ÇAĞLAR OSKAY, Ph.D.

CURRICULUM VITAE

August 9, 2016

CURRENT POSITION

Associate Professor
Department of Civil and Environmental Engineering — August 2013– Present
Department of Mechanical Engineering — January 2015– Present
Vanderbilt University, Nashville, TN

CONTACT INFORMATION

Mailing Address:
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2301 Vanderbilt Place
Nashville, TN 37235

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1102 17th Avenue South
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Nashville, TN 37212

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AREAS OF EXPERTISE

- Multiscale Computational Failure Modeling of Solids and Structures
- Life Prediction and Performance Assessment of Structures
- Computational Modeling of Composites and other Heterogeneous Materials
- Modeling of Multiphysics Phenomena in Solid Mechanics

EDUCATION

Ph.D., Civil Engineering — May, 2003
Rensselaer Polytechnic Institute, Troy, NY
Research: System identification of geophysical systems
Thesis Advisor: Mourad Zeghal

M.Sc., Civil Engineering — December, 2001
Rensselaer Polytechnic Institute, Troy, NY
Research: System identification of geophysical systems
Thesis Advisor: Mourad Zeghal

M.Sc., Applied Mathematics — December, 2000

Rensselaer Polytechnic Institute, Troy, NY
Research: Continuous wavelet transforms
Advisor: Thomas Yu

B.Sc., Civil Engineering June, 1998
Middle East Technical University (METU), Ankara, Turkey

ACADEMIC EXPERIENCE

Associate Professor (tenured) September 2013– Present
Civil and Environmental Engineering
Vanderbilt University, Nashville, TN

Assistant Professor August 2006– Present
Civil and Environmental Engineering
Vanderbilt University, Nashville, TN

Research Associate October 2005 – July-2006
Scientific Computation Research Center (SCOREC)
Rensselaer Polytechnic Institute, Troy, NY

Post-Doctoral Research Associate January 2003 – August 2005
Civil and Environmental Engineering
Rensselaer Polytechnic Institute, Troy, NY

Graduate Student Research and Teaching Assistant September 1998 – January 2003
Civil and Environmental Engineering
Rensselaer Polytechnic Institute, Troy, NY

AWARDS AND HONORS

- Chancellor Faculty Fellow, 2016-2018
- ASCE Excellence in Civil Engineering Education (ExCEEd) Fellow, 2011.
- Air Force Office of Scientific Research Summer Faculty Fellow, May-August, 2010.
- Air Force Office of Scientific Research Summer Faculty Fellow, May-August, 2009.
- Travel grant for 8th US National Congress on Computational Mechanics, *United States Association for Computational Mechanics* (USACM) (2005)
- Thomas Archibald Bedford Prize, *Rensselaer Polytechnic Institute* (2003).
- Scholarship for post-graduate studies by *Higher Education Council of Turkey* (1998).
- Graduated with high honors from *Middle East Technical University* (1998).

COURSES TAUGHT

- **CE240 Geotechnical Engineering.** *Semesters taught:* Fall 2006, Fall 2007, Fall 2008, Fall 2009, Fall 2010, Fall 2011. *Subject*: Fundamentals of soil mechanics and geotechnical engineering. Origins, formation, identification of soil properties, compressibility, shear strength, stress analysis, earth pressure theories and bearing capacity. *Enrollment*: 32 in Fall

2006, 36 in Fall 2007, 46 in Fall 2008, 50 in Fall 2009, 37 in Fall 2010, 28 in Fall 2011. *Required* course for all CE undergraduates.

- **CE6205 (formerly CE 302) Advanced Solid Mechanics II.** *Semesters taught:* Spring 2007-2016 (every year). *Subject*: Theory of plasticity, plastic stability, linear elastic and elasto-plastic fracture mechanics, topics in geometrically nonlinear continuum mechanics. *Enrollment:* 6 in Spring 2007, 8 in Spring 2008, 8 in Spring 2009, 7 in Spring 2010, 5 in Spring 2011, 4 in Spring 2012. 7 in Spring 2013, 5 in Spring 2014, 6 in Spring 2015, 9 in Spring 2016. *Required* course for all CE graduates enrolled in the Structures program.
- **CE182 Mechanics of Materials.** *Semesters taught:* Fall 2008, Fall 2009, Fall 2010, Fall 2013. *Subject*: Stress and strain, tension, compression and shear; Hooke's law, Mohr's circle, combined stresses, strain energy, Beams, columns, shafts and continuous beams. Deflections, shear and moment diagrams. *Enrollment:* 27 in Fall 2008, 28 in Fall 2009, 25 in Fall 2010, 29 in Fall 2013. *Required* course for all CE and ME undergraduates.
- **CE314 Multiscale Modeling.** *Semesters taught:* Fall 2013, Fall 2014. *Subject*: The state-of-the-art and emerging multiscale computational methods for modeling of mechanics and transport phenomena. Principles of information transfer between multiple spatial and temporal scales, including atomistic-to-continuum coupling, continuum-to-continuum coupling, and bridging of time scales. Enrichment methods including generalized finite elements, partition of unity, variational multiscale methods. *Enrollment:* 8 in Fall 2013, 3 in Fall 2014.

PROFESSIONAL ACTIVITIES

- Member of professional societies:
  - American Society of Civil Engineers (ASCE).
  - United States Association for Computational Mechanics (USACM).
  - International Association for Computational Mechanics (IACM).
  - American Society of Mechanical Engineers (ASME).
  - American Institute of Aeronautics and Astronautics (AIAA).
  - Society of Engineering Sciences (SES).
- Member of technical committees in professional organizations:
  - Founding member of the *ASCE EMI Committee on Nanomechanics.*
  - Member of the *ASCE EMI Committee on Computational Mechanics.*
  - Member of the *ASCE EMI Committee on Inelasticity and Multiscale Behavior.*
  - Member of the *ASME AMD Committee on Computing in Applied Mechanics.*
  - Member of the *ASME AMD Committee on Composite Materials.*
  - Member of the *USACM Technical Thrust Area Committee on Manufacturing and Materials Processing*
- Editorships:
  - Associate Editor of the *International Journal for Multiscale Computational Engineering*, 2015-current.
  - Guest Editor - *Special Issue. Title*: "Recent Advances in Computational Materials Science and Multiscale Materials Modeling". *Co-Editor*: Karel Matous (University of Notre Dame). *Journal*: International Journal for Multiscale Computational Engineering. *Status*: published in 2010.

  - Guest Editor - *Special Issue. Title:* "Model Reduction Approaches in Multiscale Modeling of Heterogeneous Materials". Journal: *International Journal for Multiscale Computational Engineering*. Status: published in 2013.
  - Guest Editor – 4 *Special Issues. Title:* "Mechanics of Nanocomposites and Nanostructure". Co-Editors: Nima Rahbar (Worcester Polytechnic Institute), Huiming Yin (Columbia University). Journal: *Journal of Nanomechanics and Micromechanics*. Status: two (2) issues published in 2014; two (2) issues published in 2015.

- Editorial board membership:
  - *International Journal for Multiscale Computational Engineering*, 2014-current.
- Leadership in professional organizations:
  - Chair of the *ASCE EMI Committee on Inelasticity and Multiscale Behavior.* Term: October 1, 2015-September 30, 2017.
  - Vice chair of the *ASME AMD Composite Materials Committee.* Term: November 1, 2015-October 31, 2017. Two years thereafter as committee chair.
  - Vice chair of the *USACM Technical Thrust Area Committee on Manufacturing and Materials Processing.* Term: August 1, 2015-July 31, 2017.
  - Vice chair elect of the *ASME AMD Committee on Computing in Applied Mechanics.* Term: November 1, 2016-October 31, 2018. Two years thereafter as committee chair.
- Conference organization:
  - *Conference Chair* for the ASCE Engineering Mechanics Institute 2016 Conference at Vanderbilt University, Nashville TN, May 22-15, 2016 (co-chaired with Prof. Sankaran Mahadevan at Vanderbilt University).
  - *Conference Track Chair* for Theoretical, Applied and Computational Mechanics (co-chaired with Prof. Haim Waisman at Columbia University), ASCE Engineering Mechanics Institute 2013 Conference at Northwestern University, Evanston, IL, August 4-7, 2013.
- Scientific advisory board memberships:
  - 2017 ASCE Engineering Mechanics Institute Conference, San Diego, CA, June 4-7, 2017
  - 2016 ASCE Engineering Mechanics Institute and 2016 Probabilistic Mechanics and Reliability Conferences at Vanderbilt University, Nashville, TN, May 22-25, 2016.
  - 13th US National Congress on Computational Mechanics, San Diego, CA, July 26-30, 2015.
  - ASCE Engineering Mechanics Institute 2014 Conference at McMaster University, Hamilton, Ontario, Canada, August 5-7, 2014.
  - ASCE Engineering Mechanics Institute 2013 Conference at Northwestern University, Evanston, IL, August 4-7, 2013.

