

**THOMAS L. ATTARD, Ph.D.**



**The University of Alabama at Birmingham (Associate Professor)**

**◆ 331C HOEHN Engineering Building ◆ Dept of Civil, Construction, & Environmental Engineering**

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***Education***

Ph.D. 2003. Arizona State University. Tempe, Arizona

Department of Civil and Environmental Engineering (Structural Dynamics & Mechanics)

Dissertation: Modeling of Higher-Mode Effects in Various Structures Using a Pushover Analysis

Master of Science 1996. Arizona State University. Tempe, Arizona

Department of Civil and Environmental Engineering (Structural Engineering)

Bachelor of Science 1994. University of Nevada. Reno, Nevada

Department of Civil Engineering (Civil/Structural Engineering)

***Faculty Appointments***

Associate Professor

Department of Civil, Construction, and Env. Eng, The University of Alabama at Birmingham [2014 - ]

Associate Research Professor

School of Sustainable Eng and Built Env. Arizona State University, Tempe, AZ [2011-2014]

Assistant Professor

Department of Civil and Env. Eng, The University of Tennessee, Knoxville, TN [2009-2011]

Department of Civil and Geomatics Eng California State University, Fresno, CA [2006-2009]

Department of Civil Engineering, University of New Hampshire, Durham, NH [2003-2006]

***Journal Articles***

- Attard, T.L. and Zhou, H. (2015). "Damping characterization and interfacial cohesion interactions of a dual-hybridized polymeric load-bearing composite," *Athens Journal of Technology & Engineering*, **2**, 19 – 29.
- Zhou H., Attard T.L., Dhiradhamvit K., Wang Y., and Erdman, D. (2015). "Crashworthiness characteristics of a carbon fiber reinforced dual-phase epoxy-polyurea hybrid matrix composite," *Composites Part B: Engineering*, **71**, 17 – 27.
- Zhou, H., Dhiradhamvit, K., and Attard, T.L. (2014). "Tornado-borne debris impact performance of an innovative storm safe room system protected by a carbon fiber reinforced hybrid-polymer matrix composite," *Engineering Structures*, **59**, 308-319.
- Zhou, H., Attard, T.L., Wang, Y., Wang, J.A., and Ren, F. (2013). "Rehabilitation of notch damaged steel beams using a carbon fiber reinforced multiphase-matrix Composite," *Composite Structures*, **106**, 690 – 702.
- Zhou, H., Attard, T.L., Zhao, B., Yu, J., Lu, W., and Tong, L. (2013). "Experimental study of retrofitted reinforced concrete shear wall and concrete-encased steel girders using a new CarbonFlex composite for damage stabilization," *Engineering Failure Analysis*, **35**, 219–233.

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- Attard, T.L. Wharton, C.R., and Zhou, H. (2013). “Developing LH controller to model low-high velocity behavior in prototype MR damper,” *ASCE Journal of Structural Engineering*, **139**(9), 1457 – 1467.
- Zhou, H., Dhiradhamvit, K., and Attard, T.L. (2013). “Design and tornado-borne debris impact performance of a new storm safe room system constructed with carbon-fiber reinforced polymeric composites,” *Journal of the National Institute of Building Sciences*, **1**(2), 32-34.
- Zhou, H. and Attard, T.L. (2013). “A simplified anisotropic plasticity model for analyzing the post-yield behavior of cold formed sheet-metal shear panel structures,” *ASCE, Journal of Structural Engineering*, DOI: 10.1061/(ASCE)ST.1943-541X.0001152
- Dhiradhamvit, K., and Attard, T.L. (2013). “Sustainable Energy Dissipation and Evolutionary Viscous Damping in Wood-Frame Structures,” *Journal of Construction, Architecture and Engineering (ATINER)*, **2**(1), 77 - 83.
- Dhiradhamvit, K., Attard, T.L., and Zhou, H. (2013). “Energy Absorption in Residential Wood-Framed Structures using a Damage-Tolerant Composite that incorporates “Sustainable Negative Stiffness”,” *Journal of High-Performance Materials, NIBS*, **1**(4), 27 – 29.
- Zhou, H. and Attard, T.L. (2012). “Rehabilitation and strength sustainability of fatigue damaged concrete-encased steel flexural members using a newly developed polymeric carbon-fiber composite,” *Composites Part B: Engineering*, **45**, 1091 – 1103.
- Attard, T.L. and Wharton, C.R. (2012). “Optimal Control Parameterization for Meeting Displacement and Acceleration Performance Demands, and Reducing Local Constitutive Responses in Potentially Damaged Steel Frames,” *Engineering Structures*, **36**(3), 123 - 133.
- Attard, T.L., Abela, C.M., and Dhiradhamvit, K. (2011). “Seismic FRP Retrofit of Circular Single-Column Bents using a Ductility Wrap Envelope to alter Failure Modes,” *Engineering Structures*, **33** (5), 1553 – 1564.
- Abela, C.M., and Attard, T.L. (2010) “Analytical models and guidelines for the ductility enhancement of circular reinforced concrete single-column bents using fiber-reinforced polymers,” *ASCE, Journal of Bridge Engineering*, **16**(1).
- Attard, T.L., and Dansby, R.E. (2009). “Evolutionary control of structurally damaged steel buildings using an optimal state transition formulation,” *Journal of Mechanics of Materials and Structures*, **4**(5), 855 - 886.
- Attard, T.L., and Dhiradhamvit, K. (2009). “Application and design of lead-core base isolation for reducing structural demands in short stiff and tall steel buildings and highway bridges subjected to near-field ground motions,” *Journal of Mechanics of Materials and Structures*, **4**(5), 799 - 817.

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- Attard, T.L., and Mignolet, M.P. (2008). "Random Plastic Analysis using a Constitutive Model to Predict the Evolutionary Stress-Related Responses and Time Passages to Failure," *Journal of Engineering Mechanics*, **134**(10), 881 – 891.
- Attard, T.L., Wesson, M.D., and Abela, CA. (2008). "Hydraulic-Powered Seismic Shaking Table: Testing CFRP-Based Energy Dissipation in Bridge Columns," *Fluid Power Journal*, **15**(4), 50 – 62.
- Attard, T.L., and Fafitis, A. (2007). "Optimal Seismic Analysis of Degrading Planar Frames using a Weighted Energy Method to Associate Inelastic Mode Shapes: Part I Optimal Parameters," *Engineering Structures*, **29**(8), 1977-1989.
- Attard, T.L., and Fafitis, A. (2007). "Optimal Seismic Analysis of Degrading Planar Frames using a Weighted Energy Method to Associate Inelastic Mode Shapes: Part II Application," *Engineering Structures*, **29**(8), 1990-2000.
- Attard, T.L. (2007). "Controlling all Inter-Story Displacements in Highly-Nonlinear Steel Buildings using Optimal Viscous Damping," *Journal of Structural Engineering*, ASCE, **133**(9), 1331 - 1340.
- Attard, T.L., and Fafitis, A. (2005). "Plastic Hinge Development of Frame Members Using a Nonlinear Hardening Rule." *Journal of Structural Engineering*, ASCE, **131**(8), 1286-1293.
- Attard, T.L. (2005). "Post-Yield Material Nonlinearity: Optimal Homogeneous Shear-Frame Sections and Hysteretic Behavior," *International Journal of Solids and Structures*, **42**(21-22), 5656-5668.
- Zhou, H. Attard, T.L., and Mignolet, M.P. (2015). "Damping characterization and interfacial cohesion interactions of a dual-hybridized polymeric load-bearing composite," Accepted for Publication, *Composites Part A: Applied Science and Manufacturing*
- Zhou H. and Attard T.L., (2015). "Crack propagation and stabilization of notch-damaged steel beams retrofitted using energy-dissipative carbon-fiber hybridized-matrix composites," Submitted for Possible Publication, *Composites Part B: Engineering*
- Dhiradhamvit, K. and Attard, T.L. (2015). "Seismic protection and energy absorption via "sustainable negative stiffness using a CarbonFlex composite," Submitted for Possible Publication, *Journal of Structural Engineering*, ASCE
- Zhou, H., Attard, T.L., and Mignolet, M.P. (2015). "Structural uncertainty in inelastic seismic shear frames and the effects on constitutive stresses," Submitted for Possible Publication, *Journal of Engineering Mechanics*, ASCE
- Dhiradhamvit, K. and Attard, T.L. (2015). "Analysis of a Multi-Layered Carbon-fiber/ Polymeric-epoxy Hybrid-Matrix Composite System for Energy Absorption and Impact Resistance," Submitted for Possible Publication, ASCE, *Journal of Materials in Civil Engineering*

