

APPENDIX 3: Biographical Sketches of CMR Faculty and Post Doctoral Assistants



Kenneth R. Currie, Ph.D., P.E.

Professor

Department of Industrial & Systems Engineering
Center for Manufacturing Research
Tennessee Technological University
Email:kcurrie@tntech.edu; Tel: (931)372-3362

1. Professional Preparation:

West Virginia University	Industrial Engineering	B.S.	1978
West Virginia University	Industrial Engineering	M.S.	1986
West Virginia University	Industrial Engineering	Ph.D.	1988

2. Appointments:

Tennessee Technological University

Director, Center for Manufacturing Research, 2001-Present

Interim Director, Center for Manufacturing Research, 2000-01

Professor, CMR/Industrial & Manufacturing Engineering, 1999-Present

Associate Professor, CMR/Industrial & Manufacturing Engineering, 1995-1999

Associate Professor, Industrial & Manufacturing Engineering, 1994-1995

Assistant Professor, Industrial Engineering, 1989-1994

Packaging Engineer: TRW, VSSI, Cookeville, Tennessee: summer 1993.

Summer Faculty Fellow: Air Force Office of Scientific Research, Materials Laboratory, Wright-Patterson AFB, Ohio: summer 1989.

Assistant Professor: Industrial Engineering, Kansas State University, Manhattan, Kansas: 1987-89.

West Virginia University

Instructor: Industrial Engineering, West Virginia University, Morgantown, West Virginia: 1983-87.

Safety Engineering (part-time): National Institute of Occupational Safety and Health, Morgantown, West Virginia: 1982-86

Research Assistant: Industrial Engineering, West Virginia University, Morgantown, West Virginia: 1982-86.

Industrial Engineer: Honeywell, Inc., Solid State Electronics Division, Colorado Springs, Colorado: 1980-82.

Industrial Engineer: Aluminum Company of America, Warrick Operations, Evansville, Indiana: 1978-80.

3. Publications (5 Related Publications)

1. Zhou, L. and **Currie, K.R.**, "Uncertainty Analysis in the Preliminary Stage for Robust Multidisciplinary," 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, NY, Aug. 2004.
2. Won, Y. and **Currie, K.R.**, "Efficient P-Median Mathematical Programming Approaches to Machine-Part Grouping in Group Technology Manufacturing", Engineering Optimization, in press.
3. **Currie, K.R.** and Burnham, J., "Lean Product Development", Lean Management Solutions Conference, St. Louis, MO, Sept 2001, pp. 125-134.
4. Williamson, K., **Currie, K.R.**, and Agrawalla, A. J., "A Statistical Study of the Factors that Affect Errors", 8th Industrial Engineering Research Conference Proceedings, Phoenix, AZ, May, 1999.

5. Balakrishnan, V. and **Currie, K.R.**, "Development of a Framework for an Electronic Engineering Notebook", 2nd International Conference Proceedings on Engineering Design and Automation, Maui, HI, Aug, 1998.

4. **Publications (5 Other Publications)**

6. Krishnakumar, S. and **Currie, K.R.**, "Part Family Formation Using an Intelligent Grouping System", 2nd International Conference Proceedings on Engineering Design and Automation, Maui, HI, Aug, 1998.
7. Ress, D. A. and **Currie, K.R.**, "Self-Directed Control of a Discovery System for Chemical Compound Properties", Intelligent Engineering Systems Through Artificial Neural Networks, Vol. 5, ASME Press, Eds. Dagli, Akay, Chen, Fernandez, and Ghosh, 1995 Artificial Neural Networks in Engineering Conference, November 12-15, 1995, St. Louis, MO., pp. 835-840.
8. **Currie, K.R.**, LeClair, S. R., and Patterson, O., "Self-Improving Process Control for Molecular Beam Epitaxy", International Journal of Advanced Manufacturing Technology, Special Issue on Neural Networks in Design and Manufacturing, Springer-Verlag, Vol. 8, No. 2, April 1993, pp. 244-251.
9. Rao, B.V. and **Currie, K.R.**, "The Inversion Problem in Neural Networks", Intelligent Engineering Systems Through Artificial Neural Networks, Vol. 2, ASME Press, Eds. Dagli, Burke, Shin, 1992 Artificial Neural Networks in Engineering Conference, November, 1992, St. Louis, MO., pp. 921-926
10. **Currie, K.R.** and Creese, R. C., "Justification of Cellular Manufacturing Using Multi-Attribute Part Family Loading-MAPFLO", Justification Methods for Computer Integrated Manufacturing Systems, Parsaei, Ward, & Karwowski (eds.), Elsevier Press, April, 1990, pp. 203-219.