- Organizer of mini-symposia in international conferences:
  - *Mini-symposium title:* Computational Methods and Applications for Solid and Structural Mechanics.
    Conference: 2017 ASCE Engineering Mechanics Institute Conference, June 4-7, 2017, San Diego, CA.
    Organizers: Timothy Truster (University of Tennessee, Knoxville), Caglar Oskay (Vanderbilt University), Ertugrul Taciroglu (University of California – Los Angeles), Haim Waisman (Columbia University) and Guglielmo Scovazzi (Duke University).
  - *Mini-symposium title:* Multiscale Models and Experimental Techniques for Composite Materials
    Conference: 2016 ASME International Mechanical Engineering Congress and Exposition.
    Organizers: Evan Pineda (NASA Glenn Research Center), Caglar Oskay (Vanderbilt University) and Dianyun Zhang (University of Connecticut).
  - *Mini-symposium title:* Multiscale and Computational Approaches to Fracture and Failure.
    Conference: European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS) 2016.
    Organizers: Haim Waisman (Columbia University) and Caglar Oskay (Vanderbilt University).
  - *Mini-symposium title:* Computational Methods and Applications for Solid and Structural Mechanics.
    Conference: ASCE Engineering Mechanics Institute 2016 Conference, May 22-25, 2016, Nashville, TN.
    Organizers: Timothy Truster (University of Tennessee, Knoxville), Armando Duarte (University of Illinois, Urbana-Champaign), Caglar Oskay (Vanderbilt University), Ertugrul Taciroglu (University of California – Los Angeles) and Haim Waisman (Columbia University).
  - *Mini-symposium title:* Cyber Physical Infrastructure.
    Conference: ASCE Engineering Mechanics Institute 2016 Conference, May 22-25, 2016, Nashville, TN.
    Organizers: Mourad Zeghal (Rensselaer Polytechnic Institute), Caglar Oskay (Vanderbilt University), Tarek Abdoun (Rensselaer Polytechnic Institute) and Raimondo Betti (Columbia University).
  - *Mini-symposium title:* Multiscale Models and Experimental Techniques for Composite Materials and Structures.
    Conference: 2015 ASME International Mechanical Engineering Congress and Exposition.
    Organizers: Caglar Oskay (Vanderbilt University) and Evan Pineda (NASA Glenn Research Center).
  - *Mini-symposium title:* Modeling Dynamic Response of Heterogeneous Materials.
    Conference: 13th US National Congress on Computational Mechanics, July 26-30, 2015, San Diego, CA.
    Organizers: Caglar Oskay (Vanderbilt University), Varvara Kouznetsova (Eindhoven University of Technology) and Sia Nemat-Nasser (University of California, San Diego).

- *Mini-symposium title:* Computational Modeling in Civil Engineering.
  Conference: ASCE Engineering Mechanics Institute 2014 Conference, August 5-7, 2014, Hamilton, Ontario, Canada.
  Organizers: Ertugrul Taciroglu (University of California – Los Angeles), Haim Waisman (Columbia University), Caglar Oskay (Vanderbilt University), Loukas Kallivokas (University of Texas at Austin) and Wael El-Dakhakhni (McMaster University).
- *Mini-symposium title:* Computational Methods and Applications for Solid and Structural Mechanics.
  Conference: ASCE Engineering Mechanics Institute 2014 Conference, August 5-7, 2014, Hamilton, Ontario, Canada.
  Organizers: Caglar Oskay (Vanderbilt University), Haim Waisman (Columbia University), and Ertugrul Taciroglu (University of California – Los Angeles).
- *Mini-symposium title:* Computational Methods for Blast and Impact in Mechanics of Materials.
  Conference: The 12th US National Congress on Computational Mechanics, July 22-25, 2013, Raleigh, NC.
  Organizers: Haim Waisman (Columbia University), Caglar Oskay (Vanderbilt University), Ertugrul Taciroglu (University of California – Los Angeles) and Jeong-Hoon Song (University of South Carolina).

- *Mini-symposium title:* Multi-scale and Multi-physics Computations in Fluids and Solids.
  Conference: 11th United States National Congress on Computational Mechanics (USNCCM), July 25-28, 2011, Minneapolis, MN.
  Organizers: Caglar Oskay (Vanderbilt University), Karel Matous (University of Notre Dame), Yozo Mikata (Bechtel Corp.) and Jacob Fish (Columbia University).
- *Mini-symposium title:* Recent Advances in Computational Materials Science and Multiscale Materials Modeling.
  Conference: ASME International Mechanical Engineering Congress and Exposition, November 12-18, 2010, Vancouver, British Columbia, Canada.
  Organizers: Karel Matous (University of Notre Dame) and Caglar Oskay (Vanderbilt University).
- *Mini-symposium title:* Mechanical Behavior of Nanocomposite Materials.
  Conference: ASME International Mechanical Engineering Congress and Exposition, November13-19, 2009, Lake Buena Vista FL.
  Organizers: Luoyu Roy Xu (University of Texas at El Paso) and Caglar Oskay (Vanderbilt University).

  - *Mini-symposium title:* Recent Advances in Computational Materials Science and Multiscale Materials Modeling.
    Conference: United States National Congress on Computational Mechanics (USNCCM), July 16-19, 2009, Columbus OH.
    Organizers: Karel Matous (Notre Dame University) and Caglar Oskay (Vanderbilt University).
  - *Mini-symposium title:* Recent Advances in Computational Materials Science and Multiscale Materials Modeling.
    Conference: ASME International Mechanical Engineering Congress and Exposition, November 2-6, 2008, Boston MA.
    Organizers: Karel Matous (Notre Dame University) and Caglar Oskay (Vanderbilt University).

- Invited participant and speaker within the *USACM/IUTAM Symposium on Connecting Multiscale Mechanics to Complex Material Design*, Evanston, IL, May 14 – 16, 2014.
- Invited participant and speaker within the *Composite Materials and Computational Tools Workshop: Industrial, Academic, and Government Perspective to DOD Applications*, WPAFB, OH, November 4-5, 2014.
- Invited participant in the JASON study on Science-Based Explosive Formulation Design, San Diego, CA, July 1-2, 2015.
- Invited panelist in the International US-Poland Workshop on Multiscale Computational Modeling of Cementitious Materials held in Cracow, Poland, October 18-19, 2012.

- Invited participant in the AFOSR workshop on *Multiscale Modeling and Prognosis* held in December 2009, Dayton OH.
- Invited participant at the Air Force Research Laboratory, Midwest Structural Sciences Center Review Meeting held in April 7-9, 2009, Champaign, IL.
- Invited participant at the *Sensitivity Analysis and Uncertainty Quantification Methods Workshop* organized by the Air Force Research Laboratory and Sandia National Laboratories in May 2009, Dayton OH.
- Invited participant at the DiffPack training organized and funded by the Air Force Office of Scientific Research in May 2009, Dayton OH.
- Invited participant at the *International Symposium on Inverse Problems and System Identification of Geo Systems* organized by the Inverse Problem Center at Rensselaer Polytechnic Institute in May 2008, Troy NY.
- Panelist and site visit team member during the 2011-2012 National Science Foundation Engineering Research Center competition on Nano-manufacturing.
- Peer-reviewer for technical journals:

  Technical journals on Computational Mechanics -
  - International Journal of Numerical Methods in Engineering
  - Computer Methods in Applied Mechanics and Engineering
  - Journal of Computational Mechanics
  - International Journal for Multiscale Computational Engineering
  - Finite Elements in Analysis and Design
  - International Journal of Computational Methods in Engineering Science and Mechanics

  Technical journals on Structures and Theoretical and Applied Mechanics -
  - Journal of Mechanics and Physics of Solids
  - International Journal of Damage Mechanics
  - Mechanics of Materials
  - International Journal of Solids and Structures
  - Mechanics Research Communications
  - Journal of Strain Analysis for Engineering Design
  - ASME Journal of Applied Mechanics
  - ASCE Journal of Engineering Mechanics
  - Journal of Mechanics of Materials and Structures
  - ASCE Journal of Nanomechanics and Micromechanics
  - ASCE Journal of Structural Engineering
  - Soil Dynamics and Earthquake Engineering
  - Thin Walled Structures

  Technical journals on Materials Science –

  - Composites Science and Technology
  - Composites Part B
  - Journal of Composite Materials
  - Cement and Concrete Composites
  - Modeling and Simulation in Materials Science and Engineering
  - Journal of Materials Science
  - Express Polymer Letters

- Peer-reviewer for national and international funding agencies
    - Army Research Office
    - National Science Foundation
    - Ohio Supercomputing Center
    - Luxembourg National Research Funds
- Referee of the Applied Mechanics Division Best Student Paper Contest during the 2010 ASME International Mechanical Engineering Congress and Exposition, Vancouver, Canada.
- Referee of the Engineering Mechanics Institute Best Student Paper Competition during the 2015 EMI Conference, Stanford, CA.

