

Curriculum Vitae

Gang Wang, Ph.D.
Associate Professor
Department of Mechanical and Aerospace Engineering
University of Alabama in Huntsville
Email: gang.wang@uah.edu
Tel: 256-824-6209

- **Status: US Citizen**

- **Education**

Doctor of Philosophy, Aerospace Engineering, December, 2001

University of Maryland, College Park, MD, USA

Dissertation: Analysis of Sandwich Beams and Plates with Viscoelastic Cores

Advisor: Dr. Norman M. Wereley

Committee: Dr. Amr Baz (Dean's representative), Dr. Inderjit Chopra, Dr. Sung Lee, Dr. Darryll J. Pines

Master of Science, Aerospace Engineering, May, 1998

University of Maryland, College Park, MD, USA

Scholarly Paper: Analysis of Sandwich Plates with Isotropic Face Plates and a Viscoelastic Core

Master of Engineering, Engineering Mechanics, July, 1996

Dalian University of Technology, Dalian, China

Thesis: Dynamic Optimization of Turbine Base Systems

Bachelor of Engineering, Engineering Mechanics, July, 1993

Dalian University of Technology, Dalian, China

Development of finite element models for a rock structure with joints

- **Professional Experience**

Campus Director, November 2019 to present

University of Alabama in Huntsville

Alabama Space Grant Consortium, Alabama NASA EPSCOR

Co-Campus Director, August 2019 to November, 2019

University of Alabama in Huntsville

Alabama Space Grant Consortium, Alabama NASA EPSCOR

Associate Professor, August 2016 to present

Department of Mechanical and Aerospace Engineering

University of Alabama in Huntsville

Assistant Professor, August 2010 to July 2016

Department of Mechanical and Aerospace Engineering

University of Alabama in Huntsville

Principal Engineer, Jan., 2007 to July 2010

Senior Engineer, July 2006 to Dec. 2006

Techno-Sciences, Inc.
11750 Beltsville Dr., Beltsville, MD

Visiting Assistant Research Scientist, August 2006 to July 2010

Alfred Gessow Rotorcraft Center, Dept. of Aerospace Engineering
University of Maryland, College Park, MD

Assistant Research Scientist, August 2004 to July 2006

Alfred Gessow Rotorcraft Center, Dept. of Aerospace Engineering
University of Maryland, College Park, MD

Research Associate, December, 2001 to July 2004

Alfred Gessow Rotorcraft Center, Dept. of Aerospace Engineering
University of Maryland, College Park, MD

• **Honors**

- ASME Fellow, 2020
- 2016 ASME Ephraim Garcia Best Paper Award
- NASA Marshall Summer Faculty Fellow, 2015
- AIAA Associate Fellow, 2013
- 2013 UAH Individual Investigator Distinguished Research Award
- 2012 UAH Junior Faculty Distinguished Research Program Award
- 2012 NSF Travel grant to attend the ICAST Conference in Nanjing, China
- 2005-2006 Young Researcher/Scientist Award, AIAA National Capital Section
- University of Maryland Minta-Martin Fellowship, 2000/2001
- Graduate School Fellowship, Dalian University of Technology, China, 1992/1993

• **Teaching**

- MAE 371: Aerospace Structures
- MAE 471: Advanced Aerospace Materials and Structures
- MAE 474/574: Applied Solid Mechanics
- MAE 660: Structural Dynamics
- MAE 657: Helicopter Theory

• **Service/ Society**

- Conference Co-chair, Active and Passive Smart Structures and Integrated Systems IX (SSN03), SPIE Smart Structure + Nondestructive Evaluation, 2020 & 2021
- Faculty Advisor, Space Hardware Club, University of Alabama in Huntsville
- Associate Editor, Journal of Intelligent Material Systems and Structures, June 2016 to present
- Panelist, Division of Industrial Innovation and Partnerships (IIP), National Science Foundation, August 2015
- Section Chair, ASME 2012 and 2011 Conference on Smart Materials Adaptive Structures & Intelligent Systems
- Proposal reviewer for the Army Research Office (ARO), 2011 & 2012
- Book reviewer, *Composite Materials: Design and Applications, Third Edition* by Daniel Gay, CRC Press, 2014
- Judge for Student Best Paper Award
 - 2013 SPIE Smart Structures/NED
 - 2013 AIAA Region II Student Conference

