

## APPENDIX 2: CMR Five-Year Publications List

**MOHAMED ABDELRAHMAN**, *Associate Professor, Electrical & Computer Engineering*  
**RESEARCH ACTIVITIES:** *Sensor Fusion, Wireless Sensors, Intelligent Control, Integration of Sensing and Control, Instrumentation*

“A Methodology for Self-Validation, Fusion and Reconstruction of Quasi-Redundant Sensors”, *IEEE Transaction on Instrumentation and Measurement*, Vol. 50, December 2001 (with J. Frolik and P. Kandasamy)

“Integration of Industrial Process Sensing and Control for Cupola Iron Melting Furnaces”, Proceedings of the 7<sup>th</sup> Mechatronics Forum International Conference, Atlanta, Georgia, September 6–8, 2000 (with P. Kandasamy)

“A Methodology for Development of Configurable Remote Access Measurement Systems”, *Transaction of Instrumentation Society of America*, Vol. 39, 441-458, December 2000

“Integrated Industrial Process Sensing and Control System Applied to and Demonstrated on Cupola Furnaces”, Annual Technical Report, Year 2, United States Department of Energy, #DE-FC02-9CH10975, 2000 (with W. Mahmoud, J. Frolik, R. Haggard, P. Kandasamy, VOL. Vijaykumar, S. Sankaran, S. Vadlaman, K. Moore, S. Anderson, D. Clark and E. Larsen)

“Fusion of Sensors with Multisampling Rates using Wavelet Transforms”, presentation at the 2001 American Control Conference, Washington, DC, June 25-27, 2001 (with M. Luo and J. Frolik)

**JOSEPH J. BIERNACKI**, *Professor, Chemical Engineering*  
**RESEARCH ACTIVITIES:** *Cement-based Materials, Micro-fluidics, Ceramic Materials, Electron Ceramics, Micro-Electro-Mechanical Systems (MEMS)*

“Variation in Boron Doping by Planar Diffusion - A Comparative Study of Computational Hydrodynamics and Experimental Observations”, *Elec. Mat.*, 2004 (with S. Shanmugasundaram and R. Subramanian)

“Kinetics of Borosilicate Glass Deposition”, *J. Mat. Res.*, 91(3) 872-879 (2004) (with P. Kannan, H. Meyer and C. Blue)

“Gas Phase Mixing and Dispersion in a Diffusion Furnace”, *J. Elec. Chem. Soc.* 151(1) in press (2004) (with R. Subramanian, M. R. Islam, C. Schewe and M. C. Rogers)

“Meso-Scale Strain Measurements Using Synchrotron X-Rays, in High-Performance Cement-Based Concrete Composites, J. J. Biernacki, S. P. Shah, N. Lakshmanan and S. Gopalakrishnan, eds., *Am. Cer. Soc.*, 291-299 (2005) (with C. Parnham)

“High-Performance Cement-Based Concrete Composites”, J. J. Biernacki, S. P. Shah, N. Lakshmanan and S. Gopalakrishnan, eds., *Am. Cer. Soc.*, 2005, pp. 313

“Characterization of Wood Pulp Fiber-Containing Cement”, Buckeye, August 19, 2004 (invited seminar speaker).

“Micro- and Meso-scale Strain Measurements in Cement-based Materials”, *CerS Annual Meeting*, April 2003 (with C. J. Parnham, J. Bai, C. Hubbard and T. Watkins)

“Micro- and Meso-scale Strain Measurements in Cement-based Materials”, Brookhaven National Laboratory, February 13, 2003.

“Kinetics of 4-Acetoxybenzoic Acid Synthesis”, *Designed Monomers and Polymer* 6(2) 159-173, 2003 (with N. D. Vora, D. J. Crouse and D. J. Swartling)

“Impulse Penetration into Idealized Granular Beds: Behavior of Cumulative Surface Kinetic Energy”, *Phys. ReVol. E.*, 70, 051306 (2004) (with S. Swaminathan and D. P. Visco, Jr. T.R. Krishna, Mohan, A. Sokolow and S. Sen.)

“Kinetics of the Reaction Between Fly Ash and Calcium Hydroxide”, *ACI Mat. J.*, 98(4), pp. 340-349, 2001 (with P. Stutzman and P. J. Williams)

“Surface Micro-Machined Mirrors Using Simple Floating and Fixed Hinge Designs for three-Layer Process”, *Proceedings of the ASME Congress 2001*, November 11-16, 2001 (A. Mahatvaraj, N. D. Vora, J. Bush, G. Cunningham, and J. Frolik)

“An Investigation of Early Age Curing Behavior and Micro-Pore Water Development in Blended Cement Systems”, *AICHE Annual Meeting*, November 4-9, 2001 (P. J. Williams, J. D. York and J. Richardson)

“Applying ABET Criteria to Classroom Level Student Assessment”, *AICHE Annual Meeting*, November 4-9, 2001

**GARY BLACK**, *Assistant Professor, Industrial & Systems Engineering*

**RESEARCH ACTIVITIES:** *Scheduling, Risk Management, Optimization*

“Predictive, Stochastic and Dynamic Extensions to Aversion Dynamics Scheduling”, invited presentation, *INFORMS Conference*, San Jose, California, November 2002 (with K.N. McKay, S.L. Messimer)

“Anti-Fragmentation in Aversion Dynamics Scheduling”, *International Journal of Production Research*, 2003 (with K.N. McKay, S.L. Messimer)

“Proactive and Dynamic Post-Event Impact E Extensions”, *Proceedings IIE Research Conference*, Portland, Oregon, May 2003 (with K.N. McKay, S.L. Messimer)

**ERIC BROWN**, *Information/Instruction Technology Specialist, Computer Science*

“A Three-tier Communication and Control Structure for the Distributed Simulation of an Automated Highway System”, *2002 Performance Metric for Intelligent Systems Workshop NIST*, August 2002 (with R. Maarfi, A. Dean, S. Ramaswamy)

**GEORGE R. BUCHANAN**, *Professor, Civil & Environmental Engineering*

**RESEARCH ACTIVITIES:** *Finite Element Analysis, Solid Mechanics, Structural Analysis, Vibrations*

“Application of Nonlocal Continuum Models to Nanotechnology”, *International Journal of Engineering Science*, 41, pp. 305-312, 2002 (with J. Peddieson, R. McNitt)

“Analysis of a Moderately Thick Piezoelectric Disk”, *Developments in Theoretical and Applied Mechanics*, 21, pp. 41-48, 2002 (with S. Anamalai, J. Peddieson)

“A Simple Unified Age Forming Model”, *Mechanics Research Communications*, 27, pp. 631-636, 2000 (with S. Narimetla, J. Peddieson, Jr., and S. Foroudastan)

“A Finite Element Analysis of Anisotropic Midlin Plates”, *SECTAM Preprint XX-SM13*, 2000 (with J. Peddieson, Jr.)

“Testing and Simulation of Perforated Plate Deformations”, Technical Report, Eastman Chemical Company, 2000 (with S. Idem, J. Peddieson, Jr. and S. Munukutla)

“Vibration of Truncated Conical Cylinders of Crystal Class 6/mmm”, *Journal of Vibration and Control*, Vol. 7, No.7, pp. 985-998, 2000

“Frequencies and Mode Shapes for Finite Length Cylinders”, *Journal of Sound and Vibration*, Vol. 246, No.5, pp. 927-941, 2001 (with C-L. Chua)

“Frequencies and Mode Shapes for Thick Truncated Conical Cylinders”, *International Journal of Mechanical Sciences*, Vol. 43, No.12, pp. 2815-2832, 2001 (with F. T-I. Wong)

“The Effect of the Poisson Ratio on the Vibration of Hollow Circular Finite Length Cylinders”, *Journal of Sound and Vibration*, Vol. 248, No.1, 187-194, 2001 (with C.B.-Y. Yii)

Comments on “Free Vibration Analysis of Laminated Piezoceramic Hollow Spheres”, by W.Q. Chen,

*Journal of the Acoustical Society of America*, Vol. 109, pp. 41-49, 2001, *Journal of the Acoustical Society of America*, Vol. 110, No.2, pp. 1188-1189, 2001 (with G.R. Ramirez)

“Effect of Symmetrical Boundary Conditions on the Vibration of Thick Hollow Cylinders,” *Applied Acoustics*, Vol. 63, No.5, pp. 547-566, 2002 (with C.B.-Y. Yü)

“Analysis of a Moderately Thick Piezoelectric Disk”, *Proceedings of the Twenty-first Southeastern Conference on Theoretical and Applied Mechanics*, University of Central Florida, Orlando, Florida, May 2002 (with S. Annamali and J. Peddieson)

“Elastic Compensation using Deformation Plasticity Models”, *Proceedings of the Twenty-first Southeastern Conference on Theoretical and Applied Mechanics*, University of Central Florida, Orlando, Florida, May 2002 (D. Wu and J. Peddieson)

**STEPHEN CANFIELD**, Associate Professor, Mechanical Engineering

**RESEARCH ACTIVITIES:** *Mechatronics, Automation, Mechanism Analysis, Dynamics and Design, and Robotics*

“Multivariate Parameter Sets for Optimization of Compliant Mechanisms”, submitted to the 2005 ASME Design Engineering Technical Conferences, 2005 (with A. Shibakov, P. Hull, and M. Tinker)