SERVICE ACTIVITIES WITHIN VANDERBILT UNIVERSITY

University Service -

- Faculty Senator, 2014-2017.
- Member of the Academic Policies and Services Committee of the Faculty Senate, 2014-current.
- Member of the Consultative Committee of the Faculty Senate, 2016.

School of Engineering Service -

- Member of the VUSE Working Group on Faculty Financial Incentives Related to Research, 2015.
- Member of the Admissions and Scholarship committee, 2009 – 2014.
- Member of the Information Technology committee, 2007 – 2009.
- Member of the Library committee, 2006 – 2007.

Civil and Environmental Engineering Department Service –

- Director of Graduate Studies, Civil and Environmental Engineering, 2015-present.
- Director of Graduate Recruitment, Civil and Environmental Engineering Department, 2014-2015.
- Academic advisor to the undergraduate Class of 2017, Civil and Environmental Engineering Department, Fall 2013-present.
- Academic advisor to the undergraduate Class of 2011, Civil and Environmental Engineering Department, 2007-2011.
- Coordinator of the *CEE Invited and Special Seminar Series*, Civil and Environmental Engineering Department, 2014-present.
- Member of the tenure-track faculty evaluation committee, 2015.
- Member of the mentoring committee for a tenure-track faculty member, 2014-present.

- Member of the Civil and Environmental Engineering departmental faculty search committees:
    - Member of the faculty search committee, 2016 – 2017.
    - Member of the faculty search committee, 2014 – 2015.
    - Member of the faculty search committee, 2011 – 2012.
    - Member of the faculty search committee, 2007 – 2008.
- Organizer of the SoE Open House activities of the Civil and Environmental Engineering Department, 2008.
- Conducted feasibility study on the development of a new course designed to expose the Civil Engineering students to materials experimentation, 2009.
- Assisted the activities for the preparation of the new departmental brochure. The purpose of the brochure is to increase the visibility of the Civil and Environmental Engineering Department among the prospective undergraduate and graduate students, funding agencies and other parties, 2009.
- Assisted in the graduate student recruitment efforts of the Civil and Environmental Engineering Department, 2007-present.
- Assisted undergraduate students in preparation for the ASCE Geotechnical Engineering competition, 2007-present.
- Presented CEE departmental overview during the SoE Open House, 2009.
- Served as the CEE representative during the SoE Open House, 2010.

PUBLICATIONS

Book Chapters and Journal Special Issues:

1. **C. Oskay** and K. Matous, "Recent Advances in Computational Material Science and Multiscale Materials Modeling," *International Journal for Computational Multiscale Engineering*, DOI: 10.1615/IntJMultCompEng.v8.i5.10, **8**:vii-vii, 2010.
2. **C. Oskay**, "Model Reduction Approaches in Multiscale Modeling of Heterogeneous Materials," *International Journal for Multiscale Computational Engineering*, DOI: 10.1615/IntJMultCompEng.2013005986, **11**:vii-viii, 2013.
3. N. Rahbar, **C. Oskay** and H. Yin, "Special Section on Mechanics of Nanocomposites and Nanostructures," *ASCE Journal of Nanomechanics and Micromechanics*, DOI: 10.1061/(ASCE)NM.2153-5477.0000073, **3**:36-36, 2013.
4. **C. Oskay**, "Multiscale Modeling of the Response and Life Prediction of Composite Materials," in *Numerical Modelling of Failure in Advanced Composite Materials*, P. Camanho and S. Hallett (eds.), Woodhead publishing, 2015 (in press).

Refereed Journal Articles - Total (43 with 20 post tenure); published (36 with 17 post tenure), in-review (6):

Underline indicates graduate student.

1. M. Zeghal and **C. Oskay**, "Local system identification analyses of the dynamic response of soil systems,'' *Soil Dynamics and Earthquake Engineering*, DOI: 10.1016/S0267-7261(02)00123-9, **22**:985-993, 2002.

2. M. Zeghal and **C. Oskay**, "A local identification technique for geotechnical and geophysical systems," *International Journal for Numerical and Analytical Methods in Geomechanics*, DOI: 10.1002/nag.302, **27**:967-987, 2003.
3. **C. Oskay** and J. Fish, "Fatigue life prediction using 2-scale temporal asymptotic homogenization," *International Journal for Numerical Methods in Engineering*, DOI: 10.1002/nme.1069, **61**:329-359, 2004. [**62 times (Google Scholar)**] (I conceived the work along with Prof. Fish, carried out the computations, and wrote the bulk of the paper. Level of contribution 90%)
4. **C. Oskay** and J. Fish, "Multiscale modeling of fatigue for ductile materials," *International Journal for Multiscale Computational Engineering,* DOI: 10.1615/IntJMultCompEng.v2.i3.10, **4**(3):1-25, 2004.
5. J. Fish and **C. Oskay**, "A nonlocal multiscale fatigue model," *Mechanics of Advanced Materials and Structures,* DOI: 10.1080/15376490500259319, **12**:485-500, 2005.
6. M. Zeghal, P. V. Kallou, **C. Oskay**, T. Abdoun and M. K. Sharp, "Visualization of soil and soil-structure response in the presence of liquefaction," *Earthquake Engineering and Engineering Vibration,* DOI: 10.1007/s11803-006-0610-5, **5**:1-12, 2006.
7. **C. Oskay** and J. Fish, "Eigendeformation-based reduced order homogenization for failure analysis of heterogeneous materials," *Computer Methods in Applied Mechanics and Engineering,* DOI: 10.1016/j.cma.2006.08.015, **196**:1216-1243, 2007.
8. **C. Oskay** and J. Fish, "On calibration and validation of eigendeformation-based multiscale models for failure analysis of heterogeneous materials," *Computational Mechanics,* DOI: 10.1007/s00466-007-0197-3, **42**:181-195, 2008.
9. **C. Oskay**, "Two-level multiscale enrichment methodology for modeling of heterogeneous plates," *International Journal for Numerical Methods in Engineering*, DOI: 10.1002/nme.2652, **80**:1143-1170, 2009.
10. **C. Oskay** and G. Pal, "A multiscale failure model for analysis of thin heterogeneous plates," *International Journal of Damage Mechanics*, DOI: 10.1177/1056789509104729, **19**:575-610, 2010.
11. H. Yan, **C. Oskay**, A. Krishnan and L. R. Xu, "Compression after impact response of woven fiber reinforced composite," *Composites Science and Technology*, DOI: 10.1016/j.compscitech.2010.08.012, **70**:2128-2136, 2010.
12. R. Crouch and **C. Oskay**, "Symmetric meso-mechanical model for failure analysis of heterogeneous materials," *International Journal for Multiscale Computational Engineering,* DOI: 10.1615/IntJMultCompEng.v8.i5.20, **8**:447-461, 2010.
13. **C. Oskay** and M. Haney, "Computational modeling of titanium structures subjected to thermo-chemo-mechanical environment," *International Journal of Solids and Structures*, DOI: 10.1016/j.ijsolstr.2010.08.014, **47**:3341-3351, 2010.
14. **C. Oskay** and M. Zeghal, "A survey of geotechnical system identification techniques," *Soil Dynamics and Earthquake Engineering*, DOI: 10.1016/j.soildyn.2010.11.011, **31**:568-582, 2011.
15. **C. Oskay**, "Variational multiscale enrichment for modeling coupled mechano-diffusion problems," *International Journal for Numerical Methods in Engineering*, DOI: 10.1002/nme.3258, **89**:686-705, 2012.

