

September 2004

## CURRICULUM VITAE OF MANOHAR R. KULKARNI, Ph.D., P.E.

### ADDRESS

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 Grand Forks, North Dakota 58208-2393  
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### PERSONAL

Birthdate: August 25, 1957 in Pune, India  
 Marital Status: Married with two children  
 Citizenship: United States of America

### PROFESSIONAL EXPERIENCE

University of North Dakota, Grand Forks, ND  
 Mechanical Engineering  
 Professor & Chair 2004 - present

Southern Illinois University, Carbondale, IL  
 Mechanical Engineering & Energy Processes  
 Professor 2004  
 Associate Professor 1998 –2004  
 Assistant Professor 1993 –1998  
 Directed Rebuild America (Carbondale) Partnership, 2000-2004  
 Established and directed Energy Management Center, 1996-2004

Johnson Controls, Inc., Milwaukee, WI  
 Corporate Research Group  
 Senior Research Engineer 1990 - 1993  
 Research Engineer 1986 - 1990

University of Wisconsin, Milwaukee, WI  
 Mechanical Engineering  
 Adjunct Associate Professor 1991 - 1993  
 Adjunct Assistant Professor 1988 - 1990

University of Missouri, Columbia, MO  
 Mechanical Engineering  
 Graduate Assistant 1981 –1986

University of Iowa, Iowa City, IA  
 Mechanical Engineering  
 Graduate Assistant 1979 –1980

## RESEARCH INTERESTS

Thermal system analysis, Energy Management, Energy optimal control of thermal systems, Energy efficient technology transfer, Thermal analysis of materials, Transient Thermography

## EDUCATION

Ph.D. University of Missouri, Columbia, Missouri (Mechanical Engineering); 1986

M.S. University of Iowa, Iowa City, Iowa (Mechanical Engineering); 1980

B.S. Indian Institute of Technology, Madras, India (Mechanical Engineering); 1979

## ACCOMPLISHMENTS/AWARDS

- At SIUC,
- Graduated 1 Ph.D. and 12 MS students
  - Author on about 60 technical articles
  - Obtained about \$600,000 in External (6-account) funding
  - Taught 12 *different* courses, both at Graduate and Undergraduate level
  - Developed 2 new courses and about 6-8 new laboratory experiments
  - Supervised/Assisted about 15 senior design projects or special research investigations, both undergraduate and graduate.
- 2002 Conducted a week-long workshop on, “Process Energy Optimization” at Tobyhanna Army Depot in Tobyhanna, Pennsylvania
- 2002 Collaborated with the Physical Plant in developing an Undergraduate Assistantship position description in Energy Management. Evaluated and interviewed applicants. Craig Carter of MEEP was awarded the assistantship.
- 2001 Based on his thesis work on energy efficiency, Jose Pecchio was awarded a \$7,500 traveling research fellowship by the SOM Foundation in a national competition. Recently, assisted Associate Dean Sevim in obtaining additional \$1,000 from SOM Foundation for Scholarship Fund.
- 1999-2003 During the summers, hosted area High-School seniors as Energy Interns. Obtained \$10,000 from ILEED/DOE for these 8-week paid internships.
- 2000-2002 Founding President, Southern Illinois Chapter of APEC (an association of energy professionals)
- 2000-2001 *Runner-up* for Outstanding Teacher of the Year, MEEP, SIUC
- 1999-2000 *Runner-up* for Outstanding Teacher of the Year, MEEP, SIUC
- 1998-1999 *Runner-up* for Outstanding Teacher of the Year, MEEP, SIUC
- 1997-1998 Outstanding Teacher of the Year, MEEP, SIUC
- 1986-present Licensed Professional Engineer; Member of ASME & ASHRAE
- 1986 Graduate Student Research Presentation *Runner-up*, University of Missouri
- 1983 Outstanding Graduate Student Teacher Award, University of Missouri

## CONSULTANTSHIPS

- Potential arbitrator for energy savings dispute between a university and private industry, both from Chicago, IL
- Attorneys Huffman & Prosser, Carbondale, Illinois
- Attorneys Booker & Christy, Carbondale, Illinois
- Midwest Electric Power, Inc., Joppa, Illinois
- Maytag Corporation, Herrin, Illinois
- Universal Cooltech, Inc., Milwaukee, Wisconsin

## INVENTION DISCLOSURES

- Energy and comfort optimal design of a thermostat for residential space-conditioning, Southern Illinois University Carbondale, July 2003
- An automatic volume control scheme in automobiles in response to speed, road and weather conditions, Johnson Controls, Inc, 1990
- Valley charging of energy storage systems during on-peak for most cost effective operation, Johnson Controls, Inc, 1988

## FUNDED RESEARCH ACTIVITIES

Illinois Bureau of Energy and Recycling, “Regional Energy Program by USDOE”, PI, June 2004 – present, \$70,000

US-Department of Energy/City of Carbondale, “Rebuild America: Energy efficiency initiative by USDOE”, PI, August 2000 – May 2004, \$161,699

