

Curriculum Vita

WENCHIANG RICHARD CHUNG

Work Phone: (408) 924-3927

Fax: (408) 924-4057

E-Mail: wrchung@email.sjsu.edu

EDUCATION

Ph.D., Mechanical Engineering (Materials Engineering Emphasis), Auburn University, Auburn, Alabama [August 1987]

M.S., Materials Engineering, Youngstown State University, Youngstown, Ohio [August 1984]

B.S., Chemical Engineering, Chinese Culture University, Taiwan, Republic of China. [June 1976]

SPECIAL TRAINING

Microelectronic Packaging Workshop, San Jose State University, California [July 21- 25, 1997]

Microelectronic Fabrication Workshop, San Jose State University, California [June 24 - 28, 1991]

Automatic Identification Workshop, San Jose State University, California [June 18 - 22, 1990]

WORK EXPERIENCE

Professor [8/99-present]

Department of Chemical and Materials Engineering, San Jose State University, San Jose, California

- Teaching graduate and undergraduate courses, serving as faculty advisor for thesis, graduate research project, and senior design project at San Jose State University.
- Conducting research studies in the areas of failure analyses of structural materials, semiconductors, defects analysis, chip scale packaging, polymer recycling, thermoplastic composites, composite interface study, conductive polymers, nanocomposites, and smart composite materials.
- Conducting annual "discovery engineering camp" for local high school teachers and students.
- Organizer, Discover Engineering Camp, an open-house hands-on program for local high school and community college students.
- Organized an industry advisory board for material engineering program at San Jose State University
- Taught a Co-op engineering course for all majors in the college.

Professor [Department chair 96-97, Professor 8/96 – 7/99, Associate Professor 8/91-7/96, Assistant Professor:8/87-7/91]

Department of Technology, San Jose State University, San Jose, California

- Taught a few courses at community colleges:

ISO 9000 and 14000 Standards, Disk Drive Manufacturing -- Evergreen Community College

Manufacturing Materials and Processes -- De Anza Community College

- Faculty advisor for the student chapters for SPE and SAMPE at San Jose State University.

- Executive committee member and member of Education Committee, American Society of Materials -- Santa Clara Valley Chapter

- Member for the Silicon Valley Engineering Council (organizer for national engineers week banquet)

- Education consultant for Disk Drive Consortium (IBM, Seagate, Komag, San Jose City College and Evergreen Community College)

- Technical book reviewer for Prentice Hall Publisher and the Society of Manufacturing Engineers

- Corporate technical instructor for NASA, IBM, Imation, and Lockheed Martin Missiles and Space Company.

IISME Fellow: 6/02 –8/02

LOTIS (Large Optics Test and Integration Site) project, Missiles and Space Operations, Lockheed Martin Space Systems Company, Sunnyvale, California

-Worked with program managers and systems engineers to deal with the day-to-day management processes of a highly technical project - (LOTIS) from a business and technical sense. Involved with the processes used to develop, implement and validate technical requirements; monitoring technical and business performance; and experience with engineering design, fabrication and performance verification/validation processes systems planning, optical systems design, problem solving and technical executions related to the design, manufacturing, testing of optical devices.

- Participated in PDR process with University of Arizona-Tucson and Kaman Aerospace Corporation

IISME Fellow: 6/99 – 12/99

Optoelectronics Division, Hewlett Packard Corporation, San Jose, California

- Worked with research and production engineers and managers to identify the education needs and the methodology for process development from R&D results to production lines for LEDs (light emitted diodes).

IISME Fellow: 6/98 - 8/98

Photolithography, Thin Films, and Diffusion, D2 building, Intel Corporation, Santa Clara, California

- Conducted studies in semiconductor/wafer manufacturing yields, R&D, and training projects
- Involved in inspection and troubleshooting of semiconductor defects and process control

Visiting Scholar: 8/94 - 12/94 (recipient of sabbatical leave award from San Jose State University)

Department of Aeronautics and Astronautics, Stanford University, Stanford, California

- Worked with a research team involving with piezoelectric actuators and network algorithms to manufacture and investigate various types of smart composite materials

Research Assistant: 9/84 - 7/87

Department of Mechanical Engineering (Materials Engineering Program), Auburn University, Auburn, Alabama

- Design and development of polymer resins and multidirectional fiber-reinforced composites
- Material characterization and failure analysis of fibrous composites
- Development and evaluation of high impact resistant composite structures

Teaching Assistant: 9/82 - 6/84

Department of Chemical & Metallurgical Engineering, Youngstown State University, Youngstown, Ohio

- Laboratory instructor for the following courses: Physical Metallurgy (including Metallography and crystallography) and Mechanical Metallurgy (including heat treatment of metals and mechanical testing)

Plant Design Engineer: 7/80 - 2/82

Plant Design and Piping Support Division, Pacific Engineers and Constructors, Ltd. (A subsidiary of

Bechtel Engineers and Constructors, Ltd.)

