

**JEONGHO KIM**

**Associate Professor**

Department of Civil and Environmental Engineering  
261 Glenbrook Rd. U-3037  
University of Connecticut  
Storrs, CT 06269  
Phone: (860) 486-2746  
Fax: (860) 486-2298  
E-mail; jeongho.kim@uconn.edu

**Status:** USA Citizen

**Education:** Ph.D. 5/2000-10/2003  
Department of Civil & Environmental Engineering,  
University of Illinois at Urbana-Champaign

M.S. 08/1998-5/2000  
Department of Civil & Environmental Engineering,  
University of Illinois at Urbana-Champaign

B. S. 2/1989-2/1996  
Department of Architectural Engineering, College of Architecture  
Hanyang University, Seoul, South Korea

**Employment:** 09//2016-present Director, Connecticut Manufacturing Simulation Center,  
University of Connecticut  
08/2010-present Associate Professor, Department of Civil & Env.  
Engineering, University of Connecticut  
01/2004-08/2010 Assistant Professor, Department of Civil & Env.  
Engineering, University of Connecticut  
08/2011-12/2011 Visiting Professor & Instructor, Department of Architectural  
Engineering, Hanyang University, Seoul, South Korea  
11/2007-present Joint Appointment, Department of Mechanical  
Engineering, University of Connecticut

**Affiliations:** 2004-present Institute of Materials Science, Center for Clean Energy Engineering  
2005-present Booth Engineering Center for Advanced Technologies

**Research Interests:**

- Blast Dynamics of Steel Beams and Columns
- Nonlinear Structural Analysis
- Finite Element Modeling and Simulation
- Computational Fracture Mechanics
- Functionally Graded Materials
- Mechanical Durability Modeling of Solid Oxide Fuel Cells
- Multi-physics Modeling for Piezoelectric Fiber Composites

**Supervision of Graduate Students:**

- Mr. A. KC (MS, 2007) – Stress and Fracture Analysis of Functionally Graded Solids
- Ms. N. Li (MS, 2010) – SOFC Material Characterization and Testing
- Mr. G. Anandakumar (PhD, 2010) – Dynamic Analysis of Functionally Graded Solids
- Ms. L. Zhang (MS, 2010) – Analytical Fracture Study of Functionally Graded Solids
- Ms. L. Zhang (PhD, 2012) – Dynamic Response of Corrugated Steel Beams
- Mr. S. Vaidya (PhD, 2013) – Algorithms for 3D Reconstruction of Microstructures
- Ms. Asmita Rokaya (PhD) – Composite Damage Modeling
- Mr. Joseph Johanson (MS) – Manufacturing Simulations
- Ms. Sukirti Dhital (PhD) – Viscoelastic Finite Element Analysis for Dental Ceramics
- Mr. David Manan (MS) – Manufacturing Simulations
- Ms. Lilia Miller (MS) – Metal Cutting Simulations
- Mr. Toby Poole (new PhD student)
- Mr. Brendon Sodergren (new MS student)

**Supervision of Post-Docs & Visiting Scholars:**

- Prof. D. H. Lee (2019): Structural Analysis
- Dr. Sushrut Vaidya (2014): Microstructural Analysis
- Dr. G. Anandakumar (2010): Dynamic Analysis of Functionally Graded Solids
- Prof. J.-Y. Lee (2014): Glass fiber reinforcing bars in reinforced concrete
- Prof. D. C. Park (2015): Concrete heat-moisture modeling

**Teaching Activities:**

- Taught undergraduate courses (Fundamentals of Engineering, Statics, Dynamics, Basic Structural Analysis, Advanced Structural Analysis, Foundation Design)
- Taught graduate courses
  - **Fracture Mechanics:** This course focuses on fundamental concepts and applications of fracture mechanics.
  - **Finite Element Methods in Applied Mechanics II:** This course focuses on nonlinear structural analysis, nonlinear transient analysis, geometric nonlinearity, contact analysis, and blast analysis.
  - **Finite Element Methods in Applied Mechanics I:** This course focuses on linear-elastic structural analysis, structural (bar, beam, plate, shell elements) and solid elements, and thermal analysis.
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- Participated in an NSF-sponsored Undergraduate Teaching Workshop “*How to Engineer Engineering Education*” at Bucknell University, Lewisburg, PA, July 18-23, 2004
- Took a two-week online course, Exploring Online Learning (EOL), Center for Excellence in Learning and Teaching (CETL) at UConn, October 29 – November 11, 2018

**Professional Societies:**

- Member of *American Institute Steel Construction* (AISC)
- Connecticut President of *Korean-American Scientists and Engineers Association* (KASE)
- Member of *Fracture and Failure Mechanics Technical Committee*, ASME Applied Mechanics Division: 2013-present (ASME-IMECE, San Diego, 2013)
- ASME, *Nanomaterials for Energy Technical Committee*: 2013-present
- Member of *International Advisory Committee on Functionally Graded Material* (IACFGM): 2004 - present

## Curriculum Vita – Jeongho Kim

- Member of *International Scientific Committee on Functionally Graded Material (ISCFGM)*: 2004 - present
- Member of *American Society of Civil Engineers* 2006 – present
- Member of *American Society of Mechanical Engineers* 2006 – present
- Past Member of *International Advisory Board on International Ceramics Congress (CIMTEC 2010)*: 2009 - 2010

