CURRICULUM VITAE

Jaime F. Cárdenas-García, PhD

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Education

- Ph.D., Mechanical Engineering, University of Maryland, College Park, MD, December 1983 Dissertation: On Rayleigh Waves and Rayleigh Wave Extension of Surface Micro-cracks; Advisor: Professor David C. Holloway
- M.S., Mechanical Engineering, University of Maryland, College Park, MD, May 1975 Master's Paper: Attritious Wear in Precision Grinding; Advisor: Professor James A. Kirk
- * B.S.M.E., Mechanical Engineering, University of Maryland, College Park, MD, June 1971

*	M.A., Economics, University of Maryland, College Park, MD (thesis pending). Courses taken:					
	ECON 401 - National Income Analysis	ECON 403 - Micro-Economics				
	ECON 430 - Money and Banking	ECON 440 - International Economics				
	ECON 450 - Public Finance	ECON 485 - Economic Planning				
	ECON 601 - Macro-Economic Analysis	ECON 603 - Micro-Economic Analysis				
	ECON 606 - History of Economic Thought	ECON 616 - Seminar on Economic Development				
	ECON 621 - Quantitative Economics I	ECON 705 - Seminar on Institutional Economics				

Research Interests

Optical Techniques in Experimental Solid Mechanics; Fracture Mechanics; Dynamic Behavior of Materials; Micro Mechanical Characterization of Materials; Applications of Optical Tweezers; Inverse Problem Methodology in Solid Mechanics; Distributed Cognition, Biosemiotics, Tools and Language, Economic Development, Science, Technology and Public Policy, Higher Education

Employment

- ◆ Faculty Adjunct, Department of Physics, Escuela Politécnica Nacional, October 2014 present
- Secretaria Nacional de Ciencia, Tecnología e Innovación (SENESCYT):
 - o Escuela Politécnica Nacional
 - Advisor to the Vice-Rector (Ing. Adrián Peña) on issues related to the development of Graduate Studies and Research, October – December 2013;
 - Affiliated with the Department of Physics and Mechanical Engineering, Escuela Politécnica Nacional, January 2014 – October 7, 2014;
 - Consejo de Evaluación, Acreditación y Aseguramiento de la Calidad (CEAACES), Quito, Ecuador, Advisor to the President (Dr. Francisco Cadena Villota) on issues related to evaluation, accreditation and quality control in higher education; In charge of evaluation and accreditation of degrees in Basic Science and Engineering, February 2014 – July 2014.

- **Examiner**, United States Patent and Trademark Office, January 2008 July 2013
 - Examined over 500 Patent Applications, which resulted in over 100 issued Patents;
 - Achieved Partial Signature Authority.
- Professor, Department of Engineering, The University of Texas at Brownsville, Brownsville, Texas, August 2005 – August 2007
- Research Professor/Research Scientist, Department of Mechanical Engineering, University of Maryland, College Park, Maryland, August 2002 – July 2005
 - o Associate Director, Small Smart Systems Center
- Visiting Professor (Sabbatical Leave), Department of Mechanical Engineering, University of Maryland, College Park, Maryland, September 2001 - May 2002
- Visiting Professor, Graduate Engineering and Research Center, University of Florida, Shalimar, Florida, May 2001 - August 2001
- Professor, Department of Mechanical Engineering, Texas Tech University, Lubbock, Texas, August 1998 - August 2002
- Associate Professor, Department of Mechanical Engineering, Texas Tech University, Lubbock, Texas, August 1990 - July 1998
- Assistant Professor, Department of Mechanical Engineering, Texas Tech University, Lubbock, Texas, January 1988 - July 1990
- Assistant Professor, Department of Mechanical Engineering, Colorado State University, Fort Collins, Colorado, July 1984 - December 1987
- Consultant, National Bureau of Standards, Boulder, Colorado May 1985 March 1987
- Teaching Assistant, Research Assistant, Assistant Instructor and Instructor, Department of Mechanical Engineering, University of Maryland, College Park, Maryland, November 1972 - June 1984
- **Petroleum Engineer,** Gulf Oil Company, Columbia, Mississippi, June 1972 August 1972
- * Roustabout, Gulf Oil Company, Columbia, Mississippi, June 1971 August 1971

Current Memberships in Professional Societies

- Member of the Academy of Sciences of Ecuador (Academia de Ciencias del Ecuador), Selected: September 23, 2014; Inducted: February 19, 2015.
- Member of the American Society of Mechanical Engineers
- Member of the International Society for Biosemiotic Studies
- Member of the Distributed Language Group

Past Memberships in Professional Societies

- Member of the Society for Experimental Mechanics
- ✤ Member of the British Society for Strain Measurement
- Member of the Society of Manufacturing Engineers
- ✤ Member of the Society of Automotive Engineers
- Member of the Materials Research Society
- Member of Sigma Xi. Founding member of the UTB Chapter.
- Member of the Patent Office Professional Association
- ✤ Member of the Patent and Trademark Office Society
- ♦ Member of the International Society for the Study of Interactivity, Language and Cognition
- Professional Engineer in the State of Texas (Expired license number 65834)

Awards and Honors

- 1. Master's Paper entitled: "Attritious Wear in Precision Grinding," was one of nineteen papers selected for publication in the <u>Manufacturing Engineering Transactions</u> out of over 400 papers which were submitted, Fall 1976
- 2. 1986 Ralph E. Teetor Award, Society of Automotive Engineers (in recognition of significant contributions to teaching, research, and student development)
- Outstanding Support Award, Society of Hispanic Professional Engineers, Colorado State University, May 1987
- 4. Award in recognition of excellence in initiating and organizing the First Annual Walking Machine Decathlon, Colorado State University, May 1987
- 5. 1987-88 Outstanding Younger Member Award, Society of Automotive Engineers (for significant contributions and dedication to the on-going growth and success of SAE sections)
- 6. Certificate of Appreciation, Second Annual Walking Machine Decathlon, April 16, 1987 (for outstanding and dedicated service)
- Award of Excellence, Halliburton Education Foundation, in recognition of outstanding achievement and professionalism in education, research, and service to students, Texas Tech University, May 4, 1989
- 8. Purple Shaft Award, Pi Tau Sigma Mechanical Engineering Honor Society, Texas Tech University, Fall 1989
- 9. Purple Shaft Award, Pi Tau Sigma Mechanical Engineering Honor Society, Texas Tech University, Spring 1990
- Finalist as the "Spencer A. Wells Faculty Award" nominee from the Department of Mechanical Engineering. Nominees for this award are selected from all nine Texas Tech University colleges, Spring 1990
- Finalist as the "Hemphill-Wells New Professor Excellence in Teaching Award" nominee from the Department of Mechanical Engineering. Nominees for this award are selected from all nine Texas Tech University colleges, Spring 1990
- 12. Certificate of Appreciation, Texas Tech University Texas Academic Skills Program (TASP) Office, "in recognition of the time, effort, support, and excellent performance you have given as a TASP consultant representing the College of Engineering," Fall 1991
- 13. Award of Excellence, Halliburton Education Foundation, in recognition of outstanding achievement and professionalism in education, research, and service to students, Texas Tech University, 1993-94
- 14. Purple Shaft Award, Pi Tau Sigma Mechanical Engineering Honor Society, Texas Tech University, Fall 1999
- 15. Outstanding Faculty Advisor Award, for exemplary dedication to senior student design project advisement in ME 4371 Engineering Design II, sponsored by the Society for Design and Process Science, May 1, 2000
- 16. Certificate of Recognition and Medal, Research Institute for Autonomous Precision Guided Systems at the University of Florida Graduate Engineering and Research Center, Shalimar, Florida, October 2001
- 17. Best Paper of the 6th International Symposium on MEMS and Nanotechnology (6th ISMAN), June 8-9, 2005, Portland, OR: S. Cho, J. F. Cárdenas-Garcia and I. Chasiotis, "Determination of elastic properties of MEMS materials using inverse solutions."
- 18. Member (Three-year appointment) of an Accreditation External Review Panel of the Centro de Investigaciones en Optica, A.C. (CIO) as a result of an invitation by the Consejo Nacional de Ciencia

y Tecnología (CONACYT) and CIO; to be held from February 28, 2006 to March 3, 2006 in León, Gto., México.

- 19. Member of a Doctoral Dissertation Committee of the Fakulteit Toegepaste Wetenschappen (Faculty of Engineering) of the Vakgroep Mechanica van Materialen en Constructies (MEMC) of the Vrije Universiteit Brussel and the Royal Military Academy in Brussels, Belgium. The title of the dissertation prepared by David Lecompte is: "Identification of Mechanical Material Parameters by Inverse Methods using Displacement Fields Obtained by Digital Image Correlation". The Dissertation is directed by Professors Hugo Sol (Vrije Universiteit Brussel) and John Vantomme (Royal Military Academy). The data set for the Dissertation Defense is Thursday, February 1, 2007.
- 20. Invited by Prof. Fabrice Pierron, Head of the Laboratoire de Mécanique et Procédés de Fabrication Research Group, at the Ecole Nationale Superieure d'Arts et Metiers (ENSAM), in Chalons-en-Champagne, France, to spend 2 summer months in 2007 at his laboratory as a Visiting Fellow under the auspices of the French Government.
- 21. Member of Distributed Language Group, a self-organizing community that promotes the view that human cognitive and communicative abilities arise as we do things together while, at times, drawing on linguistic resources, language being inseparable from the artifacts, institutions and behavior used by humans who undertake complex tasks, June 2012 present.
- 22. Founding member of the International Society for the Study of Interactivity, Language and Cognition, September 13, 2012, Odense, Denmark.
- 23. Evaluated by SENESCYT (Secretaría Nacional de Ciencia, Tecnología e Innovación Ecuador) and selected to be partnered with Escuela Politécnica Nacional in Quito via Project Prometeo, September 29, 2012.
- 24. Invited by Dr. Timothy Ireland to be an External PhD Supervisor at the Leicester School of Architecture, De Montfort University, Leicester, United Kingdom, April 2014.
- 25. Member of the Academy of Sciences of Ecuador (Academia de Ciencias del Ecuador), Selected: September 23, 2014; Inducted: February 19, 2015. The Academy of Sciences of Ecuador has 31 members.

RESEARCH AND SCHOLARLY ACTIVITIES

Book/Monographs/Chapters

- J. F. Cárdenas-García, José L. F. Freire and W. C. Wang, "Optical Methods," in The Status of Experimental Mechanics, 2nd Edition, Society for Experimental Mechanics, Bethel, CT, 2002, pp. 18-22.
- 2. J. F. Cárdenas-García, C. Costa Vera, A. Naranjo Rubio and R. Quezada Ochoa, "Una Propuesta Para Estimular las Ciencias Básicas Como Elemento Crítico del Desarrollo de la Ciencia y Tecnología en el Ecuador", Document Relevant to Science and Technology Public Policy in Ecuador, Quito, Ecuador (May 30 2014).
- 3. J. F. Cárdenas-García, C. Costa Vera, L. Lascano, R. Quezada Ochoa and F. Tinajero Cárdenas, "Lo Común de las Virtudes: De Banana Republic a Banana Republic Tecnológica", Document Relevant to Science and Technology Public Policy in Ecuador, Quito, Ecuador (October 6 2014).
- J. L. Paz, A. Mastrodomenico, J. F. Cárdenas-García, L. G. Rodriguez and C. Costa Vera, "Nonlinear optical properties in molecular systems with non-zero permanent dipole moments in Four-Wave Mixing under stochastic considerations", in (S. H. Lin, A.A. Villaeys and Y. Fujimura eds.) Advances in Multi-photon Process and Spectroscopy, Vol. 23, World Scientific Publishing Co. Pte. Ltd. (Invited Paper, October 2014).

Journal Publications

- 1. J. A. Kirk and J. F. Cárdenas-García, "Attritious Wear in Precision Grinding," <u>Manufacturing</u> <u>Engineering Transactions</u>, Vol. 5, 365-383 (1976).
- 2. J. A. Kirk, J. F. Cárdenas-García and C. R. Allison, "Evaluation of Grinding-Lubricants Simulation Testing and Grinding Performance, <u>ASLE Transactions</u>, Vol. 20, No. 4, 333-339 (1977).
- J. F. Cárdenas-García and D. C. Holloway, "Optical Measurement of Projectile Velocity," <u>Experimental Techniques</u>, Vol. 9, No. 2, 25-27 (1985).
- 4. J. F. Cárdenas-García, D. T. Read and J. C. Moulder, "Experimental Study of Path Independence of the J Integral in an Aluminum Tensile Panel," <u>Experimental Mechanics</u>, Vol. 27, No. 3, 328-332 (1987).
- 5. J. F. Cárdenas-García and D. C. Holloway, "On the Lamb Solution and Rayleigh Wave Induced Cracking," <u>Experimental Mechanics</u>, Vol. 28, No. 2, 105-109 (1988).
- 6. J. F. Cárdenas-García, "Rayleigh Wave Induced Crack Extension," <u>Engineering Fracture Mechanics</u>, Vol. 35, No. 1/2/3, 409-424 (1990).
- 7. J. F. Cárdenas-García and M. C. Chyu, "Thermally Induced Failure of Microelectronic Structures," <u>ASME Journal of Electronic Packaging</u>, Vol. 112, No. 1, 80-82 (1990).
- R. D. Peters, J. F. Cárdenas-García and M. E. Parten, "Capacitive Servo-Device for Microrobotic Applications," <u>Journal of Micromechanics and Microengineering</u>: <u>Structures</u>, <u>Devices and Systems</u>, Vol. 1, 103-112 (1991).
- 9. J. C. Moulder and J. F. Cárdenas-García, "Two-Dimensional Strain Analysis Using a Video Optical Diffractometer," <u>Experimental Techniques</u>, Vol. 17, No. 5, 11-16 (1993).
- 10. J. F. Cárdenas-García, S. Zheng and F. Z. Shen, "Implementation and Use of An Automated Projection Moiré Experimental Set-Up," Optics and Lasers in Engineering, Vol. 21, Nos. 1-2, 77-98 (1994).
- 11. J. F. Cárdenas-García, H. G. Yao and S. Zheng, "3D Reconstruction of Objects Using Stereo Imaging," Optics and Lasers in Engineering, Vol. 22, 193-213 (1995).
- 12. J. F. Cárdenas-García, J. Hashemi and A. J. Durelli, "The Practical Use of the Hole Method in Photoelasticity," <u>Mechanics Research Communications</u>, Vol. 22, No. 3, 239-244 (1995).

