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## 2014 Scholarly Productivity Report

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# Scholarly Productivity Report



2014

TRANSFORMING  
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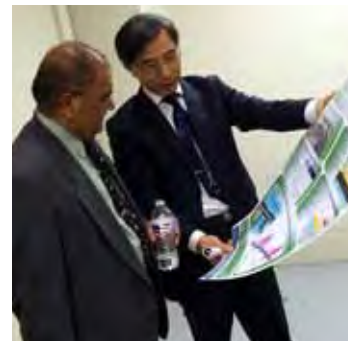
2014

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**“Investing in our faculty is a top priority. Our outstanding instructors and researchers are critical to our success as a university.”**

— S&T Chancellor Cheryl B. Schrader

# 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



## Bate Bate, Ph.D.

*Assistant Professor, Geotechnical Engineering*

**Education:** Ph.D. Civil Engineering, Georgia Institute of Technology

**Research Interests:** Bender element study on Vs anisotropy of geomaterials, Spectral induced polarization in geomaterials, Complex dielectric conductivity of surfactant modified soils, High volume reuse of fly ash in geotechnical engineering, Effects of biopolymers on the water retention behavior (soil water characteristic curve)



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

*Assistant Chair, Architectural Engineering, Assoc. 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



## 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



## Joel Burken, Ph.D., P.E., BCEE, AAEE

*Assoc. Department Chair, Civil, Architectural and Environmental Engineering Professor, Environmental and Civil 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



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

*Robert W. Abbett Distinguished Professor, Civil 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



## Wen Deng, Ph.D.

*Assistant Professor, Geotechnical Engineering*

**Education:** Ph.D. Geosciences, Iowa State University

**Research Interests:** Multiphase flow, Chemical and thermal transport, Microbial growth in porous and fractured media, Areas of geo-energy recovery, Waste sequestration, Environmental remediation



## 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



## 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



## Mark Fitch, Ph.D.

*Assistant Chair, Environmental Engineering Assoc. 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  
 Associate Dean for Academic Affairs,  
 College of Engineering and Computing  
 Director, Structural Engineering  
 High-Bay Laboratory*

**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



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

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



**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



**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



**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



**Hefu Pu**, Ph.D.  
*Assistant Professor, Geotechnical Engineering*

**Education:** Ph.D. Geotechnical Engineering, University of California, San Diego  
**Research Interests:** Energy-related geo-engineering, Coupled thermo-hydro-mechanical analysis, Numerical simulation in geomechanics, Ground improvement, Slope stability and retaining walls, Coupled flow and contaminant transport in deformable porous media  
 Geo-environmental remediation

**NEW FACULTY:**

- **Wen Deng**, Geotechnical Engineering
- **Hefu Pu**, Geotechnical Engineering
- **Julian Wang**, Architectural Engineering
- **Grace Yan**, Structural Engineering



**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)

# 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.  
*Associate 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



**Julian Wang**, Ph.D.  
*Assistant Teaching Professor,  
Architectural Engineering*  
**Education:** Ph.D. Architecture,  
Texas A&M University  
**Research Interests:** Building science and  
technology, Sustainable building design,  
Smart building and envelopes, BIM and  
Healthcare design



**Grace Yan**, Ph.D.  
*Assistant Professor, Structural Engineering*  
**Education:** Ph.D. Engineering Mechanics,  
Harbin Institute of Technology, China  
**Research Interests:** Resilient infrastructural  
systems in multi-hazard environments, Structural  
health monitoring, Structural damage detection,  
Wireless sensor networks, Advanced signal  
processing, Nonlinear system identification and  
damage detection, Model updating of structural  
FEMs, Structural vibration control, Smart materials  
and structures

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## FACULTY PROMOTIONS:

- **Genda Chen**, Robert W. Abbett  
Distinguished Chair in Civil Engineering
- **Lesley Sneed**, Associate Professor of  
Civil Engineering

# Journal Publications

## JOURNALS



Kang, X., Kang, G.-C., and **Bate, B.**, Shear Wave Velocity Anisotropy of Kaolinite Using a Floating Wall Consolidometer-Type Bender Element Testing System," *Geotechnical Testing Journal*, Vol. 37, No. 5, pp. 1-15, 2014.

**Bate, B.**, and Burns, S.E., "Complex Dielectric Permittivity of Organically Modified Bentonite Suspensions (0.2 - 1.3 GHz)," *Canadian Geotechnical Journal*, Vol. 51, pp. 782-794, 2014.

**Bate, B.**, Zhao, Q., and Burns, S.E., "Impact of Organic Coatings on the Frictional Strength of Organically Modified Clay," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 140, No. 1, pp. 228-236, 2014.

Yildirim, S., **Baur, S.W.**, and LaBoube, R.A., "Formulation of Problem-Based Learning in "Building Components Design" Education," *Journal of Engineering and Architecture*, Vol. 2, No. 2, pp. 63-746, 2014.

Yildirim, S., **Baur, S.W.**, and LaBoube, R.A., "Problem-Based Learning with Framing Construction in Architectural Engineering," *Journal of Engineering and Architecture*, Vol. 2, No. 2, pp. 13-26, 2014.

Limmer, M.A., and **Burken, J.G.**, "Plant Translocation of Organic Compounds: Physicochemical Predictors," *Environmental Science and Technology Letters*, Vol. 1, No. 2, pp. 156-161, 2014.

Stringer, R., **Burken, J.G.**, Elmore, A.C., and Reible D.D., "Using in situ Solid Phase Microextraction (SPME) for Depth Profiling in Sediments Treated With Activated Carbon," *Journal of Soils Sediments*, Vol. 14, No. 5, pp. 1013-1020, 2014.

Limmer, M.A., Martin, G., Watson, C.J., Martinez, C., and **Burken, J.G.**, "Phytoscreening: A Comparison of In planta Portable GC-MS and In vitro Analyses," *Groundwater Monitoring and Remediation*, Vol. 34, No. 1, pp. 49-56, 2014.

Smith, K.T., Balouet, J.C., Shortle, W.C., Chalot, M., Beaujard, F., Grudd, H., Vroblesky, D.A., and **Burken, J.G.**, "Dendrochemical Patterns of Calcium, Zinc, and Potassium Related to Internal Factors Detected by Energy Dispersive X-ray Fluorescence (EDXRF)," *Chemosphere*, Vol. 95, pp. 58-62, 2014.

Shetty, M., Limmer, M.A., Waltermire, K.W., Morrison, G.C., and **Burken, J.G.**, "In planta Passive Sampling Devices for Assessing Subsurface Chlorinated Solvents," *Chemosphere*, Vol. 104, pp. 149-154, 2014.

Limmer, M.A., Holmes, A.H., and **Burken, J.G.**, "Phytomonitoring of Chlorinated Ethenes in Trees: A Four-year Study of Seasonal Chemodynamics in Planta," *Environmental Science and Technology*, Vol. 48, No. 18, pp. 10634-10640, 2014.

Harper G. E., Limmer, M.A. Showalter, E., and **Burken, J.G.**, "Green Roof Water Impacts and Climate-based Modeling," *Journal of Ecological Engineering*, doi:10.1016/j.ecoleng.2014.06.004, 2014.

Tang, F., **Chen, G.**, and Yi, W., "Corrosion-Induced Concrete Cracking, Steel-Concrete Bond Loss, and Mechanical Degradation of Steel Bars," *Advanced Materials Research*, Vol. 919-921, pp. 1760-1770, 2014.

Fakharifar, M., Sharbatdar, M.K., Lin, Z., Dalvand, A., Sivandi-Pour, A., and **Chen, G.**, "Seismic Performance and Global Ductility of RC Frames Rehabilitated with Retrofitted Joints by CFRP Laminates," *Earthquake Engineering and Engineering Vibration*, Vol. 13, No. 1, pp. 59-73, 2014.