### Professional Service:

- Associate Editor, *Finite Elements in Analysis and Design (Elsevier)*, 2011-present
- NSF Proposals Review (Structural Systems and Hazards Mitigation of Structures (06/2004, 03/2005), Materials Design and Surface Engineering (05/2007), Mechanics of Materials (11/2009, CAREER panel))
- Refereed Journal Papers Review (Finite Elements in Analysis and Design, International Journal for Numerical Methods in Engineering, The Royal Society Proceedings A; Experimental Mechanics, Engineering Fracture Mechanics, Computer Methods in Applied Mechanics and Engineering, International Journal of Solids and Structures, ASCE Journal of Engineering Mechanics, ASME Journal of Applied Mechanics, Engineering Mechanics, International Journal of Computational Engineering Science, Journal of Materials Science, International Journal of the Italian Association of Theoretical and Applied Mechanics, Mechanics Research Communications, and other)
- Session Chair on *Modeling and Simulation* at the 8<sup>th</sup> *International Symposium on Multifunctional and Functionally Graded Materials*, Leuven, Belgium, July 11-14, 2004
- Mini-symposium Organizer of *Functionally Graded Materials at the 11<sup>th</sup> International Conference on Fracture*, Turin, Italy, March 20-25, 2005
- Mini-symposium Organizer of *Modeling and Simulation (29 presentations)* for the 9<sup>th</sup> *International Conference on Multi-scale and Functionally Graded Materials*, Honolulu, Hawaii, October 15-18, 2006
- Mini-symposium Organizer of *Recent Advances in Modeling Functionally Graded Materials* in the 9<sup>th</sup> and 10<sup>th</sup> *US National Congress on Computational Mechanics*, San Francisco, 2007 and Ohio, 2009.
- Judge for USACM Student Presentation Competition in the 9<sup>th</sup> *USNCCM*, San Francisco, July 2007
- Participated in Outreach Programs by providing sessions on “Finite Element Modeling for Structural Analysis and Solid Oxide Fuel Cells” in Explore Engineering (2007- present), Da Vinci Workshop (2007- present), and Connecticut Invention Convention (2008-present).
- Conference Organizer of the 16<sup>th</sup> *International Symposium Functionally Graded Materials* in Hartford, Connecticut, USA.

### Academic Service

- Director of Connecticut Manufacturing Simulation Center (CMSC) since 2016 ([www.cmssc.uconn.edu](http://www.cmssc.uconn.edu))
- CEE Representative for Continuing & Distance Engineering Education in 2013-2018.
- Member of Connecticut Global Fuel Cell Center Director Search, Eminent Faculty Search and 12 Plus Faculty Search Committee from 2007 to 2008.
- School of Engineering Undergraduate Commencement CEE Marshall in 2009.
- Hosted two school-wide MSC Workshops. (November 15, 2018, April 10, 2019)
- Structures and Applied Mechanics (STAM) group coordinator: 2010, 2012, 2017-present
- Merit Committee: 2012, 2019

- CEE PTR Committee: 2010, 2012-2014, 2016-2018
- UG Education Committee: 2009, 2010, 2017-present
- Faculty Search Committee: 2004, 2006, 2012, 2013, 2019
- Graduate Education Committee: 2013-2016
- Computing Committee (chair): 2007-2008
- STAM Seminar Series: 2006-2009, 2019
- Engineering 2000: 2007-2009
- Da Vinci: 2007-2009
- Connecticut Innovation Convention: 2004, 2008, 2010
- Engineering Open House: 2004-2019
- Orientation to Engineering 1000: 2017

#### Honors and Awards:

- ASEE Air Force Summer Faculty Fellowship, Air Force Research Laboratory at Wright-Patterson (2010)
- National Science Foundation CAREER Award (2006)
- Inaugural USACM (U.S. Association of Computational Mechanics) & ASME (American Society of Mechanical Engineers) PTC 60 *Student Benchmark Competition Award*, the 7<sup>th</sup> U.S. National Congress on Computational Mechanics, July 2003
- *Young Researcher Fellowship Award* in the Second M.I.T. Conference, June 2003
- *Ambassadorial Scholar Award*, The Rotary International, 1998-1999

#### Manuscripts under Review

- 1) **Asmita Rokaya**, G. Egilmez, and J. Kim, “Incompatible Graded Finite Elements for Orthotropic Functionally Graded Materials,” *Computers and Structures* (submitted May 11, 2019)
- 2) S.-P. Kim, J. Kim, D. Sohn, M. Shin, “Stress-based vs. strain-based safety evaluations of nuclear spent-fuel transport casks in energy-limited events” *Nuclear Engineering and Design* (submitted April 19, 2019)

#### Manuscripts under Preparation

- 1) **S. Dhital**, C. D. S. Rodrigues, Y. Zhang, and J. Kim, “Finite Element Analysis to Estimate Residual Stresses in Zirconia-based Dental Crowns” (manuscript ready)
- 2) **S. Dhital**, C. D. S. Rodrigues, Y. Zhang, and J. Kim, “Experimental Validation of Finite Element Analysis with Lift-Off Technology for Dental Crowns” (manuscript ready)
- 3) **J. Johanson** and J. Kim, “Finite Element Analysis of Thermomechanical Manufacturing Process using Enhanced Graded Elements” (manuscript ready)
- 4) **D. Manan** and J. Kim, “Development of LS-DYNA MAT261 Material Parameters for Tri-axially Braided Composite Materials” (manuscript ready)
- 5) **R. E. Martínez-Castro**, S. Jang, J. Kim, “Finite Element Analysis of Crack Growth in Aluminum using Low-cost RFID-based Sensor” (manuscript ready)
- 6) **L. Zhang** and J. Kim, “Mechanical Response of Proton Exchange Membranes under Various Ultraviolet Radiation and Humidity Conditions” (manuscript ready)

### Book Chapters Published

- 1) **G. Anandakumar** and J. Kim, “Three-dimensional Finite Element Analysis for Nonhomogeneous Materials using Parallel Explicit Algorithm,” Modeling and Simulation in Engineering, InTech, pp 1-19, 2018.
- 2) **S. Vaidya** and J. Kim, “Thermomechanics of SOFC Electrode Microstructures using Finite Element Methods: Progressive Interface Degradation under Thermal Cycling,” A book chapter in J. Winczek (Ed.), Thermomechanics, InTech, pp 5-21, 2018.
- 3) **S. Vaidya** and J.-H. Kim, “Continuum Mechanics of Solid Oxide Fuel Cells Using Three-Dimensional Reconstructed Microstructures,” A book chapter in Y. X. Gan (Ed.), Continuum Mechanics – Progress in Fundamentals and Engineering Applications, InTech, pp 73-88, 2012.