- E. Irick, C. Heinol, T. Clayton, J. Hashemi, J. F. Cárdenas-García and R. Sadhneni, "Numerical and Experimental Investigation of Adiabatic Shear Bands in Metals Under Low Velocity Impact Conditions," Journal of Materials Engineering and Performance, Vol. 4, No. 6, 709-716 (1995).
- J. F. Cárdenas-García, Y. L. Tian, J. Hashemi and A. J. Durelli, "A Least-Squares Approach to the Practical Use of the Hole Method in Photoelasticity," <u>ASME Journal of Applied Mechanics</u>, Vol. 64, No. 3, 576-581 (1997).
- 15. J. F. Cárdenas-García, H. Yao, S. Zheng and R. E. Zartman, "Digital Image Correlation Procedure to Characterize Surface Layer Cracking," <u>Agronomy Journal</u>, Vol. 90, No. 3, 438-441 (1998).
- 16. J. F. Cárdenas-García, K. P. Suryanarayan, and W. E. Ingalls, "Mechanical Alignment Using Duplicate Circular Wedges," <u>ASME Journal of Mechanical Design</u>, Vol. 121, 305-309 (June 1999).
- 17. J. F. Cárdenas-García and J. J. E. Verhaegh, "Catalogue of moiré fringes for a bi-axially-loaded infinite plate with a hole," <u>Mechanics Research Communications</u>, 26, 6, (1999), pp. 641-648.
- 18. J. F. Cárdenas-García and J. J. E. Verhaegh, "The practical use of the hole method in moiré," <u>Mechanics Research Communications</u>, 26, 6, (1999), pp. 649-655.
- 19. J. F. Cárdenas-García, "Catalogue of photoelastic fringes for a biaxially loaded infinite plate with a hole," <u>Strain</u>, 35, 3, (1999), 97-104.
- 20. J. F. Cárdenas-García, "Photoelastic inverse problem solution for a biaxially loaded infinite plate with a hole," <u>Strain</u>, 35, 4, (1999), 131-138.
- 21. J. F. Cárdenas-García, "Determination of the elastic constants using moiré," <u>Mechanics Research</u> <u>Communications</u>, 27, 1, (2000), pp. 69-77.
- 22. J. F. Cárdenas-García, "The hole-drilling method in photoelasticity application of an optimisation approach," <u>Strain</u>, 36, 1, (2000), 9-17.
- 23. J. F. Cárdenas-García, S. Ekwaro-Osire and J. M. Berg, "Solution to the moiré hole method problem", <u>Mechanics Research Communications</u>, 28, 1, (2001), pp. 13-32.
- 24. J. F. Cárdenas-García, "The moiré circular disc: Two inverse problems," <u>Mechanics Research</u> <u>Communications</u>, 28, 4, (2001), pp. 381-388.
- 25. J. F. Cárdenas-García, "Guest Editorial." Fragblast, 7, 2, (2003), pp. 61.
- 26. J. F. Cárdenas-García, J. L. F. Freire and W. C. Wang, "Status of Experimental Mechanics Series: Part 3, Optical Methods", <u>Experimental Techniques</u>, 27, 5, (2003), pp. 19-20.
- Z. Wang, J. F. Cárdenas-García and B. Han, "Inverse Method to Determine Elastic Constants Using a Circular Disc and Moiré Interferometry", <u>Experimental Mechanics</u>, 45, 1, (2005), pp. 27-34. (doi: 10.1007/BF02428987)
- S. Cho, J. F. Cárdenas-García and I. Chasiotis, "Measurement of Nano-Displacements and Elastic Properties of MEMS Via the Microscopic Hole Method," <u>Sensors and Actuators A: Physical</u>, 120 (2005), pp. 163-171. (doi: 10.1016/j.sna.2004.11.028)
- J. F. Cárdenas-García, S. Ekwaro-Osire, J. M. Berg and W. H. Wilson, "Nonlinear Least Squares Solution to the Moiré Hole Method Problem in Orthotropic Materials, Part I: Residual Stresses", <u>Experimental Mechanics</u>, 45, 4, (2005), pp. 301-313. (doi: 10.1007/BF02428160)
- J. F. Cárdenas-García, S. Ekwaro-Osire, J. M. Berg and W. H. Wilson, "Nonlinear Least Squares Solution to the Moiré Hole Method Problem in Orthotropic Materials, Part II: Material Elastic Constants", <u>Experimental Mechanics</u>, 45, 4, (2005), pp. 314-324. (doi: 10.1007/BF02428161)
- 31. J. F. Cárdenas-García, Y. M. Shabana and R. A. Medina, "Thermal Loading and Material Property Characterization of a Functionally Graded Plate with a Hole Using an Inverse Problem Methodology", <u>Journal of Thermal Stresses</u>, 29, 1, (2006), pp. 1-20. (doi: 10.1080/014957390967929)

- J. F. Cárdenas-García, S. Preidikman and Y. M. Shabana, "Solution of the Moiré Hole Drilling Method Using a Finite-Element-Method-Based Approach," <u>International Journal of Solids and</u> <u>Structures</u>, 46, (2006), pp. 6751-6766. (doi: 10.1016/j.ijsolstr.2006.02.010)
- J. Rasty, X. Le, M. Baydogan and J. F. Cárdenas-García, "Measurement of Residual Stresses in Nuclear-Grade Zircaloy-4(R) Tubes - Effect of Heat Treatment", <u>Experimental Mechanics</u>, 47, 2, (2007), pp. 185-199. (doi: 10.1007/s11340-006-9009-5)
- 34. J. F. Cárdenas-García, "Distributed Cognition: An Ectoderm-Centric Perspective", Invited paper in <u>Biosemiotics</u>, 6, 3, (2013), pp. 337-350. (doi: 10.1007/s12304-013-9166-8)
- 35. L. G. Rodriguez, J. F. Cárdenas-García and C. Costa Vera, "Measurement of thermal diffusivities of silver nanoparticle colloidal suspensions by means of a frequency-resolved thermal lensing approach", <u>Optics Letters</u>, 39, 12, (2014), pp. 3406-3409. (doi: 10.1364/OL.39.003406)
- 36. J. L. Paz, A. Mastrodomenico, J. F. Cárdenas-García, L. G. Rodriguez, and C. Costa Vera, "Study of the absorptive and dispersive responses of molecular systems under stochastic considerations", <u>Journal of Nonlinear Optical Physics and Materials</u>, 23, 3, (2014) (doi: 10.1142/S0218863514500374)
- 37. J. L. Paz, A. Mastrodomenico, C. Costa Vera, J. F. Cárdenas-García and L. G. Rodriguez, "Rotating Wave Approximation effects on the nonlinear optical responses of complex molecular systems using a Four-Wave Mixing Signal", <u>Journal of Modern Optics</u>, (In press, November 2014) (doi: 10.1080/09500340.2014.986235).
- L. G. Rodriguez, J. L. Paz, J. F. Cárdenas-García, and C. Costa Vera, "Frequency-resolved thermal lensing: an approach for thermal diffusivity measurements in liquid samples", <u>Applied Physics B:</u> <u>Lasers and Optics</u>, (In review, September 2014).
- J. F. Cárdenas-García, J. L. Paz, L. G. Rodriguez and C. Costa Vera, "Rayleigh-type Optical Mixing Signal Intensity Reconstruction From Sparse Data Using an Inverse Problem Approach", <u>Revista</u> <u>Politécnica</u>, (In review, January 2015).

Papers in Conference Proceedings

- 1. J. A. Kirk and J. F. Cárdenas-García, "Attritious Wear in Precision Grinding," Paper number MR75-119, <u>1975 International Tool and Engineering Conference</u>, Detroit, Michigan, April 17-20, 1975.
- 2. J. A. Kirk and J. F. Cárdenas-García, "An Investigation of Grinding Wheel Behavior During Lubricated Grinding of Hardened and Annealed Steels," <u>Third North American Metalworking</u> <u>Research Conference</u>, Carnegie-Mellon University, May 1975.
- J. A. Kirk, J. F. Cárdenas-García and C. R. Allison, "Evaluation of Grinding Lubricants Simulation Testing and Grinding Performance," Paper No. 76AM-38-1, <u>American Society of Lubrication</u> <u>Engineers 1976 Annual Meeting</u>, Philadelphia, Pennsylvania, May 10-13, 1976.
- J. A. Kirk and J. F. Cárdenas-García, "Grain-Workpiece Interaction in Grinding," <u>Fourth North</u> <u>American Metalworking Research Conference</u>, Battelle's Columbus Laboratories, Columbus, Ohio, May 17-19, 1976.
- 5. D. B. Barker, D. C. Holloway and J. F. Cárdenas-García, "Experimental Investigation of Fragmentation Enhancement Due to Salvo Impact," <u>23rd U.S. Symposium on Rock Mechanics</u>, University of California, Berkeley, California, August 1982.
- 6. J. F. Cárdenas-García and D. C. Holloway, "Theoretical and Experimental Investigation of the Propagation of Surface Cracks by the Rayleigh Wave," <u>Society for Experimental Stress Analysis Annual Spring Conference</u>, pp. 437-444, Cleveland, Ohio, May 1983.

- J. F. Cárdenas-García and D. C. Holloway, "On the Lamb Solution and Rayleigh Wave Induced Cracking," <u>V International Congress on Experimental Mechanics</u>, pp. 699-706, Montreal, Canada, June 1984.
- J. F. Cárdenas-García and D. C. Holloway, "Theoretical and Experimental Study of Micro-cracking Induced by the Rayleigh Wave," <u>11th Symposium on Experimental Research in Mechanics of Solids</u>, pp. 27-36, Warsaw, Poland, September 1984.
- J. F. Cárdenas-García and D. C. Holloway, "A Quasi-Static Approach to Crack Extension Induced by Rayleigh Waves," <u>40th Mechanical Failures Prevention Group Symposium</u>, pp. 157-167, National Bureau of Standards, Gaithersburg, Maryland, April 16-18, 1985 (Cambridge University Press).
- J. F. Cárdenas-García, W. H. Wilson and D. C. Holloway, "Surface Micro-cracking Induced by Two Approaching Rayleigh Waves," <u>Society for Experimental Mechanics Spring Conference</u>, pp. 169-176, Las Vegas, Nevada, June 1985.
- D. C. Holloway, W. H. Wilson and J. F. Cárdenas-García, "Utilization of Holographic Interferometry for Dynamic Measurements in Geophysics and Detonics," <u>Society for Experimental Mechanics Fall</u> <u>Conference</u>, pp. 155-162, Grenelefe, Florida, November 17-20, 1985.
- J. C. Moulder, D. T. Read and J. F. Cárdenas-García, "A New Video-Optical Method for Whole-Field Strain Measurements," <u>Society for Experimental Mechanics Spring Conference</u>, pp. 700-705, New Orleans, Louisiana, June 9-13, 1986.
- J. F. Cárdenas-García, D. T. Read and J. C. Moulder, "Experimental Study of Path Independence of the J-integral in an Aluminum Tensile Panel," <u>Society for Experimental Mechanics Spring Conference</u>, pp. 448-457, New Orleans, Louisiana, June 9-13, 1986.
- D. T. Read, J. C. Moulder and J. F. Cárdenas-García, "Experimental Study of Path Independence on the J-Integral in an HSLA Steel Tensile Panel," <u>Conference of the European Group on Fracture</u>, Delft, The Netherlands, June 15-20, 1986.
- J. F. Cárdenas-García, J. C. Moulder and R. D. Kriz, "Determination of Whole-Field Strain in a Composite Panel Using Coherent Optical Processing," <u>Society for Experimental Mechanics Fall</u> <u>Conference</u>, pp. 48-53, Keystone, Colorado, November 2-5, 1986.
- D. C. Holloway, W. H. Wilson and J. F. Cárdenas-García, "Laboratory Study of Techniques for Fracture Control in Blasting," <u>Society for Experimental Mechanics Spring Conference</u>, pp. 79-86, Houston, Texas, June 14-19, 1987.
- J. F. Cárdenas-García, "Rayleigh Wave Induced Crack Extension," <u>International Conference on</u> <u>Fracture and Damage of Concrete and Rock</u>, pp. 409-424, Vienna, Austria, July 4-6, 1988 (Pergamon Press).
- J. F. Cárdenas-García, J. Rasty and J. C. Moulder, "NDE Applications of an Optical Technique for Non-Contact Measurements of In-Plane Strains," <u>Review of Progress in Quantitative Non-Destructive Evaluation</u>, pp. 559-566, San Diego, California, July 31 - August 5, 1988 (Plenum Publishing Corporation).
- J. F. Cárdenas-García and J. Rasty, "Development of a Walking Machine: A Tool for Promoting Interdisciplinary Cooperation Among Undergraduate Engineering Students," <u>ASEE Gulf-Southwestern Conference</u>, pp. 135-141, Lubbock, Texas, April 2-4, 1989.
- J. F. Cárdenas-García and M. S. Wu, "Further Development of the Video Optical Diffractometer for Strain Measurement," <u>1989 Spring Conference on Experimental Mechanics</u>, pp. 73-79, Cambridge, Massachusetts, May 28 -June 2, 1989.
- J. F. Cárdenas-García and L. W. Tsai, "The Society of Automotive Engineers Walking Machine Decathlon, a National Collegiate Robotics Competition," <u>First National Applied Mechanisms and Robotics Conference</u>, Paper number 89AMR-7A-6, Cincinnati, Ohio, November 5-8, 1989.