Yin, Z., Wu, C., and **Chen, G.**, "Concrete Crack Detection through Full-field Displacement and Curvature Measurements by Visual Mark Tracking: a Proof-of-concept Study," *Structural Health Monitoring*, Vol. 13, No.2, pp. 245-258, 2014.

Wang, Z., and **Chen, G.**, "Analytical Mode Decomposition with Hilbert Transform for Modal Parameter Identification of Building under Ambient Vibration," *Engineering Structures*, Vol. 59, pp. 173-184, 2014.

Fakharifar, M., Dalvand, A., Arezoumandi, M., Sharbatdar, M.K., **Chen, G.**, and Kheyroddin, A., "Mechanical Properties of High Performance Fiber Reinforced Cementitious Composites," *Construction and Building Materials*, Vol. 71, pp. 510-520, 2014.

**Chen, G.**, Schafer, B., Lin, Z., Huang, Y., Suaznabar, O., Shen, J. and Kerenyi, K., "Maximum Scour Depth Based on Magnetic Field Change of Smart Rocks for Foundation Stability Evaluation of Bridges," *Structural Health Monitoring*, Vol. 14, No. 1, pp. 86-99, 2014.

(continued on next page)



## Journal Publications continued ...

Wang, Z., Zhang, D., Ren, W. and **Chen, G.**, "Structural Modal Parameter Identification from Forced Vibration with Analytical Mode Decomposition," *Advances in Structural Engineering*, Vol. 17, No. 8, pp. 1129-1144, 2014.

Tang, F., **Chen, G.**, Brow, R.K. and Koenigstein, M.L., "Corrosion Resistance of a Sand Particle-Modified Enamel Coating Applied to Smooth Steel Bars," *Materials*, Vol. 7, pp. 6632-6645, 2014.

Tang, F., Lin, Z., **Chen, G.**, and Yi, W., "Three-dimensional Corrosion Pit Measurement and Statistical Mechanical Degradation Analysis of Deformed Steel Bars Subjected to Accelerated Corrosion," *Construction and Building Materials*, Vol. 70, pp. 104-117, 2014.

Pan, D., **Chen, G.**, and Wang, Z., "Suboptimal Rayleigh Damping Coefficients in Seismic Analysis of Viscoelastically-damped Structures," *Earthquake Engineering and Engineering Vibration*, Vol. 13, No. 4, pp. 653-670, 2014.

Hassanali, R., **ElGawady, M.A.**, and Mills, J.E., "An Evaluation of Design Code Expressions for Estimating In-plan Shear Strength of Partially Grouted Masonry Walls," *Australian Journal of Structural Engineering*, Vol. 15, No. 3, pp. 299-315, 2014.

Youssif, O., **ElGawady, M.A.**, Mills, J.E., and Ma, X., "An Experimental Investigation of Crumb Rubber Concrete Confined by Fibre Reinforced Polymer Tubes," *Construction and Building Materials*, Vol. 53, pp. 522-532, 2014.

Farooq, H., **ElGawady, M.A.**, and Ilyas, M., "Seismic In-plane Performance of Retrofitted Masonry Walls," *Journal of Civil Engineering*, Korean Society of Civil Engineering, Vol. 18, No. 1, pp. 226-237, 2014.

Youssif, O., **ElGawady, M.A.**, Mills, J.E., and Ma, X., "Finite Element Modelling and Dilatation of FRP-Confined Concrete," *Engineering Structures*, Vol. 79, No. 15, pp. 70-85, 2014.

Dawood, H., **ElGawady, M.A.**, and Hewes, J., "Factors Affecting the Seismic Behavior of Segmental Precast Bridge Columns," *Frontiers of Structural and Civil Engineering Journal*, Vol. 8, No.4, pp. 388-398, 2014.

Ryu, D., Wijeyewickrema, A.C., **ElGawady, M.A.**, and Madurapperuma, M.A. K.M., "Effects of Tendon Spacing on In-Plane Behavior of Posttensioned Masonry Walls," *Journal of Structural Engineering*, ASCE, Vol. 140, No. 4, pp. 04013096-1: 04013096-13, 2014.

Proske, T., **Khayat, K.H.**, Omran, A., and Leitzbach, O., "Form Pressure Generated by Fresh Concrete: a Review about Practice in Formwork Design," *Materials and Structures*, Vol. 47, No. 7, pp. 1099-1113, 2014.

Long, W., **Khayat, K.H.**, Lemieux, G., Hwang, S.D., and Han, N., "Performance-Based Specifications of Prestressed Self-Consolidating Concrete," *Open Access Materials*, ISSN 1996-1944, <http://www.mdpi.com/journal/materials>, 2014.

Esmailkhanian, B., Feys, D., **Khayat, K.H.**, and Yahia, A., "New Test Method to Evaluate Dynamic Stability of Self-Consolidating Concrete," *ACI Materials Journal*, Vol. 111, No. 3, pp. 299-308, 2014.

Esmailkhanian, B., **Khayat, K.H.**, Yahia, A., and Feys, D., "Effects of Mix Design Parameters and Rheological Properties on Dynamic Stability of Self-Consolidating Concrete Cement and Concrete Composites," *Cement and Concrete Composites*, Vol. 54, pp. 21-28, 2014.

Feys, D., **Khayat, K.H.**, Perez-Schell, A., and Khatib, R., "Development of a Tribometer to Characterize Lubrication Layer Properties of Self-Consolidating Concrete," *Cement and Concrete Composites*, Vol. 54, pp. 40-52, 2014.

Kassimi, F., El-Sayed, A.K., and **Khayat, K.H.**, "Performance of Fiber-Reinforced Self-Consolidating Concrete used in Repair of Reinforced Concrete Beams," *ACI Structural Journal*, Vol. 111, No. 6, pp. 1277-1286, 2014.

**Khayat, K.H.**, Kassimi, F., and Ghoddousi, P., "Mix Design and Testing of Fiber-Reinforced Self-Consolidating Concrete," *ACI Materials Journal*, Vol. 111, No. 2, pp. 143-152, 2014.

Long, G., Feys, D., **Khayat, K.H.**, and Yahia, A., "Efficiency of Waste Tire Rubber Aggregate on the Rheological Properties and Compressive Strength of Cementitious Materials," *Journal of Sustainable Cement-Based Materials*, Vol. 3, Issue 3-4, pp. 201-211, 2014.

Billberg P.H., Roussel N., Amziane S., Beitzel M., Charitou G., Freund B., Gardner J.N., Grampeix G., Graubner C.-A., Keller L., **Khayat K.H.**, Lange D.A., Omran A.F., Perrot A., Proske T., Quattrocioni R., and Vanhove Y., "Field Evaluation of Models for Predicting Lateral Form Pressure when Casting with SCC," *Cement and Concrete Composites*, Vol. 54, pp. 70-79, 2014.

Mueller, F.V., Wallevik, O.H., and **Khayat, K.H.**, "Linking Solid Particle Packing of ECO-SCC to Material Performance," *Cement and Concrete Composites*, Vol. 54, pp. 117-125, 2014.

Arezoumandi, M., Smith, A., Volz, J.S., and **Khayat, K.H.**, "An Experimental Study on Shear Strength of Reinforced Concrete Beams with 100% Recycled Concrete Aggregate," *Construction and Building Materials Journal*, Vol. 53, pp. 612-620, 2014.

Omran, A.F., and **Khayat, K.H.**, "Choice of Thixotropic Index to Evaluate Formwork Pressure Characteristics of Self-Consolidating Concrete," *Cement and Concrete Research*, Vol. 63, pp. 89-97, 2014.

**Richardson, D.N.**, and Whitwell, B.A., "Concrete Production Plant Variables Affecting Flexural Strength Relative to Compressive Strength," *Journal of Materials in Civil Engineering*, ASCE, Vol. 26, No. 8, pp. 1-10, 2014.

**Sneed, L.H.**, D'Antino, T., and Carloni, C., "Experimental Investigation of FRMC-Concrete Interfacial Debonding," *Advanced Materials and Sensors Towards Smart Concrete Bridges: Concept, Performance, Evaluation, and Repair*, SP-298, American Concrete Institute, Farmington Hills, MI, pp. 1-14, 2014.

