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Department of Mechanical Engineering

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SUMMARY OF CAPABILITIES

I have a strong background in electromechanical design and engineering education with broad skills in mechatronics, machine design, precision machine design, and mechanism design. I have experience with dynamic system analysis, solid modeling, heat transfer modeling, time-dependent flow of material at elevated temperature modeling, data acquisition, geometric dimensioning and Tolerancing (GD&T), and tolerance analysis. I also have significant experience with web page design and multimedia. I have excellent oral and written communication skills and enjoy working with people.

ACADEMIC BACKGROUND AND HONORS

- 1991 Ph.D., Stanford University, Mechanical Engineering.
- 1982 M.E., University of California, Davis, Mechanical Engineering.
- 1980 B.S., University of California, Davis, Mechanical Engineering, with High Honors.

Dissertation

“A New, Thermally Controlled, Non-Contact Rotor Balancing Method.” This work comprised the design and feasibility demonstration of a new approach for balancing a rotor as it spins without physical contact. The method accomplishes balance correction by means of deformable metallic elements, which relocate discrete masses through local radiative heating under the action of centrifugal forces.

Master’s Thesis

“Design of an Improved Rotary Singulator.” This work focused on the design of a modular mechanism that improved the versatility of a previously existing singulator (a device that orders objects from a disorganized state). This work resulted in a U.S. patent, no. 4,526,269, on July 2, 1985.

- Promoted to Professor, May 2006
- SJSU College of Engineering Applied Materials Award for Excellence in Teaching, March, 2001
- SJSU ITL 2000-20001 Teacher Scholar
- Awarded tenure and promoted to Associate Professor, May 2000
- Faculty Merit Increase for demonstrated performance (July 1, 1999 through June 30, 2000), November 20, 2000
- ITL-Knight-Ridder Champions Fellowships, 1998

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- President's Special Recognition Award (PSRA) for exceptional achievements that advance the University's mission, December 20, 1996.
- Performance-Based Salary Step Increase (PSSI) award of 1 step in rank, December 20, 1996.
- San José State University Innovation in Teaching and Learning Fellowship for the "Development Of Computer-Assisted, Classroom Instructional Modules For The Effective Teaching Of Mechanical Design," 1996.
- Electronic Materials Symposium 1995 Undergraduate Grant Award to assist in the development of a battery operated atomic force microscope, June 27, 1995.
- Pi Tau Sigma Professor of the Year Award, for excellence in teaching and outstanding service to the Mechanical Engineering Department, May 4, 1995.

CREDENTIALS

Registered Professional Mechanical Engineer in the state of California, License No. M022873, since 1984.

California Community College Instruction Credential: Engineering

SUMMARY OF PROFESSIONAL HISTORY

Professor, Department of Mechanical Engineering, San José State University, May 2006 – to present.

Visiting Scientist, New Focus, Inc., San José, CA (July 2008 – July 2009)

Associate Professor, Department of Mechanical and Aerospace Engineering, San José State University, May 2000 – May 2006.

Consultant, Symyx Technologies, Santa Clara, CA. (October 2001 – June 2002)

Assistant Professor, Department of Mechanical and Aerospace Engineering, San José State University. (since January 1994)

Staff Engineer, IBM Corporation, Advanced Storage and Retrieval Division, San José, CA. (1991-1993)

Research and Teaching Assistant, Mechanical Engineering Department, Stanford University. (1986-1991)

Senior Associate Engineer, IBM Corporation, General Products Division, San José, CA. (1982-1986)

Research and Teaching Assistant, Mechanical Engineering Department, University of California, Davis. (1980-1982)

DETAILS OF PROFESSIONAL HISTORY

Professor and Director of the Mechatronic Engineering, Engineering Measurements, and Precision Engineering Measurements Laboratories, Department of Mechanical Engineering, San José State University. (current)

Current research and interests include:

- Design of precision instruments for metrology

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- Automation of production processes
- Design, interfacing and control of mechatronic and electromechanical systems
- Use of the Internet and multimedia for engineering education
- Mechatronics education
- Design education

