Curriculum Vitae

GARY DON SEIDEL, PH.D.
ASSOCIATE PROFESSOR

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EDUCATION

Doctor of Philosophy, Aerospace Engineering (2002-2007)
Texas A&M University, College Station, TX
Thesis Topic: *Micromechanics Modeling of the Multifunctional Nature of Carbon Nanotube-Polymer Nanocomposites*
Thesis Chair: Dr. Dimitris C. Lagoudas
Thesis Committee: Drs. J.N. Reddy, John Slattery, and James Boyd
Recipient, Sandia National Laboratories/Texas A&M University Doctoral Fellowship in Engineering

Master of Science, Aerospace Engineering (1999-2002)
Texas A&M University, College Station, TX
Thesis Topic: *A Model for Predicting the Evolution of Damage in the Plastic Bonded Explosive LX17*
Thesis Chair: Dr. David H. Allen
Thesis Committee: Drs. Dimitris C. Lagoudas and J.N. Reddy

Bachelor of Science, Aerospace Engineering (1994-1999)
Texas A&M University, College Station, TX
Magna Cum Laude

Diploma, St. Thomas High School, Houston, TX (1990-1994)
Graduated top 3% of the Class of 1994

RESEARCH INTERESTS

- Micromechanics Analysis of Nanocomposites
- Damage Evolution using Cohesive Zone and Continuum Damage Models
- Bridging Atomistic and Continuum Length and Time Scales in Nanocomposites
- Multi-scale Modeling of Multifunctional Composites and Biomaterials
- Micromechanics of Materials with Time-Varying Effective Properties
- Meshless Computational Solid Mechanics for Dynamic Materials

PROFESSIONAL EXPERIENCE

- **Associate Professor** (2015-present)
  Aerospace and Ocean Engineering Department,
  Virginia Polytechnic Institute and State University
- **Assistant Department Head for Academic Affairs** (2021-present)
  Aerospace and Ocean Engineering Department,
  Virginia Polytechnic Institute and State University
- **Interim Assistant Department Head for Academic Affairs** (2017-2018)
  Aerospace and Ocean Engineering Department,
  Virginia Polytechnic Institute and State University
- **Undergraduate Academic Assessment Coordinator** (2018-2021)
  Aerospace and Ocean Engineering Department,
  Virginia Polytechnic Institute and State University
- **Assistant Professor** (2008-2015)
  Aerospace and Ocean Engineering Department,
  Virginia Polytechnic Institute and State University
- **Affiliate Faculty** (2011-present)
  Engineering Science and Mechanics Department
  Mechanical Engineering Department
  Virginia Polytechnic Institute and State University
- **Postdoctoral Research Associate** (2007-2008)
  Texas Institute of Intelligent Bio-Nano Materials and Structures for Aerospace Vehicles (TiiMS), Aerospace Engineering Department, Texas A&M University
- **Graduate Assistant Research** (2002-2007)
  Aerospace Engineering Department, Texas A&M University
- **Graduate Assistant Research** (1999-2002)
  Aerospace Engineering Department, Texas A&M University
- **Graduate Student Intern** (Summer 2000)
  Engineering Sciences Summer Institute, Sandia National Laboratories, Livermore, CA
- **Student Intern** (Summer 1999)
  Science and Technology Outreach Program, Sandia National Laboratories, Albuquerque, NM
- **Undergraduate Student Research Assistant** (1997-1999)
  Aerospace Engineering Department, Texas A&M University

PUBLICATIONS

Refereed Journal Publications (42)

1. Stefan J. Povolny, Gary D. Seidel, Carolina Tallon, 2022, Numerical investigation of thermomechanical response of multiscale porous Ultra-High Temperature Ceramics, Ceramics International, Volume 48, Issue 8, pp 11502-11517
2. Stefan J. Povolny, Gary D. Seidel, Carolina Tallon, 2022, Numerical Brazilian disk testing of multiscale porous Ultra-High Temperature Ceramics, International Journal of Solids and Structures, Vol 234-235 Jan, 111262 - 21 pgs

3. Nishant Shirodkar, Shengfeng Cheng, and Gary D.Seidel, 2021, Enhancement of Mode I fracture toughness properties of epoxy reinforced with graphene nanoplatelets and carbon nanotubes, Composites Part B: Engineering, Vol 224, Nov, 109177 - 12 pgs
4. Stefan J.Povolny, Gary D.Seidel, and Carolina Tallon, 2021, Investigating the mechanical behavior of multiscale porous ultra-high temperature ceramics using a quasi-static material point method, Mechanics of Materials, Vol 160, Sept, 103976 - 19 pgs
5. Krishna Talamadupula and Gary D Seidel, 2021, Statistical analysis of effective electro-mechanical properties and percolation behavior of aligned carbon nanotube/polymer nanocomposites via computational micromechanics, Computational Materials Science, Vol 197, 110616 - 32 pgs
6. Krishna Kiran Talamadupula, Stefan Povolny, Naveen Prakash, Gary D. Seidel, 2020, Piezoresistive Detection of Simulated Hotspots and the Effects of Low Velocity Impact at the Mesoscale in Nanocomposite Bonded Energetic Materials via Multiphysics Peridynamics Modeling, Computational Materials Science, Vol 188, 110211 - 30 pgs.
7. Krishna Talamadupula, Stefan Povolny, Naveen Prakash and Gary Don Seidel, 2020, Mesoscale Strain and Damage Sensing in Nanocomposite Bonded Energetic Materials under Low Velocity Impact with Frictional Heating via Peridynamics, Modelling and Simulation in Materials Science and Engineering, Vol 28, 085011 - 53 pgs.
8. N Shirodkar, S Rocker and G D Seidel, 2019, Strain and damage sensing of polymer bonded mock energetics via piezoresistivity from carbon nanotube networks, Smart Materials and Structures, Vol 28, No 10, 104006 - 15 pgs.
9. Ryan Seifert, Mayuresh Patil and Gary Seidel, 2019, Topology optimization of self-sensing nanocomposite structures with designed boundary conditions, Smart Materials and Structures, Vol 28, No 7, 074006 - 14 pgs.
10. Ryan Seifert, Mayuresh Patil, Gary Seidel, Gregory Reich, 2019, Multifunctional topology optimization of strain-sensing nanocomposite beam structures, Structural and Multidisciplinary Optimization, Vol 60, No 4, pp 1407–1422.
11. Y. Li and G.D. Seidel, 2018, Multiscale modeling of the interface effects in CNT-epoxy nanocomposites, Computational Materials Science, Vol 153, pp. 363-381
12. Adarsh K. Chaurasia, Andrew M. Rukangu, Michael K. Philen, Gary D. Seidel, and Eric C. Freeman, 2018, Evaluation of bending modulus of lipid bilayers using undulation and orientation analysis, Physical Review E, Vol 97, 032421-1-12
13. Naveen Prakash and Gary D. Seidel, 2018, Effects of microscale damage evolution on piezoresistive sensing in nanocomposite bonded explosives under dynamic loading via electromechanical peridynamics, Modelling and Simulation in Materials Science and Engineering, Vol 26, No 1, 015003-1-32.
14. Engin C. Sengezer and Gary D. Seidel, 2018, Structural health monitoring of nanocomposite bonded energetic materials through piezoresistive response, AIAA Journal, Vol 56, No 3, pp. 1225-1238.
15. Engin C. Sengezer, Gary D. Seidel, Robert J. Bodnar, 2017, Anisotropic piezoresistivity characteristics of aligned carbon nanotue-polymer nanocomposites, Smart Materials and Structures, Vol. 26, No. 9, 095027-1-24
16. Naveen Prakash and Gary D. Seidel, 2017, Computational electromechanical peridynamics modeling of strain and damage sensing in nanocomposite bonded explosive materials (NCBX), Engineering Fracture Mechanics, Vol. 177, pp 180-202