Shaw, D. and **Sneed, L.H.**, "Interface Shear Transfer of Lightweight Aggregate Concretes Cast at Different Times," *PCI Journal*, Vol. 59, No. 3, pp. 130-144, 2014.

**Sneed, L.H.**, D'Antino, T., and Carloni, C., "Investigation of the Bond Behavior of PBO Fiber-Reinforced Cementitious Matrix-Concrete Interface," *ACI Materials Journal*, Vol. 111, No. 5, pp. 569-580, 2014.

He, R., **Sneed, L.H.**, and Belarbi, A., "Torsional Repair of Severely Damaged Column Using Carbon Fiber-Reinforced Polymer," *ACI Structural Journal*, Vol. 111, No. 3, pp. 705-716, 2014.

D'Antino, T., Carloni, C., **Sneed, L.H.**, and Pellegrino, C., "Matrix-fiber Bond Behavior in PBO FRMC Composites – A Fracture Mechanics Approach," *Engineering Fracture Mechanics Journal*, Vol. 117, pp. 94-111, 2014.

**Sneed, L.H.** and Ramirez, J.A., "Influence of Cracking on the Behavior and Shear Strength of RC Beams," *ACI Structural Journal*, Vol. 111, No. 1, pp. 157-166, 2014.

Ren, W., **Sneed, L.H.**, Yang Y., and He, R., "Nonlinear Analysis of PC Bridge Deck Panels Based on the Damaged Plasticity Model," *International Journal of Concrete Structures and Materials*, doi:10.1007/s40069-014-0091-2, 2014.

Carloni, C., D'Antino, T., **Sneed, L.H.**, and Pellegrino, C., "Role of the Matrix Layers in the Stress-Transfer Mechanism of FRMC Composites Bonded to a Concrete Substrate," *Journal of Engineering Mechanics*, doi:10.1061/(ASCE)EM.1943-7889.0000883, 2014.

Sun, Y., Guan, X., **Wang, J.**, Meng, X., Xu, C., and Zhou, G., "Effect of Weak Magnetic Field on Arsenate and Arsenite Removal from Water by Zero Valent Iron," *Environmental Science Technology*, Vol. 48, pp. 6850-6858, 2014.

Huang, C.P., and **Wang, J.**, "Specific Chemical Interactions between Metal Ions and Biological Solids Exemplified by Sludge Particulates," *Bioresource Technology*, Vol. 160, pp. 32-42, 2014.

Liu, G., and **Wang, J.**, "Role of Solids Retention Time on Complete Nitrification: Mechanistic Understanding and Modeling," *Journal of Environmental Engineering*, Vol. 140, pp. 48-56, 2014.

**Yan, G.R.**, Chen, P., Hu G.D. and Yi, J.R., "Fast Damage Detection of Cable-stayed Bridges Using an Improved Edge-detection Method," *Journal of Intelligent Material Systems and Structures*, DOI: 10.1177/1045389X14551431, 2014.

**Yan, G.R.**, Peng, X., and Hao, H., "Dynamic Characteristics of Submarine Pipelines and Experimental Validation of a Bedding Condition Assessment Approach based on Mode Shape Curvatures," *Australian Journal of Structural Engineering*, Vol. 15, No. 1, pp. 1-13, 2014.

Hackmann, G., Guo, W.J., **Yan, G.R.**, Sun, Z.X., Lu, C.Y. and Dyke, S., "Cyber-Physical Codesign of Distributed Structural Health Monitoring with Wireless Sensor Networks," *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, Vol. 25, pp. 53-72, 2014.

Surace, C., **Yan, G.R.**, Archibald, R., Saxena, R. and Feng, R.Q., "Structural Damage Detection using the Polynomial Annihilation Edge Detection Method," *Australian Journal of Structural Engineering*, Vol. 15, No. 1, pp. 37-49, 2014.

**Pictured below:**  
**Dr. Mohamed ElGawady and staff test a Hollow Core FRP-Concrete-Steel Column in the High Bay Laboratory. Department of Bridge Office Engineers from MoDOT were onsite for the testing.**



# Conference Papers & Presentations



## CONFERENCES



Kang, X., **Bate, B.**, and Ge, L., "Shear Wave Velocity and Its Anisotropy of Granular Materials of Different Sizes," Geo-Congress 2014, Atlanta, GA, February, 2014, GSP 234: 2029-2041.

Tang, F., **Chen, G.**, and Yi, W., "Corrosion-Induced Concrete Cracking, Steel-Concrete Bond Loss, and Mechanical Degradation of Steel Bars," Proceedings of the 4th International Conference on Structures and Building Materials, Guangzhou, China, March, 2014 (keynote).

**Chen, G.**, "Simplicity in Structural Health Monitoring – Towards Behavior Assessment," World Congress on Advanced Materials, Chongqing, China, June, 2014.

**Chen, G.**, Radchenko, A., Schafer, B., Pommerenke, D., and Zheng, Y.R., "Recent Development on Remote Sensing and Wireless Communication with Distributed Smart Rocks in Bridge Scour Monitoring," SPIE Annual Symposium on Smart Structures and NDE, San Diego, CA, March, 2014.

Bao, Y., Schafer, B., Huang, Y., Cain, J.A., Palek, L., and **Chen, G.**, "Strain and Temperature Distributions in Concrete Pavement Panels under Truck Loads with Brillouin Scattering Measurement," SPIE Annual Symposium on Smart Structures and NDE, San Diego, CA, March, 2014.

Wu, C., Yin, Z., and **Chen, G.**, "Full-field Displacement Measurement of Highway Bridges through Visual Mark Tracking," Transportation Research Board Annual Meeting, Washington D.C., January, 2014.

Tang, Y., Radchenko, A., Schafer, B., Chen, Y., Pommerenke, D., and **Chen, G.**, "Semi-active Smart Rocks with Flipping Magnets," Proceedings of the NDE/NDT on Structural Materials Technology for Highways and Bridges, Washington D.C., August, 2014.

Chen, Y., Tang, F., Bao, Y., Tang, Y., and **Chen, G.**, "Corrosion Monitoring of Steel Rebar by Long-Period Fiber Grating Sensors Coated with a Thin Fe-C Layer," Proceedings of the NDE/NDT on Structural Materials Technology for Highways and Bridges, Washington D.C., August, 2014.

Fakharifar, M., **Chen, G.**, and Lin, Z., "Behavior and Strength of Passively Confined Concrete Filled Tubes," Proceedings of the 10th National Conference on Earthquake Engineering, Anchorage, AL, July, 2014.

**Chen, G.**, "Quantifying Deterioration or Damage Levels with Novel Bridge Monitoring Concepts," Proceedings of the 7th International Conference on Bridge Maintenance, Safety and Management, Shanghai, China, July, 2014.

Abdelkarim, O.I., and **ElGawady, M.A.**, "Behavior of Hybrid FRP-concrete-steel Double-Skin Tubular Columns Subjected to Cyclic Axial Compression," Structures Congress, ASCE, Boston, MA, April, 2014.

Tuwair, H., Hopkins, M., Volz, J.S., **ElGawady, M.A.**, Mohamed, M., Chandrashekhara, K., and Birman, V., "An Experimental Study on Static Behavior of Structural Polyurethane Foam Infill for GFRP Bridge Deck Panels," 1st International Conference on Mechanics of Composites, Long Island, NY, June, 2014.

Carter, J.D., Abdelkarim, O.I., **ElGawady, M.A.**, and Khayat, K.H., "FRP Confinement of High Strength Self-Consolidating Concrete," 10th U.S. National conference on Earthquake Engineering, Anchorage, AK, July, 2014.

**ElGawady, M.A.**, Ryu, D., and Wijeyewickrema, A.C., "Seismic Behavior of Unbonded Post-Tensioned Masonry Walls," 10th U.S. National Conference on Earthquake Engineering, Anchorage, AK, July, 2014.