5. **Synergistic Activities**

- Co-PI of "In-Situ, Real Time Monitoring and Control of Mold Making and Filling Processes", (Mohamed Abdelrahman, PI) \$3.0 million (\$1.5 million Department of Energy, \$1.5 million other matching commitments) Department of Energy, Office of Industrial Technologies #DE-PS07-03ID14488, Advanced Melting or Innovative Casting Processes for Metal Casting; Participating partners – Oak Ridge National Laboratories, Walford Technologies, General Motors, Metal Casting Technologies, Citation, D8, Foseco Morval, Hirsch-USA, Styrochem, American Foundry Society, U.S. Pipe, Mercury Marine, Unimin, FlowSim, US Pipe, Carbo Ceramics, and Metal Tek International.
- Co-PI of "Automated Prescription Verification System", \$98,600 (Ali Alouani, PI) to develop a novel prototype for TechWerks, LLC to automatically verify prescriptions on an assembly line.
- Principal Investigator of National Center for Advanced Manufacturing – Louisiana Partnership contract through NASA, "Minimizing Life Cycle Costs of Composites Through Design" (\$145,701 in year 1 and \$60,000 in year 2) to provide cost driver and parametric cost models early in the requirements generation phase of design in order to influence the reduction of life cycle costs of advanced space systems products. Industrial collaborators include Lockheed Martin Space Systems Company, Michoud Operations in New Orleans, LA and ATK Alliant Aerospace Company in Iuka, MS. (2001-Present)
- Co-PI of DOE funded grant (\$73,334) entitled, "Development of a Broad Based Tennessee IOF Network." This is a collaborative project that includes six participating Tennessee universities, ORNL, Y-12, and Tennessee industries that comprise DOE targeted energy consumers in the Industries of the Future (IOF) program. The goal is to improve technology transfer, solution based research, and ultimately facilitate significant reductions in statewide energy consumption. (2002-Present)

6. **Collaborators & Other Affiliations**

- a) Agrawalla, A.J.; Burnham, J.; Johnson, G.; Miller, M.C.; Williamson, K.; Wilson, D.
- b) Robert Creese, West Virginia University, Wafik Iskander, West Virginia University
- c) V. Dadireddy, K. Aravindan, L. Guo, S. Sankaramanchi, A. Agrawalla, S. Krishnakumar, V. Balakrishnan, R. Nidimoori, D. Ress, I.A. Kattan, S. Maddineni



Kwun-Lon Ting, Ph.D.

Professor
Department of Mechanical Engineering
Center for Manufacturing Research
Tennessee Technological University
Email: kting@tntech.edu; Tel: (931)372-3230

Education:

Ph.D. (M.E.), Oklahoma State University, 1982

Thesis: 3-D Kinematic Analysis of Tangent Plane Motion, Advisor: Dr. A.H. Soni

M.S. (M.E.), Clemson University, 1977

B.S. (M.E.), National Taiwan University, 1972

Experience:

Professor – Center for Manufacturing Research, Tennessee Technological University, 1995-present

Professor (1992-95), Associate Professor (1987-92), Assistant Professor (1982-87) – Department of Mechanical Engineering, Tennessee Technological University
Graduate Research Associate (1981-82), Graduate Teaching Assistant (1977-80), School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater
Graduate Research Assistant (1975-77) – Dept. of Mechanical Engineering, Clemson University, SC

Mechanical Engineer - USI Chemicals, Taiwan, 1974-1975

Mechanical Engineer (1974), Tong-Yang Bearing Company, Taiwan

Honors and Societies:

South-Pointing Chariot Award, National Applied Mechanisms and Robotics Conf., 1999

Fellow, American Society of Mechanical Engineers

Kinslow Engineering Research Award, Tennessee Tech University, 1991 & 1997

Roth Award, 3rd National Applied Mechanisms and Robotics Conference, 1993

Member, Mechanism Committee, The Chinese Academy of Mechanical Engineering, 2002-

Member, Editorial Committee, Machine Design and Research, China, 2001-

Outstanding Young Men of America, 1986

Who's Who in the South and Southwest, 1988-present

Editor, Journal of Applied Mechanisms and Robotics, 1993- 1999

Paper Review Chairman, National Applied Mechanisms and Robotics Conf., 1989-91

Keynote Speaker, National Mechanism Conference, China, 2002

Selected Publications:

Dr. Ting has published over 100 technical papers in professional journals and conference proceedings in the areas of kinematics, mechanism synthesis, manufacturing, and geometric modeling. Ten selected publications are listed below.

1. "SMA Actuated Compliant Bistable Mechanisms," Journal of Mechatronics, 14 (2004) 421-437 (with H. Ishii)
2. "Synthesis of Polynomial and Other Motion Programs with the Bezier Technique," J. of Mechanism and Machine Theory, Vol. 29, No. 6, pp.887-903, 1994 (with N. L. Lee and G. H. Brandan)
3. "Topological Synthesis of Compliant Mechanisms with Control Strategy," Journal of Mechanical Design (Paper No. MD-04-1072) (in press)
4. "Performance Distribution Analysis And Robust Design," J. of Mechanical Design, Vol. 123, No. 1, March 2001, pp. 11-17
5. "Subdivision Surface Based Finish Machining," International Journal of Production Research (in press)
6. "On the Basis Screws and Screw Systems of Point-Line and Line Displacements," Journal of Mechanical Design, January 2004, Vol. 126, No.1, pp. 56-62 (with Y. Zhang)
7. "Rigid Body Motion Characteristics and Unified Instantaneous Motion Representation of Points, Lines, and Planes," [Journal of Mechanical Design--July 2004](#), Volume 126, Issue 4, July 2004, pp. 593-601 (with Y. Zhang)
8. "On Point-Line Geometry and Displacement" Mechanism and Machine Theory, [Volume 39, Issue 10](#), October 2004, pp. 1033-1050 (with Y. Zhang)
9. "Rotatability Laws for N-Bar Kinematic Chains and Their Proof," Journal of Mechanical Design, Vol. 113, No. 1, 1991, PP. 32-39
10. "Rotatability Laws for Spherical N-Bar Kinematic Chains," Journal of Mechanical Design, September, 1994 (with Y. Liu)

