

Qingxu (Bill) Jin, Ph.D., LEED GA

Curriculum Vitae

School of Civil & Environmental Engineering
Georgia Institute of Technology
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EDUCATION:

Georgia Institute of Technology (GT), Atlanta, GA, USA

Ph.D. in Civil Engineering 2019

- Dissertation: Fundamental understanding of NO_x sequestration capacity and pathways in nano TiO₂-engineered cementitious materials

Guest Researcher at the National Institute of Standards and Technology (NIST) Jan-Aug 2019

University of Michigan (UM), Ann Arbor, MI, USA

M.S.E. in Civil Engineering – Infrastructure Systems 2016

M.S. in Natural Resources and Environment – Sustainable Systems 2016

Hong Kong University of Science and Technology (HKUST), Hong Kong

B.Eng. in Civil and Structural Engineering – Structures 2009

Technical University of Denmark (DTU), Lyngby, Denmark

2007-2008

Academic Exchange

HONORS & AWARDS:

- Science ATL Communication Fellowship - Atlanta Science Festival 2019
- Future Faculty Fellow – Department of Civil and Environmental Engineering, GT 2019
- Sigma Xi – The Scientific Research Honor Society Inducted 2019
- Robert H. Kulman Student Scholarship – ACI Georgia Chapter 2018
- Finalist, ACI Foundation Student Fellowship – ACI National 2017
- Provost's Fund for Excellence in Graduate Studies Fellowship, GT 2016
- Chi Epsilon – The Civil Engineering Honor Society Inducted 2014
- The Hong Kong Institution of Engineers (HKIE) Young Engineers Arthur & Louise May Memorial Scholarship (Two-time recipient) 2014-2015
2013-2014
- HKIE President's Protégé (one of the ten selected) 2012
- First runner-up, APEC-IDEERS, National Center for Research on Earthquake Engineering, Taiwan (among 20 international teams) 2009

PUBLICATIONS*:

Peer-Reviewed Journal Articles

1. **Jin, Q.**, Perry, L. N., and Bullard, J. W. (2020). “Temperature dependence of gypsum dissolution rates”, *Cement and Concrete Research*, 129, 105969
2. **Jin, Q.**, Faraldos, M., Bahamonde, A., Zaribaf, B. H., and Kurtis, K. E. (2019). “Titania and Silica Nanoparticle-Modified Coatings for Cementitious Materials”, *ACI SP: Nanotechnology for Improved Concrete Performance*, 335, 97-111
3. **Jin, Q.** and Li, V. C. (2019). “Structural and durability assessment of ECC/Concrete dual-layer system for tall wind turbine towers”, *J. of Engineering Structures*, 196, 109338
4. **Jin, Q.**, Saad, E. M., Zhang, W., Tang, Y., and Kurtis, K. E. (2019). “Quantification of NO_x uptake in plain and TiO₂-doped cementitious materials”, *Cement and Concrete Research*, 122, 251-256
5. **Jin, Q.** and Li, V. C. (2019). “Development of lightweight engineered cementitious composite for durability enhancement of tall concrete wind towers”, *Cement and Concrete Composites*, 96, 87-94
6. **Jin, Q.**, Leung, C. K. Y., and Yu, C. (2013). “Effect joining method for pseudo-ductile permanent formwork”, *Materials and Structures*, 46 (3), 345-360.
7. **Jin, Q.** and Leung, C. K. Y. (2011). “Fiber reinforced cementitious composite (FRCC) plate for anchoring of FRP sheet on concrete member”, *J. Composites for Construction*, 15 (5), 790-798

Manuscripts Under Review or In Preparation (Available on Request)

1. **Jin, Q.** and Ma, H. “Estimating reactions of low-grade fly ash for potential use in cement-based materials”, *Resources, Conservation and Recycling*, under 2nd review
2. Bullard, J. W., **Jin, Q.**, and Snyder, K. A. “Evolution of specific surface area in powder dissolution with bimodal particle size distribution”, under NIST internal review
3. **Jin, Q.**, Stutzman, P. E., and Kurtis, K. E. “Effect of TiO₂ particles on hydration and microstructural development of calcium aluminate cementitious material”, in preparation
4. **Jin, Q.**, Lucas, S. N., Tang, Y., and Kurtis, K. E. “Fundamental understanding of NO_x sequestration by cementitious materials”, in preparation
5. **Jin, Q.**, Hordern, S. L., Tang, Y., and Kurtis, K. E. “Evaluation of photocatalytic performance for nano TiO₂-modified calcium aluminate cementitious material”, in preparation
6. **Jin, Q.**, Xu, M., and Li, V. C. “Life cycle assessment of hybrid tall ECC/concrete wind turbine towers using various ECC mix designs”, in preparation