IDCEO Bureau of Energy and Recycling, “Developing energy resources for business and industry”, PI, October 2000 – December 2003, \$92,133

Illinois Clean Energy Foundation, “A 24 kW Grid-Tied Photovoltaic Power System”, Co-PI, May 2002 – May 2004, \$48,000

IDCEO Bureau of Energy and Recycling, “Renewable Energy: A 24 kW Grid-Tied Photovoltaic Power System”, Co-PI, May 2002 – May 2004, \$144,000

IDCEO Bureau of Energy and Recycling, “Energy Efficiency Improvements in J. W. Neckers Building”, PI, November 2000 – June 2001, \$41,544

IDCEO Bureau of Energy and Recycling, “Creating Energy Management Opportunities for Industry”, PI, June 1996 – January 2000, \$98,914

US-Department of Energy/ILEED, “Energy education development”, PI, 1999 – 2003 (summer internships), \$9,195

## RECENT EXTERNAL PROPOSALS SUBMITTED

- Thermal transfer function approach for rapid estimation of air flows, Broad Agency Announcement: BAA#DADD 05-03-t-0024, Combating terrorism technology support office/Technical support working group
- Sustainable geothermal energy system design for Carbondale Teen Center, Illinois Clean Energy Foundation, Co-PI
- Photovoltaic assisted geothermal heat pump system, Illinois Clean Energy Foundation
- Illinois energy internship, USDOE/ILEED
- Rebuild America: An energy efficiency initiative by USDOE/City of Carbondale
- Developing energy resources for business and industry, Illinois DCCA
- 24 kW grid-tied Photovoltaic power system, Illinois Clean Energy, [Co-PI]
- Renewable energy: 24 kW grid-tied Photovoltaic power system, IDCCA, [Co-PI]
- Travel support to attend DOE peer exchange meeting with the graduate student, USDOE
- Energy efficiency improvements in J. W. Neckers Bldg., IDCCA, [PI with Phil Gatton]
- Illinois energy internship, USDOE/ILEED
- Travel support to attend DOE peer exchange meeting, USDOE
- Developing energy resources for business and industry, Illinois DCCA
- Industrial assessment center, USDOE, [PI with B. DeRuntz]
- Illinois energy internship, USDOE/ILEED
- Waterade for resource conservation, Illinois ENR/WMRC
- Rebuild America: Carbondale integrated energy partnering, City of Carbondale (USDOE)
- A high-power compact hybrid pump/actuator, USDOD/DARPA, [Co-PI]
- Illinois energy internship, USDOE/ILEED
- Creating energy management opportunities for industry, Illinois DCCA
- Tribo-heat transfer interactions in mechanical systems, EPRI , [Co-PI]
- Energy management research, ASHRAE

## PEER REVIEWED PUBLICATIONS

Kulkarni, M. R. and Gong, X. "Techno-economical analysis of a large scale rooftop photovoltaic system", 2005 ASHRAE Winter Meeting in Orlando, FL, February 5-9, 2005 (accepted).

Kulkarni, M. R. and Gong, X. "Design optimization of a large scale rooftop photovoltaic system", *International Journal of Solar Energy*, 2004 (accepted).

Harrell, J. and Kulkarni, M. R. , "Energy Efficiency Improvements in Buildings: An Environmentally Friendly Approach for Managing Electric Demand," *Energy Engineering*, 2004. [Due to relocation, I don't have journal or the page numbers available at the moment]

Kulkarni, M. R. and Hong, F., "An experimental technique for thermal comfort comparison in a transient pull-down," *Building and Environment*, vol. 39(2), pp. 189-193, 2004.

Kulkarni, M. R. "Critical Radius For Radial Heat Conduction: A Necessary Criteria But Not Always Sufficient," *Applied Thermal Engineering*, vol. 24(7), pp. 967-979, 2004.

Kulkarni, M. R. and Hong, F., "Energy Optimal Control of a Residential Space Conditioning System Based on Sensible Heat Transfer Modeling," *Building and Environment*, vol. 39(1), pp. 31-38, 2004.

Kulkarni, M. R., and Hong, F., " An experimental technique for thermal comfort comparison in a transient pull-down," Proceedings of the Sixth ISHMT-ASME Heat and Mass Transfer Conference and Seventeenth National Heat and Mass Transfer Conference, January 2004.

Kulkarni, M. R. and Gang, X., "Cogeneration via Magneto-Hydro-Dynamic (MHD) Power Generator," *Cogeneration and Distributed Generation Journal*, 2003. [Due to relocation, I don't have journal or the page numbers available at the moment]

Raichintala, S. and Kulkarni, M. R., "Thermal modeling of a reversing valve in a refrigeration system," Proceedings of IMECE: 2003 ASME International Mechanical Engineering Congress and Exposition, IMECE-43888, 2003.

Hong, F. and Kulkarni, M. R. "Energy optimal control of a residential space-conditioning system based on sensible heat transfer modeling," Proceedings of IMECE: 2003 ASME International Mechanical Engineering Congress and Exposition, IMECE-43887, 2003.