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- Dhiradhamvit, K. and Attard, T.L. (2015). “Experimental shaking table tests and resolution of large accelerations in two-story wood-built homes designed with blocked plywood shear walls,” Submitted for possible publication, *ASCE, Practice Periodical on Structural Design and Construction*

In-Progress

- Attard, T.L. and Zhou, H. (2015). “Nonlinear Time-History Analysis Procedure in Stress-Space Using Corrected Acceleration and Velocity Responses at Various Yield-Levels,” *Computers & Structures*
- Dhiradhamvit, K., and Attard, T.L. (2015). “Introduction of Evolutionary Viscous Damping into Wood-Frame Structures using a Newly Developed Composite that Integrates Sustainable Negative Stiffness,” *Earthquake Engineering and Structural Dynamics*
- Attard, T.L. and Abela, C.M. (2015). “Analysis and Retrofit of Circular Multicolumn Concrete Bridge Bents Using a Control Node Pushover Analysis and Fiber Reinforced Polymers,” *Journal of Bridge Engineering, ASCE*
- Zhou H., Attard T.L. and Li X. (2015). “Seismic performance of reinforced concrete masonry shear walls: full versus partially grouted,” *Journal of Structural Engineering, ASCE*
- Zhou H., Attard T.L. and Li X. (2015). “Post-earthquake damage repairing and retrofit of reinforced concrete masonry shear walls using a carbon-fiber reinforced hybrid polymer-matrix composite,” *Journal of Composites in Construction, ASCE*

In-the-Pipeline:

- Attard, T.L. “Nonlinear Material Behavior Analyzed through Optimal Curvature Distributions of Rectangular Sections,” *Journal of Engineering Mechanics, ASCE.*
- Attard, T.L., and Mignolet, M.P. “Optimal Raleigh Distribution of the Statistical Post-Yield Responses of Single Degree of Freedom Systems Under White Noise Random Excitation,” *Journal of Engineering Mechanics, ASCE.*
- Attard, T.L., and Mignolet, M.P. “Statistical Comparison of the Constitutive Responses in Tall Buildings with Higher-Mode Influence,” *Journal of Structural Engineering, ASCE.*
- Zhou, H., Attard, T.L., and Bicja, J. “Incremental Bending-Axial Interaction of Structural Steel using a Highly-Nonlinear Model,” *Journal of Structural Engineering, ASCE.*

**Conference Proceedings**

- Attard, T.L. and Zhou, H. (2015). “Damage Absorption of High-Impact Structural Systems using Time-Reaction of Hybridized Epoxy-Polyurea Interfaces,” *Proc. 5<sup>th</sup> Intl Conf on Construction, Architecture and Engineering, Athens, Greece, May 25 – 28, 2015*
- Attard, T.L. (2014). “Next Generation Hybridized Polymeric “Tuned” Composites for 21<sup>st</sup> Century Advances in Earthquake Engineering,” *6<sup>th</sup> Kwang-Hua Forum on Innovations and*

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*Implementations in Earthquake Engineering Research*, Shanghai, China, December 12 – 14, 2014.

- Invited Paper
- Zhou H., Shen Z., Zuo Q.H., and Attard T.L. (2014). “Multiscale investigation and modeling of a carbon-fiber reinforced hybrid-polymeric matrix composite for vibration suppress,” *Proc. 2014 Conference of the ASCE Engineering Mechanics Institute*, McMaster University, ON, August 5 – 8, 2014.
- Zhou, H. and Attard, T.L. (2014). “Damping characteristics and crashworthiness of carbon-fiber reinforced hybrid-polymeric matrix composite,” *Proc. 1<sup>st</sup> Int. Conference on Mechanics of Composites*, Stonybrook, NY, June 8-12, 2014.
- Attard, T.L., and Zhou, H. (2013). “Impact resistance of tornado shelters using a load bearing composite having a multi-phase hybrid polymeric interfacial cohesion mechanism,” *Proc. 2013 Conference of the ASCE Engineering Mechanics Institute*, Northwestern University, Evanston, IL, August 4 – 7, 2013.
- Dhiradhamvit, K., Zhou, H. and Attard, T.L. (2013). “Tornado debris impact tests of a new composite storm shelter room system,” *Proc 3<sup>rd</sup> Intl Conf on Construction, Architecture and Engineering*, Athens, Greece, June 10 – 12, 2013.
- Zhou, H. and Attard, T.L. (2012). “Bridge Girder Damage Quantification and the Retrofitting Techniques,” *ASNT - NDE/NDT for Highways and Bridges: Structural Materials Technology (SMT) Conf.*, New York, NY, Aug 21 – 24, 2012.
- Zhou, H. and Attard, T.L. (2012). “Sustainability of strength of already-damaged concrete-encased steel girders using a novel energy-dissipating composite to stabilize crack growth,” *Proc 2<sup>nd</sup> Intl Conf on Construction, Architecture and Engineering*, Athens, Greece, June 18 – 21, 2012.
- Zhou, H. and Attard, T.L. (2012). “Anisotropic plasticity model for the failure analysis of sheet metal structures,” *Fifth International Conference on Engineering Failure Analysis (ICEFA)*, The Hague, The Netherlands, July 1 – 4, 2012.
- Zhou, H. and Attard, T.L. (2012). “Strength and ductility analysis of fatigue damaged concrete-encased steel girders rehabilitated using CFRP and a newly developed CarbonFlex composite,” *Fifth International Conference on Engineering Failure Analysis (ICEFA)*, The Hague, The Netherlands, July 1 – 4, 2012.
- Zhou, H. and Attard, T.L. (2012). “Sustainability of strength and ductility of fatigue-damaged concrete-encased steel flexural members using a newly developed CarbonFlex composite,” *Proc. Int. Conference on Fatigue Damage of Structural Materials IX*, Hyannis, MA, September 16-21, 2012.