Synergistic Activities:

1. Dr. Ting is the PI of the Design and Manufacturing Integration Lab, which is funded by the NSF Major Research Instrumentation Grant and some industrial funds. The lab will serve campus wide education, research, and local industries. It will include a rapid prototyping machine, a coordinate measuring machine, a 3D digital scanner, and a five-axis CNC machine.
2. Dr. Ting is a Co-PI of the \$200,000 NSF project on High Performance Network Connection for Tennessee Technological University. The grant is to upgrade the computer network to improve the research and education infrastructure at the university.
3. Dr. Ting organized and led the team teaching of a new course, Advanced Computer Aided Design and Manufacturing (ME 6830).

List of Persons, other than those cited above, who have collaborated on a project or a book, article, report or paper:

D.E.P. Hoy;
M. Sidhanty;
Shaobin Tao;
Y. W. Liu;
J. H. Shyu;
N. L. Lee
C. Lu
Doug Talbert

Ruj Bunduwongse;
X. Dou;
S.Wang;
Kulkarni;
S. Sturgill;
H. Ishii
M. Jackson
Dennis George

M. Wen ;
Jianmin Zhu;
Paul Bookout;
H. Shen;
C. J. Lee
Yi Zhang
Peter Li



Robert C. Qiu, Ph.D.

Associate Professor
Department of Electrical and Computer Engineering
Center for Manufacturing Research
Tennessee Technological University
Email:rqiu@tntech.edu; Tel: (931)372-3847

Education:

Ph.D. (E.E.) Polytechnic University, Brooklyn, NY, 1995
Thesis: Time/Frequency Dispersion of Digital Transmission Media
M.S. (E.E.), University of Electronic Science & Technology of China, 1990
B.S. (E.E.), Xidian University, 1987

Experience:

2003-present Associate Professor – Department of Electrical and Computer Engineering, Center for Manufacturing Research, Tennessee Technological University
2000-2003 Wiscom Technologies Inc., Founder CEO& President (2000-2001), Chief Scientist & President (2001-2003)
1997-2000 Member of Technical Staff, Bell Labs (Lucent Technologies Inc.)
1995-1997 Member of Technical Staff, GTE Labs (Verizon)
1992-1995 Research Assistant, Polytechnic University

Honors, Societies and Activities:

1. Advisor, Industrial Advisory Board, New Jersey Center for Wireless Telecommunications, serving with 15 other industrial leaders from Lucent, Siemens, NEC, US Army, etc.
2. One of “Three Outstanding Alumni”, an honor given by University of Electronic Science & Technologies of China (Chengdu, China)
3. News coverage by major news agency, such as Reuters, Beijing TV, Yahoo, etc.
4. Invited to present 14 seminar talks at Princeton University, Georgia Tech, Army Research Lab, etc.
5. Key-note speakers for international conferences and industrial forums.
6. His channel model on UWB pulse distortion was adopted in IEEE 802.15.4a.
7. Senior Member, IEEE

Selected Publications:

Dr. Qiu has published over 35 technical papers in 22 professional journals and 13 conference papers and has 10 US patents (pending) in the areas of wireless communication, signal processing, microwaves, radio propagation, optics, and acoustics. Ten selected publications on UWB are listed below.

1. R.C. Qiu, “UWB Pulse Propagation and Detection,” Book Chapter, UWB Wireless Communications, Editors: S. Shen, R. C. Qiu, M. Guizani, T. Le-Ngoc, John Wiley, 2005.
2. R.C. Qiu, “UWB Pulse Propagation Processes,” Book Chapter, UWB Wireless Communications - A Comprehensive Overview, Editor: Thomas Kaiser (Germany), Eurasip, 2005. R.C. Qiu, H. P. Liu, X. Shen, and M. Guizani, “Ultra-Wideband for Multiple Access,” IEEE Communications Magazine, Feb. 2005.
4. R. C. Qiu, “UWB Pulse Propagation and Detection (*invited paper*),” IEEE Trans. Vehicular Technology, special issue, Sept. 2005.

5. H. Liu, R. C. Qiu, Z. Tian, "Error Performance of Pulse-Based Ultra-Wideband MIMO Systems over Indoor Wireless Channels," *IEEE Trans. Wireless Communications*, to appear.
6. R. C. Qiu, "A Generalized Time Domain Multipath Channel and Its Application in Ultra-Wideband (UWB) Wireless Optimal Receiver Design: Part III System Performance Analysis," *IEEE Trans. Wireless Communications*, to appear.
7. R.C. Qiu, "A Generalized Time Domain Multipath Channel and Its Application in Ultra-Wideband (UWB) Wireless Optimal Receiver Design: Part II Physics-Based System Analysis," *IEEE Trans. Wireless Communications*, Vol. 3, No. 11, pp. 2312-2324, Nov. 2004.
8. R. C. Qiu, "A Study of the Ultra-wideband Wireless Propagation Channel and Optimum UWB Receiver Design," *IEEE J. Selected Areas in Comm. (JSAC), the First Special Issue on UWB Radio in Multiple Access Wireless Comm.*, Vo. 20, No. 9, pp. 1628-1637, Dec. 2002.
9. R.C. Qiu and I. T. Lu, "Multipath Resolving with Frequency Dependence for Broadband Wireless Channel Modeling," *IEEE Trans. Veh. Tech.*, vol. 48, No. 1, pp. 273-285, Jan. 1999.
10. M. McClure, R. C. Qiu, and L. Carin, "On the Super Resolution of Observables from Swept-frequency Scattering Data", *IEEE Trans. Antenna Propagation*, Vol. 45, No. 4, April 1997, pp. 631-641.