- 22. J. F. Cárdenas-García and M. C. Chyu, "Thermally Induced Failure of Microelectronic Structures," ASME paper number 89-WA/EEP-41, <u>American Society of Mechanical Engineers Winter Annual Meeting</u>, San Francisco, California, December 10-15, 1989.
- 23. J. F. Cárdenas-García, S. Mateos, R. Rodriguez, R. D. Peters and J. C. Moulder, "Finite Element Modeling of 3D Capacitive Array Sensors for NDE Applications," <u>Review of Progress in Quantitative</u> <u>Non-Destructive Evaluation</u>, pp. 927-934, San Diego, California, July 15-20, 1990 (Plenum Publishing Corporation).
- L. Ferrer, J. F. Cárdenas-García, J. Chaur and E. Solis, "The Use of Candied Sugar as a Brittle Lacquer," <u>9th International Conference on Experimental Mechanics</u>, Technical University of Denmark, Copenhagen, Denmark, August 20-24, 1990.
- 25. W. E. Ingalls, J. F. Cárdenas-García and M. A. Rodriguez, "A Novel Continuously Variable Desmodromic Engine Valve Timing Mechanism," SAE paper number 910452, <u>1991 Society of</u> <u>Automotive Engineers International Congress and Exposition</u>, Detroit, Michigan, February 25 - March 1, 1991.
- 26. M. A. Rodriguez and J. F. Cárdenas-García, "Development of a Solid Modeler Using Object Oriented Programming," <u>SCOOP-West '91</u>, pp. 75-96, San Jose, California, March 11-14, 1991.
- 27. J. F. Cárdenas-García, S. Zheng and F. Z. Shen, "Projection Moire as a Tool for the Automated Determination of Surface Topography," <u>Second International Conference on Photomechanics and Speckle Metrology</u>, pp. 210-224, San Diego, California, July 21-26, 1991.
- 28. M. A. Rodriguez, J. F. Cárdenas-García and W. E. Ingalls, "Modeling of a Continuously Variable Desmodromic Engine Valve Timing Mechanism Using Object Oriented Programming," <u>Special</u> <u>Symposium on Advanced Automotive Technologies at the 1991 American Society of Mechanical</u> Engineers Winter Annual Meeting, DE-Vol. 40, pp. 139-154, Atlanta, Georgia, December 1-6, 1991.
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- 43. J. F. Cárdenas-García and R. Iza-Terán, "A Least Squares Approach to the Practical Use of the Hole Method in Geometric Moiré," <u>Proceedings of the Fifth Biennial World Conference on Integrated</u> <u>Design and Process Technology</u>, Dallas, Texas, June 4 - 8, 2000.
- 44. J. F. Cárdenas-García and H. Espinosa, "Determination of Elastic Constants in MEMS Anisotropic Materials", Society for Experimental Mechanics Annual Conference on Experimental Mechanics, June 4-6, 2001, Portland, Oregon.
- 45. J. F. Cárdenas-García, S. Ekwaro-Osire and J. M. Berg, "Nonlinear Least Squares Applied to the Moiré Hole-Drilling Problem", Society for Experimental Mechanics Annual Conference on Experimental Mechanics, June 4-6, 2001, Portland, Oregon (extended abstract and presentation).
- 46. J. F. Cárdenas-García, "Assessment of Elastic Properties and Fracture Toughness of Nanoenergetic Materials," The Research Institute for Autonomous Precision Guided Systems, at the University of Florida Graduate Engineering and Research Center, Annual Technical Review, October 22-23, 2001, Shalimar, Florida (extended abstract and presentation).
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- 48. J. F. Cárdenas-García, B. Han, R. Rodríguez-Vera and J. A. Rayas, "The Interferometric Moiré Circular Disc", 2002 Society for Experimental Mechanics Annual Conference on Experimental and Applied Mechanics, June 10-12, Milwaukee, Wisconsin.
- 49. Z. Wang, J. F. Cárdenas-García and B. Han, "Determination of Material Elastic Constants and Residual Stresses Using Moiré Hole Drilling Inverse Approach", 2003 Society for Experimental Mechanics Annual Conference and Exposition on Experimental and Applied Mechanics, June 2-4, Charlotte, North Carolina.

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- 51. J. F. Cárdenas-García, S. Cho and I. Chasiotis, "Determination of Elastic Properties From Nonuniform MEMS Geometries", 2003 Society for Experimental Mechanics Annual Conference and Exposition on Experimental and Applied Mechanics, June 2-4, Charlotte, North Carolina.
- 52. J. F. Cárdenas-García and J. Rasty, "The Indentation Test Revisited: Obtaining Poisson's Ratio", 2004 Society for Experimental Mechanics International Congress and Exposition on Experimental and Applied Mechanics, June 7-10, Costa Mesa, California.
- 53. J. F. Cárdenas-García, R. J. Bonenberger and S. Wolpert, "Elastic Constant Determination Using the Orthotropic Circular Disc", 2004 Society for Experimental Mechanics International Congress and Exposition on Experimental and Applied Mechanics, June 7-10, Costa Mesa, California.
- 54. H. Jin, J. F. Cárdenas-García, H. Bruck and S. Ekwaro-Osire, "Design and Construction of a Novel Microtensile Tester for Thin Films", 2004 Society for Experimental Mechanics International Congress and Exposition on Experimental and Applied Mechanics, June 7-10, Costa Mesa, California.
- 55. J. F. Cárdenas-García, I. Chasiotis and S. Cho, "Thin Film Material Parameters Derived from Full Field Nanometric Displacement Measurements in Non-uniform MEMS Geometries", Proceedings of 2003 Materials Research Society Fall Meeting, December 1-5, Boston, MA, p. U.11.28.1- U.11.28.6.
- 56. J. F. Cárdenas-García and Y. M. Shabana, "An Inverse Problem Finite-element-method-based Approach to the Hole Drilling Method in Photoelasticity", 2005 Society for Experimental Mechanics Annual Conference and Exposition on Experimental and Applied Mechanics, June 7-9, Portland, Oregon.
- 57. J. F. Cárdenas-García and Y. M. Shabana, "Solution of the Moire Hole Drilling Method Using a Finite-element-method-based Approach", 2005 Society for Experimental Mechanics Annual Conference and Exposition on Experimental and Applied Mechanics, June 7-9, Portland, Oregon.
- 58. D. T. Casem, H. W. Meyer and J. F. Cárdenas-García, "Re-examining the Taylor Impact Test Using a Finite-element-method-based Inverse Problem Methodology", 2005 Society for Experimental Mechanics Annual Conference and Exposition on Experimental and Applied Mechanics, June 7-9, Portland, Oregon.
- 59. S. Cho, J. F. Cárdenas-García and I. Chasiotis, "Determination of Elastic Properties of MEMS Materials Using Inverse Solutions", 2005 Society for Experimental Mechanics Annual Conference and Exposition on Experimental and Applied Mechanics, June 7-9, Portland, Oregon.
- 60. J. Rasty, M. Baydogan, K. Ramkumar, and J. F. Cárdenas-García, "Measurement of Residual Stresses in Nuclear-Grade Zircaloy □4(R) Tubes Effect of Heat Treatment," Residual Stress Summit 2005, August 10-12, Vancouver, BC, Canada.
- 61. J. F. Cárdenas-García and S. Preidikman, "Consideration of a Biaxially Loaded Photoelastic Plate with an Elliptical Discontinuity Using and Inverse Problem Methodology," MECOM 2005, VIII Congreso Argentino de Mecánica Computacional, November 16-18, Buenos Aires, Argentina.
- J. F. Cárdenas-García and S. Preidikman, "On Systems of Circular Wedges for Serpentine Robot Applications," MECOM 2005, VIII Congreso Argentino de Mecánica Computacional, November 16-18, Buenos Aires, Argentina.
- 63. S. Ekwaro-Osire and J. F. Cárdenas-García, "Notched Bimaterials: An Inverse Problem Methodology Appraisal", IMAC-XXIV: Conference & Exposition on Structural Dynamics, January 30- February 2, 2006, St. Louis, Missouri.
- S. Ekwaro-Osire and J. F. Cárdenas-García, "Determining Material Properties of Orthotropic Bimaterials", 2006 Society for Experimental Mechanics Annual Conference and Exposition, June 4-7, St. Louis, Missouri.

- 65. J. F. Cárdenas-García, Y. Zhou and A. Zapata, "Solution to the Residual Stress Problem in Orthotropic Materials Using Genetic Algorithms", 2006 Society for Experimental Mechanics Annual Conference and Exposition, June 4-7, St. Louis, Missouri.
- 66. J. F. Cárdenas-García, G. G. Weber and S. Ekwaro-Osire, "An Inverse Problem Methodology Appraisal of the Elastic Properties of Bimaterials", IDPT 2006: 9th World Conference on Integrated Design & Process Technology, June 25-30, San Diego, CA.
- 67. J. F. Cárdenas-García, Y. Zhou and A. Zapata, "Solution to the Hole Method Problem in Orthotropic Materials Using Genetic Algorithms", Photomechanics 2006, International Conference on Full-Field Measurement Techniques and Their Applications in Experimental Solid Mechanics, July 10-12, Clermont-Ferrand, France.
- 68. J. F. Cárdenas-García, G. G. Weber and L. Molisani, "Material Identification Using an End-Loaded Bimaterial Cantilever Beam", Photomechanics 2006, International Conference on Full-Field Measurement Techniques and Their Applications in Experimental Solid Mechanics, July 10-12, Clermont-Ferrand, France.
- 69. G. Lara and J. F. Cárdenas-García, "Design, Construction and Testing of a Mini-Split-Hopkinson Pressure Bar", Society for Experimental Mechanics Annual Conference and Exposition on Experimental and Applied Mechanics, June 4-6, 2007, Springfield, Massachusetts.
- 70. F. Karpat, S. Ekwaro-Osire and J. F. Cárdenas-García, "Photoelastic Analysis of an Asymmetric Gear Tooth", Society for Experimental Mechanics Annual Conference and Exposition on Experimental and Applied Mechanics, June 4-6, 2007, Springfield, Massachusetts.
- 71. S. Ekwaro-Osire, M. Dhorje, G. Lolge and J. F. Cárdenas-García, "Probabilistic Analysis of a Bimaterial Disc", Society for Experimental Mechanics Annual Conference and Exposition on Experimental and Applied Mechanics, June 4-6, 2007, Springfield, Massachusetts.
- 72. S. Ekwaro-Osire*, M. Dhorje, M. Khandaker, and J. F. Cárdenas-García, "Accounting for Uncertainty in the Inverse Problem," *Proceedings of the 2008 SEM Annual Conference & Exposition*, Orlando, Florida, Jun 2–5, 2008.
- 73. S. Ekwaro-Osire*, F.M. Alemayehu, I. Durukan, and J. F. Cárdenas-García, "Dynamics of a Bi-Unit Impact Vibration Absorber with Staggered Clearances," Proceedings of the 2009 SEM Annual Conference & Exposition, Albuquerque, New Mexico, Jun 1–3, 2009. (Extended Abstract)
- 74. S. Ekwaro-Osire*, F. Karpat, I. Durukan, F.M. Alemayehu, and J. F. Cárdenas-García, "An Inverse Problem Technique for Spur Gears with Asymmetric Teeth," Proceedings of the 2009 SEM Annual Conference & Exposition, Albuquerque, New Mexico, Jun 1–3, 2009. (Extended Abstract)
- 75. S. Ekwaro-Osire*, F.M. Alemayehu, I. Durukan, and J. F. Cárdenas-García, "Performance of Bi-Unit Impact Vibration Absorbers with Staggered and Identical Clearances," Proceedings of the 2009 ASME International Mechanical Engineering Congress & Exposition, Lake Buena Vista, Florida, Nov 13–19, 2009.
- 76. S. Ekwaro-Osire*, F.M. Alemayehu, I. Durukan, and J. F. Cárdenas-García, "Energy Dissipation in Impact Absorber," <u>Optical Measurements, Modeling, and Metrology, Volume 5</u> <u>Conference</u> <u>Proceedings of the Society for Experimental Mechanics Series</u> 2011, pp 331-335.
- 77. T. Ireland and J. F. Cárdenas-García, "A Distributed Cognition Approach to Configuration", Sixth International Conference on Design Computing and Cognition (DCC14), 23–25 June 2014 University College London, London, UK. (extended abstract, presentation and poster)
- 78. R. Quezada Ochoa and J. F. Cárdenas-García, "La Planificación Estratégica Como Herramienta Para el Desarrollo de la Nueva Universidad Ecuatoriana", Twelfth LACCEI Latin American and Caribbean Conference for Engineering and Technology (LACCEI'2014), "Excellence in Engineering to Enhance a Country's Productivity", 22–24 July 2014, Guayaquil, Ecuador. (extended abstract)