### Refereed Journal Articles Published

- 1) **S. Dhital**, A. Rokaya, M. R. Kaizer, Y. Zhang and J. Kim “Accurate and Efficient Thermal Stress Analyses of Functionally Graded Solids Using Incompatible Graded Finite Elements,” Composite Structures, 222-110909, 2019.
- 2) **Asmita Rokaya**, L. Zhang and J. Kim, “Quasi-static and Dynamic Analysis of Multi-Layered Steel Beams: Core Optimization,” Journal of Functionally Graded Materials, 33:1-7, 2019.
- 3) **Asmita Rokaya** and J. Kim, “Incompatible Graded Finite Elements for Analysis of Nonhomogeneous Materials” Journal of Applied Mechanics, 86(2), 021009, 2019.
- 4) N. C. Ramos, M. R. Kaizer, T. M. B. Campos, Y. Zhang, J. Kim, Renata M. de Melo, “Silica-Based Infiltrations for Enhanced Zirconia-Resin Interface Toughness,” Journal of Dental Research, 98(4):423-429, 2019
- 5) **R. E. Martínez-Castro**, S. Jang, J. Kim, A. Wentworth, “Experimental Evaluation of a Low-cost RFID-based Sensor to Crack Propagation,” Journal of Aerospace Engineering, 32(2), 04019003, 2019.
- 6) **L. Zhang** and J. Kim, “Core Crushing and Dynamic Response of Sandwich Steel Beams with Sinusoidal and Trapezoidal Corrugated Cores: A Parametric Study,” Journal of Sandwich Structures and Materials, 1-27, 2018.
- 7) **Asmita Rokaya** and J. Kim, “An Accurate Analysis for Sandwich Steel Beams with Graded Corrugated Core Under Dynamic Impulse,” International Journal of Steel Structures, pp 1-19, 2018.
- 8) **H. Yuan**, W. Zhang, G. M. Castelluccio, J. Kim, Y. Liu, “Microstructure-sensitive Estimation of Small Fatigue Crack Growth in Bridge Steel Welds, International Journal of Fatigue 112: 183-197, 2018.

- 9) J. Kim, **S. Dhital**, P. Zhivago, Marina R. Kaizer, and Y. Zhang, “Viscoelastic Finite Element Analysis of Residual Stresses in Porcelain-Veneered Zirconia Dental Crowns,” *Journal of the Mechanical Behavior of Biomedical Materials*, 82:202-209, 2018
- 10) **H. Yuan**, W. Zhang, J. Kim, Y. Liu “A Nonlinear Grain-based Fatigue Damage Model for Civil Infrastructure under Variable Amplitude Loads,” *International Journal of Fatigue*, 104: 389-396, 2017.
- 11) J-Y Lee, A-R Lim, J. Kim and J. Kim, “Bond Behavior of Glass Fiber Reinforced Polymer Bars in High Strength Concrete: Effect of Bar Diameter,” *Magazine of Concrete Research*, 69(11): 541-554, 2017
- 12) B. Cho, D. Park, J. Kim and H. Hamasaki, “Study on the Heat-moisture Transfer in Concrete under Real Environment,” *Construction & Building Materials*, 132: 124-129, 2017
- 13) J.-Y. Lee, J. Kim, J.-M. Kim, J. Kim, “Evaluation of the Long-term Sound Reduction Performance of Resilient Materials in the Floating Floor System,” *Journal of Sound and Vibration*, 366: 199-210, 2016
- 14) **S. Vaidya**, L. Zhang, D. Maddala, R. Hebert, J. T. Jefferson, A. Shukla, and J.-H. Kim, "Quasi-static Response of Sandwich Steel Beams with Corrugated Cores," *Engineering Structures*, 97:80-89, 2015
- 15) **L. Zhang**, R. Hebert, J. T. Jefferson, A. Shukla, and J.-H. Kim, "Dynamic Response of Corrugated Steel Plates with Graded Cores," *International Journal of Impact Engineering*, 65:185-194, 2014
- 16) **S. Vaidya** and J.-H. Kim, “Finite Element Thermal Analysis of Solid Oxide Fuel Cell Cathode Microstructures,” *Journal of Power Sources*, 225(1):269-276, 2013.
- 17) J. Ahn, Y. Lee, **S. Vaidya**, J.-H. Kim, S-W. Lee, “Estimation the Porosity of Pervious Concretes based on X-Ray CT and Submerged Weight,” *Journal of Korean Society of Hazard Mitigation*, 13(4)77-81, 2013.
- 18) **N. Li**, A. Verma, P. Singh, and J.-H. Kim, “Characterization of La<sub>0.58</sub>Sr<sub>0.4</sub>Co<sub>0.2</sub>Fe<sub>0.8</sub>O<sub>3-d</sub>-Ce<sub>0.8</sub>Gd<sub>0.2</sub>O<sub>2</sub> Composite Cathode for Intermediate Temperature Solid Oxide Fuel Cells,” *Ceramics International*, 39:529-538, 2013.
- 19) **L. Zhang** and J.-H. Kim, “Mixed-mode Crack tip Fields in an Anisotropic Functionally Graded Materials,” *ASME Journal of Applied Mechanics*, 79(5):051011 (10 pages), 2012.
- 20) **C. Liu**, J. DeWolf and J.-H. Kim, “Development of a New Cracked Mindlin Plate Element,” *ISRN Civil Engineering*, Research Article ID: 842572, 11 pages, 2011.
- 21) **L. Zhang** and J.-H. Kim, “Higher-order Terms for the Mode-III Stationary Crack-tip Fields in a Functionally Graded Material,” *ASME Journal of Applied Mechanics*, 78(1):011005 (10 pages), 2011.