Kulkarni, M. R. and Gong, X., "Coal fired MHD technology: A prospective power generation method," Proceedings of IJPGC 2003 ASME International Joint Power Generation Conference, IJPGC-40041, 2003.

Kulkarni, M. R. and Raichintala, S., "Heat Exchanger Switchover in a Refrigeration System: Thermal Modeling of a Reversing Valve," *International Journal of Heat Exchangers* (Article in Press), 2004.

Kulkarni, M. R. and Sardesai, C. R. "Enrichment of Methane Concentration via Separation of Gases using Vortex Tubes," *Journal of Energy Engineering*, Vol. 128, No. 1, pp. 1-11, 2002.

Kulkarni, M. R., and Sardesai, C. R., "Separation of Gases using Vortex Tubes," Proceedings of the Fifth ISHMT-ASME Heat and Mass Transfer Conference and Sixteenth National Heat and Mass Transfer Conference, pp 1358-1363, January 2002.

Kulkarni, M. R., and Eiamworawutthikul, C. "Switchover Control Strategies for Improving Performance of Refrigeration Systems under Off-Design Conditions," *Heat Transfer Engineering*, 22:41-49, 2001.

Harrell, J. and Kulkarni, M. R., "Pre-construction Energy Performance Contracting for New Construction," Governor's Conference on Energy and the Illinois Environment, November 2001.

Harrell, J. and Kulkarni, M. R., "Energy Efficiency in Buildings: Technology, Costs and Impact on New Electric Generation," Governor's Conference on Energy and the Illinois Environment, November 2001.

Kulkarni, M. R. "Pre-Construction Performance Contracting for Improved Building Energy Efficiency," Proceedings of the Intersociety Energy Conversion Engineering Conference, Savannah, Paper IECEC2001-ES-41, pp 649-654, 2001.

Kulkarni, M. R. "Compressor Power Modeling: Part I Thermodynamic Efficiency Determination from Manufacturer's Performance Curves," Proceedings of the Intersociety Energy Conversion Engineering Conference, Savannah, Paper IECEC2001-ES-42, pp 721-726, 2001.

Kulkarni, M. R. "Compressor Power Modeling: Part II Experimentally Validated New Compressor Energy Efficiency Factor (CEEF) for Improved Power Prediction," Proceedings of the Intersociety Energy Conversion Engineering Conference, Savannah, Paper IECEC2001-ES-43, pp 727-732, 2001.

Lalvani, S. B., Kulkarni, M. R., and Hu, W., "A Comprehensive Treatment of Heat Exchanger Analyses in the Presence of a Third-Medium," Proceedings of the Fourth ISHMT-ASME Heat and Mass Transfer Conference and Fifteenth National Heat and Mass Transfer Conference, HMT-2000-151, pp. 1021-1026, January 2000.

Kulkarni, M. R., "Critical radius for radial heat conduction: A necessary criterion but not always sufficient," Proceedings of the ASME, HTD-Vol. 364-4, pp. 369-382, November 1999.

Brady, R. P., Kulkarni, M. R., Chu, T. C., Russell, S. "Thermal image analysis

for the in-situ NDE of composites,” *Journal of Composites Technology and Research*, Vol. 21, No. 3, pp. 141-146, 1999.

Kulkarni, M. R. “Introduction of a New Crossover Radius for Radial Heat Conduction, Part I: Cylindrical Systems,” *J. Thermal Env. & Bldg. Sci.*, Vol. 22, pp. 72-88, 1998.

Kulkarni, M. R., McGee, D. V. and Wheeler, J. W. “A Cooperative Energy Management Program,” CD-ROM Proceedings of the International Conference on Engineering Education, 1998.

Kulkarni, M. R., Sudarsan, S. and Teo, K. M. “Ensuring Continuity and Enhancement of Laboratory Experience for Undergraduate Students,” CD-ROM Proceedings of the International Conference on Engineering Education, 1998.

Kulkarni, M. R. “Caution: As We Celebrate Integration of Computers into the Engineering Education,” Proceedings of the International Conference on Engineering Education: Progress Through Partnerships, Chicago, Vol. 1, pp. 671-678, 1997.

Kulkarni, M. R., Brady, R. P. “A Model of Global Thermal Conductivity in Laminated Carbon-Carbon Composites,” *Composites Science and Technology*, Vol. 57, pp. 277-285, 1997.

Brady R. P., Kulkarni, M. R., Chu, T. C. Russell, S., “Thermal Image Analysis for the on-line NDE of Composites,” Proceedings of the Second Conference on NDE Applied to Process Control of Composite Fabrication, St. Louis, NTIAC-PR-97-01, pp. 123-136, 1996.

Kulkarni, M. R., Brady, R. P. “Preliminary Characterization of Thermal Diffusivity for Carbon-Carbon Composites Through Pulsed Video Thermal Imaging,” *Journal of Testing and Evaluation*, JTEVA, Vol. 24, No. 5, pp. 275-278, 1996.

Brady, R. P., Kulkarni, M. R. “Determination of Thermal Diffusivity for Three Types of Materials by Transient Thermography,” *NDT&E International*, Vol. 29, No. 4, pp. 205-211, 1996.