16. T. Hui and **C. Oskay**, "Computational modeling of polyurea-coated composites subjected to blast loads," *Journal of Composite Materials*, DOI: 10.1177/0021998311430160, **46**:2167-2178, 2012.
17. A. Krishnan and **C. Oskay**, "Modeling compression-after-impact response of polymer matrix composites subjected to seawater aging," *Journal of Composite Materials,* DOI: 10.1177/0021998311433343, **46**:2851-2861, 2012.
18. T. Hui and **C. Oskay**, "A nonlocal homogenization model for wave dispersion in dissipative composite materials," *International Journal for Solids and Structures*, DOI:10.1016/j.ijsolstr.2012.09.007, **50**:38-48, 2013.
19. R. Crouch, **C. Oskay** and S. B. Clay, "Multiple spatio-temporal scale modeling of composites subjected to cyclic loading," *Computational Mechanics*, DOI: 10.1007/s00466-012-0707-9, **51**:93-107, 2013.
20. M. J. Bogdanor, S. Mahadevan and **C. Oskay**, "Uncertainty Quantification in Damage Modeling of Heterogeneous Materials," *International Journal for Multiscale Computational Engineering*, DOI: 10.1615/IntJMultCompEng.2013005821, **11**:289-307, 2013.
21. P. Sparks and **C. Oskay**, "Identification of optimal reduced-order multiscale models for failure modeling of heterogeneous materials," *International Journal for Multiscale Computational Engineering,* DOI: 10.1615/IntJMultCompEng.2013005373, **11**:185-200, 2013.
22. R. Crouch, S. B. Clay and **C. Oskay**, "Experimental and computational investigation of progressive damage in graphite/epoxy composites," *Composites Part B: Engineering*, DOI: 10.1016/j.compositesb.2012.12.005, **48**:59-67, 2013.
23. H. Yan and **C. Oskay**, "A three-field (displacement-pressure-concentration) formulation for coupled transport-deformation problems," *Finite Elements in Analysis and Design,* DOI: 10.1016/j.finel.2014.06.005, **90**:20-30, 2014. (I conceived the work, carried out the computations jointly with the graduate student, and wrote the bulk of the paper. Level of contribution 50%)
24. **C. Oskay**, "Variational Multiscale Enrichment Method with Mixed Boundary Conditions for Modeling Diffusion and Deformation Problems," *Computer Methods in Applied Mechanics and Engineering*, DOI: 10.1016/j.cma.2013.05.022, **264**:178-190, 2013.
25. D. T. Pierce, J. A. Jimenez, and J. Bentley, D. Raabe, **C. Oskay** and J. E. Wittig, "The Influence of Manganese Content on the Stacking-Fault and Austenite/ε-Martensite Interfacial Energies in Fe-Mn-(Al-Si) Steels Investigated by Experiment and Theory," *Acta Materialia*, DOI: 10.1016/j.actamat.2014.01.001, **68**:238-253, 2014.
26. T. Hui and **C. Oskay**, "A High Order Homogenization Model for Transient Dynamics of Heterogeneous Media Including Micro-Inertia Effects," *Computer Methods in Applied Mechanics and Engineering*, DOI: 10.1016/j.cma.2014.01.028, **273**:181-203, 2014.
27. M. G. Pike and **C. Oskay**, "Modeling Random Short Nano-/Micro-Fiber Reinforced Composites using the Extended Finite Element Method," *ASCE Journal of Nanomechanics and Micromechanics*, DOI: 10.1061/(ASCE)NM.2153-5477.0000092, A4014005, 2015.
28. R. D. Crouch and **C. Oskay**, "Accelerated Time Integrator for Multiple Time Scale Homogenization," *International Journal for Numerical Methods in Engineering*, DOI: 10.1002/nme.4863, **101**:1019-1042, 2015.
29. T. Hui and **C. Oskay**, "Laplace-Domain, High-Order Homogenization for Transient Dynamic Response of Viscoelastic Composites," *International Journal for Numerical Methods in Engineering*, DOI: 10.1002/nme.4916, **103**:937-957, 2015.

30. H. Yan and **C. Oskay**, "A Viscoelastic-Viscoplastic Model of Titanium Structures Subjected to Thermo-Chemo-Mechanical Environment," *International Journal of Solids and Structures*, DOI: 10.1016/j.ijsolstr.2014.12.012, **56-57**:29-42, 2015.
31. S. Zhang and **C. Oskay**, "Variational Multiscale Enrichment Method with Mixed Boundary Conditions for Elasto-Viscoplastic Problems," *Computational Mechanics*, DOI: 10.1007/s00466-015-1135-4, **55**:771-787, 2015.
32. M. G. Pike and **C. Oskay**, "XFEM Modeling of Short Microfiber Reinforced Composites with Cohesive Interfaces," *Finite Elements in Analysis and Design*, DOI: 10.1016/j.finel.2015.07.007, **106**:16-31, 2015.
33. M. J. Bogdanor, **C. Oskay** and S. B. Clay, "Multiscale Modeling of Failure in Composites under Model Parameter Uncertainty," *Computational Mechanics*, DOI: 10.1007/s00466-015-1177-7, **56**:389-404, 2015.
34. X. Zhang and **C. Oskay**, "Eigenstrain based Reduced Order Homogenization for Polycrystalline Materials," *Computer Methods in Applied Mechanics and Engineering,* DOI: 10.1016/j.cma.2015.09.006, **297**:408-436, 2015.
35. M. G. Pike, M. A. Hickman and **C. Oskay**, "Interactions between Multiple Enrichments in Extended Finite Element Analysis of Short Fiber Reinforced Composites," *International Journal for Multiscale Computational Engineering*, DOI: 10.1615/IntJMultCompEng.2015015486, **13**:507-531, 2015.
36. S. Zhang and **C. Oskay**, "Reduced Order Variational Multiscale Enrichment Method for Elasto-Viscoplastic Problems," *Computer Methods in Applied Mechanics and Engineering,* DOI: 10.1016/j.cma.2015.11.020, **300**:199-224, 2016, 2015.
37. X. Zhang and **C. Oskay**, "Polycrystal Plasticity Modeling of Nickel-based Superalloy IN 617 Subjected to Cyclic Loading at High Temperature," *Modelling and Simulation in Materials Science and Engineering*, in press, 2016.
38. M. G. Pike and **C. Oskay**, "Three Dimensional Modeling of Short Fiber Reinforced Composites with the Extended Finite Element Method," *Journal of Engineering Mechanics*, in press, 2016.
39. M. J. Bogdanor, **C. Oskay**, "Prediction of Progressive Damage and Strength of IM7/977-3 Composites using the Eigendeformation based homogenization approach: Static Loading," *Journal of Composite Materials*, in press, 2016.
40. M. J. Bogdanor, **C. Oskay**, "Prediction of Progressive Fatigue Damage and Failure Behavior of IM7/977-3 Composites using the Reduced-Order Multiple Space-Time Homogenization Approach," *Journal of Composite Materials*, in press, 2016.
41. R. Hu, C. Prakash, V. Tomar, M. Harr, I. E. Gunduz and **C. Oskay**, "Experimentally-validated mesoscale modeling of the coupled mechanical-thermal response of AP-HTPB energetic material under dynamic loading," *International Journal of Fracture*, in press, 2016.

Refereed Conference Proceedings – Total (15):

1. M. Zeghal, **C. Oskay**, M. K. Sharp and R. Dobry, "Visual interpretation of site dynamic response,'' *Proceedings of the 7th US-Japan Workshop on Earthquake Resistant Design of Lifeline Facilities and Countermeasures Against Liquefaction*, Seattle, WA, August 15-17, 1999.

2. **C. Oskay** and M. Zeghal, "Identification and analyses of the deformation of soil systems subjected to seismic excitations,'' *Proceedings of the XVth International Conference on Soil Mechanics and Geotechnical Engineering*, Istanbul, Turkey, August 27-31, 2001.
3. T. Abdoun, **C. Oskay**, Y. Wang, C-J. Lee and M. Zeghal, "Visualization of measured quay wall seismic response,'' *Proceedings of the XVth International Conference on Soil Mechanics and Geotechnical Engineering*, Istanbul, Turkey, August 27-31, 2001.
4. **C. Oskay** and M. Zeghal, "Identification of the dynamic response of soil systems," *Proceedings of the 15th ASCE Engineering Mechanics Division Conference*, New York, NY, June 2-5, 2002.
5. **C. Oskay**, P. V. Kallou, M. Zeghal and T. Abdoun, "Visualization of the seismic response of soil systems,'' *Proceedings of the 1st International Conference on Physical Modeling in Geotechnics*, St. John's, Newfoundland, Canada, July 2002.
6. M. Zeghal, T. Abdoun and **C. Oskay**, "A Novel Shape-Acceleration Array and Local Identification of Geotechnical Systems," *International Workshop for Site Selection, Installation and Operation of Geotechnical Strong-Motion Arrays: Inventory of Current and Planned Arrays*, Los Angeles, CA, October 14-15, 2004.
7. **C. Oskay** and J. Fish, "A multiscale model of composite failure under impact," *Proceedings of the ASME 2006 International Mechanical Engineering Congress and Exposition*, Chicago, IL, November 5-10, 2006.
8. **C. Oskay**, "A multiscale failure model for thin heterogeneous plates," *Proceedings of the American Society for Composites – 23rd Technical Conference*, Memphis, TN, September 9-11, 2008**.**
9. R. Crouch, **C. Oskay**, S. Clay, "Multiscale Modeling of Damage Accumulation in Carbon Fiber Reinforced Polymers Subjected to Fatigue," *Proceedings of the 53rd AIAA/ASME/ ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*, Honolulu, HI, April 23-26, 2012.
10. M. G. Pike, **C. Oskay** and F. Sanchez, "Multiscale Computational Methodology for the Mechanical Response of Nano- and Micro-Fiber Reinforced Cementitious Composites," *International US-Poland workshop on Multiscale Computational Modeling of Cementitious Materials (MCMoCM 2012)*, Cracow, Poland, October 18-19, 2012.
11. M. J. Bogdanor, R. D. Crouch, S. B. Clay and **C. Oskay**, "Modeling Rate Dependent Damage Evolution in Composite Structures," *Proceedings of the 54th AIAA Structures, Structural Dynamics, and Materials*, Boston, MA, April 8-11, 2013.
12. **C. Oskay** and H. Yan, "Modeling the Coupled Transport-Deformation Response of Titanium Alloys Subjected to Thermo-Mechanical Environment," *Proceedings of the AIAA Science and Technology Forum and Exposition 2014*, National Harbor, MD, January 13-17, 2014.
13. R. D. Crouch, **C. Oskay** and S. B. Clay, "Fast Life Prediction Model for Composites Based on Multiple Temporal Scale Homogenization," *Proceedings of the AIAA Science and Technology Forum and Exposition 2014*, National Harbor, MD, January 13-17, 2014.
14. M. J. Bogdanor and **C. Oskay**, "Application of Reduced Order Multiscale Homogenization to 'Assess and Quantify the Benefits of Applying Damage Tolerant Design Principles to Advanced Composite Aircraft Structures," *Proceedings of the AIAA Science and Technology Forum and Exposition 2015*, Kissimmee, FL, January 5-9, 2015.

