

**Eric R. Giannini, PhD, PE**

Principal Investigator  
RJ Lee Group, Inc.  
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**EDUCATION**

- » PhD, Civil Engineering, The University of Texas at Austin, 2012
- » MSE, Civil Engineering, The University of Texas at Austin, 2009
- » BS, Civil Engineering, University of Virginia, 2002

**PROFESSIONAL REGISTRATION**

- » Professional Engineer, Virginia (DPOR license #043161), 2007–present

**EMPLOYMENT HISTORY**

- » Principal Investigator, RJ Lee Group, Inc., 2017–present
- » Temporary Lecturer, University of Wyoming, Department of Civil and Architectural Engineering, 2017
- » Assistant Professor, The University of Alabama, Department of Civil, Construction, and Environmental Engineering, 2012–2017
- » Graduate Teaching Assistant, The University of Texas at Austin, 2012
- » Graduate Research Assistant, The University of Texas at Austin, 2007-2012
- » Naval Architect, Norfolk Naval Shipyard, 2002–2007

**SUMMARY**

- » Over 13 years of research experience in concrete durability, acoustic nondestructive testing (NDT), and structural effects of concrete durability issues.
- » Expertise in evaluating structures affected by alkali-aggregate reactions and delayed ettringite formation using in-situ monitoring, NDT, and mechanical and chemical tests of core samples.
- » Expertise in design and conditioning of laboratory mockups of concrete structures to simulate degradation in nuclear structures in collaboration with industry, government, and academic institutions.
- » Developed ultra-rapid autoclave test methods for ASR potential of concrete aggregates.
- » Conducted large-scale structural load tests on ASR and DEF damaged reinforced concrete specimens.
- » Assembled and led academic/industry/state DOT collaboration to investigate frictional properties of diamond-ground and grooved concrete pavements.
- » Conducted research into bulk mechanical, nano-mechanical, and time-dependent properties of US-harvested bamboo.
- » Coordinated summer research program (NSF Research Experience for Undergraduates) for 19 undergraduates over two summers at The University of Alabama focused on engineering properties

and behavior of bamboo.

- » Responsible for \$1.8M in externally funded research contracts as PI or co-PI over five years on faculty at The University of Alabama.

#### **HONORS, AWARDS, FELLOWSHIPS, MEMBERSHIPS**

- » SEC Faculty Travel Grant, SECU, 2014–2015
- » ASCE ExCEED Teaching Fellow, ASCE Committee on Faculty Development, 2013
- » Best Paper on the Use of Construction Materials, 14<sup>th</sup> International Conference on Structural Faults and Repair, Edinburgh, 2012 (shared with Dr. Jinying Zhu)
- » PCA Educational Foundation Fellowship, Portland Cement Association, 2010
- » Thrust 2000 Graduate Fellowship, Cockrell School of Engineering, The University of Texas at Austin, 2007–2011
- » Member, American Society of Civil Engineers (ASCE), 1999–present
- » Member, Chi Epsilon, 2001–present
- » Member, American Concrete Institute (ACI), 2008–present
  - Voting Member, Committee 123, Research and Current Developments
  - Voting Member, Committee 228, Nondestructive Testing of Concrete
  - Associate Member, Committee 201, Durability of Concrete
  - Associate Member, Committee 325, Pavements
  - Associate Member, Committee S802, Teaching and Educational Materials
- » Member, ASTM International, 2010–present
  - Voting Member, Committee C09, Concrete and Concrete Aggregates (and several C09 subcommittees), 2012–present
  - Secretary, Subcommittee C09.64 – Nondestructive and In-Place Testing, 2018–present
- » Member, RILEM, 2014–present (Senior Member from 2016–present)
  - Member, TC 258-AAA, Avoiding Alkali-Aggregate Reactions in Concrete, 2014–2020
  - Member, TC 259-ISR, Prognosis of Structures Affected by ASR, 2015–2020
  - Member, TC ASR, Risk Assessment of Concrete Mixture Designs with Alkali-Silica Reactive (ASR) Aggregates, 2021–present

#### **PUBLICATIONS AND PRESENTATIONS**

##### *Refereed Journal Articles and Conference Proceedings*

- » Malone, C., J. Zhu, J. Hu, A. Snyder, and E. Giannini. 2021. Quantitative Assessment of Alkali-Silica Reaction Damage in Concrete Using Nonlinear Resonance Technique. *Construction and Building Materials*, Vol. 303, 124538. DOI: 10.1016/j.conbuildmat.2021.124538.
- » Giannini, E. R., A. E. Snyder, and T. Drimalas. 2021. Diagnosis and Prognosis of ASR in an Airfield Pavement. *Revista Portuguesa de Engenharia de Estruturas*, Vol. III, No. 15, pp. 35–44.
- » Soltangharaei, V., R. Anay, L. Ai, E. R. Giannini, J. Zhu, and P. Ziehl. 2020. Temporal Evaluation of ASR Cracking in Concrete Specimens Using Acoustic Emission. *Journal of Materials in Civil Engineering*, Vol. 32, No. 10, 04020285. DOI: 10.1061/(ASCE)MT.1943-5533.0003353.
- » Karve, P.; S. Miele, K. Neal, S. Mahadevan, V. Agarwal, E. R. Giannini, and P. Kyslinger. 2020. Vibro-Acoustic Modulation and Data Fusion for Localizing Alkali-silica-reaction-induced Damage in Concrete. *Structural Health Monitoring*, Vol. 19, No. 6, pp. 1905–1923. DOI:

10.1177/1475921720905509.