- Review committee member of the AIAA National Capital Section's Hal Andrew Young Engineer/Scientist, 2015
- Reviewer for the ASME Adaptive Structures Best Paper Award in 2014 and 2015
- Member, Adaptive Structures & Material Systems Committee (ASMS), Aerospace Division, ASME
- Reviewer (selected): Journal of Sound and Vibration; Journal of Intelligent Material Systems and Structures; Smart Materials and Structures; Journal of the American Helicopter Society; Proceedings of the Institution of Mechanical Engineers, Part G, Journal of Aerospace Engineering; ASME Journal of Vibration and Acoustics; AIAA Journal; Journal of Theoretical and Applied Multiscale Mechanics; Meccanica; Journal of Fluids and Structures; Structural Health Monitoring, Energy; AIMS Energy ;Sensors & Actuators
- UAH Campus
 - Tenure and Promotion Committee member, Department of Industrial and Systems Engineering and Engineering Management, 2019
 - Faculty Search Committee member, Civil and Environmental Engineering, 2019-2020
 - Lecturer Reappointment Committee member, UAH Mechanical and Aerospace Engineering, 2019
 - Lecturer and Tenure Track Faculty Reappointment Committee member, UAH Civil and Environmental Engineering, 2019
 - Chair, UAH Faculty Senate Undergraduate Curriculum Committee, 2018-2019
 - UAH Faculty Senator (2017-2019)
 - UAH Faculty Search Committee member: Mechanical and Aerospace Engineering (2015-2016, 2017-2018); Civil and Environmental Engineering (2017-2018, 2019-2020)
- American Institute of Aeronautics and Astronautics (AIAA)
 - Associate Fellow, 2013 to present
- ASME Member, 2009 to present
- American Helicopter Society International (AHS)
 - Member since 2002
 - Student Member, 1997 to 2001(Served as vice-president of student chapter of federal city chapter, 1996-1997)

- **Students**

- **Ph.D. Graduate Students**

- Felix Ewere (December 2015, Dissertation, "Flow Induced Vibration on Piezoelectric Structures: Theory, Characterization, and Application," now Teaching Assistant Professor at North Carolina State University
- Matthew Pinkston (Served as dissertation committee chair, December 2019, Dissertation "Development of Carbon Reinforced High Performance Cementitious Composites.")
- Logan Caskey (part-time, expected to graduate in December 2024)
- Brandon Stiltner (part-time, expected to graduate in December 2021)
- David Fikes (part-time, expected to graduate in December 2020)
- Luis E. Deganis (part-time, expected to graduate in December 2020)

- **Master Graduate Students**

- Frederick Snopl, (full-time, expected to graduate in May 2022)
- Jarrod Moore (full-time, expected to graduate in December 2020)
- Bao Ha (May 2020, Thesis "Development of a PZT Fiber Sensor Rosette for Structural Health Monitoring Using Lamb Wave Responses.")

- Prabhav Borate (December 2017, Thesis, “Development of Data Driven Structural Health Monitoring Approach Using Guided Lamb Wave Responses.” Now with Energy Recovery, Inc.)
- Shushannah Smith (December 2015, non-thesis, scholarly paper, “Bayesian Approach to Breathing Crack Detection in Beam Structures,” Now Associate Professor at Oakwood University)
- Ahmet Unal (May 2014, Thesis, “Analysis of Multi-layered Beam Structures Using Spectral Finite Element Method,” Now with Vacco Industries)
- Vishnu P. Venugopal (December 2013, Thesis, “Fundamental Understanding of Wave Propagation in a Beam Using PZT Actuators and Sensors.”)

Undergraduate Students

- Nathan Ulmer (Since Fall 2019)
- Michael Angeles (Fall 2019 to 02/2020)
- Dakota Bownman (Summer 2018)
- Evan Unruh (May 2015-May 2017)
- Jackson Ritter (May 2019, Honor Project “Quantitative Analysis of Table Tennis Blades.”)
- Jeremy Pohly (December 2016, Honors Thesis “Wing Flutter Analysis using Computation Fluid Dynamics.”)
- Kevin Gilbert (May 2015, Honors Project “Analysis of a PZT fiber Rosette For Structural Health Monitoring.”)
- Ethan Hopping (May 2015, Honors Thesis “Distributed Wireless PZT Fiber Composite Sensor System Development and Demonstration: Wireless Data Acquisition Development.”)
- Markus Murdy (May 2015, Honors Thesis “Distributed Wireless PZT Fiber Composite Sensor System Development and Demonstration: Sensor Design and Fabrication”)

• **Book Chapters**

1. D.-C. Chang, G. Wang, and N.M. Wereley (2006). “Mathematical Analysis of Fly Fishing Rod Static and Dynamic Response.” Proceedings of the Conference on Differential and Difference Equations and Applications, Edited by R. Agarwal and K. Perera, Hindawi Publishing Corporation, New York, NY, pp. 287–297.
2. G. Ngatu, W. Hu, N.M. Wereley, C.S. Kothera and G. Wang (2013). “Controllable Magnetorheological Damping for Advanced Helicopter Rotors.” *Magnetorheology: Advances and Applications*, Norman M. Wereley, Ed., Royal Society of Chemistry. RSC Smart Materials, Cambridge, UK. Chapter 14, pp. 307-341.

• **Refereed Journal Articles**

J34. B. Ha, K. Gilbert, and G. Wang, 2020, “Data-Driven Structural Health Monitoring Approach Using Guided Lamb Wave Responses,” *Journal of Intelligent Material Systems and Structures*, in revision.

J33. P. Borate, G. Wang, and Y. Wang, 2020, “Data-Driven Structural Health Monitoring Approach Using Guided Lamb Wave Responses,” *ASCE Journal of Aerospace Engineering*, in press.