Tuwair, H., Volz, J.S., **ElGawady, M.A.**, Mohamed, M., Chandrashekhara, K., and Birman, V., "Testing and Evaluation of GFRP Sandwich Bridge Deck Panels Filled with Polyurethane Foam," 29th Technical Conference on Composite Materials, American Society for Composites, San Diego, CA, September, 2014.

Youssif, O., **ElGawady, M.A.**, Mills, J., and Ma, X., "Prediction of Crumb Rubber Concrete Strength," 23rd Australasian Conference on the Mechanics of Structures and Materials (ACMSM23), S.T. Smith (Ed.), Byron Bay, Australia, December, 2014.

**Fitch, M.**, "Biochemical Reactors for the Removal of Metals From Mine-Impacted Water," 2nd International Workshop on Sustainability and Water Quality (IWSWQ) Remediation of Pesticides and Metals Contamination, Energy and Resources Institute, Gautam Buddha University, January, 2014 (invited).

Van der Vurst, F., De Schutter, G., Ghafari, E., and **Feys, D.**, "Influence of the Mixing Sequence on the Rheology of Self-Compacting Concrete," International Symposium on Sustainability: the 23rd Nordic Rheology Conference, Proceedings of the XXII Nordic Concrete Research Symposium, Reykjavik, Iceland, August, 2014.

**Feys, D.**, and Roussel, N., "Physical Background of Air Void Variations during Pumping of Self-Consolidating Concrete," ACI Fall 2014 Convention, Washington, DC, October, 2014 (invited).

**Feys, D.**, and **Khayat, K.H.**, "Recent Developments in Evaluating Pumping Behavior of Flowable and Self-Consolidating Concrete," Proceedings of the 3rd International Symposium on Performance and Use of Self-Consolidating Concrete, SCC 2014, Xiamen City, China, June, 2014 (keynote).

**Khayat, K.H.**, and **Feys, D.**, "Recent Developments in Evaluating Pumping Behavior of Flowable and SCC," ECO-CRETE, International Symposium on Sustainability: the 23rd Nordic Rheology Conference, Proceedings of XXII Nordic Concrete Research Symposium, Reykjavik, Iceland, August, 2014 (keynote).

**Feys, D.**, and **Khayat, K.H.**, "Analytical and Empirical Equations to Predict Pressure during Pumping of Self-Consolidating Concrete," International Symposium on Sustainability: the 23rd Nordic Rheology Conference, Proceedings of the XXII Nordic Concrete Research Symposium, Reykjavik, Iceland, August, 2014.

Kassimi F., and **Khayat K.H.**, "Prediction of Structural Response in Flexure of Fiber-Reinforced Self-Consolidating Concrete," Proceedings of the 3rd International Symposium on Performance and Use of Self-Consolidating Concrete, SCC 2014, Xiamen City, China, June, 2014.

Cao, Q., and **Khayat, K.H.**, "Workability and Pumpability of Self-Consolidating Concrete Used in Bridge Deck-Girder Connection," Proceedings of the 3rd International Symposium on Performance and Use of Self-Consolidating Concrete, SCC 2014, Xiamen City, China, June, 2014.

**Khayat, K.H.**, Jolicoeur, C., Vanhove, Y., and Pavate, T., "Electrical Conductivity to Evaluate Homogeneity of Concrete," ACI Spring 2014 Convention, Reno, NV, March, 2014 (invited).

Feys, D., Esmailkhanian, B., **Khayat, K.H.**, and Yahia, A., "New Test Method to Evaluate Dynamic Stability of Self-Consolidating Concrete," ACI Spring 2014 Convention, Reno, NV, March, 2014 (invited).

Buechlein, M., Parker, K.G., and **Morrison, G.C.**, "Skin Uptake of Gas Phase Methamphetamine: Effect of Clothing," Indoor Air 2014, Hong Kong, China, July, 2014.

Li, H., and **Morrison, G.C.**, "Adsorption Capacity of Methamphetamine in Gypsum Drywall, Indoor Air 2014, Hong Kong, China, July, 2014.

Parker, K.G., and **Morrison, G.C.**, "New Routs of Human Exposure to Methamphetamine From Residential Meth Labs: Post Remediation Accumulation From Air to Skin Oil," Indoor Air 2014, Hong Kong, China, July, 2014.

Shaughnessy, R., Reisdorph, D., and **Morrison, G.C.**, "Field Testing to Estimate Ozone Emission Rates of In-Duct Air Cleaners in Occupied Homes," Indoor Air 2014, Hong Kong, China, July, 2014.

Shu, S., He, Z., and **Morrison, G.C.**, "Large Agglomerates Formed From Ozone Reactions with Surface Bound Alpha-Terpineol and Dihydromyrcenol," Indoor Air 2014, Hong Kong, China, July, 2014.

Siegel, J.A., and **Morrison, G.C.**, "A Laboratory Method for Measuring Ozone Emission From In-Duct Air Cleaners," Indoor Air 2014, Hong Kong, China, July, 2014.

Abeol Seoud, M.A., and **Myers, J.J.**, "Effects of Environmental Exposure on Hybrid Composite Beam (HCB) Bridges," 23rd Australasian Conference on the Mechanics of Structures and Materials (ACMSM23), Byron Bay, Australia, December, 2014.

Alghazali, H., and **Myers, J.J.**, "Creep and Shrinkage of High-Strength Self-Consolidating Concrete (HS-SCC) and Normal Strength Self-Consolidating Concrete (SCC) Compared to Code Models," 23rd Australasian Conference on the Mechanics of Structures and Materials (ACMSM23), Byron Bay, Australia, December, 2014.

Hernandez, E., Griffin, A., and **Myers, J.J.**, "Construction and Monitoring of Sustainable Concrete Bridge A7957 in Missouri USA," 23rd Australasian Conference on the Mechanics of Structures and Materials (ACMSM23), Byron Bay, Australia, December, 2014.

*(continued on next page)*



**Pictured above:**  
**Dr. Dimitri Feys, left, and Dr. Kamal Khayat, right,**  
**presented the keynote speech on the topic of**  
**"Recent Advances in Pumping of High-Performance Concrete."**  
**Here they are in the rugged terrain of**  
**Icelandic countryside near a geothermal field.**

# Conference Papers & Presentations continued ...

Abeol Seoud, M.A., Earley, C.E., and **Myers, J.J.**, "In-situ Load Testing Results of Hybrid Composite Beam Bridges in Missouri, USA," Composites in Civil Engineering (CICE-14), Vancouver, BC, Canada, August, 2014.

**Myers, J.J.**, and Muncy, N. "Long-term In-situ Bond Behavior of Externally Bonded Fiber Reinforced Polymer Laminates Subjected to Environmental Conditioning," Composites in Civil Engineering (CICE-14), Vancouver, BC, Canada, August, 2014.

Abeol Seoud, M.A., and **Myers, J.J.**, "Hybrid Composite Beam Bridge Implementation and Field Monitoring," Structural Faults & Repair: European Bridge Conference (SF&R 2014), London, England, UK, July, 2014.

Hernandez, E., Griffin, A., and **Myers, J.J.**, "Balancing Extended Service Life and Sustainable Concrete Usage in Missouri Bridge A-7957," 2014 Structural Faults & Repair: European Bridge Conference (SF&R 2014), London, England, UK, July, 2014.

Wang, W., and **Myers, J.J.**, "Long-term Service Behavior of Secondary Reinforced Fiber Reinforced Polymer (FRP) RC Panels," Structural Faults & Repair: Concrete, Materials & Conservation Conference (SF&R 2014), London, England, UK, July, 2014.

**Myers, J.J.**, "Use of Self-Consolidating Concrete (SCC) and High Volume Fly Ash Concrete (HVFAC) For A Bridge Implementation," American Concrete Institute Fall Conference, (Co-presenter), Washington DC, October, 2014.

**Myers, J.J.**, "Use of Passive and Wireless-Based RFID Sensors to Measure Chloride Ingress in Concrete," American Concrete Institute Fall Conference, (Co-presenter), Washington DC, October, 2014.