- 22) **G. Anandakumar**, N. Li, A. Verma, P. Singh, and J.-H. Kim, “Thermal Stress and Probability of Failure Analyses of Functionally Graded Solid Oxide Fuel Cells,” *Journal of Power Sources*, 195(19):6659-6670, October 2010.
- 23) **G. Anandakumar** and J.-H. Kim, “A Thermomechanical Fracture Modeling and Simulation for Functionally Graded Solids using a Residual-Strain Formulation,” *International Journal of Fracture*, 164:31-55, July 2010.
- 24) **G. Anandakumar** and J.-H. Kim, “On the Modal Behavior of a Three-Dimensional Functionally Graded Cantilever Beam: Poisson’s ratio and Material Sampling Effects,” *Composite Structures*, 92:1358-1371, May 2010.
- 25) **G. Anandakumar** and J.-H. Kim, “Dynamic, Modal and Wave Propagation Analyses of 3D Functionally Graded Continua,” *Materials Science Forum*, 631-632:17-22, 2010.
- 26) **C. Liu**, J. T. DeWolf and J.-H. Kim, “Development of a Baseline for Structural Health Monitoring and Seismic Evaluation for a Curved Post-tensioned Concrete Box Girder Bridge,” *Engineering Structures*, 31: 3107-3115, 2009
- 27) **L. Zhang** and J.-H. Kim, “A Complex Variable Approach for Asymptotic Mode-III Crack-tip Fields in an Anisotropic Functionally Graded Material,” *Engineering Fracture Mechanics*, 76: 2512-2525, 2009.
- 28) J.-H. Kim and **Amit KC**, “A Generalized Interaction Integral Method for the Evaluation of the T-stress in Orthotropic Functionally Graded Materials under Thermal Loading,” *ASME, Journal of Applied Mechanics*, 75:051112, 8 pages, 2008.
- 29) **Amit KC** and J.-H. Kim, “Interaction Integrals for Thermal Fracture of Functionally Graded Materials,” *Engineering Fracture Mechanics*, 75(8):2542-2565, 2008.
- 30) J.-H. Kim and G. H. Paulino, “On Fracture Criteria for Mixed-mode Crack Propagation in Functionally Graded Materials,” *Mechanics of Advanced Materials and Structures*, 14:227-244, 2007
- 31) G. H. Paulino and J.-H. Kim, “The Weak Patch Test for Nonhomogeneous Materials Modeled with Graded Finite Elements,” *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 29(1): 63-81, 2007.
- 32) J.-H. Kim and G. H. Paulino, “Consistent Formulations of the Interaction Integral Method for Fracture of Functionally Graded Materials,” *ASME Journal of Applied Mechanics*, 72(3):351-364, 2005.
- 33) G. H. Paulino and J.-H. Kim, “On the Poisson’s Ratio Effect in Mixed-mode Stress Intensity Factors and T-stress in Functionally Graded Materials,” *International Journal of Computational Engineering Science*, 5(4):833-861, 2004.
- 34) J.-H. Kim and G. H. Paulino, “Simulation of Crack Propagation in Functionally Graded Materials under Mixed-mode and Non-proportional Loading,” *International Journal of Mechanics and Materials in Design*, 1(1):63-94, 2004.

- 35) J.-H. Kim and G. H. Paulino, “T-stress in Orthotropic Functionally Graded Materials: Lekhnitskii and Stroh Formalisms,” *International Journal of Fracture*, 126 (4):345-384, 2004.
- 36) G. H. Paulino and J.-H. Kim, “A New Approach to Compute T-stress in Functionally Graded Materials Using the Interaction Integral Method,” *Engineering Fracture Mechanics*, 71 (13-14):1907-1950, 2004.
- 37) J.-H. Kim and G. H. Paulino, “The Interaction Integral for Fracture of Orthotropic Functionally Graded Materials: Evaluation of Stress Intensity Factors,” *International Journal of Solids and Structures*, 40 (15):3967-4001, 2003.
- 38) J.-H. Kim and G. H. Paulino, “An Accurate Scheme for Mixed-mode Fracture Analysis of Functionally Graded Materials Using the Interaction Integral and Micromechanics Models,” *International Journal for Numerical Methods in Engineering*, 58 (10): 1457-1497, 2003.
- 39) J.-H. Kim and G. H. Paulino, “T-stress, Mixed-mode Stress Intensity Factors, and Crack Initiation Angles in Functionally Graded Materials: A Unified Approach Using the Interaction Integral Method,” *Computer Methods in Applied Mechanics and Engineering*, 192 (11-12): 1463-1494, 2003.
- 40) J.-H. Kim and G. H. Paulino, “Mixed-mode J-integral Formulation and Implementation Using Graded Finite Elements for Fracture Analysis of Nonhomogeneous Orthotropic Materials,” *Mechanics of Materials*, 35 (1-2): 107-128, 2003.
- 41) J.-H. Kim and G. H. Paulino, “Mixed Mode Fracture of Orthotropic Functionally Graded Materials Using Finite Elements and the Modified Crack Closure Method,” *Engineering Fracture Mechanics*, 69 (14-16): 1557-1586, 2002.
- 42) J.-H. Kim and G. H. Paulino, “Isoparametric Graded Finite Elements for Nonhomogeneous Isotropic and Orthotropic Materials,” *ASME Journal of Applied Mechanics*, 69 (4): 502-514, 2002.
- 43) J.-H. Kim and G. H. Paulino, “Finite Element Evaluation of Mixed Mode Stress Intensity Factors in Functionally Graded Materials,” *International Journal for Numerical Methods in Engineering*, 53 (8): 1903-1935, 2002.