- J32.** ZF Yu, T. Pillsbury, G. Wang, and N.M. Wereley, 2019, “Hyperelastic Analysis of Pneumatic Artificial Muscle with Filament-Wound Sleeve and Coated Outer Layer,” *Smart Materials and Structures*, Vol. 28, No. 10. 105019.
- J31.** D. Barot, G. Wang, and LZ Duan, 2019, “High Resolution Dynamic Strain Sensor Using a Polarization Maintaining Fiber Bragg Grating,” *IEEE Photonics Technology Letters*, DOI 10.1109/LPT.2019.2905951.
- J30.** G. Wang and J.W. Shen, 2019, “Flutter Instabilities of Cantilevered Piezoelectric Pipe Conveying Fluid,” *Journal of Intelligent Material Systems and Structures*, Vol. 30(4) 606–617.
- J29.** GF. Bin, Y. Huang, SP. Guo, XJ. Li, and G. Wang, 2018, “Investigation of Induced Unbalance Magnitude on Dynamic Characteristics of High-speed Turbocharger with Floating Ring Bearings,” *Chinese Journal of Mechanical Engineering*, 31:88.
- J28.** G. Wang, 2018, “Beam Damage Uncertainty Quantification Using Guided Lamb Wave Responses,” *Journal of Intelligent Material Systems and Structures*, Vol. 29, No.3, pp. 323–334.
- J27.** F. Ewere, G. Wang, and A. Frendi, 2017, “Experimental Investigation on a Bioinspired Bluff Body Effect on Galloping Piezoelectric Energy Harvester Performance,” *AIAA Journal*, 56 (3), 1284-1287.
- J26.** S. Smith, G. Wang, DS Wu, 2017, “Bayesian Approach to Breathing Crack Detection in Beam Structures,” *Engineering Structures*, Vol. 148, pp.829-838.
- J25.** A. Unal, G. Wang, Q.H Zuo, 2016, “Modeling and Analysis of Multi-layered Elastic Beam Using Spectral Finite Element Method,” *The ASME Journal of Vibration and Acoustics*, 138 (4), 041013.
- J24.** V.P. Venugopal and G. Wang, 2015, “Modeling and Analysis of Lamb Wave Propagation in a Beam Under PZT Actuation and Sensing,” *Journal of Intelligent Material Systems and Structures*, vol. 26, no. 13, pp. 1679-1698, published online 23 May 2014.
- J23.** G. Wang, N.M. Wereley, and T. Pillsbury, 2015, “Nonlinear Quasi-Static Model of Pneumatic Artificial Muscle Actuators,” *Journal of Intelligent Material Systems and Structures*, Vol. 26, No. 5, pp. 541-553.
- J22.** B. Woods, C. Kothera, G. Wang, and N.M. Wereley, 2014, “Dynamics of a Pneumatic Artificial Muscle Actuation System Driving a Trailing Edge Flap,” *Smart Materials and Structures*, Vol. 23, No. 9, 095014.
- J21.** F. Ewere and G. Wang, B. Cain, 2014, “Experimental Investigation of Piezoelectric Galloping Harvesters with Square Bluff Body,” *Smart Materials and Structures*, Vol. 23, No. 10, 104012.
- J20.** F. Ewere and G. Wang, 2014, “Performance of Galloping Piezoelectric Energy Harvesters,” *Journal of Intelligent Material Systems and Structures*, Vol. 25. No. 4, pp.1693-1704.

- J19.** G. Wang and A. Unal, “Free Vibration of Stepped Thickness Rectangular Plates Using Spectral Finite Element Method,” *Journal of Sound and Vibration*, Vol. 332, No. 18, September, 2013, pp. 4324-4338.
- J18.** G. Wang, 2013, “Analysis of Bimorph Piezoelectric Beam Energy Harvesters Using Timoshenko and Euler-Bernoulli Beam Theory,” *Journal of Intelligent Material Systems and Structures*, Vol. 24. No. 2, 2013, pp. 226-239.
- J17.** Q. H. Zuo, L.E. Deganis, and G. Wang, 2012, “Elastic Waves and Damage Quantification in Brittle Material with Evolving Damage,” *Journal of Physics D: Applied Physics*, Vol. 45, No. 14, 145302.
- J16.** G. Wang and N.M. Wereley, 2011, “Analysis of Fly Fishing Rod Casting Dynamics,” *Journal of Shock and Vibration*, Vol. 18, Issue 6, pp: 839-855.
- J15.** N. M. Wereley, G. Wang, and A. Chaudhuri, 2011, “Demonstration of Uniform Cantilevered Beam Bending Vibration Using a Pair of Piezoelectric Actuators,” *Journal of Intelligent Material Systems and Structures*, Vol. 22, Issue 4, March, 2011, pp. 307-316.
- J14.** H.J Song, Y.T. Choi, G. Wang, and N.M. Wereley, 2009, “Energy Harvesting Utilizing Single Crystal PMN-PT Material and Application to a Self-power Accelerometer,” *Journal of Mechanical Design, ASME Journal of Mechanical Design*, September, Vol. 131.
- J13.** S. John, J. Sirohi, G. Wang, and N.M. Wereley, 2007 “Comparison of Piezoelectric, Magnetostrictive, and Electrostrictive Hybrid Hydraulic Actuators,” *Journal of Intelligent Material Systems and Structures*, Vol. 18, Issue10, pp. 1035-1048.
- J12.** S.R. Hong, G. Wang, W. Hu, and N.M. Wereley, 2006, “Liquid Spring Shock Absorber With Controllable Magnetorheological Damping,” *Proceedings of the Institution of Mechanical Engineers Part D- Journal of Automobile Engineering*, Vol. 220, Issue 8, Pages: 1019-1029.
- J11.** D.C. Chang, T. Nguyen, G. Wang, and N.M. Wereley, 2006, “Applications of the Poincare Inequality to Extended Kantorovich Method,” *Journal of Inequalities and Applications*, Volume 2006, Article ID 32356, Pages 1–21.
- J10.** Chaudhuri, G. Wang, N.M. Wereley, V. Tasovksi, and, R. Radhakrishnan, 2005 “Substitution of Micron by Nanometer Scale Powders in Magnetorheological Fluids,” *International Journal of Modern Physics B*, 19 (7-9): 1374-1380 Part 1 Special Issues. SI, April, 10 2005.
- J9.** G. Wang, N.M. Wereley, and D.C. Chang, 2005, “Analysis of Bending Vibration of Rectangular Plates Using Two Dimensional Plate Modes,” *Journal of Aircraft*, Vol. 42, No. 2, March-April, pp. 542-550.
- J8.** G. Wang and N.M. Wereley, 2004, “Free Vibration Analysis of Rotating Blades With Uniform Tapers,” *AIAA Journal*, Vol. 42, No. 12, December, pp. 2429-2437.
- J7.** D.C. Chang, G. Wang, and N.M. Wereley, 2003, “Analysis and Applications of Extended Kantorovich-Krylov Method,” *Applicable Analysis*, Vol. 82, No. 7, July, pp. 713-740.

