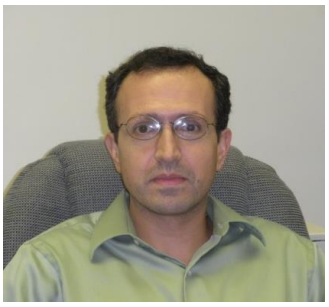
Firas Akasheh, Ph.D



Firas Akasheh, Ph. D.
Associate Professor
Mechanical Engineering
Phone: 334 727 8861
Fax: 334 724 4224
Email: fakasheh@tuskegee.edu

Education

Ph.D in Mechanical Engineering, Washington State University, May 2007
M.Sc in Mechanical Engineering, Washington State University August 2002
B.Sc in Mechanical Engineering, Jordan University of Science and Technology, 1990

Appointments

6/2014 -present	Associate Professor, Mechanical Engineering Dept, Tuskegee University
1/2008-6/2014	Assistant Professor, Mechanical Engineering Dept, Tuskegee University
6/2007-12/2007	Research Associate, School of Mechanical and Materials Engineering, Washington State University

Research Interests

Plasticity, Dislocation Dynamics, manufacturing processes, nanoscale metallic composites, computational solid mechanics, additive manufacturing, engineering education

Teaching Interests

Dynamics, materials science and engineering, manufacturing, finite element method, computational methods, mechanical design

Publications

1. Shuai Shao, Firas Akasheh, Jian Wang, and Yue Liu, "Alternative misfit dislocations pattern in semi-coherent FCC {100} interfaces", Acta Materialia, v. 144, 1, 2017, p 177.
2. F. Akasheh, A. Rochester, and H. Aglan "Effect of Build Orientation on the Mechanical Properties and Fracture Behavior of ABS Produced by Fused Deposition Modeling", Journal: Microscopy and Microanalysis, v 23, Issue S1 / July 2017, p 758.
3. F. Akasheh, "Dislocation Dynamics", Chapter Four in Integrated Computational Materials Engineering (ICME) for Metals: Using Multiscale Modeling to Invigorate Engineering Design with Science, authored/edited by Mark F. Horstemeyer, John Wiley & Sons, Inc., NJ, 2012
4. H. M. Zbib, C. Overman, F. Akasheh, and David Bahr, "Analysis of plastic deformation in nanoscale metallic multilayers with coherent and incoherent interfaces", International Journal of Plasticity, v 27, n 10, p 1618-1639, October 2011.

5. Ioannis N. Masterakos, Firas E. Akasheh, and Hussein M. Zbib, "Treating internal surfaces and interfaces in discrete dislocation dynamics", J. Mech. Behav. Mater. 20, p. 13-20, 2011.
6. F. Akasheh and H. M. Zbib, "Multiscale modeling and simulation of deformation in nanoscale metallic multilayered composites", book chapter, Multiscale Modeling and Simulation of Composite Materials and Structures, edited by Young Kwon, David Allen, and Ramesh Talreja, Springer, 2008.
7. F. Akasheh, H. M. Zbib, and T. Ohashi, "Multiscale modeling of size effect in FCC crystals: Discrete dislocation dynamics and dislocation-based gradient plasticity", Philosophical Magazine, vol. 87, no. 8-9, 2007, p 1307-1326
8. K.A. Nibur, F. Akasheh, D. F. Bahr, "Analysis of dislocation mechanisms around indentations through slip step observations", Journal of Materials Science, vol. 42, no. 3, 2007, p 889-900.
9. F. Akasheh, H. M. Zbib, J. P. Hirth, R. G. Hoagland, and A. Misra, "Dislocation dynamics analysis of dislocation intersections in nanoscale metallic multilayered composites", Journal of Applied Physics, vol. 101, no, 8, p 084314 (2007).
10. F. Akasheh, H. M. Zbib, J. P. Hirth, R. G. Hoagland, and A. Misra, "Interactions between threading dislocation and parallel finite interfacial arrays in nanoscale strained layers", Journal of Applied Physics vol. 102, no.3, p 034314 (2007)
11. Firas Akasheh, John Fraser, Susmita Bose, and Amit Bandyopadhayay, "Piezoelectric Micromachined Ultrasonic Transducers: Influence of Structural Parameters on device Performance", IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, vol. 52, no. 3, 2005, p 455-468
12. Firas Akasheh, Todd Myers, John Fraser, Susmita Bose, and Amit Bandyopadhayay, "Development of Piezoelectric Micromachined Ultrasonic Transducers (pMUTs)", Sensors and Actuators, A: Physical, vol. 111, n 2-3, Mar 15, 2004, p 275-287.

