

Curriculum Vita

WENCHIANG RICHARD CHUNG

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EDUCATION

Ph.D., Mechanical Engineering, Auburn University, Auburn, Alabama, 1987

M.S., Materials Engineering, Youngstown State University, Youngstown, Ohio, 1984

B.S., Chemical Engineering, Chinese Culture University, Taiwan, 1976

SPECIAL TRAINING

Nanotechnology Boot Camp, Infocast Company, San Francisco, California [June 4 -6, 2003]

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

Major achievements:

- I fundraised and organized the 2002 National Educators' Workshop, held October 13-16, 2002, San Jose, California (320 attendees; this workshop used the facilities of IBM-Amalden Research Center, Lockheed Martin, SEMI, Seagate Technologies – Milpitas and Fremont plants, Ultratech Stepper, NASA-Ames and San Jose State University and received financial support from Norfolk State University, American Ceramic Society, The Tech Museum and University of California- Davis)
- I assembled and led a California delegate team consisting of three administrators from three community colleges (two deans and one department chair), one industry representative, three high school science teachers to attend the Sugar Lake Conference held July 26-28, 2002, Grand Rapids, Minnesota, sponsored by the National Science Foundation's Division of Undergraduate Education (Representatives from K-12, community colleges, universities, and business and industry/professional societies engaged in a discussion of how to improve quality of engineering education)
- I established an industry advisory board for the material engineering program at San Jose State University
- I helped Department of Chemical and Materials Engineering redesign its capstone courses – MatE 198A and MatE 198B (Senior Design Projects; the course contents were changed from pure research to design courses in order to meet the ABET requirements)
- I helped organize the 2002 Annual Technical Conference (ANTEC) for the Society of Plastics Engineers; the conference was held in San Francisco, May 6-9, 2002 (approx. 5000 attendees)
- I taught a co-op engineering course (Engr. 197) for all majors in the college of Engineering; this course required the course instructor to visit a student's workplace to meet and discuss the student's progress with their supervisors (16 students enrolled in this course)
- I taught two off-campus courses (Tech 103 and 143) at NASA-Ames Research Center for NASA-Ames cohort program (Jan. 15 – Aug. 16, 2002)

Responsibilities:

- Teaching graduate and undergraduate courses, serving as faculty advisor for theses, research projects, and senior design projects at San Jose State University
- Serving on various departmental, college, and university committees
- Organizing and conducting annual “discover engineering camp” for local high school and community college teachers and students (100 attendees per year)
- Chairing the nanotechnology undergraduate education committee for College of Engineering
- Conducting research work in the areas of failure analyses of structural materials, failure modes in semiconductors, defects analysis, electronic packaging, polymer recycling, thermoplastic composites, composite interface study, conductive polymers, nanocomposites, and smart composite materials.

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

Major accomplishments:

- I have helped organize the 1994 Annual Technical Conference (ANTEC) for the Society of Plastics Engineers; the conference was held in San Francisco, May 1-5, 1994 (approx. 6000 attendees); I served as member of organizing committee and chair of Information Committee.
- I helped Department of Technology revamp its MSQA (Master of Quality Assurance) degree program and passed the College of Engineering Curriculum Committee. (There were 9 courses involved)
- During my tenure as chair of the department, the number of majors increased by 14%.
- I taught a few courses at community colleges:
 - ISO 9000 and 14000 Standards, Disk Drive Manufacturing -- Evergreen Community College
 - Surface Measurement Techniques, Disk Drive Manufacturing -- Evergreen Community College
 - Manufacturing Materials and Processes -- De Anza Community College
- I served as education consultant for the Disk Drive Consortium (including IBM, Seagate, Lam Research, Komag, San Jose City College and Evergreen Valley Community College)
- I served as Expert witness for Impact General, a forensic company based in Los Angeles. (1990-1995)
- I served as Secretary for the Silicon Valley Engineering Council (also helped organize the 1998 national engineers’ week banquet; 550 attendees)
- I worked with faculty members and administrators at Sequoia High School and Canada Community College to develop their polymer program. (Both college Dean and department chairs frequently participated in meetings)
- I approached Mission Community College and West Valley Community College to develop a 2+2+2 polymer education program to be articulated from high schools via community colleges to a 4-year university such as San Jose State University (Chancellor and two presidents of the aforementioned colleges participated in the meetings with my industry representatives)
- I taught a few courses for IBM, Imation, and Lockheed Martin Missiles and Space Company: Circuits and Electronic Designs for Designers (IBM, 1991), Mechanical Designs (Imation, 1994) and Measurement and Testing Techniques (Lockheed Martin, 1989 - 92).