Synergistic Activities:

1. As Chief Scientist, Founder CEO and President of Wiscom Technologies Inc., during 2000-2002 Dr. Qiu raised a total of \$8 millions from AMD, Fennway Capital, and I-group. Under his leadership Wiscom grew to 35 employees in US, working on WCDMA chipset project. Wiscom sold all assets to Intel in July 2003.
2. During 2000-2001, Dr. Qiu was one of the technical leaders in the 3.5G (HSDPA) Wireless standards (3GPP) project. His proposal was written into important standard documents.
3. During 1997-2000 Dr. Qiu was one of the 20 earliest scientists and engineers in a multi-billion dollars project on WCDMA DoCoMo/UMTS Project in Bell Labs, Lucent.
4. In 1998 he developed three earliest courses on 3G Wireless Communications for Bell Labs Learning & Performance Center (internal trainings for engineers and scientists).
5. During 1995-1996, Dr. Qiu led the GTE Technical team in Austin, Texas Field Trial of the first North American CDMA (IS-95) Wireless System.
6. His work on UWB is being funded by Army Research Lab (paper work is going on).
7. Technical Professional Committee (TPC), IEEE WCNC'04, WCNC'05, IEEE Globecom'05, IEEE VTC'05.
8. Session Chair, IEEE Milcom'05.
9. Symposium Co-Chair, Ultra-wideband (UWB) Communications and Networking Symposium, WirelessCOM 2005.
10. Guest Co-Editor, Special Issue on Ultra Wideband (UWB), *An International Journal for Theory and Applications (Series B)*, to appear, Jan. 2005.
11. Special Issue co-Editor, *IEEE JSAC Special Issue on UWB*, 2004.
12. Special Session (leading) co-Editor, *IEEE Trans. Veh Tech. Special Session on UWB*, 2004.
13. Book co-Editor, *UWB Wireless Communications*, John Wiley, to appear.
14. Associate Editor, *Wireless Communications and Mobile Computing (John Wiley)*
15. Associate Editor, *IEEE Trans. Vehicular Technology*



Chunsheng Wang, Ph. D

Assistant Professor
Department of Chemical Engineering
Center for Manufacturing Research
Tennessee Technological University
Email: cswang@tntech.edu; Tel: (931)372-3678

Education:

B.S. Mechanical Engineering, Jiamusi University, China; 1982
M.S. Materials Science and Engineering, Harbin Institute of Technology, China, 1988
Ph.D. Materials Science and Engineering, Zhejiang University, China, 1995

Experience:

2003-present: Assistant Professor, Department of Chemical Engineering/Center for Manufacturing Research, Tennessee Technological University
1999-2003: Research Scientist, Center for Electrochemical Systems and Hydrogen Research, The Texas A&M University
1998-1999: Assistant Research Scientist, Department of Chemistry, Texas A&M University
1997-1998: Associate Professor, Department of Materials Science and Engineering, Zhejiang University, China
1995-1997: Postdoctoral Research Associate, Department of Physics, Zhejiang University, China.
1988-1992: Lecturer, Department of Mechanical Engineering, Jiamusi University, China.
1982-1985: Assistant Professor, Department of Mechanical Engineering, Jiamusi University, Jiamusi, 154007, China.

Research Interests

Energy conversion (fuel cells) and energy storage systems (rechargeable batteries)
Electrochemistry
Nanostructured materials
Synthesis and characterization of metallic alloy and compounds
Physical metallurgy and materials processing

Selected Publications

Dr. Wang holds more than 40 peer-reviewed journal publications in the areas of fuel cells, Li-ion batteries, nickel-metal hydride batteries, and supercapacitors.

Five publications most closely related to the proposed project

1. C. Wang, A J. Appleby, "High Peak Power Proton Exchange Membrane Fuel Cells" *J. Electrochem. Soc.*, **150**, A493(2003).