17. A.K. Chaurasia, G.D. Seidel, 2017, Computational micromechanics analysis of electron hopping and interfacial damage induced piezoresistive response in carbon nanotube-polymer nanocomposites subjected to cyclic loading conditions, European Journal of Mechanics - A/Solids, Vol. 64, pp 112-130
18. G. Domínguez-Rodríguez, A.K. Chaurasia, G.D. Seidel, A. Tapia, and F. Avilés, 2016, Hierarchical Multiscale Modeling Of The Effect Of Carbon Nanotube Damage On The Elastic Properties Of Polymer Nanocomposites, Journal of Mechanics of Materials and Structures, Vol. 12, No. 3, pp 263-287.
19. G. Dominguez-Rodriquez, A. Tapia, G.D. Seidel, F. Aviles, 2016, Influence of Structural Defects on the Electrical Properties of Carbon Nanotubes and Their Polymer Composites, Advanced Engineering Materials, Vol. 18, No. 11, 1897-1905, DOI: 10.1002/adem.201600116.
20. Xiang Ren, Adarsh K. Chaurasia, and G. D. Seidel, 2016, Concurrent Multiscale Modeling of Coupling Between Continuum Damage and Piezoresistivity in CNT-Polymer Nanocomposites, International Journal of Solids and Structures, Vol. 96, pp. 340-354.
21. Adarsh K. Chaurasia, Engin C. Sengezer, Krishna K. Talamadupula, Stefan Povolny, Gary D. Seidel 2014 Experimental Characterization and Computational Modeling of Deformation and Damage Sensing Through the Piezoresistive Response of Nanocomposite Bonded Surrogate Energetic Materials, Journal of Multifunctional Composites, Vol. 2 No. 4, ISSN 2168-4286.
22. Naveen Prakash and Gary D. Seidel 2016 Electromechanical peridynamics modeling of piezoresistive response of carbon nanotube nanocomposites, Computational Materials Science, Vol. 113, pp. 154-170.
23. Y. Li and G.D. Seidel 2015 Multiscale modeling of functionalized interface effects on the effective elastic material properties of CNT-polyethylene nanocomposites, Computational Materials Science Vol. 107 pp. 216-234.
24. Xiang Ren, Adarsh Chaurasia, Andres Oliva-Aviles, Jose de Jesus Ku-Herrera, Gary Seidel, Francis Aviles 2015 Modeling of Mesoscale Dispersion Effect on the Piezoresistivity of Carbon Nanotube-Polymer Nanocomposites via 3D Computational Multiscale Micromechanics Methods, Smart Materials and Structures, Vol. 24 No 6 pp. 065031.
25. Xiang Ren, Josh Burton, Gary D. Seidel, Khalid Lafdi 2015 Computational Multiscale Modeling and Characterization of Piezoresistivity in Fuzzy Fiber Reinforced Polymer Composites, International Journal of Solids and Structures Vol 54 pp 121-134.
26. A.K. Chaurasia, X. Ren, and G.D. Seidel 2014 Computational Micromechanics Analysis of Electron Hopping and Interfacial Damage Induced Piezoresistive Response In Carbon Nanotube-Polymer Nanocomposites, Smart Materials and Structures Vol 23 No 7 p 075023-1-23.
27. Engin Cem Sengezer, Gary D. Seidel, and Robert J. Bodnar 2015 Phenomenological Characterization of Fabrication of Aligned Pristine-SWNT and COOH-SWNT Nanocomposites via Dielectrophoresis Under AC Electric Field, Polymer Composites Vol. 36 Iss. 7 pp. 1266-1279.
28. Yumeng Li and Gary D Seidel 2014 Multiscale Modeling of the Effects of Nanoscale Load Transfer on the Effective Elastic Properties of Unfunctionalized Carbon Nanotube-

Polyethylene Nanocomposites, Modelling and Simulation in Materials Science and Engineering Vol 22 pp 25023-1-28.
29. A.I. Oliva-Aviles, F. Aviles, V. Sosa, G.D. Seidel 2014 Dielectrophoretic modeling of the dynamic carbon nanotube network formation in viscous media under alternating current electric fields, Carbon Vol 69 pp 342-354.
30. A. K. Chaurasia, G. D. Seidel 2014 Computational micromechanics analysis of electron hopping induced conductive paths and associated macroscale piezoresistive response in carbon nanotube-polymer nanocomposites, Journal of Intelligent Material Systems and Structures, November 2014 vol. 25 no. 17 pp. 2141-2164.
31. Xiang Ren and Gary D Seidel 2013 Computational micromechanics modeling of piezoresistivity in carbon nanotube-polymer nanocomposites, Composite Interfaces Vol 20 Iss 9 pp 693-720.
32. J J Ku-Herrera, F Aviles and G D Seidel 2013 Self-sensing of elastic strain, matrix yielding and plasticity in multiwall carbon nanotube/vinyl ester composites Smart Materials and Structures 22 085003-1-7
33. Xiang Ren and Gary D. Seidel 2013 Computational micromechanics modeling of inherent piezoresistivity in carbon nanotube-polymer nanocomposites Journal of Intelligent Material Systems and Structures Vol. 24, Iss. 12 pp. 1459-1483
34. A.I. Oliva-Aviles, F. Aviles, G.D. Seidel, V. Sosa. 2013 On the contribution of carbon nanotube deformation to piezoresistivity of carbon nanotube/polymer composites Composites Part B: Engineering 47 200-206
35. G. Chatzigeorgiou, G.D. Seidel, D.C. Lagoudas 2012 Effective mechanical properties of "fuzzy fiber" composites. Composites Part B: Engineering, Vol. 43, Iss. 6 pp. 2577-2593.
36. G.D. Seidel and A.-S. Puydupin-Jamin 2011 Analysis of clustering, interphase region, and orientation effects on the electrical conductivity of carbon nanotube-polymer nanocomposites via computational micromechanics. Mechanics of Materials, 43, 755-774.
37. G.D. Seidel and D.C. Lagoudas. 2009. A micromechanics model for the electrical conductivity of nanotube-polymer nanocomposites. Journal of Composite Materials, 43, No 9, 917-941.
38. G.D. Seidel and D.C. Lagoudas. 2008. A micromechanics model for the thermal conductivity of nanotube-polymer nanocomposites. Journal of Applied Mechanics, 75, No 4, 041025-1-9.
39. D. C. Hammerand, G. D. Seidel and D. C. Lagoudas. 2007. Computational Micromechanics of Clustering and Interphase Effects in Carbon Nanotube Composites. Mechanics of Advanced Materials and Structures 14 277–294.
40. G.D. Seidel and D.C. Lagoudas. 2006. Micromechanical analysis of the effective elastic properties of carbon nanotube reinforced composites. Mechanics of Materials 38 884-907.
41. Y.-R. Kim, D.H. Allen, and G.D. Seidel. 2006. Damage-Induced modeling of elastic-viscoelastic randomly oriented particulate composites. ASME Journal of Engineering Materials and Technology 128 18-27.
42. G.D. Seidel, D.H. Allen, K.L.E. Helms, and S.E. Groves. 2005. A model for predicting the evolution of damage in viscoelastic particle-reinforced composites. Mechanics of Materials 37 163-178