“Optimal Synthesis of Compliant Mechanisms Using Subdivision and Commercial FEA”, *ASME Journal of Mechanical Design*, accepted for publication, 2004 (with P. Hull)

“Modeling and Control of Shape Memory Alloys Using Cylindrical Concentrators”, *Mechatronics*, Vol. 14, pp. 757-775, 2004 (with P. Hull)

“Torsional Stiffness of Several Variable Rectangular Cross-Section Flexure Hinges for Macro-Scale and EMS Applications”, *Smart Materials and Structures*, Vol. 13, issue 1, pp. 12-19, 2004 (with N. Lobontiu and E. Garcia)

“Similarity Modeling of Solar Sails Propulsion System”, *Solar Sail Technology and Applications Conferences*, Greenbelt, MD, Sept. 28-29, 2004 (with J. Peddieson, A. Ewing, and G. Garbe)

“Optimal Synthesis of Compliant Mechanisms Using Subdivision and Commercial FEA”, *Proc. of the 2004 ASME Design Engineering Technical Conferences*, Salt Lake City, UT, Sept. 28-Oct. 2, DETC2004/MECH-57497, 2004 (with P. Hull)

“Modeling and Control of Shape Memory Alloys Using Cylindrical Concentrators”, *Mechatronics, The Science of Intelligent Machines Journal*, 2004. (with P. Hull)

“Improved Development Cycle of a Spatial Compliant Manipulator”, *Proc. of the 2003 ASME Design Engineering Technical Conferences*, Chicago, IL, September 2-6, 2003, DETC2003/MECH-48805 (with P. Hull and J.W. Beard)

“Teaching Mechatronics in the 2000’s”, presentation at 2003 *Mechatronic Curriculum Workshop*, at the University of the District of Columbia, December 8, 2003.

“Improved Development Cycle of a Spatial Compliant Manipulator”, *Proc. of the 2003 ASME Design Engineering Technical Conferences*, Chicago, IL, Sept. 2-6, DETC2003/MECH-48805, 2003 (with Hull, P.VOL. and J.W. Beard)

“Development of a Spatial Compliant Manipulator”, *International Journal of Robotics and Automation*, Vol. 17, Issue 1, pp. 63-72, 2002 (with J. Beard, N. Lobontiu, E. O'Malley, M. Samuelson and J. Paine)

“Genetic Programming Techniques for Designing Compliant Mechanisms”, *International Journal of Structural and Multidisciplinary Optimization*, Vol. 24, Issue 1, pp. 78-86, 2002 (with R. Parsons)

“Optimization and Control of a Spatial Compliant Manipulator”, *Proc. of the 2002 ASME Design Engineering Technical Conferences*, Montreal, Canada, DETC2002/MECH-34201, 2002 (with J. Beard, M. Stefanick, D. Bennett, N. Lobontiu, and J. Paine)

“Development of Parallel Architecture Spatial Compliant Manipulators”, ASME 2001 Design Engineering Technical Conference, Pennsylvania, September 9-12, 2001 (with J.W. Beard, R.D. Parsons, N. Lobontiu, M. Paine, and J. Paine)

“Thermal Analysis of an Orbiting Cryogenic Fuel Depot”, *Thermal Fluids and Analysis Workshop*, September 10-14, 2001 (with P. Hull, C. Carrington, and J. Fikes)

**GLEN CUNNINGHAM**, *Professor, Mechanical Engineering*

**RESEARCH ACTIVITIES:** *Steam processes and Thermodynamics, Steam co-Generation, Micro-Electro-Mechanical Systems (MEMS), Thermographic measurement, Energy assessments*

“Ferrofluid Field Induced Flow for Microfluidic Applications”, with L.J. Love, J.F. Jansen, T.E. Knight, Y. Roh, T.J. Phelps and L.W. Yeary, *IEEE Transactions on Mechatronics*, Vol. 10, No.1, pp. 68-76, February 2005

“Real-Time Differentiation of Normal and Malignant Mouse Tissue Using Hyperspectral Fluorescence Imaging”, with Matt Martin, Musundi Wabuye, Masoud Panjehpour and Tuan VoDinh, submitted to the *Journal of Biomedical Optics*

“Design, Analysis, and Testing of Electrostatically Actuated Micromembranes”, with L. Yeary, C. Darvennes, N. Panduga, K. Walsh, M. Crain, R. Cohn, S. Harfenist, J. Frolik, presented at the *International Mechanical Engineering Congress and Exposition*, Washington D.C., November 17-20, 2003

“Thermographic Phosphor Chalk: A Simple Binding Method”, with R. Dodi, presented at the 49<sup>th</sup> ISA International Instrumentation Symposium, May 2003, Orlando, FL

“Analysis of Aluminum Shakeout Characteristics of Shell Cores Used in Permanent Mold Operations – A Case Study”, with Fred Vondra, Kelley Kerns and Greg Tordoff, American Foundry Society 107<sup>th</sup> Casting Congress Proceedings, Milwaukee, WI, April 2003

“Experimental Investigation of Phosphor Thermography Using a Blue LED Optical Excitation Source”, with R. Raja, Invited paper and presentation at the 48<sup>th</sup> ISA International Instrumentation Symposium Conference & Exposition, Chicago, IL, September 2002

“Two-Dimensional Finite Element Analysis Using Java”, with C. Wilson and R. Parsons, accepted for presentation at the ASEE SE Section Annual Conference, Gainesville, FL, April 2002

“Surface micro-machined mirrors using simple floating and fixed hinge designs for three layer process”, A. Mahatvarag, N. Vora, J. Bush, J. Biernacki, G. Cunningham and J. Frolik, *International Mechanical Engineering Congress and Exposition*, NY, November 11-16, 2001

“Application of Neural Networks to the Control of Sootblowers”, with B. Vadathavoor, A. Sekar, and R. Smoak, presented at the ISA Power Industry Conference - Odyssey 2001, Orlando, FL, July 2001

“Energy Assessment for Harris Metals Company of Cookeville”, Report, *Industries of the Future Grant*, July 2002 (with J. Christian)

“Energy Assessment for Alcoa – Tennessee Operations”, Report, *Industries of the Future Grant*, July 2002.

“Micro Field-Flow-Fractionation”, presentation, 2002 Annual Meeting of the AIChE, November 2002 (with J.J. Biernacki, N. Vyas, M.J.M. Wells).

**KENNETH CURRIE**, *Professor, Industrial & Systems Engineering; Director, Center for Manufacturing Research*

**RESEARCH ACTIVITIES:** *Multi-Disciplinary Optimization, Integrated Product and Process Development, Technology Planning/Management, Lean Manufacturing Strategies, Process Simulation.*

“Putting Technology to Work for Tennessee”, Center for Manufacturing Research Annual Report 2002-03, with D. Wiegand and E. Porter.

“Efficient  $\rho$ -Median Mathematical Programming Approaches to Machine-Part Grouping in Group Technology Manufacturing”, with Y. Won, *Engineering Optimization*, Vol. 36, No.5, August 2004.

“Strengthening the Foundation for the Future”, *Annual Report 2001-2002*, Center for Manufacturing Research, August 2002 (with D. Wiegand, E. Porter).

“Center for Manufacturing Research”, *Tennessee’s Business*, Vol. 12, No.1, pp. 19-23, 2003.

“Casting a Vision for the Future”, 2000-2001 Annual Report, Center for Manufacturing Research, August 2001 (with E. Porter and D. Wiegand).

“Lean Product Development”, *Lean Management Solutions Conference*, St. Louis, Missouri, September 2001, pp. 125-134 (with J. Burnham).

“CMR at the Crossroads”, 1999-2000 Annual Report, Center for Manufacturing Research, August 2000 (with D. Loy and D. Wiegand).

“Center for Manufacturing Research: Past, Present, and Future”, invited presentation, Automation Robotics Research Institute, Fort Worth, Texas, October 2000.

“Lean Manufacturing: On the Factory Floor and Above the Factory Floor”, invited presentation, APICS Knoxville Chapter Meeting, Knoxville, Tennessee, November 2000 (with J. Burnham).

“Lean Manufacturing: On the Factory Floor and Above the Factory Floor”, invited presentation, 2<sup>nd</sup> Annual Region 13 Student IIE Conference, Morelia, Mexico, March 2001.

“Industrial Engineering: A Benefit/Cost Analysis of Professional Participation”, invited presentation, 2<sup>nd</sup> Annual Region 13 Student IIE Conference, Morelia, Mexico, March 2001.