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- Zhou, H. and Attard, T.L. (2011). “Seismic damage mitigation of already-damaged steel-encased reinforced concrete beams and shear walls,” *Proc. 11<sup>th</sup> European Conference of Civil Engineering (ECCIE'11)*, Puerto De La Cruz, Tenerife, Spain, December 10 – 12, 2011.
- Attard, T.L., and Dhiradhamvit, K. (2011). “New technology Combining High-Strength Viscoelastic Behavior with High Energy-Dissipative Properties” *Proc. NEXT Conference*,” Nashville, TN, May 6, 2011.
- Dhiradhamvit, K. and Attard, T.L. (2010). “Development of an Advanced Composite for Building Resiliency and Performance (CarbonFlex)” *Proc. Advanced and High-Performance Materials*,” Washington, DC, December 9-10, 2010.
- Dhiradhamvit, K. Attard, T.L. (2011). “Development and Application of a CarbonFlex Composite for Sustainable High Strength and Energy Dissipation.” *DHS Science and Technology Southeast Regional Research Initiative (SERRI)*,” Atlanta, GA, November 16 – 18, 2010.
- Dhiradhamvit, K. Attard, T.L., and Zhou, H. (2011). “Development of a New Lightweight ‘Rubberized-Carbon’ Composite for Wood Home Protection.” *Proc. 1<sup>st</sup> Intl Conf on Construction, Architecture and Engineering*, Athens, Greece, June 20, 21, 2011.
- Attard, T.L. and Dhiradhamvit, K. (2010). “Development of a New Lightweight ‘Rubberized-Carbon’ Composite for Wood Home Protection.” *Proc. Engineering Mechanics Institute 2010*, University of Southern California, August 8-11, 2010.
- Attard, T.L. and Dhiradhamvit, K. (2010). “Development of a New Lightweight ‘Rubberized-Carbon’ Composite for New or Already-Damaged Structures,” *Proc. Near-Collapse Buildings Conference and Workshop*, Texas A&M University, April 28-29, 2010.
- Wharton, C.R., Chaudhary, A., Attard, T.L., and Mignolet, M.P. (2011). “Effects of structural uncertainty/ variability on the linear and yielding response of a shear frame,” *Proc. 11th Intl Conf on Applications of Statistics and Probability in Civil Engineering, ICASP*, Zurich, Switzerland, August 1-4, 2011.
- Dhiradhamvit, K., and Attard, T.L. “Evolutionary viscous damping using a newly developed composite (CarbonFlex) that infuses sustainable negative stiffness and high-energy dissipation,” *Proc. 52<sup>nd</sup> AIAA Structural Dynamics and Materials Conference, Denver, CO, April 4 – 7, 2011*.
- Wesson, M.D., and Attard, T.L. (2009). “Modeling of as-is, retrofitted, and repaired R/C columns using FRP and compared to experimental shaking table tests,” *Proc., Eleventh Pan-American Congress of Applied Mechanics – Volume 13, PACAM XI*, Foz do Iguacu, Brazil, January 4 – 8, 2010.



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- Abela, C.M., and Attard, T.L. (2008). “Ductility Enhancement of Circular R/C Bridge Bents: PACCC & PACCC-FRP,” *Seventh International Conference on Earthquake Resistant Engineering Structures*, ERES2009, May 11 – 13, Cyprus.
  - Invited Paper
- Attard, T.L., Pnevmatikos, N.G., Wesson, M.D., Sanchez, MC., and Wharton, C. (2008). “Experimental shaking table tests of a steel structure using a prototype MR damper,” *Proc. 4<sup>th</sup> European Conference of Structural Control*, 4ecsc, St. Petersburg, Russia, September 8 – 12, 2008.
- Pnevmatikos, N.G.; Gantes, C.J., Attard, T.L. (2008). “Integrated Control Strategy for Structures subjected to Dynamic Loading,” *Proc., Tenth Pan-American Congress of Applied Mechanics – Volume 12*, PACAM X, Cancun, Mexico, January 7 – 11, 2008.
- Attard, T.L., and Dhiradhamvit, K (2008). “Lead-Core Base Isolation of Highly-Nonlinear Multi-Story Steel Buildings subjected to Near-Field Excitations,” *Proc., Tenth Pan-American Congress of Applied Mechanics – Volume 12*, PACAM X, Cancun, Mexico, January 7 – 11, 2008.
- Dhiradhamvit, K., and Attard, T.L. (2008). “Damage Detection and Monitoring of Highway Panels poured with a Rapid-Set<sup>®</sup> Concrete,” *Proc., Tenth Pan-American Congress of Applied Mechanics – Volume 12*, PACAM X, Cancun, Mexico, January 7 – 11, 2008.
- Attard, T.L., and Dansby, R.E. (2008). “Evolutionary Control of Damaged Systems using a Rehabilitative Algorithm,” *Proc., Tenth Pan-American Congress of Applied Mechanics – Volume 12*, PACAM X, Cancun, Mexico, January 7 – 11, 2008.
- Wesson, M.D. and Attard, T.L. (2008). “Preliminary Study: CFRP Applications for Already-Damaged Bridge-Column Bents using Experimental Shaking Table Tests,” *Proc., Tenth Pan-American Congress of Applied Mechanics – Volume 12*, PACAM X, Cancun, Mexico, January 7 – 11, 2008.
- Attard, T.L., Dansby, R.E., and Marusic, M. (2007). “Optimal Nonlinear Structural Damage Control for Kinematically Strain Hardened Systems using an Evolutionary State Transition,” *ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering*, COMPDYN 2007, Rethymno, Crete, Greece.
- Dansby, R.E., and Attard, T.L., (2007). “Controlling nonlinear vibrations in steel structures using an evolutionary gain formulation to optimally satisfy performance objectives,” *Sixth International Conference on Earthquake Resistant Engineering Structures*, ERES2007, Bologna, Italy.
  - Invited Paper
- Attard, T.L., Dansby, R.E., and Marusic, M. (2007). “Evolutionary Control of Large Damages to Steel Structures during Seismic Activity,” 28<sup>th</sup> Annual Research Symposium, California State University, Fresno, Fresno, California.

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- Dhiradhamvit, K. and Attard, T.L. (2008). "Higher-Mode Effects in Lead-Core-Rubber Base isolated Multi-Story Steel Buildings subjected to Near-field Excitations," 29<sup>th</sup> Annual Research Symposium, California State University, Fresno, Fresno, California.
- Pnevmatikos, N.G., Gantes, C.J., and Attard, T.L. (2008). "Control Algorithm for Civil Structures Subjected to Earthquake Loading," 29<sup>th</sup> Annual Research Symposium, California State University, Fresno, California.
- Attard, T.L., and Marusic, M. (2006). "Nonlinear and Anisotropic Analysis of Multi-axially Loaded Members using a Collection of Yield Surfaces," *Proc., Ninth Pan-American Congress of Applied Mechanics – Volume 11*, PACAM IX, Merida, Mexico.
- Attard, T.L., and Mignolet, M.P. (2005). "Evolutionary Model for Random Plastic Analyses of Shear-Frame Buildings Using a Detailed Degradation Model," 9<sup>th</sup> *International Conference on Structural Safety and Reliability*, ICOSSAR2005, Rome, Italy.
- Attard, T.L., and Fafitis, A. (2005). "Modeling of Higher-Mode Effects in Frame Buildings Using an Optimal Multi-Modal Pushover Analysis," *Fifth International Conference on Earthquake Resistant Engineering Structures*, ERES2005, Skiathos, Greece.
- Attard, T.L. (2004). "Optimal Damping and Higher-Mode Control in Nonlinearly Degrading Shear Buildings for a Ground Acceleration," *International Symposium on Network and Center-Based Research For Smart Structures Technologies and Earthquake Engineering*, SE04, Osaka, Japan.
- Attard, T.L. (2004). "Post-Yield Material Analysis and Plastic Hinge Assessment of Frame Members," *Proc., Eighth Pan-American Congress of Applied Mechanics – Volume 10*, PACAM VIII, Havana, Cuba.
  - Invitation to submit a paper for a special issue in the *International Journal of Solids and Structures*
- Attard, T.L. (2003). "Modeling of Higher Mode Effects in Structural Frames Using a Probabilistic Nonlinear Dynamic Pushover Analysis," *Proc., 2003 ASCE/ SEI Structures Congress and Exposition*, Seattle, WA.