Papers in Conference Proceedings (64)

1. Genckal N, Seidel GD, Cheng S, "Multiscale Modeling of Carbon Fiber Reinforced Composites with a Local Interface Model", Proceedings Paper for the 63rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2022, San Diego, California, USA, 3-7 January, 2022 (AIAA 2022-0628)
2. Shah K, Seidel GD, "Microstructure Characterization of Multifunctional CNT-Polymer Nanocomposites via Two-Point Correlation Functions", Proceedings Paper for the 63rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2022, San Diego, California, USA, 3-7 January, 2022 (AIAA 2022-2239)
3. Morris BA, Povolny SJ, Seidel GD, Tallon C, "Investigation of Oxidation Effects in Porous Ultra-High Temperature Ceramics", Proceedings Paper for the 63rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2022, San Diego, California, USA, 3-7 January, 2022 (AIAA 2022-1860)
4. Shirodkar N, Cheng S, Seidel GD, "Exploring Possible Synergy Between Carbon-Based Nanofiller Reinforcements with Regards to Fracture Toughness Enhancement in Dual Filler Epoxy Nanocomposites", Proceedings Paper for the 63rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2022, San Diego, California, USA, 3-7 January, 2022 (AIAA 2022-0376)
5. Shirodkar N, Talluru V, Seidel GD, "Experimental Investigation of Self-Sensing Mock Polymer-Bonded Energetic Nanocomposites Under Cyclic Compressive Loads", Proceedings Paper for the 63rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2022 San Diego, California, USA, 3-7 January, 2022 (AIAA 2022-1242)
6. Neslihan Genckal, Stefan Povolny, Gary Seidel, and Shengfeng Cheng, "Multiscale Modeling of Damage Response in Composites Reinforced with CNT Fibers", Proceedings Paper for the 62nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2021, Virtual Conference, 11-21 January 2021 (AIAA 2021-0275)
7. Krishna Kiran Talamadupula and Gary D. Seidel, "Statistical Analysis of Effective Piezoresistivity of Carbon Nanotube Reinforced Polymer Nanocomposites from Electron Tunneling Effects", Proceedings Paper for the 60th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2020, Orlando, Florida, USA, 6-10 January 2020 (AIAA 2020-2259)
8. Stefan Povolny, Gary D. Seidel, and Daniel Hammerand, "Effective Properties of Granular Composites as a Function of Relative Damage Evolution in Constituent Phases", Proceedings Paper for the 60th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2020, Orlando, Florida, USA, 6-10 January 2020 (AIAA 2020-2108)
9. Neslihan Genckal and Gary D. Seidel, "Multiscale Modeling of Damage Response in Nanocomposites Reinforced with Carbon Nanotubes", Proceedings Paper for the 60th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials

Conference at AIAA SciTech 2020, Orlando, Florida, USA, 6-10 January 2020 (AIAA 2020-1380)

10. Nishant Shirodkar and Gary D. Seidel, "Strain and Damage Sensing in Polymer-Bonded Energetics through Piezoresistive MWCNT Networks", Proceedings Paper for the 60th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2020, Orlando, Florida, USA, 6-10 January 2020 (AIAA 2020-0152)
11. Stefan Povolny, Krishna Talamadupula, Gary D. Seidel, "Strain and damage sensing at the mesoscale in energetic materials in response to low velocity impact and localized thermal loads", Proceedings Paper for the SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring Conference, Modeling of Smart Materials 2019, Denver, Colorado, USA, 3 - 7 March, 2019 (10968-6)
12. Krishna Kiran Talamadupula and Gary D. Seidel, "Multiscale Investigation of Piezoresistive Response of Nanocomposite Bonded Explosives (NCBXs) Derived From Electron Tunneling Effects", Proceedings Paper for the 59th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2019, San Diego, California, USA, 7 - 11 January, 2019 (AIAA 2019-1198)
13. Stefan Povolny, Krishna Kiran Talamadupula, Naveen Prakash and Gary D. Seidel, "Detecting “Hot-Spot” Damage in Granular Energetics Using a Thermo-electromechanical Peridynamics Model", Proceedings Paper for the 59th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2019, San Diego, California, USA7 - 11 January, 2019 (AIAA 2019-0962)
14. Nishant Shirodkar, Samantha Rocker, Gary Seidel, "Structural Health Monitoring of Solid Rocket Propellants using Piezo-resistive properties of Dispersed Carbon Nano-tube Sensing Networks", ASME 2018 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 1-7 Piezoelectrics and Piezoresistive Materials, San Antonio, Texas, USA, 10 - 12 September, 2018 (SMASIS2018-8250)
15. Nishant Shirodkar, Samantha Rocker, Tanner McCoy, Gary Seidel, "Electro-Mechanical Response of Polymer Bonded Energetic Materials with CNT Sensing Networks for Structural Health Monitoring", Proceedings Paper for the 2018 SEM Annual Conference and Exposition on Experimental and Applied Mechanics, Greenville, South Carolina, USA, 4 -7 June, 2018 (492-sen)
16. K. Talamadupula and G. Seidel, "Multiscale Modeling of Effective Piezoresistivity and Implementation of Non-Local Damage Formulation in Nanocomposite Bonded Explosives", Proceedings Paper for the 59th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2018, Kissimmee, Florida, USA, 8 - 12 January, 2018 (AIAA-2018-0903)
17. Samantha Rocker, Timothy Wade Pearrell, Engin Sengezer, Gary Seidel, "Electro-Thermal Response of Polymer-Bonded Explosives for Structural Health Monitoring of Energetic Materials", ASME 2017 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 1-7 Multifunctional Composites III, Snowbird, Utah, USA, 18 - 20 September, 2017 (SMASIS2017-3869)
18. Engin C. Sengezer, Gary D. Seidel, "Application of Piezoresistive Nanocomposite Binders for Real Time Embedded Sensing of Strain and Damage in Energetic Materials",

Proceedings Paper for the 58th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2017, Grapevine, Texas, USA 9 - 13 January, 2017 (AIAA 2017-0122)

