ABDEL-MOEZ E. BAYOUMI

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EXECUTIVE BIOSKETCH

Dr. Bayoumi is Director of the USC Biomedical Engineering Program and Professor of Mechanical Engineering at the University of South Carolina in Columbia, SC. He chaired the Department of Mechanical Engineering from 1998 through 2006. Before joining USC, he was a Professor and Director of the Manufacturing Program at North Carolina State University-Raleigh, North Carolina (1996–1998); Assistant, Associate, Professor, and Distinguished Boeing Manufacturing Professor at Washington State University (1983-1996); a Project Manager at Hewlett-Packard Company-Corvallis, Oregon (1993–1995 – *on professional leave from WSU)*; and a visiting scholar for a year at the American University in Cairo (AUC) - Egypt (1991-1992 – *a sabbatical leave from WSU)*. During his tenure at the University of South Carolina, North Carolina State University, Washington State University, the American University in Cairo, and Hewlett-Packard Company, Dr. Bayoumi has been actively involved in developing strong research and educational programs.

His current areas of interest can be grouped into three categories, (1) *Study of Condition-Based Maintenance (CBM) of military aircraft in which diagnosis, prognosis and health monitoring systems* are effectively utilized using informatics and sensing technologies, (2) *Micro-Electro Mechanical Systems (MEMS) and Mechatronics* in which a MEMS device is designed, fabricated and used to sense and control mechanical or biological systems, and (3) *Design and applications of efficient energy resources and systems*.

His efforts for the past twenty-five years can be highlighted in several major contributions: (1) The intensive curriculum development for both graduate and undergraduate programs; (2) Four successful engineering accreditations in three major universities; (3) The development of high quality research and instruction facilities; (4) The successful funding from industry and federal agencies to support research activities; (5) The production of at least 100 journal and proceeding papers; (6) The successful hiring of faculty and staff members; (7) The development of several articulation agreements and Memoranda of Understanding between USC and other universities for students and faculty exchange; (8) The development of the only Nuclear Engineering Graduate (MS & PhD) programs in South Carolina at USC with about $5M of external funding in less than three years and (9) the most recent accomplishment of introducing the BS, MS, and PhD degree programs in Biomedical Engineering that is administered jointly by the Departments of Mechanical and Chemical Engineering at USC.

DETAILED CURRICULUM VITAE

PROFESSIONAL AND ACADEMIC EXPERIENCE

2006-Present: **Director of Biomedical Engineering and Professor of Mechanical Engineering,** College of Engineering and Computing, University of South Carolina, Columbia, SC

1998-2006: **Professor and Chairman,** Department of Mechanical Engineering, College of Engineering and Computing, USC, Columbia, SC

1996-1998: **Professor and Director of Manufacturing Program,** Department of Mechanical and Aerospace Engineering, North Carolina State, Raleigh, NC

1983-1996: **Assistant; Associate; Professor; and Boeing Manufacturing Distinguished Professor,** School of Mechanical and Materials Engineering, Washington State University, Pullman, WA

1993-1996: **Project Manager and Lead Scientist,** Image Technology Division, Hewlett-Packard Company, Corvallis, Oregon – ***Professional Leave from WSU***

1991-1992: **Visiting Scholar, College of Engineering and Science,** the American University in Cairo (AUC), Cairo, Egypt – ***Sabbatical Leave from WSU***

1982-1983: **Postdoctoral Research Associate Fellowship,** Engineering Research Division, North Carolina State, Raleigh, NC

1980-1981: **Design Engineer, NC-DOT**, Raleigh, NC

EDUCATION

PhD: Mechanical and Aerospace Engineering, NCSU, Raleigh, NC
MS: Mechanical Engineering, Helwan University, Cairo, Egypt
BS: Mechanical Engineering, Tanta University, Egypt

AWARDS

Fellow: ASME (2006) and SME (1993)
Excellence in Teaching: WSU, 1987, 1991 and 1993
Excellence in Teaching: ASEE, 1993 and 1994
Excellence in Research: WSU, 1992
Engineering Honorary: Tau Beta Pi, Golden Key

RESEARCH INTERESTS

Health Monitoring Systems: Condition-Based Maintenance (CBM)
Diagnosis, Prognosis and Predictive Maintenance
Image Processing in Materials Characterizations

Design and Manufacturing:	Design for Manufacturing and Assembly Product Design and Development Manufacturing Processes and Automation Tribology in Manufacturing and Design
MEMS/NEMS/Mechatronics:	MEMS/NEMS Fabrication and Characterization Mechatronics Design

GRANTS AND CONTRACTS

Current Research Grants

- **South Carolina Army National Guard (SC ARNG) - $868K, FY08-FY10,** "Achieving Condition-Based Maintenance (CBM) Objectives of Military Aircraft", PI
- **US Army Aviation and Missile Command (AMCOM) - $3.91M, FY06-FY08,** "Achieving Condition-Based Maintenance (CBM) Objectives of Military Aircraft", – Competitive Grants – PI
- **Department of Energy (DOE) - $1.37M, FY05-FY08,** "Nuclear Engineering Education", Ear Mark – PI
- **Department of Energy (DOE) - $210K, FY04-FY08,** "DOE Matching Educational Grant", Competitive Grant – PI
- **Department of Energy (DOE), - $523K, FY05-FY08,** "Innovations in Nuclear Infrastructure and Education, INIE, Multi-University Southeast INIE Consortium", – Competitive Grant – PI

Pending Proposals

- **Army Research Office,** "Development of a Predictive Maintenance of Military Equipment", $750K
- **Boeing Aerospace,** "Development of a Mechanical Diagnosis and Prognosis Test Stand at USC", $325,000
- **DARPA,** "Development of a Complete Methodology for Mechanical Diagnosis and Prognosis of Rotating Machinery", $1,335,000

Completed Research Grants

- **DOE,** "DOE Matching Educational Grant", $210,000, 2003–2005
- **DOD/South Carolina Army National Guard,** "Cost and Effectiveness Analysis of the AH64/UH-60L on Board Vibrations Monitoring (VM) System", $1,950,000, February 1999-January 2005
- **South Carolina Department of Commerce,** "On the Internal Combustion Engine of the Future; the Camless Engine", $250,000, 2000 – 2003
- **US-Egypt Collaborative Program, NSF,** "Smart Composite Materials for Monitoring Structural Damage", $49,996, July 99 - July 2002
- **Goodrich Corporation,** "The Goodrich Laboratory of Excellence in Mechanical Diagnostics and Prognostics Technology", $250,000, 2001-2002