Invited Seminars and Presentations

- 1. J. F. Cárdenas-García, "Rayleigh Wave Extension of Surface Micro-cracks," Inorganic Materials Division Seminar, National Bureau of Standards, Gaithersburg, Maryland (December 21, 1983).
- 2. J. F. Cárdenas-García, "Theoretical and Experimental Study of Micro-Cracking Induced by the Rayleigh Wave," Joint Departments of Mechanical and Civil Engineering Seminar, Colorado State University, Fort Collins, Colorado (November 13, 1984).
- 3. J. F. Cárdenas-García, "Strain Analysis Using a Digital Optical Diffractometer," Mechanics of Materials Branch, Naval Research Laboratory, Washington, D. C. (November 5, 1987).
- 4. J. F. Cárdenas-García, "Surface Wave Induced Cracking," <u>II Simposio Interno del Centro de</u> <u>Instrumentos</u>, Universidad Nacional Autonoma de Mexico, Mexico, D.F., November 25-27, 1987.
- J. F. Cárdenas-García, "Video Optical Diffractometer for Strain Measurement," <u>II Simposio Interno del Centro de Instrumentos</u>, Universidad Nacional Autonoma de Mexico, Mexico, D.F., November 25-27, 1987.
- 6. J. F. Cárdenas-García and M. S. Wu, "The Grid Method: A Review," <u>1989 Spring Conference on Experimental Mechanics</u>, Cambridge, Massachusetts, May 28 June 2, 1989.
- 7. J. F. Cárdenas-García, "Investigaciones de Mecánica Experimental de Sólidos en la Universidad Tecnológica de Texas," Instituto de Ingeniería UNAM, México, D.F., México, July 10, 1989.
- 8. J. F. Cárdenas-García, "Investigaciones de Mecánica Experimental de Sólidos en la Universidad Tecnológica de Texas," Escuela Politécnica del Ejército, Quito, Ecuador, July 19, 1989.
- 9. J. F. Cárdenas-García, "The Use of Three Optical Techniques to Map Object Surfaces," Yucca Mountain Project Colloquium, United States Geological Survey, Denver, Colorado, February 12, 1991.
- 10. J. F. Cárdenas-García, "Seminario Informal Sobre Holografía," Escuela Politécnica Nacional, Quito, Ecuador, September 13, 1991.
- 11. J. F. Cárdenas-García, "Perspectivas de la Educación en los Estados Unidos," Escuela Politécnica del Ejército, Quito, Ecuador, January 16, 1992.
- 12. J. F. Cárdenas-García, "El Uso de Tres Técnicas Opticas Para Hacer Mapas de Superficies de Objetos," Universidad San Francisco de Quito, Quito, Ecuador, March 17, 1992.
- 13. J. F. Cárdenas-García, "Full-Field Non-Contact Strain Measurement," MTS Systems Corporation, Minneapolis, MN, June 30, 1992.
- 14. J. F. Cárdenas-García, "Un Concurso de Máquinas que Caminan," Escuela Politécnica Nacional, Quito, Ecuador, July 22, 1992.
- 15. J. F. Cárdenas-García, "La Medición de Deformación con Métodos Opticos," Escuela Politécnica Nacional, Quito, Ecuador, July 22, 1992.
- 16. J. F. Cárdenas-García, "Optical Techniques in Experimental Solid Mechanics," Department of Civil Engineering Seminar (CE 5101), Texas Tech University, November 2, 1992.
- 17. J. F. Cárdenas-García, "Hispanics in Engineering ?", Texas Tech University Hispanic Culture Awareness Week Program, April 26, 1993.
- J. F. Cárdenas-García, "Optical Techniques for Strain Measurement," American Society for Testing Materials Workshop on Non-Traditional Methods of Sensing Damage in Materials and Structures, Dallas, Texas, November 15, 1993.
- J. F. Cárdenas-García, and J. Hashemi, "Optical Techniques for Strain Measurement," <u>American Society for Testing and Materials (ASTM) Symposium on Nontraditional Methods of Sensing Stress,</u> <u>Strain, and Damage in Materials and Structures</u>, <u>ASTM STP 1318</u>, May 20, 1996, Orlando, Florida, pp. 4.

- 20. Instructor in the XI Curso Nacional de Estructuras, Nivel Postgrado, Centro de Investigaciones Científicas, Escuela Politécnica del Ejército, Sangolquí, Ecuador, November 9-13, 1998.
- 21. J. F. Cárdenas-García, "From Feynman to Molecular Manufacturing Technology, Where Do We Fit In?" Division of Design, Manufacture, and Industrial Innovation, National Science Foundation, Arlington, Virginia, March 16, 2001.
- 22. J. F. Cárdenas-García, "The Hole Method Applied to Elastic Property and Residual Stress Identification in Micro and Nano-Scale Material Characterization," The Research Institute for Autonomous Precision Guided Systems, at the University of Florida Graduate Engineering and Research Center, Shalimar, Florida, May 4, 2001.
- 23. J. F. Cárdenas-García, "The Moiré Hole Method Problem," Department of Mechanical Engineering, Lehigh University, Bethlehem, Pennsylvania, November 9, 2001.
- 24. J. F. Cárdenas-García, "Design and Construction of a Hopkinson Bar and Other Ongoing Research Projects," <u>Split Hopkinson Bar Design Workshop for Low-Impedance Materials</u>, Eglin AFB, FL, July 30 31, 2003.
- 25. J. F. Cárdenas-García, "Inverse Problems in Experimental Solid Mechanics," Naval Surface Warfare Center, Carderock, Maryland, May 27, 2004.
- 26. J. F. Cárdenas-García, "FEM-based Solutions of Inverse Problems," Naval Surface Warfare Center, Indian Head, Maryland, August 27, 2004.
- 27. J. F. Cárdenas-García, "An Inverse Problem Methodology for Experimental Solid Mechanics," The University of Texas at Brownsville, Department of Engineering, Brownsville, Texas, April 25, 2005.
- J. F. Cárdenas-García, "Una Metodología Inversa Para Resolver Problemas de Mecánica Experimental," Universidad Nacional de Río Cuarto, Facultad de Ingeniería, Río Cuarto, Argentina, November 14, 2005.
- 29. J. F. Cárdenas-García, "El Uso de Metodologías en la Mecánica Experimental," Escuela Politécnica del Ejército, Sangolquí, Ecuador, December 12, 2006.
- 30. J. F. Cárdenas-García, "The Human Senses, Cognitive Development, Tool Technology and Language", Invited presentation to the Distributed Cognition and Language Origin Research Cluster Workshop of the Distributed Language Group, 1st International Conference on Interactivity, Language & Cognition, University of Southern Denmark, Odense, Denmark, September 11-14, 2012. (Extended Abstract and presentation)
- 31. J. F. Cárdenas-García, "La Cognición Distribuida: Una Perspectiva Ectodérmica," Universidad San Francisco de Quito, Cumbaya, Ecuador, Octubre 25, 2012.
- 32. J. F. Cárdenas-García, "¿Es Necesaria la Investigación Para Cambiar la Matriz Productiva?", Congreso de la Red Ecuatoriana de Universidades y Escuelas Politécnicas (REDU) 2013, Guayaquil, Ecuador, October 24-25, 2013 (short abstract and presentation).
- 33. J. F. Cárdenas-García, "El Papel de la Ciencia y Tecnología en la Nueva Universidad Ecuatoriana" o "El Papel de la Ciencia y Tecnología en la Nueva Universidad Ecuatoriana", Seminario Prometeo, Escuela Politécnica Nacional, Quito, Ecuador, November 20, 2013.
- 34. J. F. Cárdenas-García, "Las Ciencias Básicas y la Investigación en la Nueva Universidad Ecuatoriana", Escuela Superior Politécnica de Chimborazo, Riobamba, Ecuador, January 30, 2014.
- 35. J. F. Cárdenas-García, "ABET: Organización Que Evalúa, Acredita y Garantiza La Calidad De Carreras", Seminario en el Consejo de Evaluación, Acreditación y Aseguramiento de la Calidad en la Educación Superior (CEAACES), Quito, Ecuador, February 5, 2014.
- 36. J. F. Cárdenas-García, "La Biosemiótica del aprendizaje y la cognición distribuida", Seminario en la Secretaria del Buen Vivir, Presidencia de la Republica, Quito, Ecuador, February 19, 2014.
- 37. J. F. Cárdenas-García, "Una Metodología Para Resolver Problemas Inversos en Mecánica Experimental de Sólidos", Seminario del Programa de Maestría del Departamento de Física, Escuela Politécnica Nacional, Quito, Ecuador, February 19, 2014.

- 38. J. F. Cárdenas-García, "¿Es la Ciencia Objetiva? ¿A Quién Carajo le Importa?," Seminario Prometeo, Escuela Politécnica Nacional, Quito, Ecuador, May 8, 2014.
- J. F. Cárdenas-García, "¿Es la Ciencia Objetiva? ¿A Quién Carajo le Importa?," Seminario en el Consejo de Evaluación, Acreditación y Aseguramiento de la Calidad en la Educación Superior (CEAACES), Quito, Ecuador, May 27, 2014.
- 40. J. F. Cárdenas-García, "Una Visión de la Nueva Universidad Ecuatoriana", Universidad Técnica Particular de Loja, Loja, Ecuador, June 5, 2014.
- 41. J. F. Cárdenas-García, "Universidad, Conocimiento y Matriz Productiva", Universidad Tecnológica Indoamérica, Ambato, Ecuador, June 20, 2014.
- 42. J. F. Cárdenas-García, "El Posgrado en el Ecuador: Su Organización y Gestión" o "La Nueva Universidad Ecuatoriana", Congreso de la Red Ecuatoriana de Universidades y Escuelas Politécnicas (REDU) 2014, Cuenca, Ecuador, September 25-26, 2014 (short abstract and presentation).

Other Publications and Presentations

- J. A. Kirk and J. F. Cárdenas-García, "Grinding Wheel Wear Morphology Characterization," <u>Electron</u> <u>Microscope Central Facility Newsletter</u>, Institute for Physical Science and Technology, University of Maryland, Issue 3, January 1975.
- 2. J. A. Kirk and J. F. Cárdenas-García, "Fundamental Studies of Grinding Performance Lubricated Grinding," <u>NSF Report UMME-GR-01</u>, June 1975.
- 3. J. A. Kirk and J. F. Cárdenas-García, "Microfracture Wear A Lubricated Grinding and Sliding Phenomenon," <u>Electron Microscope Central Facility Newsletter</u>, Institute for Physical Science and Technology, University of Maryland, Issue 6, February 1978.
- 4. J. A. Kirk and J. F. Cárdenas-García, "Fundamental Studies of Grinding Performance A Grinding Model," <u>NSF Report UMME-GR-02</u>, August 1978.
- J. F. Cárdenas-García, W. H. Wilson and D. C. Holloway, "Surface Micro-cracking Induced by Two Approaching Rayleigh Waves," <u>Advanced Materials Institute Symposium</u>, Colorado School of Mines, Golden, Colorado, April 18, 1985. (Presentation only)
- 6. J. F. Cárdenas-García, W. H. Wilson and D. C. Holloway, "Rayleigh Wave Induced Crack Extension," <u>Abstract in the Bulletin of the American Physical Society</u>, Vol. 30, No. 8, September 1985, pp. 1314.
- J. F. Cárdenas-García, "Rules for the First Annual Walking Machine Decathlon," <u>National Robotics</u> <u>Competition</u>, Colorado State University, Fort Collins, Colorado, October 1987 (Competition was held April 16-18, 1987).
- J. F. Cárdenas-García and M. S. Wu, "A Two-Dimensional Video Optical Diffractometer for Strain Analysis," <u>VI International Congress on Experimental Mechanics</u>, Portland, Oregon, June 5-10, 1988. (Presentation only)
- J. F. Cárdenas-García, "Rules for the SAE Walking Machine Decathlon," <u>National Robotics</u> <u>Competition</u>, Texas Tech University, Lubbock, Texas, September 1988 (Competition held April 20-22, 1989).
- L. A. Ferrer and J. F. Cárdenas-García, "A New Brittle Lacquer for Experimental Stress Analysis Applications," <u>1989 Spring Conference on Experimental Mechanics</u>, Cambridge, Massachusetts, May 28 -June 2, 1989. (Presentation only)
- J. F. Cárdenas-García and L. A. Ferrer, "Optical Determination of Poisson's Ratio," <u>1989 Spring</u> <u>Conference on Experimental Mechanics</u>, Cambridge, Massachusetts, May 28 -June 2, 1989. (Presentation only)