Oerther, S.E., Manjrekar, P., and **Oerther, D.B.**, "Utilizing Mobile Health Technology at the Bottom of the Pyramid," Procedia Engineering, Vol. 78, pp.143-148, 2014.

Voth-Gaeddert, L.E., and **Oerther, D.B.**, "Utilizing Structural Equation Modeling in the Development of a Standardized Intervention Assessment Tool," Procedia Engineering, Vol. 78, pp. 218-223, 2014.

Schriner, A., and **Oerther, D.B.**, "No Really, (Crowd) Work is THE Silver Bullet," Procedia Engineering, Vol. 78, pp. 224-228, 2014.

Petersen, D., Anderson, V., Anderson, B., and **Oerther, D.B.**, "Maslow Missed the Mark: Relationships (and Giving) Are The Basic Need That Defines Development," Humanitarian Technology: Science, Systems, and Global Impact, Boston, MA, May, 2014.

**Oerther, D.B.**, and Schriner, A., "Which Has Greater Liquidity: Money, Education, or Drinking Water?," Proceedings of the 11th IWA Leading Edge Conference on Water and Wastewater Technologies, Abu Dhabi, UAW, CD-ROM, May, 2014.

Voth-Gaeddert, L., Jobi-Taiwo, A., Cudney, E.A., and **Oerther, D.B.**, "Analyzing Indicators of Multidimensional Poverty for Structural Equation Modeling Using Mahalanobis-Taguchi Strategy," Proceedings of the 11th IWA Leading Edge Conference on Water and Wastewater Technologies, Abu Dhabi, UAW, CD-ROM, May, 2014.

Petersen, D., Anderson, V., Anderson, B., Voth-Gaeddert, L., and **Oerther, D.B.**, "Poverty of Relationship Can Also Be Overcome With Technology: The Sharing Economy," IEEE Global Humanitarian Technology Conference, Silicon Valley, CA, October, 2014.

**Richardson, D.N.**, "ACI 325 Guide for Design and Proportioning of Concrete Mixtures for Pavements," ACI Spring National Convention, Reno, Nevada, March, 2014.

**Schonberg, W.P.**, and Dittmer, J.P., "Ethics and Technology: Instilling an Enhanced Ethical Awareness in Future Generations of Engineers," Proceedings of the 2015 UCCI Conference, Towards a Corruption-Free Caribbean: Ethics, Values, and Morality, University College of the Cayman Islands, Grand Cayman, BWI, March, 2014.

Khamzin, A., Varnavina, A., Torgashov, E., Goodwin, B., **Sneed, L.H.**, and Anderson, N., "Adaptive Approach for Utilization of Ground Penetrating Radar for Bridge Deck Investigations," Proceedings of the 27th Conference of the Environmental and Engineering Geophysical Society, The Symposium on the Application of Geophysics to Engineering and Environmental Problems, Boston, MA, March, 2014.

Elkry, A., Torgashov, E., Dera, A., Li, M., Khamzin, A., Varnavina, A., Goodwin, B., Luna, R., **Sneed, L.H.**, and Anderson, N., "Utility and Cost Effectiveness of Using a Combination of Geophysical Techniques to Solve Highway Related Problems," Proceedings of the 27th Conference of the Environmental and Engineering Geophysical Society, The Symposium on the Application of Geophysics to Engineering and Environmental Problems, Boston, MA, March, 2014, CD-ROM.

Varnavina, A., Khamzin, A., Torgashov, E., Goodwin, B., **Sneed, L.H.**, and Anderson, N., "Non-destructive Evaluation of Bridge Decks Using Ground Penetrating Radar," Proceedings of the 27th Conference of the Environmental and Engineering Geophysical Society, The Symposium on the Application of Geophysics to Engineering and Environmental Problems, Boston, MA, March, 2014.

**Sneed, L.H.**, Anderson, N., Torgashov, E., Varnavina, A., Khamzin, A., and Goodwin, B., "Non-Destructive Evaluation of Bridge Decks," Proceedings of the 2014 Missouri S&T Concrete Conference, Rolla, MO, May, 2014.

D'Antino, T., Pellegrino, C., Carloni, C., and **Sneed, L.H.**, "Structural and Bond Behavior of Reinforced Concrete Elements Strengthened with FRCM Composites," COST Action TU1207 — Next Generation Design Guidelines for Composites in Construction, Lyon, France, March, 2014.

**Sneed, L.H.**, Anderson, N., Torgashov, E., Varnavina, A., Goodwin, B., and Khamzin, A., "Use of GPR to Estimate Deterioration in Concrete Bridge Decks," Proceedings of the Transportation Engineers Associate of Missouri (TEAM) Conference, St. Louis, MO, March, 2014.

**Sneed, L.H.**, Yang, Y., Saiidi, S., Belarbi, A., and Eshani, M., "Repair of RC Bridge Columns with Fractured Bars using Pocketed Externally Bonded Prefabricated Laminates," American Concrete Institute Fall 2014 Convention, Washington, D.C., October, 2014.

Carloni, C., **Sneed, L.H.**, D'Antino, T., and Pellegrino, C., "Experimental Investigation of FRCM-Concrete Joints Subject to Fatigue and Post-Fatigue Quasi-Static Monotonic Loadings," American Concrete Institute Fall 2014 Convention, Washington, D.C., October, 2014.

**Sneed, L.H.**, He, R., and Yang, Y., "Repair of Severely Damaged Reinforced Concrete Bridge Columns," Proceedings of the Transportation Infrastructure Conference, Rolla, MO, October, 2014 (invited).

**Sneed, L.H.**, "Lightweight Concrete Modification Factor for Shear Friction," PCI Convention/National Bridge Conference 2014, Washington, D.C., September, 2014 (invited).

**Yan, G.R.**, Zhao, K., Fang, C. and Feng, R.Q., "Identification of Breathing Fatigue Cracks in Nonlinear Structures," 2014 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, Newport, RI, September, 2014.

**Yan, G.R.**, Zhao, K., Feng, R. and Yi, J.R. "Identification of Fatigue Cracks through Separating Dynamic Responses," Proceedings of the SPIE Smart Structures/NDE Conference, San Diego, CA, March, 2014.

## Scholarly Monographs & Chapters

# CHAPTERS



Shi, C., Ou, Z., and **Khayat, K.H.**, *Proceedings of the 3rd International Symposium on Performance and Use of Self-Consolidating Concrete*, SCC 2014, June 2014, Xiamen City, China, RILEM Publications S.A.R.L., ISBN: 978-2-35158-143-8, 438 p., 2014.

**Khayat, K.H.**, and DeSchutter, G. (Eds.), *State-of-the-Art Report 228-MPS on Mechanical Properties of Self-Compacting Concrete*, Springer Publishers, ISBN: 978-3-319-03244-3, 271 p., January 2014.

DeSchutter, G., and **Khayat, K.H.**, *Mechanical Properties of Self-Compacting Concrete*, Eds., Khayat, K.H., and DeSchutter, G., Springer Publishers,

ISBN: 978-3-319-03244-3, Chapter 1, "Introduction and Glossary," pp. 1-13, January 2014.

**Khayat, K.H.**, and Desnerck, P., *Mechanical Properties of Self-Compacting Concrete*, Eds., Khayat, K.H., and DeSchutter, G., Springer Publishers, ISBN: 978-3-319-03244-3, Chapter 4, "Bond Properties of Self-Compacting Concrete," pp. 95-139, January 2014.

DeSchutter, G., and **Khayat, K.H.**, *Mechanical Properties of Self-Compacting Concrete*, Eds., Khayat, K.H., and DeSchutter, G., Springer Publishers, ISBN: 978-3-319-03244-3, Chapter 8, "Summary and Conclusions," pp. 255-267, January 2014.