- Nuclear power plant design and piping layout
- Material selection for piping construction
- Destructive and nondestructive examinations for piping and piping support joints
- Field troubleshooting for design and construction discrepancies

Production Engineer: 6/79 – 6/80

Injection Molding and T-Die Extrusion Factory, Carlin Plastic Products Manufacturing Company

- Technical management of product manufacturing using extruders and injection molding machines
- Product quality control involved with statistical process control and troubleshooting
- Supervision of PVC compounding process

Chemical Engineer: 4/78 - 5/79

First Papermaking Mill, Taiwan Pulp and Paper Corp.

- R&D on waterproof kraft paper and Failure analysis of defective paper products
- Paper machine operation and technical management

RELATED SKILLS

Hands-on experience with scanning electron microscopes (models of AMRAY-1000, AMRAY-1820, ISI-40, and JOEL JEM-840), transmission electron microscopes (models of EMU-4 and JOEL- 1200X), Zeiss and Leco optical microscopes, semiconductor manufacturing equipment (including spinner, photoresist developer, aligner, vacuum sputtering, chemical vacuum depositor), differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), dynamic mechanical thermal analyzer (DMTA), destructive and nondestructive testing equipment (MTS, Instron, Satec universal testers, Dynatup impact tester, Charpy/Izod impact tester, ultrasonic and acoustic emission instruments)

PROFESSIONAL AFFILIATIONS

- Senior Member, Golden Gate Section, Society of Plastics Engineers (SPE)
- Past President, Chinese Quality Assurance Association (CQAA)
- Past Mechanical Engineering Group Chair, San Francisco-Bay Area Chapter, Chinese Institute of Engineers/USA (CIE/USA)
- Executive Committee Member (former chair of education committee and chair of yearbook committee) of Santa Clara Chapter, American Society for Materials, International (ASMI)
- Member of Scholarship Committee, American Society for Quality (ASQ)
- Member, Society for the Advancement of Material and Process Engineering (SAMPE)
- Member of Steering Committee for the Workforce Silicon Valley (WSV)
- Member and former secretary of Silicon Valley Engineering Council (SVEC)
- Member of American Society of Engineering Education (ASEE)
- Fellow of Industry Initiatives for Science and Math Education (IISME)

HONORS RECEIVED

- Outstanding Alumni Award, Auburn University (April 15, 2002)
- 2001 Hall of Fame Award, Golden Gate Section, Society of Plastics Engineers (Jan. 24, 2002)
- Service Award, Faculty Leadership Institute, Workforce Silicon Valley (August 9, 2001)
- Special Judge representing ASMI for 2001 Intel International Science and Engineering Fair, San Jose, California (May 8-9, 2001)

- Grant proposal reviewer for the Division of International Programs, the National Science Foundation. (1992 - 1994)
- Recipient of Sabbatical Leave Award, San Jose State University (Fall semester, 1994)
- Two-time Recipient of Meritorious Performance and Professional Promise Award, San Jose State University (AY 1989-90, 1988-89)
- First Place Winner in Materials Application, 1988 National Student-Instructor Project Competition, Sponsored by Industrial Education, Southfield, Michigan. (November 1988)

EDITING PUBLICATION

Editor, Chapter 8 (Thermoforming), Vol.8, Plastic Part Manufacturing, Tool and Manufacturing Handbook, published by Society of Manufacturing Engineers, 1996.