- J. F. Cárdenas-García, "The Texas Tech University Walking Machine Competition," <u>Changes Kids'</u> <u>Conference for Fourth Grade G/T Students</u>, Lubbock Independent School District, Lubbock, Texas, May 5, 1989. (Presentation only)
- Y. K. Park, R. D. Peters, J. F. Cárdenas-García and M. E. Parten, "Torsion Balance with a Voltage Dependent Restoring Constant," <u>1990 Spring Meeting of the Texas Section of the American Physical</u> <u>Society</u>, Texas Christian University, Fort Worth, Texas, March 2-3, 1990. (Presentation only)
- J. F. Cárdenas-García and M. A. Rodriguez, "Computer Generated Shadow Moire Interferometry," <u>1990 Society for Experimental Mechanics Spring Conference</u>, Albuquerque, New Mexico, June 4-6, 1990. (Presentation only)
- 15. Y. K. Park, R. D. Peters, J. F. Cárdenas-García and M. E. Parten, "Effects of Dielectric Constant Change in a Capacitive Transducer," <u>Joint Fall 1990 Meeting of the Texas Section of the American</u> <u>Physical Society</u>, Houston, Texas, November 8-9, 1990. (Presentation only)
- J. F. Cárdenas-García, S. Mateos and R. Rodriguez, "A Transient Model for Thermally Induced Failure in Microelectronic Structures," <u>American Society of Mechanical Engineers - Winter Annual Meeting</u>, Dallas, Texas, November 25-30, 1990. (Presentation only)
- N. Nagappan, C. V. G. Vallabhan, R. W. Tock, R. Keshavaraj, K. Kandil, M. S. Asik, J. F. Cárdenas-García, "Behavior of Laterally Loaded Structurally Glazed Systems," Glass Research and Testing Laboratory Report, Texas Tech University, Lubbock, Texas, December 1992.
- 18. J. F. Cárdenas-García, S. Zheng, J. Hashemi and J. Kalejs, "On-Line Automated Profilometry of Silicon Wafers," <u>VIII International Congress in Experimental and Applied Mechanics - Experimental /</u> <u>Numerical Mechanics in Electronic Packaging</u>, June 10-13, 1996, Nashville, Tennessee, pp. 74 (short abstract and oral presentation).
- 19. J. F. Cárdenas-García, J. Li, J. Hashemi and E. E. Anderson, "Thermo-Mechanical Study of a Glass Pour," <u>1997 Society for Experimental Mechanics Spring Conference on Experimental and Applied</u> <u>Mechanics</u>, June 2-4, 1997, Bellevue, Washington, pp. 71 (short abstract and oral presentation).
- H. Mansouri and J. F. Cárdenas-García, "An Application of Empirical Model Building in Experimental Solid Mechanics," <u>1997 Society for Experimental Mechanics Spring Conference on Experimental and</u> <u>Applied Mechanics</u>, June 2-4, 1997, Bellevue, Washington, pp.172-173 (short abstract and oral presentation).
- J. E. Verhaegh and J. F. Cárdenas-García, <u>The Practical Use of the Hole Method Using Moiré</u>, Society of Engineering Science, 35th Annual Technical Meeting, Washington State University, Pullman, Washington, September 27-30, 1998. (short abstract and presentation)
- 22. J. F. Cárdenas-García and W. H. Wilson, "Obtaining Full Field Subsurface Rayleigh Wave Displacements from Surface Measurements", 14th US National Congress of Theoretical and Applied Mechanics, Symposium in Honor of James W. Dally, Blacksburg, Virginia, June 23-28, 2002 (short abstract and presentation).
- 23. J. F. Cárdenas-García and B. Han, "Experimental Verification of Moiré Hole Drilling to Obtain Material Elastic Constants and Residual Stresses", 14th US National Congress of Theoretical and Applied Mechanics, Symposium in Honor of James W. Dally, Blacksburg, Virginia, June 23-28, 2002 (short abstract and presentation).
- 24. J. F. Cardenas-Garcia, "The Biosemiotics of Learning and Distributed Cognition", Biosemiotics 2013, June 4-8, 2013, Castiglioncello, Italy. (extended Abstract and presentation)
- 25. R. Quezada Ochoa and J. F. Cárdenas-García, Plan Estratégico EPN 2014 2017: Tipología de Universidad, Escuela Politécnica Nacional, Dirección de Planificación, December 2013.
- 26. J. F. Cardenas-Garcia and T. Ireland, "Peirce and Bateson: The pattern that connects", Gatherings in Biosemiotics 14, Middlesex University, London (UK), 30 June 4 July 2014 (extended abstract and presentation).

Manuscript Reviews

- 1. Chapman & Hall Ltd., London, England, 1991.
- 2. Harper-Collins Publishers, Glenview, Illinois, 1991.
- 3. CRC Press LLC: Dynamics of Mechanical Systems, 1998.
- 4. CRC Press LLC: Selection of Engineering Materials, 1998.
- 5. CRC Press LLC: Kinematics and Dynamics of Machines and Mechanisms with Mathematica, 1998.
- 6. CRC Press LLC: Mechanical Vibrations, 1998.
- 7. CRC Press LLC: Advanced Strength of Materials, 1999.
- 8. Oxford University Press: *Elementary Solid Mechanics for Engineers A Problem Based Approach*, 1999.
- 9. John Wiley & Sons, Inc.: Dynamics, 1999.
- 10. John Wiley & Sons, Inc.: Statics and Mechanics of Materials, 1999.
- 11. Prentice-Hall, Inc.: Dynamics, 2001.

Invention Disclosures

- 1. "A New Brittle Coating for Experimental Stress Analysis Applications," Office of Research Services, Texas Tech University, October 25, 1989.
- 2. "Circular Wedge Robotic Modules", Office of Technology Commercialization, University of Maryland, August 16, 2004.

Poster Presentations

- J. F. Cárdenas-García and J. Rasty, "An Automated Video Optical Diffractometry Technique for Measurement of Strain on Curved Surfaces," <u>Texas Research Seminars, Phase III</u>, Dallas, Texas, April 24-25, 1989.
- 2. J. F. Cárdenas- García, R. Dick and W. H. Wilson, "Development of a Hopkinson Bar Experimental Setup for Dynamic Testing of Nanoenergetic Materials," Center for Energetic Concepts Development Research Review Day, University of Maryland, College Park, May 21, 2003.
- 3. J. F. Cárdenas-García, I. Chasiotis and S. Cho, "Thin Film Material Parameters Derived from Full Field Nanometric Displacement Measurements in Non-uniform MEMS Geometries", 2003 Materials Research Society Fall Meeting, December 1-5, Boston, MA.
- 4. J. L. Jordan, C. Siviour, J. F. Cárdenas-García, R. Dick, W. G. Proud, "Development of a High Strain Rate Testing Facility", Fifth International Symposium on Impact Engineering, July 11-15, 2004, University of Cambridge, Cambridge, United Kingdom.
- 5. G. Lara and J. F. Cárdenas-García, "Design and Construction of a Split Hopkinson Pressure Bar", 8th Annual UTB/TSC Research Symposium, April 6-7, 2006, University of Texas at Brownsville, Brownsville, TX.
- 6. J. F. Cárdenas-García, "A perspective on Consciousness", Toward a Science of Consciousness Conference, April 9-14, 2012, Tucson, AZ.
- J. F. Cárdenas-García, "Una Metodología Para Resolver Problemas Inversos en Mecánica Experimental de Sólidos", XIII Simposio y XI Congreso de la Sociedad Cubana de Física, March 17-21, 2014, La Habana, Cuba. (abstract and poster)

 T. Ireland and J. F. Cárdenas-García, "A Distributed Cognition Approach to Configuration", Sixth International Conference on Design Computing and Cognition (DCC14), 23–25 June 2014 University College London, London, UK. (extended abstract, presentation and poster)

Software

- E. E. Anderson, M. G. Beruvides, T. Burkes, J. F. Cárdenas-García, J. R. Dunn, J. Hashemi, E. Kiesling, J. H. Smith, and R. W. Tock, <u>Interactive Fundamentals of Engineering Examination Review</u>, Engineering Software Partners, Lubbock, Texas, 1996 (Software package).
- E. E. Anderson, J. F. Cárdenas-García and J. Hashemi, <u>FE Exam Interactive Review for Statics and Dynamics</u>, included in the New Media CD of the textbook: F. P. Beer and E. R. Johnston, Jr., *Vector Mechanics for Engineers: Statics and Dynamics*, 6th edition, McGraw-Hill Book Co., New York, NY (1997). (Prepared 75 problems with solutions using Macromedia Authorware).

Research Grants and Awards

PI or Co-PI	Inclusive Dates	Title of Project	Funding Source	Total Funding	Share of Funding
J. F. Cárdenas-García	5/85 - 8/85	Critical Review of an Automated Optical Strain Measurement System	National Bureau of Standards	\$10,000	\$10,000
J. F. Cárdenas-García	5/85 -5/86	Holographic Interferometry and Moiré Analysis Facility	Faculty Development Grant, Colorado State University	\$2,500	\$2,500
P. J. Wilbur and J. F. Cárdenas-García	6/85 - 6/86	Engineering Research Equipment Grant: Ion Implantation Related Tribological Equipment	National Science Foundation	\$48,000	\$24,000
J. F. Cárdenas-García	9/86 - 1/88	Computerized Design Tool to Evaluate Truck Overturns	Colorado Department of Highways	\$8,000	\$8,000
J. F. Cárdenas-García	7/87 - 12/88	Engineering Research Equipment Grant: Multiple Spark-Gap Camera	National Science Foundation	\$40,800	\$40,800
J. F. Cárdenas-García	7/87 - 9/88	IPA Agreement: Three Dimensional Contouring of Crack Surfaces in Rock	U. S. Geological Survey	\$46,541	\$46,541
J. F. Cárdenas-García	7/87 - 12/88	Engineering Research Equipment Grant: Automated Coherent Optical Processing Grid Technique	National Science Foundation	\$28,400	\$28,400
J. F. Cárdenas-García and J. Rasty	6/88 - 5/90	An Automated Video Optical Diffractometry Technique for Measurement of Strain	Advanced Technology Program, Texas Higher Education Coordinating Board	\$114,000	\$57,000
J. F. Cárdenas-García	1/88 - 12/88	Research Experience for Undergraduates - The Design and Construction of a Multiple Spark Camera	National Science Foundation	\$3,531	\$3,531
J. F. Cárdenas-García	9/88 - 6/89	Research Experience for Undergraduates - The Design and Construction of a Multiple Spark Camera	National Science Foundation	\$4,000	\$4,000
J. F. Cárdenas-García	2/89 - 1/90	SGER: A New Brittle Lacquer for Experimental Stress Analysis	National Science Foundation	\$30,000	\$30,000
J. F. Cárdenas-García	5/89 - 5/91	IPA Agreement: Three Dimensional Contouring of Crack Surfaces in Rock	U. S. Geological Survey	\$130,793	\$130,793
J. F. Cárdenas-García	5/89 - 5/91	Equipment for IPA Agreement: Three Dimensional Contouring of Crack Surfaces in Rock	U. S. Geological Survey	\$35,000	\$35,000
J. F. Cárdenas-García	6/89 - 1/90	Research Experience for Undergraduates - A New Brittle Lacquer for Experimental Stress Analysis	National Science Foundation	\$10,000	\$10,000
J. F. Cárdenas-García, S. Mitra and H. Krompholz	7/89 - 6/90	Engineering Research Equipment Grant: Ruby Laser for Pulsed Laser Interferometry	National Science Foundation	\$120,000	\$12,000
J. F. Cárdenas-García	8/89 - 8/90	Ruby Laser Holographic Interferometry Applications in Solid Mechanics	College of Engineering Research Grant, Texas Tech University	\$11,750	\$11,750

PI or Co-PI	Inclusive Dates	Title of Project	Funding Source	Total Funding	Share of Funding
J. F. Cárdenas-García	9/89 - 8/90	Special Graduate Student Research Award - Juan Barraza	National Science Foundation	\$6,000	\$6,000
J. F. Cárdenas-García, R. D. Peters and M. E. Parten	10/89 - 8/91	Computer Modeling of Microdynamic System Fabrication	Center for Automation and Robotics, College of Engineering, Texas Tech University	\$39,420	\$13,140
J. F. Cárdenas-García, M. C. Chyu, S. Mitra and M. E. Parten	10/89 - 8/91	Integrated Circuit Metrology	Center for Automation and Robotics, College of Engineering, Texas Tech University	\$54,750	\$13,688
J. F. Cárdenas-García and R. D. Peters	1/90 - 12/91	Microdynamic Studies Using a New Capacitance Transducer	Advanced Technology Program, Texas Higher Education Coordinating Board	\$150,000	\$75,000
C. B. Fedler, R. Narayan, J. M. Gregory and J. F. Cárdenas-García	1/90 - 12/91	Flow Prediction of Cohesive and Non-Cohesive Materials Through Orifices	Advanced Technology Program, Texas Higher Education Coordinating Board	\$140,000	\$35,000
J. F. Cárdenas-García	7/90 - 6/91	Research Experience for Undergraduates: Ruby Laser for Pulsed Laser Interferometry	National Science Foundation	\$7,500	\$7,500
J. F. Cárdenas-García	9/90 - 8/91	A Novel Continuously Variable Desmodromic Engine Valve Timing Mechanism	Alternate Sources of Energy, College of Engineering, Texas Tech University	\$15,000	\$15,000
J. F. Cárdenas-García	5/91 - 5/92	IPA Agreement: Three Dimensional Contouring of Crack Surfaces in Rock	U. S. Geological Survey	\$55,122	\$55,122
J. F. Cárdenas-García	6/92 - 4/93	High Temperature Strain Measurement	Mobil Solar Energy Corporation	\$29,929	\$29,929
J. F. Cárdenas-García	1/93 - 3/93	High Temperature Strain Measurement - Supplemental	Mobil Solar Energy Corporation	\$2,000	\$2,000
J. F. Cárdenas-García	6/92 - 12/92	Optical Buckling Shape Monitor	Mobil Solar Energy Corporation	\$59,963	\$59,963
J. F. Cárdenas-García	1/93 - 3/93	Optical Buckling Shape Monitor - Phase II	Mobil Solar Energy Corporation	\$30,364	\$30,364
J. F. Cárdenas-García	6/93 - 8/93	Optical Buckling Shape Monitor - Implementation	Mobil Solar Energy Corporation	\$10,085	\$10,085
J. Hashemi, G. Engel, M. Kristiansen, J. Macedo, A. Barhorst, and J. F. Cárdenas-García	9/94 - 8/95	Rapid Prototyping and Flexible Manufacturing of Advanced Ceramic Composite Parts	Center for Automation and Robotics, College of Engineering, Texas Tech University	\$12,500	\$12,500

