

Oğulcan Canbek

Materials Scientist

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PROFILE

Materials scientist working at the intersection of cement chemistry and materials informatics. More than four years of industrial R&D experience, building on Ph.D. research at Georgia Tech on lower-carbon binders.

EXPERIENCE

Saint-Gobain Construction Chemicals (formerly GCP Applied Technologies) Boston, MA
Senior Scientist Aug 2022 – Present

Cemtech Global Engineering Inc. Türkiye
Structural Engineer 2015 – 2016

Project: AS Cement – Cement Grinding Center, Aydın, Türkiye

- Coordinated concrete placements and monitored construction of plant buildings for compliance with approved engineering drawings and specifications.

RESEARCH

Georgia Institute of Technology Atlanta, GA
Graduate Research Assistant 2019 – 2022

- Developed statistical and machine learning models for rheology, hydration, and strength evolution in cementitious materials [1–3, 8, 9].
- Designed and evaluated low-carbon limestone calcined clay cement (LC³) formulations, examining composition, performance, and environmental trade-offs [1–3, 8, 9].
- Performed rheological, hydration, mechanical, and durability testing and life-cycle assessment of alternative binders.

Middle East Technical University Türkiye
Research Project Assistant 2016 – 2018

- Investigated effects of kiln temperature and retention time on CSA clinker properties [5].
- Produced and characterized calcium sulfoaluminate (CSA) cement clinkers with high industrial-waste content [6].

EDUCATION

Georgia Institute of Technology · Ph.D., Civil and Environmental Engineering 2019 – 2022
Dissertation: Elucidating the Fresh and Hardened Properties of Limestone Calcined Clay Cements (LC³) Through Data Analytics · Minor in Machine Learning · GPA 3.84/4.00

Middle East Technical University · M.Sc., Civil Engineering 2016 – 2018
Thesis: Production of Low-Energy Cements Using Various Industrial Wastes · High Honors

Yildiz Technical University · B.Sc., Civil Engineering 2011 – 2015
Graduated with Honors

EXPERTISE

Modeling	Machine learning, statistical analysis, design of experiments, thermodynamic modeling, life-cycle assessment
Programming	Python, R, MATLAB
Characterization	Rheology, isothermal calorimetry and hydration kinetics, particle size analysis, X-ray characterization / analysis, vibrational spectroscopy, compressive-strength and durability testing

SERVICE

American Concrete Institute (ACI) · Voting Member, Committee 135 – Machine Learning-Informed Construction and Design

PUBLICATIONS

Peer-reviewed journal articles

- [1] **O. Canbek**, C. Szeto, N. R. Washburn, K. E. Kurtis (2023). "A Quantitative Approach to Determining Sulfate Balance for LC³." *Cement*, 12, 100063. DOI [↗](#)
- [2] **O. Canbek**, Q. Xu, Y. Mei, N. R. Washburn, K. E. Kurtis (2022). "Predicting the Rheology of Limestone Calcined Clay Cements (LC³): Linking Composition and Hydration Kinetics to Yield Stress through Machine Learning." *Cement and Concrete Research*, 160, 106925. DOI [↗](#)
- [3] **O. Canbek**, N. R. Washburn, K. E. Kurtis (2022). "Relating LC³ Microstructure, Surface Resistivity and Compressive Strength Development." *Cement and Concrete Research*, 160, 106920. DOI [↗](#)
- [4] C. Childs, **O. Canbek**, T. M. Kirby, C. Zhang, J. Zheng, C. Szeto, B. Poczcos, K. E. Kurtis, N. R. Washburn (2020). "Cheminformatics for Accelerated Design of Chemical Admixtures." *Cement and Concrete Research*, 136, 106173. DOI [↗](#)
- [5] **O. Canbek**, S. T. Erdoğ̃an (2020). "Influence of Production Parameters on Calcium Sulfoaluminate Cements." *Construction and Building Materials*, 239, 117866. DOI [↗](#)
- [6] **O. Canbek**, S. Shakouri, S. T. Erdoğ̃an (2020). "Laboratory Production of Calcium Sulfoaluminate Cements with High Industrial Waste Content." *Cement and Concrete Composites*, 106, 103475. DOI [↗](#)
- [7] B. A. Bilginer, **O. Canbek**, S. T. Erdoğ̃an (2020). "Activation of Blast Furnace Slag with Soda Production Waste." *Journal of Materials in Civil Engineering*, 32(1), 04019316. DOI [↗](#)

Conference proceedings

- [8] **O. Canbek**, N. R. Washburn, K. E. Kurtis (2025). "Rheology of Limestone Calcined Clay Cements (LC³): Predictive Modeling of Yield Stress and Plastic Viscosity with Machine Learning." *Calcined Clays for Sustainable Concrete 2022: Conference Proceedings*, pp. 447–456. DOI [↗](#)
- [9] **O. Canbek**, F. Lolli, C. Childs, N. R. Washburn, K. E. Kurtis (2022). "Multi-Objective Design of LC³: Sustainability and Strength." *ACI Special Publication*. Link [↗](#)
- [10] **O. Canbek**, S. T. Erdoğ̃an (2018). "Production of Calcium Sulfoaluminate Cements Using Industrial Byproducts in Turkey." *13th International Congress on Advances in Civil Engineering*, İzmir, Türkiye.

PRESENTATIONS

Rocky Mountain Institute (RMI) Webinar (2023). "Limestone Calcined Clay Cement (LC³) Technology and Practical Application for DOTs." Virtual.

ACI Spring Convention (2023). "Workability and Retardation Effects on Early CSA Hydration by Phosphono and Carboxylate Chemistries." San Francisco, CA.

4th Corvallis Workshops: Concrete Fit for Purpose and Planet (2022). "Performance-Based Design of Limestone Calcined Clay Cements Guided by Machine Learning." Corvallis, OR.

12th Advances in Cement-Based Materials, American Ceramic Society (2022). "Relating LC³ Microstructure, Surface Resistivity and Compressive Strength Development." Irvine, CA.

Calcined Clays for Sustainable Concrete (2022). "Rheology of Limestone Calcined Clay Cements (LC³): Predictive Modeling of Yield Stress and Plastic Viscosity with Machine Learning." Lausanne, Switzerland.

ACI RACTSI (2022). "Multi-Objective Design of LC³: Sustainability and Strength." Milan, Italy.

ACI Fall Convention (2021). "Predicting the Rheology of Limestone Calcined Clay Cements (LC³)." Virtual.

11th Advances in Cement-Based Materials, American Ceramic Society (2021). "Predicting the Rheology of Limestone Calcined Clay Cements (LC³)." Virtual.

13th International Congress on Advances in Civil Engineering (2018). "Production of Calcium Sulfoaluminate Cements Using Industrial Byproducts in Turkey." İzmir, Türkiye.

PROFESSIONAL EDUCATION	Massachusetts Institute of Technology · Non-degree course	2024
	Data Leadership: Transforming the Corporation's Operations, Management, and Mindset to Leverage Data, AI, and Cloud Computing	
	Coursera · Design of Experiments Specialization	2025
	Four courses taught by Douglas C. Montgomery	
HONORS	Georgia ACI Robert H. Kulman and LaGrit F. "Sam" Morris Student Scholarship	2021
	Georgia Tech Institute for Materials Graduate Student Fellowship	2020
TEACHING	Graduate Teaching Assistant, Civil Engineering Materials (CEE 3020), Georgia Tech	2019
LANGUAGES	Turkish (native) · English (fluent) · French (B2)	