REFERRED PUBLICATIONS

1. W. C. Chung, "Structure and Mechanical Properties of Thermoplastic Composites" presented at Update 2000: Standard Experiments in Engineering Materials, Science and Technology, National Educators' Workshop, sponsored by Wright Patterson Air Force Base, NIST, NASA, National Composite Center, October 29 – November 1, 2000, Kettering, Ohio. (NASA CP-2001-211029, pp. 59-68)
2. W. C. Chung, "New and Emerging Opportunities in Packaging Materials" presented at the 20th International Association of Packaging Research Institute Symposium, June 14-18, 2000, San Jose, California. (pp. 352 – 356)
3. W.C. Chung and G.C. Erickson, "Characterization of Effectiveness of Non-destructive Inspection Methods in Detecting Defects in Thick Composites", presented at the Update97: Standard Experiments in Engineering Materials, Science and Technology, National Educators' Workshop, sponsored by Boeing, NSU, NASA, DoE and NIST, November 2 - 5, 1997, Seattle, Washington.
4. W.C. Chung and R. Peterson, "A New Processing Technique for Composite Tubes", presented at the 40th International SAMPE Symposium and Exhibition, May 8 -11, 1995, Anaheim, California (pp.1274 - 1280)
5. W.C. Chung and K.M.Wilson, "Racing Hydroplane Driver's Safety Capsule: Composite Design and Evaluation", presented at the Update93: Standard Experiments in Engineering Materials, Science and Technology, National Educators' Workshop, sponsored by NSU, NASA, DoE and NIST, November 3 - 5, 1993, Hamton, Virginia.
6. W.C. Chung, K.Bean, J.Heng and H.Doan, "Hardness of Weldment of Low-Carbon Steels", presented at Update93: Standard Experiments in Engineering Materials, Science and Technology, National Educators' Workshop, sponsored by NSU, NASA, DoE and NIST, November 3 - 5, 1993, Hamton, Virginia.
7. W.C. Chung and A.H.Yuen, "Composite Disk Brakes: The Advantages and Disadvantages and Its Feasibility in a Production Car", presented at the 51st Annual Technical Conference, sponsored by SPE, May 9 -13, 1993, New Orleans, Louisiana. (pp.1508 - 1509)
8. W.C. Chung and T.W.Lee, "Modeling and Simulation of A Thermoforming Process", presented at the Advanced Materials and Processing of the First Pacific Rim International Conference, sponsored by TMS-AIME and MRS, June 23 - 27, 1992, Hangzhou, China. (pp. 357 - 363)
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9. W.C. Chung and T.W. Lee, "Thermoforming Simulation of A Plastic Cup", presented at the 50th Annual Technical Conference, sponsored by SPE, May 3 - 7, 1992, Detroit, Michigan. (pp. 117 - 121)
10. W.C. Chung and M.L.Morse, "Effects of Heat Treatment on A Metal Alloy", presented at

Update90: Standard Experiments in Engineering Materials, Science and Technology, National Educators' Workshop, sponsored by NSU, NASA, ASM and NIST, November 13 - 15, 1990, Gaithersburg, Maryland. (pp. 34 - 38)

11. W.C. Chung, "Mechanical Properties of Metal Fiber-Reinforced Composites", presented at the Advancements in Materials for Polymer Composites and Special Topics, Regional Technical Conference of SPE, October 16 - 18, 1990, Los Angeles, California. (pp.77 - 84)

12. W.C. Chung, "A Study of Short Metal Fiber-Reinforced Composite Materials", presented at the 1989 Fall Technical Conference, sponsored by MRS, November 27 - December 2, 1989, Boston, Massachusetts. (pp. 1037 - 1043)

13. W.C. Chung, B.Z.Jang and W.K.Shih, "Mechanical Properties of Multidirectional Fiber Composites", Journal of Reinforced Plastics and Composites, Vol. 8, No. 6, November 1989, pp. 538 - 564.

14. W.C. Chung, "The Assessment of Metal Fiber-Reinforced Composite Materials", presented at Update 89: Standard Experiments in Engineering Materials, Science and Technology, National Educators' Workshop, sponsored by NSU and NASA, October 16 -19, 1989, Norfolk, Virginia. (pp. 54 - 58)

15. W.C. Chung, B.Z. Jang, T.C. Chang, L.R. Hwang and R.C. Wilcox, "Fracture Behavior in Stitched

Multidirectional Composites", Materials Science and Engineering, A112, June 1989, pp. 157 - 173.

16. B.Z. Jang, W.C. Chung, Y.K. Lieu and L.R. Hwang, "Controlled Energy Dissipation in Fibrous Composites, Part I. Controlled Delamination," Polymer Composites, April 1987, Vol. 8, No. 2, pp. 94 -102.