***US Patent for "CarbonFlex," Intellectual Property***

- "High Strength and High Elasticity Composite Materials and Methods of Reinforcing Substrates with the Same," T.L. Attard; US Patent Application No. 61/420,159, December 6, 2010, and International Publication Number (non-provisional) WO 2012/078664 A1, December 6, 2011. ASU Case M12-023P; 0118090.138-WO1. PCT/US2011/063581.

***Fellowships***

- Kwang Hua Fellowship (2011). "Structural Retrofit Using a High-Performance Composite (HPC)," in collaboration with the Department of Building Engineering, Tongji University, Shanghai, China, July 8, 2011 - August 10, 2011, \$3,000.



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- Kwang Hua Fellowship (2014). “Next Generation Hybridized Polymeric “Tuned” Composites for 21<sup>st</sup> Century Advances in Earthquake Engineering,” Invited Presentation in collaboration with the Department of Building Engineering, Tongji University, Shanghai, China, December 12 – 14, 2014, \$2,500.

***Books, Announcements, and Reports***

- Attard, T.L. (2015). Editor: “Athens Journal of Technology & Engineering, Editorial and Reviewers’ Board, Athens Institute for Education and Research (ATINER): 2015.
- Attard T.L., Zhou H. and. Dhiradhamvit K. (2013). “Report of CarbonFlex composite for structural sustainability (DHS Project No. 90300),” US Department of Homeland Security, Southeast Region Research Initiative (SEERI).
- Attard, T.L. (2009). Guest Editor: “Special Issue: Tenth Pan American Congress o Applied Mechanics (PACAM X),”4(5), *Journal of Mechanics of Materials and Structures*, Mathematical Science Publishers.
- Attard, T.L. (2010). “Eleventh Pan American Congress of Applied Mechanics,” Co-Editor, PACAM XI, Volume 13, Foz do Iguacu, Brazil, January 4-8, 2010.
- Aguiar, A.R., and Attard, T.L. (2009). “Announcement and first call for papers 11<sup>th</sup> Pan-American Congress of Applied Mechanics – PACAM XI,” *Journal of Elasticity*, **94**(1), 95.
- Attard, T.L. (2008). “Tenth Pan American Congress of Applied Mechanics,” Editor, PACAM X, Volume 12, Cancun, Mexico, January 7-11, 2008.
- Attard, T.L. (2003). “Modeling of Higher-Mode Effects in Various Structures Using a Pushover Analysis,” Doctoral Dissertation, Arizona State University, Tempe, Ariz.

***Sponsored Research Grants, Contracts, and Support***

- Tongji University, “Controlling Ductility of Precast RC Frames using a Dissipative Plastic Hinge for Green Construction,” August 2015 – December 2016. RMB 500,000 (\$90,000). PI
- Head Health Challenge III (NFL and Under Armour), “Advanced Materials for Impact Mitigation Design of Football Helmets,” March 2013 – December 2015. PI.
- US Army Corps of Engineers and Presidium Group of Companies, “Development of a Carbon-fiber Hybrid-polymeric Matrix Composite (CarbonFlex) for Impact Resistance, Damping, Fracture Toughness, and Fire-Resistance in the Design of various Infrastructures, Military Structures, and Sporting Equipment in Compliance with Standards for Safety and Performance Metrics,” January 2014 – January 2017. \$746,709. PI.
- Department of Homeland Security (DHS) through FEMA Region IV and SERRI (The Southeast Region Research Initiative), “Continuation of CarbonFlex Composite to Seismic Damage Mitigation of Wood-Frame Structures and Extension to Storm Shelters in Level-5

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Tornado Regions utilizing a tremendous Energy Dissipation Mechanism to Resist High-Impact and Debris Loading,” October 2011 – November 2012. \$156,500. PI.

- Arizona Technology Enterprises, CATALYST Program, “Application of a Carbon-Fabric Hybrid-Matrix Polymeric Composite (CHMC), known as CarbonFlex, for vibration control, fracture toughness, and Impact Resistance,” September 2013 – November 2013. \$5,412. PI.
- Border Construction Specialties/ Marvel Masonry and Old Castle, “Performance-based seismic design of masonry wall systems using an advanced polymeric composite,” November 2012 – July 2013. \$14,500. PI.
- Department of Homeland Security (DHS) Higher Education Research Experience (HERE) Program, “Micro-Structure Analysis and Fracture Stabilization of CarbonFlex,” May 2012 – August 2012. \$32,500. PI.
- Arizona State University/ Fulton Undergraduate Research Initiative (FURI) Program, “Application of CarbonFlex Composite System to Already-Damaged Wood and Masonry Structures,” January 2012 – December 2012. \$25,300. PI.
- BASF, The Chemical Company, “Development of CarbonFlex Shear Walls and Tornado Shelters using Carbon-Fiber Technology,” January 2012 – December 2012, \$12,000. PI.
- SWD Urethane, “Investigation of Energy Dissipation Capability of Polymeric-Reinforced Wall Systems using Carbon-Base Strength Enhancement,” December 2011 – January 2013, \$13,000. PI.
- Rice University (via NSF), “Integrating Earthquake Resistance into ASU’s Existing e<sup>2</sup>-Camps Outreach Program,” August 2011 – July 2012. \$10,000. Co-PI.
- Department of Energy (DOE) - High Temperature Materials Laboratory (HTML), “Potential Application and Characterization of CarbonFlex in Automotive Crashworthiness Technologies,” 2010 – 2011. \$55,000. PI.
- Department of Homeland Security (DHS) through FEMA Region IV and SERRI (The Southeast Region Research Initiative), “Development and Application of a CarbonFlex Composite for Structural Damage Mitigation and for Sustainable High Strength and Energy Dissipation,” January 2011 – August 2011. \$125,000. PI.
- The University of Tennessee, “Development of a Large-Scale Bi-Axial Seismic Testing Facility,” 2011 – 2012. \$64,730. PI.
- National Science Foundation, “NEESR-SG: Development of Next Generation Adaptive Seismic Protection Systems,” September 2008 – August 2012. \$1,591,082. (\$100,826) Co-PI.
- California Department of Transportation (Caltrans), “Monitoring and Damage Detection in Newly-Constructed Rapid-Set Panels along Highway 99,” 2006 – 2008. \$80,000. PI