15. M. J. Bogdanor and **C. Oskay**, "Fatigue Life Prediction of IM7/977-3 Composite Laminates with Multispatial/Multitemporal Homogenization," *Proceedings of the AIAA Science and Technology Forum and Exposition 2016*, San Diego, CA, January 4-8, 2016.

PRESENTATIONS

Italic indicates presenter
Underline indicates graduate student

Conference Presentations

- ***C. Oskay***, M. J. Bogdanor and S. B. Clay, "Interaction of Microstructural Damage Mechanisms in Laminated Composites Subjected to Cyclic Loading," presented at the *ASME International Mechanical Engineering Congress and Exposition*, Houston, TX, November 13 – 19, 2015.
- S. Zhang and ***C. Oskay***, "Reduced Order Modeling of Variational Multiscale Enrichment Method for Elasto-Viscoplastic Problems," presented at the *ASME International Mechanical Engineering Congress and Exposition*, Houston, TX, November 13 – 19, 2015.
- *X. Zhang* and **C. Oskay**, "Fatigue and Creep-Fatigue Modeling of Alloy 617 at High Temperature," Conference Presentation in the Proceedings of the ASME International Mechanical Engineering Congress and Exposition, Houston, TX, November 13 – 19, 2015.
- ***C. Oskay***, Tong Hui and Ruize Hu, "High Order Nonlocal Multiscale Homogenization Model for Analysis of Wave Propagation in Composite Materials," presented at the *13th US National Congress on Computational Mechanics*, July 26-30, 2015.
- M. J. Bogdanor and ***C. Oskay***, "Blind Prediction of Laminated Composites under Monotonic Loading using Reduced Order Computational Homogenization," presented at the *2015 Conference of the ASCE Engineering Mechanics Institute*, Stanford, CA, June 16-19, 2015.
- *S. Zhang* and **C. Oskay**, "Variational multiscale enrichment method for elasto-viscoplastic problems," presented at the *2015 Conference of the ASCE Engineering Mechanics Institute*, Stanford, CA, June 16-19, 2015.
- ***C. Oskay***, "Spatio-temporal multiscale modeling of composites for fatigue life prediction," **Invited Presentation** at the *EuroMech Colloquium 559: Multiscale Computational Methods for Bridging Scales in Materials and Structures*, Eindhoven, the Netherlands, February 23, 2015.
- *M. J. Bogdanor* and **C. Oskay**, "Application of Reduced Order Multiscale Homogenization to Assess and Quantify the Benefits of Applying Damage Tolerant Design Principles to Advanced Composite Aircraft Structures," presented at the *AIAA Scitech 2015 Conference*, Kissimmee, FL, January 8, 2015.
- ***C. Oskay***, "Predicting Response and Fatigue Life of Composites using Homogenization-based Multiscale Simulation Framework," **Invited Lecture** presented at the *Composite Materials and Computational Tools Workshop: Industrial, Academic, and Government Perspective to DOD Applications*, Dayton, OH, November 4, 2014.
- ***C. Oskay***, "Multiscale Modeling of the Transient Dynamic Response of Heterogeneous Materials: Dispersion, Dissipation and Band Gaps," **Invited Presentation** at the *USACM/IUTAM Symposium on Connecting Multiscale Mechanics to Complex Material Design*, Evanston, IL, May 14, 2014

- X. Zhang and ***C. Oskay***, "Reduced Order Homogenization of Polycrystal Plasticity," presented at the *ASME 2014 International Mechanical Engineering Congress & Exposition*, Montreal, Quebec, Canada, November 17, 2014.
- ***C. Oskay*** and H. Yan, "Interaction Effects of Aggressive Agent Transport and Mechanical Deformation in Metals at High Temperatures," presented at the *ASME 2014 International Mechanical Engineering Congress & Exposition*, Montreal, Quebec, Canada, November 17, 2014.
- ***C. Oskay*** and R. D. Crouch, "Accelerated Time Integrator for Simulation-based Fatigue Life Prediction of Structures and Materials," presented at the *2014 Conference of the ASCE Engineering Mechanics Institute*, Hamilton, Ontario, Canada, August 6, 2014.
- *M. Pike* and **C. Oskay**, "Mechanical Modeling of Nano and Micro Fiber Reinforced Cemen55ous Composites Using XFEM," presented at the *2014 Conference of the ASCE Engineering Mechanics Institute*, Hamilton, Ontario, Canada, August 6, 2014.
- ***C. Oskay*** and R. D. Crouch, "Accelerated Multiple Temporal Scale Computation For Fatigue Loadings In Composite Materials," presented at the *11th World Congress on Computational Mechanics*, Barcelona, Spain, July 21, 2014.
- ***C. Oskay*** and H. Yan, "Modeling Coupled Transport-Deformation Response of Titanium Alloys Subjected to Thermo-Mechanical Environment," presented at the *AIAA Scitech 2014 Conference*, National Harbor, MD, January 15, 2014.
- ***C. Oskay*****,** R. D. Crouch, and S. B. Clay, "Fast Temporal Scale Modeling of Failure in Composites Subjected to Fatigue Loading," presented at the *AIAA Scitech 2014 Conference*, National Harbor, MD, January 13, 2014.
- *H. Yan* and **C. Oskay**, "A Three-Field (Displacement-Pressure-Concentration) Formulation for Coupled Transport-Deformation Problems," presented at the *ASME 2013 International Mechanical Engineering Congress & Exposition*, San Diego, CA, November 20, 2013.
- ***C. Oskay*** and T. Hui, "A Dispersive Multiscale Computational Model for Elastic Composites," presented at the *ASME 2013 International Mechanical Engineering Congress & Exposition*, San Diego, CA, November 20, 2013.
- T. Hui and ***C. Oskay***, "A Nonlocal Multiscale Model of Viscoelastic Composite Materials," presented at the *2013 Conference of the ASCE Engineering Mechanics Institute*, Evanston, IL, August 4-7, 2013.
- ***C. Oskay***, "Variational Multiscale Enrichment Method with New Boundary Conditions for Surface Degradation Problems," presented at the *2013 Conference of the ASCE Engineering Mechanics Institute*, Evanston, IL, August 4-7, 2013.
- *R. D. Crouch*, **C. Oskay** and S. B. Clay, "Multiple temporal scale life prediction in composite structures undergoing cyclic loadings," presented at the *2013 Conference of the ASCE Engineering Mechanics Institute*, Evanston, IL, August 4-7, 2013.
- *P. A. Sparks* and **C. Oskay**, "Reduced order homogenization of heterogeneous materials with overlapping failure paths," presented at the *2013 Conference of the ASCE Engineering Mechanics Institute*, Evanston, IL, August 4-7, 2013.
- *M. J. Bogdanor*, **C. Oskay** and S. B. Clay, "Multiscale modeling of failure evolution in composite materials: Transitioning from diffuse damage to cracks," presented at the *2013 Conference of the ASCE Engineering Mechanics Institute*, Evanston, IL, August 4-7, 2013.