Technical Reports

1. **Jin, Q.** and Li, V. C. (2016). “Program on Technology Innovation: Application of Advanced Concrete Technology in Tall Wind Towers”, *Electric Power Research Institute Technical Report 3002007871*, Palo Alto, CA, USA

Conference Proceedings

1. **Jin, Q.**, VanderZwaag, M. B., Hordern, S. L., Tang, Y., and Kurtis, K. E. (2018). “Understanding of the Photocatalytic Products of NO_x Degradation in TiO₂-based Cementitious Materials”, *Proceedings of the 6th International Symposium on Nanotechnology in Construction (NICOM6)*, Hong Kong

* Note: underlined names denote student mentees

2. Faraldos, M., Luna-Sanguino, G., Tolosana-Moranchel, A. **Jin, Q.**, Kurtis, K. E., and Bahamonde, A. (2018). "NO_x Photocatalytic Degradation and Self-cleaning of TiO₂-GO Coated Cementitious Materials", *Proceedings of 26th Catalysis Congress (CICat)*, Coimbra, Portugal
3. **Jin, Q.** (2017). "Mathematical Modeling based on the Evolution of Concrete Deterioration for Optimizing Concrete Service Life and Repair Schedules", *Proceedings of the 3rd Corvallis Workshops on Service-life Prediction of Concrete*, Corvallis, OR, USA
4. **Jin, Q.** and Leung, C. K. Y. (2012). "The Use of FRCC and FRP for the Joining Method of Permanent Formwork", *Proceedings of the 3rd IIFC Asia-Pacific regional conference on the research and application of fiber reinforced polymers (FRP) in civil and architectural engineering structures*, Hokkaido, Japan
5. **Jin, Q.**, Leung, C. K.Y., and Chung, W. (2011). "The Joining Method for Permanent Formwork", *Proceedings of International RILEM Conference on Advances in Construction Material through Science and Engineering*, Hong Kong
6. **Jin, Q.** and Leung, C. K.Y. (2010). "Fiber reinforced cementitious composite (FRCC) plate for the anchoring of fiber reinforced polymer (FRP) sheet on concrete member", *Proceedings of the 5th International Conference on FRP Composites in Civil Engineering*, Beijing, China

Other Publications

1. **Jin, Q.**, Spevacek, C., El-Dehaibi, N., and Johnson, W. (2016), "Uber and the Sharing Economy: Global Market Expansion and Reception." *WDI Publishing, University of Michigan*, Ann Arbor, MI

PRESENTATIONS[†]:

Oral Presentations

1. **Jin, Q.**, Perry, L., Bullard, J. W., and Kurtis, K. E. (2019). "Dissolution Kinetics of Calcium Salts under Different Environmental Conditions", *10th Advances in Cement-Based Materials*, Urbana, IL, USA
2. **Jin, Q.**, VanderZwaag, M. B., Hordern, S. L., Tang, Y., and Kurtis, K. E. (2018). "Understanding of the Photocatalytic Products of NO_x Degradation in TiO₂-based Cementitious Materials", *6th International Symposium on Nanotechnology in Construction (NICOM6)*, Hong Kong
3. **Jin, Q.**, Faraldos, M., Bahamonde, A., Balonis-Sant, M., Sant, G., and Kurtis, K. E. (2018). "Engineering Smart TiO₂ Nanoparticle-Modified Coatings for Enhanced Corrosion Resistance", *ACI Convention*, Las Vegas, NV, USA
4. **Jin, Q.**, Tang Y., and Kurtis, K. E. (2018). "Fundamental Understanding of NO_x Sequestration of Photocatalytic Cementitious Materials", *9th Advances in Cement-Based Materials*, University Park, PA, USA
5. **Jin, Q.**, Saad, E. M., VanderZwaag, M. B., Reeve, T. L., Tang Y., and Kurtis, K.E. (2017). "Where does nitrogen go in photocatalytic cement?", *8th Advances in Cement-Based Materials*, Atlanta, GA, USA
6. **Jin, Q.**, Leung, C. K. Y., and Chung, W. (2011). "The Joining Method for Permanent Formwork", *International RILEM Conference on Advances in Construction Material through Science and Engineering*, Hong Kong
7. **Jin, Q.** and Leung, C. K. Y. (2010). "Fiber reinforced cementitious composite (FRCC) plate for the anchoring of FRP sheet on concrete member", *5th International Conference on FRP Composites in Civil Engineering*, Beijing, China

[†] Note: underlined names denote student mentees; the first author is the presenting author