Voth-Gaeddert, L.E., Divelbiss, D.W., and **Oerther, D.B.**, "Utilizing Structural Equation Modeling as an Evaluation Tool for Critical Parameters of the Biosand Filter in a Case Study in Para, Brazil," *in Progress in Slow Sand and Alternative Biofiltration: Processes Further Developments and Applications*, ed. N. Nakamoto, N. Graham, M.R. Collins, and R. Gimbel, International Water Association, ISBN: 9781780406374, 2014.

# Technical Reports

# PUBLISHED



Medina, V.F., Waisner, S., Cospser, S., Rodriguez, G., Gilbert, D., Tucker, R., MacAllister, I., Scholze, R., **Burken, J.G.**, and **Wang, J.**, Anaerobic Digestion Assessment for Contingency Base Waste, Report No. ERDC TR-14-3, US Army Corps of Engineers, Washington, D.C., May, 2014 (<http://el.erdc.usace.army.mil/elpubs/pdf/tr14-3.pdf>).

Wilson, J.L., Schumacher, J.G., and **Burken, J.G.**, Occurrence and Origin of Escherichia coli in Water and Sediments at Two Public Swimming Beaches at Lake of the Ozarks State Park, Camden County, Missouri, 2011-13. U.S. Geological Survey Scientific Investigations Report No. 2014-5005, U.S. Geological Survey, Reston, VA, 2014 (<http://dx.doi.org/10.3133/sir20145005>).

**Chen, G.**, and Wu, C., Splice Performance Evaluation of Enamel-Coated Rebar for Structural Safety, Publication No. MATC-25-1121-0003-194, Mid-America Transportation Center, Lincoln, NE, July, 2014.

Ghasr, M.T., Bao, Y., Ying, K., Combs, K.M., Zoughi, R., and **Chen, G.**, Nondestructive Evaluation of Mechanically Stabilized Earth Walls with Frequency-Modulated Continuous Wave (FM-CW) Radar, Publication No. MATC-25-1121-0003-196, Mid-America Transportation Center, Lincoln, NE, June, 2014.

**Chen, G.**, and Bao, Y., Development of Bridge Girder Movement Criteria for Accelerated Bridge Construction, Publication No. NUTC-36966, Center for Transportation Infrastructure and Safety, Rolla, MO, August, 2014.

**Chen, G.**, Huang, Y., Bao, Y., Palek, Jr., L.G., and Burnham, T., Unbonded Portland Cement Concrete Overlay/Pavement Monitoring with Integrated Grating and Scattering Optical Fiber Sensors, Publication No. NUTC-41896, Center for Transportation Infrastructure and Safety, Rolla, MO, August, 2014.

**EIGawady, M.A.**, Acquisition of Uniaxial Shaking Table for Dynamic Testing of Structural Elements, Department of Transportation, Report No. RE368, Washington, D.C., August, 2014.

**EIGawady, M.A.**, and Ghenni, A., Strength of Unbonded Post-Tensioned Walls, Department of Transportation, Report No. R349, Washington, D.C., August, 2014.

**EIGawady, M.A.**, Mechanical Characteristics of Low-cost Hybrid Fiber Reinforced Polymer, Department of Transportation, Report No. R343, Washington, D.C., July, 2014.

Wang, S., **EIGawady, M.A.**, Shrestha, P. P., Said, A., and Dhakal, D., Environmental, Mechanical, and Life-Cycle Cost Analysis of Bridge Columns, Department of Transportation, Report No. R337, Washington, D.C., August, 2014.

**EIGawady, M.A.**, Dilation Characteristics of Rubberized Concrete, Department of Transportation, Report No. R342, August, 2014.

**EIGawady, M.A.**, and Abdelkarim, O., Behavior of Hollow-Core FRP-Concrete-Steel Columns Subjected to Cyclic Axial Compression, Department of Transportation, Report No. R357, Washington, D.C., August, 2014.

**Feys, D.**, Asghari, A., Ghafari, E., Ley Hernandez, A.M., Van Der Vurst, F., and DeSchutter, G., Influence of Mixing Procedure on Robustness of Self-Consolidating Concrete, Publication No. NUTC R333, National University Transportation Center, 85 p., Rolla, MO, July, 2014.

Ghafari, E., Baig, A., Nicoletta, K., **Feys, D.**, Douglas Ferron, R., and **Khayat, K.H.**, Admixture Compatibility of Alternative Supplementary Cementitious Materials for Pavement and Structural Concrete, Publication No. NUTC R366, National University Transportation Center, 60 p., Rolla, MO, August, 2014.

**Khayat, K.H.**, and Libre, N.A., Automated Measurement and Control of Concrete Properties in a Ready Mix Truck with VERIFI, Publication No. NUTC R335, National University Transportation Center, 54 p., Rolla, MO, July, 2014.

Volz, J.S., and **Khayat, K.H.**, Arezoumandi, M., Drury, J., Sadati, H., Smith, A., and Steele, A., Recycled Concrete Aggregate (RCA) for Infrastructure Elements, Project No. DTRT-06-G-04, National University Transportation Center, 54 p., Rolla, MO, May, 2014.

Morcous, G., and **Khayat, K.H.**, Self-Consolidating Concrete for Connecting Precast Concrete Deck Panels and Bridge I-Girders, Publication No. TRyy1317, National University Transportation Center, 125p., Rolla, MO, May, 2014.

**Morrison, G.C.**, Siegel, J., and Shaughnessy, R.J., In-Duct Air Cleaning Devices: Ozone Emission Rates and Test Methodology, California Air Resources Board, Contract No. 09-342, [http://www.arb.ca.gov/research/single-project.php?row\\_id=64860](http://www.arb.ca.gov/research/single-project.php?row_id=64860), March, 2014.

Long, S., Qin, R., Betak, J., Ojah, A., and **Myers, J.J.**, Quantifying Economic Benefits for Rail Infrastructure Projects, MoDOT TR201410, Missouri Department of Transportation, 103 p., Jefferson City, MO, November, 2014.

**Myers, J.J.**, Hernandez, E.S., Griffin, A., and Alghazali, H., Self-Consolidating Concrete (SCC) and High Volume Fly Ash Concrete (HVFA) for Infrastructure Elements: Implementation, MoDOT TRyy1236, Report cmr15-002, Missouri Department of Transportation, 273 pp., Jefferson City, MO, September, 2014.

**Myers, J.J.**, Hernandez, E.S., Griffin, A., and Alghazali, H., Self-Consolidating Concrete (SCC) and High Volume Fly Ash Concrete (HVFA) for Infrastructure Elements: Implementation, Final Summary Report NUTC R315, National University Transportation Center, 272 p., Rolla, MO, August, 2014.

**Myers, J.J.**, Abeol Seoud, M.A., Earley, C.R., Washer, G., and Schmidt, J., Field Evaluation of Hybrid-Composite Girder Bridges in Missouri, Final Summary Report NUTC, National University Transportation Center, 155 p., Rolla, MO, August, 2014.

**Myers, J.J.**, Abeol Seoud, M.A., Earley, C.R., Washer, G., and Schmidt, J., Field Evaluation of Hybrid-Composite Girder Bridges in Missouri, Final Report MoDOT TRyy1124, Report cmr15-002, Missouri Department of Transportation, 156 p., Jefferson City, MO, August, 2014.

Wang, W., **Myers, J.J.**, and O'Keefe, M., Long-term Behavior of GFRP Reinforced Panels after Eight Years of Field Exposure, Final Summary Report NUTC R352, National University Transportation Center, 39 p., Rolla, MO, June, 2014.

Hernandez, E.S., and **Myers, J.J.**, Implementation of Radio Frequency Identification (RFID) Sensors for Monitoring of Bridge Deck Corrosion in Missouri, Final Summary Report NUTC R351, National University Transportation Center, 31 p., Rolla, MO, March, 2014.

**Richardson, D.N.**, Anderson, N., Boeckmann, A.Z., Luna, R., Lusher, S.M., Rosenblad, B., and Sneed, L., NUTC/MoDOT Pavement Preservation Research Program, NUTC Final Report No. R300, Project No. 00039112, Contract No. DTRT-06-G-14, National University Transportation Center, Rolla, MO, August, 2014.