**CORINNE M. DARVENNES**, *Professor, Mechanical Engineering*

**RESEARCH ACTIVITIES:** *Physical Acoustics, Noise Control, Ultrasonics*

“Help! There are sixty screaming kids in my lab! – Outreach activities for fifth graders”, *Journal of the Acoustical Society of America*, February 2005

“Porosity Determination in Thin Graphite-epoxy Composite Laminates using Histograms of Ultrasonic C-scans”, *Proceedings of SPIE 9th Annual International Symposium on NDE for Health Monitoring and Diagnostics*, March 2004 (with L. Lowe and C. Wilson)

“Improving Noise Source Location Using the Unwrapped Phase Method”, *Proceedings of the 1<sup>st</sup> Pan-American/Iberian meeting on Acoustics*, December 2002 (with Y. Wang)

“Help, There are 60 screaming kids in my lab!” *Journal of the Acoustical Society of America*, 112 (5, pt. 2) p. 2345, November 2002

“Dynamic and Resonating Use of WebCT”, *Proceedings of the 2002 ASEE Conference and Exposition*, June 2002 (with S. Pardue)

“Effective use of a Homework Portfolio”, *Proceedings of the 2002 ASEE-SE Annual Conference*, April 2002 (with S. Pardue)

“Transverse Vibration of Elastic-viscoelastic-elastic Sandwich Beams, Part I: Compression-Experimental and Analytical Study”, *Journal of Sound and Vibration*, Vol. 252 (1), pp. 155-167, 2002 (with C.L. Sisemore)

NDE - Vol. 20, *Proceedings of the 7th ASME-NDE Topical Conference*, Editor (T. Kundu co-editor), 2001

“Noise Levels at Hickory Valley Substation”, Bolivar Electric Dept., August 2001

“Boundary Effect of a Viscous Fluid on a Longitudinally Vibrating Bar: Theory and Application”, *Journal of the Acoustical Society of America*, 110, July 2001 (with S.J. Pardue)

“A Modular Approach to Vibrations”, *Proceedings of the 2001 ASEE Annual Conference and Exposition*, session 2793, Session 2793, June 2001, (with S. Pardue)

“Noise Analysis at McMinnville Electric System”, McMinnville Electric System, March 2001

“New Algorithms to Improve Noise Source Location Using a Microphone Array”, *NCAD Proceedings 2000 International Mechanical Engineering Congress and Exposition*, 2000 (with T.K. Bhatt)

NDE - Vol. 19, *Proceedings of the 6th ASME-NDE Topical Conference*, Editor, November 2000

“Seal Test Program”, Final Report, Procon Products, MCTR-01-00-01, January 2000 (with Y. Wang)

“Improved Noise Performance of Heating Units and Combustion Blowers”, Final Report, International Comfort Products, MCTR-01-00-03, January 2000

“Design, Analysis, and Testing of Electrostatically Actuated Micromembranes”, presented at the *International Mechanical Engineering Congress and Exposition*, Washington D.C., November 17-20, 2003 (with L. Yearly, N. Panduga, K. Walsh, M. Crain, R. Cohn, S. Harfenist, J. Frolik)

“Engineering A Future 2003”, *National Conference of Society of Women Engineers*, Birmingham, Alabama, October 9-11, 2003 (with K. Ramsey-Idem, S. Pardue, P. Roberts)

“Porosity Determination in Thin Graphite-epoxy Composite Laminates using Histograms of Ultrasonic C-scans”, *Proceedings of SPIE 9th Annual International Symposium on NDE for Health Monitoring and Diagnostics*, March 2004 (with L. Lowe and C. Wilson)

**S. DEIVANAYAGAM**, *Professor, Industrial & Systems Engineering; Associate Dean of Graduate Studies/Research, College of Engineering*

**RESEARCH ACTIVITIES:** *Ergonomics/Human Factors, Occupational Safety and Health, Work Physiology and Fatigue, Occupational Rehabilitation, Disability Accommodation, Work Analysis and Design, Engineering Anthropometry and Workplace Design, Industrial Robot Work Applications, Engineering Economics*

“Ergonomic Issues at Worthington Precision Metals”, *Technical Report to Worthington Precision Metals*, December 2002.

**AHMED ELSAWY**, *Professor & Chairperson, Manufacturing and Industrial Technology*

**RESEARCH ACTIVITIES:** *Development of Manufacturing Processes, Welding Engineering and Metallurgy, Recycling and Reuse of Industrial Solid Waste Materials, Web-based Distance Learning, Computer Applications in Technology*

“The Power of Software Tools in Design”, *Fluid Power Journal*, pp. 10-11, November/ December 2000.

“Characterization of Color Sorting Performance of a Computer Vision-Guided Robotic System using Different Illuminance”, *Proceedings of the 28<sup>th</sup> ICC&IE Conference*, Cocoa Beach, Florida, March 19, 2001 (with J.T. Li and W. Mahmoud).

**ISMAIL FIDAN**, *Associate Professor, Manufacturing and Industrial Technology*

**RESEARCH ACTIVITIES:** *Manufacturing Processes, Electronics Manufacturing, Knowledge Based Systems, Web-based Distance Learning, Rapid Prototyping*

“Collaborative Product Development on the Internet”, *Proceedings of the 6<sup>th</sup> ASME Biennial Conference on Engineering Design and Analysis*, Istanbul, Turkey, July 8-11, 2002 (with S. Tumkor).

“WebCT Component for Computer Numerical Control Machining Practices”, Tennessee Technological University, 2002.

“WebCT Component for Computer Aided Design for Technology”, Tennessee Technological University, 2002.

“The Development of a Knowledge-Based Tool for CNC Machine”, *International Journal of Engineering Education*, Vol. 18, No.6, pp. 732-735, 2002 (with A. ElSawy).

“CAPP for Electronics Manufacturing – Case Study: Fine Pitch SMT Laser Soldering”, *Transactions of the ASME-Journal of Electronic Packaging*, 2002.

“Surface Mount Electronics Manufacturing: From Automated Manufacturing to E-Manufacturing”, Istanbul Technical University, Istanbul, Turkey, NSF ANESA Division, December 17, 2002

“Using WebCT in Engineering Design and Manufacturing Courses”, *2003 Distance Learning Conference*, Bell South Building, Nashville, Tennessee, February 21, 2003.

“Implementation and Assessment of Knowledge Based Systems in Various Engineering Courses”, *2003 ASEE Annual Conference*, Nashville, Tennessee, June 22-25, 2003 (with S. Tumkor, A. Sekmen, R. Pecen, A. Zora).

“Design, Implementation, and Assessment of WebCT-based CNC”, *2003 ASEE Annual Conference*, Nashville, Tennessee, June 22-25, 2003 (with L.L. Neal, R.J. Clougherty, Jr.)

“Online Bearing Selection Catalog”, *Computers in Education Journal*, Vol. 10, No.3, pp. 37-46, 2000 (with S. Tumkor).

“Integrated Tool Design and Manufacturing within Advanced Hands-on Projects”, *2003 ASEE Annual Conference*, Nashville, Tennessee, June 22-25, 2003 (with A. Sekmen, F. Vondra).

“Development and Implementation of a Virtual Gear Design and Simulation Tool for Undergraduate Education”, *2003 ASEE Annual Conference*, Nashville, Tennessee, June 22-25, 2003 with C. Fetvacı, S. Tumkor).

“The Development of a Computer-Aided Process Planning Tool for Electronics Manufacturing Education”, *2003 ASEE Annual Conference*, Nashville, Tennessee, June 22-25, 2003 (with S. Tumkor, R.P. Kraft).

“Selection of Optimum Machining Parameters in CNC Milling and Turning Processes”, *112<sup>th</sup> Tennessee Academy of Science Annual Meeting*, East Tennessee State University, Johnson City, Tennessee, November 15, 2002.

“Inline Troubleshooting for Electronics Manufacturing Systems”, *Proceedings of the 2000 IEEE/CPMT International Electronics Manufacturing Technology Symposium*, pp. 338-343, October 2-3, 2000 (with R.P. Kraft).

“The Power of Software Tools in Design”, *Fluid Power Journal*, pp. 10-11, November/December 2000 (with A. ElSawy).

“Knowledge-Based Part and Process Design for Metal Forging”, *SAE Transactions-Journal of Materials and Manufacturing*, Vol. 109, n. 5 pp. 92-99, 2000 (with S.K. Esche, C. Chassapis, S. Manoochehri).

**JEFFREY L. FROLIK**, *Assistant Professor, Electrical & Computer Engineering*

**RESEARCH ACTIVITIES:** *Wireless Communication Systems, Micro-Electrical Mechanical Systems (MEMS)*

“Surface Micro-Machined Mirrors Using Simple Floating and Fixed Hinge Designs for three-Layer Process”, *Proceedings of the ASME Congress 2001*, November 11-16, 2001 (with A. Mahatvaraj, N. D. Vora, J. Bush, G. Cunningham, and J.J. Biernacki).

“A Methodology for Self-Validation, Fusion and Reconstruction of Quasi-Redundant Sensors”, *IEEE Transaction on Instrumentation and Measurement*, Vol. 50, December 2001 (with M. Abdelrahman and P. Kandasamy).

“Fusion of Sensors with Multisampling Rates using Wavelet Transforms”, presentation at the 2001 American Control Conference, Washington, DC, June 25-27, 2001 (with M. Luo and M. Abdelrahman).

“An Internet-based Approach to Multi-disciplinary Course Offerings”, presented at the 2001 ASEE-Southeastern Section Meeting, Charleston, North Carolina, April 1-3, 2001 (with T.M. Weller).

“Integrated Industrial Process Sensing and Control System Applied to and Demonstrated on Cupola Furnaces”, Annual Technical Report, Year 2, United States Department of Energy, #DE-FC02-9CH10975, 2000 (with M. Abdelrahman, W. Mahmoud, R. Haggard, P. Kandasamy, VOL. Vijaykumar, S. Sankaran, S. Vadlamani, K. Moore, S. Anderson, D. Clark and E. Larsen).

**ROGER HAGGARD**, Associate Professor, Electrical & Computer Engineering

**RESEARCH ACTIVITIES:** Computer Architecture, FPGA/ASIC Design, Computer-aided Design, Engineering Tools, Digital Systems

“A Survey of Dynamically Reconfigurable FPGA Devices”, *Proceedings of the 35<sup>th</sup> Southeastern Symposium on System Theory*, March 16-18, 2003.