2. C. Wang, A. J. Appleby, D. L. Cocco, "Alkaline Fuel Cell with Intrinsic Energy Storage" *J. Electrochem. Soc.*, **151** A260 (2004).
3. C. Wang, X. Zhang, A. J. Appleby, "Solvent-free composite PEO-ceramic-fiber-mat electrolytes for lithium secondary cells" *J. Electrochem. Soc.*, in press (2004)
4. C. Wang, K. Patil, A. J. Appleby, F. E. Little, D. L. Cocco, "In-situ Ionic/Electric Conductivity Measurement of $\text{La}_{0.55}\text{Li}_{0.35}\text{TiO}_3$ Ceramic at Different Li Insertion Levels" *J. Electrochem. Soc.*, **151**, A1196 (2004).
5. C. Wang, "Kinetic Behavior of Metal Hydride Electrode by Means of AC Impedance," *J. Electrochem. Soc.*, **145**, 1801(1998)

Five other significant publications

6. C. Wang, A. J. Appleby, and F. E. Little, "Criteria for Reliable Electrochemical Impedance Measurements on Li-ion Battery Anodes" *J. Electrochem. Soc.*, **150**, A143(2003).
7. C. Wang, A. J. Appleby, and F. E. Little, "Low-Temperature Characterization of Carbon Anode via Microperturbation Measurement", *J. Electrochem. Soc.*, **149**, A754(2002).
8. C. Wang, A. J. Appleby, and F. E. Little, "Comparison of the Electrochemical Impedance Spectroscopy Characteristics of Insertion Electrode Materials Used in Secondary Metal Hydride and Lithium-Ion Electrodes" *J. Electrochem. Soc.*, **148**, A762 (2001).
9. C. Wang, A. J. Appleby, and F. E. Little, "Electrochemical Impedance Study of Initial Lithium Ion Intercalation into Graphite Powders", *Electrochimica Acta*, **46**, 1793 (2001).
10. C. Wang, I. Kakwan, A. J. Appleby, and F. E. Little, "In-Situ Investigation of Electrochemical Lithium Intercalation into Graphite Powder," *J. Electroanal. Chem.*, **489**, 55(2000).

Synergistic Activities

Created graduate course entitled "Advanced Fuel Cells and Batteries" ChE 7970, Spring, 2004.

Collaborators within the last 48 months (in US)

Prof. A. John Appleby, Director of the Center for Electrochemical Systems and Hydrogen Research, Texas A&M University

Prof. David C. Cocco, Department of Chemical Engineering, Lamar University

Dr. Frank E. Little, Associate Director, Center for Space Power, Texas A&M University

Prof. Manny P. Soriaga, Department of Chemistry, Texas A&M University

Dr. Xiangwu Zhang, Department of Chemical Engineering, North Carolina State University



Shujiang Geng, Postdoctoral Assistant
Center for Manufacturing Research
Tennessee Tech. University

Office: CH 106

Phone: (931) 372-3106

E-mail: sgeng@tntech.edu

Degrees:

B.S. - Industry Analysis, Guilin Technological University (China), 1995

M.S. - Inorganic Materials Engineering, Northeastern University (China), 1998

Ph.D.- Materials Science and Engineering, Institute of Metal Research, CAS (China), 2001

Professional Expertise: Sol-gel method for powder preparation, High-temperature alloys and coatings, High-temperature oxidation/corrosion, Alloy design.

Publication list:

1. **Shujiang Geng** and Fuhui Wang. "Oxidation Behavior of a Ni-20Cr and its Microcrystalline Coating in Wet Oxygen at 1000°C " **International Journal of Materials and Product Technology.**, Special Issue, SPM1, 2001, Vol.2:817~822
2. **Shujiang Geng**, Fuhui Wang and Shenglong Zhu. "High-Temperature Oxidation Behavior of Sputtered IN738 Nanocrystalline Coating " **Oxidation of Metals.**, 57 (3/4), p.231~243 (2002)
3. **Shujiang Geng**, Fuhui Wang, Shenglong Zhu and Weitao Wu. "Hot-Corrosion Resistance of a Sputtered K38G Nanocrystalline Coating in Molten Sulfate at 900°C" **Oxidation of Metals.**, 57 (5/6), p.549~557 (2002)
4. Fuhui Wang, **Shujiang Geng** and Shenglong Zhu. "Corrosion Behavior of a Sputtered K38G Nanocrystalline Coating with a Solid NaCl Deposit in Wet Oxygen at 600-700°C" **Oxidation of Metals.**, 58 (1/2), p.185~195 (2002)
5. **Shujiang Geng**, Fuhui Wang, Shenglong Zhu and Ying Li. "Effect of Nanocrystallization on Oxide Composition of Ni-20Cr Alloy at 1000°C" **Materials Science and Technology.**, 18 (10), p.1101~1103 (2002)
6. **Shujiang Geng**, Fuhui Wang, Shenglong Zhu and Weitao Wu. "Hot Corrosion Behavior of K38G Alloy and its Sputtered Nanocrystalline Coating by Pre-deposit Sulfate at 900°C" **Acta Metallurgica Sinica (English Letter).**, 15(1), p.119~122 (2002)