**Schonberg, W.P.**, MMOD Impact of Pressurized Tanks: Initial Data Analyses and First-Principles-Based Calculations, Report No. JPL-D-93584, Jet Propulsion Laboratory, Pasadena, CA, August, 2014.

**Sneed, L.H.**, Anderson, N., and Torgashov, E., Non-Destructive Evaluation of MoDOT Bridge Decks – Pilot Study, Report CMR14-010, Missouri Department of Transportation, Jefferson City, MO, March, 2014.

He, R. and **Sneed, L.H.**, Numerical Simulation of CFRP-Repaired Reinforced Concrete Columns, Report NUTC R347, Center for Transportation Infrastructure and Safety/NUTC Program, Missouri University of Science and Technology, 25 p., Rolla, MO, July, 2014.

Yang, Y., **Sneed, L.H.**, Saiidi, M., and Belarbi, A., Repair of Earthquake-Damaged Bridge Columns with Interlocking Spirals and Fractured Bars, Report CA 14-2179, California Department of Transportation, Sacramento, CA, July 2014.



**Missouri S&T's Big Beam Team**  
Pictured from left to right:  
**Dr. John Myers (team co-advisor),**  
**Eli Hernandez, Hayder Alghazali and**  
**Kaylea Smith. Not pictured is Alex Griffin.**



**Space Debris**  
**Dr. William Schonberg discussed the dangers of space debris in October at the Saint Louis Zoo. The lecture was sponsored by the Academy of Science of St. Louis.**



# Contracts, Grants & Fellowships

## RESEARCH



**Burken, J.G.** (PI), "The Missouri Transect: Climate, Plants and Communities," NSF Office of Experimental Programs, August 2014 to July 2019; \$137,931.

Elmore, A.C. (PI), Guggenberger, J.D., (Co-PI) and **Burken, J.G.** (Co-PI), "FLW Regional Ground Water Research," Corps of Engineers, September 2014 to September 2017; \$350,000.

**Burken, J.G.** (PI), "Sampling for Keyport Phytoremediation Site," URS Group, Inc., July 2014 to September 2014; \$76,671.

**Chen, G.** (PI), "Smart Rock Technology for Real-Time Monitoring of Bridge Scour and Riprap Effectiveness — Design Guidelines and Visualization Tools," Department of Transportation OST-R, October 2014 to September 2016; \$249,988.

**ElGawady, M.A.** (PI), "Development of Advanced Masonry Educational Program," National Concrete Masonry Association, September 2014 to August 2017; \$10,500.

**Feys, D.** (PI), "RE-CAST/Rapid Pavement Construction: Research on Thixotropy and Workability Loss of Vibration-Free Concrete in View of Accelerating Pavement Construction by Slip-forming," Department of Transportation, September 2014 to August 2015; \$39,409.

**Khayat, K.H.** (PI), "RE-CAST: Economical and Crack-Free High Performance Concrete with Adapted Rheology," Department of Transportation, May 2014 to December 2016; \$80,000.

**Khayat, K.H.** (PI), "RE-CAST: High-Volume Recycled Materials for Sustainable Pavement Construction," Department of Transportation, May 2014 to May 2016; \$80,000.

**Khayat, K.H.** (PI), "RE-CAST: Performance of Fiber-Reinforced Self-Consolidating Concrete for Repair of Bridge Sub-Structures and Fiber-Reinforced Super-Workable Concrete for Infrastructure Construction," Department of Transportation, May 2014 to May 2016; \$80,619.

**Khayat, K.H.** (PI), "MoDOT: High-Volume Recycled Materials for Sustainable Pavement Construction," Missouri Department of Transportation, June 2014 to May 2016; \$80,000.

**Khayat, K.H.** (PI), "MoDOT: Economical and Crack-Free High Performance Concrete with Adapted Rheology," Missouri Department of Transportation, July 2014 to June 2016; \$80,000.

**Khayat, K.H.** (PI), "MoDOT: Performance of Fiber-Reinforced Self-Consolidating Concrete for Repair of Bridge Sub-Structures and Fiber-Reinforced Super-Workable Concrete for Infrastructure Construction," Missouri Department of Transportation, July 2014 to June 2016; \$80,000.

**Khayat, K.H.** (PI), "RE-CAST/Ultra-High Performance Fiber-Reinforced Concrete (UHPC) for Infrastructure Rehabilitation-Khayat," Missouri Department of Transportation, June 2014 to June 2017; \$90,000.

**Khayat, K.H.** (PI), "SmrREC 07/2014-Advanced Concrete Materials and UHPC Permanent Formworks for Construction of Shield Building of Small Modular Nuclear Reactors," MO Tech Corporation, July 2014 to June 2015; \$30,000.

**Khayat, K.H.** (PI), "SmrREC 07/2014-Advanced Concrete Materials and UHPC Permanent Formworks for Construction of Shield Building of Small Modular Nuclear Reactors," Small Modular Reactor Research and Education Consortium, July 2014 to June 2015; \$60,000.

**LaBoube, R.** (PI), and Yu, W.-W. (Co-PI), "Center for Cold-Formed Steel Structures," Metal Construction Association, January 2014 to December 2014; \$5,000.

**LaBoube, R.** (PI), and Yu, W.-W. (Co-PI), "Wei-Wen Yu Center for Cold-Formed Steel Structures," Metal Building Manufacturers Association, January 2014 to December 2014; \$5,000.

**LaBoube, R.** (PI), and Yu, W.-W. (Co-PI), "Wei-Wen Yu Center for Cold-Formed Steel Structures," Metal Building Manufacturers Association, January 2014 to December 2014; \$5,000.



**Pictured:**  
**Dr. Glenn Morrison and graduate student Melissa Buechlein use laboratory chambers to study how tiny particles in air transfer chemicals from building materials to people.**

**LaBoube, R.** (PI), and Yu, W.-W. (Co-PI), “Wei-Wen Yu Center for Cold-Formed Steel Structures,” Metal Building Manufacturers Association, January 2014 to December 2014; \$5,000.

**LaBoube, R.** (PI), and Yu, W.-W. (Co-PI), “Wei-Wen Yu Center for Cold-Formed Steel Structures,” Steel Deck Institute, January 2014 to December 2014; \$5,000.

**LaBoube, R.** (PI), and Yu, W.-W. (Co-PI), “Wei-Wen Yu Center for Cold-Formed Steel Structures,” Metal Building Manufacturers Association, January 2014 to December 2014; \$5,000.

**LaBoube, R.** (PI), and Yu, W.-W. (Co-PI), “Wei-Wen Yu Center for Cold-Formed Steel Structures,” Metal Building Manufacturers Association, January 2014 to December 2014; \$52,500.

**Morrison, G.** (PI), Lobo, P. (Co-PI), and Ercal, N. (Co-PI), “Indoor Exposure to Pollutants Associated with Oxidative Chemistry: Field Studies and Window-Opening Behavior,” Environmental Protection Agency, November 2014 to October 2017; \$999,999.

**Morrison, G.** (PI), “Workshop: Interactions Between Indoor and Ambient Chemistry,” Alfred P. Sloan Foundation, December 2014 to August 2015; \$34,388.

**Myers, J.J.** (PI), “RE-CAST/Strengthening Repair of Structural Concrete with a Fabric-Reinforced-cementitious-matrix (FRCM): Laboratory Studies and Field Implementation,” Department of Transportation, June 2014 to June 2017; \$96,247.

**Myers, J.J.** (PI), “RE-CAST/Ultra-High Performance Fiber-Reinforced Concrete (UHPFRC) for Infrastructure Rehabilitation-Myers,” Department of Transportation, June 2014 to June 2017; \$96,247.

**Sneed, L.H.** (PI), “Shear Friction of Lightweight Aggregate Concrete,” Precast/Prestressed Concrete Institute, August 2014 to April 2016; \$43,025.

