

ACADEMIC VITA
KENNETH E. LULAY

ACADEMIC RANK

Associate Professor, Mechanical Engineering

EDUCATION

University of Portland, B.S., Mechanical Engineering, May 1984

Cum laude

University of Portland, M.S., Mechanical Engineering, May 1987

(Obtained while employed full time)

University of Washington, Ph.D., Mechanical Engineering, June 1990

Dissertation: *The Effect of Cooling on the Flow Strength of Metal Matrix Composites*

ACADEMIC APPOINTMENT

Assistant Professor, University of Portland, Portland, Oregon, 1998-2004

Associate Professor, University of Portland, Portland, Oregon, 2004-present

Mechanical Engineering Chair, University of Portland, Portland, Oregon, 2005-present

Margaret M. and Vincent P. Aquino Endowed Associate Professor in Engineering, 2014-present.

RESEARCH SUPPORT

The Boeing Company, "Thermal modeling of titanium inspection via laser input heating", 1999.

University of Portland Arthur Butine Development Grant titled: *Development of In-Class Demonstrations and Teaching Aids*, 1999.

University of Portland Arthur Butine Development Grant titled: *The Effect of Cryogenic Treatments on an Aluminum Alloy*, 2000.

University of Portland Arthur Butine Development Grant Titled: *Cryogenic Hardening of Hadfield's Austenitic Manganese Steel*, 2002.

University of Portland Arthur Butine Development Grant Titled: *Development of Internal Molds for Composite Fabrication*, 2004.

Keck Foundation Grant co-author: *Improving Student Learning with Modern Laboratory Methods*, \$250,000.00, Awarded: June 2014

RESEARCH INTERESTS

History of engineering and industry in the Portland area

Failure analysis – recent developments and historical perspectives

Innovative teaching methods – failure analysis, data acquisition, experimentation

AWARDS

Nominated for University of Portland's Faculty Award for Excellence in Teaching, 2001

Nominated for Special Invention Award, The Boeing Company, for demonstrating Technical Excellence and Significant Value (based on US Patent 6,014,804), 1999.

U.S. Patent 6,014,804; Low voltage electromagnetic process and apparatus for controlled riveting (Lulay and Kostenick), 2000.

U.S. Patent 6,176,000; Low voltage electromagnetic process for controlled riveting (Lulay and Kostenick), 2001.

U.S. Patent 6,446,319; Low voltage electromagnetic process and apparatus for controlled riveting (Lulay and Kostenick), 2002.

PROFESSIONAL EMPLOYMENT HISTORY

DESIGN ENGINEER, Hyster Company, Portland, Oregon, 1984-1987

TEACHING ASSISTANT, University of Washington, Seattle, Washington, 1987-1988

RESEARCH ASSISTANT, University of Washington, Seattle, Washington, 1988-1990

MANUFACTURING R&D ENGINEER, The Boeing Company, Seattle, Washington;
Measurement & Test Development, *Defense & Space Group*, 1990-1994
Nondestructive Evaluation R&D, *Commercial Airplanes Group*, 1994-1995
Assembly Technology, *Commercial Airplanes Group*, 1995-1998

ASSISTANT PROFESSOR, University of Portland, Portland, Oregon, 1998-2004

Associate Professor, University of Portland, Portland, Oregon, 2004-present

Mechanical Engineering Chair, University of Portland, Portland, Oregon, 2005-present

PROFESSIONAL MEMBERSHIPS

Licensed Professional Engineer, Washington State

Member of ASME International

Member of Society of Automotive Engineers

Tau Beta Pi, Engineering Honor Society, (joined as an "Eminent Engineer"), 2011

CONFERENCES and MEETINGS

Pacific Northwest Materials and Manufacturing conference, Portland, Oregon, 1999.

American Society of Mechanical Engineers, Regional Student Leadership Seminar, Seattle, Washington, 2000.

American Society of Mechanical Engineers, Regional Student Conference, Corvallis, Oregon, 2001.