**Conference Proceedings (Full Paper Refereed)**

- 1) Yuan, H., Zhang, W., Kim, J., Liu, Y.M. “Mesoscale Simulation of Short Fatigue Crack Growth under Non-stationary Stress History”, *International Conference on Fatigue Damage of Structural Materials XI*, Hyannis Resort and Conference Center, Hyannis, MA, USA, September 18-23, 2016.
- 2) S. Vaidya and J.-H. Kim, “Microscopic Analysis of Porous Ceramic-Metal Composite Cathode Microstructures,” *Proceedings of the 13<sup>th</sup> International Symposium on Multiscale, Multifunctional and Functionally Graded Materials*, Taua Resort, Brazil, Oct. 19-24, 2014.



- 3) L. Zhang, R. Hebert, J. T. Wright, A. Shukla and J.-H. Kim, “Dynamic Response of Corrugated Sandwich Steel Plates under Shock Tube Loading,” Proceedings of the ASME International Mechanical Engineering Congress & Exposition, Volume 9: Mechanics of Solids and Structures and Fluids, San Diego, California, USA, November 15-21, 2013.
- 4) J.-H. Kim, Z. Zhang, R. Hebert, T. J. Wright, A. Shukla, and J.-H. Kim, “Dynamics of Nonhomogeneous Carbon Steel Plates,” Journal of Physics Conference Series, 419:011005, 2013
- 5) L. Zhang, R. Hebert, J. T. Wright, A. Shukla and J.-H. Kim, “Dynamics of Nonhomogeneous Carbon Steel Plates,” Proceedings of the 12<sup>th</sup> International Symposium on Multiscale, Multifunctional and Functionally Graded Materials, Beijing, China, October 22-26, 2012.
- 6) J. Ahn, Y. Lee, S. Vaidya, J.-H. Kim, S.-W Lee, “Estimation of the Porosity of Pervious Concrete,” Proceedings of International Joint Symposium on Urban Geotechnics for Sustainable Development, JS-Seoul, 2012.
- 7) J.-H. Kim and G. Anandakumar, “Stress Wave Propagation in Functionally Graded Solids under Impact Loading,” Proceedings of the 10<sup>th</sup> IMPLAST 2010 Conference (Society for Experimental Mechanics), Rhode Island, USA, October 12-14, 2010.
- 8) N. Li, A. Smirnova, A. Verma, P. Singh, and J.-H. Kim, “Material Characterization of LSCF-GDC Composite Cathodes” Proceedings of 34<sup>th</sup> International Conference & Exposition on Advanced Ceramics and Composites, Daytona Beach, Jan 24-29, 2010.
- 9) G. Anandakumar and J.-H. Kim, “Dynamic and Modal Analysis of a Homogeneous and Functionally Graded 3D Cantilever Beam,” Proceedings of the 10<sup>th</sup> International Symposium on Multiscale, Multifunctional and Functionally Graded Materials, Sendai, Japan, September 22-25, 2008.
- 10) J. Gang, K. Reifsnieder and J.-H. Kim, “Cathode Thermal Delamination Study for a Planar Solid Oxide Fuel Cell with Functional Graded Properties: Experimental Investigation and Numerical Results,” Ceramic Engineering and Science Proceedings, Volume 27(4), pp. 161-173, 2007.
- 11) C. Liu, J. T. DeWolf and J.-H. Kim, “Rectangular Mindlin Plate Element with a Through Crack,” Proceedings of SPIE, San Diego, California, USA, March 19, Volume 6529, 11 pages, 2007.
- 12) J.-H. Kim, “Mixed-mode Crack Growth in Functionally Graded Materials under Thermal Loads,” Proceedings of the 9<sup>th</sup> International Conference on Multiscale and Functionally Graded Materials, Hawaii, USA, October 15-18, Volume 1, pp 76-81, 2006.
- 13) J.-H. Kim and Amit KC, “Evaluation of Thermal Stress Intensity Factors in Functionally Graded Materials by means of Interaction Integrals,” Proceedings of the 9<sup>th</sup> International Conference on Multiscale and Functionally Graded Materials, Hawaii, USA, October 15-18, Volume 1, pp 94-99, 2006.