Kulkarni, M. R., Eiamworawutthikul, C. “Preliminary Estimation of Convective Heat Transfer Coefficient via Computational Fluid Dynamics Simulation,” Proceedings of the National Heat Transfer Conference, Houston, HTD-Vol. 323, pp. 215-221, 1996.

Kulkarni, M. R., Brady, R. P., Marx, D. T. “Estimation of Heat Transfer Parameters using Pulsed Video Thermography Techniques,” Proceedings of the National Heat Transfer Conference, Houston, HTD-Vol. 327, pp. 19-23, 1996.

Brady, R. P., Kulkarni, M. R. “Pulsed Video Thermography for the Simultaneous Measurement of Material Properties and Characterization of Defects,” Proceedings of Eighteenth Southeastern Conference on Technical and Applied Mechanics, Tuscaloosa, 1996.

- Brady R. P., Kulkarni, M. R. "Pulsed Video Thermography of Materials: New Comprehensive Methods for Test and Analysis," Proceedings of the ASNT Spring Conference, Norfolk, pp 94-96, 1996.
- Kulkarni, M. and Brady, R. "Non-Destructive Evaluation of Composite Materials via Thermal Diffusivity Mapping," Proceedings of the International Conference on Composites in Infrastructure, Tucson, pp 1060-1070, 1996.
- Brady, R. P., Kulkarni, M. R. "A Novel Pulsed Video Thermography Apparatus for the Quantitative Characterization of Material Flaws," *Tran. ISAS*, vol. 88, pp. 131-136, 1995.
- Brady, R. P. and Kulkarni, M. R. "Global Thermal Conductivities in Laminated Carbon-Carbon Composites," Proceedings of Carbon and Carbonaceous Composite Materials: Structure-Property Relationships Conference, Malenovice, pp 36-47, 1995.
- Marx, D. T., Brady, R. P., and Kulkarni, M. R. "Nondestructive Evaluation of Carbon-Carbon Composites Using Pulsed Video Thermography," Proceedings of the Carbon Society Conference, San Diego, pp. 126-127, 1995.
- Kulkarni, M. R., Worsham, T. R. "Mini-Van Headliner-Based Air Distribution System," SAE Technical Paper Series, Detroit, Paper 910780, pp 93-96, 1991.
- Kulkarni, M. R. and Barton, J. P. "Theoretical Examination of the Growth and Attenuation of Acoustic and Entropy Waves in Ideal Faraday Generators," The Intersociety Energy Conversion Engineering Conference, Washington, D.C., Paper 899017, pp 1005-1010, 1989.
- Kulkarni, M. R. "Simulation of MHD Power Generator Channels," Research and Creative Activities Forum, Columbia, RCAF-86-5-Math., 1986.
- Kulkarni, M. R. and Hong, F., "Determination of in-situ pipe wall thickness and percent wall erosion by Infrared Thermography Technique (IRT) based on transient thermal analysis," *Heat transfer Engineering* (submitted)
- Kulkarni, M. R. and Chetlapalli, P., "Effect of temperature gradient across bond coat in thermal barrier coatings," *Journal of Thermal Stresses*, (submitted)

### Presentations (Independent of Publications)

Kulkarni, M.R., "Energy Efficiency in Buildings: International Energy Conservation Code," invited talk to the meeting of Code Enforcement Officers of Southern Illinois, O'Fallon, IL, 2003.

Kulkarni, M. R., "Rebuild America (Carbondale): An Energy Efficiency Initiative by USDOE," Illinois Energy Peer Exchange Forum, Utica, IL, 2003.

Kulkarni, M. R., "Rebuild America (Carbondale): An Energy Efficiency Initiative by USDOE," Illinois Energy Peer Exchange Forum, Woodington, IL, 2003.

Kulkarni, M. R. and Harrell, J., "Rebuild America (Carbondale): An Energy Efficiency Initiative by USDOE," Illinois Energy Peer Exchange Forum, Findley, IL, 2002.

Kulkarni, M. R. and Harrell, J., "Rebuild America (Carbondale): An Energy Efficiency Initiative by USDOE," Illinois Energy Peer Exchange Forum, Grafton, IL, 2002.

Kulkarni, M. R., "Rebuild America (Carbondale): An Energy Efficiency Initiative by USDOE," Chicago DOE Regional Rebuild America Peer Forum, St. Louis, 2001.

Kulkarni, M. R. and Harrell, J., "Rebuild America (Carbondale): An Energy Efficiency Initiative by USDOE," Illinois Energy Peer Exchange Forum, Utica, IL, 2001.

Kulkarni, M. R. and Harrell, J., "Rebuild America (Carbondale): An Energy Efficiency Initiative by USDOE," Illinois Energy Peer Exchange Forum, Carbondale, IL, 2001.

Kulkarni, M. R., "DOE's Zero-Energy Home Initiative," meeting of the Southern Illinois chapter of Association of Professional Energy Consultants, Carbondale, 2001.

Interviewed on, "National Energy Policy," for airing during NPR hour, 2000.

