Craig W. Hargis, Ph.D.

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Education

University of California, Berkeley, CA — G.P.A. 3.9/4.0 — 2010 –2013

- **Ph.D.** in Civil and Environmental Engineering
  - **Major:** Structural Engineering, Mechanics, and Materials
  - **Minors:** Chemistry
    Engineering and Business for Sustainability
  - **Thesis:** Advances in Sustainable Cements

University of Texas, Austin, TX — G.P.A. 4.0/4.0 — 2008 –2010

- **M.S.** in Civil Engineering
  - **Major:** Infrastructure Materials Engineering
  - **ABET:** Undergraduate courses to fulfill qualifications

Texas A&M University, College Station, TX — G.P.A. 4.0/4.0 — 1998 –2002

- B.B.A. in Finance

Work Experience

University of North Florida, Construction Management Dept. — 2016 – Pres.

- **Assistant Professor**

EMPA: Swiss Federal Laboratories for Materials Science and Technology — 2015 – 2016

- **Postdoctoral Researcher**

Calera Corp. — 2013 – 2015

- **Scientist II**

University of California, Berkeley, Dept. Civil and Environmental Engineering — 2010 – 2013

- **Graduate Student Researcher**, Prof. Paulo Monteiro

University of Texas, Austin, Dept. Civil, Arch., and Environmental Engineering — 2009 – 2010

- **Research Assistant**, Prof. Maria Juenger & Kevin Fowler

Artistry in Building, Inc. — 2005 – 2008

- **Residential General Contractor**

T. Rowe Price — 2002 – 2005

- **Retirement Plan Coordinator**
- **Investment Specialist**

Teaching Experience

University of North Florida, Jacksonville, FL 2016 – Pres.

- **Assistant Professor**
- **Undergraduate Courses Taught:** Soils and Foundations, Mechanical and Electrical Systems, Construction Management Capstone, and Construction Materials
- **Graduate Courses Taught:** Advanced Construction Administration (Distance Learning)
- **Certified Online Instructor**
- **Committees**: University Appeals, Faculty Awards Selection, and Library Advisory

University of California, Berkeley, CA 2012 – 2013

- **Laboratory Instructor**: Structure and Properties of Civil Engineering Materials
- **Graduate Student Instructor**: Concrete Materials and Construction
- **Guest Lecturer**: Concrete Materials and Construction

University of Texas, Austin, TX 2009 – 2010

- **Lead Teaching Assistant**: Properties and Behavior of Engineering Materials
- **Teaching Assistant**: Structural Analysis

Publications

Journals

1. Y. Jeong, C.W. Hargis, S. Chun, J. Moon, Effect of Calcium Carbonate Fineness on Calcium Sulfoaluminate-Belite Cement, Materials 10 (2017) 900-918.
2. N. Chitvoranund, F. Winnefeld, C.W. Hargis, S. Sinthupinyo, B. Lothenbach, Synthesis and hydration of alite-calcium sulfoaluminate cement**,** Advances in Cement Research 29 (2017) 101-111.
3. C.W. Hargis, B. Lothenbach, C.J. Müller, F. Winnefeld, Carbonation of calcium sulfoaluminate mortars, Cement and Concrete Composites 80 (2017) 123-134.
4. J. Moon, Z. Wang, S.C. Chun, C.W. Hargis, Strength and hydration characteristics of calcium sulfoaluminate-belite cement pastes with various contents of water and gypsum, Construction and Building Materials in 2016.
5. D. Hernández-Cruz, C.W. Hargis, J. Dominowski, M. Radler, P.J.M. Monteiro, Fiber reinforced mortar affected by alkali-silica reaction: A study by synchrotron microtomography, Cement and Concrete Composites 68 (2016) 123-130.
6. C. W. Hargis, A. Telesca, P.J.M. Monteiro, Calcium sulfoaluminate (ye'elimite) hydration in the presence of gypsum, calcite, and vaterite, Cement and Concrete Research 65 (2014) 15-20.
7. C. W. Hargis, J. Moon, B. Lothenbach, F. Winnefeld, H.-R. Wenk, P.J.M. Monteiro, Calcium sulfoaluminate sodalite ($Ca_4Al_6O_{12}SO_4$) crystal structure evaluation and bulk modulus determination, Journal of the American Ceramic Society 97 (2014) 892-898.
8. D. Hernández-Cruz, C.W. Hargis, S. Bae, P.A. Itty, C. Meral, J. Dominowski, M. Radler, D.A. Kilcoyne, P.J.M. Monteiro, Multiscale characterization of the chemical-mechanical interactions between polymer fibers and cementitious matrix, Cement and Concrete Composites 48 (2014) 9-18.