19. Krishna Kiran Talamadupula, Adarsh K. Chaurasia, Gary D. Seidel, "Multiscale Modeling of Effective Piezoresistivity and Damage Response in Nanocomposite Bonded Explosives", Proceedings Paper for the 58th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2017, Grapevine, Texas, USA, 9 - 13 January, 2017 (AIAA 2017-0348)
20. Naveen Prakash, Gary D. Seidel, "Coupled Electromechanical Peridynamic Modeling of Strain and Damage Sensing in Granular Energetic Materials", Proceedings Paper for the 58th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2017, Grapevine, Texas, USA, 9 - 13 January, 2017 (AIAA 2017-0126)
21. Adarsh Chaurasia and Gary Don Seidel, "Modeling Nanocomposite Piezoresistive Response With Electromechanical Cohesive Zone Material Point Method", ASME 2016 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 2-10 Piezo Resistive Materials and Devices, Stowe, Vermont, USA, 28 - 30 September, 2016 (SMASIS2016-9236)
22. Naveen Prakash and Gary Seidel, "Coupled Electromechanical Peristatic Simulation of Deformation and Damage Sensing in Granular Materials", ASME 2016 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 2-10 Piezo Resistive Materials and Devices, Stowe, Vermont, USA, 28 - 30 September, 2016 (SMASIS2016-9235)
23. Krishna Talamadupula, Adarsh Chaurasia, and Gary Seidel, "2-Scale Hierarchical Multiscale Modeling of Piezoresistive and Damage Response in Polymer Nanocomposite Bonded Explosive", ASME 2016 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 2-10 Piezo Resistive Materials and Devices, Stowe, Vermont, USA, 28 - 30 September, 2016 (SMASIS2016-9234)
24. Engin C. Sengezer and Gary D. Seidel, “In-situ Sensing of Deformation and Damage in Nanocomposite Bonded Surrogate Energetic Materials”, Proceedings Paper for the SEM XIII International Congress, Orlando, Florida, USA, 6-9 June, 2016 (449-sen).
25. Engin C. Sengezer and Gary D. Seidel, "Real time In-situ Sensing of Damage Evolution in Nanocomposite Bonded Surrogate Energetic Materials", Proceedings Paper for the SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring Conference, Behavior and Mechanics of Multifunctional Materials and Composites 2016, Las Vegas, Nevada, USA, 21-23 March, 2016
26. D. Seifert, M. Patil, G. Seidel, and G. Reich, "Multi-Functional Topology Optimization of Nanocomposite Beams", Proceedings Paper for the 57th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2016, San Diego, California, USA, 4-8 January 2016, (AIAA-2016-1173)
27. K. Talamadupula, S. Berry, J. O'Donnell, G. Seidel, B. Goodell, "Experimental Characterization and Computational Analysis of Mode I Fracture Toughness of a Nanocellulose Z-Pin Reinforced Carbon Fiber Laminate", Proceedings Paper for the 57th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials

Conference at AIAA SciTech 2016, San Diego, California, USA4-8 January 2016, (AIAA-2016-0937)

28. N. Prakash and G. Seidel, "A Coupled Electromechanical Peridynamics Framework for Modeling Carbon Nanotube Reinforced Polymer Composites", Proceedings Paper for the 57th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2016, San Diego, California, USA4-8 January 2016, (AIAA-2016-0936)
29. E. Sengezer, Stefan Povolny, and G. Seidel, "Real Time In-Situ Sensing of Damage Evolution in Carbon Nanotube-Polymer Nanocomposite Bonded Surrogate Energetics", Proceedings Paper for the 57th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2016, San Diego, California, USA 4-8 January 2016, (AIAA-2016-0412)
30. A. Chaurasia and G. Seidel, "Multiscale Modeling of Effective Piezoresistivity in Nanocomposite Bonded Explosives", Proceedings Paper for the 57th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2016, San Diego, California, USA4-8 January 2016, (AIAA-2016-0155)
31. Krishna Talamadupula, Adarsh Chaurasia, and Gary Seidel, "2-Scale Hierarchical Multiscale Modeling of Piezoresistive Response in Polymer Nanocomposite Bonded Explosives", Proceedings Paper for the ASME 2015 Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 2-8 Smart Materials for Sensing Stretch and Pressure, Colorado Springs, Colorado, USA, 21 - 23 September, 2015 (SMASIS2015-9111)
32. Ryan Seifert, Mayuresh Patil, Gary Seidel, and Gregory Reich, "Multi-Functional Topology Optimization of Piezoresistive Nanocomposite Beams", Proceedings Paper for the ASME 2015 Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 1-7 Advanced Composites and Nanostructures I, Colorado Springs, Colorado, USA, 21 - 23 September, 2015 (SMASIS2015-8958)
33. A. Chaurasia, X. Ren, and G. Seidel (2015) "Computational Micromechanics Analysis of Damage Induced Piezoresistivity in Carbon Nanotube-Polymer Nanocomposites Under Cyclic Loading Conditions", Proceedings Paper for the 56th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2015, Kissimmee, Florida, USA, 5-9 January 2015 (AIAA-2015-1724)
34. N. Prakash and G. Seidel (2015) "A novel two-parameter linear elastic constitutive model for bond based peridynamics", Proceedings Paper for the 56th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2015, Kissimmee, Florida, USA, 5-9 January 2015 (AIAA-2015-0461)
35. E. Sengezer and G. Seidel, (2015) "Experimental Characterization of Damage Evolution in Carbon Nanotube-Polymer Nanocomposites", Proceedings Paper for the 56th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2015, Kissimmee, Florida, USA, 5-9 January 2015 (AIAA-2015-0126)
36. D. Seifert, M. Patil, and G. Seidel, (2015) "Topology Optimization of Composite Structures for Multifunctional Behavior" Proceedings Paper for the 56th

AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2015, Kissimmee, Florida, USA, 5-9 January 2015 (AIAA-2015-0455)

37. X. Ren and G. Seidel (2015) "Concurrent Multiscale Modeling of Coupling between Continuum Damage and Piezoresistivity in CNT-Polymer Nanocomposites", Proceedings Paper for the 56th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2015, Kissimmee, Florida, USA, 5-9 January 2015 (AIAA-2015-0393)
38. Engin Sengezer and G.D. Seidel (2014) "Experimental Characterization of Damage Evolution in Carbon Nanotube-Polymer Nanocomposites", Proceedings Paper for the 2014 Conference on Smart Materials, Adaptive Structures & Intelligent Systems (SMASIS), Newport, Rhode Island, USA, 8-10 September 2014 (SMASIS2014-7612)
39. Adarsh K. Chaurasia and G. D. Seidel (2014) "Sensing Interfacial Damage Initiation, Evolution and Accumulation in Carbon Nanotube-Polymer Nanocomposites Under Cyclic Loading: A Computational Micromechanics Approach" Proceedings Paper for the 2014 Conference on Smart Materials, Adaptive Structures & Intelligent Systems (SMASIS), Newport, Rhode Island, USA, 8-10 September 2014 (SMASIS2014-7592)
40. Adarsh K. Chaurasia, Xiang Ren, Yumeng Li, Engin C. Sengezer, Josh Burton and G. D. Seidel (2014) "Computational Modeling and Experimental Characterization of Macroscale Piezoresistivity in Aligned Carbon Nanotube and Fuzzy Fiber Nanocomposites", Proceedings Paper for the 55th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech, 13-17 January 2014National Harbor, Maryland, USA (AIAA 2014-1168)
41. Adarsh K. Chaurasia, Xiang Ren, and Gary D. Seidel, (2013) “Computational Micromechanics Model to Study the Effective Macroscale Piezoresitivity of Carbon Nanotube-Polymer Nanocomposites for Strain and Damage Sensing”, Proceedings paper for the ASME 2013 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, September 16-18, 2013, Snowbird, Utah, USA.
42. J. L. Abot, K. Wynter, K. Belay, M.-D. Lamos, G. Seidel and B. Vondrasek (2013) "Mode II Delamination Detection in Laminated Composite Materials Using Carbon Nanotube Yarn: State-of-the-Art and Challenges", Proceedings Paper for the ASC 2013 28th Technical Conference, September 9-11, 2013, State College, Pennsylvania, USA.
43. Adarsh Chaurasia and G. D. Seidel "Computational Micromechanics Analysis of Electron Hopping Induced Piezoresistive Response in Carbon Nanotube-Polymer Nanocomposites" Proceedings Paper for the 54th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference Boston, Massachusetts, USA 8-11 April 2013 (AIAA 2013-1731)
44. Engin Sengezer and G.D. Seidel "Phenomenological Characterization of the Fabrication of Aligned Carbon Nanotube Nanocomposites via Dielectrophoresis Under AC Electric Field" Proceedings Paper for the 54th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference Boston, Massachusetts, USA 8-11 April 2013 (AIAA 2013-1582)
45. Xiang Ren and Gary D. Seidel "Computational Micromechanics Modeling of Piezoresistivity of Carbon Nanotube Polymer Nanocomposites" Proceedings Paper for the ECCM15 - 15TH EUROPEAN CONFERENCE ON COMPOSITE MATERIALS Venice, Italy 24-28 June, 2012 (ECCM15-914)