Kulkarni, M. R., "Building A More Energy Efficient Community: Rebuild America (Carbondale)," meeting of the Southern Illinois chapter of Association of Professional Energy Consultants, Carbondale, 2000.

Kulkarni, M. R., "Conducting A Building Energy Audit On A Budget," an invited talk at the Illinois Higher Education Facilities Officer's Annual Meeting, 2000.

Kulkarni, M. R., "Potential Research Interaction with the Carbondale Business Development Center," meeting held at the SIUC's College of Engineering, February 2000.

Kulkarni, M. R., "Principles and Application of Vortex Tubes," a seminar at SIUC's Department of Mechanical Engineering and Energy Processes, 1999.

Kulkarni, M. R., McGee, D. V., "Energy Management," Southern Illinois Energy Expo., Carbondale, 1999.

Kulkarni, M. R., McGee, D. V., A 45-minute live interview on a radio station in Carterville about the Southern Illinois Energy Expo, energy management and deregulation. Arranged to have the participation of Mr. McGee of DCCA-Springfield via a hookup at SIUE, 1999.

Kulkarni, M. R., "Ideas for Energy Efficiency Projects in response to SB-24 (ComEd Bill)," an invited talk at Illinois State University in Normal-Bloomington, Illinois, 1999.

Kulkarni, M. R., Pecchio, J., "Energy Efficient Refrigerant Expansion," Sporlan Valve Company, Washington, Missouri, 1999.

Kulkarni, M. R., "An Energy Management and Recycling Center," Illinois DCCA, Springfield, Illinois, 1998.

Kulkarni, M. R., "Temperature Profiles Using Finite Difference," Boeing Corporation, Seattle, Washington, 1998.

Kulkarni, M. R., "Low Cost/No Cost Energy Management Opportunities," SIU-Edwardsville, 1998.

Kulkarni, M. R., Hu, W., "Thermomechanical Coupling and Wear in Braking," Industrial Advisory Board Meeting of the Center for Advanced Friction Studies, Carbondale, 1998.

Kulkarni, M. R., "Application of Scaling Methods for Thermal Analysis in Braking," Society of Automotive Engineer's Earthmoving Industry Conference, Peoria, Illinois, 1998.

Kulkarni, M. R., "Making Science Fun using Problem Based Learning (PBL) Techniques," Illinois Science Teachers Association's Science in the South Conference, Carbondale, 1997.

Kulkarni, M. R., a presentation to NSF Evaluation Team for the Proposed Center for Advanced Friction Studies, Carbondale, 1995.

Kulkarni, M. R., a presentation for the proposed NSF Industry/University Research Center, St. Louis, 1995.

Kulkarni, M. R., a presentation on Thermal Scaling to the Aircraft Braking Systems, Inc., Carbondale, 1995.

Kulkarni, M. R., "Mini-van Headliner-Based Air Distribution System," General Motors, Truck & Bus Division, Troy, 1990.

## INDUSTRIAL RESEARCH TRANSFER

Successful transfer of Headliner Based Air Distribution Research Concept at Johnson Controls, Inc. (JCI) to General Motors vehicles, 1988-1993. Resulted in,

- Kulkarni, M. R., Worsham, T. R., “Mini-Van Headliner-Based Air Distribution System,” SAE Technical Paper Series, Paper 910780, Detroit, 1991.
- Research citation and concept inclusion in, “Automotive Interior Trends for the ‘90s,” *Automotive Engineering*, Vol. 99 (5), pp. 28-33, 1991.
- JCI’s Monitor in July 1993 included a news about GM’s multi-million-dollar contract to JCI for seating and headliner based air-distribution for 1996 vans.

## MEDIA ATTENTION

- Rebuild America (Carbondale) and Energy Efficiency, local TV stations, September 2002, September 2001, February 2001, November 2000, October 2000.
- Interviewed by WSIU on National Energy Policy for airing during NPR-hour, July 2002, Oct. 2000.
- Interviewed on Bright Ideas for Energy Savings, Southern Illinoisan, Sunday, September 23<sup>rd</sup>, 2001
- Energy Efficiency in Neckers, Daily Egyptian, September 11<sup>th</sup>, 2001.
- SIUC Commits to Energy Efficiency, USDOE Partner Update, January-February, 2001
- Rebuild energy grant article, Daily Egyptian, 11/2/1999.
- Energy Management Interview: WSIU-TV, Channel 8, 9/17/1996.
- Energy Management Interview: WSIL-TV, Channel 3, 9/12/1996.
- Energy Management Interview by Beth Lilly, WSIU-Radio, 9/5/1996.
- Friction Center Interns Interview: Daily Egyptian, 7/19/1996.

