longevity of Bituminous Mixtures," Advisor: **D. Richardson**

Shaw, D., "Direct Shear Transfer of Lightweight Aggregate Concretes with Non-Monolithic," Advisor: **L.H. Sneed**

Ulary, A., "Analysis of Uncertainty in Hydraulic Modeling. The BSTEM Application to the Osage River," Advisor: **C. Mendoza**

Wiley, J., "Use of Ultra-High Performance Concrete to Mitigate Impact and Explosive Threats," Advisor: **J.J. Myers**

Wilson, J., "Dominant Loss Mechanisms in Phytoremediation and Applications of Phytoremediation for Determination of Vapor Intrusion," Advisor: **J.G. Burken**

Doctor of Philosophy

Arezoumandi, M., "Shear and Fracture Behavior of High Performance Concretes," Advisor: **J.S. Volz**

Tabatabaei, Z., "Numerical Analyses of Long Carbon Fiber Reinforced Concrete Panels Exposed to Dynamic Loading," Advisor: **J.S. Volz**

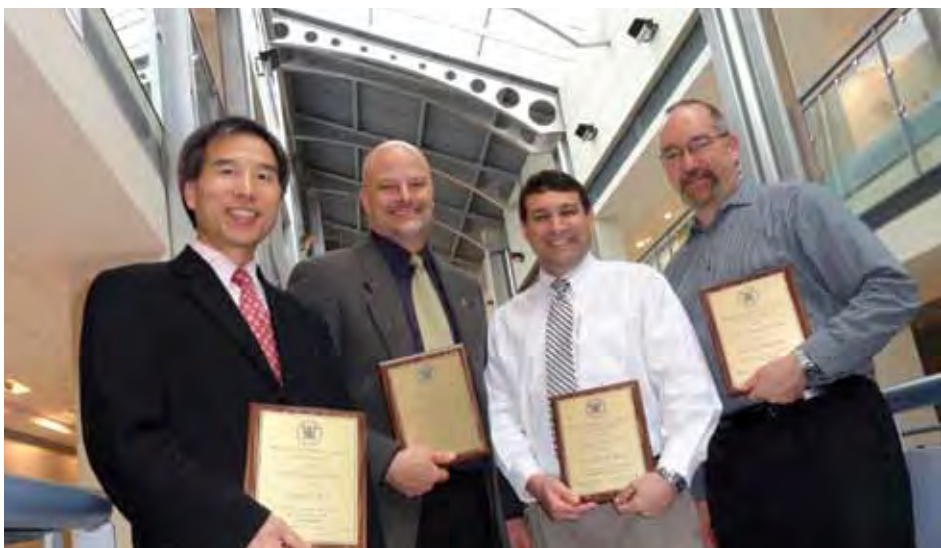
Tang, F., "Enamel Coated Steel Reinforcement for Improved Durability and Life-Cycle Performance of Concrete Structures: Microstructure, Corrosion, and Deterioration," Advisor: **G. Chen**

Yuan, Y., "Phytoforensics on Energetics: Novel Plant Tissue Measure Approach and Modeling," Advisor: **J.G. Burken**



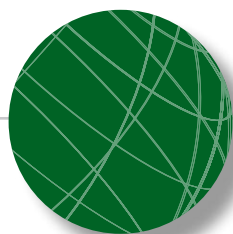
Sara Tabatabaei, a Ph.D. graduate, pictured with her advisor, Dr. Jeffery Volz, during commencement.





Pictured from left to right:
Dr. Genda Chen, Dr. Joel Burken,
Dr. John Myers and Dr. Eric Showalter
with their Faculty Awards.

Honors, Awards, & Other Recognition



AWARD

Burken, J.G., Faculty Research Award, Missouri S&T, 2013.

Burken, J.G., Appointed Director of Environmental Research Center, Missouri S&T, 2013.

Burken, J.G., Workshop Chairman, Environmental Engineering Chairs and Directors Workshop, AEESP Biannual Conference, 2013.

Chen, G., Faculty Research Award, Missouri S&T, 2013.

Chen, G., Fellow, Structural Engineering Institute (SEI), 2013.

ElGawady, M.A., Elected Member, Board of Directors, The Masonry Society (TMS), 2013.

Khayat, K.H., Keynote Speaker, 8th International Congress on Cement and Concrete, Nanjing, China, 2013.

Khayat, K.H., Keynote Speaker, 7th RILEM Conference on Self-Compacting Concrete, Paris, France, 2013.

Khayat, K.H., Keynote Speaker, ACI/ACTS Conference on Advances in Concrete Technology, Beirut, Lebanon, 2013.

Khayat, K.H., Keynote Speaker, 6th North American Conference on Design and Use of Self-Consolidating Concrete, Chicago, IL, 2013.

Myers, J.J., Faculty Service Award, Missouri S&T, 2013.

Myers, J.J., Keynote Speaker, 6th Advanced Composites In Construction Conference (ACIC-13), Belfast, Northern Ireland, UK, 2013.

Myers, J.J., Keynote Speaker, 6th North American Conference on Design and Use of Self-Consolidating Concrete, Chicago, IL, 2013.

Oerther, D.B., 3rd Place – Oral Presentation (with Alex Korf), Sciences Division, Undergraduate Research Conference, Missouri S&T, 2013.

Oerther, D.B., Invited Participant, Virtual Community of Practice, ASEE-NSF-NAE joint project, 2013.

Oerther, D.B., Make a Difference Award, STEM Academy of the Society of American Military Engineers, Rolla Student Chapter and Fort Leonard Wood Professional Chapter, 2013.

Oerther, D.B., First Place, Value of Certification Video Contest, American Academy of Environmental Engineers and Scientists, 2013.

Oerther, D.B., Invited Participant, Leadership Phelps County Program, University of Missouri Extension, 2013.

Showalter, E., Faculty Achievement Award, Missouri S&T, 2013.



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