DAISY HUANG

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UAF PO Box 750720 / Fairbanks, AK 99775

SUMMARY: Mechanical engineer with strong materials background and broad industry and academic experience

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EDUCATION

PhD, Mechanical Engineering, Applied Physics, University of Alaska Fairbanks   May 2013
Thesis topic: Size Effects in Mesoscale Mechanical Testing of Snow

MS, Mechanical Engineering, Santa Clara University   June 2005
Concentrations: Applied Math, Materials
Capstone Project: Developed a method to determine fracture toughness of glass
MS program concurrent with full-time industry employment

BS, Mechanical Engineering, University of California Berkeley   May 1999
Concentrations: Applied Math, Materials
Minor Degree: English

Passed Fundamentals of Engineering/Engineer-in-Training (FE/EIT) Exam   April 2006

ACADEMIC EXPERIENCE

Assistant Professor of Energy, Department of Mechanical Engineering   *Jan 2014 – Present*
Research Professional, Alaska Center for Energy and Power
Research and analyze different strategies for developing sustainable energy and reducing the cost of energy on isolated power grids in Alaska. Current points of focus include the use of biomass energy sources, high voltage direct current (HVDC) energy transmission, Organic Rankine Cycle applications, and wind diesel hybrid power systems. Teach Mechanical Engineering Department coursework. Developing renewable energy coursework.

Research Professional, Alaska Center for Energy and Power   *June 2012 – Jan 2014*
Researched and analyzed different strategies for developing sustainable energy and reducing the cost of energy on isolated power grids in Alaska.

Adjunct Professor, Department of Mechanical Engineering, University of Alaska Fairbanks   *Jan 2013 – present*
Teach undergraduate course Mechanical Engineering 334, Introduction to Materials Science. Responsibilities include curriculum and educational laboratory development. Topics include material selection, material properties, alloying, heat treatment, stress/strain diagrams, phase diagrams, polymers, ceramics, composites.

Graduate Research Assistant, University of Alaska Fairbanks   *May 2008 – May 2012*
Developed and executed tests to determine, quantify, and categorize morphological and mechanical properties of natural snows. Analyzed test results to compare against software models and mathematical models developed from fundamental physical properties of ice. Traveled to remote field sites via dog team to perform in situ snow tests and collect samples. Aided in development of new software models by providing data from real-world natural snows. Skills include design of experiments, mechanical design, fabrication, and testing instrumentation. Proficient with tribology testing, Instron, SEM, CT scanning, and in-situ snow testing techniques.

Study group leader, Alaska Native Science and Engineering Program   *Feb 2009 – May 2012*
Led proactive study groups for students in the Alaska Native Science and Engineering Program. These are largely students from rural villages who need additional help with technical competencies as they adjust to the University setting. Study groups led include first-year physics, first- and second-year calculus, and differential equations.

Teaching Assistant, University of Alaska, Fairbanks   *Sept 2007 – May 2008*
Set up and led undergraduate instructional laboratory experiments. Prepared and presented lectures on relevant material. Helped students with homework, and helped prepare them for examinations. Graded written work from students and maintained grade database.
At the end of both the fall 2007 and spring 2008 semesters, over two thirds of my evaluations from students were extremely positive, with the "optional comments" section filled in with praise for my teaching skills. I did not receive any negative reviews at all.

INDUSTRY EXPERIENCE

Mechanical Design Engineer, Echelon Corporation   *Nov 2006 – July 2007*
Designed, troubleshot, and documented mechanical components for power meters and power control systems. Managed prototyping and transitioning to mass production. Documented manufacturing requirements and assembly procedures. Traveled frequently to China to evaluate manufacturing and to train technicians in assembly procedures.

Mechanical Design Engineer, Sun Microsystems (Scalable Systems Group)   *Feb 2005 – Nov 2006*
Designed structures to provide mechanical support and EMI shielding, and meet other functionality requirements for server housing elements. Performed stress analyses on designs to ensure functionality and performance. Managed prototype builds, and planned and executed mechanical testing (shock and vibration analysis) on prototypes. Adjusted designs as necessary, and documented results and design histories. Interfaced with electrical engineering team during concurrent development of printed circuit boards with their associated mechanical support structures to ensure that they did not conflict.

Technical Communications Engineer, Marvell Semiconductor (Data Storage Division)   *Feb 2002 – Feb 2005*
Created and edited specifications and register maps for new data storage products; developed, documented, and verified programming instructions and operational procedures for read channels, preamplifiers, and other data storage products.

Product Support Engineer, Applied Materials (Tungsten Systems Division)   *Mar 2000 – Feb 2002*
Supported Tungsten chemical vapor deposition equipment by monitoring and optimizing worldwide installed base performance. Performed failure analyses on selected customer returns, including chemical and material analysis and auditing of manufacturing processes, and documented and reported findings and recommended corrections to customers. Led Tungsten Systems Division to ISO 9000 certification by performing internal audits and training employees in ISO requirements.
Two-time recipient of Applied Materials Global Quality Recognition Award for achieving highest degree of Customer Satisfaction and largest Installation and Warranty cost reduction

Process Engineer, DiCon Fiberoptics   *June 1999 – Mar 2000*
Designed specialized packaging for product shipment; tested packaging with impact, vibration, and other mechanical tests. Developed, wrote, executed, and evaluated results of qualification test plans for newly designed optical components. Tests measured optical signal strength loss and included mechanical vibrations, mechanical shock, thermal cycling, damp heat storage, dry heat storage, fiber pull, flammability, and airborne contaminants tests.