J6. G. Wang, N.M. Wereley, and D.C. Chang, 2003, "Analysis of Sandwich Plates With Viscoelastic Damping Using Two-dimensional Plate Modes," *AIAA Journal*, Vol. 41, No. 5, May, pp. 924-932.

J5. D.C. Chang, G. Wang and N. M. Wereley, 2002, "A Generalized Kantorovich Method and its Application to Free In-plane Plate Vibration Problem," *Applicable Analysis*, Vol. 80, No. 3, pp. 493-523.

J4. G. Wang and N.M. Wereley, 2002, "Spectral Finite Element Analysis of Sandwich Beams with Passive Constrained Layer Damping," *ASME Journal of Vibration and Acoustics*, Vol. 124, No. 3, July, pp.376-386.

J3. G. Wang, and N.M. Wereley, 2002, "Free In-plane Vibration of Rectangular Plates," *AIAA Journal*, Vol. 40, No. 5, pp. 953-959.

J2. G. Wang, S. Veeramani, and N.M. Wereley, 2000, "Analysis of Sandwich Plates with Isotropic Face Plates and a Viscoelastic Core," *ASME Journal of Vibration and Acoustics*, Vol. 122, No. 3, July, pp. 305-312.

J1. G. Cheng, Z. Kang and G. Wang, 1997, "Dynamic Optimization of a Turbine Foundation," *Structural and Multidisciplinary Optimization (formerly Structural Optimization)*, Vol. 13, No. 4, pp. 244-249.

- **Conference Papers and Presentations**

C40. B. Ha and G. Wang, 2019, "Development of PZT Fiber Sensor Array to Locate Acoustic Source," Presented at the 30th International Conference on Adaptive Structures and Technologies, October 7-11, Montreal, QC, Canada.

C39. G. Bin, G. Wang, H. Li, and X. Li, 2017, "Model Testing Method for Finite Element Validation in Small and Axial Asymmetric Rotors," Presented at the 58th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, AIAA SciTech Forum, January 9-13, Grapevine, Texas, Paper No., AIAA 2017-0871.

C38. C. E. Banks and G. Wang, 2016, "Experimental Investigation on Acousto-ultrasonic Sensing Using Polarization-maintaining Fiber Bragg Gratings," Proc. SPIE 9803, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems, 98033R, doi:10.1117/12.2218379.

C37. G. Wang, 2015, "Beam Damage Uncertainty Quantification Using Guided Lamb Wave Response," Presented at the 26th International Conference on Adaptive Structures and Technologies, October 14-16, Kobe, Japan.

C36. K. Gilbert and G. Wang, 2015, "Lamb Wave Based Damage Detection Using PZT Fiber Sensor Array," Presented at the MFPT 2015 and ISA's 61st International Instrumentation Symposium, Huntsville, AL, May 12-14. (Presentation only)

