

Alisa J. Millar Henrie

Education

Ph.D. Brigham Young University (BYU) Mechanical Engineering April, 2004

Dissertation: "Percolation Paths of Three-Dimensions in Sensitized Stainless Steel"

Committee: Brent L. Adams, Larry L Howell, Tracy W. Nelson, Carl D. Sorensen, Michael P. Miles

MS & BS in Mechanical Engineering from Brigham Young University (BYU)

MS - BYU, December 1997

BS – BYU, August 1995

AS- General Engineering Ricks College, 1993

Experience

Department Chair and Clinical Assistant Professor, University of Alabama, Huntsville (UAH) Huntsville, AL College of Science, Engineering Technology Program 2019-present

- Developed online curriculum for 12 new engineering technology classes including:
 - Engineering Technology Foundations I and II
 - Applied Statics, Applied Dynamics and Applied Strength of Materials
 - Introduction to Manufacturing Materials and Processes
 - Instrumentation and remote instrumentation lab
 - Capstone for Engineering Technology
 - Capstone for Professional Studies I and II
 - Assisted in developing
 - Introduction to Electrical Systems and Circuits including remote labs
 - Computer Aided Design for CAD
- Oversee 8 part-time and adjunct professors who teach in the engineering technology program
- Created academic oversight committee for new engineering technology program
- Designed and implemented online/home labs for new electrical and instrumentation courses
- Developed Engineering Technology lab space at UAH
- Grew program from a concentration in professional studies to a stand-alone Bachelor of Science in Engineering Technology department
- Working towards ABET accreditation

Instructor KTECH, Madison, AL 2017-2019

KTECH is a program devoted to helping the underserved population gain college level technical experience. Students include veterans, the homeless, recovering addicts, students ageing out of foster care and members of our community looking for career change. My responsibilities included:

- Instructed students in basic Mechanical concepts focusing on hands on opportunities for trouble-shooting flow of energy and critical thinking skills.

- Mentored students in study skills, life skills, appropriate coping mechanisms, finding solutions to medical needs, transportation needs, housing needs, and nutrition needs.
- Helped students overcome obstacles to learning such as hunger, housing, transportation, dental and medical needs
- Developed curriculum and solve textbook needs.
- Obtained certified Siemens Mechatronics Systems Certification Program Instructor (SMSCP) Level
- YASKAWA FS100 Certified Instructor

Presenter UAH Tech Trek for Teachers Huntsville, AL 2019, 2022-24

- Traveled to AL middle-schools and engaged in hands on engineering design activities. Discuss careers in STEM and opportunities for students and educators
- Presented workshops for STEM educators and administration from across AL at UAH explaining how to teach engineering principles in the classroom, Tech Trek opportunities and other programs offered by UAH.

Adjunct Professor University of New Mexico, Los Alamos campus (UNMLA) – 2005-2006

- Taught Natural Science 261 & 261L: For pre-service K-8 teachers. A broad, interdisciplinary introduction to the science of geology, chemistry, physics and astronomy, with emphasis on the science processes, inquiry and the integration of technology.
- Advised curriculum development committee on the creation of two-year programs to help lab technicians at Los Alamos National Laboratory earn associate's degrees. The aim was to help lab technicians better understand the research they were conducting, be more invested, and to help further advance their careers.

Adjunct Instructor UNMLA - 2003

- Taught Physics 105 & 151L: Introduction to Physics

Research Assistant – Brigham Young University, 1999 – 2003

- Coordinated the construction of a new research lab including the installation of a new cutting-edge scanning electron microscope (SFEG) and the infrastructure necessary for its use. Built the polishing and serial-sectioning lab that was used for obtaining 3-D micro-crystallography samples. This lab was then used by many research groups on campus.
- Trained users on how to use the scanning electron microscope (SFEG).
- Mentored graduate and undergraduate students
- Used mathematical models, computer programming and visualization software to transfer electronic backscatter diffraction patterns into a 3-D model of grain orientation and boundaries in stainless steel. Analyzed the statistical percolation of types of grain boundaries through the 3-D structure. This research is still referenced almost monthly in new publications.

Senior Design Engineer – Boeing Commercial Airplane Company, 1997 – 1998

- Responsible for design and maintenance of 747 interiors. This included championing the 747 and instructing those who worked on other airplanes about her unique nature. Several difficulties were solved involving lead time needed to manufacture new tooling, flow of work through the line and timing the implementation of new designs to accommodate each aircraft.

- Senior Design Engineer on special team to help airlines update their interiors and maintain FAA fireworthiness standards. Involved engineering archeology; determining what materials, laminates and adhesives already existed on a specific airplane from decades past and what could equivalently be used for safety testing of any changes made by the airlines. This required coordinating between the FAA, testing engineers, design engineers and the airlines. Awarded Boeing Applause Appreciation Award from the Service Engineering Department.
- Developed close working relationships with plant personnel, designers and airlines.
- Obtained special training in manufacture and repair of composite panels.