“Integrated Industrial Process Sensing and Control System Applied to and Demonstrated on Cupola Furnaces”, Annual Technical Report, Year 2, United States Department of Energy, #DE-FC02-9CH10975, 2000 (with M. Abdelrahman, W. Mahmoud, J. Frolik, P. Kandasamy, VOL. Vijaykumar, S. Sankaran, S. Vadlamani, K. Moore, S. Anderson, D. Clark and E. Larsen).

**SAMUEL HAN**, Professor, Mechanical Engineering

**RESEARCH ACTIVITIES:** Numerical Modeling of Flow, Heat Transfer in Energy and Environmental Systems

“Two-Dimensional Hyperbolic Conduction with Temperature Dependent Properties”, *J. Thermophysics and Heat Transfer*, Vol. 18, No.2, pp. 285-287, 2004 (with W. Shen)

“A Numerical Solution of Two-Dimensional Hyperbolic Heat Conduction with Nonlinear Boundary Conditions”, *Heat and Mass Transfer Journal*, Vol. 39, pp. 499-507, 2003 (with W. Shen)

“Numerical Study of PSU RBCC Ejector Mode Operation”, AIAA2003-5230, 33<sup>rd</sup> Joint Propulsion Conference, July 2003, Huntsville, AL (with J. Tomes and J. Lane)

“A Control Volume Model of Multiple Gas/Multiple Ejector Systems”, AIAA-2003-5229, 39<sup>th</sup> Joint Propulsion Conference, July 2003, Huntsville, AL (with J. Kremar and J. Peddieson)

“Effects of Multiple Primary Flows on Ejector Performance in an Ejector-Ram-Rocket Engine”, AIAA 2003-0373, 41<sup>st</sup> Aerospace Science Meeting and Exhibit, January 2003, Reno, NV

“Ejector Primary Flow Molecular Weight Effects in an Ejector-Ram Rocket Engine”, *Journal of Propulsion and Power*, 18, pp. 592-599, 2002 (with J. Peddieson, D. Gregory)

“One Dimensional Numerical Study of Compressible Flow Ejector”, *AIAA Journal*, 40, pp. 1469-1472, 2002 (with J. Peddieson).

“Effects of Primary Flow Molecular Weight Effects in an Ejector-Ram Rocket Engine”, *Journal of Propulsion and Power*, Vol. 18, No.3, pp. 592-599, 2002 (with J. Peddieson and D. Gregory)

“An Explicit TVD Numerical Scheme for Hyperbolic Heat Conduction in Complex Geometry”, *Numerical Heat Transfer*, Part B, Vol. 41, pp. 1-26, 2002 (with W. Shen)

“Numerical Solution of Two-Dimensional, Axisymmetric Hyperbolic Heat Conduction”, *Journal of Computational Mechanics*, Vol. 29, pp. 122-128, 2002 (with W. Shen)

“A Numerical Study of Marquardt’s Ejector-Scramjet Test Engine”, with J. Tomes, AIAA-2002-3608, 38<sup>th</sup> Joint Propulsion Conference and Exhibit, July 2002, Indianapolis, IN (with D. Gregory)

“Effects of the Primary Flow Pulse Frequency on the Secondary Flow Entrainment”, AIAA-2002-2857, AIAA Fluid Dynamics Conference and Exhibit, June 2002, St. Louis, MO

“Hyperbolic Heat Conduction in Composite Materials”, AIAA2002-2003, 8<sup>th</sup> AIAA/ASME Thermophysics and Heat Transfer Conference, June 2002, St. Louis, MO (with W. Shen)

“Hyperbolic Heat Conduction in Composites Subject to Axisymmetric Heat Sources”, 2nd Symposium on Advancements in Heat Shield Technology and Applications, US Army Aviation and Missile Command, Redstone Arsenal, AL, April 2002 (with W. Shen)

“Radial Flows in Supergranules”, *Solar Physics*, Vol. 205, pp. 25-38, 2001 (with D.H. Hathaway, J.G. Beck and J. Raymond)

“Enhancement of Ejector Efficiency in Advanced Reusable Propulsion Engines”, Report, NASA Marshall Space Flight Center, 2001 (with J. Peddieson and S. Idem)

“The Photospheric Convection Spectrum”, *Solar Physics*, Vol. 193, 2000 (with D. Hathaway, G. Beck, R. Bogart, K. Bachmann, G. Khatri, J. Petitto, and J. Raymond)

“Numerical Analysis of Moisture Propagation and Chemical Reaction in a Solid Propellant”, 36<sup>th</sup> Joint Propulsion Conference, July 16-19, 2000, Huntsville, AL

“Atomic-Based-Combined-Cycle Analysis”, *AIAA-2000-3861*, 36<sup>th</sup> Joint Propulsion Conference, July 16-19, 2000, Huntsville, AL (with D. Bai and G. Schmidt)

“Time-Lag Effects of Hyperbolic Conduction on Heat Shield Applications”, Advancement on Heat Shield Symposium, May 9-11, 2000, Huntsville, AL

**XUBIN HE**, *Assistant Professor, Electrical and Computer Engineering*

**RESEARCH ACTIVITIES:** *Networked storage, Storage cache and disk I/O, Embedded systems, Computer security, and Network performance evaluations*

“STICS: SCSI-To-IP Cache for Storage Area Networks”, *Journal of Parallel and Distributed Computing*, 2004 (with M. Zhang and O. Yang)

“Online Remote Data Backup for iSCSI-based Storage Systems”, *Internet Computing*, Las Vegas, Nevada, June 2004 (with D. Zhou, L. Ou and S. Scott)

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“A Large Virtual NVRAM Cache for Software RAID”, *Parallel I/O for Cluster Computing (Chapter 7)*, Editors: Christophe CÉRIN and Hai JIN, ISBN: 1-903996-50-3, Kogan Page Science, November 2003 (with O. Yang)

“Improving Performance and Reliability of iSCSI Storage Systems”, *Journal of CSI*, Vol. 33, No.4, October 2003.

“Availability and Reliability of iSCSI-based Storage Systems”, *High Availability and Performance Computing Workshop* (in conjunction with LACSI'2003), Santa Fe, New Mexico, October 27, 2003 (with B. Leangsuksun and S. Scott)

“Performance Evaluation of Distributed iSCSI RAID”, To be presented at the *International Workshop on Storage Network Architecture and Parallel I/Os* (in conjunction with *12th IEEE/ACM International Conference on Parallel Architectures and Compilation Techniques*) (with P.B. Beedanagari and D. Zhou)

“SPEK: A Storage Performance Evaluation Kernel Module for Block Level Storage Systems”, Proc. of the 11th IEEE/ACM International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS'2003) (with M. Zhang and Q. Yang)

**DARRELL E. HOY**, *Professor & Chairperson, Mechanical Engineering*

**RESEARCH ACTIVITIES:** *Experimental Stress Analysis, Digital Imaging Applications in Engineering, Photoelasticity, Machine Design, Measurements*

**AWARDS:** *D.R. Harting Award 2000 (Society for Experimental Mechanics)*

“An Interactive Photoelastic Bulletin Board”, *2003 SEM Annual Conference*, June 2003.

“Stress Analysis of Front Rib Center Section Monitor Stand GE Virgin 7/18/00”, Technical Report, Exponent, Inc., July 24, 2000 (with C. Wilson).

“An Interactive Photoelastic Bulletin Board”, Presented at the *2003 SEM Annual Conference*, June 2003

“Stress and Temperature Measurement of an Automotive Bulb by Experimental and Finite Element Methods”, *2002 SEM Annual Conference*, June 2002 (with C. Joshi)

**STEPHEN A. IDEM**, *Professor, Mechanical Engineering*

**RESEARCH ACTIVITIES:** *Energy Conservation, Experimental Heat Transfer, Instrumentation*

“Convection Heat Transfer Measurements to Fine Stationary Wires with Application to Fiber Dry Spinning”, *Heat Transfer Engineering*, Accepted for publication, 2005 (with K.W. Chandler, J. Peddieson, and S.G. Rochelle)

“A Comprehensive One-Dimensional Model of Fiber Dry Spinning”, *Heat Transfer Engineering*, Accepted for publication, 2005 (with K.W. Chandler, J. Peddieson, and S.G. Rochelle)

“Pressure Loss Measurements of Two Close-Coupled HVAC Elbows”, *International Journal of Heating, Ventilating, Air Conditioning and Refrigeration Research*, Vol 11, No.1, pp. 133-146, 2005 (with N. Mylaram)

“An Experimental Investigation of Cold Air-to-Air Ejectors”, *41<sup>st</sup> AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, Tucson, AZ, 2005 (with M.N. Young)

“Numerical and Experimental Study of Pressure Drop Reduction in Stacks of a Power Plant”, IMECE2004-61937, *Proceedings of IMECE*, Anaheim, CA, 2004 (with M. Lakshmiraju, J. Cui, and S. Munukutla)

“CFD Studies on Burner Secondary Air Flow”, IMECE2004-61914, *Proceedings of IMECE*, Anaheim, CA, 2004 (with A.K.Purimetla, J. Cui, and S. Munukutla)