- C35.** F. Ewere, G. Wang, and K. Frendi, 2015, “Galloping Piezoelectric Energy Harvester with Bio-inspired Square Bluff Body,” Presented at the AIAA Science and Technology Forum and Exposition (SciTech 2015), January 5-9, Kissimmee, FL, Paper No. AIAA2015-1257.
- C34.** R. Elkins and G. Wang, 2014, “Aeroelasticity and Dynamic Analysis of Cracked Composite Wings Using Spectral Finite Element Method,” Presented at the AIAA Science and Technology Forum and Exposition (SciTech 2014), January 13-17, National Harbor, MD, Paper No. AIAA2014-0677.
- C33.** G. Wang, “Modeling and Analysis of Piezoelectric Energy Harvesters With Geometric and Material Nonlinearities,” Presented at the 24th International Conference On Adaptive Structures and Technologies (ICAST), Aruba, October 7-9, 2013 (Presentation Only)
- C32.** V. Venugopal and G. Wang, Fundamental Understanding of Wave Propagation In a Beam Using PZT Actuators and Sensors,” Presented at the ASME 2013 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS2013-3107, Snowbird, Utah, September 16-18.
- C31.** F. Ewere and G. Wang, “Performance of Galloping Piezoelectric Energy Harvesters With Square Bluff Body,” Presented at the ASME 2013 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS2013-3122, Snowbird, Utah, September 16-18.
- C30.** C. Banks, G. Wang, R. Elkins, and B. Cain, “FBG and Piezoelectric Sensors in Structural Health Monitoring of a Laminated Composite Beams,” Presented at the ASME 2013 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS2013-3140, Snowbird, Utah, September 16-18. (Presentation Only)
- C29.** E. Bubert, C. Kothera, G. Wang, and N.M. Wereley, “Modeling and Closed Loop Control of Dynamic Contraction in a Pneumatic Artificial Muscle,” Presented at the ASME 2013 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS2013-3328, Snowbird, Utah, September 16-18.
- C28.** Q. H. Zuo, L. E. Deganis, and, G. Wang, “Wave Propagation Analysis in Brittle Materials Using a Rate-dependent Micromechanical Damage Model,” Presented at the 2013 13th International Conference On Fracture, June 16-21, Beijing, China. (Presentation Only)
- C27.** V. Sotoudeh, R.J. Black, J. Costa, F. Faridian, B. Moslehi, L. Olbea, W.P. Roush, G. Wang, and, Q.H. Zuo, “High Strain Measurement Using Fiber Bragg Grating Sensors,” Proceedings of SPIE- The International Society for Optical Engineering, Volume 8690, Article No. 869005, Industrial and Commercial Applications of Smart Structures Technologies 2013, March, San Diego, CA.
- C26.** G. Wang and N. M. Wereley, 2012, “Nonlinear Quasi-static Model of Pneumatic Artificial Muscle Actuators,” Presented at the 23rd International Conference On Adaptive Structures and Technologies (ICAST), Nanjing, Oct. 11-13, 2012.
- C25.** G. Wang, 2012, “Nonlinear Vibration of a Beam with a Breathing Crack,” Presented at the ASME 2012 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS2012-8016, Stone Mountain, GA, September 19-21.

C24. A. Unal and G. Wang, 2012, “Wave Propagation in Multi-layered Elastic Beams,” Presented at the ASME 2012 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS2012-7939, Stone Mountain, GA, September 19-21.

C23. G. Wang, 2012, “Free Vibration of Stepped Thickness Rectangular Plates Using Spectral Finite Element Method,” Presented at the 53rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Honolulu, HI, April 23-26.

C22. G. Wang, Gregory Hiemenz, Wei Hu, and Norman Wereley, 2011, “A Constant Stroking Load Regulator for Shock Absorption, Presented at the ASME 2011 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS2011-4942, Scottsdale, AZ, September 18-21, 2011.

C21. G. Wang, E. Bubert, N.M. Wereley, and C. Kothera, 2010, “Analysis of High Frequency Actuation of Pneumatic Artificial Muscles,” Presented at the ASME 2010 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, Philadelphia, PA, Sept 28- Oct. 1, 2010. (Presentation Only)

C20. H.J Song, Y.T. Choi, N.M. Wereley, and G. Wang, 2009, “Energy Harvesting Utilizing Single Crystal PMN-PT Material,” Presented at the ASME Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS), October 28-30, Ellicott City, MD.

C19. N. Nersessian, A. Chaudhuri, S. John, G. Wang, and N.M. Wereley, 2007, “Blocked force and free displacement characterization of PMN-32%PT stacks,” *Proceedings of SPIE on Behavior and Mechanics of Multifunctional and Composite Materials*, v 6526, 2007, , March 19-22, 2007, San Diego, CA.

C18. Y.X. Liu, A. Lacher, G. Wang, A. Purekar, and M. Yu , “Wireless Fiber Optic Sensor System for Strain and Pressure Measurements on a Rotor Blade”, *Proceedings of SPIE on Fiber Optic Sensors and Applications*, Vol. 6770, San Diego, 2007.

C17. N.M. Wereley, S.R. Hong, G. Hiemenz, and G. Wang, 2006, “Semi-Active Control of a Vertical Stroking Helicopter Crew Seat for Enhanced Crashworthiness” The 10th International Conference on Electrorheological Fluids and Magnetorheological Suspensions, June 18-22, Lake Tahoe, CA

C16. S.R. Hong, G. Wang, W. Hu, S.B. Choi, and N.M. Wereley, 2006, “Hydro-mechanical Analysis of Magnetorheological Bypass Damper,” The 10th International Conference on Electrorheological Fluids and Magnetorheological Suspensions, June 18-22, Lake Tahoe, CA.

C15. D. C. Chang, G. Wang, and N.M. Wereley, 2006, “Mathematical Analysis of Fly Fishing Rod Static and Dynamic Response,” *Proceedings of the Conference on Differential and Difference Equations and Applications*, Edited by Ravi P. Agarwal and L. Perera, Hindaawi Publishing, New York, 2006.