- **Gulfstream Aerospace,** "Testing and Simulation of Airframe Structure under Complex Loading", $120,000 July 2002-June 30, 2003
- **Center for Manufacturing and Technology (CMAT),** 400,000, 1999 - 2001
- **CECMT Center for Composites at USC, DOD-US Navy-GLCC,** $15,000, 1999–2000
- **NASA Langely,** "Sensing and Control in Machining Processes", $44,000, 97– 99
- **KREATIV, Inc.,** "The Development and Characterization of Air Abrasive Jet for Dentistry Applications", $106,500, January 98 - December 98
- **Ingersoll-Rand Company,** "Icejet and Waterjet Technology for Biological and Electronics Applications", $55,100, Nov. 97 - Nov. 98
- **Space Age Control, Inc.,** "An Investigation of a Transducer Frequency Response", $5,100, April 98 – July 98
- **National Science Foundation,** "Advanced Manufacturing Concepts for Shaping Superplastic Sheet Materials", $299,916, Aug. 93 - May 96
- **The Boeing Company,** "Intelligent Machining Systems: Tape Tuning and Control", $112,820, July 1992 - December 1994
- **Flow International Cooperation,** "High Pressure Jet-Assisted Machining of Hard Materials; Design, Mechanics and Tribology", $188,280, 1993 - 1995
- **Washington Technology Center,** "Advanced Waterjet Technology Development; Jet-Assisted Machining and Abrasive Waterjet Cutting", $70,000, 1993 - 1995
- **Boeing Commercial Airplane Company,** "Intelligent Supervisory Control of Unmanned Machining Systems", $366,556, 1990-1994
- **Boeing Commercial Airplane Company,** Co-PI, "Boeing Manufacturing Professor", $500,000, 1993-1998
- **Hewlett-Packard Company,** "The Effect of Tribology of Sliding Printer's Components on Print Quality using Machine Vision", $50,000, August 1, 1992 - December 31, 1993
- **The Washington Technology Center,** "Advanced Forming Concepts; Design, Materials and Processing", $48,841, July 1991- June 1993
- **Omark Industries,** "The Development of an Adaptive Control System for a Multi-system Bulk Deformation Processes", $65,000, July 90 - June 91
- **The Washington Technology Center,** "Sensors and Control of Machining Processes", $55,500, July 1991- June 1993
- **College of Engineering and Architecture-WSU,** "Polyspectral Analysis of the Buckled Beam and Machine Tool Chattering Using Nonlinear Transfer Functions", $13,988, 1990-1991
- **Boeing Commercial Airplane Co.,** "Automated Formability Analysis of Al-Li and Other Al Alloys", Grant No.429662-0957N, $43,982, 88-89
- **National Science Foundation,** "Engineering Research Equipment Grant: High Power Copper Vapor Laser", $35,000, 1988-1989
- **Washington State University,** "Material Characterization for Forming Processes", grant-in-aid Program, $9,590, 1986-1987
- **Boeing Commercial Airplane Company,** "Physical Machinability Models for Flexible Machining Systems", $25,000, 1986-1987

- **The Washington Technology Center,** "Advanced Forming Concepts", $181,918, 1988-1993
- **The Washington Technology Center,** "Sensors and Control in Machining", $185,129, 1988-1993
- **Boeing Commercial Airplane Company,** "Cutting Tool Reliability and Tool Wear Analysis", Grant No. Y4-18661, $60,608, 1985-1986
- **National Science Foundation,** "Engineering Research Equipment, High-Speed Camera and Photographic Data Reduction Unit", Grant No. CBT-8506618, $36,191, 1985-1986
- **United States Department of Agriculture - Forestry Service,** "New Concept Increment Borer for High Production Sampling in Building Green Density Models", Grant No. PNW-84-35, $12,962, 1984-1985
- **National Science Foundation,** "Equipment to Support Materials Behavior Research", Grant No. MEA 8405633, $57,000, 1984-1985

PUBLICATIONS

Summary

1 Book, 2 Book Chapters, 65 refereed journal papers, 30 refereed proceeding articles, 32 invited seminars, 55 reports and over 45 conference presentations.

Refereed Journal Papers

- Kwangik Cho, David Coats, John Abrams, Nicholas Goodman, Yong-June Shin, and Abdel E. Bayoumi, "Applications of time-frequency analysis for aging aircraft component diagnostics and prognostics", Proc. SPIE 7074, 70740Y (2008), DOI:10.1117/12.795289
- Abdel Bayoumi, Nicholas Goodman, Ronak Shah, Les Eisner, Lem Grant, Jonathan Keller, "Conditioned-Based Maintenance at USC - Part I: Integration of Maintenance Management Systems and Health Monitoring Systems through Historical Data Investigation", in Proceedings of the AHS International Specialists' Meeting on Condition Based Maintenance, Huntsville, AL, 12-13 Feb 2008
- Abdel Bayoumi, Nicholas Goodman, Ronak Shah, Les Eisner, Lem Grant, Jonathan Keller, "CBM at USC - Part II: Implementation of CBM through the Application of Data Source Integration", in Proceedings of the AHS International Specialists' Meeting on Condition Based Maintenance, Huntsville, AL, 12-13 Feb 2008
- Abdel Bayoumi, Nicholas Goodman, Ronak Shah, Trevor Roebuck, Andrew Jarvie, Les Eisner, Lem Grant, Jonathan Keller, "CBM at USC - Part III: Aircraft Components Mapping and Testing for CBM", in Proceedings of the AHS International Specialists' Meeting on Condition Based Maintenance, Huntsville, AL, 12-13 Feb 2008
- Abdel Bayoumi, Nicholas Goodman, Ronak Shah, Les Eisner, Lem Grant, Jonathan Keller, "CBM at USC - Part IV: Examination and Cost-Benefit Analysis of the CBM Process", in Proceedings of the AHS International Specialists' Meeting on Condition Based Maintenance, Huntsville, AL, 12-13 Feb 2008