“Quantifying the Value of Improved Control System Performance, Part 2 Proceedings, *14th Joint ISA/POWID/EPRI Controls and Instrumentation Conference*, Colorado Springs, CO, 2004”, (with J. Sorge, C Taft, G. Kedilaya, J. Peddieson, J. and S. Munukutla)

“Stack Scale Model Study for Improved Pressure Drop and Velocity Profile”, *Proceedings, CEM User's Group Meeting*, Milwaukee, WI, 2004 (with R. Frank, and S. Munukutla)

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“An Improved 1D Fiber Dry Spinning Mass Transfer Model”, *Mechanics Research Communications*, Vol. 29, 2002, pp. 351-357 (with K.W. Chandler, J. Peddieson, and S.G. Rochelle)

“Leakage of Ducted Air Terminal Connections”, Final Report, ASHRAE RP-1132, 2002 (with S. Sahu)

“Fin Heat Transfer Modeling and its Impact on Predictions of Efficiency and Condensation in Gas-Fired Boilers”, *Heat Transfer Engineering*, 2000, Vol. 21, No.6, pp. 7-17 (with A.M. Jacobi and VOL.W. Goldschmidt)

“Eastman Chemical Turbulence Tests”, Final Report, Eastman Chemical Company, 2000 (with S. Munukutla and J. Peddieson)

“Testing and Simulation of Perforated Plate Deformations”, Final Report, Eastman Chemical Company, 2000 (with G. Buchanan, S. Munukutla, J. Peddieson, and D. Wu)

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“Testing and Simulation of Perforated Plate Deformations”, Technical Report, Eastman Chemical Company, 2000 (with G. Buchanan, J. Peddieson, Jr. and S. Munukutla)





**KEVIN R. LISKA**, *Director, Business Media Center, Decision Sciences and Management*

“A Federally Funded Case Study of Entrepreneurship Programs: Implications for Public Policy”, presented to Allied Academies, Nashville, Tennessee, April 5, 2001.

“A Federally Funded Case Study of Entrepreneurship Programs: Implications for Public Policy”, *Journal of Entrepreneurship Education*, Summer 2001 (with D. Weinrauch).

“Creating a Virtual Rural University Incubator: Implications for Innovative Programs and Future Research in Entrepreneurship”, presented at UIC Symposia on Marketing and Entrepreneurship, August 4-5, 2000, Chicago, Illinois (with D. Weinrauch).

**WAGDY H. MAHMOUD**, *Assistant Professor, Electrical and Computer Engineering*

**RESEARCH ACTIVITIES:** *Reconfigurable logic, digital VLSI, Micro-Electro-Mechanical Systems (MEMS), Image processing*

“Integrated Industrial Process Sensing and Control System Applied to and Demonstrated on Cupola Furnaces”, Annual Technical Report, Year 2, United States Department of Energy, #DE-FC02-9CH10975, 2000 (with M. Abdelrahman, J. Frolik, R. Haggard, P. Kandasamy, VOL. Vijaykumar, S. Sankaran, S. Vadlaman, K. Moore, S. Anderson, D. Clark and E. Larsen).

“Characterization of Color Sorting Performance of a Computer Vision-Guided Robotic System using Different Illuminance”, *Proceedings of the 28<sup>th</sup> ICC&IE Conference*, Cocoa Beach, Florida, March 19, 2001 (with J.T. Li and A. ElSawy).

**VIRGINA MOORE**, *Associate Dean of Business Administration*

“Leveraging Resources and Marketing with a Consortium of Incubators: A Tapestry of Opportunities”, AMA-UIC Research Symposium on Marketing and Entrepreneurship, 2002 (with K. Liska and D. Weinrauch).

**SASTRY MUNUKUTLA**, *Professor, Mechanical Engineering; Director, Center for Energy Systems Research*

**RESEARCH ACTIVITIES:** *Gas Dynamics, Turbulence, Fluid Mechanics, Advanced Viscous Flow, Convective Heat Momentum Transfer, Aerodynamics, Computational Fluid Dynamics*

“Testing and Simulation of Perforated Plate Deformations”, Technical Report, Eastman Chemical Company, 2000 (with G. Buchanan, J. Peddieson, Jr. and S. Idem).

**SALLY J. PARDUE**, *Associate Professor, Mechanical Engineering*

**RESEARCH ACTIVITIES:** *Vibrations Testing, Materials Testing, Machine Design*

“Engineering A Future at Tennessee Technological University”, *2005 ASEE Annual Conference and Exposition*, Portland, OR, June 12- 15 (with K. Craven, K. Ramsey-Idem)

“Monitoring Fatigue in Composites”, *SAMPE 2005*, Long Beach, CA, May 1-5, 2005, with B. Vasantharao, R. Gregory (C. Wilson, J. Richardson)

“Vibration Based Characterization of Expanded Polystyrene Foam Patterns”, *CastExpo 05*, April 16-19, 2005--St Louis, MO (with N. Shaam, and M. A. Abdelrahman)

“Vibration Based NDE of Polystyrene Foam Plates”, *23<sup>rd</sup> International Modal Analysis Conference*, Orlando Florida, January 31 – February 3, 2005 (with N. Shaam)

“Flaw Detection Using FRFs and Autocorrelation”, *23<sup>rd</sup> International Modal Analysis Conference*, Orlando Florida, January 31 – February 3, 2005 (with B. Vasantharao)

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“Flaw Detection in Thin Composite Beams using Autocorrelation Method on the FRFs”, *2003 Quantitative Non-Destructive Evaluation (QNDE) Conference*, Green Bay, Wisconsin, July 2003, published in the *Review of Progress in Quantitative Nondestructive Evaluation*, Vol 23. AIP/Springer-Verlag, 2004 (with B. Vasantharao)

“Damping Estimation of a Cast Aluminum Structure”, 74th Shock and Vibration Symposium, San Diego, California, October 27 – 31, 2003, with F.M. Sasoglu, C. Demirdogen

“Engineering A Future 2003”, *National Conference of Society of Women Engineers*, Birmingham, Alabama, October 9-11, 2003, with K. Ramsey-Idem, C. Darvennes, P. Roberts

“Low Frequency Cavitation Erosion”, *First Pan-American/Iberian Meeting on Acoustics*, Dec 2 – Dec 6, 2002, Cancun, Mexico, sponsored by the Acoustical Society of America (with Gautam Chandekar)

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“Effective Use of a Homework Portfolio”, *2002 Annual Meeting of the Southeastern Section of the American Society for Engineering Education* on April 7-9, 2002 at University of Florida (with C. Darvennes)

“Modal Parameter Identification of a Commercial Truck Exhaust Assembly”, *20th International Modal Analysis Conference*, Los Angeles, California, February 4-7, 2002 (with M. Ellis, C. Demirdogen)

“Damping Estimation of a Cast Aluminum Structure”, 74th Shock and Vibration Symposium, San Diego, California, October 27 – 31, 2003 (with F.M. Sasoglu, C. Demirdog)

“Engineering A Future 2003”, *National Conference of Society of Women Engineers*, Birmingham, Alabama, October 9-11, 2003 (with K. Ramsey-Idem, C. Darvennes, P. Roberts)

“Large Axisymmetric Deformations of Elastic/Plastic Perforated Circular Plates”, *ASME Journal of Pressure Vessel Technology*, 125, 2003, pp. 357-364 (with D. Wu, G. Buchanan, and S. Rochelle)

Confidential Report for Carrier Corporation, MCTR-09-01-01, September 2001

“Quarterly Report #6: Field Verification of In-Situ Pile Length Measurement Using Force Random Vibration”, MCTR-08-01-01, August 20, 2001

“Boundary Effect of a Viscous Fluid on a Longitudinally Vibrating Bar: Theory and Application”, *Journal of the Acoustical Society of America*, v110, issue 1, July 2001, pp. 216-224 (with C. Darvennes)

“A Modular Approach to Vibrations”, *2001 ASEE Annual Meeting and Exposition*, June 24-27, 2001, Albuquerque, New Mexico (with C. Darvennes)

“Quarterly Report #5: Field Verification of In-Situ Pile Length Measurement Using Force Random Vibration”, MCTR-04-01-01, April 30, 2001

“Damage Detection Using Auto Correlation”, *Proceedings at the 19<sup>th</sup> International Model Analysis Conf.*, Feb. 5-8, 2001, Kissimmee, Florida (with P. Ramsagar)

“Joint Characterization for Muffler System–Fleetguard Graduate Student Sponsorship: Activity Report for June 15 to December 20, 2000”, MCTR-01-01-01, January 5, 2001

“Field Verification of In-Situ Pile Length Measurement Using Force Random Vibration”, Tennessee Department of Transportation, MCTR-08-01-01, August 2001.

“Quarterly Report #4: Field Verification of In-Situ Pile Length Measurement Using Force Random Vibration”, MCTR-10-00-02, October 23, 2000

“Quarterly Report #3: Field Verification of In-Situ Pile Length Measurement Using Force Random Vibration”, MCTR-07-00-01, July 21, 2000

“Joint Characterization for Muffler System–Fleetguard Graduate Student Sponsorship: Activity Report for January 1 to May 30, 2000”, MCTR-006-00-01, June 15, 2000

“Quarterly Report #2: Field Verification of In-Situ Pile Length Measurement Using Force Random Vibration”, MCTR-05-00-01, May 16, 2000

“Low Frequency Cavitation Generator, Report for Phase 2”, (Draft) MCTR-03-00-01, March 1, 2000

“Boundary Effect of a Viscous Fluid on a Longitudinally Vibrating Bar: Theory and Application”, accepted for publication in the *Journal of the Acoustical Society of America*, January 6, 2000, with C. Darvennes

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“Cepstral Analysis Applied to Identification of Longitudinal Vibration in Timber Piles”, *Noise Control and Acoustics Division, ASME IMECE 2000*, Orlando, Florida, November 5-10, 2000 (with M. Renfro and P. Ramsagar).