Courses taught and/or developed

- E 10 Introduction to Engineering
- E 197 Cooperative Education Project
- ME 30 Computer Applications (revamped lecture and laboratory, Fall 2009)
- ME 106 Fundamentals of Mechatronics (co-developed, Spring 1997)
- ME 110 Manufacturing Processes (developed, Fall 2000)
- ME 120 Experimental Methods (revamped lecture and laboratory, Fall 2003)
- ME 154 Mechanical Engineering Design (co-developed, Fall 1996)
- ME 155 Kinematics and Dynamics of Machinery
- ME 156 Principles of Machine Design
- ME 195A/B Senior Design Project
- ME 196I Foundations of Mechatronics (co-developed Spring 1996)
- ME 180 Individual Study
- ME 250 Precision Machine Design (developed Fall 1997)
- ME 285 Mechatronic Systems Engineering
- ME 298 Master's Project

Professional Short Courses Organized

- Geometric Dimensioning & Tolerancing (2007: October 25-26, November 14-16), (2006: January 19-20, October 16-17, November 8-10), (2004: February 21, October 7-8, November 10-12, December 9-10), (2003: December 12), (2002: September 19-20, October 7-9, November 6-8, December 9-11), (2001: January 24-26, February 22-23, June 12, July 11-13), (2000: June 8, July 12, August 8, December 5), (1999: August 11, June 4, February 26)
- Design for X (September 26, 2002)
- Statistical Process Control for Long and Short Run Production (June 21-22, 2001)
- Precision Mechanics (March 24, 2000)

Workshops for Faculty Offered

- “Automated Pre-Lab Exams to Motivate Students”, with Prof. Winncy Du, December 8, 2004.
- “Creating Web Pages For Your Courses”, March 23, 1999 and October 30, 1998
- “Multimedia for Engineering Education: Help or Hype?” October 31, 1996

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- Trans-Pacific Workshop on Mechatronics Technology, September 16-18, 1996 (co-contributor)
- Faculty Enhancement Workshop on Mechatronics Curriculum Development, June 16-20, 1996 (co-organizer)
- “Software for Computer-Assisted Curriculum Delivery”, April 18, 1995

Grants and Contracts Awarded

- Learning Productivity Implementation Grant, with Prof. Winncy Du, April 2004
- Learning Productivity Planning Grant, with Prof. Winncy Du, January 29, 2004
- \$10K SJSU College of Engineering Instructional Research Development Grant, April 22, 2003
- \$2.2K SJSU College of Humanities and Arts, University Writing Requirements Grant, December 19, 2002
- \$5K SJSU College of Engineering Instructional Development Grant, December 6, 2002
- \$2.2K SJSU College of Engineering Professional Development Grant, November 7, 2002
- \$8.9K Agilent Technologies, University Philanthropy Equipment Grant, January 5, 2001
- \$22.9K HP Equipment Gift Offer #84967, November 30, 2000.
- \$1.6K SJSU College of Engineering Professional Development Grant, November 2000.
- \$5K, KLA-Tencor, Inc., “Automation of the Fabrication of High Aspect-Ratio Probe Tips, Spring 1999.
- \$0.6K SJSU College of Engineering Professional Development Grant, November 1999
- \$1.4K SJSU College of Engineering Professional Development Grant, November 1998.
- \$45K, ITL Knight-Ridder Champions Fellowships, “Exploring/Creating Multimedia for Engineering Education”, 1998 (team member).
- \$5K, Automation Modules, Inc., “Development of a Microbuffering Platform for 300 mm FOUP Handling”, March 1998.
- \$7K (in kind), Ambios Technology, Inc. and Hysitron, Inc. “Development of a Low-Cost Profiler”, September 1997- June 1999.
- \$1.5K SJSU College of Engineering Professional Development Grant, November 1997.
- \$72.4K, NSF ARI Grant, “Acquisition of Scanning Probe Microscope System to Enable the Development and Application of Scanning Probe Devices For Engineering Measurements”, September 1996.
- \$89.7K, NSF ILI Grant, “Scanning Probe Microscopes for Interdisciplinary Advanced Microscopy Laboratory”, Co-PI with Dr. Brad Stone SJSU Dept. of Chemistry. June 1996.
- \$6.6K, United Braille, Inc., May 1996 to September 1997.
- \$0.5K, Electronic Materials Symposium, “Development of a Battery-Operated Atomic Force Microscope”, July 14, 1995.