C14. S.R. Hong, G. Wang, W. Hu, N.M. Wereley, and J. Niemczuk, 2005, “An Automotive Suspension Strut Using Compressible Magnetorheological Fluids,” *Proceedings of SPIE - The International Society for Optical Engineering On Smart Structures and Materials, Damping and Isolation*, v5760, pp. 238-246, San Diego, CA.

C13. G. Wang, L. Y. Dai, N. M. Wereley, M. Wuttig, R. Sahul, and V. Tasovksi, 2004, “Rapid Consolidation of HF Doped NiTi For High Transformation Temperatures,” Proceedings of 2004 ASME International Mechanical Engineering Congress and Exposition, November 13-19, 2004, Anaheim, California USA, Paper No. IMECE2004-62379.

C12. G. Wang and N.M. Wereley, 2004, “Analysis of Fly Fishing Rod Casting Dynamics,” Proceedings of 2004 *The Engineering of Sport 5*, Hubbard M., Mehta R.D. & Pallis J.M. (eds.), Volume 2, pp. 333-339, September 13-17, UC Davis, California.

C11. Chaudhuri, G, Wang, N.M. Wereley, and R. Radhakrishnan, 2004, “Partial Substitution of Micron by Nanometer Scale Powders in Magnetorheological Fluids,” Poster section, *The Ninth International Conference on Electrorheological (ER) Fluids and Magneto-rheological (MR) Suspensions*, Aug. 29—Sept. 3, 2004, Beijing, China.

C10. G. Wang and N.M. Wereley, 2003, “Free Vibration of Rotating Blades With Uniform Tapers,” Proceedings of 2003 ASME International Mechanical Engineering Congress and RD&D Expo, 15-21 November , Washington, D.C., Paper No. IMECE2003-43636.

C9. G. Wang and N.M. Wereley, 2003, “Analysis of Flexible Fly Fishing Rods and Casting Dynamics,” Proceedings of 2003 ASME International Mechanical Engineering Congress and RD&D Expo, 15-21 November , Washington, D.C., Paper No. IMECE2003-43645.

C8. G. Wang, N.M. Wereley, and D.C. Chang, 2003, “Analysis of Bending Vibration of Rectangular Plates Using 2D Plate Modes,” Proceedings of 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, 7-10 April, Norfolk, VA, Paper No. AIAA-2003-1774.

C7. D.C. Chang, R. Gilbert, and Gang Wang, “A Note on Generalized Cesaro Operators,” Proceedings of Acoustics, Mechanics and the Related Topic of Mathematical Analysis, World Scientific, (Ed. by A. Wirgin), 2003.

C6. G. Wang, N.M. Wereley, and D.C. Chang, 2002, “Analysis of Plates with Passive Constrained Layer Damping Using 2D Plate Modes,” Proceedings of 43rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, 22-25 April, Denver, CO., Paper No. AIAA-2002-1366.

C5. G. Wang, and N.M. Wereley, 2001, “Free In-plane Vibration of Rectangular Plates,” Proceedings of 42nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, 16-19 April, Seattle, WA, Paper No. AIAA-2001-1476.

C4. G. Wang, and N.M. Wereley, 1999, “Efficient Frequency Domain Analysis of Piezo-actuated Sandwich Beams with a Viscoelastic Core,” The Fifth IUMRS (International Unions of Materials Research Societies) International Conference on Advance Materials, 13-18 June, Beijing, China.

C3. G. Wang, and N.M. Wereley, 1999, “Spectral Finite Element Analysis of Piezo-actuated Sandwich Beams with A Viscoelastic Core,” Proceedings of 40th AIAA /ASME/ ASCE/ AHS/ASC Structures, Structural Dynamics, and Materials Conference, 12-15 April, St. Louis, MO, Paper No. AIAA-1999-1540.

C2. G. Wang, and N.M. Wereley, 1999, “Piezo-actuation of Sandwich Plates with Viscoelastic Cores,” SPIE Conference on Passive Damping and Isolation, 1-5 March, Newport Beach, CA, Paper No. SPIE-3672-21.

C1. G. Wang, and N.M. Wereley, 1998, “Frequency Response of Beams with Passively Constrained Damping Layers and Piezoactuators,” SPIE Conference on Passive Damping and Isolation, 2-5 March, San Diego, CA, Paper No. SPIE-3327-05.

