



Seda Mursel, Ph.D.

Associate | Civil and Structural Engineering
New York
+1-212-895-8102 | smursel@exponent.com

Professional Profile

Seda Mursel, Ph.D., knowledge of structural engineering, combines computational mechanics, nonlinear finite element analysis, experimental data, and multiscale modeling to study the behavior and performance of concrete structures and advanced cementitious materials. Her work focuses on understanding structural response, load-transfer mechanisms, material behavior, and failure processes across multiple length scales.

Dr. Mursel earned her M.S. and Ph.D. in Structural Engineering from The University of Texas at Austin. Her doctoral research focused on the multiscale analysis of ultra-high-performance concrete (UHPC) structural members, combining continuum damage mechanics, fracture mechanics, computational modeling, and experimental results to investigate behavior across material and structural scales. She developed three-dimensional finite element models to simulate steel-fiber pullout from UHPC, including fiber-matrix interface behavior, and used mesoscale simulations to inform the nonlinear analysis of structural members and examine how fiber-level behavior influences structural response.

Dr. Mursel has also investigated reinforced concrete bent-to-column connections used in transportation structures. Her work on reinforced concrete bent-to-column connections combined experimental research, data analysis, evaluation of design-code requirements, and numerical modeling to investigate connection behavior and structural performance.

Dr. Mursel's technical expertise includes:

- **Nonlinear Finite Element Analysis:** Development and interpretation of nonlinear models for reinforced concrete and UHPC structural systems.
- **Computational Mechanics and Multiscale Modeling:** Analysis of material and structural behavior across scales, including the connection between fiber-level mechanisms and member-level response.
- **Concrete Structural Systems:** Reinforced concrete, UHPC, fiber-reinforced concrete, and the application of damage, fracture, and interface mechanics to structural analysis.
- **Structural Analysis and Assessment:** Evaluation of structural response, load-transfer mechanisms, failure modes, experimental results, and analytical predictions.
- **Scientific Computing:** Development and implementation of computational analyses using Julia and Python.

Dr. Mursel enjoys translating complex computational and experimental results into clear engineering insights. Her background in structural mechanics, experimental research, and numerical simulation enables her to connect local response mechanisms with overall structural behavior.

Academic Credentials & Professional Honors

Ph.D., Structural Engineering, University of Texas - Austin, 2026

M.Sc., Structural Engineering, University of Texas - Austin, 2021

B.Sc., Civil Engineering, Bogaziçi University, 2019

Runner-Up Award, EMI 2026 Properties of Materials Student Paper Competition, 2026

Kolodzey Travel Grant, The University of Texas at Austin, 2026

J. Neils Thompson Graduate Fellowship in Structural Engineering, The University of Texas at Austin, 2025-2026

Professional Partners Fellowship, The University of Texas at Austin, 2019-2020

Publications

Mursel S, Dortdivanlioglu B, Ferche AC. [Computational investigation of pull-out behavior of steel fibers embedded in ultra-high-performance concrete](#). Preprint 2026.

Mursel S, Wang HC, Ferche AC, Bayrak O. [Reinforced concrete bent-to-column connections: code requirements, experimental insights, and modeling strategies](#). Structures 2026; 87:111523.

Wang HC, Briscoe TJ, Kraus P, Castano JE, Mursel S, Yu Y, Jang H, Saqan E, Zaborac J, Webb ZD, Ferche AC, Bayrak O. [The service and ultimate behavior of bent-to-column joints in TxDOT substructures](#). Texas Department of Transportation (TxDOT) Research Report 2025.

Mursel S. [Seismic analysis and evaluation of a building retrofitted with new RC walls](#). M.S. thesis, The University of Texas at Austin 2021.

Presentations

Mursel S, Dortdivanlioglu B, Ferche AC. Numerical analysis and evaluation of fiber pullout behavior of steel fibers embedded in ultra-high-performance concrete. Oral Presentation, Engineering Mechanics Institute Conference (EMI 2026), Boulder, Colorado, June 2-4, 2026.

Mursel S, Dortdivanlioglu B, Ferche AC. from fiber pull-out to structural performance: 3d multiscale modeling of ultra-high-performance concrete (UHPC). Poster presentation, CAEE Graduate Student Symposium, University of Texas at Austin, Austin, Texas, March 6, 2026.

Mursel S, Dortdivanlioglu B, Bayrak O., Ferche AC. Mesoscale modeling of ultra-high performance concrete with randomly distributed steel fibers. Oral Presentation, Engineering Mechanics Institute Conference and Probabilistic Mechanics & Reliability Conference (EMI/PMC 2024), Chicago, Illinois, May 28-31, 2024.