- 14) J.-H. Kim, "Simulation of Crack Growth in Soils with Varying Water Content," An International Workshop on Hydrological Soil Mechanics 2005, University of Connecticut, May 20-21, 2005.
- 15) J.-H. Kim and G. H. Paulino, "Evaluation of Stress Intensity Factors and T-stress in Functionally Graded Materials using the Interaction Integral Method," Proceedings of the 11<sup>th</sup> International Conference on Fracture (CD-ROM: ISBN: 978-88-903188-1-8), Turin, Italy, March 20-25, 6 pages, 2005.
- 16) J.-H. Kim and G. H. Paulino, "Mixed-mode Crack Propagation in Functionally Graded Materials," Proceedings of the 11<sup>th</sup> International Conference on Fracture (CD-ROM: ISBN: 978-88-903188-1-8), Turin, Italy, March 20-25, 6 pages, 2005.
- 17) J.-H. Kim and G. H. Paulino, "Stress Intensity Factors and T-stress in Functionally Graded Materials: A Unified Approach Using the Interaction Integral Method," In K. J. Bathe, editor, Proceedings of the Second MIT Conference on Computational Fluid and Solid Mechanics, Volume I, pp 381-186, Cambridge, MA, 2003

**Conference Proceedings (Abstract Refereed)**

- 1) Asmita Rokaya and J. Kim, "Dynamic Analysis of Functionally Graded Beams," Proceedings of the 15<sup>th</sup> International Symposium on Functionally Graded Materials, Kitakyushu, Japan, August 5-8, 2018.
- 2) J. Kim and Y. Zhang, "Viscoelastic Finite Element Estimation of Residual Stresses in Zirconia-Based Crowns," the 2016 IADR/APR General Session & Exhibition, Seoul, South Korea, June 22-25, 2016.
- 3) H. Yuan, W. Zhang, J.-H. Kim, "Multi-scale Fracture Simulation for a Welded Steel Plate under Cyclic Loads and Corrosion," ASCE Engineering Mechanics Institute, Stanford, CA, USA, June 16-19, 2015.
- 4) G. Anandakumar and J.-H. Kim, "Transient Thermal Stress Analysis of Functionally Graded SOFCs using Graded Finite Elements," Center for Clean Energy Engineering, University of Connecticut, Dec. 10, 2009.
- 5) G. Anandakumar and J.-H. Kim, "Three-dimensional Dynamic and Wave Propagation Analyses of Functionally Graded Solids," Recent Advances in Modeling Functionally Graded Materials *at the 10<sup>th</sup> US National Congress on Computational Mechanics*, Columbus, Ohio, USA, July 16-19, 2009.
- 6) J.-H. Kim (Keynote Lecture), "Fracture Modeling of Nonhomogeneous Materials subjected to Residual Stress and Strain Loads," Recent Advances in Modeling Functionally Graded Materials *at the 10<sup>th</sup> US National Congress on Computational Mechanics*, Columbus, Ohio, USA, July 16-19, 2009.
- 7) J.-H. Kim "Three-dimensional Fracture and Damage Modeling for Solid Oxide Fuel Cells," Vancouver to Northeast USA Fuel Cell and Hydrogen Cluster Connection Workshop, Institute for Fuel Cell Innovation, National Research Council, Vancouver, Canada, March 17-18, 2008

- 8) J.-H. Kim and A. KC, “Computational Fracture Modeling of Functionally Graded Materials under Thermal Loads”, *Recent Advances in Modeling Functionally Graded Materials Symposium* at the Ninth US National Congress on Computational Mechanics, San Francisco, CA, USA, July 23-26, 2007.
- 9) J.-H. Kim, “Simulation of Crack Growth in Soils with Varying Water Content,” *An International Workshop on Hydrological Soil Mechanics 2005*, University of Connecticut, May 20-21, 2005. (Invited)
- 10) J.-H. Kim, Pouran Faghri and Jasminka Ernst-Illich, “Development of the Parameterized Unit Cell Models for Evaluation of Human Cancellous Bone Stiffness and Strength,” *Workshop on “Bone Quality: What is it and Can we measure it?”*, Bethesda, Maryland, USA, May 2-3, 2005.
- 11) J.-H. Kim and G. H. Paulino, “Finite Element Evaluation of Stress Intensity Factors and T-stress in Functionally Graded Materials,” *Modeling and Simulation at the 8<sup>th</sup> International Symposium on Multifunctional and Functionally Graded Materials*, Leuven, Belgium, July 11-14, 2004.
- 12) J.-H. Kim and G. H. Paulino, “Mixed-mode Crack Propagation in Functionally Graded Materials,” *Modeling and Simulation at the 8<sup>th</sup> International Symposium on Multifunctional and Functionally Graded Materials*, Leuven, Belgium, July 11-14, 2004.
- 13) J.-H. Kim and G. H. Paulino, “Mixed-mode Crack Propagation in Functionally Graded Materials”, *Recent Advances in Functionally Graded Materials Symposium* at the Seventh US National Congress on Computational Mechanics, Albuquerque, NM, USA, July 27-31, 2003.
- 14) J.-H. Kim and G. H. Paulino, “Isoparametric Graded Finite Elements for Nonhomogeneous Materials,” *Verification & Validation in Computational Mechanics Symposium* (the Inaugural USACM & ASME PTC 60 Student Benchmark Competition) at the Seventh U.S. National Congress on Computational Mechanics, Albuquerque, NM, USA, July 27-31, 2003.
- 15) J.-H. Kim and G. H. Paulino, “Stress Intensity Factors and T-stress in Functionally Graded Materials: A Unified Approach Using the Interaction Integral Method,” *Determination of Stress Intensity Factors Symposium* at the Second M.I.T. Conference on Computational Fluid and Solid Mechanics, Cambridge, MA, USA, June 17-20, 2003.

#### **Technical Meeting and Presentations**

- 1) Asmita Rokaya and J. Kim, “Composite Damage Modeling using LS OPT,” Center of Excellence Mid-year Review Meeting, United Technology Engineering Building, UConn, Storrs, June 23, 2016.
- 2) Asmita Rokaya and J. Kim, “Composite Damage Modeling using LS OPT,” Center of Excellence Annual Review Meeting, United Technology Research Center, East Hartford, Dec. 14, 2016.
- 3) Asmita Rokaya and J. Kim, “Composite Damage Modeling,” Center of Excellence Mid-year Review Meeting, United Technology Engineering Building, UConn, July 14, 2017.