Research Assistant – Brigham Young University, 1995 – 1997

- Master research topic: magnetorheological materials and application to compliant mechanisms.
- Identified and arranged usage of research labs in the biology department, family science department and the electrical engineering department. Communicated the location and abilities of those labs on to my fellow students and professors.
- Tracked the goals, design, and manufacture release of nine graduate and undergraduate students in MEMS (micro-electro mechanical systems).
- Verified designs in constant-force mechanisms through experimental means.

Honors

Young Scientist Award, ICOTOM 13, International Conference on Textures and Materials, 2002

ZONTA Amelia Earhart Fellowship 1999-2000

Boeing Applause Appreciation Award, Service Engineering Dept., 1998

SAMPE student presentation scholarship award 1996

Extracurricular Activity

Bringing Science to Madison, AL children

- Tech Trek 2019-present
 - Teach middle school STEM educators from across the state on how to implement Engineering principles in the classroom.
 - Teach rising 8th graders STEM activities
- Space Week 2010-present
 - Space week is a national PTA program that highlights education in STEM as related to space. Organized this program for Columbia and Horizon elementary schools in Madison, AL. This involves coordinating science experiments for approximately 850 children per school on a limited budget. Conducted science experiments with all 800 students at Columbia the first year with a different, age-appropriate experiment for each grade on a budget of \$50 total. Coordinated speakers from NASA and local industry, displays of space culture such as the moon rock that children can touch and hold, school wide design competitions and a Mars rover design contest with a raw egg payload to simulate sensitive equipment. Also assisted other schools in the city.

- UAH Charger Engineering Camp, 2017: Instructed 7th and 8th graders in fundamental engineering principals backed up with experiments and design challenges.
- Science Olympiad, 2015
 - Columbia elementary was the first-grade school in our school district to compete in Science Olympiad in 2015. Worked closely with the 5th grade science teacher to prepare the students in various STEM activities including bridge building, compass reading and parachute design.
- Camp Invention 2011, 2015 Camp Invention is a week-long summer camp focused on STEM activities.
- Guest speaker at local science exhibitions for young women.

President of SWE (Society of Women Engineers BYU chapter) 1996-97

- Under my direction SWE organized an engineering-only career fair for BYU with over 25 companies attending with interview rooms provided for the day. Personally offered several jobs based on organization of the career fair alone.
- Supported local science fairs for middle school girls at UVCC, Provo, UT
- Created several scholarships for female engineering students through private and corporate donations.

Publications

- Fidan, I., Gupta, A, Hasanov, S, Henrie, A.J., Fidan, P, "Flipped Classroom to increase the Student Success in Manufacturing Courses", ASEE 2022 Annual Conference, June 2022.
- Reed, B.W., Adams, B.L., Bernier, J.V., Heffernan, C.M., Henrie, A.J.M., Li, S.F.F., Lind, J., Suter, R., Kumar, M., "Experimental Tests of Stereological Estimates of Grain Boundary Population", Acta Materialia, 60(6-7), 2999-3010, March, 2012.
- Reed, B.W., Adams, B.L., Bernier, J., Heffernan, C., Henrie, A.J.M., Li, S., Lind, J., Suter, R., Kumar, M., "Stereology and 3 D Grain Boundary Network Analysis" , Dec. 2011
- Adams, B.L., Gao, X., and Henrie, A., "Design of crystallographic and morphologic texture for elastic/plastic applications," Materials Science Forum, vol. 495-497, p. 319-324, 2005.
- Hansen, B.L., Adams, B.L., Lyon, M.E. and Henrie, A.J., 2003 "On the Reconstruction of Polycrystalline Microstructures from Two-point Correlation Statistics" Journal of Computer-Aided Materials Design; v.10 no. 3 p. 163-173.
- Adams, B.L., Gao, X., and Henrie, A., "Rectangular models for microstructure design," Dislocations, Plasticity, Damage and Metal Forming: Material Response and Multiscale Modeling, eds. A. Khan, A. Khoei, p.535-538, 2005.
- Henrie, A., Adams, B. L. and Larsen, R. J., "Creating a model for percolation of grain boundaries in polycrystalline materials," Proc. ICOTOM 13, Textures of Materials, 408-4, 419-24, 2002.
- Henrie, A.J. and Carlson, J.D, Magnetorheological Fluids, in the Encyclopedia of Smart Materials, John Wiley and Sons, New York, 2002.
- Adams, B.L., Henrie, A., Henrie, B., Lyon, M., Kalidindi, S.R., and Garmestani, H., 2001, "Microstructure-sensitive Design of a Compliant Beam," Journal of the Mechanics and Physics of Solids, 49, pp. 1639-1663.
- Henrie, A. J. M., Howell, L.L, 1998, "Variable Compliance via Magneto-Rheological Materials," Proceedings of the 43rd International SAMPE Symposium, Anaheim, CA, pp. 431-443, June, 1998.

- Henrie, A. J. M., 1997, "Variable Compliance via Magneto-Rheological Materials," M.S. Thesis, Brigham Young University, Provo, Utah.
- Millar, A.J., Howell, L.L., and Leonard, J.N., 1996, "Design and Evaluation of Compliant Constant-Force Mechanisms," Proceedings of the 1996 ASME Design Engineering Technical Conferences, 96-DETC/MECH-1209.