- Gelman, V. Giurgiutiu and A. Bayoumi, 2007, “Statistical Analysis of the Dynamic Mean Excitation for Spur Gear”, accepted, ASME J. Vibration and Acoustics 2
- N. Crews, J. Darabi, P. Voglewede, F. Guo, A. Bayoumi, 2007, “An Analysis of Interdigitated Electrode Geometry for Dielectrphoretic Particle Transport in Micro-Fluidics”, In Press, J. Sensors and Actuators
- N. Crews, J. Darabi, P. Voglewede, F. Guo, A. Bayoumi, 2007, “An Analysis of Interdigitated Electrode Geometry for Dielectrphoretic Particle Transport in Micro-Fluidics”, In Press, J. Sensors and Actuators
- L. Gelman, V. Giurgiutiu and A. Bayoumi, 2007, “Statistical Analysis of the Dynamic Mean Excitation for Spur Gear”, *accepted, ASME J of Vibration and Acoustics* 2
- Abdel Bayoumi and Les Eisner, May 2007, “Transforming the US Army through the Implementation of Condition-Based Maintenance”, Journal of Army Aviation, May 2007
- Abdel Bayoumi and William Ranson, August 2006, “On-Board Vibrations And Health Monitoring Systems, An Approach To Achieve Condition-Based Maintenance (CBM)”, IMAC-SEM, accepted, J of the American Helicopter Society, December 2006
- Shet, X. Deng and A. Bayoumi, 2004, “Finite Element Simulation of High-Pressure Water-Jet Assisted Metal Cutting, *International Journal of Mechanical Sciences, vol. 45, pp. 1201-1228*
- V. Giurgiutiu, Abdel Bayoumi, and Gregg Nall, January 2003, ”Mechatronics and Smart Structures: Emerging Engineering Disciplines of the New Millennium*”, Journal of Mechatronics, Pergamon Press, UK, vol. 12, no. 2, pp. 169-181*
- Guven Yucesan, Abdel Bayoumi, and Jamil Khan, May 2002, ”Least Square Method for Determination of Cutting Force Parameters in End Milling-Model and Experimental Verification”, *Transactions of the North American Manufacturing Research, vol. 30, no. 1, pp. 161-169*
- J. S. Lyons and Abdel E. Bayoumi”, May 2000, ”CQI Processes, Results, and Program Improvements foe Engineering Design*”, IEEE Transactions on Education, vol. 43, no. 2, pp. 174-181*
- M. K. Khraisheh and A. E. Bayoumi, 1999, “On the Mechanistic Modeling of Cutting Forces of Milling Operations: A Control Algorithm*”, Transactions NAMRI-SME, pp. 171-181*
- M. K. Khraisheh, A. E. Bayoumi, and S. Barnwal, 1999, “On the Mechanistic Modeling of Cutting Forces of Milling Operations: Hole Making using an End-Mill Cutter*”, Transactions of NAMRI-SME, pp. 162-169*
- M. K. Khraisheh, H. M. Zbib, C. H. Hamilton and A. E. Bayoumi, 1997”,Constitutive Modeling of Superplastic Deformation. Part I: Theory and Experiments”, *Int. Journal of Plasticity, Vol. 13, No. ½, pp. 143 – 164*
- X. D. Ding, H. M. Zbib, C. H. Hamilton and A. E. Bayoumi, January 1997, “On the Stability of Biaxial Stretching with Application to the Optimization of Superplastic Blow-Forming”, *J. Eng. Mater. And Tech., ASME Trans, pp. 26-31*
- Q. Xie, A. E. Bayoumi and H. M. Zbib, 1996, "A Study on Shear Localization in Chip Formation of Orthogonal Machining”, *Intl. J. Machine Tools & Manufacture, vol. 36, No. 7, p. 835*

- Q. Xie, A. E. Bayoumi and H. M. Zbib, 1996, "Analytical and Experimental Study of Shear Localization and Chip Formation", *J. Materials Engineering and Performance, vol.4, no.1, pp. 32-39*
- E. Bayoumi and Q. Xie, 1996, "Some Metallurgical Aspects of Chip Formation in Cutting Ti-6 wt. %Al-4wt. %V Alloy", *J. Materials Science and Engineering A, vol. 190, pp. 173-180*
- X. D. Ding, H. M. Zbib, C. H. Hamilton and A. E. Bayoumi, 1995, "On the Optimization of Superplastic Blow-Forming Processes", *Journal of Materials Engineering and Performance*, *vol. 4, no. 4, pp. 474-485*
- M. K. Khraisheh, A. E. Bayoumi, C. H. Hamilton, H. M. Zbib and K. Zhang, 1995, " Experimental Observations of Induced Anisotropy during the Torsion of Superplastic Pb-Sn Eutectic Alloy", *Scipta Met. et Mater, vol. 32, no. 7, pp. 955-959*
- M. K. Khraisheh, C. Pezeshki and A. E. Bayoumi, 1995, "Time Series-Based Analysis for Primary Chatter in Metal Cutting", *J. of Sound and Vibration, vol. 180, no. 1, p. 67*
- E. Bayoumi, G. Yucesan and L. A. Kendall, August 1994, "An Analytic Mechanistic Cutting Force Model for Milling Operations: A Theory and Methodology", *Trans. ASME-Journal of Engineering for Industry, vol. 116, no. 3, pp. 324-330*
- K. Zhang, M. K. Khraisheh, A. E. Bayoumi, C. H. Hamilton and H. M. Zbib, 1994, "Anisotropy and Transient Effects in Superplastic Deformation", *Materials Science Forum, vol. 170-172, pp. 583-588*
- E. Bayoumi, G. Yucesan and L. A. Kendall, August 1994, "An Analytic Cutting Force Model: A Case Study of Helical End Milling Operations", *Trans. ASME-Journal of Engineering for Industry*, *vol. 116, no.3*, *pp. 331-339*
- J. M. Park, R. V. Subramanian and A. E. Bayoumi, 1994, "Interfacial Shear Strength and Durability Improvement by Silanes in Single-Filament Composites Specimens of Basalt Fiber in Brittle Phenolic and Isocyanate Resins", *J. Adhesion Science and Technology*, *vol. 8, no. 2, pp. 133-150*
- E. Bayoumi, G. Yucesan and D. V. Hutton, 1993, "On the Closed Form Mechanistic Modeling of Milling: Specific Cutting Energy, Torque and Power", *Journal of Materials Engineering and Performance, vol.3, no. 4, pp. 151- 158*
- E. Bayoumi, S. Barnwal and D. V. Hutton, 1993, "Prediction of Flank Wear and Engagements from Force Measurements in End-Milling Operations", *Intl. J. Wear, vol. 170, pp.255-266*
- G. Yucesan, Q. Xie and A. E. Bayoumi, 1993, "Determination of Process Parameters through A Mechanistic Force Model of Milling Operations", *Int. J. of Mach. Tools Manufacturing*, vol. 33, no. 4, pp. 627-641
- R. B. Joshi, A. E. Bayoumi and H. M. Zbib, 1992, "The Use of Digital Image Processing in Studying Stretch-Forming Sheet Metal", *J. Experimental Mechanics, vol. 32, no. 2, pp. 117-123*
- E. Bayoumi and R. B. Joshi, 1992, "On the Instability/Formability of Stretch-Forming Sheet Metals", *Appl. Mechanics Reviews, vol.45, no.3, part 2, pp. 154-164*, 1992
- R. B. Joshi, A. E. Bayoumi and H. M. Zbib, "On Flow Localization of Stretch-Forming Sheet Metals", *Trans. NAMRI-SME, vol. XX, pp. 61-66*