**JOHN PEDDIESON, JR.**, *Professor, Mechanical Engineering*

**RESEARCH ACTIVITIES:** *Multiphase Flow, Friction Stir Welding, Tether Dynamics, Fluid Mechanics, Solid Mechanics*

“Simulation of the Age Forming Process”, to appear in *ASME Journal of Manufacturing Science and Engineering*, Feb 2005 (with K. Idem)

“A General Discrete Filtration Model with Applications to Sieving”, *Fluid/Particle Separation Journal*, 16, 2004, pp. 53-67 (with W. Davis and S. Munukutla)

“An Incremental Elastic Compensation Method for Trusses”, *Developments in Theoretical and Applied Mechanics*, 22, 2004, pp. 304-313 (with A. Khalili and G. Buchanan)

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“A Finite Element Analysis of Anisotropic Midlin Plates”, *SECTAM Preprint XX-SM13*, 2000 (with G. Buchanan)

“Testing and Simulation of Perforated Plate Deformations”, Technical Report, Eastman Chemical Company, 2000 (with S. Idem, G. Buchanan and S. Munukutla).

**ROBERT QIU**, *Associate Professor, Electrical & Computer Engineering Department*

**RESEARCH ACTIVITIES:** *Wireless Communications and Systems (3G, 4G, UWB), Radar/communications Signal Processing, Time-domain Electromagnetics*

“Error Performance of Pulse-Based Ultra-Wideband MIMO Systems over Indoor Wireless Channels”, *IEEE Transactions on Wireless Communications*, to appear in November 2005 (with H. Liu, Z. Tian).

“Optimum and Sub-Optimum Detection of Physics-Based Ultra-Wideband and Signals in Presence of Inter-symbol Interference”, *IEEE WCNC*, New Orleans, Louisiana, March 2005.

“Demonstrating Time Reversal in Ultra-Wideband Communications using Time Domain Measurements”, *51<sup>st</sup> International Instrumentation Symposium*, 8-12 May 2005, Knoxville, Tennessee (with E. Akogun, N. Guo).

“The Impact of Fading Correlation on the Error Performance of MIMO Systems over Rayleigh Fading Channels”, to appear, *IEEE Transactions on Wireless Communications* (with H. Liu, Y. Zhong).

“A Generalized Time Domain Multi-path Channel Model and Its Applications in Ultra-sideband UWBO Wireless Optimal Receiver Design: UTD/GTD Based Solutions”, *IEEE Transaction on Wireless Communications*, Vol. 3, No.11, November 2004.

“UWB Wireless Communications”, Book Chapter, *Design and Analysis of Wireless Networks*, edited by Professor Y. Pan and Professor X. Xiao, to be published by Nova Science 2004.

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“A Generalized Time Domain Multipath Channel and its Application in Ultra-Wideband (UWB) Wireless Optimal Receiver Design: System Performance Analysis”, *IEEE 2004 Wireless Communications and Networking Conference (WCNC)*, Atlanta, Georgia, March 21-25, 2004.

**PERIASAMY K. RAJAN**, *Professor & Chairperson, Electrical & Computer Engineering*

**RESEARCH ACTIVITIES:** *Digital Signal Processing, Image Processing*

“Delta Operator Based 2-D Filter Design using Symmetry Constraints”, presented at the IEEE International Symposium on Circuits and Systems, Sydney, Australia, May 6-9, 2001 (with I-H. Khao and H.C. Reddy).

“A Distributed Agent-based Simulation Environment for Interference Detection and Resolution”, *Special Issue on Software Agents and Simulation*, June 2001 (with K. Srinivasan, S. Ramaswamy, S. Krishnamurthy).

**SRINI RAMASWAMY**, *Professor & Chairperson, Computer Science*

**RESEARCH ACTIVITIES:** *Digital signal processing, Image processing*

“Conflict Detection during Plan-integration for Multi-agent Systems”, *IEEE Transactions on Systems, Man and Cybernetics*, pp. 616-628, August 2001 (with K.S. Barber and T.H. Liu).

“A Three-tier Communication and Control Structure for the Distributed Simulation of an Automated Highway System”, *2002 Performance Metric for Intelligent Systems Workshop NIST*, August 2002 (with R. Maarfi, A. Dean, E. Brown).

“Software Design and Testing using Petri Nets: A Case Study using a Distributed Simulation Software System”, *2002 Performance Metric for Intelligent Systems Workshop NIST*, August 2002 (with R. Neelakantan).

“A Petri Net Based Approach for Establishing Necessary Software Design and Testing Requirements”, *Special Track on Petri Nets in Systems Design*, presented at 2000 IEEE International Conference on Systems, Man and Cybernetics, Nashville, Tennessee October 2000.

“Implementation and Evaluation of a Distributed Interactive Simulation Architecture for Group Interaction and Coordination: A Case Study in Interference Detection and Resolution in Naval Radar

Units”, presented at the *2000 Summer Computer Simulation Conference*, Vancouver, Canada, July 2000 (with K. Srinivasan).

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“A Distributed Agent-based Simulation Environment for Interference Detection and Resolution”, *Special Issue on Software Agents and Simulation*, June 2001 (with K. Srinivasan, P.K. Rajan, S. Krishnamurthy).

**JOSEPH RICHARDSON**, *Assistant Professor, Mechanical Engineering*

**RESEARCH ACTIVITIES:** *Boundary Element Methods, Finite Element Methods, Functionally Graded Materials Computational and Applied Mechanics, Multiscale Modeling*

“Numerical p-Version Refinement Studies for the Regularized Stress- BEM”, *International Journal for Numerical Methods in Engineering*, 58, pp. 2161-2176, 2003.

“Green’s Functions for Functionally Graded Materials: Heat Conduction”, with L. J. Gray, T. Kaplan, and Glaucio H. Paulino, *Journal of Applied Mechanics*, 70, pp. 543-549, 2003.

“An Investigation of Early Age Curing Behavior and Micro-Pore Water Development in Blended Cement Systems”, *AIChE Annual Meeting*, November 4-9, 2001 (P. J. Williams, J. D. York and J.J. Biernacki).

**R. MEENAKSHI SUNDARAM**, *Professor, Industrial Systems Engineering*

**RESEARCH ACTIVITIES:** *Manufacturing Cost Estimation, Cost Analysis and Cost Reduction, Cost Justification, Lean Manufacturing, Facilities Design and Layout Improvements, Manufacturing Strategies*

“An Approach for Dynamic Balancing of Mixed-Model Production Lines”, *Proceedings of the Second Annual Lean Management Conference, IIE*, September 23-24, 2002.

“The Effect of Postponement Strategy on Manufacturing Logistics Costs in a Supply Chain Environment”, *Proceedings of Annual Decision Science Institute Conference*, November 2002.

“Process Improvements.” Technical Report to Sunbeam Corporation, McMinnville, TN, October 2002.

“A Report on the Evaluation of Alternative Layouts”, Technical Report to Sunbeam-Oster, McMinnville, TN, 2002.

**KWUN-LON TING**, *Professor, Mechanical Engineering; Center for Manufacturing Research*

**RESEARCH ACTIVITIES:** *Mechanical systems, Material Handling, Kinematics and Mechanism Design, Robotics, Automation, Tolerance Analysis, CAD/CAM*

“On Realization of Mechanisms with Spherical Joints”, *Journal of Mechanical Design*, Vol. 127, No.4, July 2005

“Topological Synthesis of Compliant Mechanisms with Control Strategy”, *Journal of Mechanical Design*, Vol. 127, No.4, July 2005

“Path Generation with Singularity Avoidance for Five-Bar Slider-Crank Parallel Manipulators”, *Mechanisms and Machine Theory*, 40 (2005) 371-384

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“On Point-Line Geometry and Displacement”, *Mechanism and Machine Theory*, Volume 39, Issue 10, October 2004, pp. 1033-1050

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“Rigid Body Motion Characteristics and Unified Instantaneous Motion Representation of Points, Lines, and Planes”, *Journal of Mechanical Design—July 2004*, Issue 4, pp. 593-601, July 2004 (with Y. Zhang).

“Characterization of Instantaneous Point-Line Motions”, a presentation, *The Theoretical and Computational Kinematics Symposium of the 2004 ASME IDETC/CIE Conference*, Salt Lake City, Utah, October 2004.

“Geometric Properties of Point-Line Trajectories”, a presentation, *The Theoretical and Computational Kinematics Symposium of the 2004 ASME IDETC/CIE Conference*, Salt Lake City, Utah, October 2004.

“Spatial Distance of Point-Lines”, a presentation, *The Theoretical and Computational Kinematics Symposium of the 2004 ASME IDETC/CIE Conference*, Salt Lake City, Utah, October 2004.

Invited seminar presentation, National Chung Hsing University, Taiwan, December 2004.