American Society of Mechanical Engineers, Regional Student Leadership Seminar, Portland, Oregon, 2001.

Society for Experimental Mechanics, annual conference, 2001.

Western Users of SAS Software Conference, San Francisco, California, September 2001.

American Society of Mechanical Engineers, Regional Student Conference, Ellensburg, Washington, 2002.

American Society of Engineering Education, Pacific NW Spring Meeting, 2002.

Nano/Bio: Engineering Trends and Applications Conference (ASME), April 2003.

American Society of Mechanical Engineers, Regional Student Conference, Portland, Oregon, 2003.

American Society of Mechanical Engineers, local meetings, Portland, Oregon, regular attendance 1998-2003.

Society of Automotive Engineers, local meetings, Portland, Oregon, occasional attendance, 2001-2003.

ASME Sponsored Geometric Dimensioning and Tolerancing Seminar, Portland, Oregon, 2004.

ASM International Conference, AeroMat (Advanced Aerospace Materials and Processes Conference and Exposition), Seattle, Washington. May 15-18, 2006

Center for Manufacturing and Infrastructure Engineering meeting (June 1, 2006), Portland, Oregon.

ASME International Mechanical Engineering Congress and Exposition, Seattle, Washington, November 12-13, 2007,

ASME International Mechanical Engineering Congress and Exposition, San Diego, California, November 17-18, 2013

NSF Workshop on Advanced Manufacturing for Smart Goods, Portland, Oregon, May 14-15, 2015

ASEE Conference, Seattle, Washington, June 14-17, 2015

Attend local meetings of ASME, ASM, and SAE.

REVIEWED PUBLICATIONS

M. Taya, K. Lulay, K. Wakashima, and D. Lloyd, *Bauschinger Effect in Particulate SiC-6061 Aluminum Composites*, Materials Science and Engineering, A124, 1990

M. Taya, K. Lulay, and D. Lloyd, *Strengthening of a Particulate Metal Matrix Composite by Quenching*, Acta Metallurgica, Vol. 39, No. 1, 1991.

K. Lulay, and M. Safai, *Optimizing Thermographic NDT using Finite Element Analysis*, Thermosense XVI, SPIE Vol. 2245, pp. 106-110, 1994.

K. Lulay, *Development of an Apertured-Confocal Acoustic Microscope*, Rev. of Progress in Quantitative Nondestructive Evaluation, Vol. 15B, pp. 2023-2029, 1996.

K. Lulay, *Simulation of Digital Data Acquisition Using LabVIEW*, Computers in Education Journal, Port Royal, VA, Oct-Dec 2001.

K. Lulay, K. Khan, D. Chaaya, *The Effect of Cryogenic Treatments on 7075 Aluminum Alloy*, ASM Journal of Materials Engineering and Performance, Vol. 11, No. 5, October 2002.

CONFERENCE PRESENTATIONS and PROCEEDINGS (minimal review)

M. Taya, K. Lulay, and D. Lloyd, *Strengthening Mechanisms of Particulate MMC's with various types of Fillers*, Morris E. Fine Symposium, ed. P. D. Liaw, et al., pp. 153-164, 1991.

K. E. Lulay, P. G. Kostenick, G. E. Georgeson, *X-ray Computed Tomography for Verification of Rivet Installation Assessment Techniques*, Proceeding (P-326) Society of Automotive Engineers Aerospace Automated Fastening Conference, 1998.

P. G. Kostenick, and K. E. Lulay, *Interactive Three Dimensional Graphical Presentation of Analysis of Variation Results*, Proceedings of the Western Users of SAS Software, San Francisco, pp. 523-525, California, September 2001.

K. Lulay, *Developing the Ability to Design, Conduct and Analyze an Experiment*, American Society of Engineering Education, Pacific NW Spring Meeting, April 12, 2002.