- T. M. Teitenberg, A. E. Bayoumi and G. Yucesan, 1992, "Tool Wear Modeling through An Analytic Mechanistic Model of Milling Processes", *Intl. J. WEAR, 154, pp. 287-304*
- E. Bayoumi, R. B. Joshi and H. M. Zbib, 1991, "An Investigation of Finite Deformation and Shear Banding: Theory and Experiment", *Appl. Mechanics Reviews, vol.44, no.11, pt 2*
- E. Bayoumi, Q. Xie and M. N. Hamdan, 1991, "Effect of Cutting Conditions on Dynamic Properties and Surface Integrity of Work Materials", *Int. J. Wear, 146, pp. 301-312*
- Y. Wang, A. E. Bayoumi and H. M. Zbib, 1991, "An Experimental/Analytical Approach to Study Formability of Sheet Metals using a Punch Test", *J. Materials Shaping Technology, Vol. 9, No. 3, pp. 143-152*
- R. B. Joshi, A. E. Bayoumi and H. M. Zbib, 1990, "Evaluation of Macroscopic Shear Banding Using A Digital Image Processing Technique", *Scripta Metallurgica et Materialia, Vol. 24, No. 9, pp. 1747-1752*
- Q. Xie, A. E. Bayoumi and L. A. Kendall, 1990, "On the Tool Wear and Its Effect on Machined Surface Integrity", *J. Materials Shaping Technology, Vol. 8, No. 4, pp. 255-265*
- G. Yucesan, A. E. Bayoumi and L. A. Kendall, 1990, "An Analytic Mechanical Model for Milling Operations", *Trans. NAMRI-SME, vol. XVIII, pp. 137-145*
- Brown, G. L. Sheldon and A. E. Bayoumi, 1990, "A Parametric Study on Improving Tool Life by Electrospark Deposition", *Int. J. WEAR, 138, pp. 137-151*
- D. Ma, W. E. Johns, A. K. Dunker and A. E. Bayoumi, 1990, "The Effect of Donor-Acceptor Interactions on Mechanical Properties of Wood", *J. of Adhesion Sci. and Tech., Vol. 4, No. 5, pp. 411-429*
- Q. Xie, A. E. Bayoumi, L. A. Kendall and G. L. Sheldon, 1989, "A Study on Residual Stresses and Tool Wear in Machining", *Trans. NAMRC, vol. XVII, pp. 170-174*
- M. N. Hamdan and A. E. Bayoumi, 1989, "An Approach to Study the Effects of Tool Geometry on the Primary Chatter Vibration in Orthogonal Cutting", *J. Sound and Vibration, Vol. 128, No. 1, pp. 451-469*
- E. Bayoumi and N. Hamdan, 1988, "Characterization of Dynamic Flow Stress/Strain Properties Through Machining Tests", *J. Manufacturing Review, Vol. 1, No. 2, pp. 130-135*
- E. Bayoumi, J. S. Stewart and J. A. Bailey, 1988, "The Effects of Composition on Corrosion and Wear Rates of Cemented Carbide Blades in Planning Green Wood", *J. Wood and Fiber Sci., Vol. 20, No. 4, pp. 457-476*
- E. Bayoumi and L. A. Kendall, 1988, "Modeling and Measurement of Wear of Coated and Uncoated High Speed Steel End Mills", *J. Materials Shaping Tech., Vol. 6, No. 1, pp. 19-29*
- E. Bayoumi and H. Frank, 1988, "Formability Study of 2090 Al-Li Alloy", *Trans. NAMRI-SME, vol. XVI, pp. 150- 158*
- L. A. Kendall and A. E. Bayoumi, 1988, "Automated Tool Wear Monitoring and Tool Changing using Intelligent Supervisory Control", *Int. J. Prod. Res., Vol. 26, No. 10, pp. 1619-1628*

- H. Frank and A. E. Bayoumi, 1987, "Plastic Instability Study of 70/30 Cartridge Brass through a Computerized Method", *Trans. NAMRI, vol. XV, pp. 324-329*
- E. Bayoumi and H. Frank, 1987, "An Investigation of Stretch Formability and Plastic Instability through a New Computerized Testing Method", in *Recent Developments in Production Research, ed. A. Mital, Elsevier Science Publishers, Amsterdam, The Netherlands*
- L. A. Kendall and A. E. Bayoumi, 1987, "Automation of a Machining Cell: Intelligent Supervisory Control", in *Recent Developments in Production Research, ed. A. Mital, Elsevier Science Publishers, Amsterdam, the Netherlands*
- S. B. Billatos, A. E. Bayoumi, L. Alden Kendall and S. Saunders, 1986, "A Statistical Wear Model for Certain Tool Materials with Applications to Machining", *Int. J. WEAR, 112, 257*
- E. Bayoumi, H. Frank, D. Hewett and G. Sheldon, 1986, "A Computer-Aided Application in Stretch Forming", *Trans. NAMRI-SME, vol. XIV, pp. 379-387*
- E. Bayoumi and J. A. Bailey, 1985, "The Role of Chemical Composition and Tool Geometry in Controlling Surface Roughness", *Int. J. WEAR, 103, 311*
- E. Bayoumi and J. A. Bailey, 1985, "Comparison of the Wear Resistance of Selected Steels and Cemented Carbide Cutting Tool Materials in Machining", *Int. J. WEAR, 105, 131*
- E. Bayoumi and J. A. Bailey, 1985, "New Concepts of Cutting Tool Wear Mechanisms in Machining", in *Use of New Technology to Improve Mechanical Readiness, Reliability, and Maintainability, ed. T. Robert Shives, Cambridge University Press, New York, pp. 224-237*
- E. Bayoumi and H. Conrad, 1985, "The Effects of Material Parameters on Stretch Formability in Uniaxial Tension in 3003-0 Al Alloy", *Trans. NAMRI-SME, vol. XIII, p. 266*
- E. Bayoumi and J. A. Bailey, 1984, "Analytical and Experimental Study of Wear of Cemented Carbide in the Presence of Dilute Organic Acids", *WEAR, 94, 29*
- E. Bayoumi, J. A. Bailey and J. S. Stewart, 1983, "Comparison of the Wear Resistance of Various Grades of Cemented Carbides that may Find Application in Wood Machining", *Int. J. WEAR, 89, 185*
- J. A. Bailey, A. E. Bayoumi and J. S. Stewart, 1983, "Wear of Some Cemented Tungsten Carbide Tools in Machining Oak", *Int. J. WEAR, 85, 69*