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- California Department of Transportation in Cooperation with California State University, Fresno, “Carbon-Wrapped Bridge Columns for Earthquake Protection,” 2007 – 2008, \$144,100. PI
- California State University, Fresno, “Soil-Structure Interaction for Earthquake Applications,” 2007 – 2009, \$25,000. PI
- Nolte Engineers, "Dynamic Analysis of Above Ground Steel Tanks for Water Storage and Design Retrofit Solutions" 2008 - 2009, \$25,600. PI
- Caltrans in cooperation with Brooks-Ransom Engineers and Cornerstone Structural Engineering Group, “Bridge Health Monitoring and Skew Angle Analysis with respect to Pre-stress, damping, and modal losses at Hwy 180East at Belmont,” 2008–2009. \$43,768. PI
- Kasco Fab, Inc., and Claude C. Laval Jr. Research Foundation for Innovative Technology, “Using MR Fluid Dampers to Protect Medical Facilities during “Pulse” Type Earthquakes,” 2008 - 2009, \$20,800. PI
- California State University, Fresno, “Protecting Non-structural Components and Reducing Seismic Vulnerability in Wood Homes using Carbon Shear Walls,” 2008 - 2009, \$15,000. PI
- Graduate Faculty Enhancement Program, “Protecting Buildings and Lives during Earthquakes” 2008, \$5,000. PI
- NSF Travel Grant through NEESInc and the University of Colorado “MR Damper FHT Workshop August 6-7, 2007 at the University of Colorado,” \$1,600. PI
- Robert and Norma Craig Graduate Fellowship for Graduate Student Support, 2007 – 2008. \$800. PI
- California State University, Fresno, “Provost’s Scholarships for new Graduate Students,” 2008 – 2010. \$16,000. PI
- Efco Corporation In-Kind Donation, “Bent Cap Pier FormWork: A Near-Field CFRP analysis study of the 99 Overpass in Selma, CA,” 2008. \$12,000. PI
- Local Engineering Industries (Brooks-Ransom Associates, C.M. Hanif Engineering, Dutcher & Associates, Advanced Structural Design, Hugo Kervorkian, Krazan and Associates, Cornerstone Engineering, ,” Development of the Center for Earthquake Modeling and Simulation (CEMS),” 2007. \$15,000. PI
- National Science Foundation, “Tenth Pan American Congress of Applied Mechanics - PACAM X,” 2007 – 2008, \$10,000. PI
- MTS In-Kind Donation, “HSM 293.32 for Improving the Performance of the Seismic Shaking Table Facility,” 2007, \$9,971. PI

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- BASF, “Carbon-Wrap Support for Bridge Column Tests,” 2007-2008. \$11,000. PI
- BASF, “IC-2480 Polyurea Elastomeric-Coated CF 130 M-Brace Fiber-Cloth (“CarbonFlex”) for Wood-Home Protection,” 2008 – 2009, \$4,000. PI
- Lord Corporation, “MR Fluid Damper Application to a Structural Shear Frame under a Random Excitation,” 2004 – 2005. \$15,000. PI
- ExcEEd Teaching Workshop, Fellowship, 2004. \$2,500. PI
- University of New Hampshire Parents Association, “Reducing Vibrations in the Renovated Kingsbury Building Using Smart Materials,” 2004 – 2005. \$5,500. PI
- University of New Hampshire International Development Program, “Smart Structures Technologies and Earthquake Engineering,” 2004. \$2,000. PI
- University of New Hampshire Faculty Development, “Application of Smart Structures Technologies in Resisting Dynamic Forces,” 2003. \$500. PI.
- National Science Foundation - Travel Expense, International Symposium on Network and Center-Based Research for Smart Structures Technologies and Earthquake Engineering in Osaka, Japan, 2004. \$1,900. PI.
- Graduate Students Association Research Grant, Arizona State University, 2002. \$1,000. PI.

***Professional Activities***

- Chairman, Civil Engineering and Structural Engineering/ Mechanics Conference of 5<sup>th</sup> Annual Athens Institute for Education and Research (ATINER), May 25 - 27, 2015
- Panel Chair, Session on Materials Advances in High-Impact Resistant Structures, 5<sup>th</sup> Annual Athens Institute for Education and Research (ATINER), May 25 - 27, 2015
- Session Technical Chair, “Structural Mechanics and Other Essays,” 5<sup>th</sup> Annual Athens Institute for Education and Research (ATINER), May 25 - 27, 2015
- Chair, Technical Session on “Parallel Session on Seismic Structural Protection and Damage Minimization,” *Kwang-Hua Forum on Innovations and Implementations in Earthquake Engineering Research*, Shanghai, China, December 12 – 14, 2014.
- Appointed: Head, Civil Engineering Research Unit (ATINER), 2015- Present
- Chairman, Civil Engineering and Structural Engineering/ Mechanics Conference of the 4<sup>th</sup> Annual Athens Institute for Education and Research (ATINER), May 26 -28, 2014

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- Associate Member of the National Storm Shelter Association (NSSA), May 2013 - Present.



- Chairman, Civil Engineering Conference of the 3<sup>rd</sup> Annual Athens Institute for Education and Research (ATINER), June 18 – 20, 2013.
- Mini-Symposium Organizer and Session Chairman on Earthquake Protection Systems, Engineering Mechanics Institute (EMI), Aug. 4 – 7, 2013.
- Academic Member of the Athens Institute for Education and Research, 2012 - Present.
- Post-Earthquake Disaster in Haiti, Report on Decentralization and designing a new bridge and roadway in Font des Blancs, October 7 – 10, 2011.
- Graduate Coordinator, Civil Engineering Program, Fresno State, 2007 – 2009.
- North American Chairman and Editor, *11<sup>th</sup> Pan-American Congress of Applied Mechanics*, PACAM XI, Foz do Iguacu, Brazil, January 4 – 8, 2010.
- Chairman and Editor, *10<sup>th</sup> Pan-American Congress of Applied Mechanics*, PACAM X, Cancun, Mexico, January 7 – 11, 2008.
- Guest Editor, *Journal of Mechanics of Materials and Structures*, Special Issue: Applied Mechanics Pan America X, 2010.
- Member, Scientific Committee, *11<sup>th</sup> Pan-American Congress of Applied Mechanics*, PACAM XI, Foz do Iguacu, Brazil, January 4 – 8, 2010.
- Member, Scientific Committee, *10<sup>th</sup> Pan-American Congress of Applied Mechanics*, PACAM X, Cancun, Mexico, 2008.
- Co-Chair, Technical Session on “Solid Mechanics II,” *9<sup>th</sup> Pan-American Conference of Applied Mechanics*, PACAM IX, Merida, Mexico, 2006.
- Chair, Technical Session on “Lifelines, and Monitoring and Testing,” *6<sup>th</sup> Int. Conference on Earthquake Resistant Engineering Structures*, ERES2007, Bologna, Italy, 2007.
- Chair, Technical Session on “Soil-Structure Interaction & Lifelines,” *5<sup>th</sup> Int. Conference on Earthquake Resistant Engineering Structures*, ERES2005, Skiathos, Greece, 2005.
- Member, International Science Advisory Committee (ISAC), *7<sup>th</sup> International Conference on Earthquake Resistant Engineering Structures*, ERES2009, Limassol, Cyprus, 2009.
- Member, International Science Advisory Committee (ISAC), *6<sup>th</sup> International Conference on Earthquake Resistant Engineering Structures*, ERES2007, Bologna, Italy, 2007.