- **Invited Seminar**

- *Problems in Beam Analysis: Fly Fishing Rods and Helicopter Blades*
Department of Mechanical, Aerospace, and Biomedical Engineering, University of Tennessee, Knoxville, April 8, 2004
Department of Mathematics, Georgetown University, September 29, 2004
- *Advanced Passive and Smart Structures Analysis and Applications in Helicopters*
Department of Mechanical and Aerospace Engineering, University of Alabama in Huntsville, March 10, 2010
Department of Mechanical Engineering, North Carolina A&T State University, April 12, 2010
- *Spectral Finite Element Method for Aerospace Structure*
Presented at Mathematical Colloquium, University of Alabama in Huntsville, August 26, 2011
Presented at Department of Mechanical Engineering, Mississippi State University, February 6, 2012
Presented at Boeing, Huntsville, December 6, 2012
- *NSF IUCRC Center for Advanced Composites in Transportation Vehicles (ACTV) Overview*
2014 Composite Maintainers Technical Interchange Meeting (TIM), June 17, 2014
- *Bayesian Approach to Breathing Crack Detection in Beam Structures*
Naval Air Systems Command (NAVAIR), Structures Division, Patuxent River, MD, May 5, 2015.
Hunan University of Science and Technology.
Xiangtan, China, May 12, 2015.
- *Flow Induced Vibration on Piezoelectric Structures: Theory, Characterization and Application*
Huntsville Student Chapter, The Association of Energy Engineers (AEE)
Huntsville, September 2, 2015
Department of Aerospace and Engineering Mechanics, The University of Alabama, Tuscaloosa, AL, October 6, 2017.
- *Guided Lamb Wave Sensing Using Polarization-Maintaining Fiber Bragg Gratings in Composites*
SAMPE Carolinas Feb. 2018 - Redstone Symposium, Huntsville, AL
UAH Department of Physics and Astronomy Seminar, October 1, 2019.

- **Patent and Invention Disclosure**

1. N.M. Wereley, G. J. Hiemenz, YT Choi, G. Wang, and C-H Chen, *Adaptive Energy Absorption System for a Vehicle Seat*, **US patent 7,822,522**, Issued on October 26, 2010.

2. N.M. Wereley, G. J. Hiemenz, W. Hu, G. Wang, and C-H Chen, *Adaptive Energy Absorption System for a Vehicle Seat*, **US patent 7,921,973**, Issued on April 12, 2011.
3. G. Wang, N.M. Wereley, G. Hiemenz, and YT Choi, *Constant Force Controller for Shock Mitigation*, **US patent 8,311,705**, Issued on November 13, 2012.
4. G. Wang and F. Ewere, *Airflow Sensing Systems and Methods*, **US patent, 10,191,076**, Issued on January 29, 2019.
5. G. Wang, Y.B. Lin, and R. Lindquist, 2013, *An Optically Driven Microfluidic Pump Using Carbon Nanotubes*, UAH-P-13006.
6. G. Wang and F. Ewere, 2014, *Piezoelectric Airflow Sensor*, UAH Invention Disclosure, UAH-P-14018.
7. G. Wang and D.A. Hissam, 2014, *PZT Washer for Accurate Application of Bolt Preload*, NASA Invention Disclosure, e-NTR #: 1417633725.

- **Research Funding**

- 2010 to Present**

1. Energy Harvesting Solutions for Tracking Flight Times in Aviation and Missile Structures; Army SBIR Phase II Effort, Subcontract to Materials Sciences, LLC; Selected for Award; Contract pending; Amount: \$300,000.
2. Time-accurate and Fast-running Model for Damaged Structures Aeroelastic Vulnerability Assessment; Air Force SBIR Phase II Effort, Subcontract to CFD Research Corporation; Award Dates: 02/04/2020-05/03/2022; Amount: \$150,000
3. Energy Harvesting Solutions for Tracking Flight Times in Aviation and Missile Structures; Army SBIR Phase I Effort, Subcontract to Materials Sciences, LLC; Award Dates: 09/20/2019-02/20/2020; Amount: \$22,000.
4. Fiber-Optic Acousto-Ultrasonic Sensing in Composite Structures; Cross College Faculty Research (CCFR) Program, University of Alabama in Huntsville; PI: Lingze Duan; Co-PI; Gang Wang; Award Dates: 01/01/2017-12/31/2017; Amount: \$5,000. (my share=\$2,500)
5. Prediction of Rotor Loads from Fuselage Sensors for Improved Structural Modeling and Fatigue Life Calculation; NAVAIR STTR Phase I effort, Subcontract to McConnell Jones Lanier & Murphy (MJLM) LLP; PI: Gang Wang; Co-PI: Jinwei Shen (UA); Award Dates: 06/01/2017-01/02/2018; Amount: \$68,000 (my share=\$33,000).
6. The Fundamental Limit of Fiber-Optic Sensors in the Infrasonic Region; National Science Foundation; PI: Lingze Duan; Co-PI; Gang Wang; Award Dates: 08/01/2016-7/31/2019; Amount: \$340,314. (my share=\$55,000)