46. Mohammad Bonakdar, G.D. Seidel, and D.J. Inman "Effect of nanoscale fillers on the viscoelasticity of polymer nanocomposites" Proceedings Paper for the 53rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference Honolulu, Hawaii, USA 23 - 26 April, 2012 (AIAA 2012-xxxx)
47. Yumeng Li and G.D. Seidel "Analysis of the Interface in CNT-Polyethylene Nanocomposites using a Multiscale Modeling Method" Proceedings Paper for the 53rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference Honolulu, Hawaii, USA 23 - 26 April, 2012 (AIAA 2012-xxxx)
48. Xiang Ren and G.D. Seidel "Computational Micromechanics Modeling of Axial Piezoresistivity of Polymer Nanocomposites with Well Dispersed and Aligned Carbon Nanotubes" Proceedings Paper for the 53rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference Honolulu, Hawaii, USA 23 - 26 April, 2012 (AIAA 2012-xxxx)
49. Xiang Ren and G.D. Seidel "Computational Modeling of Piezoresistivity of Carbon Nanotube Polymer Nanocomposites" Proceedings Paper for the SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring Conference San Diego, California, USA 11 - 15 March, 2012 [8342-49]
50. Yumeng Li and G.D. Seidel, "Analysis of the Interface in CNT-Polyethylene Nanocomposites using a Multiscale Modeling Method", Proceedings Paper for the 52nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Denver, Colorado, April 4-7 2011 (AIAA 2011-2058)
51. Xiang Ren and G.D. Seidel, "Analytic and computational multi-scale micromechanics models for mechanical and electrical properties of fuzzy fiber composites", Proceedings Paper for the 52nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, Denver, Colorado, April 4-7 2011 (AIAA 2011-1923)
52. Mohammad Bonakdar, G.D. Seidel, and D.J. Inman "Damping characterization of viscoelastic composites using micromechanical approach", Proceedings Paper for the 2011 SPIE Smart Structures/NDE Conference, San Diego, California, March 6-10 2011 [7978-48].
53. G.D. Seidel and S.N. Stephens "Analytical and Computational Micromechanics Analysis of the Effects of Interphase Regions and Orientation on the Effective Coefficient of Thermal Expansion of Carbon Nanotube-Polymer Nanocomposites", Proceedings Paper for the 51st AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Orlando, Florida, April 12-15 2010 (AIAA 2010-2809)
54. A.-S. Puydupin-Jamin and G.D. Seidel "Computational Micromechanics Analysis of the Effects of Bundle Packing and Interphase Addition on the Effective Electrical and Thermal Transverse Conductivity of Carbon Nanotube-Polymer Nanocomposites", Proceedings Paper for the 51st AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Orlando, Florida, April 12-15 2010 (AIAA 2010-2523)
55. G.D. Seidel, K.L. Boehringer, and D.C. Lagoudas, "Computational Micromechanics Analysis of the Effects of Interphase Regions and Bundle Packing on the Effective Electrical Properties of Carbon Nanotube-Polymer Nanocomposites", Proceedings Paper for the 50th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Palm Springs, California, 4-7 May, 2009. (AIAA 2009-2498)

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57. G.D. Seidel and D.C. Lagoudas, "Micromechanics Modeling of Polymer Nanocomposites for use as Multifunctional Materials", Proceedings Paper for the 49th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Schaumburg, Illinois, 7-10 April, 2008. (AIAA 2008-1947)
58. G.D. Seidel, Y. Bisrat, and D.C. Lagoudas, "Electrical and Thermal Conductivities of Carbon Nanotube-Epoxy Composites: Modeling and Characterization", Proceedings Paper for IMECE2007: 2007 ASME International Mechanical Engineering Congress and Exposition, Seattle, Washington, 11-15 November, 2007. (IMECE2007-42339)
59. D.C. Lagoudas and G.D. Seidel, "Micromechanics Modeling of the Multi-Functional Nature of Carbon Nanotube-Epoxy Nanocomposites: Effective Elastic Thermal and Electrical Properties", Proceedings Paper for COMP07: 6th International Symposium on Advanced Composites, Corfu, Greece, 16-18 May, 2007. (COMP2007-021)
60. G.D. Seidel and D.C. Lagoudas, "Micromechanics Aspects of Multi-scale Modeling of Multi-functional Nanocomposites: Effective Thermal Conductivity", Proceedings Paper for the 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Honolulu, Hawaii, 23-26 April, 2007. (AIAA 2007-2172)
61. G.D. Seidel, D.C. Lagoudas, S.J.V. Frankland, and T.S. Gates, "Micromechanics modeling of functionally graded interphase regions in carbon nanotube-polymer composites", Proceedings Paper for the 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Newport, Rhode Island, 1-4 May, 2006. (AIAA 2006-1678)
62. G. D. Seidel, D.C. Lagoudas, S.J.V. Frankland, and T.S. Gates, "Modeling functionally graded interphase regions in carbon nanotube reinforced composites", Proceedings Paper for the 20th American Society for Composites Technical Conference, Drexel University, Philadelphia, PA, 7-9 September, 2005.
63. D. Lagoudas and G. Seidel, "Effective Elastic Properties of Carbon Nanotubes and Carbon Nanotube Reinforced Composites," AIAA Paper 2004-1782, 45th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics & Materials Conference, Palm Springs, CA, April 19-22, 2004.
64. D.C. Lagoudas and G. D. Seidel, 2003, "A Micromechanical Study on the Clustering Effect of Carbon Nanotube Reinforced Composites," ASME International Mechanical Engineering Congress, Washington, D.C., Nov. 16-22, 2003.

Book Chapters

1. Brian L. Wardle, Joseph H. Koo, Gregory M. Odegard, Gary D. Seidel, "Advanced Nanoengineered Materials" in Aerospace Materials and Applications, American Institute of Aeronautics and Astronautics, Inc., Vol 255 of Progress in Astronautics and Aeronautics, 2018, pp 275-304.
2. Gary Don Seidel, George Chatzigeorgiou, Xiang Ren, Dimitris C. Lagoudas, "Multiscale Modeling of Multifunctional Fuzzy Fibers Based on Multi-Walled Carbon Nanotubes" in

Modeling of Carbon Nanotubes, Graphene and their Composites, Springer Series in Materials Science Volume 188, 2014, pp 135-176.