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- Member, International Science Advisory Committee (ISAC), *5<sup>th</sup> International Conference on Earthquake Resistant Engineering Structures*, ERES2005, Skiathos, Greece, 2005.
- Reviewer, *Journal of Applied Mechanics*, ASME, 2005 - Present.
- Reviewer, *Earthquake Engineering and Structural Dynamics*, 2010 - Present.
- Reviewer, *Journal of Materials in Civil Engineering*, 2010 - Present.
- Reviewer, *International Journal of Mechanical Sciences*, 2008 - Present.
- Reviewer, *Structural Control and Health Monitoring*, 2008 - Present
- Reviewer, *Journal of Structural Engineering, ASCE*, 2006 – Present
- Reviewer, *Journal of Systems and Control Engineering*, 2006 – Present
- Reviewer, *Journal of International Modeling and Simulations*, 2006 – Present
- Reviewer, *International Journal of Computer-Aided Civil and Infrastructure Engineering*, 2004 - Present.
- Reviewer, *17th Analysis and Computation Specialty Conference*, 2006 Structures Congress, ASCE Technical Committee on Structural Control, 2005.
- Member, American Society of Civil Engineers (ASCE), 2004 – Present.
- Member, American Academy of Mechanics (AAM), 2006 – Present.
- Member of the following committees at Fresno State:
  - Co-advisor to the ASCE Student Chapter at Fresno State (2008 – 2009)*
  - Consultative Body secretary for the College of Engineering (2007 – 2008)*
  - Department of Civil and Geomatics Engineering secretary (2006 – 2007)*
  - Civil Engineering Program Secretary (2006 – 2007)*
  - Engineering Outreach Coordinator (2007)*
  - Library Subcommittee Member (2007 – 2009)*
  - Ad Hoc Awards Committee for Honorary Degrees (2008)*
  - Wang Family Award for Teaching Excellence Committee (2008)*
  - Faculty Search Committee for a new Structural Engineering Position (2007)*
  - Career Promotion Committee (2006 – 2009)*
  - Task Force on Graduate Culture Committee (2008 – 2009)*
  - Task Force for Safety in the College of Engineering (2008 – 2009)*
- Panelist, National Science Foundation CAREER Award Program, Structural Systems and Hazards Mitigation of Structures, Civil & Mechanical Systems Division of the Directorate for Engineering, January 15-16, 2004.



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- Panelist, UNH Undergraduate Research Opportunities Program, UNH 2004-2005.
- Member, ABET Subcommittees 1 and 2 for executing ABET-mandated guidelines, Department of Civil Engineering, University of New Hampshire, 2003 - 2004.
- Laboratory Safety Committee and Scribe, Department of Civil Engineering, UNH 2003 - 2005.
- Mentor, FIRST program for UNH freshman engineering students – NH state science and robot competition, College of Engineering and Physical Sciences, UNH, 2004.

***Invited Research Seminars***

- “Carbon-Fiber Reinforced Elastomers: “Materials by Design” Approach to Property Tuning with Applications to Impact-Resistant Structures,” The Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, April 21, 2015
- “Next Generation Bridge Connection Design for Across-the-Board Soil Site Classes,” The Alabama Department of Transportation (ALDOT), Montgomery, AL, October 21, 2014
- “Advanced Composites in the Design of Structures Subjected to Extreme Loadings,” Tongji University, Shanghai, China, July 4, 2014
- “Carbon-based Design of Extreme-Loaded Structures (2014). In conjunction between Wuxi City College and Jiang Nan University, Wuxi, China, June 3, 2014
- “Development of a Carbon-Fiber Hybrid-Polymeric Matrix Composite (CHMC) having Calibrated Properties for Designing Complex Structural and Infrastructural Systems Subjected to Extreme Loading,” Burns & McDonnell, Phoenix, AZ, March 7, 2014.
- “Impact Resistance and Multi-Hazard Damage Mitigation System Using a Hybrid Polymeric-Matrix Composite having a Interfacial Cohesion Mechanism,” Presidium Group of Companies, London, Ontario, Canada, September 16, 2013
- “Application of High-Strength Rubber-Based Carbon Composites to Dissipate Energy and Protect Various Structures,” The Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, May 24, 2011
- “CarbonFlex: Evolutionary Viscous Damping Material Infusing Sustainable Negative Stiffness & High-Energy Dissipation,” Y12 Nuclear Facility, Oak Ridge, TN, April 6, 2011
- “Application of High-Strength Rubber-Based Carbon Composites to Dissipate Energy and Protect Various Substrates,” Combating Terrorism Technical Support Office (CTTSO), Knoxville, TN, March 29, 2011

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- “High-Strength Sustainability and Energy Dissipation via Evolutionary Viscous Damping,” The Boeing Company, Huntsville, AL, December 20, 2010.
- “Development and Application of a CarbonFlex Composite for Sustainable High Strength and Energy Dissipation,” University of Mississippi Materials Seminar, Department of Civil Engineering, University of Mississippi, Oxford, MS, November 11, 2010.
- “Sustainable High-Strength ‘Rubberized-Carbon’ Composite for In-situ Bio-Medical Use,” The Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, July 26, 2010
- “Experimental Shaking Table Test: Near-field Ground Motion Study on R/C Bridge-Column Bents,” CFRP Bridge Seminar, Department of Structural Engineering, University of Sao Paulo, Sao Carlos, Brazil, August 21<sup>st</sup>, 2008.
- “Research Progress in the areas: CFRP Shaking Table Test Applications in R/C Bridges and Experimental Control of Steel Buildings using MR Fluid Dampers,” Research Seminar, Department of Architecture and Civil Engineering, Voronezh State University, Voronezh, Russia, September 17<sup>th</sup>, 2008.
- “Random Plastic Analysis of Buildings Using a Degradation Model Embedded into a Wireless Network to Compute and Control Local Constitutive Responses,” Structural Controls Seminar, Department of Civil and Environmental Engineering, Clarkson University, Potsdam, NY, April 1<sup>st</sup>, 2005.
- “An Evolutionary Model for Plastic Analyses of Shear-Frame Buildings Using a Detailed Hardening Model and the Bouc-Wen Model,” Structural Mechanics Seminar, Department of Civil Engineering, State University of New York City College of New York, Manhattan, NY, October 30<sup>th</sup>, 2004.

***Workshops***

- University of Colorado at Boulder: NEES Fast Hybrid Test Facility, “MR Damper FHT Workshop at the Colorado NEES Facility,” Boulder, Colorado USA, 2007
- MR Technology Training and Workshop 2005 (Lord Corporation, N.C.)
- ExcEEd Teaching Workshop 2004 (NSF sponsored fellowship award)
- Smart Materials and Structures Technology Workshop 2004 (Honolulu, HI)

***Courses (All Courses Taught at the University Level)***

- |                                            |                                   |
|--------------------------------------------|-----------------------------------|
| • Advanced Structural Steel Design         | Fall 2008                         |
| • Prestressed Concrete Design              | Spring 2008                       |
| • Finite Element Analysis                  | Spring 2007, F 09, F 15           |
| • Dynamics of Structures                   | Fall 2003, F 04, F 06, F 07, S 10 |
| • Advanced Materials and Composites        | Fall 2010                         |
| • Matrix Structural Analysis               | Fall 2005                         |
| • Inelastic Stress Analysis and Plasticity | Fall 2005                         |

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- |                                                  |                                         |
|--------------------------------------------------|-----------------------------------------|
| • Structural Steel Design                        | Fall 2004, S 07, F 07, S 08, F 08       |
| • Structural Analysis                            | Spring 2004, S 05, S 06, S 07           |
| • Mechanics of Materials                         | Fall 2006                               |
| • Senior Design                                  | Fall 2010                               |
| • Senior Design Coordination                     | Fall 2006, S 07, F 07, S 08, F 08, S 09 |
| • Statics                                        | Fall 2004, F 06 (2), S 09, F 14         |
| • Engineering 11 – Step-to-College: Outreach     | Fall 2006, S 07, F 07, S 08             |
| • Engineering 1T – Calculus Applications in Eng. | Fall 2008, Spring 2009                  |
| • Introduction to Engineering                    | Fall 2011 (3), S 12, F 12 (4), S 13     |
| • The ASU Experience                             | Fall 2011 (2), S 12                     |
| • Introduction to Construction                   | Fall 2011, S 12                         |
| • Numerical Methods for Engineers                | Spring 2012, 13, 14                     |
| • Advanced Structural Analysis                   | Spring 2015                             |