7. **Shujiang Geng**, Fuhui Wang and S. Zhang. “Cross Sectional Oxide Distribution of cast IN738 and its Sputtered Coating at 1000°C” **Surface & Coatings Technology.**, 167, p.161 ~ 164 (2003)
8. **Shujiang Geng**, Fuhui Wang and S. Zhang. “High Temperature Oxidation Behavior of a Sputtered Pure Ni Nanocrystalline Coating at 700-900°C” **Surface & Coatings Technology.**, 167, p. 212 ~ 216 (2003)
9. Fuhui Wang, **Shujiang Geng**. “High Temperature Oxidation and Corrosion Resistant Nanocrystalline Coatings” **Surface Engineering.** 19(1), p. 32 ~ 36 (2003)
10. **Shujiang Geng**, Shenglong Zhu, Fuhui Wang and Weitao Wu. “Effect of Nanocrystallization on Hot Corrosion Behavior of K38G Alloy with Sulfate Deposit at 900 °C ” **Materials Science Forum.** 461-464, p. 153 ~ 160 (2004)
11. **Shujiang Geng**, Jiahong Zhu and Zigui Lu. “Evaluation of Haynes 242 alloy as SOFC interconnect material” **Solid State Ionics** (submit)
12. **Shujiang Geng** and Jiahong Zhu. “Investigation on Haynes 242 alloy as SOFC interconnect in simulated anode environment” **Electrochemical and Solid-State Letters** (submit)



Center for Manufacturing Research
[Chemical Engineering](#), Campus Box
5077
Tennessee Technological University
Cookeville, TN 38505-0001

Office: (931) 372-3133
Home: (931)372-5896
Fax: (931) 372-6345
E-Mail: jma@tntech.edu

Jianxin Ma

Professional Experience	<p>Tennessee Tech University, Cookeville, TN, USA</p> <ul style="list-style-type: none">✧ Date: 2005.08-present✧ Position: Post Doctorate Assistant <p>Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian, LN, China</p> <ul style="list-style-type: none">✧ Date: 2003.04-2005.07✧ Position: Assistant director at New Energy Department <p>Zhejiang Narada Power Source Co.Lit, Hangzhou, ZJ, China</p> <ul style="list-style-type: none">✧ Date: 2002.4-2003.3✧ Position: Deputy director at R&D center <p>Hangzhou Iron & Steel Group Corporation, Hangzhou, ZJ, China</p> <ul style="list-style-type: none">✧ Date: 1994.8-1996.8✧ Position: Assistant engineer
Education	<p>1999.3--2002.3 Zhejiang University, Hangzhou <i>Ph.D in Materials Science</i></p> <p>1996.9--1999.1 Zhejiang University, Hangzhou <i>MS. in Materials Science</i></p> <p>1990.9--1994.7 Xi'an Science & Technology University, Xi'an <i>BS. in Materials Science</i></p>

<p>Academic conference</p>	<ul style="list-style-type: none"> ✧ During Sep. 26--29,2004, I took part in an international conference about fuel cell technology at Stuttgart, Germany with the conference's title of "F-cell2004", and did a congressional invited report with "Research, development& Demonstration of fuel cell technology in China".
<p>Awards</p>	<ul style="list-style-type: none"> ✧ 1997--1998: Honored an scholarship of <i>Guanghua</i> ✧ 1999--2000: Zhejiang University graduate scholastic scholar- ship ✧ 1999--2000: Honored an scholarship of <i>Motorola</i>



Nan (Terry) Guo, Postdoctoral Assistant
Center for Manufacturing Research
Tennessee Tech. University

Office: CH 401
Phone: (931) 372-3742
E-mail: nguo@tntech.edu

SUMMARY

- Self-motivated and easy-going researcher and teacher with EE background and special expertise in wireless communications
- 10+ years experience in both industry and academia in doing projects and attracting funding
- Tracking record in solving challenging problems using theoretical and practical abilities
- Hands-on skills in lab work and use of software tools (mainly for simulation and EDA)

RESEARCH AREAS AND INTERESTS

- Wireless communications physical layer and MAC layer
- Signal detection and processing, equalization, channel coding, modulation, spread spectrum, receiver techniques, multiple access.
- Circuits, measurement and implementation techniques.
- WPAN, Ultra-Wideband (UWB), 3G and beyond.

EXPERIENCE

Center for Manufacturing Research, Tennessee Technological University January 2004 – present

Focus on Ultra-Wideband (UWB) Wireless Communications

- Authorized (or co-authored) technical papers, presentations, and proposals to DoD, NSF and IEEE 802.15.
- Multiple projects and attracting funding: analysis, multiple simulation platforms, system design and verification, and transceiver testbed implementation.
- Led lab work: daily work management, system set-up, selection of devices and instruments, facility maintenance, RF measurement, data processing, and troubleshooting.
- Assistance to Dr. Qiu in a wide range of aspects including partially supervising graduate students and doing professional services.

**Ansoft Corporation, Elmwood Park, NJ
2002 – 2003**

Research Engineer, Systems Group

Software Development with Emphasis on Functionality Modeling of Emerging Technologies

- Led the system-level simulation project for 3G WCDMA, a key enhancement to Ansoft's EDA capabilities. Contributions included: architecture, function dimensioning, programming, standard tracking and study, and documentation.
- Successfully implemented over 20 components, including: rate matching /de-matching, variable Reed-Muller code decoder for TFCI decoding, various transport-channel and physical-channel components.

- Participated in Software test /verification of DSP and communications libraries.

**Golden Bridge Technology, West Long Branch, NJ
2000 - 2002**

**Research/System Engineer, Systems Group (special focus on WLAN, WLL, 3G and beyond)
R&D, System Design and Standardization**

- One of key technical supporters for GBT's intellectual properties and proprietary technologies.
- Collaborated on implementing a 3G WCDMA user equipment test-bed: system design, analysis, computer simulation, and algorithm development.
- Deeply involved in standardization and patenting activities: contributed to a proprietary GBT technology called CPCH (Common Packet Channel), resulting in approval of CPCH performance requirement proposals under 3GPP Working Group 4.
- Provided several simulation packages for 3G WCDMA physical layer performance evaluation.