17. W.C. Chung, "The Growth of Materials Processing in Space Technology", presented at the 21st Annual Conference of National Association of Industrial Technology, October 13 - 15, 1988, San Jose, California. (pp. 23 - 25)

18. W.C. Chung, B.Z.Jang,L.R.Hwang and R.C.Wilcox,"A study on Multidirectional Composites", presented at the 46th Annual Technical Conference, sponsored by SPE, April 18 - 21, 1988, Atlanta, Georgia. (pp. 1630 - 1633)

19. B.Z. Jang, W.C. Chung, R.C. Wilcox and T.C. Chang, "Damage Tolerance of Multidirectional Fiber-Reinforced Composites", presented at the 33rd International SAMPE Symposium and Exhibition, March 7 - 10, 1988, Anaheim, California. (pp. 262 - 271)

20. B.Z. Jang and W.C. Chung, "Structure-Property Relationship in Three Dimensionally Reinforced Fibrous Composites", presented at the Second Annual ASM/ESD Advanced Composites Conference, November 18 - 20, 1986, Dearborn, Michigan. (pp. 183 - 191)

21. B.Z. Jang, W.C. Chung,Y.K. Lieu and L.R. Hwang, "Delamination Inhibition and Promotion in Fiber-Epoxy Composites", presented at the First International Conference on Post-Failure Analysis Techniques for Fiber-Reinforced Composites", July 1 - 3, 1985, Dayton, Ohio. (pp. 4-1 to 4-29)

INVITED PRESENTATIONS (last two years)

W. Chung, keynote speaker, "The Emerging Opportunities for Engineering Students" presented at Saratoga High School Science Fair, October 25, 2001, Saratoga, California.

W. C. Chung, "Overview of NEW: Update 2002" presented at Update 2001:Standard Experiments in Engineering Materials, Science and Technology, National Educators' Workshop, sponsored by University of Maryland, NIST, NASA, DoE, ASMI, NSU, National Composite Center, October 14 – 17, 2001, University Park, Maryland.

W.C. Chung, "Firestone Tire Tread Separation Problem" presented at Northern California Chapter technical meeting, SAMPE, October 10, 2001, Mountain View, California.

W.C. Chung, "Communication Skills for College Students" presented at Faculty Leadership Institute,

Communicating for Success: Tools for Tomorrow's Leaders, Workforce Silicon Valley, August 7-9, 2001, San Jose, California.

W.C. Chung, "Engineering/Technology Curriculum Modules" presented at statewide career pathway and technology education, February 24 - 26, 2001, Anaheim, California.

W.C. Chung, Channel 5 TV Interview "Firestone Tires and Ford Explorer Issues" October 9, 2000.

W.C. Chung, "Basic Types of Polymer Processing" presented at 20th Annual Tech Fair, SPE Golden Gate Section, April 20, 2000, Hayward, California.

PROFESSIONAL INVOLVEMENT AND COMMUNITY SERVICE

Chairperson, conference organizing committee for the 17th National Educators' Workshop to be held in San Jose, California, October 13-16, 2002.

Course instructor, taught two courses (Introduction to materials and Polymer and Composites) for NASA Cohort degree program. (January 15 – August 6, 2002)

Grant proposal reviewer, evaluated six proposals for California Technology Trade and Commerce Agency (May-June, 2002)

Member of Education committee, conference organizing committees for the SPE 2002 ANTEC in San Francisco, California, May 6-9, 2002.

Team leader, formed and led a team consisting of two community college deans, a department chair of a third community college, an industry professional, and three high school teachers participated in a national engineering education collaboration held at Sugar Lake Conference, Grand Rapids, Minnesota, July 26-28, 2002.

CURRENT INDUSTRY SPONSORED RESEARCH PROJECTS

1. Characterization and Modeling of Failure Mechanisms in Plastic Encapsulated Microcircuits, sponsored by Lockheed Martin (\$20,000)
2. Nanocomposites, sponsored by Lockheed Martin Advanced Technology Center (\$15,000)
3. Corrosion Prevention for Aluminum Alloys, joined with San Diego State University, NSF-SBIR grant phase I (\$100,000)
4. Civil Engineering Technology, served as consultant to Evergreen Valley College, NSF grant (\$85,000)
5. Prediction and Verification of Ductile Crack Growth in Small Test Specimens – NASA Ames Research Center.