- *R. D. Crouch*, **C. Oskay** and S. B. Clay, "Multiple temporal scale life prediction in composite structures undergoing cyclic loadings," presented at the *12th U.S. National Congress on Computational Mechanics,* Raleigh, NC, July 23, 2013.
- *M. J. Bogdanor*, **C. Oskay**, R. D. Crouch and S. B. Clay, "Failure prediction of Composite Structures: Capturing Uncertainty and Rate dependence," presented at the *12th U.S. National Congress on Computational Mechanics,* Raleigh, NC, July 23, 2013.
- ***C. Oskay,*** R. D. Crouch, and S. B. Clay, "Multiple Spatio-Temporal Scale Modeling of Failure in Composites Subjected to Cyclic Loading," presented at the *Third International Conference on Computational Modeling of Fracture and Failure of Materials and Structures*, Prague, Czech Republic, June 6, 2013.
- ***C. Oskay,*** "Multiple Spatio-Temporal Modeling of Fatigue Failure in Composites," **Invited Talk** at the *Advances in Computational Mechanics with Emphasis on Fracture and Multiscale Phenomena Workshop Honoring Professor Ted Belytschko's 70th Birthday*, Evanston, IL, April 19, 2013.
- ***C. Oskay,*** "Scale Bridging in Hierarchical Multiscale Modeling: A Tutorial," **Invited Tutorial Lecture** at the *2013 Mach Conference*, Annapolis, MD, April 11, 2013.
- ***C. Oskay***, M. J. Bogdanor, R. D. Crouch and S. B. Clay, "Modeling Rate Dependent Damage Evolution in Composite Structures," presented at the *54th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference*, Boston, MA, April 10, 2013.
- ***C. Oskay,*** A. Krishnan and H. Yan, "Compression-After-Impact Response of Environmentally-Aged Fiber-Reinforced Composites," presented at the *ASME 2010 International Mechanical Engineering Congress and Exposition*, Houston, TX, November 13, 2012.
- ***C. Oskay*** and T. Hui, "A Non-Local Homogenization Method for Wave Dispersion and Dissipation in Viscoelastic Composite Materials," presented at the 22nd International Workshop on Computational Mechanics of Materials, Baltimore, MD, September 25, 2012.
- ***C. Oskay***, "A Multiscale-Multiphysics Computational Framework for Modeling Embrittlement in Heterogeneous Materials," **Keynote lecture** at the 6th European Congress on Computational Methods in Applied Sciences and Engineering, Vienna, Austria, September 12, 2012.
- *T. Hui* and **C. Oskay**, "A Non-Local Homogenization Method for Wave Dispersion and Dissipation in Viscoelastic Composite Materials," presented at the ASCE *EMI 2012 Engineering Mechanics Conference*, University of Notre Dame, South Bend, IN, June 18, 2012.
- ***C. Oskay*****,** R. Crouch, and S. B. Clay, "A Spatio-Temporal Homogenization Method for Life Prediction of Heterogeneous Materials Subjected to Cyclic Loading," presented at the ASCE *EMI 2012 Engineering Mechanics Conference*, University of Notre Dame, South Bend, IN, June 18, 2012.
- ***C. Oskay*****,** R. Crouch, and S. B. Clay, "Multiscale Modeling of Failure under Cyclic Loading in Composite Materials," presented at the 53rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Honolulu, HI, April 24, 2012.
- ***C. Oskay,*** A. Krishnan and H. Yan, "Compression-After-Impact Response of Polymer-Matrix Composites Subjected to Environmental Aging," **Invited presentation** at the *48th*

Annual Technical Conference of the Society of Engineering Science, Evanston, IL, October 13, 2011.

- ***C. Oskay***, "Variational Multiscale Enrichment Method for Coupled Deformation-Transport Problems," **Invited presentation** at the *48th Annual Technical Conference of the Society of Engineering Science*, Evanston, IL, October 12, 2011.
- ***C. Oskay***, "Variational Multiscale Enrichment Method for Coupled Deformation-Diffusion Problems," **Invited presentation** at the *11th United States Congress on Computational Mechanics*, Minneapolis, MN, July 26, 2011.
- *T. Eason*, **C. Oskay** and R. John, "Computational Model for Titanium Structures Subjected to Thermo-Chemo-Mechanical Environment," **Invited presentation** at the *11th United States Congress on Computational Mechanics*, Minneapolis, MN, July 26, 2011.
- *T. Hui* and **C. Oskay**, "Computational Modeling of Polyurea-Coated Composites Subjected to Blast," **Invited presentation** at the *11th United States Congress on Computational Mechanics*, Minneapolis, MN, July 25, 2011.
- ***C. Oskay*** and Tong Hui, "Computational Modeling of Polyurea-Coated Composites Subjected to Blast," **Invited presentation** at the ASCE *EMI 2011 Engineering Mechanics Conference*, Northeastern University, Boston, MA, June 2, 2011.
- *R. Crouch*, **C. Oskay** and S. B. Clay, "Multiscale Modeling of Failure under Cyclic Loading in Composite Materials," **Invited presentation** at the ASCE *EMI 2011 Engineering Mechanics Conference*, Northeastern University, Boston, MA, June 2, 2011.
- ***C. Oskay***, "Variational Multiscale Enrichment for Coupled Transport-Deformation Problems," **Invited presentation** at the *ASME 2010 International Mechanical Engineering Congress and Exposition,* Vancouver, British Columbia, Canada, November 15, 2010.
- ***C. Oskay***, R. Crouch and S. B. Clay, "Multiscale Modeling of Failure under Cyclic Loading in Composite Materials," **Invited presentation** at the *16th US National Congress of Theoretical and Applied Mechanics*, State College, PA, July 1, 2010.
- ***C. Oskay*** and M. Haney, "Computational Model for Titanium Structures Subjected to Thermo-Chemo-Mechanical Environment," **Invited presentation** at the *16th US National Congress of Theoretical and Applied Mechanics*, State College, PA, July 1, 2010.
- ***C. Oskay*** and M. Haney, "Multiscale Computational Modeling of Alpha-Case Formation in Titanium Structures," **Invited presentation** at the *IV European Conference on Computational Mechanics*, Paris, France, May 20, 2010.
- ***C. Oskay***, "A reduced-order multiscale modeling framework for failure analysis of heterogeneous materials using gradient-enhanced computational homogenization," **Invited presentation** at the *ASME 2009 International Mechanical Engineering Congress and Exposition*, Lake Buena Vista FL, November 18, 2009.
- *R. Crouch* and **C. Oskay**, "Two-level multiscale failure model for heterogeneous materials," Invited Presentation, **Invited presentation** at the *10th US National Congress on Computational Mechanics*, July 17, 1009.
- ***C. Oskay***, "Two-level multiscale enrichment methodology for modeling of heterogeneous plates" **Invited presentation** at the *10th United States National Congress on Computational Mechanics,* Columbus OH, July 19, 2009.

- ***C. Oskay***, "Multiscale modeling of heterogeneous plates" presented at the *Joint ASCE-ASME-SES Conference on Mechanics of Materials,* Blacksburg VA, June 26, 2009.
- ***C. Oskay*** and R. Crouch, "Meso-mechanical model for failure analysis of heterogeneous materials," presented at *Joint ASCE-ASME-SES Conference on Mechanics of Materials*, Blacksburg VA, June 25, 2009.
- ***C. Oskay***, "Failure modeling of heterogeneous structures based on multiscale enrichment" **Invited presentation** at the *ASME 2008 International Mechanical Engineering Congress and Exposition*, Boston MA, November 3, 2008.
- ***C. Oskay*** and G. Pal "A multiscale failure model for thin heterogeneous plates," presented at the *23rd Annual Technical Conference on Composite Materials*, American Society for Composites, Memphis TN, September 10, 2008.
- ***C. Oskay*** and G. Pal "Multiscale modeling of thin heterogeneous structures" presented at the *ASME 2007 International Mechanical Engineering Congress and Exposition*, Seattle WA, November 13, 2007.
- ***C. Oskay*** and G. Pal "A new multiscale approach to failure analysis of composite plates and shells" presented at the *44th Annual Technical Meeting of the Society of Engineering Science,* College Station TX, October 23, 2007.
- ***C. Oskay***, G. Pal and J. Fish "Eigendeformation-based reduced order homogenization" presented at the *9th United States National Congress on Computational Mechanics,* San Francisco CA, July 25, 2007.
- ***C. Oskay*** and J. Fish "Eigendeformation-based reduced order homogenization" presented at the *ASME 2006 International Mechanical Engineering Congress and Exposition,* Chicago IL, November 9, 2006.
- ***C. Oskay*** and J. Fish "Mesoscale modeling of fragmentation and failure in composites" **Keynote lecture** presented at the *7th World Congress on Computational Mechanics,* Los Angeles CA, July 19, 2006.
- ***C. Oskay*** and J. Fish "Multiscale modeling of heterogeneous materials with interface damage" presented at *8th United States National Congress on Computational Mechanics,* Austin TX, July 26, 2005.
- ***C. Oskay*** and J. Fish "A nonlocal multiscale model for fatigue" presented at *8th United States National Congress on Computational Mechanics,* Austin TX, July 26, 2005.
- *J. Fish* and **C. Oskay** "Fatigue life prediction using multiple temporal scales" presented at *6th World Congress on Computational Mechanics,* Beijing, China, September 7, 2004.
- *J. Fish* and **C. Oskay** "Fatigue life prediction using multiple temporal scales" presented at *6th World Congress on Computational Mechanics,* Albuquerque NM, July 30, 2003.
- *M. Zeghal* and **C. Oskay** "Identification of the dynamic response of soil-structure systems" presented at *15th ASCE Engineering Mechanics Division Conference,* New York NY, June 4, 2002.
- ***C. Oskay*** and M. Zeghal "Local identification analyses of the dynamic respose of geophysical systems" presented at *10th International Conference on Soil Dynamics and Earthquake Engineering,* Philadelphia PA, October 9, 2001.