Conference Presentations and Proceedings

- On-Board Vibration and Health Monitoring Systems: An Approach to Achieve Condition –Based Maintenance (CBM)-IMAC, Society of Experimental Mechanics, St. Luis, Missouri, January 2006
- Cost and Effectiveness Analysis of the AH-64 and UH-60 On-Board Vibrations Monitoring System, Aerospace Conference- IEEE, Big Sky, Montana, March 2005
- The Nuclear Sun Shines Bright on South Carolina, ASEE Annual Conference, Portland, Oregon, June 2005
- Micro-Electro-Mechanical-Systems (MEMS) for Medical Applications, Keynote Speech, Proceedings of the 8th International Conference in Design and Production, Cairo, Egypt, January 2-4, 2004

- Mechanical Diagnosis and Prognosis of Military Aircrafts: A Scientific Approach", The Annual American Helicopter Society Meeting, Virginia Peach, VA, October 2003
- Nuclear Engineering Education at University of South Carolina", The Annual American Nuclear Society Meeting, Chicago, Illinois, March 2004
- V. Giurgiutiu, A.E. Bayoumi, "Mechatronics and Smart Structures: Emerging Engineering Disciplines for the Next Millennium, Paper # M2000-002, 7th Mechatronics Forum International Conference, Atlanta, GA, September, 2002
- M. K. Khraisheh, A. E. Bayoumi and S. Barnwal, "On the Mechanics Hole Making using an End-Mill Cutter", Proceedings of the Society of Engineering Science, 2001
- M. K. Khraisheh and A. E. Bayoumi, "On the Mechanistic Modeling of Cutting Forces of Milling Operations: A Control Algorithm*", NAMR Conference, 2001*
- X. Deng, C. Shet, and A. E. Bayoumi, "A Finite Element Study of Waterjet Assisted Orthogonal Cutting", Proceedings of the 37th Society of Engineering Science Annual Technical Meeting (SES 2000), USC, Columbia, SC, October 2001
- G. Yucesan, J. Khan, and A. E. Bayoumi, "A Least Square Parameter Estimation Algorithm for Investigation of the Clearance Rubbing in Helical End Milling", Proceedings of the 37th Society of Engineering Science Annual Technical Meeting (SES 2000), University of South Carolina, Columbia, SC, October 2000
- G. Yucesan, J. Khan, and A. E. Bayoumi, "The Effect of Feed Rate and Rake Angle on Clearance Rubbing in Helical End Milling of Ti6Al4V", Proceedings of the 37th Society of Engineering Science Annual Technical Meeting (SES 2000), University of South Carolina, Columbia, SC, October 2000
- M. K. Khraisheh, A. E. Bayoumi, and S. Barnwal, "On the Mechanistic Modeling of Cutting Forces of Milling Operations: Hole Making using an End-Mill Cutter*", NAMRI 1999*
- C. H. Hamilton, H. M. Zbib and A. E. Bayoumi, " Mechanical Characterization and Constitutive Modeling for Superplastic Forming Processes: Theory and Applications", *The 1995 NSF Design and Manufacturing Grantee Conference,* January 4-6, 1995
- Q. Xie, A. E. Bayoumi and H. M. Zbib, "Characterization of Chip Formation and Shear Banding in Orthogonal Machining Using Finite Element Analysis", *International Mechanical Engineering Congress and Exposition, Chicago Ill., AMD-Vol. 183, MD – Vol. 50,* 1994
- K. Zhang, M. K. Khraisheh, A. E. Bayoumi, C. H. Hamilton and H. M. Zbib", Anisotropy and Transient Effects in Superplastic Deformation", Proceedings of the ICSAM, Moscow, Russia, May 23-25, 1994
- M. K. Khraisheh, A. E. Bayoumi, C. H. Hamilton and H. M. Zbib, "Multiaxial Deformation of Superplastic Materials", *The 1994 NSF Design and Manufacturing Grantee Conference, Cambridge Massachusetts,* January 5-7, 1994
- K. Zhang, M. K. Khraisheh, A. E. Bayoumi, C. H. Hamilton, A. E. Bayoumi and H. M. Zbib, "Mechanical Characterization of Superplastic Materials using Tension/Torsion Methods, *The 1994 NSF Design and Manufacturing Grantee Conference, Cambridge Massachusetts,* January 5-7, 1994

- X. D. Ding, H. M. Zbib, C. H. Hamilton and A. E. Bayoumi, " On the Stability of Superplastic Forming Processes, *The 1994 NSF Design and Manufacturing Grantee Conference, Cambridge Massachusetts,* January 5-7, 1994
- A. E. Bayoumi, "On the Formability/Instability Experimental Mechanics of Sheet Metal Forming", *The 22nd Midwestern Mechanics Conference,* 1991
- R. B. Joshi, A. E. Bayoumi, and H. M. Zbib, "An Investigation on the Instability of Plastic Flow using A Digital Image Processing Technique", *The Eleventh U.S. National Congress of Applied Mechanics*, 1990
- G. L. Sheldon, A. E. Bayoumi and A. R. Brown, "A Parametric Study on Improving Tool Life by Elctrospark Deposition", *Proc. Intl. Conf. WEAR*, 1989
- A. E. Bayoumi and Q. Xie, "A Study on Machined Subsurface and Tool Wear", *Proc. Intl. Conf. Prod. Research, Nottingham, United Kingdom*, 1989
- A. E. Bayoumi and S. Wojcicki, "Chemical Furnace Synthesis of Cutting Tool Materials based on Tungsten Carbide Ceramics", *Second Topical Conference on Emerging Technologies in Materials; Amer. Inst. of Chemical Engineers, San Francisco*, 1989
- L. A. Kendall and A. E. Bayoumi, "Automation of a Machining Cell: Intelligent Supervisory Control", *Proc. Intl. Conf. Prod. Research, Cincinnati, Ohio*, 1987
- A. E. Bayoumi and H. Frank, "Investigation of Stretch Forming and Plastic Instability through a New Computerized Experimental System", *Proc. Intl. Conf. Prod. Research, Cincinnati, Ohio*, 1987
- A. E. Bayoumi and L. A. Kendall, "Automation of a Machining Cell through Physical Modeling of Tool Wear", *Proc. International Conference on "Strategies for Automation of Machining-Materials and Processes,ASM-Intl" Orlando, Fl*, 1987
- A. E. Bayoumi and D. M. Weatherhead, "A New Concept Increment Core Borer", *American Society of Agricultural Engineers, No. 84*, p. 1621, 1984
- A. E. Bayoumi, "Layout Optimization of Factories", *National Planning Institute, Cairo, Egypt*, July 1977