7. Piezoelectric Washer for Accurate Application of Bolt Preload; NASA Marshall Space Flight Center FY16 Center Innovation Fund; PI: G. Wang; Award Dates: 3/01/2016-2/28/2017; Amount: \$38,255.
8. NASA Marshall Space Flight Center Summer Faculty Fellowship Program; PI: G. Wang; Award Dates: 06/08/2015-08/14/2015; Amount: \$15,000.
9. Nonlinear and Stochastic Analysis of Flow-Induced Piezoelectric Energy Harvesters; UAH 2014-2015 Cross-College Faculty Research (CCFR) program; PI: Wenzhang Huang, Co-PI: G. Wang; Award Dates: 08/2014-08/2015; Amount: \$5000 (my share=\$2500)
10. Planning Grant, NSF I/UCRC for Advanced Composites in Transportation Vehicles (ACTV); National Science Foundation; PI: G. Wang; Award Dates: 04/01/2014-03/31/2016; Amount: \$11,500.
11. Miniaturizable, High Performance, Fiber-Optic Gyroscopes for Small Satellites; NASA STTR Phase II; Subcontract to Intelligent Fiber Optic Systems (IFOS) Corp.; PI: G. Wang; Co-PI: K. Zuo; Award Dates: 07/11/2013-7/10/2015 (no-cost extension to 12/10/2015); Amount: \$216,000 (my share=\$152,000)
12. Carbon (IM7) Cryogenic Tank SHM Sensors Evaluation; Jacobs/NASA Marshall Space Flight Center; PI: G. Wang; Award Dates: 07/15/2013-07/15/2014; Amount: \$16,000.
13. Development and Characterization of an Optically Driven Microfluidic Pump Using Carbon Nanotubes; UAH Individual *Distinguished* Individual Investigator Distinguished Research (IIDR) Program; PI: G. Wang; Co-PI: Y.B. Lin; Award Dates: 03/01/2013-02/28/2014; Amount: \$34,000 (my share=\$17,000)
14. Inertial Rate Sensors for Next Generation Interceptors; *MDA SBIR Phase II*; subcontract to Intelligent Fiber Optic Systems (IFOS) Corp.; PI: G. Wang; Co-PI: K. Zuo; Award Dates: 01/23/2012-01/22/2014; Amount: \$82,000 (my share=\$50,000)
15. Miniaturizable, High Performance, Fiber-Optic Gyroscopes for Small Satellites; *NASA STTR Phase I*; subcontract to Intelligent Fiber Optic Systems (IFOS) Corp.; PI: G. Wang; Co-PI: K. Zuo; Award Dates: 02/13/2012-02/12/2013; Amount: \$36,000 (my share=\$20,000)
16. Optically Driven Speaker by Converting Light Energy to Sound; UAH Junior Faculty Distinguished Research; PI: G. Wang; Award Dates: 01/2012 to 12/2012; Amount: \$9,000.
17. Fiber-Optics Instrumentation for Ballistic Impact Assessment; Army SBIR Phase I; subcontract to Intelligent Fiber Optic Systems (IFOS) Corp.; PI: K. Zuo; Co-PI: G. Wang; Award Dates: 11/2011 to 05/2012; Amount: \$9,000 (my share=\$4,000)
18. Combined Analytical and Experimental Approaches to Rotor and Dynamics Component Stress Predictions; NAVY SBIR Phase II; Subcontract to Techno-Sciences, Inc.; PI: G. Wang; Award Dates: 08/2010 to 01/2012; Amount: \$50,000.

- **Education and Outreach Program Funding**

2010 to Present

1. UAH Space Hardware Club; Alabama Space Grant Consortium; PI: G. Wang; Award Dates: 04/23/2015 to 04/22/2020; Amount: \$236,750.
2. UAH 2017-2018 Space Hardware Club; Alabama Space Grant Consortium; PI: G. Wang; Award Dates: 04/23/2015 to 04/22/2020; Amount: \$10,000.
3. UAH 2018-2019 Space Hardware Club; Alabama Space Grant Consortium; PI: G. Wang; Award Dates: 04/23/2015 to 04/22/2020; Amount: \$20,000.
4. NASA Marshall Space Flight Center Academies Initiative & Faculty Fellowship Program; NASA Marshall Space Flight Center; PI: G. Wang; Award Dates: 04/22/2016 to 04/21/2021; Amount: \$196,517.81.
5. Student Flight Research Opportunity; NASA Goddard Space Flight Center; PI: G. Wang; Award Dates: 06/01/2016 to 05/31/2020; Amount: \$49,800.

Before Joining UAH in 2010

(Secured over \$2millions SBIR/STTR/BAA funding)

1. Combined Analytical and Experimental Approaches to Rotor and Dynamics Component Stress Predictions; Navy Air Systems Command (NAVAIR) SBIR Phase I & II effort; PI: G. Wang; Award Dates: 2008-2012 (3.5 year); Amount: \$900,000.
2. Naval Device Applications of Relaxor Piezoelectric Single Crystals; Office of Naval Research (ONR) SBIR Phase I; PI: G. Wang; Award Dates: 06/2007-12/2007; Amount: \$70,000.
3. Rotorcraft On-blade Pressure and Strain Measurements Using Wireless Optical Sensor System; NASA SBIR Phase I; PI: G. Wang; Award Dates: 01/2007-07/2007; Amount: \$100,000.
4. Single Crystal Piezoelectric Actuators for Rotorcraft; Army SBIR Phase I & II; PI: C.P. Chen; Co-PI: G. Wang; Award Dates: 2005-2008; Amount: \$840,000.
5. Semi-Active Magnetorheological Seat Suspension for Navy Rotorcraft; Navy Air Systems Command (NAVAIR) Broad Agency Announcement (BAA); PI: C.P. Chen; Co-PI: G. Wang; Award Dates: 2006-2009; \$570,000.
6. A Variable-fidelity Simulation Tool for Dynamic Nonlinear Fluid/Structure Interaction Problems; Air Force Office of Scientific Research (AFOSR) STTR Phase I; PI: C.P. Chen; Co-PI: G. Wang; Award Dates: 09/2006-06/2007; Amount: \$100,000.