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- \$0.5K (in kind), Park Scientific Instruments, Inc., “Development of a Battery-Operated Atomic Force Microscope”, 1994/95.
- \$0.9K SJSU College of Engineering Supplement to CSU Mini-grant, March 16, 1995.
- \$5.1K CSU Mini-grant/Summer Pair Fellowship, December 16, 1994.
- \$1.6K SJSU Lottery Fund Grant, November 1994.

Service to the University, College, and Department

- University Library Review Board, 2005-2006
- Dossier Preparation Workshop participant (model dossier), 2002 – present
- New Faculty Mentor Program, Fall 2004
- University Student Evaluation Review Board (SERB) Spring 2000 – Spring 2001
- University Improvement of Instruction Committee, Fall 1995 – Spring 1998
- University Fellow for the New Student Orientation Program, 1994-1997
- University Technology Infrastructure Committee, 1996
- Equity 2000 Faculty Mentor, 1995-1996
- College RTP Committee, 2011/12
- College Undergraduate Curriculum Committee, Fall 2002 – 2008
- College Liaison for the COB Neat Ideas Fair, Fall 2004 – 2006
- College Task Force on Manufacturing Laboratory Integration (Chair), Spring 1999
- College Student Recruitment Committee, Fall 1998 to Spring 2001
- College Student Affairs Committee, Fall 1994 – Spring 1996
- Faculty Mentor for the Scholarships for Under-Represented Engineering Students (SURES) program, 1996-97
- College Task Force on Mechanical and Aerospace Engineering Restructuring, 1995/96
- College Research Review Committee, 1994-1996
- Faculty Marshall for College Commencement Activities, since 1994
- Department Chair Recruitment Committee (Chair) 2011
- Department Curriculum Committee, (Chair) 2003 – present
- Department Chair Review Committee (Chair) 2005
- Department RTP Committee (Chair) 2004, 2010
- Department Graduate Studies Committee, 1998/99
- Department Design/Structures Committee, 1993/94; (Chair) 1994–1997
- Department Computer Facilities Committee (Chair), 1996–1997
- Department Capital and Budget Committee 1994/95
- Director of the Engineering Measurements Laboratory, since 2002
- Director of the Mechatronic Engineering Laboratory, since 1996
- Director of the Precision Measurements Laboratory, since 1997

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- Director of the DEC Workstation Laboratory, 1995-1996

Visiting Scientist, New Focus, Inc., San José, CA (July 2008 – July 2009) (while on Sabbatical Leave from SJSU)

I worked on the next-generation design of the Picomotor, New Focus' industry leading high precision positioner and related projects. Work areas included:

- Development of design concepts, detail drawings, and finite element analysis for a Picomotor that had faster actuation and higher force output
- Development of a capacitive touch interface to control a Picomotor
- Life testing and analysis of alternative material configurations in the current Picomotor

Consultant, Symyx Technologies, Santa Clara, CA. October 2001 to July 2002 (while on Sabbatical Leave from SJSU)

I assisted research chemists by designing hardware for a catalyst process optimization reactor. Work areas also included:

- Re-design of a compact, pneumatically controlled injection valve for a gas chromatograph (GC)
- Design and testing of alternative o-ring glands for sealing catalyst tubes
- Leak testing reactor hardware

Staff Engineer, IBM Corporation, Advanced Storage and Retrieval Division (ADSTAR), San José, CA. 1991 – 1993.

I was responsible for design, development, and analysis of actuator hardware and spindle motors for high capacity disk drives. Work areas also included:

- Analysis of actuator magnetics
- Testing of spindle motor performance
- Manufacturing process improvement
- Field failure analysis
- Serving as a technical liaison for IBM-sponsored student engineering projects at San José State University
- Exploration of new business opportunities for the ADSTAR division

Research and Teaching Assistant, Stanford University, Mechanical Engineering Department, Stanford, CA. 1986 – 1991.