- » Deschenes, R., C. Jones, E. R. Giannini, and M. Hale. 2019. A Modified Chemical Index to Predict Fly Ash Dosage for Mitigating Alkali-Silica Reaction. *Advances in Civil Engineering Materials*, Vol. 8, No. 1, pp. 699–722. DOI:10.1520/ACEM20190191.
- » Deschenes, R. A., E. R. Giannini, T. Drimalas, B. Fournier, and W. M. Hale. 2018. Mitigating Alkali-Silica Reaction and Freezing and Thawing in Concrete Pavement by Silane Treatment. *ACI Materials Journal*, Vol. 115, No. 5, pp. 685–694. DOI: 10.14359/51702345.
- » Deschenes, R. A.; E. R. Giannini, T. Drimalas, B. Fournier, and W. M. Hale. 2018. Effects of Moisture, Temperature, and Freezing and Thawing on Alkali-Silica Reaction. *ACI Materials Journal*, Vol. 115, No. 4, pp. 575–584. DOI: 10.14359/51702192.
- » Burkett, S. L., S. Gerster, T. J. Freeborn, E. R. Giannini, R. M. Frazier, D. M. McCallum, and G. Quenneville. 2018. Renewable Resources: Theme with Broad Societal Impact for REU Students. *ASEE Annual Conference, Salt Lake City, June 24–27*.  
<https://www.asee.org/public/conferences/106/papers/22622/view>.
- » Hayes, N. W., Q. Gui, A. Abd-Elssam, Y. Le Pape, A. B. Giorla, S. Le Pape, E. R. Giannini, and Z. J. Ma. 2018. Monitoring Alkali-Silica Reaction Significance in Nuclear Concrete Structural Members. *Journal of Advanced Concrete Technology*, Vol. 16, No. 4, pp. 179–190. DOI: 10.3151/jact.16.179.
- » Wood, S.G., E. R. Giannini, M. A. Ramsey, and R. D. Moser. 2018. Autoclave Test Parameters for Determining Alkali-Silica Reactivity of Concrete Aggregates. *Construction and Building Materials*, Vol. 168, pp. 683–691. DOI:10.1016/j.conbuildmat.2018.02.114.
- » Giannini, E. R., L. Sanchez, A. Tuinukuafe, and K. J. Folliard. 2018. Characterization of Concrete Affected by Delayed Ettringite Formation Using the Stiffness Damage Test. *Construction and Building Materials*, Vol. 162, pp. 253–264. DOI: 10.1016/j.conbuildmat.2017.12.012.

#### Book Chapters

- » Courtois, A., E. R. Giannini, A. Boule, J.-M. Henault, L. Jacobs, B. Masson, P. Rivard, J. Sausse, and D. Vautrin. 2021. *Field Assessment of ASR-affected Structures*, in: V. Saouma (ed.) *Diagnosis and Prognosis of AAR-affected Structures*, RILEM State-of-the-Art Reports, Vol. 31 Springer, Cham. DOI: 10.1007/978-3-030-44014-5\_3.

#### Published Technical Reports

- » Miele, S., Y. Bao, P. Karve, S. Mahadevan, V. Agarwal, E. Giannini, and J. Zhu. 2019. *Vibration-Based Techniques for Concrete Structural Health Monitoring*, INL/EXT-19-5324, March 2019. DOI: 10.2172/1546748.
- » 2019. ACI Committee 228, 228.1R-19: *Report on Methods for Estimating In-Place Concrete Strength*, American Concrete Institute. Farmington Hills, MI. (Member of committee and editorial task group).
- » Mahadevan, S., S. Miele, P. Karve, J. Finrock, V. Agarwal, and E. Giannini. 2018. *Enhancement of the Structural Health Monitoring Framework by Optimizing Vibro-Acoustic Modulation Technique to Localize Alkali-Silica Reaction Degradation in Medium-Sized Concrete Samples*, INL/EXT-18-45212. DOI: 10.2172/1495181

#### Presentations

- » Giannini, E.R. and A. E. Snyder. 2021. Towards Standardized Evaluation of Aggregates for Potential Iron Sulfide Reactions. Technology Forum 50, *ACI Foundation Strategic Development Council*, August 24. (Invited).

- » Giannini, E. R. and A. E. Snyder. 2021. *Iron Sulfide Oxidation: Implications for Concrete Structures and Broader Impacts*, CE 703: *Concrete Durability*, New Jersey Institute of Technology, Guest Lecture, April 22.(Invited).
- » Giannini, E. R. 2021. *A Hoo in the World: Engineering Adventures in Texas and Beyond*, CE 3330: *Design of Structural Systems*, University of Virginia, Guest Lecture, March 4. (Invited).
- » Giannini, E. R. 2019. *ASR Testing with Autoclave Methods: Recent Developments and Future Direction*, *ASTM C09.50 Subcommittee Meeting*, Denver, CO, June 3. (Invited).
- » Giannini, E. R. 2018. *Civil and Forensic Engineering: Perspectives from the Academic, Public, and Private Sectors*, Civil Engineering Department Seminar, University of Minnesota Duluth, Duluth, MN, November 9.
- » Giannini, E. R. 2018. *Recent Work on Autoclave Methods in the US*. *RILEM TC 258-AAA Committee Meeting*, Reykjavik, Iceland, June 6.