**Center for Wireless Communications, University of California at San Diego
1997 – 1999**

Participated in Research Projects Funded by industry, government and NSF, etc.

- Proposed, analyzed, and simulated several techniques for CDMA applications.
- Major contributions were summarized in several IEEE publications
- Teaching assistant for Professor Laurence B. Milstein's classes

**National Key Laboratory for Wireless Communications
1990 - 1996**

**University of Electronic Science and Technology of China, Chengdu, China
Faculty member**

Research and Teaching in Electronic Engineering

- Supervised 2 MS theses in spread spectrum communications.
- Taught computer-related and communication-engineering courses:
 - Communication systems
 - Signal detection and estimation
 - Data structure and Pascal language
 - Applications of microprocessors
 - BASIC
- Conducted original research in several areas, including:
 - Trellis coded multi-code DS/SS transmission
 - Digitalized matched filter (impact of quantization and soft limits)
 - Digital Automatic Gain Control (AGC) algorithm
 - Fast cyclic correlation structures
- Designed and implemented apparatus/test-beds

MAJOR CONTRIBUTIONS / INNOVATIONS

- Developed an address decoding apparatus for CATV trunk state monitoring (based on polling protocol), 1991.
- Developed a multi-code DS/SS transceiver baseband part based on cyclic reuse of the Gold codes, 1995.
- Proposed and evaluated a general multi-code CDMA technology, 1998.
- Designed/optimized a number of key components for 3G WCDMA transceiver, 2000.
- Provided several simulation packages for 3G WCDMA performance evaluation, 2001.
- Conducted 3G WCDMA system-level simulation project to enhance Ansoft's EDA tools, 2002.
- Proposed a number of enhancement techniques for UWB applications, recently.

EDUCATION

- **Ph.D., Communications Engineering and Electronic Systems**
University of Electronic Science and Technology, Chengdu, China
- **MS, Telecommunications Engineering**
Beijing University of Posts and Telecommunications, Beijing, China
- Undergraduate, Automatic Control of Electrical Systems
Jiangsu University of Science and Technology, Zhenjiang, China

SELECTED PUBLICATIONS

1. "A digitized DS/SS receiver structure with adaptive control of soft limiting," in Proc. *4th IEEE International Conference on Universal Personal Communications*, Nov. 6-10, 1995, pp.52-55.
2. "The effects of soft limitation, quantization and sampling interval on DS/SS digital matched filtering," *Journal of China Institute of Communications*, vol.17, no.1, Jan. 1996, pp.12-17.
3. "An M-ary DS/SS communication system and the optimization of information-combination mapping," *Acta Electronica Sinica*, vol.24, no.4, April 1996, pp.50-54.
4. "An adaptive meteor-burst communication system using interleaving-RS code correction technique and analysis of its performance," *Journal of China Institute of Communications*, vol.18, no.1, Jan. 1997, pp.73-77.
5. "On a trellis coded multidimensional DS/SS communication scheme," *Acta Electronica Sinica*, vol.25, no.4, April 1997, pp.20-23.
6. "On sequence sharing for multi-code DS/CDMA systems," in Proc. *IEEE Military Communications Conference*, Oct. 18-21, 1998, vol.1, pp.238-242.
7. "Service-variable multidimensional DS/CDMA systems," in Proc. *IEEE Military Communications Conference*, Oct. 18-21, 1998, vol.2, pp.534-538.
8. "On rate-variable multidimensional DS/SSMA with dynamic sequence sharing," *IEEE Journal on Selected Areas in Communications*, vol.17, no.5, pp.902-917, May 1999.
9. "Mapping design for general multidimensional communication systems," in Proc. *IEEE Military Communications*, Oct. 31- Nov. 3, 1999, vol.1, pp.35-39.
10. "Impact of imperfect CSI estimation on multidimensional communication systems over a Rayleigh fading channel," in Proc. *IEEE Communication Theory Mini-Conference*, June 6-10, 1999, pp.120-124.
11. "The impact of nonlinear amplification on multi-code CDMA systems," in proc. *IEEE International Conference on Communications*, June 18-22, 2000, vol.2, pp.1034-1038.
12. "Uplink performance evaluation of multi-code DS/CDMA systems in presence of nonlinear distortions," *IEEE Journal on Selected Areas in Communications*, vol.18, no.8, pp.1418-1428, Aug. 2000.
13. Improved autocorrelation receivers based on multiple symbol differential detection for UWB communications, to appear in *IEEE Trans. Wireless Comm.*
14. An ultra-wideband autocorrelation demodulation scheme with low-complexity time reversal enhancement, to appear in *IEEE Military Communications Conference*.



Jen-Hau Wan, Ph.D.