Conference Abstracts and Presentations

- A. E. Bayoumi, R. B. Joshi and H. M. Zbib, "An Investigation of Localized Deformation using A Digital Image Processing Technique", *The PACAM II, Congress of Applied Mechanics, Chile*, 1990
- J. W. Roedell, P. G. Vaidya and A. E. Bayoumi, "Experimental Determination of the Speed of Sound in Solids using Impact Loading", *Acoustical Society of America, San Diego, California*, November, 1990
- R. Arshad, A. E. Bayoumi and W. L. Grosshandler, "A Study on Heat Generation in an End-milling Operations", *Proc. Heat Transfer, ASME-WAM*, 1989
- Brown, G. L. Sheldon and A. E. Bayoumi, 1988, "Extension of Metal Cutting Tool Life by Electrospark Alloying", *Surface Modification Technologies. Second International Conference of TMS, Chicago, Illinois*
- A. E. Bayoumi, "A Computerized Experimental Method for Solving Problems in Plastic Instability", *The Tenth U.S. National Congress of Applied Mechanics*, 1986
- A. E. Bayoumi and J. A. Bailey, "New Concepts of Cutting Tool Wear Mechanisms in Machining", *40th Meeting of the MFPG*, April 1985

Invited Conference Presentations

- Mechanical Diagnosis and Prognosis of Military Aircrafts: A Scientific Approach", The Annual American Helicopter Society Meeting, Virginia Peach, VA, October 2003
- Nuclear Engineering Education at University of South Carolina", The Annual American Nuclear Society Meeting, Chicago, Illinois, March 2004
- Recent Trends on Manufacturing Education Keynote Lecture, the 35th Annual Technical Meeting of the Society of Engineering Science, September, 1998
- On the Formability/Instability Experimental Mechanics of Sheet Metal Forming, *The 22nd Midwestern Mechanics Conference, Missouri-Rolla*, 1991
- Extension of Metal Cutting Tool Life by Electrospark Alloying, *Surface Modification Technologies III: Second International Conference of TMS, Chicago, Illinois*, 1988
- A Parametric Study on Improving Tool Life by Electrospark Deposition, *Intl. Conf. WEAR, Denver, Colorado*, 1988
- Cutting forces and power consumption versus tool life in cutting operations, *The 40th Forest Products Research Society, Spokane, Washington*, 1986
- A New Concept Increment Core Borer, *American Society of Agricultural Engineers, New Orleans, Louisiana*, 1984

Invited Seminars and Keynotes

- Micro-Electro-Mechanical-Systems (MEMS) for Medical Applications, Keynote Speech, the 8th International Conference in Design and Production, Cairo, Egypt, January 2-4, 2004
- Machinery Prognosis and Diagnosis, An Annual Scholars' Lecture, *Egyptian National Academy of Science and Technology, Cairo, Egypt, Dec. 1999*
- Smart Structures and Sensing of Composite Materials, *Egyptian National Academy of Science and Technology, Cairo, Egypt, Dec. 1998*
- Health Monitoring and Damage Prevention in Composite Materials and Structures, *Cairo University, Cairo, Egypt, Dec. 1998*
- Design for manufacture and assembly of heavy equipment, *John Deere Company, Charlotte, North Carolina, 1997*
- Design of mechatronics components, *Caterpillar Company, Clayton, NC, 1997*
- A mechanistic approach for the development of an intelligent supervisory controller of manufacturing operations, *Department of Industrial Engineering, North Carolina State University, Raleigh, North Carolina, 1997*
- The use of digital image processing in characterizing superplastic forming of hard materials, *Department of Materials Science and Engineering, North Carolina State University, Raleigh, North Carolina, 1997*
- Mechanistic modeling of milling operation for the purpose of automation, *Department of Mechanical and Aerospace Engineering, North Carolina State University, Raleigh, North Carolina, 1995*
- An Integrated Approach on the Development of an Intelligent Machining System: Process, Materials, Mechanics and Control, *Department Of Mechanical, Aerospace and Manufacturing Engineering, Syracuse University, NY, 1995*

- Machine Vision and Concurrent Engineering in Electronics Manufacturing, *Hewlett-Packard, Vancouver Division*, *Vancouver*, *Washington*, 1993
- On the Concepts of Machining Processes: From Mechanics to Automation, *Corporate Technology Center, Kennametal Inc., Latrobe, Pennsylvania*, 1993
- An Integrated Approach to Manufacturing Processes: Design, materials and Process Selection, *Department of Manufacturing Engineering, Boston University, 1993*
- Concurrent Engineering; the Trend of Manufacturing Engineering Education, *Department of Mechanical Engineering, Oregon State University, 1992*
- The World Trends of Manufacturing Systems and Manufacturing Research, *Department of Mechanical Engineering, SUNY-Stony Brook, 1992*
- Efficient Use of Computer in Solving Problems of Production and Design, *Egyptian Society of Engineers, Cairo, Egypt, 1992*
- The Use of Digital Image Processing in Metal Forming, *The American University in Cairo, Egypt, 1991*
- Manufacturing Processes Research at Washington State University, *Department of Mechanical Engineering, University of Victoria, British Colombia, Canada, 1991*
- Intelligent Machining Systems: Modeling and Control, *Department of Mechanical Engineering, University of New Mexico, Albuquerque, NM, 1991*
- Manufacturing Problems, Education and Research: A Personal View, *Department of Mechanical Engineering, San Jose State University, San Jose, CA, 1991*
- A Physical and Mechanistic Milling Model for an Untended Machining Systems, *The Sibley School of Mech. and Aerospace Engineering, Cornell Uni., Itheca, NY*, 1990
- Manufacturing, Materials and Thermo-Fluids Research Trends at Washington State University*, Dept. Mechanical Engineering, Menoufia University, Egypt*, 1990
- Computer Integrated Manufacturing- A Case Study, *Faculty of Engineering, Cairo University, Cairo, Egypt*, 1988
- Manufacturing Research Activities at Washington State University*, College of Engineering, University of Idaho, Moscow, ID*, 1986
- Technology of Metal Forming and Formability, *Omark Industries, Lewiston, ID*, 1985
- How to Increase Productivity through the Improvements of Tool Life*, Newman Machine Tool Company, Greensboro, NC*, 1983
- An Experimental and Analytical Investigation of Tool Wear in Machining Processes, *Mechanical Engineering, Washington State University, Pullman, WA*, 1983
- *A* Tribological Investigation in Machining Processes and Tool Wear, *Mechanical Engineering and Engineering Mechanics, MTU, Houghton, MI*, 1983