- 4) Asmita Rokaya and J. Kim, “Composite Damage Modeling,” Center of Excellence Annual Review Meeting, United Technology Research Center, East Hartford, Dec. 15, 2017.
- 5) Asmita Rokaya and J. Kim, “Composites - Parameter Optimization and Progressive Damage Modeling,” Center of Excellence Mid-year Review Meeting, United Technology Engineering Building, UConn, Storrs, July 12, 2018.
- 6) Asmita Rokaya and J. Kim, “Composites - Parameter Optimization and Progressive Damage Modeling,” Center of Excellence Annual Review Meeting, Pratt and Whitney Engineering Technology Center, East Hartford, Dec. 3, 2018.
- 7) D. Manan and J. Kim, “Parameter Optimization of Triaxially-Braded Composite Structures,” NASA-ACC Phase 2, Center of Excellence Annual Review Meeting, Pratt and Whitney Engineering Technology Center, East Hartford, Dec. 3, 2018.
- 8) Asmita Rokaya and J. Kim, “Composites - Parameter Optimization and Progressive Damage Modeling,” Center of Excellence Mid-year Review Meeting, United Technology Engineering Building, UConn, Storrs, June 10, 2019.

#### **Invited Seminar Lectures**

- 1) J. Kim, “Manufacturing Simulation using Finite Element Technologies,” Department of Mechanical and Industrial Engineering, University of New Haven, October 29, 2018.
- 2) H. Bozorgmanesh and J. Kim, “Industry Projects and Training Progress Report on Quiet Corner Innovation Cluster and Connecticut Manufacturing Simulation Center,” Economic Development Administration University Center Conference with a theme “Function at Time of Disruption,” Washington DC, March 4-6, 2018.
- 3) J.-H. Kim and L. Zhang, “Dynamic Response of Corrugated Sandwich Steel Plates: Finite Element Modeling and Validation,” Department of Civil Engineering and Engineering Mechanics, Columbia University, Apr 16, 2013.
- 4) L. Zhang and J.-H. Kim, “Finite Element Modeling and Simulation of Engineered Materials,” Seminar in the Department of Architectural Engineering, College of Engineering, Korea National University of Transportation, South Korea, Feb 15, 2012.
- 5) L. Zhang and J.-H. Kim, “Finite Element Procedure for Materials Subjected to Dynamic Air Pressure Loads,” Seminar I in the Department of Civil & Environmental Engineering, College of Engineering, Yonsei University, South Korea, December 7, 2011.
- 6) S. Vaidya and J.-H. Kim, “Thermo-mechanical Modeling of Solid Oxide Fuel Cell Anode and Cathode Microstructures,” Seminar II in the Department of Civil & Environmental Engineering, College of Engineering, Yonsei University, South Korea, December 7, 2011.
- 7) L. Zhang and J.-H. Kim, “Finite Element Modeling of Advanced Blast-Resistant Materials Subjected to Dynamic Loads,” Seminar I in the Department of Architectural

Engineering, College of Architecture, Hanyang University, South Korea, August 29, 2011.

- 8) J.-H. Kim, “Fracture Modeling and Simulation of Functionally Graded Solids,” Seminar II in the Department of Architectural Engineering, College of Architecture, Hanyang University, South Korea, August 29, 2011.
- 9) S. Vaidya and J.-H. Kim, “Micromechanical Modeling of Solid Oxide Fuel Cells Using Three-dimensional Reconstructed Microstructures,” Seminar III in the Department of Architectural Engineering, College of Architecture, Hanyang University, South Korea, August 29, 2011.
- 10) L. Zhang, G. Anandakumar and J.-H. Kim, “Modeling and Simulation on the Dynamic Response of Advanced Materials,” The 1<sup>st</sup> UNIST Symposium on Urban Infrastructure Systems and Engineering, School of Urban and Environmental Engineering, Ulsan National Institute of Science and Technology, South Korea, September 23, 2011.
- 11) S. Vaidya, G. Anandakumar, N. Li, and J.-H. Kim, “Mechanical Durability of Solid Oxide Fuel Cells: Modeling and Experiments” Green City LID and Renewable Energy Seminar Series, Green Land and Water Management Research Institute, Pusan National University, South Korea, October 21, 2011.
- 12) L. Zhang, G. Anandakumar, and J.-H. Kim, “Dynamic Finite Element Analysis for Advanced Materials and Systems,” Department of Architectural Engineering, College of Urban Sciences, The University of Seoul, South Korea, December 5, 2011.
- 13) J.-H. Kim, “Fracture and Damage Modeling of Functionally Graded Material Systems under Thermo-mechanical Loadings,” Seminar in Mechanical, Industrial and Systems Engineering Department, The University of Rhode Island, March 19, 2010.
- 14) J.-H. Kim “Three-dimensional Fracture and Damage Modeling for Solid Oxide Fuel Cells,” Vancouver to Northeast USA Fuel Cell and Hydrogen Cluster Connection Workshop, Institute for Fuel Cell Innovation, National Research Council, Vancouver, Canada, March 17-18, 2008
- 15) J.-H. Kim, “Towards Fracture and Damage Modeling for Functionally Graded Solid Oxide Fuel Cells,” College of Engineering Seminar, The University of Akron, November 20, 2008.
- 16) J.-H. Kim, “Finite Element Simulation of Mixed-mode Crack Growth in Multifunctional and Functionally Graded Materials,” Seminar in the Department of Civil & Environmental Engineering, Worcester Polytechnic Institute, April 5, 2006.
- 17) J.-H. Kim, “Mixed-mode Crack Propagation in Functionally Graded Materials,” Seminar in the Department of Architectural Engineering, College of Architecture, Hanyang University, South Korea, August 1, 2006.
- 18) J.-H. Kim, “Mixed-mode Crack Propagation in Functionally Graded Materials,” Seminar Series in the Department of Metallurgy & Materials Engineering, University of Connecticut, April 14, 2004