Presentations at Universities

- ***C. Oskay***, "Modeling High Performing Structures at Extreme Environments: Effects of Environmental Degradation" **Invited lecture**, presented at *Columbia University*, New York, NY, August 21, 2014.
- ***C. Oskay***, "A Multiscale Simulation-Based Life Prediction Approach for Composite Materials" **Invited lecture**, presented at *Northwestern University*, Evanston, IL, January 29, 2014.
- ***C. Oskay***, "Prediction of Damage Accumulation and Failure in Heterogeneous Structures" **Invited lecture**, presented at the *University of Texas at San Antonio*, San Antonio, TX, February 21, 2013.
- ***C. Oskay***, "Prediction of Damage Accumulation and Failure in Heterogeneous Structures" **Invited lecture**, presented at the *University of Tennessee*, Knoxville, TN, October 24, 2012.
- ***C. Oskay***, "Prediction of Damage Accumulation and Failure in Heterogeneous Structures" **Invited lecture**, presented at the *University of Pittsburgh*, Pittsburgh, PA, October 12, 2012.
- ***C. Oskay***, "Prediction of Damage Accumulation and Failure in Heterogeneous Structures" **Invited lecture**, presented at the *Vanderbilt University*, Nashville, TN, September 19, 2012.
- ***C. Oskay***, "Modeling Mechanical Response of Structures Operating in Extreme Environments" **Invited lecture**, presented at *Tennessee Technological University*, Cookeville, TN, November 1, 2011.
- ***C. Oskay***, "Multiscale Computational Modeling of Failure in Materials and Structures" **Invited lecture**, presented at *Northwestern University*, Evanston, IL, January 20, 2011.
- ***C. Oskay***, "Multiscale Computational Modeling of Failure in Materials and Structures" **Invited lecture**, presented at *Notre Dame University*, South Bend, IN, November 9, 2010.
- ***C. Oskay***, "Multiscale Computational Modeling of Failure in Materials and Structures" **Invited lecture**, presented at *Cornell University*, Ithaca, NY, October 5, 2010.
- ***C. Oskay***, "Multiscale modeling of failure in materials and structures" **Invited lecture**, presented at *Sabanci University*, Istanbul, Turkey, December 24, 2008.
- ***C. Oskay***, "Simulation-based engineering" **Invited lecture** presented at the *ASCE Student Chapter Meeting at Vanderbilt University,* Nashville TN, October 12, 2006.
- ***C. Oskay*** "Life prediction and survivability of structures: A multiscale perspective" **Invited lecture** presented at *Vanderbilt University,* Nashville TN, February 27, 2006.
- ***C. Oskay*** "Life prediction and survivability of structures: A multiscale perspective" **Invited lecture** presented at *Rice University,* Houston TX, February 13, 2006.
- *J. Fish* and **C. Oskay** "Mesoscale modeling of fragmentation and failure in composites" **Invited lecture** presented at *Challenges in Computational Mechanics,* Cachan, France, May 11, 2006
- ***C. Oskay*** "Life prediction and survivability of structures: A multiscale perspective" **Invited lecture** presented at *Rensselaer Polytechnic Institute,* Troy NY, March 29, 2005.

Presentations at National Laboratories

- ***C. Oskay***, "Reduced Order Multiscale Modeling of Materials with Heterogeneous Microstructures" **Invited lecture**, presented at *Navy Research Laboratory*, Washington, DC, May 19, 2015.
- ***C. Oskay***, "A Multiscale Simulation-Based Life Prediction Approach for Composite Materials" **Invited lecture**, presented at *Army Research Laboratory*, Aberdeen Proving Ground, April 30, 2015.
- ***C. Oskay***, "Variational Multiscale Enrichment for Coupled Mechanical-Diffusion Problems," presented at the *Air Force Research Laboratory*, WPAFB, Dayton OH, July 30, 2010.
- ***C. Oskay***, "Multiscale Modeling of Failure in Heterogeneous Materials" **Invited lecture**, presented at *Oak Ridge National Laboratory*, Oak Ridge, TN, February 25, 2010.
- ***C. Oskay***, "Multiscale computational modeling of alpha-case formation in titanium structures," presented at the *Air Force Research Laboratory*, WPAFB, Dayton OH, July 31, 2009.
- ***C. Oskay***, "Multiscale modeling of failure in materials and structures" **Invited lecture**, presented at *Air Force Research Laboratory*, WPAFB, Dayton OH, June 09, 2009.
- ***C. Oskay***, "Eigendeformation-based computational homogenization for failure modeling of composite materials," **Invited lecture**, presented at the *NASA Multiscale Modeling Workshop*, Cleveland OH, July 24, 2009.

Other Oral Presentations

- ***C. Oskay***, "Multiscale-Multiphysics Computational Framework for Damage Prognosis in Hypersonic Structures," **Invited lecture** presented at the *United Technologies Research Center*, East Hartford, CT, August 25, 2015.
- ***C. Oskay***, "Multiscale-Multiphysics Computational Framework for Damage Prognosis in Hypersonic Structures," presented at the *AFOSR 2015 Multi-Scale Structural Mechanics and Prognosis Annual Grantees Meeting*, Fort Walton Beach, FL, July 16, 2015.
- ***C. Oskay***, "Multiscale Modeling of the Thermomechanical Response of Energetic Materials: From Meso to Macro," JASON 2015 Summer Study, San Diego, CA, July 2, 2015.
- **C. Oskay**, *M. J. Bogdanor* and R. D. Crouch, "DTDP Static and Fatigue Predictions of IM7/977-3 Laminates using the Spatio-Temporal Multiscale Homogenization Framework," *AFRL Tech Scout 1 Final Program Review*, Dayton, OH, March 25, 2015.
- ***C. Oskay***, "Multi-resolution in-situ testing and multiscale simulation for creep fatigue damage analysis of Alloy 617," presented at the *DOE NEUP Project Review Meeting*, Arizona State University, Tempe, AZ, March 4, 2015.
- ***C. Oskay***, "Reduced Order Models for Variable Fidelity Material Response and Life Prediction," presented at the *AFRL Structural Sciences Center Technical Interchange Meeting*, Fairborn, OH, February 9, 2015.
- ***C. Oskay***, "Multiscale-Multiphysics Computational Framework for Damage Prognosis in Hypersonic Structures," presented at the *AFOSR 2014 Multi-Scale Structural Mechanics and Prognosis Annual Grantees Meeting*, Albuquerque NM, September 4, 2014.

- *Y. Liu and* ***C. Oskay***, "Multi-resolution in-situ testing and multiscale simulation for creep fatigue damage analysis of Alloy 617," presented at the *DOE NEUP Project Kick-Off Meeting*, Idaho National Laboratory, Idaho Falls, ID, February 28, 2014.
- ***C. Oskay***, "Multiscale-Multiphysics Computational Framework for Damage Prognosis in Hypersonic Structures," presented at the *AFOSR 2013 Multi-Scale Structural Mechanics and Prognosis Annual Grantees Meeting*, Washington DC, July 23, 2013.
- ***C. Oskay***, "Multiscale Modeling for Materials and Structures Integration: A Pilot Study," presented at the *3rd Review of AFRL-Led Research in Structural Sciences & Structural Sciences Advisory Board Meeting*, University of Illinois at Urbana-Champaign, Champaign, IL, September 14, 2011.
- ***C. Oskay***, "Multiscale Modeling of Titanium Structures Operating in Extreme Environments," presented at the *Air Force Research Laboratory – Midwest Structural Sciences Center Technical Interchange Meeting*, University of Illinois at Urbana-Champaign, Champaign, IL, November 3, 2010.
- *L. R. Xu* and ***C. Oskay***, "Combined Investigation on Durability and Dynamic Failure of GFRP Composites, presented at *Office of Naval Research Solid Mechanics Program Review Meeting*, University of Maryland, Baltimore, MD, September 27, 2010.