My research focused on the development and feasibility demonstration of a new method of non-contact rotor balancing. Areas of investigation and accomplishments included:

- The design of a compact, modular element that shifts a discrete mass through permanent deformation initiated by radiant heating and centrifugally induced stress.
- The analytical and experimental demonstration of the ability to produce controllable permanent deformation of a stressed metallic element by pulse heating.

Extra-curricular work included the development of a new sensing system to distinguish walnut shells from meats for use in a walnut processing facility.

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I served as a teaching assistant for the Master's Project Course in Design (ME 210). Responsibilities included preparing course materials, instructing, grading, and establishing and maintaining the course's laboratory.

Senior Associate Engineer, IBM Corporation, General Products Division, San José, CA. 1982–1986.

I was part of a new product development team responsible for the design and development of the IBM 3390 Magnetic Disk Storage Device. Significant accomplishments were:

- The development of a novel vibration isolator used in a compact voice-coil actuator (subsequently patented, US Patent No. 4,730,227, March 8, 1988)
- The analysis of the tolerance stack-up for the entire head-disk assembly and subsequent definition of the data zones and track positions
- The development of specifications for the miniature bearing used in the guideway system

Other responsibilities included:

- Serving as a liaison for the administration of a doctoral fellowship at the University of California, Davis
- Ph.D. recruiting at the University of California, Davis

Research and Teaching Assistant, University of California, Davis, Mechanical Engineering Department, Davis, CA. 1980 – 1982.

My research involved the development of a new mechanism to extend the versatility of a rotary singulator to accommodate a variety of sizes and types of discrete objects. The result of my work culminated in an archival publication and US Patent (No. 4,526,269).

As a teaching assistant, I taught a mechanical design laboratory and a dynamics laboratory course. Duties included lecturing, setting up lab experiments, and grading laboratory reports.

AFFILIATIONS

Member, American Society for Precision Engineering (ASPE), since 1996

Associate Member, Society of Manufacturing Engineers (SME), since 1991

Member, American Society for Engineering Education (ASEE), since 1982

Jury of Awards for the James F. Lincoln Arc Welding Foundation Awards Program, July 1997

Member, Tau Beta Pi Engineering Honor Society, since 1980

Associate Member, American Society of Mechanical Engineers (ASME), 1980-1997

Member of the Executive Committee for the Santa Clara Valley Section of ASME:
Technical Activities Chairman, 1994-1997; Newsletter Editor, 1991-1993

Member, Sigma Xi, The Scientific Research Society, 1990-1997

LIST OF COLLABORATORS

Dr. Dongho Choi, Engineering Development Manager, New Focus, Inc., San José, CA

Dr. Sam Berg, Staff Scientist, Symyx Technologies, Santa Clara, CA

Dr. Ping Hsu, Associate Professor, Electrical Engineering, San José State University

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Dr. Tai-Ran Hsu, Professor, Mechanical and Aerospace Engineering, San José State University
Dr. John Lee, Assistant Professor, Mechanical and Aerospace Engineering, San José State University
Dr. Rick Kneeder, Staff Scientist, Surface Interface, Inc., Sunnyvale, CA
Dr. Kurt McMullin, Assistant Professor, Civil and Environmental Engineering, San José State University
Dr. Nikos Mourtos, Professor, Mechanical and Aerospace Engineering, San José State University
Dr. Udeme Ndon, Associate Professor, Civil and Environmental Engineering, San José State University
Dr. Patrick Pizzo, Professor, Chemical and Materials Engineering, San José State University
Dr. Brad Stone, Associate Professor, Chemistry, San José State University
Mr. William Tandler, President, Multimetrics, Inc., Menlo Park, CA
Dr. Marco Tortonese, Senior Staff Scientist, KLA-Tencor, Inc., Milpitas, CA
Dr. Ji Wang, Professor, Mechanical and Aerospace Engineering, San José State University
Dr. Raymond Yee, Associate Professor, Mechanical and Aerospace Engineering, San José State University
Dr. Greg Young, Associate Professor, Chemical and Materials Engineering, San José State University