## BOOKS EDITED/REVIEWED

Fluid Mechanics by White, F. M., Chapters 1 & 7, 5<sup>th</sup> edition, McGraw-Hill Publishers, 2002 (Reviewed)

Manufacturing and Materials Processing HTD-Vol. 347, ASME press, 1997 (Co-edited)

Post Conference Workshop: International Conference on Engineering Education, PCW Vol. 1, College of Engineering & Graduate School, SIUC, 1997 (Edited)

Proceedings of the International Conference on Engineering Education: Progress Through Partnerships, Vol. 1 and 2, College of Engineering & Graduate School, SIUC, 1997 (Co-edited)

Thermodynamics by Balmer, R. T., second edition, West Publishing Company, 1996  
(Reviewed)

Thermal Processing of Materials: Thermo-Mechanics, Controls, and Composites HTD-  
Vol. 289, ASME press, 1994 (Co-edited)

### EXTERNAL TECHNICAL REPORTS

Kulkarni, M. R. "Refrigeration Control: Compressor Power Model and Phase Change Sensor Characterization," Research Report 92-2 CRL, Johnson Controls, Inc., Milwaukee, Wisconsin, 1992.

Kulkarni, M. R. "Mini-Van Headliner-Based Air Distribution System," Research Report 309, Johnson Controls, Inc., Milwaukee, Wisconsin, 1989.

Kulkarni, M. R. "Battery Storage System Sizing Algorithms," Research Report 280, Johnson Controls, Inc., Milwaukee, Wisconsin, 1988.

Kulkarni, M. R. "Electric Utilities Rate Analyses," Research Report 276, Johnson Controls, Inc., Milwaukee, Wisconsin, 1987.

Kulkarni, M. R. "Electric Load Management Algorithms," Research Report 257, Johnson Controls, Inc., Milwaukee, Wisconsin, 1987.

Kulkarni, M. R. "Investigation into Applications of Superconductivity," Research Report 249, Johnson Controls, Inc., Milwaukee, Wisconsin, 1987.

Creighton, D. L., Kulkarni, M. R., Meyer, B.S. "University Steam Power Plant - Feasibility Studies," Research Report, Energy Management Program, University of Missouri, Columbia, 1982.

## TEACHING

### COURSES TAUGHT

- 1) ENGR 300      Engineering Thermodynamics (3-credit hours)  
Spring-95, Fall-94, Summer-94
- 2) ME 302      Heat Transfer Fundamentals (3)  
Fall-01, Fall-99, Spring-99, Spring-97, Fall-96
- 3) ME 401      Thermal Measurements Laboratory (1)  
Fall-03, Fall-02, Fall-01, Fall-00, Fall-99, Fall-98, Fall-97
- 4) ME 402      Heat Exchange Equipment Design (3\*)  
\* ABET Design Content of 3 credit hours  
Spring-98
- 5) ME 406      Thermal Systems Design (3\*)  
\* ABET Design Content of 2 credit hours  
Spring-95, Summer-94, Spring-94
- 6) ME 422      Applied Fluids for Mechanical Engineers (3\*)  
\* ABET Design Content of 1 credit hour  
Fall-02, Spring-01, Summer-99, Fall-95, Fall-94, Fall-93
- 7) ME 423      Compressible Flows (3\*)  
\* ABET Design Content of 1 credit hour  
Fall-03, Summer-00
- 8) ME 446      Energy Management (3\*)  
\* ABET Design Content of 2 credit hours  
Spring-04, Spring-03, Spring-02, Fall-00, Fall-98, Fall-97, Summer-95,  
Spring-94
- 9) ME 500      Advanced Engineering Thermodynamics (3)  
Spring-99
- 10) ME 502      Conduction Heat Transfer (3)  
Spring-03, Spring-02, Spring-01, Spring-98, Spring-97, Spring-96
- 11) ME 503      Convective Heat Transfer (3)  
Spring-04, Fall-95
- 12) ME 593      Introduction to Friction (3), *Team-Taught*  
Fall-96

## NEW COURSE DEVELOPMENT

“Micro-Processor based control of energy systems”. The course is being reviewed for approval and maybe offered during Spring-04. Catalog Data: ME 4XX: Micro-Processor Based Control of Energy Systems. Credit 3. Introduction to energy system design, constraints, workable designs region. Individual components including amplifiers, transducers, actuators, and modes of control. Analog and digital electronics. Applications of microcomputer control in a select set of systems such as energy storage, refrigeration, HVAC, and thermal processes. System modeling, design and control analyses in Matlab. Prerequisite: ME-436. Textbook: Microcomputer Control of Thermal and Mechanical Systems by W. Stoecker and P. Stoecker, Van Nostrand Reinhold Publishing

“Manufacturing Methods for Engineering Materials (ME 411)”. Has 0.5 of ABET Design hours. I got the course all approved but someone else has been teaching it.

Developed about 6-8 new experiments with handouts in ME-401, “Thermal measurements laboratory”.

## SPECIAL TRAINING

Attended the “International Conference for Enhanced Building Operations through Continuous Commissioning” in Berkeley, California, October 13 – 15, 2003

Attended a two days ABET Regional Faculty Workshop in October 1999.

Attended a two days symposium on, “Best Assessment Processes in Engineering Education II” in October 1998.

Attended the three days National Effective Teaching Institute of ASEE in June 1994.

Compact Heat Exchanger Design workshop of ASME in June 1989.