9. C. W. Hargis, M. C.G. Juenger, P.J.M. Monteiro, Aggregate passivation: Lithium hydroxide aggregate treatment to suppress alkali-silica reaction, ACI Materials Journal 110 (2013) 567-576.
10. C. W. Hargis, A.P. Kirchheim, P.J.M Monteiro, E.M. Gartner, Early age hydration of calcium sulfoaluminate (synthetic ye'elimite, $C_4A_3\hat{S}$) in the presence of gypsum and varying amounts of calcium hydroxide, Cement and Concrete Research 48 (2013) 105-115.
11. I. Chen, C.W. Hargis, M.C.G. Juenger, Understanding expansion in calcium sulfoaluminate–belite cements, Cement and Concrete Research 42 (2012) 51-60.

Patents

1. I. Chen, M. Devenney, S.O. Morgan, C. Hargis, Methods and compositions using water repellants, US Patent App. 14/662,974 (2015).

Conferences

1. Saint Gobain University Days, Paris, France (2015), Sustainable binders for mortar presentation and poster.
2. American Ceramic Society's 3rd Advances in Cement-based Materials, Austin, TX (2012), Early-age hydration of calcium sulfoaluminate poster.

Research Interests & Experience

Sustainable building materials: carbon negative cement, low-energy cements, & alternative composites

Advanced cementitious composites: particle packing, fiber reinforcement, & cellular concrete

Concrete durability: sulfate attack, carbonation resistance, & alkali-silica reaction

Modeling: thermodynamic modeling of cement hydration

Multiscale characterization: chemical influences on micro- and macro-scale performance

Life-cycle assessment: cradle to cradle accounting of building materials' environmental impacts

Fellowships & Awards

- **EMPA Postdoc Fellowship** co-supported by the European Commission's FP7: People Marie-Curie action COFUND and EMPA (2015-2016).
- **Outstanding Graduate Student Instructor Award** by the Graduate Division, University of California, Berkeley (2013).
- **Carlson-Polivka Fellowship** by the Department of Civil and Environmental Engineering, University of California, Berkeley (2013).
- **Berkeley Fellowship** for Graduate Studies by the University of California, Berkeley (2010-2012).
- **Best Student Poster Award** by American Ceramic Society's Cements Division (2012).
- Eldon Durrett Scholarship, Lloyd P. and Kathryn M. Hayes Scholarship, and J.H. Dunn Endowed Opportunity Award (1998-2002).

Professional Service

Journal Reviewer

- Cement and Concrete Composites
- Construction and Building Materials
- Journal of the American Ceramic Society
- American Society of Civil Engineer's Journal of Materials in Civil Engineering

Organizational Memberships

- ASTM International
    - Committee C17 on Fiber-Reinforced Cement Products, voting member
    - Committee C27 on Precast Concrete Products, voting member
- The American Ceramic Society: Cements Division
- American Concrete Institute

Skills

Analytical

- Quantitative X-ray diffraction
- Scanning electron microscopy
- Energy dispersive spectroscopy
- Mass spectroscopy
- Secondary ion mass spectrometry
- Isothermal conduction calorimetry
- Thermogravimetric analysis

Synchrotron based techniques

- Micro-tomography
- Transmission X-ray microscopy
- High-pressure X-ray diffraction
- Scanning transmission X-ray microscopy

Durability testing

- Sulfate attack
- Alkali-silica reaction
- Freeze-thaw resistance
- Salt scaling
- Dimensional stability

Mechanical testing

- Mercury intrusion porosimetry
- Ultrasonic resonance frequency
- Ultrasonic pulse velocity
- Compression, flexure, & elastic moduli

Thermodynamic modeling of cement hydration