PI or Co-PI	Inclusive Dates	Title of Project	Funding Source	Total Funding	Share of Funding
E. E. Anderson, J. F. Cárdenas-García and J. Hashemi	8/95 - 1/97	Thermal/mechanical modeling of the 'Can-in-Canister' Plutonium immobilization process	Department of Energy - Amarillo National Resource Center for Plutonium - University of Texas at Austin	\$149,646	\$49,882
J. Hashemi, J. F. Cárdenas-García, and E. E. Anderson	6/96 - 6/97	Thermo-Mechanical Finite Element Analysis of Cans-in-Canister Vitreous Embedding	Pittsburgh Supercomputing Center - National Science Foundation - Request for Advanced Computing Resources	25 C90/J90 Service Units	
J. F. Cárdenas-García	8/96 - 8/97	ME 3331 - Dynamics	Distance Education Grant, Division of Continuing Education, Texas Tech University	\$2,000	\$2,000
E. E. Anderson, J. F. Cárdenas-García and J. Hashemi	1/97 - 1/98	Thermal/mechanical modeling of the 'Can-in-Canister' Plutonium immobilization process	Department of Energy - Amarillo National Resource Center for Plutonium - University of Texas at Austin	\$105,000	\$35,000
J. Hashemi, J. F. Cárdenas-García, and E. E. Anderson	6/97 - 6/98	Thermo-Mechanical Finite Element Analysis of Cans-in-Canister Vitreous Embedding	Pittsburgh Supercomputing Center - National Science Foundation - Request for Advanced Computing Resources	15 C90/J90 Service Units	
J. Hashemi, J. F. Cárdenas-García and S. Ekwaro-Osire	3/98 - 10/98	Quantification of Corrosion in 7075-T6 Aluminum Alloy	Raytheon Systems	\$74,202	\$24,734
J. F. Cárdenas-García and S. Ekwaro-Osire	8/00 - 9/02	Development of a bi-axial micro- tensile tester of MEMS materials for research and student training	National Science Foundation	\$38,257	\$19,129
J. F. Cárdenas-García	10/02 - 7/04	Development of a bi-axial micro- tensile tester of MEMS materials for research and student training (Transfer of previous proposal listed above to the University of Maryland)	National Science Foundation	\$36,156	\$36,156
W. L. Fourney and J. F. Cárdenas-García	2/03 - 5/05	Multifunctional Energetic Structural Materials	MURI: Georgia Tech, AFOSR	\$159,066	\$159,066

PI or Co-PI	Inclusive Dates	Title of Project	Funding Source	Total Funding	Share of Funding	
J. F. Cárdenas-García	4/03 - 6/04	Development of a Hopkinson Bar Experimental Setup for Dynamic Testing of Nanoenergetic Materials	Eglin AFB	\$59,956	\$59,956	
L. J. Martinez-Miranda, R. J. Bonenberger, R. M. Briber, H. Bruck, and J. F. Cárdenas-García	9/04 - 8/05	Development of Educational Materials and Acquisition of Equipment for a Nanoscale to Microscale Engineering Laboratory	National Science Foundation	\$300,000	\$112,000	
J. F. Cárdenas-García, W. L. Fourney and R. J. Bonenberger	1/05 - 12/05	Evaluation of Shock Tube-Initiated Wire Cutters (Funded but turned down by UofMD due to ITAR concerns)	Federal Bureau of Investigation	\$155,500	\$155,500	
J. F. Cárdenas-García	2/05 - 8/05	Design and Development of an Experimental Setup for Mechanical Characterization of Nano-Energetic Materials	NSWCIH	\$30,000	\$30,000	
W. L. Fourney, R. J. Bonenberger and J. F. Cárdenas-García	2/05 - 12/05	Research and Educational Equipment	DURIP	\$85,812	\$28,604	
J. F. Cárdenas-García	08/06	Equipment Grant	University of Maryland	\$30,000	\$30,000	
Research Funding Totals						
					My Share	
Total External Funding Level as Principal Investigator or Co-Principal Investigator				\$2,481,543	\$1,669,633	

TEACHING AND ADVISING

Courses Taught and Other Activities at the University of Texas at Brownsville

Professor (8/05 - 8/07)

ENGR 2302 – Engineering Mechanics II: Dynamics (Spring 2006, 2007) ITECC Course: Hydraulics (Summer 2006: 48 hours, 2 weeks, 3 days each week) ITECC Course: Pneumatics (Summer 2006: 48 hours, 2 weeks, 3 days each week) ENGR 1101 – Introduction to Engineering (Summer 2006) ENGR 3304 – Mechanics of Materials (Fall 2006) ENGR 1101 – Introduction to Engineering (Fall 2006) ENGR 2310 – Measurements and Instrumentation (Spring 2007)

Courses Taught and Other Activities at the University of Maryland

Research Professor/Research Scientist (9/02 - present)

ENES 102 – Statics ENES 220 – Mechanics of Materials

Visiting Professor (Sabbatical Leave) 9/01 - 5/02

ENES 220 – Mechanics of Materials

Assistant Instructor and Instructor (1977-79; 1980-82; 1983-84)

ENES 101 – Introduction to Engineering ENES 110 – Statics ENES 221 – Dynamics ENME 205 – Engineering Analysis and Computer Programming ENME 480 – Engineering Experimentation

Research Assistant (1983-84); Performed research in the area of fracture control in construction blasting.

Research Assistant (1981-83); Engaged in experimental research concerned with projectile assisted rock drilling. Use of dynamic photoelastic techniques and basic concepts of fracture mechanics was made to optimize drilling rates.

Research Assistant (1979-80); Performed experimental and analytical research concerned with the basic microscopic and macroscopic failure mechanisms of a uniaxially loaded specimen irradiated by a continuous wave laser beam.

Research Assistant (1973-74; 1975-77); Performed experimental research on the characterization of the wear mechanisms and the optimization of a surface grinding operation under lubricated conditions.

Teaching Assistant (1972-73; 1974-75); Provided advise and aid in computer programming, using FORTRAN IV, to all users of the College of Engineering Computer Facility.

Courses Taught and Other Activities at Texas Tech University

- ME 2464 Engineering Mechanics I
- ME 3218 Measurements and Instrumentation
- ME 3321 Engineering Thermodynamics I
- ME 3328 Materials and Mechanics Laboratory
- ME 3331 Dynamics
- ME 3364 Introduction to Mechanical Design
- ME 3464 Engineering Mechanics II
- ME 3365 Mechanical Component Design
- ME 4252 Mechanical Systems Laboratory
- ME 4316 Mechanical Vibrations
- ME 4333 Dynamics and Control of Systems
- ME 4360 Experimental Solid Mechanics
- ME 5316 Mechanical Vibrations I
- ME 5318 Advanced Dynamics
- ME 5331 Special Topics: Optics, Experimental Stress Analysis, Applied Fracture Mechanics
- ME 5352 Foundations of Solid Mechanics
- ME 5356 Optical Techniques in Experimental Solid Mechanics
- ME 5361 Introduction to Continuum Mechanics
- Set-up the Optomechanics Research Laboratory housing research equipment worth in excess of a quarter of a million dollars. Major pieces of equipment include: a polariscope; a multiple-spark camera (designed and built at Texas Tech University); a Lumonics 10-Joule ruby laser, three Newport optical tables, and associated optics; a split Hopkinson bar; equipment to implement projection moiré and Fourier transform profilometry; a moiré interferometry experimental facility; several microcomputers with image digitizer boards.

Courses Taught and Other Activities at Colorado State University

- EG 102 Engineering Principles II
- ME 224 Dynamics of Machines
- ME 324 Mechanics of Machines
- ME 326 Design and Selection of Mechanical Elements
- ME 404 Senior Design I
- ME 467 Energy Conversion I
- ME 501 Principles of Mechanics (Dynamics)
- ME 525 Applied Fracture Mechanics
- ME 727 Continuum Mechanics

- Set-up an Experimental Solid Mechanics Facility which included a polariscope, a stress-freezing oven, holography table and equipment, and a darkroom.
- Designed and built a pin-on-disc tester, which is useful in determining the wear rates and dynamic friction coefficient between surfaces. This piece of equipment enhanced the capabilities of a friction and wear laboratory which supports a broad beam ion implantation facility. The cost of the unit, excluding labor costs, is approximately \$3,000, which is 1/10 the retail value of a similar unit. (Spring 1985)
- Initiated and organized the First Annual Walking Machine Decathlon, a first-ever national event, cohosted with the University of Maryland, held at Colorado State University, Fort Collins, Colorado, April 16-18, 1987. The Society of Automotive Engineers sponsored this yearly international student competition for more than 10 years.
- Consultant to the National Bureau of Standards, Fracture and Deformation Division, Boulder, Colorado. Evaluated a new video optical diffractometer for strain measurement in two-dimensional fields. It was successfully applied to define the full-field strains in a center-cracked aluminum panel loaded in tension and to evaluate the J-integral under plane-stress conditions. Another application related to the full-field strain evaluation of a center-cracked composite panel loaded in tension and the use of the Finite Element Method for comparison purposes, 5/85 - 3/87.

Master of Science Thesis Students

- 1. Mi-Song Wu, <u>The Implementation of an Automated</u>, <u>Two-Dimensional Video Optical Diffractometer</u> for Strain Analysis, Master of Science, Colorado State University, August 1989.
- 2. Habip Asan, <u>Optical Determination of Poisson's Ratio Using Dynamic Photoelasticity</u>, Master of Science, Texas Tech University, August 1990.
- 3. Yong Liang Tian, <u>A Nonlinear Regression Approach to the Use of the Hole Method in Photoelasticity</u>, Master of Science, Texas Tech University, May 1991.
- 4. Miguel Angel Rodriguez Marquez, <u>Development of a Solid Modeler Using Object Oriented</u> <u>Programming</u>, Master of Science, Texas Tech University, May 1991.
- Michael K. M^cMurray, <u>The Design and Construction of a Linear Rotary Differential Transducer for</u> <u>Unambiguous 360 Degree Angular Displacement Measurement</u>, Master of Science, Texas Tech University, December 1991.
- 6. Gunner Christoph Heinrich Winkenwerder, <u>Determination of Static and Dynamic Deformations on the</u> <u>Surface and the Interior of Transparent Objects Using Holographic Interferometry</u>, Master of Science, Texas Tech University, May 1992.
- 7. Raja Vinod Puli, <u>The Effect of the Mixed Mode Ratio on the Plastic Zone Size and Shape and the J-Integral</u>, Master of Science, Texas Tech University, May 1993.
- 8. Kaiser Matin, <u>Displacement Analysis for Holographic Interferometry Using Fringe Tracking</u>, Master of Science, Texas Tech University, August 1993.
- 9. Dwarka Rao, <u>The Finite Element Method as a Source of Two-Dimensional Stress Field Data and the</u> <u>Application of a Least-Squares Approach to Solve the Inverse Problem</u>, Master of Science, Texas Tech University, May 1994.
- 10. Krishna Prasad Suryanarayan, <u>Application of the Matrix Approach to the Kinematic Modeling and</u> <u>Analysis of Spatial Mechanisms</u>, Master of Science, Texas Tech University, May 1995.
- 11. Jianmin Li, <u>Finite Element Method Evaluation of Thermal Stresses During the Solidification of a Glass</u> <u>Pour</u>, Master of Science, Texas Tech University, August 1997.

- 12. Jaap Verhaugh, <u>A Practical Approach to the Hole Method Using Gemetric Moiré</u>, Master of Science, University of Technology - Delft, February 1, 1999 (International TTU visitor, co-advisor with Prof. Dr. Ir. H. F. van Beek).
- 13. Mark Russell Edelen, <u>Swarm Intelligence And Stigmergy: Robotic Implementation of Foraging</u> <u>Behavior</u>, Master of Science, University of Maryland, December 2003 (co-advisor with Dr. Amr Baz).

Master of Science Non-Thesis Students

- 1. Guanghua Wu, <u>Automated Joining of Multiple Topographical Images of an Object Surface</u>, Master of Science Non-Thesis option, Texas Tech University, August 1994.
- 2. Philip Albenice, <u>Implementation of Moiré Interferometry</u>, Master of Science Non-Thesis option, Texas Tech University, Fall 1995.

Doctor of Philosophy Dissertation Students

- 1. Guanghua Wu, <u>Finite Element Study of Vibration Isolation Using an Underground Trench</u>, Doctor of Philosophy, Texas Tech University, August 1997.
- 2. Qiu Shi Zheng, <u>Analysis of a Shell of Elliptical Cross-section Under Internal Pressure and Body Force</u> (co-advisor with J. Hashemi), Doctor of Philosophy, Texas Tech University, Fall 1997.

Member of Graduate Thesis Committees

- 1. Qiu Shi Zheng, <u>Finite Element Modeling of Metal Forming Processes in Hydro-Bulged Pressure</u> <u>Vessels</u>, Master of Science, Texas Tech University, May 1994 (Chairperson: J. Hashemi).
- Girish Padmanabha Kamala, <u>Discrete Wavelet Analysis of Acoustic Emissions During Fatigue</u> <u>Loading of Carbon Reinforced Composites</u>, Master of Science, Texas Tech University, May 1996 (Chairperson: J. Hashemi).
- 3. Syed Kamruzzaman, <u>Energy Absorption of Tubular Structures</u>, Master of Science, Texas Tech University, November 6, 2000 (Chairperson: Dr. Stephen Ekwaro-Osire).