**Sneed, L.H.** (PI), “Shear Friction of Lightweight Aggregate Concrete,” American Concrete Institute, August 2014 to February 2016; \$10,000.

**Stephenson, R.W.** (PI) and Turner, L.S. (Co-PI), “Seminar: Soil Mechanics for Dam Safety,” Association of State Dam Safety Officials, August 2014 to July 2015; \$14,784.

**Stephenson, R.W.** (PI) and Turner, L.S. (Co-PI), “Seminar: Soil Mechanics for Dam Safety,” Association of State Dam Safety Officials, August 2014 to July 2015; \$5,216.

**Stephenson, R.W.** (PI) and Turner, L.S. (Co-PI), “Seminar: Soil Mechanics for Dam Safety,” Association of State Dam Safety Officials, August 2014 to July 2015; \$4,000.

**Yan, G.** (PI), “Damage and Instability Detection of Civil Large-Scale Space Structures Under Operational and Multi-Hazard Environments Based on Change in Macro-Geometrical Patterns/Shapes,” NSF Division of Civil, Mechanical & Manufacturing Innovations, September 2014 to May 2017; \$314,262.

# Graduate Students



**Pictured:**  
Ruili He receives her  
Ph.D. in civil engineering



**Chancellor  
Cheryl B.  
Schrader  
addresses the  
commencement  
audience**

## DEGREES



### Master of Science (with thesis)

Al-Karawi, S., "Comparison of Cost of Personal Protective Equipment for All Workers to Avoid Costs of Fall Accidents," Advisor: **W.E. Showalter**

Goodwin, B., "Bridge Deck Condition Assessment Using Destructive and Nondestructive Methods," Advisor: **L.H. Sneed**

Griffin, A., "Shear Behavior of High Strength Self-Consolidating Concrete in NU Bridge Girders," Advisor: **J.J. Myers**

Hongwan, L., "Adsorption and Desorption Capacity of Methamphetamine in Gypsum Drywall," Advisor: **G.C. Morrison**

Hopkins, M., "Polyurethane Foam Infill for Fiber Reinforced Polymer (FRP) Bridge Deck Panels: An Evaluation of Core Alternatives Using Small Scale Experimental Testing," Advisor: **J.S. Volz**

Kittrell, E., "Potential Acid Mine Drainage Treatment Utilizing Acidophilic Sulfate Reducing Bacteria," Advisor: **J.G. Burken**

Parker, K., "Methamphetamine Absorption by Skin Oils: Accumulated Mass, Partition Coefficients and the Influence of Tatty Acids," Advisor: **G.C. Morrison**

Steele, A., "Bond Performance of Recycled Aggregate Concrete," Advisor: **J.S. Volz**

Stuckmeyer, M., "Two Driven Pile Load Tests for Use in Missouri LRFD Guidelines," Advisor: **R. Luna**

Voth-Gaeddert, L., "Assessment of Contributing Factors to the Reduction of Diarrhea in Rural Communities," Advisor: **D.B. Oerther**

Zhao, X., "Measurements and Transient Multistep Outflow Simulation for Soil-Water Characteristic Curve (SWCC) for Soils Modified with Biopolymers," Advisor: **B. Bate**

### Doctor of Philosophy

Ale Mohammade, M., "Longitudinal Analysis of Crash Frequency Data," Co-advisors: **G. Bham** and V.A. Samaranyake

He, R., "Rapid Repair of Severely Damaged RC Columns Under Combined Loading of Flexure, Shear, and Torsion with Externally Bonded CFRP," Advisor: **L.H. Sneed**

Limmer, M., "Plant Uptake of Environmental Contaminants: Applications in Phytoscreening," Advisor: **J.G. Burken**

Wu, C., "A Unified Bond Theory, Probabilistic Meso-Scale Modeling, and Experimental Validation of Deformed Steel Rebar in Normal Strength Concrete," Advisor: **G. Chen**

Yang, Y., "Seismic Repair of Bridge Columns with Interlocking Spirals and Fractured Bars," Advisor: **L.H. Sneed**

# Honors & Other Recognition

## AWARDS



**Burken, J.G.**, 2014 Erskine Fellow – University of Christchurch, Canterbury, New Zealand, 2014.

**Burken, J.G.**, Faculty Research Award, Missouri University of Science & Technology, 2014.

**Burken, J.G.**, “Plant Translocation of Organic Compounds: Physicochemical Predictors,” Highlighted in *SCIENCE* as Editor’s Choice article (v343, p 1291), 2014.

**Burken, J.G.**, “Phytoscreening: A Comparison of In planta Portable GC-MS and In vitro Analyses,” Highlighted as cover article in *Groundwater Monitoring and Remediation*, 2014.

Gibler, M., and **Burken, J.G.**, Top poster presentation at EmCon 2014: Fourth International Conference on Occurrence, Fate, Effects & Analysis of Emerging Contaminants in the Environment, Iowa City, IA, 2014.

**ElGawady, M.A.**, Outstanding Reviewer, *Journal of Structural Engineering*, ASCE, 2014.

**Fitch, M.**, Joseph H. Senne, Jr., Faculty Achievement Award, Academy of Civil Engineers, Missouri S&T, Rolla, MO, 2014.

**Fitch, M.**, Best Reviewer Award, Air & Waste Management Association, 2014.

**Khayat, K.H.**, ACI Arthur R. Anderson Medal for “energy and perseverance in developing and sustaining world-class research facilities and for solving highly significant problems on concrete design, materials, and construction,” American Concrete Institute, August 2014.

**Khayat, K.H.**, The G.H. Tattersall Award for “sustaining and outstanding contributions in the area of sustainability and durability of concrete,” Reykjavik, Iceland, November 2014.

**Myers, J.J.**, Elected to Fellow Member Rank by The Masonry Society (TMS), 2014.

**Myers, J.J.**, ASCE Professional Recognition Award, St. Louis Section, 2014.

**Oerther, D.B.**, Jefferson Science Fellow, National Academies and U.S. Department of State, 2014.

**Oerther, D.B.**, Excellence in Environmental Engineering Education (E4) Award, American Academy of Environmental Engineers and Scientists (AAEES) and the Association of Environmental Engineering and Science Professors (AEESP), 2014.

**Richardson, D.N.**, Fellow, American Concrete Institute, 2014.

**Richardson, D.N.**, Outstanding Teaching Award, Missouri S&T, 2014.

**Schonberg, W.P.**, Summer Faculty Research Fellow, NASA/Jet Propulsion Laboratory, Pasadena, CA, 2014.

**Schonberg, W.P.**, Visiting Scholar, Department of Engineering and Computer Science, University College of the Cayman Islands, Grand Cayman, BWI, 2014.

**Schonberg, W.P.**, Group Achievement Award, NASA Engineering and Safety Center (NESC), November, 2014.

**Yan, G.R.**, Outstanding Research Performance Award, University of Texas at El Paso, June, 2014.



Burken



Fitch



Richardson



MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY  
 Civil, Architectural and Environmental Engineering  
 211 Butler-Carlton Hall, 1401 N. Pine St.  
 Rolla, Missouri 65409-0030

## BY THE NUMBERS

**Civil, Architectural and Environmental Engineering**



**UNDERGRADUATE  
STUDENTS: 400+**

**GRADUATE  
STUDENTS: 150+**

**FULL-TIME  
FACULTY: 25**

## **NO.3: COLLEGE FACTUAL/USA TODAY LIST OF TOP ENGINEERING COLLEGES**

(USA TODAY, AUGUST 2014)

**NO.5: PUBLIC UNIVERSITY FOR 20-YEAR  
RETURN ON INVESTMENT**  
 (IN-STATE TUITION AND OUT-OF-STATE TUITION),  
**PAYSCALE.COM** (JULY 2014)

**20/22% PROJECTED  
10-YEAR JOB GROWTH**  
 CIVIL AND ENVIRONMENTAL  
 ENGINEERS (SEPTEMBER 2013)  
**BUREAU OF LABOR STATISTICS**