- K. Lulay, *Teaching Design of Experiments to Undergraduates using Deterministic Equations*, American Society of Engineering Education, Pacific NW Spring Meeting, April 12, 2002.
- K. Lulay, Bart Rylander, *Truss Design Optimization Using Genetic Algorithms*, Genetic and Evolutionary Computation Conference, 2003.
- Yamayee, et al., *From ABET Commissions Summit to Final Statement: Objectives, Outcomes, and Improvements*, ABET Symposium, April 2011.
- Lulay, et al., *Implementation of a Design Spine for a Mechanical Engineering Curriculum*, American Society of Engineering Education, June 2015. (I presented)

PROFESSIONAL REPORTS for THE BOEING COMPANY

- K. Lulay, *Ultrasonic Wave Form Analysis for Composites Parts*, QADR 9-4800-92-28.17-2, 1992.
- K. Lulay, *Hand Held Ultrasonic Radius Inspection Tool for Composites Parts*, QADR 9-4800-92-28.17-1, 1992
- K. Lulay, *Superplastic Forming/Diffusion Bonding - Nondestructive Bond Line Inspection*, QADR 9-4800-92-IRAD.2-2, 1992.
- K. Lulay, *Superplastic Forming/Diffusion Bonding - Die Dimensional Effects on Bond Quality*, QADR 9-4800-92-IRAD.22-1, 1992. L. Deobald, K. Lulay, J. Linn, *Inspection of the Sine Wave Spar by Multiple Transducer Through Transmission Ultrasonics*, OTDR 9-02029-93.1, 1993.
- K. Lulay, *Through-Hole Inspection for Solder Plated Electronics Boards*, OTDR 9-02037-93, 1993.
- L. Deobald, K. Lulay, J. Linn, *Upgrade of the Blade and Fillet Robotic Ultrasonic Inspection System*, OTDR 9-02036-93, 1993.
- K. Lulay, *Sleeve Cold Working Titanium Lugs (A Practical Application of a Theoretical Analysis)*, OTDR 9-23003-93.1, 1993.
- K. Lulay, *Superplastic Forming/Diffusion Bonding Inspection Techniques*, OTDR XU402C-1, 1995.
- K. Lulay, *Mechanical Properties and Friction Coefficients at Electromagnetic Riveting Strain Rates*, MDR 666-622, 1998.
- K. Lulay, P. Kostenick, *Low Voltage Electromagnetic Riveting Main Effects Designed Experiment*, MDR 666-622-1, 1998
- K. Lulay, *Computer Modeling to Determine Optimal Laser Energy and Travel Speed for Defect Detection in Diffusion Bonded Titanium*, Report for The Boeing Company, April 2000.

UNIVERSITY SERVICE

- Probability and statistics committee, School of Engineering, 1998-1999
- Engineering enrollment committee, School of Engineering, 2000-2001

Engineering instructor and course evaluation committee, School of Engineering, 2000-2001
Engineering building space utilization committee, School of Engineering, 2000-2001
Traffic court, University of Portland, 2000-2002
Mechanical Engineering Accreditation Team, 2002-2009 (and ongoing)
American Society of Mechanical Engineers, Student Section Faculty Advisor, 2000-2005
Academic Senate (semester-long substitute), fall 2005
Society of Automotive Engineers, Student Section Faculty Advisor, 2001-present
Presidential Advisory Committee on Health and Safety, participating member 2010-2012
Engineering Laboratory Development Planning Committee, Fall 2012

UNIVERSITY SEARCH COMMITTEES

Search Committee member, two Mechanical Engineering Faculty Positions, 2002-2004
Search Committee Chair, six Mechanical Engineering Faculty Positions, 2005-2014
Search Committee Chair, Mechanical Shop Technician, 2008
Search Committee member, School of Engineering instructor position, 2011-2012
Search Committee member, School of Engineering temporary instructor position, Spring 2015