MS/ME GRADUATE STUDENTS

Erwin Ysip, “Interchangeable Trailer Bike to Single-Rider Bike”, May 2011
S. Recco, “Performance Improvement for a Micro Metrology Workstation”, December 2010
H. Le, “Development of a Profilometer Incorporating User Interface Software”, December 2009
Y. Supakorn, “Design, Analysis, and Manufacturing Process for a Load Cell, May 2008
J. Chan, “Development of Autocollimator and Interferometer Experiments for ME 250”, May 2008
P. Wayman, “Predicting Hexapod Hysteresis and Repeatability Errors”, May 2008
R. Richardson, “Benchtop Universal Test Machine System Integration and Verification”, May 2008
P. Wassei, “Human-Robotic Interface: Joystick Control of Robot”, May 2008
S. Moy, “Micro Metrology Workstation Upgrade”, December 2007
M. Miranda, “Development of a Straight Edge Reversal and Coordinate Measurement Machine Laboratory Experiments”, December 2007
P. Saikomol, “Design and Implementation of Precision Alignment for UV Detection in Planar Microfluidic Chips, December 2007
A. Gaoiran, “Exhaust Header Design, Analysis, and Optimization for a Horizontally-Opposed Engine”, December 2007

- F. Gagliardi, "Development of a Fixture to Perform Confined Creep Experiments on Composite Materials", May 2007
- O. Hui, "Active Force Control for Stylus Profiler", May 2007
- N. Hughes, "Orthogonal Blade Flexures: Study of Axial Stiffness for Flexures Used in Kinematic Coupling", December 2006
- S. Tiscareno, "Micro Metrology Station for MEMS Inspection", May 2006
- L. Nicoli, "Laboratory Experiments for Precision Machine Design", May 2006
- B. Biggs, "Mass Properties Using Statistical Techniques", May 2005
- L. Leninger, "Design and Analysis of Antenna Hinge", December 2004
- J. Dare, "Design of a Myoelectric Signal Detection System and Digital Filter Based on Wavelet Transform," December 2004
- K. Joshi, "Probe System for Stylus Profilometer," May 2004
- J. Carandang, "Hardware and Software Interface for a Coordinate Measuring Machine," May 2004
- K. Batson, "A New Low-Cost Benchtop Stylus Profiler", December 2003
- R. Clark, "Dynamic Modeling and Correlation of a Hovercraft Attitude Control System, December 2003
- E. Moen, "Microcontrollers for Mechatronics Education: An Evaluation of Alternatives and Adaptation for Use at San José State University, December 2003
- R. Belt, "Design of a Piezoelectrically Actuated MEMS Deformable Mirror," December 2002
- M. O'Hara, "Design of Rocking Beam for Electronically Stabilized Force Sensor," May 2001
- S. Son, "Linear Displacement Measurement With a ¼ inch Cube Corner," May 2001
- L. Thomas, "Benchtop Universal Test Machine," May 2001
- L. Kondor, "Automation of a Decorative Bottle Top Assembly," May 2001
- M. Edmonds, "Parallelogram Flexure Demonstration Device," May 2001
- B. Chan, "X-Y Positioning Stage," February 2001
- M. Willink, "Adjustable Fan/Heat Sink Thermal Test Fixture," December 2000 **
- M. Taylor, "Sonication Through a Flexible Interface," May 2000
- B. Stonas, "Hall Effect Demonstration Apparatus," May 2000
- J. Baxter, "Modal Analysis of a Cantilever Beam," December 1999
- H. Chen, "Automation of the Fabrication of High Aspect-Ratio Probe Tips," May 1999
- P. Eyabi, "Real Time Fuzzy Logic and PID Implementation and Control in LabView," May 1999 *
- T. Nguyen, "Hard Disk Drive Spindle Error Measurement Test Fixture," May 1999
- V. Schulze, "Design and Analysis of Typical Micro Pressure Sensors for Automotive Applications," December 1998 *