PRESENTATIONS

Professional Conferences (147)

1. Genckal N, Seidel GD, Cheng S, "Multiscale Modeling of Carbon Fiber Reinforced Composites with a Local Interface Model", Proceedings Paper for the 63rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2022, San Diego, California, USA. 3-7 January, 2022, (AIAA 2022-0628)
2. Shah K, Seidel GD, "Microstructure Characterization of Multifunctional CNT-Polymer Nanocomposites via Two-Point Correlation Functions", Proceedings Paper for the 63rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2022, San Diego, California, USA, 3-7 January, 2022, (AIAA 2022-2239)
3. Morris BA, Povolny SJ, Seidel GD, Tallon C, "Investigation of Oxidation Effects in Porous Ultra-High Temperature Ceramics", Proceedings Paper for the 63rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2022, San Diego, California, USA, 3-7 January, 2022, (AIAA 2022-1860)
4. Shirodkar N, Cheng S, Seidel GD, "Exploring Possible Synergy Between Carbon-Based Nanofiller Reinforcements with Regards to Fracture Toughness Enhancement in Dual Filler Epoxy Nanocomposites", Proceedings Paper for the 63rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2022, San Diego, California, USA, 3-7 January, 2022, (AIAA 2022-0376)
5. Shirodkar N, Talluru V, Seidel GD, "Experimental Investigation of Self-Sensing Mock Polymer-Bonded Energetic Nanocomposites Under Cyclic Compressive Loads", Proceedings Paper for the 63rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2022 San Diego, California, USA, 3-7 January, 2022, (AIAA 2022-1242)
6. Gary Seidel, "Piezoresistive Nanocomposites for Strain and Damage Sensing", Invited Talk for the Advanced Materials WebConference 2021 Prof. Joseph Koo WebSymposium on Polymer Nanocomposites, Virtual Conference, 16-18 November, 2021
7. Kavan Shah and Gary Seidel, "Reduced-Order Structure-Property Linkage for Multifunctional CNT-Polymer Nanocomposites via Principal Component Regression", ASME 2021 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in SYMP 1: Development and Characterization of Multifunctional Materials, Virtual Conference (Recorded Presentation), 14-15 September, 2021 (Presented by Kavan Shah) (SMASIS 2021-68389)
8. Kavan Shah, Krishna Talamadupula, and Gary Seidel, "Effects of CNT Dispersion on Effective Electro-Mechanical Properties of CNT/Polymer Nanocomposites via Two-Point Correlation Functions", Oral Presentation for the 62nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials

Conference at AIAA SciTech 2021, Virtual Conference, 11-21 January 2021 (Presented by Kavan Shah) (3457018)

9. Stefan Povolny, Gary Seidel, and Carolina Tallon, "Simulated Mechanical and Thermal Properties of Highly Porous Ultra High Temperature Ceramics Informed by Experiments", Oral Presentation for the 62nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2021, Virtual Conference, 11-21 January 2021 (3457122)
10. Nishant Shirodkar, Gary D. Seidel, and Shengfeng Cheng, "Characterizing Fracture Toughness of Carbon Nanotube and Graphene Nanoplatelet Doped Epoxy Nanocomposites", Oral Presentation for the 62nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2021, Virtual Conference, 11-21 January 2021 (Presented by Nishant Shirodkar) (3456978)
11. Neslihan Genckal, Stefan Povolny, Gary Seidel, and Shengfeng Cheng, "Multiscale Modeling of Damage Response in Composites Reinforced with CNT Fibers", Proceedings Paper for the 62nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2021, Virtual Conference, 11-21 January 2021 (Presented by Neslihan Genckal) (AIAA 2021-0275)
12. Stefan Povolny, Gary D. Seidel, and Carolina Tallon, "Mechanical and Thermal Properties of Highly Porous Ultra High Temperature Ceramics in Compaction via the Material Point Method", 14th WCCM and ECCOMAS Congress 2020, Virtual Conference (Recorded Presentation), 11-15 January 2021
13. Neslihan Genckal, Stefan Povolny, and Gary Seidel, "Multiscale Modeling of Damage Response in Composites Reinforced with CNT Fibers", 2020 Society of Engineering Science Annual Technical Meeting, Session Damage and Failure of Materials, Virtual Conference (Recorded Presentation), 29 September-1 October, 2020
14. Nishant Shirodkar and Gary D. Seidel, "Exploration of Structural Health Monitoring of Hot Spot Initiation in CNT/GNP – Nanocomposite Bonded Explosive Materials", ASME 2020 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in SYMP 1: Development and Characterization of Multifunctional Materials, Virtual Conference (Recorded Presentation), 15 September, 2020 (Presented by Nishant Shirodkar) (SMASIS-2414)
15. Krishna Kiran Talamadupula and Gary D. Seidel, "Statistical Analysis of Effective Piezoresistivity of Carbon Nanotube Reinforced Polymer Nanocomposites from Electron Tunneling Effects", Proceedings Paper for the 60th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2020, Orlando, Florida, USA, 6-10 January 2020 (AIAA 2020-2259)
16. Stefan Povolny, Gary D. Seidel, and Daniel Hammerand, "Effective Properties of Granular Composites as a Function of Relative Damage Evolution in Constituent Phases", Proceedings Paper for the 60th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2020, Orlando, Florida, USA, 6-10 January 2020 (AIAA 2020-2108)
17. Neslihan Genckal and Gary D. Seidel, "Multiscale Modeling of Damage Response in Nanocomposites Reinforced with Carbon Nanotubes", Proceedings Paper for the 60th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2020, Orlando, Florida, USA, 6-10 January 2020 (AIAA 2020-1380)

18. Nishant Shirodkar and Gary D. Seidel, "Strain and Damage Sensing in Polymer-Bonded Energetics through Piezoresistive MWCNT Networks", Proceedings Paper for the 60th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2020, Orlando, Florida, USA, 6-10 January 2020 (AIAA 2020-0152)
19. Gary D Seidel, “Understanding Enhancement of Strength in CNT/GNP-Based Structural Composites”, MII Technical Conference & Review, Macromolecules Innovation Institute, Blacksburg, Virginia, USA, 4-6 November, 2019
20. Nishant Shirodkar, Gary Seidel, "Structural Health Monitoring of Polymer Bonded Energetics via Piezoresistive Response of Multi-walled Carbon Nanotube Sensing Networks", ASME 2019 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 1-10 Multifunctional Materials III, Louisville, Kentucky, USA, 9 - 11 September 2019 (Presented Nishant Shirodkar)
21. Gary Seidel, "Piezoresistive Nanocomposites for Strain and Damage Sensing: Experimental and Computational Observations", ASME 2019 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 1-8 Multifunctional Materials II, Louisville, Kentucky, USA, 9 - 11 September 2019, Invited Talk
22. Krishna Talamadupula, Stefan Povolny, Naveen Prakash, Gary Seidel, "Influence of Heating Rate in the Detection of Prescribed Hotspots within Nanocomposite Bonded Explosives (NCBXs) using Thermo-Electro-Mechanical Peridynamic Modeling", ASME 2019 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 2-2 Multifield Response Modeling I, Louisville, Kentucky, USA 9 - 11 September 2019 (Presented Krishna Talamadupula)
23. Stefan Povolny, Krishna Talamadupula, Gary D. Seidel, "Strain and damage sensing at the mesoscale in energetic materials in response to low velocity impact and localized thermal loads” Proceedings Paper for the SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring Conference, Modeling of Smart Materials 2019, Denver, Colorado, USA, 3 - 7 March 2019
24. Stefan Povolny, Gary Seidel, Carolina Tallon, "Understanding and Predicting the Thermal and Mechanical Behavior of Multiscale Porous UHTCs via Microstructural Properties using the Material Point Method", 43rd International Conference and Exposition on Advanced Ceramics and Composites (ICACC 2019), Daytona Beach, Florida, USA, 27 Jan - 1 Feb 2019 (Presented by Stefan Povolny)
25. Krishna Kiran Talamadupula and Gary D. Seidel, "Multiscale Investigation of Piezoresistive Response of Nanocomposite Bonded Explosives (NCBXs) Derived From Electron Tunneling Effects", Proceedings Paper for the 59th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2019, San Diego, California, USA, 7 - 11 January 2019
26. Stefan Povolny, Krishna Kiran Talamadupula, Naveen Prakash and Gary D. Seidel, "Detecting “Hot-Spot” Damage in Granular Energetics Using a Thermo-electromechanical Peridynamics Model", Proceedings Paper for the 59th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2019, San Diego, California, USA, 7 - 11 January 2019
27. Nishant Shirodkar, Samantha Rocker, Gary Seidel, "Structural Health Monitoring of Solid Rocket Propellants using Piezo-resistive properties of Dispersed Carbon Nano-tube