COMMUNITY and PROFESSIONAL SERVICE

Planning committee and session chair, Pacific Northwest Materials and Manufacturing conference, Portland, Oregon, 1999.
Little League Coach, Hazel Dell Little League, 1999, 2006-present
ASME Micro-Baja Competition, Judge, ASME Regional Conference, 2001
ASME Web Design Competition, Judge, ASME Regional Conference, 2003
ASME Old Guard Poster Competition, Judge, ASME Regional Conference, 2003
Boy Scouts of America, various leadership positions, 2003-Present
Eucharistic Minister, Saint John the Evangelist Catholic Church, Vancouver, WA, 2008-present
Knights of Columbus, first degree, 2011-present
Invited lecturer for the American Society of Metals Seminar on Failure Analysis, Portland, Oregon, October 2003.
Invited lecturer for the American Society of Metals Seminar on Failure Analysis, Albany, Oregon, February 2004.
Paper review (2010 and re-evaluated January 2011), Ref: JMES2614, "An incremental-update formulation to simulate earing behavior with crystal plasticity model" Shaorui Zhang; Shiyao Huang; Dayong Li; Yinghong Peng, Proceedings of the Institution of Mechanical Engineers, Part C, Journal of Mechanical Engineering Science
Reviewed a funding proposal from NW Nazarene University to the M J Murdock Charitable Trust, September 2013.
Reviewed "A Multifaceted Device for Discreetly Acquiring Natural Behaviors of Children with Autism" in International Journal of Undergraduate Research and Creative Activities. November 2014
Attended various SAE Collegiate Design Competitions with students:
2003 SAE Mini Baja, Provo, Utah
2004 SAE Mini Baja, Portland, Oregon
2005 SAE Formula, Detroit, Michigan
2007 SAE Baja Competition, Rapid City, South Dakota.

2008 SAE Baja Competition, Peoria, Illinois
2009 SAE Aero Design Competition, Los Angeles, California

PROJECTS and PROFESSIONAL DEVELOPMENT

Peripheral Logic Corporation, January 2005, designed a switch for an arcade game
Butine Grant, 2005, Innovative Composites Manufacturing, Developing internal molds (student: Rebecca Boyd).
Peripheral Logic Corporation, 2006, analyzed “kick back” force for an arcade game.
ESCO, Summer-Fall 2006, Kanban to improve how experimentation is used to improve products
Lisin Metallurgical, Summer and Fall 2006, numerous failure analysis projects.
Acumed, 2007, DOE-hex driver breakaway torque project (report provided)
Western Machine Works, Inc. (Don Leighton), 2007, conducted stress analysis on cylindrical contact loading, increase vacuum pressure in a vacuum box;
Western Machine Works, Inc. (Don Leighton), 2008, analyzed stress concentration in countersink holes.
Western Machine Works, Inc. (Don Leighton), 2008, analyzed stressed due to cylindrical contact loading.
ESCO, 2008, develop and taught a course in Design of Experiments specifically for ESCO. This required understanding their needs and tailoring the course appropriately. Gave opportunity to discuss modern engineering problems especially applications of Lean Manufacturing.
Technical Expert Consultation, *Weller v. Sunsweet Growers, Graham Packaging Company and Walmart Stores*; United States District Court Case Number 11-3108-CL, April 2012
Technical Expert Consultation, *Murphy v. Advance Med, Inc. et al.*, US District Court, District of Oregon, Case number CV10-1213-BR, May 2012
Van’s Aircraft fatigue testing. Student Madisen Sickler, fatigue testing of simulated spar manufacturing processes (rough edge, smooth edge), Spring 2014 (no publication)

SABBATICALS

Fall 2006 – conducted failure analysis with *Lisin Metallurgical Services* (greatly helped me develop failure analysis understanding. Involved with developing long-term strategies for testing conducted by ESCO. Developed and conducted an experiment with Acumed to determine critical process parameters in the manufacturing of their surgical implant “screw driver.”
Fall 2014 – began developing a history of industry and engineering in the greater Portland area. Conducted work on Keck grant to develop laboratory modules. Submitted a paper for ASEE Conference on Design Spine at UP.