Member of Graduate Dissertation Committees

- 1. Chiuhsiang Lin, <u>Computer Simulation of Manual Lifting</u>, Doctor of Philosophy, Department of Industrial Engineering, Texas Tech University, August 1995 (Chairperson: M. M. Ayoub).
- 2. Walter Wanyama, <u>Analytical Investigation of the Acoustic Radiation from Linearly-Varying Thin</u> <u>Circular Plates</u>, Doctor of Philosophy, Texas Tech University, June 21, 2000 (Chairperson: A. Ertas).
- 3. Hector José Puga Soberanes, <u>Algunos Avances en el Estudio de una Interface ESPI-FEM Para Análisis</u> <u>de Estructuras Mecánicas</u>,"Doctor en Ciencias (Optica), Centro de Investigaciones en Optica, A. C., 17 de Mayo del 2002 (Chairperson: Dr. Ramón Rodríguez-Vera).
- 4. Zhaoyang Wang, <u>Development And Application of Computer-Aided Fringe Analysis</u>, Doctor of Philosophy, University of Maryland, December 2003 (Chairperson: Dr. Bongtae Han).
- HuiQing Jin, <u>New Metrological Techniques For Mechanical Characterization At The Microscale And</u> <u>Nanoscale</u>, Doctor of Philosophy, University of Maryland, December 2004 (Chairperson: Dr. Hugh Bruck)
- David Scott Stargel, <u>Experimental and Numerical Investigation Into the Effects of Panel Curvature on the High Velocity Ballistic Impact Response of Aluminum and Composite Panels</u>, Doctor of Philosophy, University of Maryland, January 2005 (Chairperson: Dr. William L. Fourney).

Graduate School Representative

- 1. Dah-Jye Lee, <u>Depth Information from Image Sequences Using 2-D Cepstrum</u>, Doctor of Philosophy, Department of Electrical Engineering, Texas Tech University, Spring 1990 (Chairperson: Sunanda Mitra).
- Mehmet Sulfi Asik, <u>A Variational Approach for Vertical Vibration Analysis of Rigid Footings on a Layered Soil Medium</u>, Doctor of Philosophy, Department of Civil Engineering, Texas Tech University, Fall 1993 (Chairperson: C. V. G. Vallabhan).
- Chintamani P. Palsule, <u>Photoluminescence Studies in Hydrogenated Amorphous Silicon and its</u> <u>Alloys</u>, Doctor of Philosophy, Department of Physics, Texas Tech University, Spring 1993 (Chairperson: S. Gangopadhyay).
- Narendra Pulipaka, <u>Wind-Induced Vibrations of Cantilevered Traffic Signal Structures</u>, Doctor of Philosophy, Department of Civil Engineering, Texas Tech University, Fall 1995 (Chairperson: J. R. McDonald).
- Nwojo Nnanna Agwu, <u>Optimal Control of Dynamic Systems and Its Application to Spline</u> <u>Approximations</u>, Doctor of Philosophy, Department of Mathematics, Texas Tech University, August 1996 (Chairperson: C. Martin).
- Tsai-Chi Kuo, <u>A Disassembly Model for End-of-Life Product Recycling</u>, Doctor of Philosophy, Department of Industrial Engineering, Texas Tech University, August 1997 (Chairperson: H. C. Zhang).
- 7. Kang Tian, <u>Industrial Applications of Flow Injection Analysis</u>, Doctor of Philosophy, Department of Chemistry, Texas Tech University, June 22, 2000 (Chair: P. K. Dasgupta).

SERVICE

College of Science, Mathematics and Technology at the University of Texas at Brownsville

- Leading role in writing a proposal to the National Science Foundation to obtain equipment to set up a Scanning Electron Microscope Imaging Facility, Fall 2006.
- Secured funding for attracting women to the College of Science, Mathematics and Technology at the University of Texas at Brownsville through a Diversity Action Grant from the American Society of Mechanical Engineers. A majority of the graduating students with a Physics / Mathematics emphasis in Matamoros, Tamaulipas, México are women. This means that this group of students has a level equivalent to AP chemistry, AP physics and AP calculus in mathematics. Also it is estimated that the total number of students that achieve this level on a yearly basis is around 3,000 students, and it is estimated that more than 50% of these students are women. It is well known that for historical reasons the number of women in the sciences, mathematics and engineering are low in comparison to men. A primary objective of this effort is to fully document the statistics of the number of women graduating with an interest in science and engineering from high school in Matamoros. Subsequent effort is geared to obtain scholarship funding to be able to recruit and retain women in the College of Science, Mathematics and Technology at the University of Texas at Brownsville, 09-06 to present.

Department of Engineering at the University of Texas at Brownsville

- ✤ Enrollment Committee, 8-05 to 07-06.
 - Helped organize and participated in an aggressive recruiting drive in Brownsville and surrounding areas to recruit students interested in engineering.
 - Obtained information and begun the organization of a recruitment drive geared toward attracting students from Matamoros, Tamaulipas, México.
- ✤ Ad Hoc Curriculum Transition Committee, 02-06
- Registration Officer, 07-01-06 to 09-15-06. The following initial objectives were met:
 - Development of a clear understanding of University of Texas at Brownsville and Department of Engineering student record policies;
 - Enforcement of pre-requisites;
 - An accounting of the actual number of students in the various engineering programs, in an attempt to generate statistical information needed to better aid our students and faculty; and,
 - Development of a **Registration Manual** and **updated forms** to help our students and faculty.
- Summer Bridge Program and TexPREP Program. Helped in the initial organization of this effort in the absence of the program director at the beginning of the summer, as well as participation as an instructor in the Summer Bridge Program as a volunteer, summer 2006.
- University of Texas System Louis Stokes Alliance for Minority Participation (LSAMP) mentor to Paola Gandara, UTEP student: "Development of a Digital Image Correlation MATLAB Program": The main objective of this project is to develop a MATLAB program that has the following capabilities: (a) the generation of an artificial gray level image that mimics the elastic deformation of the planar surface of a material; and, (b) the utilization of Digital Image Correlation (DIC) to track planar surface deformation of a material to account for rigid body translation, rigid body rotation, and deformation. The MATLAB computing environment is ideally suited for this project due to its ability to deal with matrix quantities efficiently. This is the case for gray level planar images that take the form of large two-dimensional matrices. These gray level images can be manipulated to achieve elastic deformation of these simulated surfaces or images of the planar surface of a material. The goal

is to control not only the creation of the original undeformed images, but to create precise simulated deformation of these images with fully known parameters. The ultimate objective is to assess the limits of DIC as a means of determining the parameters associated with material deformation. May 28 - July 28, 2006.

- Identified, sought pricing and availability for a fume hood for M2 building.
- Participation in Scorpiontation in representation of the department of engineering.

Involvement as Faculty Advisor to Students and Student Groups at the University of Texas at Brownsville

- Submitted an application to start a student chapter of the American Society of Mechanical Engineers (ASME). Approved March 2006.
- Faculty Advisor, student chapter of the American Society of Mechanical Engineers.
 - Attended Student Leadership Seminar in Dallas, TX, September 29-30, 2006.
 - Achieved the goal of having invited speakers every two weeks throughout the fall 2006 semester
 - Obtained \$1500 for a Diversity Action Grant (see description above)
- Encouraged Electrical Engineering faculty to form a student chapter of the Institute of Electrical and Electronic Engineers (IEEE). The student chapter started fall 2006.

Professional Development at the University of Texas at Brownsville

 Attended the Best Practices Conference 2006 on "Recruiting and Retaining Engineering and Computer Science Students" Dallas, Texas sponsored by the Texas Engineering and Technical Consortium, a Technology Workforce Development effort funded by the Texas Higher Education and Coordinating Board. It was held on the Southern Methodist University Campus from January 10-11, 2006. The knowledge gained by attendance of this conference benefited the recruitment and retention efforts by the Department of Engineering.

Department of Mechanical Engineering Committees at the University of Maryland

• Web Coordinator Search Committee, 8-03 - 12-03.

A. James Clark School of Engineering Committees at the University of Maryland

• Member, Committee to assist with recruiting female and minority faculty, 11/01 - 09/04.

Involvement as Faculty Advisor to Students and Student Groups at the University of Maryland

- Advisor of the Society of Hispanic Professional Engineers Student Chapter, 09/01 05/03.
- ✤ Liaison to Eleanor Roosevelt High School in Beltsville, MD in relation to FIRST Robotics Competition, 10/02 – 9/04.

Department of Mechanical Engineering Committees at Texas Tech University

- Member, Mechanical Systems Laboratory Committee, 1988-89
- Member, Curriculum Committee, 1988-94

- Member, Honors and Awards Committee, 1988-95
- ◆ Judge, ASME Student Section, Texas Tech University, Old Guard Competition, February 21, 1989
- Member, Computing Committee, 1992-93
- Member, Laboratory, Equipment and Facilities Committee, 1995-97
- Member and Chair, Faculty Search and Affairs, 1993-94
- Member, Graduate Affairs Committee, 1993-94
- Member, Mission and Goals Committee, 1994-95
- Member and Chair, Honors and Awards Committee, 1994-95
- Member, Graduate Affairs Committee, 1997-98
- Member and Chair, Faculty Search Committee, 1998-99
- ✤ Member, ad hoc Post-Tenure Review Committee, 1999-2002.

College of Engineering Committees at Texas Tech University

- Member, Dean of Engineering Future One Committee dealing with minority issues, 2/88 5/89
- Member, Effective Teaching Committee, 1/89 6/92
- Member, Dean of Engineering Junction Experience Committee dealing with minority retention issues, 9/89 - 7/90
- Soard Member, Texas Alliance for Minorities in Engineering (TAME), Lubbock Alliance, 9/89 5/90
- Member, Director of Minority Engineering Program Search Committee, 1992-93
- Member, several Student Grade Appeal Committees, Fall 1995

University-Wide Committees at Texas Tech University

- Consultant representing the College of Engineering, Texas Advanced Skills Program (TASP) Advisory Committee, 9/89 - 5/91
- Initiated contacts and completed a Collaborative Agreement with the College of Engineering of the National Autonomous University of Mexico (Universidad Nacional Autónoma de México) in Mexico City, Mexico, 1989.
- Initiated contacts and completed a Collaborative Agreement with the Escuela Politécnica del Ejército in Quito, Ecuador, 1989.
- Senator representing the College of Engineering, Faculty Senate, 6/93 5/96
- Member, Faculty Senate Academic Programs Committee, 6/93 5/96
- Member, Minority Affairs Committee, Fall 1994
- College of Engineering Representative, Panel for Tenure Hearing Committees, 9/94 8/95
- Mentor, Upward Bound, Texas Tech University, Daniel Cisneros and Jil Arias, summer 1999.
- Senator at-large, Faculty Senate, started 9/99-5/01.
- Member, Faculty Senate Committee B, 9/99 5/00
- Member, Faculty Grievance Panel, Texas Tech University, period 9/00-8/02.

State of Texas Service while at Texas Tech University

Selected to serve as a member of the Bias Review Committee, which falls under the aegis of the Texas Academic Skills Council, supporting the Texas Academic Skills Program administered by the Texas Higher Education Coordinating Board, 7/91 - 7/96.

International Service while at Texas Tech University

- Host to Dr. Luis A. Ferrer-Argote, a faculty member from the Autonomous University of Mexico in Mexico City, Mexico. Visiting Research Associate, 12/89 to 6/90.
- Host to Dr. Gonzalo Alduncin from the Department of Mathematical and Computational Modelling of the Institute of Geophysics of the National Autonomous University of Mexico. He presented a Department of Mechanical Engineering Seminar entitled: "Computational Modelling in Mechanical Engineering," 4/12/90.
- Host to Professor Fuzhong Shen, a faculty member and Vice-Chairman of the Department of Chemical Machinery of the Nanjing Institute of Chemical Machinery in Nanjing, China. Visiting Research Associate, 9/89 to 10/90.
- Host to Dr. Siding Zheng, a researcher from Shanghai Power Equipment Research Institute in Shanghai, China. Visiting Research Associate, 11/89 to 6/94.
- Host to Mr. Haigen Yao, a researcher from Shanghai No. 2 Textile Machinery Works in Shanghai, China. Visiting Research Associate, 11/90 to 5/93.
- External Referee: Promotion and Tenure of Dr. K. R. Yogendra Simha, Indian Institute of Science, Bangalore, India, Spring 1994.
- External Referee: Promotion to Professor of Dr. K. R. Yogendra Simha, Indian Institute of Science, Bangalore, India, Spring 2000.

Professional Development at Texas Tech University

- Participant in the College of Engineering Effective Teaching Workshop, "Creating Creative Engineers," by Dr. Richard Felder, Texas Tech University, August 1988.
- Participant in the College of Engineering Effective Teaching Workshop, "Integrated Learning System -Improving Engineering Education," by Dr. K.J. Williamson and P.K. Hurt, Texas Tech University, August 1989.
- Attended Texas Tech University Teaching, Learning, and Technology Center sessions: Authorware I, II, III
- Attended Texas Tech University Teaching, Learning, and Technology Center session: Creating Web Pages
- Attended Teleconference at the Teaching, Learning and Technology Center entitled: "Changing Practices in Evaluating Teaching," with Dr. Peter Seldin and Dr. Wilbert McKeachie, March 24, 2000.
- Attended Engineering Education Workshop: "Bringing Theory and Practice Together in Engineering Classrooms," Auburn University Hotel and Conference Center, May 11-13, 2000, Auburn, Alabama.
- Attended ALGOR Education Seminar entitled: "Module 915 Finite Element Course 40 hours," Houston, Texas, December 4-8, 2000.

Other Activities at Texas Tech University

Director in charge of organizing the Society of Automotive Engineers Walking Machine Decathlon held at Texas Tech University, Lubbock, Texas, April 20-22, 1989.