Sensing Networks", ASME 2018 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 1-7 Piezoelectrics and Piezoresistive Materials, San Antonio, Texas, USA, 10 - 12 September, 2018 (SMASIS2018-8250)

28. Krishna Talamadupula, Naveen Prakash, Gary Seidel, "Electromechanical Peridynamic Investigation of Piezoresistivity and Damage Sensing of Nanocomposite Bonded Explosives (NCBXs) Under Impact Loading Conditions", ASME 2018 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 1-2 Energy Storage and Materials Electronics, San Antonio, Texas, USA, 10 - 12 September, 2018 (SMASIS2018-8238)
29. Krishna Talamadupula, Gary Seidel, "Multiscale Investigation of Piezoresistive Response of Nanocomposite Bonded Explosives (NCBXs) Derived From Electron Tunneling Effects", ASME 2018 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 1-2 Energy Storage and Materials Electronics, San Antonio, Texas, USA, 10 - 12 September, 2018 (SMASIS2018-8239)
30. Ryan Siefert, Mayuresh Patil, Gary Seidel, "Multi-Objective Topology Optimization of Self-Sensing Structures with Designed Boundary Conditions", ASME 2018 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 1-1 Desisn Optimization, San Antonio, Texas, USA, 10 - 12 September, 2018 (SMASIS2018-8240)
31. Krishna Talamadupula, Gary Seidel, "Multiscale Modeling of Piezoresistivity and Damage Induced Sensing Of Nanocomposite Bonded Explosive Materials Using Non-Local Damage Formulation", WCCMXIII and PANACM II, 13th World Congress in Computational Mechanics, Minisymposium #1213 Computational Constitutive Modeling, New York, New York, USA, 22 - 27 July, 2018 (Presented by Krishna Talamadupula) (#2021303)
32. Naveen Prakash, Gary Seidel, "Peridynamics Applied to Deformation and Damage Sensing in Polymer Bonded Explosive Materials", WCCMXIII and PANACM II, 13th World Congress in Computational Mechanics, Minisymposium #304 Peridynamics and Its Applications, New York, New York, USA, 22 - 27 July, 2018, (Presented by Naveen Prakash) (#2018609)
33. Naveen Prakash ,Krishna Talamadupula ,Engin Sengezer ,Gary Seidel, "Multiscale Modeling of Piezoresistivity and Damage Induced Sensing Of Nanocomposite Bonded Explosive Materials Under Dynamic Loading Using Electromechanical Peridynamics", WCCMXIII and PANACM II, 13th World Congress in Computational Mechanics, Minisymposium #603 Smart Materials across the Scales: Modeling, Experiment and Simulation, New York, New York, USA, 22 - 27 July, 2018 (#2021312)
34. Stefan Povolny, Gary Seidel, Carolina Tallon Galdeano, "Property Prediction and Damage Modeling in Ultra High Temperature Ceramics Using the Material Point Method", WCCMXIII and PANACM II, 13th World Congress in Computational Mechanics, Minisymposium #413 Multiscale/Multiphysics Approach on Complex Materials and Structures, New York, New York, USA, 22 - 27 July, 2018 (Presented by Stefan Povolny) (#2021322)
35. Nishant Shirodkar, Samantha Rocker, Tanner McCoy, Gary Seidel, "Electro-Mechanical Response of Polymer Bonded Energetic Materials with CNT Sensing Networks for Structural Health Monitoring", Proceedings Paper for the 2018 SEM Annual Conference

and Exposition on Experimental and Applied Mechanics, Greenville, South Carolina, USA, 4 -7 June, 2018 (Presented by Nishant Shirodkar) (492-sen)

36. K. Talamadupula and G. Seidel, "Multiscale Modeling of Effective Piezoresistivity and Implementation of Non-Local Damage Formulation in Nanocomposite Bonded Explosives", Proceedings Paper for the 59th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2018, Kissimmee, Florida, USA, 8 - 12 January, 2018, (AIAA-2018-0903)
37. Krishna Talamadupula and Gary Seidel, "Multiscale Multifunctional Modeling of Piezoresistivity and Damage Mechanisms of Nanocomposite Bonded Explosives", ASME 2017 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 1-7 Multifunctional Composites III, Snowbird, Utah, USA, 18 - 20 September, 2017 (SMASIS2017-3880)
38. Samantha Rocker, Timothy Wade Pearrell, Engin Sengezer, Gary Seidel, "Electro-Thermal Response of Polymer-Bonded Explosives for Structural Health Monitoring of Energetic Materials", ASME 2017 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 1-7 Multifunctional Composites III, Snowbird, Utah, USA, 18 - 20 September, 2017 (Presented by Samantha Rocker) (SMASIS2017-3869)
39. Adarsh Chaurasia, Andrew Rukangu, Eric Freeman, Michael Philen, and Gary Seidel, "Effect of Lipid Type and Surface Charges on the Bending Modulus of Lipid Bilayer Membranes", Mechanobiology of Cells, Vesicles and Biomembranes Minisymposium at the 14 U.S. National Congress on Computational Mechanics, Montreal, Quebec, Canada, 17-20 July, 2017 (Presented by Adarsh Chaurasia)
40. Adarsh Chaurasia, Stefan Povolny, Gary Seidel, "Modeling of Electromechanical Composite Interfaces in the Material Point Method using Cohesive Zones", Meshfree and Particle Methods: New Developments and Applications Minisymposium at the 14 U.S. National Congress on Computational Mechanics, Montreal, Quebec, Canada, 17-20 July, 2017 (Presented by Stefan Povolny)
41. Naveen Prakash and Gary Seidel, "Electromechanical Peridynamic Modeling of Deformation and Damage Sensing in Polymer Bonded Explosive Materials", Peridynamic Modeling and Simulations Minisymposium at the 14 U.S. National Congress on Computational Mechanics, Montreal, Quebec, Canada, 17-20 July, 2017
42. Engin C.Sengezer, Gary D. Seidel, "Through Development of Inherently Sensing Energetics for Real-time in Situ Strain and Damage Detection", Proceedings Paper for the SEM IV International Congress, Indianapolis, Indiana, USA, 12-15 June, 2017 (Presented by Engin Sengezer) (15-sen)
43. Engin C. Sengezer, Gary D. Seidel, "Application of Piezoresistive Nanocomposite Binders for Real Time Embedded Sensing of Strain and Damage in Energetic Materials", Proceedings Paper for the 58th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2017, Grapevine, Texas, USA, 9 - 13 January, 2017 (Presented by Engin Sengezer) (AIAA 2017-0122)
44. Krishna Kiran Talamadupula, Adarsh K. Chaurasia, Gary D. Seidel, "Multiscale Modeling of Effective Piezoresistivity and Damage Response in Nanocomposite Bonded Explosives", Proceedings Paper for the 58th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2017, Grapevine, Texas, USA, 9 - 13 January, 2017 (AIAA 2017-0348)