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- M. Kearny, "Electrostatically Actuated Stylus Profilometer With Capacitive Displacement Sensing in Vertical and Lateral Directions," August 1998
- A. Khan, "Stamping Die Punch Wear Detector," June 1998
- S. Pang, "Single Axis Laser Interferometer," May 1998
- H. Zheng, "Cantilever Attachment Scheme for Atomic Force Microscope," May 1998
- M. Phul, "Determination of the Effects of Design Parameters on the Contact Pressure at the Clamp Interface of a Flexural Bearing," December 1997
- M. Abushaban, "Design of a Belted CMP Machine," December 1996 ***
- G. Chin, "Optimization and Life Testing of Shape Memory Alloy Wire Actuators for Refreshable Braille Display," December 1996
- J. Gonzalez, "Evaluation of Methods for Terminating Memory Alloy Wires for Force Actuators," December 1996
- D. Plankenhorn, "Leadership and Methodological Practices for New Product Development by Multidisciplinary Teams", May 1996 *
- S. Ahmed, "Design of a Low-Cost Mechanical Breadboarding Kit For the Effective Teaching of Mechanism Design," February 1996
- J. Nguyen, "Design of a Pressure Sensing Canula," January 1996
- D. Rossman, "Self-Aligning Spatial Filter," May 1996 *
- A. Ciasci, "Method of Development for the Analysis of Thermally Controlled Plastic Deformation of 304 Stainless Steel," December 1995
- H. Saravia, "Design of a Disposable Irrigation Pump," March 1995

* Reading Committee member

** This work resulted in a provisional patent

*** This work resulted in a US patent

INVITED LECTURES

"A New, Thermally Controlled, Non-Contact Rotor Balancing Method," Santa Clara University Mechanical Engineering Department Winter Seminar Series, January 12, 1994.

PATENTS AND INVENTION DISCLOSURES

“Apparatus and Method for Polishing a Flat Surface Using a Belted Polishing Pad,” US patent 6,146,249, November 14, 2000, with co-inventors, A. Hu and M. Abushaban.

“Adjustable Fixture for Thermal Testing of Fan Heat Sinks,” invention disclosure and provisional patent application, with co-inventors, M. Willink and Tomas Schindler, May 8, 2000.

“Apparatus and Method for Polishing a Flat Surface Using a Belted Polishing Pad,” US patent No. 6,059,643, May 9, 2000, with co-inventors, A. Hu and M. Abushaban.

“Automated Glass Scribing Device,” invention disclosure, September 9, 1995, with co-inventors, A. Devey, P. D. Jequinto, K. Lim, and D. Seawright.

“Disk File Actuator With Combined Carriage Rail and Isolator Mount For Drive Magnet,” US Pat. No. 4,730,227, March 8, 1988, with co-inventors, D. G. Chong, E. L. Mathurin, and T. J. Rajac.

“Singulator,” US Pat. No. 4,526,269, July 2, 1985, with co-inventor J. M. Henderson.

LIST OF PUBLICATIONS

Furman, B.; Wertz, E.; , "A First Course In Computer Programming for Mechanical Engineers," Mechatronics and Embedded Systems and Applications (MESA), 2010 IEEE/ASME International Conference on , vol., no., pp.70-75, 15-17 July 2010

Furman, B. J., Moen, E., “Evaluation of Alternative Microcontrollers for Mechatronics Education,” Computers in Engineering Education Journal, vol. 15, no. 3, July-September 2005.

Du, W. Y., Furman, B. J., Mourtos, N. J., “On the Ability to Design Engineering Experiments, Proceedings of the 8th UICEE Annual Conference on Engineering Education, February 2005.

Furman, B. J., Robinson, “Improving Engineering Report Writing with Calibrated Peer Review,” Proceedings of the 2003 Frontiers in Education Conference, November 2003.

Mourtos, N. J., Furman, B. J., “Assessing the Effectiveness of an Introductory Engineering Course for Freshman,” Proceedings of the 2002 Frontiers in Education Conference, November 6-9, 2002, Boston, MA.

Furman, B. J., Hayward, G. P., “Asynchronous Hands-On Experiments for Mechatronics Education,” Mechatronics, vol. 12, 2002, pp. 251-260.

Taylor, M. T., Belgrader, P., Furman, B. J., Pourahmadi, F., Kovacs, G. T. A., Northrup, M. A., “Lysing Bacterial Spores by Sonication through a Flexible Interface in a Microfluidic System,” Analytical Chemistry, vol. 73, no. 3, February 1, 2001, pp. 492-496.