Responsibilities:

- Faculty advisor for the student chapters for SPE and SAMPE at San Jose State University
- Taught graduate and undergraduate courses, serving as faculty advisor for theses, research projects, and senior projects at San Jose State University
- Served on various departmental, college, and university committees
- Served as graduate coordinator for the Master of Science of Quality Assurance degree program
- Prepared and developed various documents for accreditation report and academic priorities assessment

IISME (Industry Initiatives for Science and Math Education) Fellow: 6/02 –8/02

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

Honor Received:

I received two awards – Appreciation Award from VP-special program of Lockheed Martin and Service Award from Steward Observatory Mirror Laboratory, University of Arizona- Tucson

- Worked with program managers and systems engineers to deal with the day-to-day management processes of a highly technical project - (LOTIS). Coordinated meetings involved with the processes used to develop, implement and validate technical requirements; monitored technical and business performance; and involved with engineering design, fabrication and performance verification/validation processes.
- Participated in systems planning, optical systems design, problem solving and technical executions related to the design, manufacturing, testing of optical devices.
- Participated in PDR (preliminary design review) process with University of Arizona-Tucson and Kaman Aerospace Corporation
- Involved in optical alignment with Stanford Linear Acceleration Center (SLAC) and mirror bonding issues with Microgravity Probe project at Stanford University

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
- Participated 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, Hitachi-S520, 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 (membership and duration of service are listed in the parentheses)

- Senior member and board director, Golden Gate Section, Society of Plastics Engineers (SPE) (1987- present)
- President, Chinese Quality Assurance Association (CQAA) (1989- 1991)
- Mechanical engineering group chair, San Francisco-Bay Area Chapter, Chinese Institute of Engineers/USA (CIE/USA) (1989-1990)
- Member of International Materials Committee of ASMI (2003-2006)

- Executive committee member and treasurer (former chair of education committee and chair of yearbook committee) of Santa Clara Chapter, American Society for Materials, International (1987- present)
- Member of Scholarship Committee, American Society for Quality (ASQ) (1997-2000)
- Member of Society for the Advancement of Material and Process Engineering (1987-present)
- Member of Steering Committee for the Workforce Silicon Valley (WSV) (1995-2001)
- Vice president of Silicon Valley Engineering Council (1990)
- Member of American Society of Engineering Education (2000-present)
- Fellow of Industry Initiatives for Science and Math Education (1998, 1999, 2002)

HONORS RECEIVED

- Appreciation Award, Lockheed Martin Space and Missiles Corporation (August 9, 2002)
- 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); judge representing ASMI for Synopsys Science and Technology Championship (March 12-13, 2003)
- Grant proposal/Panel reviewer for the Division of International Program, (1992 - 1994), IGERT Program (June 8-10, 2003), National Science Foundation, Washington D.C.
- 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

Technical book reviewer for Prentice Hall Publisher, Brooks/Cole Publisher, and the Society of Manufacturing Engineers

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, F.M. Larsen, and R. Kornienko, "The Cam Shell: An Innovative Design with Materials and Manufacturing," presented to Update 2002:Standard Experiments in Engineering Materials, Science and Technology, National Educators' Workshop, sponsored by NASA, SJSU, NSU, SEMI, Seagate, IBM, Untratech Stepper, October 13-16, 2002, San Jose, California. (NASA CP-2003-212403, pp. 179-188)
2. W. C. Chung, "Structure and Mechanical Properties of Thermoplastic Composites," presented to 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)
3. W. C. Chung, "New and Emerging Opportunities in Packaging Materials," presented to the 20th International Association of Packaging Research Institute Symposium, June 14-18, 2000, San Jose, California. (pp. 352 – 356)