Poster Presentations

1. **Jin, Q.** and Kurtis, K. E., (2020). “Fundamental Understanding of Nano-TiO₂ Engineered Cementitious Materials for Enhanced NO_x Sequestration and Corrosion Inhibition”, *Advanced Materials for Sustainable Infrastructure Development, Gordon Research Conference (GRC)*, Ventura, CA, USA
2. **Jin, Q., Lucas, S. N.,** Kurtis, K. E., Bahamonde, A., and Faraldos, M., (2018). “Titania and Silica Nanoparticle-modified Photocatalytic Coatings for Cementitious Materials”, *6th International Symposium on Nanotechnology in Construction (NICOM6)*, Hong Kong
3. Faraldos, M., Luna-Sanguino, G., Tolosana-Moranchel, A., **Jin, Q.,** Kurtis, K. E., and Bahamonde, A. (2018). “NO_x Photocatalytic Degradation and Self-cleaning of TiO₂-GO Coated Cementitious Materials”, *26th Catalysis Congress (CICat)*, Coimbra, Portugal
4. Bahamonde, A., Jiménez-Zorita, M., **Jin, Q.,** Zaribaf, B. H., Kurtis, K. E., and Faraldos, M. (2017). “Photo-Cements with Self-Cleaning Properties for NO_x Abatement: Influence of Titania/Silica Coatings,” *5th European Conference on Environmental Applications of Advanced Oxidation Processes (EAAOP5)*, Prague, Czech Republic
5. **Jin, Q.** (2017). “Mathematical Modeling based on the Evolution of Concrete Deterioration for Optimizing Service Life and Repair Schedules”, *3rd Corvallis Workshops on Service-life Prediction of Concrete*, Corvallis, OR, USA

Invited Seminars & Talks

1. “Ultra-Ductile Cementitious Materials for Next Generation Durable Concrete Infrastructure”, presented to *CTS Cement Manufacturing Corporation*, Garden Grove, CA, March 2020
2. “Fundamental Understanding of NO_x Sequestration Capacity and Pathways in Nano-engineered Cementitious Materials”, presented to the Department of Civil and Environmental Engineering, *University of California Irvine*, Irvine, CA, March 2020
3. “TiO₂ Nanoparticles-Modified Coating on Concrete Infrastructure for Air-Purification and Self-Cleaning”, presented to *ACI Georgia Chapter*, Atlanta, GA, December 2018

Guest Lectures

1. “Advanced Concrete Technologies for Future Infrastructure”, presented to undergraduate students of Civil Engineering Materials class at Department of Civil, Environmental and Geodetic Engineering, *Ohio State University*, Columbus, OH, October 2019

FUNDED GRANT PROPOSALS:

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| ▪ NSF 17-091 DCL: Non-Academic Research Internships for Graduate Students (INTERN) Supplemental Funding, \$47,755 | 2018 |
| ▪ EPRI Technology Innovation Program, two semesters tuition | 2015 |
| ▪ NSF 12-602: Innovation Corps Teams Program (I-Corps Teams), \$50,000 | 2014 |

RESEARCH EXPERIENCE:

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| ▪ Postdoctoral Fellow, GT, Atlanta, GA | 2019-Present |
| - Design and development of fiber reinforced limestone and calcined clay (LC ³) for extremely durable concrete using coupled cement chemistry and autogenous crack width control (ARPA-E project, DoE) | |

- Guest Researcher (through NSF INTERN award), NIST, Gaithersburg, MD Jan-Aug 2019
 - Carbon sequestration in concrete – fundamentals of cement carbonation examined by nano-resolved digital holographic microscopy (DHM)
 - Fundamental science and potential of 3D printing manufacturing and construction with alternative cementitious materials, e.g. calcium aluminate cement
 - Dissolution kinetics of calcium salts and hydrated cementitious phases under various conditions – temperature and CO₂ concentrations, and particle size distribution
- Graduate Research Assistant, GT, Atlanta, GA 2016- 2019
 - Photocatalytic NO_x oxidation and ion exchange for new strategies towards functional corrosion resistant concrete infrastructure
 - Effects of nanomaterials on cement hydration and microstructural development
 - Life-cycle analysis (LCA) for TiO₂-modified cementitious materials
- Graduate Research Assistant, UM, Ann Arbor, MI 2013-2016
 - Development of advanced cementitious materials with lightweight, high fatigue and cracking resistance and self-healing properties for energy structures application
 - Development of strain-hardening cementitious composites with self-sensing properties for monitoring the performance and capacity of infrastructure systems
 - Market research of advanced concrete technology for sustainable infrastructure rehabilitation
- Research Assistant, HKUST, Hong Kong 2009-2010
 - Development of advanced retrofitting and strengthening techniques that combine fiber-reinforced polymers and fiber reinforced cementitious materials for deteriorated structures

PROFESSIONAL EXPERIENCE:

- Project Engineer, Siu Yinwai & Associates Ltd., Hong Kong and Macau 2012-2013
 - Casino and hotel resort development, MGM Cotai Casino, Macau (US\$ 3.4 billion)
 - High-rise (41 story) residential redevelopment at 11-33 Lit Tak Street, Hong Kong
- Assistant Engineer, Wong Pak Lam & Associates Consulting Engineers, Hong Kong 2011-2012
 - High-rise (47-story) residential development at 10-13 Fuk Chai Street, Hong Kong
 - High-rise (32-story) residential redevelopment at 18 Chi Kung Street, Hong Kong
- Graduate Engineer, Meinhardt (C&S) Ltd, Hong Kong 2011
 - Hysan Place, detail design for structural beam members, Hong Kong
 - Nanjing CBD project, detail design for glass box and skylight, Nanjing, China

TEACHING EXPERIENCE:

- Instructor, Civil and Environmental Engineering, GT
 - Materials Science of Concrete (CEE6585), around 15 students Spring 2020
- Graduate Student Instructor, Civil and Environmental Engineering, UM
 - Infrastructure Sustainability (CEE501.59), around 30 students Winter 2014

- Teaching Assistant, Civil and Environmental Engineering, HKUST
 - Materials Technology (CIVL323), around 20 students Fall 2010
 - Computational Methods for Structural Analysis (CIVL337), around 30 students Fall 2009

PROFESSIONAL SERVICE:

Technical Review[‡]:

- Cement and Concrete Composites, Elsevier (8)
- Resources, Conservation and Recycling, Elsevier (2)
- Journal of Cleaner Production, Elsevier (1)
- Advanced in Civil Engineering Materials, ASTM (1)

Leadership & Delegation

- Graduate Student Advisory Council, Civil and Environmental Engineering, GT 2018
- GT Delegate, National Chi Epsilon Conclave, University of Texas, Arlington, 2018
- Overseas Liaison Officer, Overseas Delegation to Germany, HKIE 2013
- Young Engineer Delegate, 10th Cross Strait Two Coasts and Four Places Engineers (Hong Kong) Forum, HKIE 2012
- Founding President, Canadian Society for Civil Engineering - HK Branch, HKUST Student Chapter, (<http://www.csce.org.hk/index.files/Page607.htm>) 2011
- Student Structural Engineer, Bridge to China Charitable Foundation, HKUST 2009
- Student Delegate, Board of European Students of Technology, DTU 2008

Professional Affiliation:

- Registered Engineer in Training (EIT), Maryland, No. 53743 2019-Present
- LEED Green Associates (LEED GA), No.: 10963063 2015-Present
- Institution of Structural Engineers (IStructE), No. 78385350 (passed interview for chartered membership in the U.K., which is equivalent to P.E. in the U.S.) 2013-Present
- The Hong Kong Institution of Engineers (HKIE), No. GW0479450 2011-Present

Professional Membership:

- Friend of Committee, Transportation Research Board (TRB) 2019-Present
 - AFN 20, Standing Committee on Durability of Concrete
 - AFN 40, Standing Committee on Concrete Materials and Placement Techniques
 - AFD 50, Standing Committee on Design and Rehabilitation of Concrete Pavements
- Associate Member, American Concrete Institution (ACI) 2016-Present
 - ACI Committee 236, Material Science
 - ACI Committee 544, Fiber Reinforced Concrete
 - ACI Committee 564, 3-D Printing with Cementitious Materials
- Class B Member, Canadian Society for Civil Engineering (CSCE), HK Branch 2012-Present

[‡] Note: number in parentheses are the number of manuscripts reviewed

ADVISING & MENTORSHIP[§]:

Undergraduate Students

- Served as Graduate Mentor to students participating in the SENIC Internship at GT
 - Samuel N. Lucas (Mississippi State University) Summer 2018
 - Sarah L. Hordern (University of Texas, Austin), Ph.D. student at Carnegie Mellon University Summer 2017
 - Michael B. VanderZwaag (UM), Project Engineer at Symbiont Summer 2016
- Served as Research Mentor to students conducting independent studies
 - Katrina M. Reinhart (GT) 2020
 - Jorge A. Magallon (GT), Structural Engineer I at Pond & Company 2019
 - Evangelia D. Tripolitis (GT), Applications Engineer at Trimble 2017-2018
 - Brandon S. Byers (GT), M.Sc. student at Stanford 2017-2018
 - Timothy L. Reeve (GT), Staff Structural Engineer at Uzun+Case 2017
 - Anne K. Magnus (UM), Structural Analysis Engineer at Boeing 2014-2016
 - Taeho Kim (UM), Ph.D. Student at California Institute of Technology 2015-2016
 - Ada W. Chung (HKUST), Structural Engineer at AECOM 2010-2011
 - Xiaoqiang Ni (HKUST), Structural Engineer at JMK Consulting Engineers 2010-2011

[§] Note: student mentee (home university), current position