- Coach, Orange Thunder Under 12 Girls Recreational Soccer Team, Lubbock Soccer Association, First Place, Spring 1989
- Coach, Loving Lions Boys Recreational Soccer Team, Lubbock Soccer Association, 1989–97. The U12 team was State of Texas Soccer champions.
- Coach, Lions Boys Select Soccer Team, Lubbock Soccer Association, 1997–2000.
- Coach, Odyssey of the Mind 7th Grade Team, J.T. Hutchinson Junior High School, 1989-90, 1995-96, 1998-99.
- ♦ United States Soccer Federation "E" Coaching License, August 25, 1991
- North Texas State Soccer Association, Staff Coach, November 1992 present
- The International License of the Football Association of Ireland, May 15-21, 1993
- ♦ United States Soccer Federation "D" State Coaching License, March 6, 1994
- The International License of the Football Association of Ireland, May 14-20, 1994
- United States Soccer Federation "C" National Coaching License, San Diego, California, January 2-9, 1997 (License 7794)

Involvement as Faculty Advisor to Students and Student Groups at Texas Tech University

- Initiator and advisor of the Society of Hispanic Professional Engineers Student Chapter, Fall 1988 -May 1997.
- Advisor to the Walking Machine Project which participated in the Society of Automotive Engineers Walking Machine Decathlon held at Texas Tech University, Lubbock, Texas, April 20-22, 1989.
- Walking Machine Project Design Project Final Report, under my direction, won a Merit Award from the James F. Lincoln Arc Welding Foundation's 1989 Pre-Professional Awards Program. (November 17, 1989).
- Advisor to the Walking Machine Project which participated in the Society of Automotive Engineers Walking Machine Decathlon held at the University of Central Florida, Orlando Florida, April 5-7, 1990.
- Advisor to the Walking Machine Project which participated in the Society of Automotive Engineers Walking Machine Decathlon held at the University of Maryland, College Park, Maryland, April 18-20, 1991.

Department of Mechanical Engineering Committees at Colorado State University

- ✤ Member, Faculty Search Committee, 9/84 5/85
- Member, Advisory Committee (temporary appointment), 10/84 12/84

College of Engineering Committees at Colorado State University

Chairman, First Annual Walking Machine Decathlon Committee, 7/86 - 5/87

University-Wide Committees at Colorado State University

✤ Marshall, University Commencement, 12/86

Involvement as Faculty Advisor to Students and Student Groups at Colorado State University

- Senior thesis of a student (Craig R. Luebben) under my direction won an Honorable Mention in the Charles Martin Hall Aluminum Technology Award Competition sponsored by the Aluminum Association. The student received \$350 and the Department of Mechanical Engineering at Colorado State University received \$150.
- Senior thesis of a student (Craig R. Luebben) under my direction won a Silver Certificate from the James F. Lincoln Arc Welding Foundation. The student received \$750 and the Department of Mechanical Engineering at Colorado State University received \$250.
- Initiated ASME student chapter participation in the design and construction of all-terrain vehicles which competed in several Mini-Baja West Competitions:
 - Competition held at California Polytechnic State University in San Luis Obispo, California, April 17-19, 1986. Aluminum frame entry obtained first place in the hill climb and maneuverability, and second place in the drag race.
 - Competition held at California Polytechnic State University in San Luis Obispo, California, April 9-11, 1987. One aluminum frame and one steel frame entries were entered.
 - Competition held at University of Texas in El Paso, Texas, April 21-23, 1988. One steel frame entry was entered.
- ♦ Advisor to the Society of Hispanic Professional Engineers Student Chapter, 1986-87.
- ✤ Initiator and advisor of the Society of Automotive Engineers Student Chapter, Fall 1987.
- Advisor to the Walking Machine Project which participated in the Second Annual Walking Machine Decathlon held at the University of Maryland, College Park, Maryland, April 14-16, 1988. Colorado State University entry took first place in the competition.

Professional Service Activities

Member:

American Society of Mechanical Engineers, Society for Experimental Mechanics, British Society for Strain Measurement, Materials Research Society, Sigma Xi

Section Officer:

Colorado Section, Society of Automotive Engineers, Vice-Chairman, 1987-88

Associate Editor:

Society for Experimental Mechanics: Experimental Techniques, 1998-99

Reviewer:

Society for Experimental Mechanics, National Science Foundation, American Society of Mechanical Engineers, Optics and Lasers in Engineering Journal, American Society for Testing and Materials

Session Chairman or Co-Chairman:

Session 9 - Photoelasticity, 1985 Society for Experimental Mechanics Spring Conference, June 9-14, 1985, Las Vegas, Nevada

- Session 35 Image Processing, VI International Conference on Experimental Mechanics, June 5-10, 1988, Portland, Oregon
- Session IVB Rock Fracture Application, International Conference on Fracture and Damage of Concrete and Rock, July 4-6, 1988, Vienna, Austria
- Session on Interdisciplinary Team Experiences, ASEE Gulf-Southwest Conference, Lubbock, Texas, April 2-4, 1989
- Sessions 20 and 27 Automated Grid Methods for Strain Measurement I and II, Society for Experimental Mechanics, May 28 - June 1, 1989, Boston, Massachusetts
- Sessions 38 Moire and Grid Techniques, Society for Experimental Mechanics, June 10-13, 1991, Milwaukee, Wisconsin
- Session DE-4B Symposium on Advanced Automotive Technologies: Powertrain Control and Measurement Systems, American Society of Mechanical Engineers - Winter Annual Meeting, December 1-6, 1991, Atlanta, Georgia
- Session 4 Holo-Interferometry, Society for Experimental Mechanics, June 7-9, 1993, Dearborn, Michigan.
- Session 42 Moire Interferometry II, Society for Experimental Mechanics, June 7-9, 1993, Dearborn, Michigan.
- Session 44 Application of Image Processing in Optical Methods, Society for Experimental Mechanics, June 12-14, 1995, Grand Rapids, Michigan.
- Session 47 General Design and Analysis VI, Third Biennial World Conference on Integrated Design and Process Technology, July 6-9, 1998, Berlin, Germany.
- Session 30 Manufacturing, Fifth Biennial World Conference on Integrated Design and Process Technology, June 4-8, 2000, Dallas, Texas.
- Session 30 General Design and Analysis II, Fifth Biennial World Conference on Integrated Design and Process Technology, June 4-8, 2000, Dallas, Texas.
- Session on Manufacturing, Fifth Biennial World Conference on Integrated Design and Process Technology, Crowne Plaza Hotel, North Dallas/Addison, Texas, June 4-8, 2000.
- Session on General Design and Analysis II, Fifth Biennial World Conference on Integrated Design and Process Technology, Crowne Plaza Hotel, North Dallas/Addison, Texas, June 4-8, 2000.
- Session 43 Optical Methods in Composites, 2002 Society for Experimental Mechanics Annual Conference on Experimental and Applied Mechanics, June 10-12, Milwaukee, Wisconsin.
- Session 55 Image Correlation Methods, 2002 Society for Experimental Mechanics Annual Conference on Experimental and Applied Mechanics, June 10-12, Milwaukee, Wisconsin.
- Session 48 Testing and Modeling of Structures, 2003 Society for Experimental Mechanics Annual Conference ad Exposition on Experimental and Applied Mechanics, June 2-4, Charlotte, North Carolina.
- Session 69 Application of Optical Techniques to Inverse Problems in Solid Mechanics, 2003 Society for Experimental Mechanics Annual Conference ad Exposition on Experimental and Applied Mechanics, June 2-4, Charlotte, North Carolina.
- Session 77 Measurement of Displacements, Strains and Stresses in Microscopic Fields II, 2003 Society for Experimental Mechanics Annual Conference ad Exposition on Experimental and Applied Mechanics, June 2-4, Charlotte, North Carolina.
- Session 62 Inverse Problem Approaches: General Techniques, 2004 Society for Experimental Mechanics International Congress and Exposition on Experimental and Applied Mechanics, June 7-10, Costa Mesa, California.

- Session 76 Inverse Problem Approaches: Stresses, 2004 Society for Experimental Mechanics International Congress and Exposition on Experimental and Applied Mechanics, June 7-10, Costa Mesa, California.
- Session 31 Inverse Problems I, 2005 Society for Experimental Mechanics Conference and Exposition on Experimental and Applied Mechanics, June 7-9, Portland, Oregon.
- Sessions 13, 52, Inverse Problems, 2006 Society for Experimental Mechanics Annual Conference and Exposition, June 4-7, St. Louis, Missouri.
- Session on "Mecánica y Energía", Congreso de la Red Ecuatoriana de Universidades y Escuelas Politécnicas (REDU), October 23, 2013, Guayaquil, Ecuador.

Session Organizer or Co-Organizer:

- Session on Interdisciplinary Team Experiences, American Society of Engineering Education Gulf-Southwest Conference, April 3-4, 1989, Lubbock, Texas
- Session on Grid Techniques, Spring Conference on Experimental Mechanics, May 28 June 2, 1989, Cambridge, Massachusetts
- Session on Application of Image Processing in Optical Methods, Society for Experimental Mechanics, June 12-14, 1995, Grand Rapids, Michigan
- Session 43 Optical Methods in Composites, 2002 Society for Experimental Mechanics Annual Conference on Experimental and Applied Mechanics, June 10-12, Milwaukee, Wisconsin.
- Session 48 Testing and Modeling of Structures, 2003 Society for Experimental Mechanics Annual Conference and Exposition on Experimental and Applied Mechanics, June 2-4, Charlotte, North Carolina.
- Session 69 Application of Optical Techniques to Inverse Problems in Solid Mechanics, 2003 Society for Experimental Mechanics Annual Conference ad Exposition on Experimental and Applied Mechanics, June 2-4, Charlotte, North Carolina.
- Sessions 62, 69, 76, 83 and 88 Inverse Problem Approaches, 2004 Society for Experimental Mechanics International Congress and Exposition on Experimental and Applied Mechanics, June 7-10, Costa Mesa, California.
- Sessions 31, 38, 45, 52 Inverse Problems, 2005 Society for Experimental Mechanics Conference and Exposition on Experimental and Applied Mechanics, June 7-9, Portland, Oregon.
- Sessions 13, 20, 27, 38, 45, 52, 59 Inverse Problems, 2006 Society for Experimental Mechanics Annual Conference and Exposition, June 4-7, St. Louis, Missouri.
- Two Sessions Inverse Problems, Society for Experimental Mechanics Annual Conference and Exposition on Experimental and Applied Mechanics, June 4-6, 2007, Springfield, Massachusetts.

Course Organizer and Presenter:

- Course 101 Applied Inverse Problem Methodology in Experimental Solid Mechanics, 2005 Society for Experimental Mechanics Conference and Exposition on Experimental and Applied Mechanics, Full Day: 8 hours, June 6, Portland, Oregon (Presenters: J. F. Cárdenas-García, F. Pierron and S. Avril).
- Course 101 Applied Inverse Problem Methodology in Experimental Solid Mechanics, 2006 Society for Experimental Mechanics Annual Conference and Exposition, Full Day: 8 hours, June 3, St. Louis, Missouri (Presenters: J. F. Cárdenas-García, A. Zapata, F. Pierron and S. Avril).

Other Activities:

- Chairman, Society of Automotive Engineers Walking Machine Decathlon Committee, 4/88 4/91.
- Judge, Second Annual Walking Machine Decathlon, held at the University of Maryland, College Park, Maryland, April 14-16, 1988.
- Organizer, Society of Automotive Engineers Walking Machine Decathlon held at Texas Tech University, Lubbock, Texas, April 20-22, 1989.
- Member, American Society of Mechanical Engineers Micro-Mechanical Systems Panel, Dynamic Systems and Control Division, 12/89 - 12/93.
- Invited to participate as a member of a National Science Foundation Panel which evaluated Research Initiation Awards and Engineering Research Equipment Grants Programs proposals, Washington, D. C., March 12-13, 1990.
- One of twenty-seven national scholars selected to participate in the American Association for the Advancement of Science "Workshop on Ethical and Values Issues in Science and Technology for Minority Scholars," The Woods Resort and Conference Center, Hedgesville, West Virginia, July 28 -August 3, 1991.
- Invited by the Foreign Affairs Bureau of the Ministry of the Chemical Industry of the People's Republic of China to lecture. All internal expenses in China were paid by the government of China. Lectures in the area of Experimental Mechanics were presented at: Tsinghua University (the most prestigious university of China), Beijing; Nanjing Institute of the Chemical Industry (20 hours of lectures), Nanjing; and, Jiangsu Institute of Petrochemical Technology, Changzhou; Visited East China University of Science and Technology, Shanghai; Visited The University of Hong Kong during the return trip; 6/93 - 7/93.
- Consultant, to the United States North American Free Trade Agreement Forum on Engineering Practice representatives in a National Science Foundation sponsored project related to defining the "Conduct and Ethics in Engineering Practice Related to the North American Free Trade Agreement, Lubbock, Texas, 5/94 - 5/95.
- Invited to participate as a member of a Department of Energy (DOE) Technical Panel which evaluated Research Opportunity Announcement Awards related to innovative technologies associated with sensors, instrumentation systems and field measurements for the DOE Environmental Management Program which is managed by the DOE Morgantown Energy Technology Center in Morgantown, West Virginia, July 18-20, 1995.
- Invited to participate as a member of a National Science Foundation instrumentation proposals review panel in FY 2001 in Arlington, Virginia, April 17-19, 2001.
- Secretary, Society for Experimental Mechanics Applications Committee, 6/95 6/00.
- Member, Society for Experimental Mechanics Optical Methods Division, 6/94 present.
- Member, Society for Experimental Mechanics Optical Methods Division Paper Review Committee, 6/94 - present.
- ♦ Secretary, Society for Experimental Mechanics Optical Methods Technical Division, 06/04 06/05.
- Scientific Committee, Photomechanics 2006, International Conference on Full-Field Measurement Techniques and Their Applications in Experimental Solid Mechanics, July 10-12, Clermont-Ferrand, France
- ♦ Vice-Chair, Society for Experimental Mechanics Optical Methods Technical Division, 06/05 06/06.
- ♦ Chair, Society for Experimental Mechanics Optical Methods Technical Division, 06/06 06/07.
- Chair, Society for Experimental Mechanics Inverse Problem Methodologies Technical Division, 06/06 - 06/07.