Engineering Intern, San Francisco Department of Public Works   *Summer 1997*
Maintained industrial machinery in water pollution control plant by monitoring and analyzing vibration patterns and lubricant particulate composition for evidence of bearing wear or equipment malfunction. Performed fault analyses on failing pumps and mixers, recommended corrections, and evaluated and documented results. Performed cost analyses on project proposals.

SKILLS

ENGINEERING & SOFTWARE TOOLS:
Pro/Engineer/Wildfire, Inventor, MATLAB, AutoCAD, HTML, Windows, MS Office, FrameMaker, Visio
Good working knowledge of Design For Manufacture (DFM) requirements for sheet metal, machining, die-casting, and injection molding fabrication techniques and limitations. Proficient in design of experiments and materials testing laboratory skills, such as Instron tension and compression testing, Rockwell hardness testing, tribology testing, SEM, CT scanning, eddy current measurement, and optical crystallographic analysis. Proficient with in situ soil and snow testing techniques, including penetrometer testing, vane shear testing, and sample sorting by grain size.

COMMUNICATION SKILLS:
Possess very strong written and oral communication skills; have worked closely and successfully with customers, vendors, field support technicians, students, and researchers in and from Europe, Asia, the Americas, and Africa.

AFFILIATIONS

American Society of Mechanical Engineers
American Society of Materials
American Physical Society
Society of Automotive Engineers

RELEVANT COURSEWORK

Mechanical Design, Design of Machinery, Design and Process of Polymers, Composite Materials
Mechanical Behavior and Processing of Materials, Fracture Mechanics and Fatigue, Finite Element Methods
Statics, Dynamics, Thermodynamics, Fluid Mechanics, Heat Transfer, Principles and Prevention of Corrosion
Classical Mechanics, Statistical Mechanics, Nonlinear Dynamics, Plasma Physics
Continuum Mechanics, Systems Engineering, Orthopedic Biomechanics, Technical Communication
Ice Physics, Arctic Engineering, Elastic Stability Theory, SEM Instrumentation, Wind Power Engineering, Renewable
Energy Systems

PERSONAL INTERESTS

Gardening, cooking, eating, hiking, backpacking, skiing, skijoring, sustainable living, astronomy, literature

PUBLICATIONS

"Mechanical Properties of Snow using Compression Tests: Size Effects"
Daisy Huang, Jonah H. Lee
Journal of Glaciology, submitted Feb. 6, 2013

"Mechanical Properties of Snow using Indentation Tests: Size Effects"
Daisy Huang, Jonah H. Lee
Journal of Glaciology, v59, 2013

"Sensitivity analysis, calibration and validation of a snow indentation model"
Jonah H. Lee, Daisy Huang
Journal of Terramechanics, v49, pp. 315-324, 2012

"Slip-based experimental studies of a vehicle interacting with natural snowy terrain"
Jonah H. Lee, Daisy Huang, Thomas H. Johnson, Stephen Meurer, Alexander A. Reid, Bill R. Meldrum
Journal of Terramechanics, v49, pp. 233-244, 2012

"A Method of Using a Snow Micro Penetrometer to Obtain Mechanical Properties of Snow"
Daisy Huang, Jonah H. Lee
Proceedings of the Joint 17th ISTVS International Conference
18-22 September 2011, Blacksburg, VA

"Statistical experimental studies of a vehicle interacting with natural snowy terrain for combined longitudinal and lateral
slip"
Jonah H. Lee, Daisy Huang, Thomas H. Johnson
Proceedings of the Joint 17th ISTVS International Conference
18-22 September 2011, Blacksburg, VA

"A Method of Using Small-Scale Indentation Tests to Examine Snow Response to Load"
Daisy Huang, Jonah H. Lee
Proceedings of the Joint 9th Asia-Pacific ISTVS Conference and Annual Meeting of Japanese Society for Terramechanics
27-30 September 2010, Sapporo, Japan

"Statistical and Slip-Based Experimental Data from a Vehicle Interacting with Natural Snowy Terrain"
Jonah H. Lee, Daisy Huang, Thomas H. Johnson, Stephen Meurer, Alexander A. Reid, Bill R. Meldrum
Proceedings of the Joint 9th Asia-Pacific ISTVS Conference and Annual Meeting of Japanese Society for Terramechanics
27-30 September 2010, Sapporo, Japan

"A New Integrated Testing System for the Validation of Vehicle-Snow Interaction Models"
Jonah H. Lee, Thomas H. Johnson, Daisy Huang, Stephen Meurer, Alexander A. Reid, Bill R. Meldrum
2010 NDIA Ground Vehicle Systems Engineering and Technology Symposium
Modeling and Simulation, Testing and Validation (MSTV) Mini-Symposium
17-19 August 2010, Dearborn, MI, US

"Material Point Method Modeling of Porous Semi-Brittle Materials"
Jonah H. Lee, Daisy Huang
IOP Conference Series: Materials Science and Engineering
9th World Congress on Computational Mechanics and 4th Asian Pacific Congress on Computational Mechanics
Volume 10, Number 1
doi: 10.1088/1757-899X/10/1/012093
19–23 July 2010, Sydney, Australia

"A mesoscopic model of low-density snow under rapid loading"
J. H. Lee, D. Huang
Paper number C33A-0484, American Geophyical Union Annual Conference, San Francsico, CA, 2009.

"Microscale Direct Simulation of Snow Penetration Tests and Inversion of Signals."
Jonah H. Lee, Daisy Huang, Hans-Peter Marshall, Jerome B. Johnson
11th European Regional Conference of the International Society of Terrain Vehicle Systems
5-8 Oct 2009, Bremen Germany

"Traction on snow and microstructure"
J. H. Lee, D. Huang,
MOCA-09 Montreal, Quebec, Canada, July 19-24, 2009.