**Research Grants (external): 18 (my share: \$3.6 M, total: \$12.0 M)**

1. Jeongho Kim (PI, 100%), Optimizing the fracture resistance of ceramic-polymer hybrid materials using cohesive finite elements and experimental validation, Vita Zahnfabrik, 8/23/2019-8/22/2020, \$8,216.
2. Jeongho Kim (co-PI, 14%), PI: Pamir Alpay Co-PIs: R. Hebert, J. Tang, D. Zhang, H. Brody, S. Nakhmanson, Simulation-based uncertainty quantification of manufacturing technologies, DOD/AFRL. 8/27/2018-8/26/2022, \$5,385,762.
3. Jeongho Kim (PI, 95%), co-PI: J. Tang, UConn - Compression Systems: Composites Manufacturing, Analysis and Test, United Technologies-Pratt & Whitney. 01/01/2019-12/31/2019, \$85,105.
4. Jeongho Kim (PI, 95%), co-PI: J. Tang, UConn - Compression Systems: Composites Manufacturing, Analysis and Test, United Technologies-Pratt & Whitney. 01/01/2018-12/31/2018, \$85,150.
5. Jeongho Kim (PI, 100%), "Development of LS-Dyna MAT162 and MAT261", NASA-Advanced Composite Consortium – United Technologies-Pratt & Whitney, 3/1/2018-12/31/2018, \$77,804.
6. Jeongho Kim (PI, 100%), Viscoelastic Modeling Aided Experimental Optimization toward Fracture-Resistant Porcelain-Veneered Zirconia and Lithium Disilicate Restorations, National Institutes of Health. 08/01/2017-07/31/2022, \$663,635.
7. Jeongho Kim (PI, 95%), UConn - Compression Systems: Composites Manufacturing, Analysis and Test, United Technologies-Pratt & Whitney. 01/01/2017-12/31/2017, \$85,173.
8. Jeongho Kim (co-PI, 25%), PI: J. Tang, co-PIs: S. Lee L. Sun, UConn - Compression Systems: Composites Manufacturing, Analysis and Test, United Technologies-Pratt & Whitney. 01/01/2016-12/31/2016, \$85,043.
9. Jeongho Kim (Director & co-PI, 50%), PI: Hadi Bozorgmanesh, co-PI: Mike Accorsi, Connecticut Manufacturing Simulation Center (CMSC), Department of Commerce - Economic Development Administration. 09/01/2016-08/31/2021, \$2,125,158.
10. Jeongho Kim (co-PI, 10%), PI: Mike Accorsi, Engineering Next Generation Infrastructure: National Excellence in Education and Research, Department of Education. 08/18/2014-08/17/2017, \$951,078.
11. Jeongho Kim (co-PI, 25%), Department of Homeland Security, PI: R. Hebert, Co-PIs: A. Shukla, B. Huey, G. Rossetti Jr. and R. Riman, "Advanced Composite Materials for Blast and Fire Resistance," 3/1/2010-6/30/2013, \$865,521.

## Curriculum Vita – Jeongho Kim

12. Jeongho Kim (co-PI, 25%), Department of Homeland Security, PI: R. Hebert, Co-PIs: B. Huey, G. Rossetti Jr. and A.F.M. Anwar, “Impact Resistant Multifunctional Composite Sensor for Structural Monitoring,” 8/1/2009-6/30/2011, \$220,000.
13. Jeongho Kim (co-PI, 25%), Department of Homeland Security – through National Transportation Security Center of Excellence, PI: G. Rossetti Jr., Co-PIs: R. Hebert, B. Huey, “Impact Resistant Multifunctional Composite Sensor for Structural Monitoring,” 7/1/2008-12/31/2009, \$60,000.
14. Jeongho Kim (PI, 100%), National Science Foundation (NSF), "CAREER: An Integrated Research and Education on Functionally Graded Solid Oxide Fuel Cells: Modeling and Experiments," 8/1/2006-7/31/2011, \$400,000.
15. Jeongho Kim (PI, 100%), Department of Defense - Air Force Research Laboratory-Universal Technology Corporation, “Damage Modeling and Simulation of Hybrid Structures,” 9/13/2010-6/19/2011, \$15,244.
16. Jeongho Kim (co-PI, 10%), The SIEMEMS Corp., PI: Prabhakar Singh, Co-PIs: C. B. Carter, A. Verma, "Treatment of Cathode Support and Measurement of Mechanical Strength of Cathode-supported SOFCs," 04/01/2010-03/31/2011, \$100,803.
17. Jeongho Kim (co-PI, 33.3%), Federal Highway Administration (FHWA) through Connecticut Department of Transportation. PI: Alireza Jamalipour, Co-PIs: J. T. DeWolf, R. Christenson, “Validating and Assessing Integrity of Troubled Bridges in Connecticut,” 07/01/2010-6/30/2012, \$207,100.
18. Jeongho Kim (co-PI, 20%), Federal Highway Administration (FHWA) through Connecticut Department of Transportation. PI: Alireza Jamalipour, Co-PIs: John T. DeWolf, Richard R. Christenson, “Expansion and Refinement of a Bridge Monitoring Network in Connecticut, Connecticut Department of Transportation,” 07/01/2008 – 06/31/2011, \$689,335.