***Computer Skills and Software Development***

Computational (Structural) Mechanics Software Development

Programs

NONLIN

- Nonlinear Dynamic Time-History Analysis Integrated with a Constitutive Material Model that Enables Optimal MR Damper Forces to be Determined per Time-Step
  - ⇒ Local state response data is optimally controlled to meet any specified performance level
  - ⇒ Converges accurately to any number of discrete yield levels identifying the states of stress and strain during any time-step
  - ⇒ Efficiently updates velocity and acceleration response vectors using a linear rule
  - ⇒ Utilizes a Caughey-damping formulation to allow inclusion of all damped modes

BW-OPT

- Global Nonlinear Optimization and Bouc and Wen Parameter Computation for Random Input
  - ⇒ Includes a 4<sup>th</sup> order Runge-Kutta solver for the Bouc and Wen model
  - ⇒ Accounts for the boundary-value conditions of each of the Bouc-Wen hysteresis legs

GRAB-OPT

- Optimal Control of all Modes of Vibration and Passive Damping Computation
  - ⇒ Links between NONLIN to update the damping ratios for all modes of vibration
  - ⇒ Gradient-based matrix enables all modes (and any inter-story responses) to be controlled
  - ⇒ Converges to desired performance-objectives for any (all) modes of vibration

PUSH-OPT

- Optimal Equivalent System Formulation in Conjunction with a Pushover Analysis for the Seismic Analysis for Frames with Higher-Mode Influence
  - ⇒ Uses the target responses computed from NONLIN to determine optimal pushover parameters for ductility, earthquake input, and inelastic modes
  - ⇒ Captures higher-mode effects and phenomena such as ratcheting, material hardening, P-Δ effects, and hysteretic energy losses

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Other programs

- Finite Element Analysis for 2D (plane stress or plane strain) Structures
- Plane Frame/ Space Truss Structural Analysis.

Software Expertise and Programming Language Proficiencies

Visual Basic	MATLAB	I-DEAS (pre- and post-processor)
C	NASTRAN	Auto-CAD
FORTRAN	PATRAN	PCA-Col and PCA-Frame
PASCAL	ADINA	SAP2000

***Laboratory Research Experience***

California State University, Fresno. Fresno, California [2006-2009]

Director, Facility Coordinator and Developer of the Earthquake Testing Facility

Center for Earthquake Modeling and Simulation (CEMS)

Shaking Table Facility –Earthquake Modeling and Simulation

- Medium- and Large-scale earthquake simulation – one, two, and three-story buildings
- Simulated earthquake ground motions are generated using response monitoring and control (MTS Hardware)
- Structural load capacity is 40,000 pounds (at 2.2 Hz and +/- 3inches)
- Table dimensions are 8 ft x 6-3/4 ft
- Hydraulic fluid flow is monitored and compensated through a 3-stage servo-valve controller using a 100 gallon per minute pump and a single 55-kip actuator (uni-directional) with a +/- 5 inch stroke capacity

University of Nevada. Reno, Nevada [1993-1994]

Project:

Seismic retrofit project of a bridge footing

- Conducted research in the seismic retrofitting of reinforced concrete bridge footings in the Engineering Research Center and laboratory
- Designed, analyzed, and constructed a footing-column test specimen that was to be tested using a hydraulic actuator and data acquisition system to generate simulated earthquake loads and record data
  - ⇒ Specimen was built to 2/5-scale of an actual bridge footing
    - \* Analyzed the system for 32k lateral (quasi-static) load and 110k gravity load
    - \* Computed the necessary lateral load to cause footing failure (one-way shear)
    - \* Designed sufficient rebar to prevent column failure
    - \* Designed rebar to model the in-situ bridge footing conditions
    - \* Computed the necessary development length at the footing-column interface
    - \* Designed the necessary strength and placement of elastomeric bearing pads to model the soil conditions under the footing
- Took bids to purchase Neoprene elastomeric bearing pads, strain gauges, rebar, concrete, etc.

***Other Professional Experience - Private-Sector***

The Aerospace Corporation, Spacecraft Structures Division. El Segundo, California [1997-1999]

Projects:

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Defense Meteorological Satellite Project (DMSP)

- Performed extensive finite element analysis on the DMSP satellite using NASTRAN and post-processed the analysis using IDEAS
- Assessed Evolved Expendable Launch Vehicle (EELV) design load factors and Delta II loads
- Analyzed random vibration and acoustical responses for DMSP hardware, including the 40Ah and circuit housing, and the Special Sensor Microwave Imager Sounder (SSMIS).
- Analyzed a shipping container that transported the SSMIS hardware against drop height limits, buckling, and impact loading; computed the acceptable margins of safety
- Generated a small portion of the dynamic model for the DMSP S18 (SSQ) spacecraft
- Created output transformation matrices (OTMs) for the DMSP S18 (SSQ) spacecraft and assessed the resulting coupled loads against the vintage DMSP verification load cycle (VLC) and against previous static test loads

Global Positioning Satellite (GPS), blocks IIf and IIr

- Assessed the resonant frequency states and modes of vibration for the GPS IIf satellite under random frequency input
- Made recommendations to Air Force DoD personnel on the critical buckling states of various components, material properties, and on the accuracy of the applied loads environments
- Assessed the integrity of thermal shrouds (covering antenna structural assemblies) with low natural frequencies
- Assessed the structural integrity of the GPSIIr Satellite for newly-computed liftoff loads that were recommended because of launch pad and forcing function changes. A comparison of the results was made to those of the previous envelope and against margins of safety

Defense Satellite Communications System (DSCS III) Satellite

- Analyzed the DSCS satellite structure and the Integrated Apogee Boost Subsystem (IABS) structure using a revised set of liftoff loads induced by the Atlas IIA launch vehicle during separation
  - ⇒ Compared the results against the previous VLC loads envelope
  - ⇒ Computed structural margins of safety using subroutines written in FORTRAN and which were compiled using the Subdivision's MATRIX program

Titan IV Launch Vehicle

- Modeled the skin panels on the Titan IV using IDEAS – including the exterior skin structure, the supporting beams, and the connecting elastic spring elements
- Analyzed the panels using NASTRAN in a study to assess the panels' structural integrity when certain (proximate) failed rivet stiffeners were removed from the analysis because of over-torquing during assembly and which resulted in regions of high stress concentrations

Constantine Construction. Las Vegas, Nevada

[May - August: 1989-1991, 1995]

Job Description:

On-site construction

- Worked in framing, roofing, interior painting, and landscaping
- Poured floor slabs, and did formwork