Poster Presentations

- X. Zhang and C. Oskay, "Modeling Cyclic Deformation in Fatigue and Creep-Fatigue of Alloy 617 at High Temperature," *DOE Advanced Reactor Technologies: Advanced Materials Program Review*, Idaho Falls, ID, July 14, 2015.
- S. Zhang and C. Oskay, "Variational multiscale enrichment method for elasto-viscoplastic problems," *2015 Conference of the ASCE Engineering Mechanics Institute*, Stanford, CA, June 18, 2015. **The Poster won the Computational Mechanics Student Poster Competition.**
- M. G. Pike and C. Oskay, "Mechanical Modeling of Nano and Micro Fiber Reinforced Cementitious Composites Using XFEM," *2014 Conference of the ASCE Engineering Mechanics Institute*, Hamilton, Ontario, Canada, August 6, 2014. **The Poster won the Computational Mechanics Student Poster Competition.**
- M. G. Pike, C. Oskay and F. Sanchez, "Multiscale Computational Methodology for the Mechanical Response of Nano- and Micro-Fiber Reinforced Cementitious Composites," *International US-Poland workshop on Multiscale Computational Modeling of Cementitious Materials (MCMoCM 2012)*, Cracow, Poland, October 18-19, 2012.
- T. Hui and **C. Oskay**, "A Non-Local Homogenization Method for Wave Dispersion and Dissipation in Viscoelastic Composite Materials," presented at the ASCE *EMI 2012 Engineering Mechanics Conference*, University of Notre Dame, South Bend, IN, June 18-20, 2012.
- T. Hui and **C. Oskay** "Computational Modeling of Polyurea Composites Subjected to Blast" presented at the *NSF CMMI Research and Innovation Conference,* Atlanta, GA, January 05, 2011.
- **C. Oskay** and J. Fish "A multiscale approach to failure modeling of solids" presented at *Barrett Memorial Lectures at University of Tennessee,* Knoxville, TN, April 28, 2007.

STUDENT ADVISING

Underline indicates student graduated.

Ph.D. Dissertation Committees Chaired

1) **Arun Krishnan**

Dissertation title: "The Interfacial Failure of Bonded Materials and Composites."
S*ource of support*: Office of Naval Research, Vanderbilt University Civil and Environmental Engineering Department.
Graduation date: December 2010.
Current Status: Technical Specialist at Dassault Systems, Minneapolis, MN.

2) **Robert D. Crouch**

Dissertation title: "Multiscale Modeling of Carbon Fiber Reinforced Polymers Using Reduced Order Computational Homogenization."
Source of support: Air Force Research Laboratory and Faculty Start-up funding.
Graduation date: August 2012.
Current Status: Postdoctoral Research Associate, Vanderbilt University (under the direction of Prof. Oskay)

3) **Tong Hui**

Dissertation title: "Multiscale Modeling of the Dynamic Response of Composite Structures."
Source of support: National Science Foundation.
Expected graduation: August 2014.
Current Status: Technical Staff Member at GE Global Research, Niskayuna, NY.

4) **Hao Yan**

Dissertation title: "Computational Modeling of Coupled Oxygen Transport and Mechanical Deformation in Titanium Structures Subjected to Extreme Environments."
Source of support: Air Force Research Laboratory.
Graduation date: May 2015.
Current Status: Postdoctoral Research Associate, Multiscale Computational Mechanics Laboratory, Vanderbilt University (under the direction of Caglar Oskay).

5) **Paul A. Sparks**

Tentative dissertation title: "Reduced Order Homogenization Models for Failure of Heterogeneous Materials."
Source of support: Southern Regional Education Board Fellowship.
Expected graduation: May 2015.

6) **Michael J. Bogdanor**

Tentative dissertation title: "Life Prediction of Composite Structures subjected to Fatigue Loading."
Source of support: Air Force Research Laboratory.
Expected Graduation: December 2015.

7) **Matthew G. Pike**

Tentative dissertation title: "Chemo-Mechanical Modeling of Cementitious Composite Materials Including Interface Effects."
Source of support: Vanderbilt University Discovery Grant.
Expected Graduation: December 2015.

8) **Xiang Zhang**

Tentative dissertation title: "Reduced Order Microstructure Modeling for Extreme Environment Structures."
Source of support: Air Force Office of Scientific Research / Department of Energy Nuclear Energy University Program.
Expected Graduation: December 2016.

9) **Shuhai Zhang**

Tentative dissertation title: "Life Prediction of Composite Structures subjected to Fatigue Loading."
Source of support: Air Force Research Laboratory.
Expected Graduation: December 2016.

10) **Rudraprasad Bhattacharrya**

Tentative dissertation title: "Multiscale Modeling of the Compressive Failure Response of Composite Materials."
Source of support: Air Force Research Laboratory.
Expected Graduation: Spring 2018.

11) **Ruize Hu**

Tentative dissertation title: "Dynamics of Viscoelastic Metamaterials."
Source of support: National Science Foundation.
Expected Graduation: Spring 2018.

12) **Wendy Tabler**

Tentative dissertation title: "Multiscale Modeling of the Composite Structures Subjected to Compression-after-Impact and Fatigue-after-Impact Loads."
Source of support: Air Force Research Laboratory.
Expected Graduation: Spring 2019.

13) **Xiao Yu Zhang**

Tentative dissertation title: "Stochastic Interface Effects on the Thermo-Mechanical Response of Energetic Materials Subjected to Dynamic Loading."
Source of support: Air Force Office of Scientific Research.
Expected Graduation: Spring 2019.

Postdoctoral Research Fellows Advised (Total: 4 with 3 post tenure, Graduated: 3 with 3 post tenure)

1) **Dr. Robert D. Crouch**

Research title: "Fatigue Life Prediction of Carbon Fiber Reinforced Polymers Using Reduced Order Computational Homogenization."
Source of support: Air Force Research Laboratory.
Employment dates: August 2012-August 2014.

Current Status: Software Development Engineer, Altair.

2) **Dr. Hao Yan**

Research title: "Numerical Simulation of Structural Response in Operational Conditions of Hypersonic Vehicles."
Source of support: Air Force Research Laboratory.
Employment dates: May 2015 – October 2015.
Current Status: CAE Mold Flow Engineer, Molex.

3) **Dr. Yumeng Li**

Research title: "Computational Modeling of High-Temperature Creep-Fatigue Failure."
Source of support: Department of Energy Nuclear Energy University Program.
Employment dates: March 2015 – January 2016.
Current Status: Assistant Professor, Wichita State University (Start date: August, 2016).

4) **Dr. Van Tung Phan**

Research title: "Computational Modeling of High-Temperature Creep-Fatigue Failure."
Source of support: Department of Energy Nuclear Energy University Program.
Employment dates: February 2016 – February 2017.

Visiting Researchers Advised

1) **Dr. Shuiwen Zhu**

Research title: "Dynamic Response of Particulate Composite Materials."
Source of support: Southwest University Science and Technology, China.
Employment dates: March 2015 – February 2016.
Current Status: Faculty Member at Southwest University Science and Technology, China.

Master of Science Thesis Advisees (Total: 5 with 1 post tenure, Graduated: 4)

1) **Veda Laohom**

Thesis title: "Computational Characterization of Novel Engineering Materials."
Graduation date: May 2007.
Co-advisor: Professor Harold S. Park.
Current Status: Structural designer at Ross Bryan Associates, Consulting Engineers, Nashville, TN.

2) **Ghanshyam Pal**

Thesis title: "Multiscale Failure Modeling of Thin Heterogeneous Plates,"
Graduation date: December 2008.
Current Status: Postdoctoral Research Associate, Masdar Institute, United Arab Emirates.

3) **Arun Krishnan**

Role: Committee Member
Thesis title: "Comparison of Interfacial Shear Strength Measurements for Bonded Materials and Composite Materials,"
Graduation date: December 2008.
Current Status: Technical Specialist, Dassault Systems.

4) **Paul Sparks**

Thesis title: "Reduced Order Models for Failure Analysis of Heterogeneous Materials."
Graduation date: December 2011.
Current Status: Postdoctoral Research Associate, Vanderbilt University

5) **Scott Williams**

Thesis title: "Thermo-mechanical response of titanium structure subjected to hypersonic conditions"
Current Status: Engineer, Arnold Engineering Development Complex, Arnold AFB, TN

Undergraduate Research Advisees (Total: 6 with 3 post tenure)

1) **David Salvetti**,

Role: Co-advisor
Research topic: "Cartilage Material Property Modulation Using Varying Density Columnar Arrangements,"
Undergraduate Program: Biomedical Engineering, Vanderbilt University
Research dates: Fall 2007.
Advisor: Professor Prasad Shastri.

2) **Lizzie Young**

Research topic: "Parallel Implementation of Optimal Reduced Order Model Identification,"
Undergraduate Program: Civil Engineering, Vanderbilt University
Research dates: Fall 2010-Spring 2011.

3) **El-Mehdi El Hailouch**

Research topic: "Analysis of Failure Mechanisms in Polymer Composites using Acoustic Emission Testing,"
Undergraduate Program: Civil Engineering, Vanderbilt University
Research dates: Fall 2011-Spring 2012.

4) **Theodore Russell,**

Research topic: "Parallel simulations of composite material response under static and fatigue loading conditions,"
Undergraduate Program: Mechanical Engineering, Vanderbilt University
Research dates: Spring 2013-Summer 2014.

5) **Jimmy Pan,**

Research topic: "Characterization of the band-gaps in 1-D core shell type composites,"
Undergraduate Program: Mechanical Engineering, Vanderbilt University
Research dates: Summer 2015.

6) **Yixiao Sun,**

Research topic: "High frequency vibrations in viscoelastic particulate composites,"
Undergraduate Program: Engineering Mechanics, Tsinghua University, China.
Research dates: Summer 2015.