“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)

“Rigid Body Motion Characteristics and Unified Instantaneous Motion Representation of Points, Lines, and Planes”, *Journal of Mechanical Design – July 2004*, Vol. 126, Issue 4, July 2004, pp. 593-601 (with Y. Zhang)

“Unified Rough Cutting Tool Path Generation for Sculptured Surface Machining”, Vol. 30, No.13, *International Journal of Production Research*, pp. 2973-2989, Taylor and Francis Ltd.

“On Point-line Geometry and Displacement”, *NSF Design, Service and Manufacturing Grantees and Research Conference*, Birmingham, Alabama, January 2003.

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“Adjustable Slider-Crank Linkages for Multiple Path Generation”, with H. Zhou, *Mechanisms and Machine Theory*, 37, 499-509, 2002

“Weight Function Based Direct Manipulation of NURBS Curves”, *Proceedings of ASME Design Engineering Technical Conference*, Montreal, Canada, September 2002 (with C. Lu).

“Tolerance Specification for Cost Reduction”, *Proceedings of ASME Design for Manufacturing Conference*, Montreal, Canada, September 2002 (with J. Zhu).

“Adjustable Slider-Crank Linkages for Multiple Path Generation”, *Mechanisms and Machine Theory*, 2002.

“VW Nurbs, Offset Surfaces, and Gorging-Free CNC Tool Path Generation”, Final Report, National Science Foundation, 2002.

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“Performance Distribution Analysis and Robust Design”, *Journal of Mechanical Design*, Vol. 123, No.1, pp. 11-17, March 2001

“Uncertainty Analysis of Planar and Spatial Robots with Joint Clearances”, *Mechanism and Machine Theory*, 35 (9) pp. 1239-1256, 2000

“The Effects of Joint Clearance on Position and Orientation Deviation of Linkages and Manipulators”, *Mechanism and Machine Theory*, 35, pp. 391-401, 2000

“Smoothness of C-Bezier Curves and Surfaces”, *Proceedings of 2001 NSF Design, Service and Manufacturing Grantees and Research Conference*, Tampa, Florida, January 2001.

“Cable Tension Control Mechanism”, Final Report, *Exponent Failure Analysis Association*, 2002.

“Uncertainty Analysis of Planar and Spatial Robots with Joint Clearances”, *Journal of Mechanisms and Machine Theory*, 35 (9), pp.1239-1256, 2000.

“Joint Rotation Space, Workspace, and Singularity-Free Workspace of Parallel Five-Bar Manipulators”, *Proceedings of ASME 26<sup>th</sup> Biennial Mechanisms Conference*, September 2000.

“Singularities Analysis of Basic Kinematic Chains and Complex Multiloop Planar Linkages”, DETC 2000/MECH-1419, *Proceedings of ASME 2000 Design Engineering Technical Conferences*, Baltimore, Maryland, September 10-13, 2000.

“Smoothness of C-Bezier Curves”, *Proceedings of ASME 2000 Computer and Information in Engineering*, Baltimore, Maryland, September 10-13, 2000.

“G<sup>1</sup> Continuity of C-Bezier Rectangular Surfaces”, *Proceedings of ASME 2000 Computer and Information in Engineering*, Baltimore, Maryland, September 10-13, 2000.

**DONALD VISCO**, Associate Professor, Chemical Engineering

**RESEARCH ACTIVITIES:** *In-Silico Molecular Design, Complex Equation of State Assessment and Development, Molecular Simulation, Phase-Equilibrium Calculation Techniques, Systems-based Learning Environments*

“The Role of Cross-Association in Aqueous-HF Mixtures and its Effect on the Thermodynamic Properties”, *Tennessee Academy of Science Annual Meeting*, Columbia; TN; November 2004. (with B. Baburao)

“Effect of Pure Component Parameterization Procedures in Mixture Phase Predictions Via Equations of State”, *Tennessee Academy of Science Annual Meeting*, Columbia; TN; November 2004. (with S. Swaminathan)

“Significance of Association Schemes in Modeling Aqueous Hydrogen Fluoride Mixtures”, *AIChE Annual Meeting*, Austin, TX; November 2004. (with B. Baburao)

“Thermodynamic Modeling of Various Refrigerants and Refrigerant Mixtures using Statistical Associating Fluid Theory with Variable Range (SAFT-VR)”, *AIChE Annual Meeting*, Austin, TX; November 2004. (with S. Swaminathan)

“Exploring the Importance of Pure Component Parameterization Procedures in Predicting Mixture Phase Properties via Equations of State”, *AIChE Annual Meeting*, Austin, TX; November 2004. (with S. Swaminathan)

“Thermodynamic Modeling of Refrigerants Using the Statistical Associating Fluid Theory with Variable Range (SAFT-VR). I: Pure Components”, in press, *Ind. Eng. Chem. Res.*

“Thermodynamic Modeling of Refrigerants Using the Statistical Associating Fluid Theory with Variable Range (SAFT-VR). II: Mixtures”, in press, *Ind. Eng. Chem. Res.*

“Thermodynamic Modeling of Aqueous-Hydrogen Fluoride Systems”, *Tennessee Academy of Science Annual Meeting*, Franklin, Tennessee, November 2003 (with B. Baburao)

“Are Pure Component Parameterization Procedures Important in Mixture Property Prediction?” with S. Swaminathan, *Tennessee Academy of Science Annual Meeting*, Franklin, Tennessee, November 2003.

“Insights to Phase Equilibrium Calculations via Equations of State”, *Tennessee Academy of Science Annual Meeting*, Franklin, Tennessee, November 2003 (with S. Dube)

“Developing a Methodology for an Inverse Quantitative Structure-Activity Relationship Using the Signature Molecular Descriptor”, *Journal of Molecular Graphics and Modelling*, 20, pp. 429-438, 2002 (with R. S. Pophale, M. D. Rintoul, and J. L. Faulon)

“Thermodynamic Modeling of HF-mixtures Using a Modified AEOS”, *AIChE Spring Meeting*, New Orleans, LA, March 2002 (with B. Baburao)

**FRED VONDRA**, Associate Professor, Manufacturing & Industrial Technology

**RESEARCH ACTIVITIES:** *Metal Casting Processes, Foundry Tooling Materials Evaluation, Foundry, Sand Reclamation, Lost Foam Casting Research, Counter-gravity Casting*

“Analysis of Aluminum Shakeout Characteristics of Shell Cores Used in Permanent Mold Operations – A Case Study”, *American Foundry Society 107<sup>th</sup> Casting Congress Proceedings*, Milwaukee, WI, April 2003 (with G. Cunningham, K. Kerns and G. Tordoff)

**CHUNSHENG WANG**, *Assistant Professor, Chemical Engineering; Center for Manufacturing Research*

**RESEARCH ACTIVITIES:** *Energy conversion (fuel cells) and energy storage systems (rechargeable batteries and supercapacitors), Hydrogen storage materials, Kinetics of electrode process, Nanostructured materials, Physical metallurgy and materials processing*

“Electrochemical performance of lithium ion battery, nano-silicon-based, disordered carbon composite anodes with different microstructures”, *Journal of Power Sources*, 125, 206-213(2004) (with X. W. Zhang, P. K. Patil, et. al.).

“Alkaline Fuel Cell with Intrinsic Energy Storage” *Journal of the Electrochemical Society*, 151(2), A260-A264(2004) (with A John Appleby and D. Cocke)

Chunsheng Wang, Prashanth Patil, A. John Appleby, et al, “In-situ Ionic/Electric Conductivity Measurement of  $\text{La}_{0.55}\text{Li}_{0.35}\text{TiO}_3$  Ceramic at Different Li Insertion Levels”, *Journal of the Electrochemical Society* 151, A1196-A1201(2004).

“Solvent-free composite PEO-ceramic-fiber-mat electrolytes for lithium secondary cells” *Journal of the Electrochemical Society*, 152, A205-A209(2005) with (Xiangwu Zhang and A. John Appleby).

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“Anode for  $\text{Li}^+$ -ion battery with improved low temperature performance,” *Indian J. Chem.*, Sec. A.,44A, 975-982(2005) (with Uday S Kasavajjula).

“Novel composite solid polymer electrolytes” in *Recent Research Development in Solid State Ionics*, Transworld Research Network, P95, 2004 (with X. W. Zhang and A. John Appleby).