## GRADUATE FACULTY STATUS

### **Direct Dissertation (at SIUC)**

## ADVANCEMENT OF GRADUATE STUDENTS

### Sardesai, Chetan:

Chetan is pursuing a Ph.D. at the Illinois Institute of Technology in Chicago. Recently he has fulfilled the candidacy requirements.

### Gong, Xiangyang:

Xiangyang is pursuing a Ph.D. at the Texas A&M in College Station

### Hong, Feng:

Feng is pursuing a Ph.D. at the University of Illinois in Urbana-Champaign

### Dr. Eiamworawutthikul, Chonlathis;

He recently completed his Ph.D. at the North Carolina State University in Raleigh, 2001.

### Pecchio, Jose:

Based on his thesis work on energy efficiency, Jose was awarded a \$7,500 traveling research fellowship by the SOM Foundation in a national competition, 2001.

### Christoforou, Costas:

Recently became the youngest Head of Department of Physics at the prestigious Grammar School in Nicosia, Cyprus

Dr. Brady, Robert: Bob was a Morris Doctoral Fellow while at SIUC. He also won a \$5,000 national award from the ASME.

## GRADUATE STUDENTS (DIRECTED)

### [a] Completed **Twelve** (1 Ph.D., 12 MS)

Brady, R., Ph.D., December 1996, (Lincoln Laboratories at MIT)

Chetlapalli, P., MS, August 2004 (General Electric Company, NY)

Hong, F., MS, May 2003, (pursuing Ph.D. at University of Illinois at Urbana Champaign)

Gong, X., MS, May 2003, (pursuing Ph.D. at Texas A&M at College Station)

Raichintala, S., MS, December 2002, (Solaris Corporation)

Muriithi, K., MS, May 2002, (GE Power Systems)

Pecchio, J., MS, August 2000, (Trane Corporation)

Sardesai, C., MS, December 1999, (Johnson Controls, also a Ph.D. candidate at IIT, Chicago)

He, W., MS, December 1999, (General Motors)

Hu, W., MS, August 1997, (United Airlines)

Eiamworawutthikul, C., MS, May 1997, (post-doc at Duke University)

Christoforou, C., MS, December 1996, (Head of Department of Physics in Cyprus)

Papayiannis, Y., MS, May 1995, (Techmaster Engineering, Ltd. in Cyprus)

### [b] Currently Supervising **3** (1 Ph.D., 2 MS)

Brown, Marian, Ph.D. in Environmental Resource Policy (ERP)

**(Co-Chairing with Professor Chris Lant)**

"Energy and Material Efficiency on College Campuses: A Comparative Study"

Harrell, Justin, MS

"Zero Energy Buildings: An Ecological Design Method for Sustainable Student Housing"

Walter, Lesley, MS (Currently a full time employee at Scroll Compressor Co. in Arkansas)

**OTHER DISSERTATIONS/THESES COMMITTEES SERVED (16)**

<i>Thesis Advisors</i>	<i>Graduate Student</i>	<i>Graduation</i>
Dr. Edwin Hippo	Linda Denton (Ph.D.)	December 2003
Dr. Dale Wittmer	Myungae Lee (Ph.D.)	August 2000
Dr. Shirshak Dhali	Bijan Pashaie (Ph.D.)	May 2000
Dr. James Mathias	Yunyun Wang	
Dr. Max Yen	Brandon Karakar	December 2003
Dr. Suri Rajan	Mahesh Mokire	
Dr. Emmanuel Nsofor	Xudong Wang	December 2003
Dr. Philip Chu	Alma Leyte	
Dr. Philip Chu	Michael Zdenek	
Dr. Emmanuel Nsofor	Phani Gurijala	May 2003
Dr. Emmanuel Nsofor	Zhan Jiang	June 2002
Dr. Michael Khonsari	Diana Lados	July 1999
Dr. Michael Khonsari	Hao Xu	August 1998
Dr. Tom Molls	Sean Cornell	May 1998
Dr. Wayne A. Helmer	C. Paramaund	May 1998
Dr. James Blackburn	Ting Si	May 1997

## SERVICE

### DEPARTMENTAL

- Chair, Energy Processes/Fluids Faculty Search Committee, 2004
- Faculty Secretary, 2003–2004
- Chair, Nanotechnology/Thermal Science Faculty Search Committee, 2002-2003
- Coal/Energy Faculty Search Committee, 2002 -2003
- Chair, Department Chair Search Committee, 2002-2003
- Faculty Secretary, 2001–2002
- ABET Committee, 2001-2004
- Chair, Department Chair Search Committee, 2001-2002
- Faculty Affairs Committee, 2002-2003
- Chair, Graduate Studies Committee, 1999-2001
- Department Chair Search Committee. 1999-2001
- Faculty Affairs Committee, 1999-2000
- Chair, Assessment Committee, 1999-2003
- Chair, Thermal Science Faculty Search Committee, 1998-1999
- Operating Paper Committee, 1998-1999
- Chair, Tenure Committee, 1998
- Faculty Search Committee, 1997-1998
- Department Chair Search Committee, 1995-1996
- Department Chair Search Committee, 1994-1995
- Undergraduate Curriculum Revising & Modification: 1993-1994
- Faculty Advisor to Tau-Beta-Pi
- Faculty Mentor to about 20 students per semester
  