Post Doctorate Assistant
Center for Manufacturing Research
Tennessee Technological University
Email: jwan@tntech.edu; Tel: (931) 372-3106

Educational Background

PhD, The University of Texas at Austin, chemistry
Master student, California State University at Fresno, Chemistry
BS, National Taiwan University, Chemistry

Research Interests

Solid State Fuel Cells:

- Develop, synthesize, and characterize different cathodic materials for SOFC
- Develop, synthesize, and characterize some novel anodic materials utilizing H₂ and other hydrocarbon fuels
- Fabricate and test the performance of SOFCs based on doped LaGaO₃ and doped ceria electrolytes

Publications, Presentations, Theses

1. Wan, Jen-Hau; Goodenough, John B; Lu, C.; Costa-Nunes, O.; Gorte, R. J.; Vohs, J. M. **Novel materials for solid oxide fuel cells.** Proceedings – Collaborative Technology Alliances Conference, Washington D.C., United States, May 4-May 7, 2004
2. Doctoral dissertation: **Solid oxide fuel cell research based on doped LaGaO₃.** The University of Texas at Austin, May 2004
3. Wan, Jen-Hau; Goodenough, John B. **Oxygen reduction reaction in a solid oxide fuel cell.** Proceedings – Collaborative Technology Alliances Conference, College Park, MD, United States, April 29-May 1, 2003, 89-92
4. Wan, Jen-Hau; Goodenough, John B. **Improved solid oxide fuel cell performance with sputtered Pt catalyst.** Proceedings - Electrochemical Society (2003), 2003-7(Solid Oxide Fuel Cells VIII (SOFC VIII)), 624-631
5. Wan, Jen-Hau; Goodenough, John B. **Pt and other transition metals as catalysts for electrodes of the solid oxide fuel cell.** Abstracts of Papers, 225th ACS National Meeting, New Orleans, LA, United States, March 23-27, 2003, COLL-127
6. Wan, Jen-Hau; Goodenough, John B. **Thin-film solid oxide fuel cell based on doped LaGaO₃ electrolyte.** Abstracts of Papers, March 2003 APS National Meeting, Austin, TX, United States, March 3-7, 2003, V33-6
7. Wan, Jen-Hau; Goodenough, John B. **Increasing the performance of cathodes of solid oxide fuel cells through surface processing.** Poster session in the 58th Southwest Regional Meeting of ACS, Austin, TX, United States, Nov 3-6, 2002.
8. Huang, Keqin; Wan, Jen-Hau; Goodenough, John B. **Increasing power density of LSGM-based solid oxide fuel cells using new anode materials.** Journal of the Electrochemical Society (2001), 148(7), A788-A794
9. Huang, Keqin; Wan, Jen-Hau; Goodenough, John B. **Oxide-ion conducting ceramics for solid oxide fuel cell.** Journal of Material Science (2001), 36, 1093-1098
10. Huang, Keqin; Wan, Jen-Hau; Goodenough, John B. **Increasing power density of solid oxide fuel cells based on thick-film LSGM electrolyte.** Proceedings - Electrochemical Society (2001), 2000-32(Solid-State Ionic Devices II: Ceramic Sensors)
11. Wan, Jen-Hau; Goodenough, LSGM Based Solid Oxide Fuel Cell with High Power Density and Long-term Stability, submitted to Journal of the Electrochemical Society (2004).

Honors

Received the “Book Coupon Award”, awarded to students in the top five percent of their class, 1990

Skills

Solid-state inorganic synthesis techniques
X-ray powder diffraction techniques
Thermal analysis techniques including Thermogravimetric Analysis (TGA)
Density determination using Pycnometry
Scanning and transmission electron microscopy
Electrochemical measurement techniques including AC-impedance spectroscopy, four-probe electronic conductivity, and SOFCs testing
Knowledge of the software package LabView™ used in the automated control of instruments for different measurements
Computer simulation using the programming language C

Experience

Postdoctoral Research Assistant, Center for Manufacturing Research

Tennessee Technological University, Cookeville

Solid oxide fuel cell research (August 2004 – Present)

Postdoctorate Research Assistant, Texas Material Institute, University of Texas, Austin

Solid oxide fuel cell research (2004).

Supervised Graduate Teaching Assistant and Graduate Research Assistant

Chemistry Dept., University of Texas, Austin, TX

Teaching general chemistry, physical chemistry labs.

Developed, synthesized, and characterized different cathodic materials for SOFC.

Developed, synthesized, and characterized some novel anodic materials utilizing H₂ and other hydrocarbon fuels.

Fabricated and tested the performance of SOFCs based on doped LaGaO₃ and doped ceria electrolytes (1998 - 2004).

Supervised Graduate Teaching Assistant

Chemistry Dept., California State University at Fresno, Fresno, CA

Teaching general chemistry lab.

Calculated the thermodynamic properties of 2D and 3D Ising systems using the programming language C.

Performed artificial recognition of simple characters using neural network programming (1996 - 1998).

Graduate Research Assistant

Molecular Biology Institute, Academia Sinica, Taipei, Taiwan

Heat-shock protein structure and function relationship. Cloned several strains of Heat-shock proteins from the plant *Arabidopsis thaliana* and performed DNA sequencing to help in the determination of their structure-function relationship (1993 - 1996).

Undergraduate Research Assistant

National Taiwan University, Taipei, Taiwan

Purification of Glucose Transporter Protein. -Modified traditional protein purification methods for higher yield of Glucose Transporter Protein. (1992 - 1993).