Furman, B. J., Hayward, G. P., “Asynchronous Hands-On Experiments for Mechatronics Education, Proceedings of the 7th Mechatronics Forum International Conference, Atlanta, GA, September 6-8, 2000.

Hayward, G. P., Furman, B. J., “Teaching Mechatronics to the New Generation,” 1999 ASME International Mechanical Engineering Congress and Exposition, Nashville, TN, November 1999.

Furman, B. J., “Printer Carriage Motion Control Experiment,” Electronics Technology Journal vol. 3, no. 2, Fall, 1998, pp. 22-23.

Kearny, M., Furman, B. J., "Electrostatically Actuated Stylus Profilometer With Capacitive Displacement Sensing in Vertical and Lateral Directions," Proceedings of SPIE, vol. 3275, January 1998, pp. 20-25.

Furman, B. J., Christman, J., Kearny, M., Wojcik, F., Tortonese, M., "Battery-Operated Atomic Force Microscope," Review of Scientific Instruments, vol. 69 issue 1, January, 1998, pp. 215-220.

Wang, J. C., Furman, B. J., Hsu, T. R., Barez, F., Tesfaye, A., Hsu, P., Reischl, P., "Mechatronics Laboratory Development at San José State University," Proceedings of the ASEE Annual Conference, Milwaukee, Wisconsin, June 16-18, 1997.

Furman, B. J., Pinkernell, D., Elgee, S., "Case Studies on Design of Mechatronic Products," IEEE Transactions on Components, Packaging, and Manufacturing Technology - Part C, vol. 20, no. 1, January, 1997, p. 8-13.

Furman, B. J., "The Un-Lecture: A Computer-Assisted Curriculum Delivery Approach For the Effective Teaching of Mechanical Design," Proceeding of the 1996 Frontiers in Education Conference, Salt Lake City, UT, November, 1996.

Furman, B. J., Hsu, T. R., Wang, J. C., Barez, F., Tesfaye, A., Hsu, P., Reischl, P., "Laboratory Development for Mechatronics Education," Session 1626, Proceedings of the ASEE Annual Conference, Washington, D. C., June 23-26, 1996.

Hsu, T. R., Wang, J. C., Barez, F., Furman, B. J., Hsu, P., Reischl, P., "An Undergraduate Curriculum in Mechatronic Systems Engineering," 95-WA/DE-3, 1995 International Mechanical Engineering Congress & Exposition, San Francisco, California, November, 1995.

Furman, B. J., "Towards a More Hands-on, Design-oriented Course on Mechanisms," Proceedings of the ASEE Annual Conference, Designers in Engineering Education Session, Anaheim, California, June 26-29, 1995.

Alvarez, J., Garcia, R., Nicoli, L., Sleight, E., Furman, B. J., "Battery Operated Atomic Force Microscope," panel paper presented at ASME INTERpack '95 conference, March 26-30, Lahaina, Hawaii, March 27-30, 1995.

Furman, B. J., "A New, Thermally Controlled, Non-Contact Rotor Balancing Method," ASME Journal of Mechanical Design, vol. 116, September 1994, p. 823-832.

Furman, B. J., Henderson, J. M., "An Improved Rotary Singulator," Transactions of the ASAE, May-June, 1983, vol. 26, no. 3, p. 955-960.

Henderson, J. M., Bellman, L. G., Furman, B. J., "A Case for Teaching Engineering With Cases," Engineering Education, January 1983, p. 288-292.

OTHER PUBLICATIONS

Furman, B. J., "Redesign of GC Valves for the Process Optimization Reactor," confidential internal report for Symyx Technologies, Inc., August 16, 2002.

Furman, B. J., "Investigation of Alternate Gland Designs for Sealing Catalyst Tubes in the Process Optimization Reactor," confidential internal report for Symyx Technologies, Inc., May 29, 2002.

Furman, B. J., "Force Sensing System Modeling and Analysis," research report for Surface/Interface, Inc., Sunnyvale, CA, July 25, 2001.

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Furman, B. J., Hsu, P., Johnson, P., "ME 106 Foundations in Mechatronics Laboratory Manual," Mechanical and Aerospace Engineering Department, Spring 1998 to Spring 2000.