Proceeding Papers- peer reviewed

1. Firas Akasheh, John Solomon, Eric Hamilton, Chitra Nayak, and Vimal Viswanathan, "Application of cognitive-neuroscience learning principles to engineering mechanics education: implementation and preliminary analysis of connections between employed strategies and improved student engagement", Proceeding of ASEE Annual Conference and Exposition, 2018, paper no 23200.
2. Ramachandran, M, Siddique, Z., Okudan Kremer, G.E., and Akasheh, F., 2015, "Bridging Learning Gap Through Peer-to-Peer Information Exchange in a Flat Environment", Proceedings of the ASME 2015 IDETC, August 2-5, 2015, Boston MA, DETC2015-47379.
3. F. Akasheh, M. R. Karim, and S. Shao, "Dislocation structure of Cu/Ni (100) semi-coherent Interface and its role in lattice dislocation nucleation, TMS 144th Annual Meeting and Exhibition Supplemental Proceedings, Nanocomposites III, p.145, 2015.
4. Siddique, Z., Akasheh, F., and Okudan Kremer, G.E., 2014, "A Flat Learning Environment - Learning To Solve Ill-Structured Problems" 121st ASEE Annual Conference and Exposition, June 15-18, 2014, Indianapolis, IN (Accepted).
5. Siddique, Z., Okudan Kremer, G.E., and Akasheh, F., 2014, "Modeling a flat learning environment as a social network to understand effects of peer-to-peer information exchange on learning", Proceedings of the ASME 2014 IDETC, DETC2014-34321, Buffalo, NY.

6. Firas Akasheh, Kenneth D. Dawson, and Jonathan Rocha, "Comprehensive approach to teaching dynamics of planar mechanisms based on modern learning theories", Proceedings of the 120th Annual Conference and Exposition, Atlanta, GA, June 23-26, 2013, Paper ID# 7321.
7. Z. Siddique, F. Akasheh, and G. E Kremer, "Enhancing Peer-Learning Using Smart Devices", Proceedings of the 120th ASEE Annual Conference and Exposition, 2013, Paper ID 6142.
8. F. Akasheh, R. Echempati, and A. L. Sala, "Assessment of student learning through homework intervention method", 2012 ASEE Annual Conference and Exposition, AC 2012-3610.
9. Siddique, Z., Saha, M. C., Akasheh, F., Arif, S., and Barua, B., "Scenario-based learning environment to support peer-learning", Proceedings of the ASME 2012 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, DETC2012-70698.
10. Brown, A. O., Jensen, D. D., Rencis, J. J., Wood, K. L,, Watson, K. A., Chen, C., Labay, V. A., Orabi, I. I., Akasheh, F. E., Wood, J. J., Hackett, R. K., Jackson, K. S., Liu, J., Schimpf, P. H., Pham, A., Zimowski, K., Taylor, K., "Improving student learning using finite element learning modules, an update in research findings", 2012 ASEE Annual Conference and Exposition, AC 2012-3981
11. Z. Siddique, G. E. Kremer, and F. Akasheh, "Peer Learning Using Smart Devices: A Report on Work-in-Progress",Proceedings of the ASME 2012 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, DETC2013-12383.
12. F. Akasheh and D. Davis, "Undergraduate homework assignments that achieve desired learning outcomes", 2011 ASEE Annual Conference and Exposition, AC 2011-565.
13. M. Saha, Z. Siddique, F. Akasheh, B. Barus, C. Heisser, and S. Arif, "Interactive Scenario Based Teaching of Metal Casting Process", 2011 ASEE Annual Conference and Exposition, AC 2011-937
14. Siddique, Z., Saha, M. C., Barua, B., and Akasheh, F., 2010, "Learning Casting Through Interactively Creating a Scenario", Proceedings of the ASME 2010 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, DETC2010-28593.
15. Saha, M. C., Siddique, Z., Barua, B., and Akasheh, F., 2010, "Create your Scenario Interactively (CSI) – A Teaching Module for Manufacturing Processes", 2010 ASEE Annual Conference & Exposition, AC 2010-638.
16. F. Akasheh, HM Zbib, S. Akarapu, C. Overman, and D. Bahr, "Multiscale modeling of dislocation mechanisms in nanoscale multilayered composites", Mater. Res. Soc. Symp. Proc. Vol. 1130, W13-01, 2009.

Academic/Research Awards

1. 2013-2014 Faculty Performance award for Teaching in College of Engineering, Tuskegee University
2. The Thomas Foley Institute for Public Policies Graduate Fellowship 2002-2003, earned on my research proposal on computational materials science.

3. Mechanical and Materials Engineering Research Excellence Award, M.Sc, Mechanical and Materials Engineering, WSU, 2002.
4. Wiley Research Exposition: Engineering/Physics- Third place, Spring 2002, earned on my paper/presentation titled "Optimization of Piezoelectric Micromachined Ultrasonic Transducers".
5. Best Technical Paper Award in the Student Paper competition held as part of the Ultrasonic Industry Association (UIA) 34th Annual Symposium, Las Vegas, March 13-15, 2005.
6. Travel Grant, Spring 2005. A joint competition-based program co-sponsored by the Graduate School and the Graduate and Professional Student Association (GPSA) at Washington State University.
7. Travel Grant, Fall 2005. A joint competition-based program co-sponsored by the Graduate School and the Graduate and Professional Student Association (GPSA) at Washington State University.
8. The School of Mechanical and Materials Engineering Teaching Fellowship Award for Spring 2005 and Fall 2006. Fellowship allowed me to be the full instructor of Dynamics ME212 course.

Service Awards

1. 2012-2013 Faculty Performance award for Service in College of Engineering, Tuskegee University
2. Community Hero award, The Tuskegee News local newspaper, 2010
3. The President's Award 2004, the Washington State University President award for excellence in leadership and service. It is the finest leadership/service award that WSU students can receive.
4. Senator of the Year 2002-2003, Graduate and Professional Student Association, Washington State University.