**DONALD WEINRAUCH**, *Professor, Economics, Finance and Marketing*

**RESEARCH ACTIVITIES:** *Marketing, Entrepreneurship, Small Business Start-ups*

“Improving the Viability of Manufacturers” Representative with Industry-Based Sales Training Initiatives”, *The Journal of Business and Industrial Marketing*, Vol.16 Issue 3, 2001 (with R. Carlson and M. Stephens)

“A Federally Funded Case Study of Entrepreneurship Programs: Implications for Public Policy”, *Journal of Entrepreneurship Education*, Vol. 4, pp. 3-18, 2001 (with R. Carlson and K. Liska)

“Leveraging Resources and Marketing with a Consortium of Incubators: A Tapestry of Opportunities”, *Proceedings of AMA-UIC Research Symposium on Marketing and Entrepreneurship*, 2002 (with K. Liska and V. Moore)

“Developing a Proactive Prescription of Fast Growing Enterprise in Rural Communities”, *Academy of Entrepreneurship Proceedings*, Vol. 8, No.1, pp. 43-48, 2002

**CHRISTOPHER WILSON**, *Associate Professor, Mechanical Engineering*

**RESEARCH ACTIVITIES:** *Fracture Mechanics, Fatigue, Mechanical Testing, Plasticity, Finite Element Analysis*

“Porosity Determination in Thin Graphite-Epoxy Composite Laminates using Histograms of Ultrasonic C-Scans”, *SPIE: The International Society for Optical Engineering, 9th Annual International Symposium on NDE for Health Monitoring and Diagnostics*, San Diego, CA, March 14-18, 2004 (with Corinne Darvennes and Lance Lowe)

“Development of a Pressure-Dependent Constitutive Model with Combined Multilinear Kinematic and Isotropic Hardening”, *2004 Abaqus Users' Conference* (with P. A. Allen)

“Hydrostatic Stress Effect on the Yield Behavior of Inconel 100”, accepted for publication in the *Journal of Mechanical Behavior of Materials*, 2004 (with P. A. Allen)

“Probabilistic Multiscale Modeling of Graphite Composites”, *17th ASCE Engineering Mechanics (EM2004) Conference*, University of Delaware, Newark, DE, June 13-16, 2004 (with G.S. Smith, R.J. Matthews, and J.D. Richardson)

“Verification of NASGRO Elastic-Plastic Modules: J-Integral Computation”, NASA Marshall Space Flight Center, 2002

“A Critical Reexamination of Metal Plasticity”, *ASME Journal of Applied Mechanics*, January 2002, Vol. 69, Issue 1, pp. 63-68

“Interdisciplinary Laboratory in Advanced Materials Engineering: A Team Oriented Inquiry-Based Approach”, *Journal of Engineering Education*, October 2001, pp. 637-640 (with J. Biernacki)

“Analysis of an Industrial Welded Wire Container”, Center for Manufacturing Research Report MCTR-06-00-01 for Nashville Wire Products, May 2000 (with P. Allen)

“Transition Fracture Toughness Testing with Notches Round Bars”, *Fatigue and Fracture Mechanics: 31st Volume*, ASTM STP 1389, American Society for Testing and Materials, Philadelphia, 2000 (with G.R. Halford and J.P. Gallagher)

“Assembly Cracks in a Hybrid Nylon and Steel Planter Wheel”, *Structural Integrity of Fasteners: 2<sup>nd</sup> Volume*, ASTM STP 1391, American Society for Testing and Materials, Philadelphia, 2000

“Fracture Toughness Testing with Notched Round Bars”, with P.C. Paris and K.L. Jerina, *Fatigue and Fracture Mechanics: 30th Volume*, ASTM STP 1360, American Society for Testing and Materials, Philadelphia, 2000

“Porosity Studies in IM6/3501-6 Graphite Epoxy Laminates”, SAMPE 2004, Long Beach, CA, May 16-20, 2000 (with Richard Gregory)

“Stress Analysis of Front Rib Center Section Monitor Stand GE Virgin 7/18/00”, Technical Report, Exponent, Inc., July 24, 2000 (with D.E.P. Hoy).

“Fracture Toughness Testing with Notched Round Bars”, *30<sup>th</sup> National Symposium on Fatigue and Fracture Mechanics (ASTM)*, 2000

**DALE A. WILSON**, *Professor, Mechanical Engineering*

**RESEARCH ACTIVITIES:** *Fracture Mechanics, Fatigue, Composite Materials, Mechanical Properties Determination*

“Team Based Interventions: When You 'Haven't Got The Time“, Presented at *Southwestern Academy of Management*, February 28 - March 3, 2001 (with C. Miller and K. Subbiah)

“Optically Actuated All Optical Switch”, *SPIE*, 2000 (with E. Roan, S. Rajic and P.G. Datskos)

**YOUKYUNG WON**, *Visiting Professor, School of Business Administration, Jeonju University, South Korea*

**RESEARCH ACTIVITIES:** *Group Technology, Optimization, Cellular Manufacturing*

“Efficient  $\rho$ -Median Mathematical Programming Approaches to Machine-Part Grouping in Group Technology Manufacturing”, *Engineering Optimization*, Vol. 36, No.5, February 2004 (with K. Currie)

**YING ZHANG**, *Assistant Professor, Mechanical Engineering*

**RESEARCH ACTIVITIES:** *Protective Coatings, High-temperature Materials, Thermal Barrier Coatings TBC, Chemical Vapor Deposition (CVD)*

“Effect of Cycle Length on the Oxidation Performance of Iron Aluminide Coatings”, G. W. Garner, K. M. Cooley, and J. A. Haynes, *Surface and Coatings Technology*, Vol. 188-189, pp. 35-40, 2004 (with B. A. Pint)

“High-Temperature Diffusion Barriers for Protective Coatings”, *Surface and Coatings Technology*, 2005, Vol. 188-189, pp. 153-157, 2004 (with J. A. Haynes, K. M. Cooley, L. Walker, K. S. Reeves, and B. A. Pint)

“The Effect of Water Vapor on the Oxidation Resistance Behavior of Iron Aluminide CVD Coatings”, *Oxidation of Metals*, Vol. 62, pp. 103-120, 2004 (with B. A. Pint, J. A. Haynes, P. F. Tortorelli, and I. G. Wright)

“LaCrO<sub>3</sub>-Based Coatings on Ferritic Stainless Steel for Solid-Oxide Fuel Cell Interconnect Applications”, *Surface and Coatings Technology*, Vol. 177-178, pp. 65-72, 2004 (with J. H. Zhu, A. Basu, Z. G. Lu, M. Paranthaman, D. F. Lee, and E. A. Payzant)

“Martensitic Transformation in CVD NiAl and (Ni,Pt)Al Bond Coatings”, *Surface and Coatings Technology*, Vol. 1633, pp. 19-24, 2003 (with J.A. Haynes, B.A. Pint, I.G. Wright, and W.Y. Lee)

“Interdiffusion Behavior in Aluminide Coatings for Power Generation Applications”, Submitted to *Proceedings of the 17<sup>th</sup> Annual Conference on Fossil Energy Materials*, R. R. Judkins, U. S. Department of Energy, April 21-24, 2003, Baltimore, Maryland (with B.A. Pint, J.A. Haynes, K.M. Cooley, and I.G. Wright)

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“Effects of Pt Incorporation on the Isothermal Oxidation Behavior of CVD Aluminide Coatings”, *Metallurgical and Materials Transactions A*, Vol. 32(7) A, pp. 1727-1741, 2001 (with J.A. Haynes, W.Y. Lee, I.G. Wright, B.A. Pint, K.M. Cooley, and P.K. Liaw)

“Effects of Platinum Additions on the Adherence of Alumina Scales to CVD Aluminide Bond Coatings”, *Materials Science Forum*, Vols. 369-372, pp. 679-686, 2001 9 (with J.A. Haynes, K.L. More, B.A. Pint, I.G. Wright, and K. Cooley)

“On the Basis Screws and Screw Systems of Point-Line and Line Displacements”, *Machine Design and Research, Special Issue*, pp. 76-77, 2002 (with K.L. Ting)

“Evaluation of Iron-Aluminide CVD Coatings for High Temperature Corrosion Protection”, *Fifteenth Annual Conference on Fossil Energy Materials*, Knoxville, Tennessee, April 30-May 2, 2001 (with B.A. Pint, P.F. Tortorelli, J.A. Hynes, and I.G. Wright)

“Evaluation of Iron-Aluminide CVD Coatings for High Temperature Corrosion Protection”, presented at the *International Conference on Metallurgical Coatings and Thin Film*, San Diego, California, April 2001

**JIAHONG (JOHN) ZHU**, *Associate Professor, Mechanical Engineering*

**RESEARCH ACTIVITIES:** *Solid Oxide Fuel Cell, High-temperature Materials, Coatings, Environmental Effects in Advanced Materials, Intermetallics*

“LaCrO<sub>3</sub>-Based Coatings on Ferritic Stainless Steel For Solid Oxide Fuel Cell Interconnect Applications”, *Surface and Coatings Technology*, 177-178C, p. 65, 2004 (with Y. Zhang, A. Basu, Z.G. Lu, M. Paranthaman, D.F. Lee and E.A. Payzant)

“Electrical Conductivity of  $Mn_xCr_{3-x}O_4$  Spinel Phase”, *Journal of American Ceramic Society*, 2004 (with Z.G. LuM. Paranthaman, D.F. Lee and E.A. Payzant)

“Effect of Iron Additions on the Environmental Embrittlement of NiTi-Base Alloys”, *Intermetallics*, 2004 (with C.T. Liu and C.H. Chen)

“Tolerance Specification for Cost Reduction”, *Proceedings of ASME Design for Manufacturing Conference*, Montreal, Canada, September 2002 (with K.L. Ting)

“Enthalpy of Formation in Binary Laves Phase Alloys”, *Intermetallics*, 2002 (C.T. Liu, L.M. Pike, and P.K. Liaw)

“Intermediate-Temperature Mechanical Properties of Ni-Ni<sub>3</sub>Si Alloys: Oxygen Embrittlement and Its Remedies”, *Intermetallics*, 2002 (with C.T. Liu)

“Physical Metallurgy and Mechanical Properties of Transition-Metal Laves Phase Alloys”, *Intermetallics*, Vol. 8, pp. 1119, 2000 (with M.P. Brady, C.T. Liu, C.G. McCamey, and L.M. Pike)

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