- Faculty Advisor to **ASHRAE** Student Chapter (1998 – 2004)  
 Our students have won scholarship/awards for **six** years in a row:
 

2003-04	Justin Harrell, \$750
2002-03	Claireese VanHoughton, \$750 & Glen Godinho, \$500
2001-02	Daren Evens, \$500
2000-01	Daren Evens, \$750
1999-2000	Matt Bober, \$1,000 & Paul Kutcosky, \$750
1998-99	Jason Hudgens, \$750

## COLLEGE OF ENGINEERING

- Director of CAFS (a NSF I/U CRC) Search Committee, 2004
- College Faculty Mentor (1999 – 2004) – Assisted a junior faculty in Technology with his preparation and eventual pursuit of tenure & promotion.
- Department ABET Coordinator to the College ABET Committee (1998 – 2004)
- Rebuild America Partnership Director (2000 – 2004)
- Elected to the Dean Chen Outstanding Faculty Research Paper Committee, (Fall 2000 – Fall 2001)
- Faculty Associate and Mentor to Engineering Student Floors in Pierce Hall
- College representative during the recruitment drive at the International Students Open House, 1996
- Conducted Thermodynamics and Heat Transfer review sessions for E.I.T., 2002, 1996, 1995
- Assisted with evaluation of candidates for the position of Director of Minority Engineering, 1995, 1996
- Curriculum Committee: 1994-95, 1995-96
- Minority Engineering Orientation Program - Spring 1996, Fall 1994
- Women in Engineering Initiative - Spring 1996, Spring 1994

## UNIVERSITY

- Architectural and Engineering (A/E) Firm Selection Committee, Spring 2004
- Provost's task force on First Year Living and Learning, (2003 – 2004)
- Chair, Special ad-hoc committee to investigate alleged violations during the Student Trustee election. After due deliberation and diligence, certified that the Student Trustee election was indeed valid, May 2003
- Chair, Chancellor's Advisory Review Board for Student Conduct Code, (2002-2004)
- Participated in Student Orientation Advisement Registration (SOAR) Initiative, Spring 2002
- College Representative to the Campus Wide Assessment Committee (2001 – 2004)
- President's Focus Group (Faculty Senate Representative), February 2001
- Undergraduate Teaching and Curriculum Committee (Fall 1998 – Fall 2001)
- Elected to Faculty Senate (2000 – 2003)
- Governance Committee of the Faculty Senate (2000 – 2003)
- Budgetary Model Ad-hoc Committee of the Faculty Senate (Fall 2000)
- Program Review Ad-hoc Committee of the Faculty Senate (Fall 2000)
- Appointed to the Facilities Advisory Committee (1999 – 2004)
- Early Warning System Facilitator (1998 – 2004)
- Judge, Science Fair Competition, 1996
- Judge, Science Fair Competition, 1995

## PROFESSIONAL

- Proposal Reviewer for University of Missouri Research Board, 2004
- Reviewer for ASME's Journal of Tribology, 2004
- Reviewer for ASME's Journal of Heat Transfer, 2002
- Judge for Illinois Junior Science Academy, Champaign, IL, 2002, 2003, & 2004
- Board Director, Southern Illinois Center for Sustainable Future (2001 – 2004)
- Reviewer for the Journal of Applied Thermal Engineering, 2001
- Proposal Reviewer for the National Science Foundation (NSF), 2000
- Founder & President, Southern Illinois Chapter of Association of Professional Energy Consultants (APEC), January 2000 – December 2002
- Corporate Treasurer and Board Director for APEC, 1997 - 2004
- Reviewer for National Heat Transfer Conference, 1999
- Steering Committee Member for the First Southern Illinois Energy Expo, 1999
- Energy Committee Member of the Southern Sustainability, 1999 – 2004
- Reviewer for DCCA-Chicago, 1998
- Member of K-15 Committee of ASME, "Thermal Control in Materials Processing & Manufacturing"
- Chair: Post ICEE-97 International Conference Workshop, Carbondale, Illinois, 1997
- Organizing Committee for the International Conference on Engineering Education, Chicago, Illinois, 1997
- Reviewer for DOE-PETC, 1996
- Reviewer for National Heat Transfer Conference, 1996
- Reviewer for the eighth International Conference on Transport Phenomena in Combustion, 1995
- Reviewer for the winter annual meeting of ASME, 1994
- Co-chair: Technical Session on Thermal Control in Materials Processing and Manufacturing at winter annual meeting of ASME, 1994
- Member of the Corporate Diversity Team, Johnson Controls, Inc., Milwaukee, Wisconsin, 1991-1993
- Milwaukee Chapter of ASME:
  - Vice President, 1989-90
  - Treasurer, 1988-89, 1987-88
  - University Activities Committee Chair, 1986-87
- Member of American Society of Mechanical Engineers
- Member of American Society of Heating, Refrigerating & Air-Conditioning Eng
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