<u>Final Project Report</u>

- A. E. Bayoumi", The Use of Air-Abrasive Jet in Dentistry Applications", *Kreativ, Inc., Albany, OR*, 1998
- A. E. Bayoumi", The Use of Air-Abrasive Jet in Dentistry Applications", *Kreativ, Inc., Albany, OR*, 1997
- A. E. Bayoumi", Intelligent Machining Systems", *Boeing Commercial Airplane Company, Seattle, WA*, 1991- 1995
- L. A. Kendall and A. E. Bayoumi, "Intelligent Supervisory Controller: Phase Three", *Boeing Company*, 1989

- A. E. Bayoumi, "Formability of AL-Li Alloys and Other Al. Alloys", *Boeing Company, Seattle, WA*, 1989
- A. E. Bayoumi and L. A. Kendall, "Physical Machinability Models for Machining Systems", *Boeing Commercial Airplane Company, Seattle, WA*, 1987
- A. E. Bayoumi and M. Hickman, "Wood Cutter Tool Wear; Tool Life vs. Forces and Power Consumption", *Newman Machine Tool Company, Greensboro, NC*, 1986
- A. E. Bayoumi and R. Patton, "Acceleration Measurements of Powered Actuated Tools using Stroboscopic Photography", *Omark Industries, Lewiston, ID*, 1986
- A. E. Bayoumi and L. A. Kendall, "Cutting Tool Reliability and Tool Wear Analysis", *Boeing Commercial Airplane Company, Seattle, WA*, 1986
- A. E. Bayoumi and H. Conrad, "A Fundamental Study of the Influence of Material Parameters on the Formability of Aluminum Alloys", *ALCOA*, 1983
- J. A. Bailey and A. E. Bayoumi, "A Study of the Wear Characteristics of Cemented Tungsten Carbide Cutting Tools", Progress Reports I through V, *Newman Machine Tool Company, Greensboro, NC*, 1981-1982
- F. Zorowski, A. E. Bayoumi and M. Caliskan, "Design and Construction of a Complete Mechanical Scaffolding System for Maintaining Bridges in the State of North Carolina", *Department of Transportation, Raleigh, NC*, 1980

Books

- A. E. Bayoumi, "Mechanical Engineering Drafting Descriptive Geometry", Cairo University Press, 1978
- A. E. Bayoumi and L. A. Kendall, "Manufacturing Processes - A Laboratory Book", *Washington State University Students Book Corporation, Pullman, WA*, 1989
- A. E. Bayoumi, "Engineering Drawing and Descriptive Geometry - A Freshman Textbook", *Faculty of Engineering, Tanta University, Egypt*, 1975

MENTORSHIP AND SUPERVISION

5 Assistant Professors (3-current), **2** Research Associates, **13** PhD (10-Graduated, 3-current), **26** MS (24-Graduated, 2-Current), **25** Undergraduates (21-Graduated, 4-current), **10** (SPRI) SC Governor's School of Science and Mathematics-Summer Research

PhD Candidates Supervised

- ***Nicholas Goodman,*** 2011 (expected), "Predictive Maintenance of Rotating Machinery: A Generic Approach"
- ***Trevor Roebuck,*** 2009 (expected), "The Development of an Experimental and Analytical Methodology for the Health Monitoring Systems of Military Aircrafts"
- ***Hatem Mohamed,*** 2009 (expected), "Health Monitoring Data Storage, Data Security and Data Processing In Diagnosis and Prognosis of Military Aircrafts"
- ***David Johns,*** 2007, Design Optimization and Analysis of the QSC Marlin Aftercooler & Support Structure for Marine Applications"

- ***Oliver Myers,*** 2000, "The Development of an Intelligent Supervisory Controller of Machining Systems"
- ***Yun Wang,*** 2000, "The Development of Icejet Machining Technology"
- ***Marwan Khraisheh,*** 1998, "Real Time Characterization of Superplastic Materials in Multidimensional Loading"
- ***Qufei Xie***, 1995, "Mechanics of Metal Cutting through a Solid Mechanics Approach; Adiabatic Shear Banding"
- ***Nagi K. Taha***, 1993, "The Inclusion of Surface and Product Integrity in Modeling Milling and turning Processes"
- ***Ramesh Joshi****,* 1992, "A Study of Inhomogeneous Deformation in Sheet Forming Using Digital Image Processing"
- ***Guven Yucesan,*** 1992, "Modeling of Cutting Forces in Milling Operations for Intelligent Supervisory controlling"
- ***Yaning Wang****, 1990,* "An Advanced Multi-Axial Experimental Testing System with Supporting Numerical Tools"
- ***Hanan Frank***, 1987, "Increasing Productivity in Sheet Metal Forming through a New Computerized Testing Method"