*Affiliations/ Scholarships/ Media Recognition*

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- Promising New Faculty Award, California State University, Fresno, 2008
- 2007 ASCE Professor of the Year, Fresno Chapter, 2007
- Interviewed 6 times on local television news for the following stories:
  - Earthquake in China (May 15<sup>th</sup>, 2008)
  - Bay Bridge fire and collapse (April 30<sup>th</sup>, 2008)
  - Near-field earthquake northeastern, Nevada near Wells (February 21<sup>st</sup>, 2008)
  - I-35W bridge collapse in Minneapolis (August 1<sup>st</sup>, 2007)
  - Two interviews regarding the opening of the shaking table facility (April 19<sup>th</sup>, 2007)
- Radio interview on November 29<sup>th</sup>, 2007, on the seismic testing facility in "The Campaign for Fresno State Powering the New California."
- Featured in an article in the Fresno Bee for being named Promising New Faculty, 2008
- Recognized and honored at the re-opening of the Henry Madden Library for my research and publications in April, 2008.
- Achievement Rewards for College Scientists (ARCS) Scholarship, 2003
- Achievement Rewards for College Scientists (ARCS) Scholarship, 2002
- Outstanding Service Award, Department of Civil Engineering, University of Nevada, 1993
- President, ASCE and Associated General Contractors Student Chapters, Department of Civil Engineering, University of Nevada, 1993
- Nevada Society of Professional Engineers Scholarship (NSPE), 1990

***Collaborators***

**Research Affiliations**

- Jeffrey Abercrombie, Division of Structural Construction, California Dept of Transportation
- Anil Agrawal, Associate Professor, The City College of the City University of New York
- Adair Aguiar, Assistant Professor, University of Sao Paulo, Sao Paulo, Brazil
- Aditi Chattopadhyay, Professor, Arizona State University
- Michael C. Constantinou, Professor, State University of New York, Buffalo
- Mark Der Matoian, Division Chief of Construction, Central Region, Caltrans
- Apostolos Fafitis, Associate Professor, Arizona State University (Graduate Advisor)
- Robert James, Construction Engineer, California Department of Transportation
- Dusan Krajcinovic, Professor, Arizona State University
- Jerome Lynch, Assistant Professor, University of Michigan
- Marc Mignolet, Professor, Arizona State University
- Satish Nagarajaiah, Professor, Rice University
- Andrei M. Reinhorn, Professor, State University of New York, Buffalo
- Martin Ostoja-Starzewski, Professor, University of Illinois at Urbana-Champaign
- Fei Ren, Assistant Professor, Temple University
- Michael Symans, Associate Professor, Rensselaer Polytechnic Institute
- Benjamin Thomas, Southeast Region Research Initiative, Oak Ridge National Laboratory
- Jim Toscano, Global Marketing and Sales Manager, Lord Corporation, Cary, NC
- Alan Vong, Construction, Division of Construction, Caltrans
- Jy-An Wang, Senior Staff, Oak Ridge National Laboratory

**Other Affiliations**

- Ayman Ababneh, Assistant Professor, Clarkson University
- Eric Hines, Research Assistant Professor, Tufts University



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***Supervision of Graduate Theses***

- Marusic, M., “Multi-Axial Anisotropic Material Behavior Using a Collection of Yield Surfaces to Model the Stress-Space Coupling Phenomena,” M.S. Thesis, University of New Hampshire, Defense Date: July 27, 2006.
- Bicja, J., “Post-Yield Nonlinear Behavior of Structural Steel Beam-Column Elements,” M.S. Thesis, University of New Hampshire, Defense Date: July 26, 2006.
- Dansby, R.E. “Semi-Active Control of Nonlinear Steel Structures using an Optimal Evolutionary State-Transition Matrix to meet Inelastic Performance Demands,” M.S. Thesis, California State University, Fresno, Defense Date: December 3<sup>rd</sup>, 2008.
- Dhiradhamvit, K. “Monitoring of Damage Projection of Concrete Panels on Highway 99 and Second St. in Selma, CA and Implementation of a Lead-Core Base Isolation System to Passively Control Structural Damages,” M.S. Thesis, California State University, Fresno, Defense Date: May 16<sup>th</sup>, 2009.
- Abela, C.A. “Development of a Moment-Curvature Methodology for Carbon-Fiber Reinforced Polymers in Reinforced Concrete Bridges,” M.S. Thesis, California State University, Fresno, Defense Date: May 16<sup>th</sup>, 2009.
- Wesson, M.D. “Carbon-Fiber Reinforced Polymer Wraps used to Increase Energy Dissipation Capability and Strength in Already-Damaged Reinforced Concrete Bridges using an Experimental Shaking Table Test,” M.S. Thesis, California State University, Fresno, Defense Date: May 16<sup>th</sup>, 2009.
- Cullers, S. “Monitoring the Shear Forces as a Function of Large Skew Angles in Overpass Bridges and the Subsequent Effects on Prestress and Damping Losses,” M.S. Thesis, California State University, Fresno, Defense Date: May 15<sup>th</sup>, 2009.
- Dhiradhamvit, K. “Advanced Energy Dissipation and Strength Sustainability of Low-Rise Wood-Framed Structures using a newly developed Composite,” Ph.D. Dissertation, Arizona State University, Tempe, Defense Date: November 20<sup>th</sup>, 2013.
- Zhou, H. “Development of a Carbon-fiber Hybrid-polymeric Matrix Composite used to mitigate damage in civil infrastructures using a two-parameter cohesion mechanism where a microscopically weak structure is built into a macroscopically strong solid,” Ph.D. Dissertation, Arizona State University, Tempe, Defense Date: November 20<sup>th</sup>, 2013.

***Supervision of Undergraduate Research Projects***

- DeWaters, J., “Filling a Gap in Research and Undergraduate Education at the University of New Hampshire,” Graduated May 2005.
- Radford-Brown, M., “The Federal Highway Administration’s “Every Day Counts” Initiative and the Transportation Construction Industry,” Graduated May 2013.

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- Carroll, M., “The Design of Wood Structures Against Natural Hazards,” Graduated May 2013.

***Graduate Student Supervisions***

- Hongyu “Nick” Zhou (Ph.D., Defended Nov 20, 2013, Assistant Professor, University of Alabama, Huntsville)
- Kittinan Dhiradhamvit (Ph.D., Defended Nov 20, 2013, Structural Engineer, Bangkok, Thailand)
- Chase Wharton (MS, Defended, December 15, 2011, Structural Engineer, ENERCON, Kennesaw, GA)
- Reza Razademplajah (MS, Defended July 26, 2010, Unknown)
- Christopher Abela (MS, Defended, May 16<sup>th</sup>, 2009, Structural Engineer, Army Corp of Engineers, Sacramento, CA)
- Shawn Cullers (MS, Defended, May 15<sup>th</sup>, 2009, Bridge Engineer, California Department of Transportation)
- Robin Dansby (MS, Defended, December 3<sup>rd</sup>, 2009, Structural Engineer, Cornerstone Engineering, Fresno, CA)
- Kittinan Dhiradhamvit (MS, Defended, May 16<sup>th</sup>, 2009, Continued to PhD, 2009-2014)
- Gurjot Gill (MS, Defended, May 14<sup>th</sup>, 2009)
- Michael Wesson (MS, Defended, May 16<sup>th</sup>, 2009, Ph.D. student Purdue University, Structural Engineer, Houston, TX)

***Other (Personal) Information***

- Citizenship: U.S.
- Fluent in Greek
- Member Parish Council – Greek Orthodox Church of the Annunciation (Dover, NH), 2004 – 2006
- Little League Baseball Coach (Gilbert American Little League and National Youth Sports), 7 seasons, 2011 – 2014
- Men’s Senior Baseball League (MSBL), 2013-2014
- Two sons, ages 11 and 7