4. W.C. Chung and G.C. Erickson, "Effectiveness of Non-destructive Inspection Methods in Detecting Defects in Thick Composites," presented to 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. (NASA CP-1998-208726, pp. 499-509)
5. W.C. Chung and R. Peterson, "A New Processing Technique for Composite Tubes", presented to the 40th International SAMPE Symposium and Exhibition, May 8 -11, 1995, Anaheim, California (pp.1274 - 1280)
6. W.C. Chung and K.M.Wilson, "Racing Hydroplane Driver's Safety Capsule: Composite Design and Evaluation", presented to 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.
7. W.C. Chung, K.Bean, J.Heng and H.Doan, "Hardness of Weldment of Low-Carbon Steels", presented to 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.
8. 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)
9. W.C. Chung and T.W.Lee, "Modeling and Simulation of A Thermoforming Process", presented to 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)
10. W.C. Chung and T.W. Lee, "Thermoforming Simulation of A Plastic Cup", presented to the 50th Annual Technical Conference, sponsored by SPE, May 3 - 7, 1992, Detroit, Michigan. (pp. 117 - 121)
11. W.C. Chung and M.L.Morse, "Effects of Heat Treatment on A Metal Alloy", presented to 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)
12. W.C. Chung, "Mechanical Properties of Metal Fiber-Reinforced Composites", presented to 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)
13. W.C. Chung, "A Study of Short Metal Fiber-Reinforced Composite Materials", presented to the 1989 Fall Technical Conference, sponsored by MRS, November 27 - December 2, 1989, Boston, Massachusetts. (pp. 1037 - 1043)
14. 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.
15. W.C. Chung, "The Assessment of Metal Fiber-Reinforced Composite Materials", presented to 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)
16. 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.
17. 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.
18. W.C. Chung, "The Growth of Materials Processing in Space Technology", presented to the 21st

Annual Conference of National Association of Industrial Technology, October 13 - 15, 1988, San Jose, California. (pp. 23 - 25)

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

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

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

22. B.Z. Jang, W.C. Chung, Y.K. Lieu and L.R. Hwang, "Delamination Inhibition and Promotion in Fiber-Epoxy Composites", presented to 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, invited speaker, "Overview of Nanocomposites" presented to SRI International, Menlo Park, California, June 19, 2003

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

W. C. Chung, invited speaker, "Overview of NEW: Update 2002 Workshop" presented to 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 to a technical meeting, Northern California Chapter, SAMPE, October 10, 2001, Mountain View, California

W.C. Chung, "Communication Skills for College Students" presented to 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 to statewide Career Pathway and Technology Education Conference, February 24 - 26, 2001, Anaheim, California

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

W.C. Chung, "Basic Types of Polymer Processing" presented to 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 held in San Jose, California, October 13-16, 2002

Course instructor, taught two courses (Industrial Materials Technology and Polymer & 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)

FUNDRAISING

I raised \$8,000 (in three consecutive years) to fund 5 scholarship awards for high school students who were pursuing engineering professions in college. (2000-2002)

INDUSTRY SPONSORED RESEARCH PROJECTS (last two years)

1. Characterization and Modeling of Failure Mechanisms in Plastic Encapsulated Microcircuits, sponsored by Lockheed Martin (\$20,000 for AY 2000-01)
2. Nanocomposites, sponsored by Lockheed Martin Advanced Technology Center (\$15,000 for AY2002)
3. Corrosion Prevention for Aluminum Alloys, joined with San Diego State University, NSF-SBIR grant phase I (\$70,000 for AY 2001)
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

RECENT GRANTS FROM COLLEGE OF ENGINEERING AND SJSU

2003 Lottery grant (\$2500), 2003 Research Development Grant (\$5,000), Faculty Mentor Program (\$450)

WORK IN PROGRESS

- I, principal investigator, have submitted a research proposal titled “Industrial ecology applications in Silicon Valley plastics management” to AT &T Foundation (this proposal involved with two professors in College of Business and one in College of Social Science, \$25K, the results will be announced in December 2003)
- I will serve as technical moderator for the Global Environmental Conference (GPEC 2004), sponsored by Environmental Division of the Society of Plastics Engineers, February 18-19, 2004, Detroit, Michigan.
- I am developing a six-week teaching module (materials engineering) to be utilized as a UC or CSU technical course in local high schools.
- I am working with a professor in the Department of Chemistry to develop a joint research proposal for Nanoscale Science & Engineering Education (NSEE) to be submitted to National Science Foundation for funding on November 17, 2003 (nsf03-044 program solicitation)