MS Students Supervised

- ***Nicholas Goodman,*** 2008 (expected), "Data Warehousing and Mining of Military Aircraft"
- ***Ronak Shah,*** 2008 (expected), **"**Cost Benefits Analysis and Value Engineering of Military Aircraft"
- ***Andrew Jarvie,*** 2008, "Condition Indicators Algorithms for Apache Aircraft"
- ***Trevor Roebuck,*** 2004, "Investigation of the Dynamic Response of a Segmented Cantilever Beam subjected to Variable Support Stiffness"
- ***Mohammad Ahmed,*** 2004, "The Development of an Experimental and Analytical Methodology for the Health Monitoring Systems of Military Aircrafts"
- ***Gary Sweezy,*** 2000, "The Development of a Machine Vision System for Superplastic Materials Characterization"
- ***Richard Michelli,*** 2000, "A Mechatronics Approach to Control Robotics Arms"
- ***Truett Thomson,*** 2000, "Cutting Force Characterization of Air-Abrasive Jet for Dentistry Drilling"
- ***Charles Grant,*** 1998*,* "The Development of Air Abrasion Jet for Dentistry Applications"
- ***Brian Mellage,*** 1998, "The Development of a Tool Wear Prediction Algorithm in Cutting Hard Materials"
- ***E. Sterling Graham,*** 1996*,* "The Use of Ultra-High Pressure Waterjet in Assisting Machining Operations of Hard Materials"
- ***Shekhar Barnwal*****,** 1994, "On the Mechanistic Modeling of Milling: Tool Wear Prediction, Hole Making and Contouring"
- ***Tom Twigg*****,** 1993, "Characterization of Superplastic Materials using a Computer Controlled Tension-Torsion Testing"
- ***Tony M. Teitenberg*****,** 1992, "Tool Wear Simulation through an Analytic Mechanistic Model of Milling Processes"

- ***Jeffrey W. Roedell***, 1991, "Study of Delamination Process in the Fiber Composite Materials using Acoustic Emission"
- ***Qufie Xie,*** 1989, "Effect of Cutting Tool Wear on Specific Cutting Energy and Surface Integrity of the Machined Component"
- ***Narendra Kulkarni*****,** 1989, "Calibration of a 5 Degree-of-Freedom Cylindrical Flexible Robot"
- ***Emre Eyup Berk*****,** 1989, "Calibration of a 4 Degree-of-Freedom Cylindrical Flexible Robot"
- ***Rizwan Arshad*****,** 1988, "Temperature Measurement and its Effect on Quality for an End-milling Cutting Operation"
- ***Surinder Aggarwal*****,** 1988, "Monitoring Fiber Composite Failure Mechanisms Using Acoustic Emission Sensing"
- ***Jea Ha*****,** 1988, "An Automated Evaluation of Formability of Al-Li Alloys and Other Aluminum Alloys Using Digital Image Processing"
- ***Masood Lodhi,*** 1988, "Monitoring Delamination/Deponding Activities during Fiber Composite Failure"
- ***Roy Johnson*****,** 1987, "Effect of Specific Cutting Energy on the Machined Surface Integrity and Power Consumption"
- ***Delane Hewett***, 1986, "An Application of Computer-Aided Analysis in Studying Stretching in Sheet Metal Forming"
- ***Tad D. Shupe*****,** 1986, "Development of a Powered Increment Borer for Inspecting Non-conventional Materials"
- ***Rajpreet Ahluwalia*****,** 1986, "Tool Life and Tool Wear Analysis for Manufacturing Automation and Supervisory Controller"

INSTRUCTION AND ADVISING ACTIVITIES

Teaching Awards and Fellowships

- **University Undergraduate Excellent/Honorary Scholarship**, a full scholarship was awarded throughout the Undergraduate Program, Tanta University, Egypt, 1968-1973
- **College of Engineering and Architecture Excellence in Teaching Award,** Washington State University, 1987, 1991 and 1993
- **The American Society of Engineering Education Excellence in Teaching Award,** 1993/1994

Graduate and Undergraduate Subjects Taught

- Introduction to Biomedical Engineering
- Computer-Aided Design
- Design for Manufacture and Assembly, and Concurrent Engineering
- Capstone Engineering Design
- Integrated Design and Design Methodologies
- Project Management, Planning and Scheduling

- Traditional and Non-Traditional MFG Processes
- Manufacturing Automation: CAM, CIM and CAE
- Fabrication of Microchips and Electronic Packaging
- Introduction and Advanced Manufacturing Processes
- Experimental Methods in Materials and Manufacturing
- Mechanics of Materials and Machine Component Design

Short Courses (Organizer and Presenter)

- Computer-Aided Manufacturing and Design, The Egyptian Society of Engineers and the Egyptian Association of Professional Engineers, May 26 - May 30, 1992, (Mechanics of Sheet Metal Forming, Omark Industries-Lewiston, Idaho, June 10 - June 18, 1990
- Engineering in Society: A Broader Professional Curriculum, The National Science Foundation Instruction Grant Workshops, 91/92, 92/93
- Improvement of Writing across Higher Education Curricula, A national televised workshop, 92/93
- Teaching Improvement Support Group, WSU, Fall 1992 and Spring 1993

Teaching Grants

- Square D, Wendell, NC "MAE-416, Design and Build a Testing Stand for Motor Switches", $8,000, August 97
- John Deere Company, Charlotte, NC, "MAE 416, Design and Build a Testing Stand for Hydraulic Pumps", $8,000, August 97
- Brooma, Inc., Roxboro, NC, "MAE 416, Design and Build an R&D Prototype of an Electric Spreader for Heavy Materials Systems", $8,000, 1998

PROFESSIONAL ACTIVITIES AND SERVICES

Conference Organization

- Organizing Committee Chair, The 37th Society of Engineering Science Conference, SES 2000, The University of South Carolina - Columbia, South Carolina, October 23-25, 2000
- Organizing Committee Chair, The Twentieth North American Manufacturing Research Conference of the Society of Manufacturing Engineers, NAMRC XX - SME, Washington State University - Pullman, Washington, May 19th through May 22nd, 1992
- Scientific Committee - NAMRI, 1987 - present
- Symposium Organizer–Sensing and Control in Manufacturing, SES 1998 & 2000
- Session Chairman - NAMRC, 1986 -98
- Session Chairman - ASME, 1986, 1987 and 1990 - 1997
- Session Chairman - 22nd Midwestern Mechanics, 1991

Society Membership

- American Helicopter Society, AHS
- American Nuclear Society, ANS
- Biomedical Engineering Society, BMES
- American Society of Mechanical Engineers, ASME
- Society of Manufacturing Engineers, SME
- American Society of Engineering Education, ASEE
- North American Manufacturing Research Institute, NAMRI
- Egyptian Association of Professional Engineers EAPE
- Engineering Honorary Tau Beta Pi

Proposal, Book and Article Review

- Department of Energy
- National Science Foundation
- U S Department of Agriculture
- Washington Technology Center
- National Research Council
- International Journal of WEAR
- Journal of Materials Research
- Journal of Engineering Mechanics
- J. Metallurgical Transactions
- J. Engineering for Industry - ASME
- J. Materials Shaping Technology - ASM International
- North American Manufacturing Research Institute - NAMRI
- Metals Handbook, ASM International
- McGraw Hill Book Company
- Western Educational Publishers