45. Naveen Prakash, Gary D. Seidel, "Coupled Electromechanical Peridynamic Modeling of Strain and Damage Sensing in Granular Energetic Materials", Proceedings Paper for the 58th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2017, Grapevine, Texas, USA, 9 - 13 January, 2017 (AIAA 2017-0126)
46. Krishna Kiran Talamadupula, Adarsh Chaurasia, and Gary Seidel, "Multiscale Investigation of the Piezoresistive Effect of Nanocomposite Bonded Explosives (NCBXs) with Continuum Damage Mechanics", 2016 Society of Engineering Science 53rd Annual Technical Meeting, Session D8-4 on Computational Mechanics of Materials and Structures, University of Maryland, College Park, Maryland, USA, 2-5 October, 2016 (Presented by Krishna Talamadupula)
47. Naveen Prakash and Gary Seidel, "Peridynamic Modeling of Strain and Damage Sensing in Nanocomposite Bonded Energetic Materials", 2016 Society of Engineering Science 53rd Annual Technical Meeting, Session D8-1 on Computational Mechanics of Materials and Structures, University of Maryland, College Park, Maryland, USA, 2-5 October, 2016 (Presented by Naveen Prakash)
48. Engin C. Sengezer and Gary D. Seidel, "In-situ Structural Health Monitoring in Polymer Bonded Surrogate Energetic Materials", 2016 Society of Engineering Science 53rd Annual Technical Meeting, Session E2-3 on Mechanics of One-Dimensional Nanomaterials: Experiments and Modeling, University of Maryland, College Park, Maryland, USA, 2-5 October, 2016 (Presented by Engin Sengezer)
49. Adarsh Chaurasia and Gary Don Seidel, "Modeling Nanocomposite Piezoresistive Response With Electromechanical Cohesive Zone Material Point Method", ASME 2016 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 2-10 Piezo Resistive Materials and Devices, Stowe, Vermont, USA, 28 – 30 September, 2016 (SMASIS2016-9236)
50. Naveen Prakash and Gary Seidel, "Coupled Electromechanical Peristatic Simulation of Deformation and Damage Sensing in Granular Materials", ASME 2016 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 2-10 Piezo Resistive Materials and Devices, Stowe, Vermont, USA, 28 - 30 September, 2016 (SMASIS2016-9235)
51. Krishna Talamadupula, Adarsh Chaurasia, and Gary Seidel, "2-Scale Hierarchical Multiscale Modeling of Piezoresistive and Damage Response in Polymer Nanocomposite Bonded Explosive", ASME 2016 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 2-10 Piezo Resistive Materials and Devices, Stowe, Vermont, USA, 28 - 30 September, 2016 (SMASIS2016-9234)
52. Engin C. Sengezer and Gary D. Seidel, "In-situ Sensing of Deformation and Damage in Nanocomposite Bonded Surrogate Energetic Materials", Proceedings Paper for the SEM XIII International Congress, Orlando, Florida, USA, 6-9 June, 2016 (Presented by Engin Sengezer) (449-sen)
53. Engin Sengezer and Gary Seidel, "Real time in-situ sensing of damage evolution in nanocomposite bonded surrogate energetic materials", 2016 SPIE Smart Structures NDE, Las Vegas, Nevada, USA, 20 - 24 March, 2016 (9800-31)
54. D. Seifert, M. Patil, and G. Seidel, "Multi-Functional Topology Optimization of Nanocomposite Beams", Proceedings Paper for the 57th

AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2016, San Diego, California, USA, 4-8 January 2016, (AIAA-2016-1173)

55. K. Talamadupula, S. Berry, J. O'Donnell, G. Seidel, B. Goodell, "Experimental Characterization and Computational Analysis of Mode I Fracture Toughness of a Nanocellulose Z-Pin Reinforced Carbon Fiber Laminate", Proceedings Paper for the 57th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2016, San Diego, California, USA 4-8 January 2016, (AIAA-2016-0937)
56. N. Prakash and G. Seidel, "A Coupled Electromechanical Peridynamics Framework for Modeling Carbon Nanotube Reinforced Polymer Composites", Proceedings Paper for the 57th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2016, San Diego, California, USA 4-8 January 2016, (AIAA-2016-0936)
57. E. Sengezer and G. Seidel, "Real Time In-Situ Sensing of Damage Evolution in Carbon Nanotube-Polymer Nanocomposites under Impact Loading", Proceedings Paper for the 57th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2016, San Diego, California, USA 4-8 January 2016, (AIAA-2016-0412)
58. A. Chaurasia and G. Seidel, "Multiscale Modeling of Effective Piezoresistivity in Nanocomposite Bonded Explosives", Proceedings Paper for the 57th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference at AIAA SciTech 2016, San Diego, California, USA 4-8 January 2016, (AIAA-2016-0155)
59. Engin Sengezer and Gary Seidel, "In Situ Raman and Piezoresistive Characterization of Aligned Carbon Nanotube-Polymer Nanocomposites", ASME 2015 International Mechanical Engineering Congress and Exposition, 12-43-1 Processing and Performance of Nanocomposites I, Houston, Texas, USA, 15 - 18 November, 2015 (IMECE2015-53475)
60. Adarsh Chaurasia, Xiang Ren, and Gary Seidel, "Multiscale Modeling of Piezoresistive Response in CNT-Polymer Nanocomposites", ASME 2015 International Mechanical Engineering Congress and Exposition, 12-34-2 Multi-Field Studies in Heterogeneous Materials: Experimental, Theoretical, and Numerical Approaches, Houston, Texas, USA, 15 - 18 November 2015 (IMECE2015-53534)
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144. "A Micromechanical Study on the Clustering Effect of Carbon Nanotube Reinforced Composites," D.C. Lagoudas and G. D. Seidel. ASME Winter Conference, Washington, D.C., Nov. 16-22, 2003.
145. "A Model for Predicting the Evolution of Damage in Viscoelastic Particle Reinforced Composites" G.D. Seidel, D.H. Allen, and S.E. Groves. ASME Winter Conference, Washington, D.C., Nov. 16-22, 2003. (Presented by D.H. Allen)
146. "Raman Spectroscopy approach to mechanics of single wall carbon nanotubes composites," V. Hadjiev, D. Lagoudas, D. Davis, G. Seidel, ASME Summer Meetings, Scottsdale, AZ, June 17-20, 2003 (Presented by V. Hadjiev)
147. "Elastic Properties of Single Wall Carbon Nanotubes: Transitioning Atomic to Continuum Scales" E.-S. Oh, A.P. Awasthi, G.D. Seidel, D.C. Lagoudas, and J.C. Slattery. ICCES '03 Corfu, Greece, July 24-29, 2003 (Presented by D.C. Lagoudas).

Invited Talks and Lectures (15)

1. G.D. Seidel, "Applications of peridynamics in modeling fracture toughness of nanocomposites and the multifunctional response of nanocomposite-bonded energetic materials", Invited Talk: IMFD Research Seminar Presentation, Institute of Mechanics and Fluiddynamics, TU Bergakademie Freiberg, Freiberg, Germany, 24 – May, 2022 (Invited by: Prof. Dr. Bjoern Kiefer)
2. G.D. Seidel, "Piezoresistive Nanocomposites for Strain and Damage Sensing: Experimental and Computational Observations", Invited Talk: Hamburg University of Applied Sciences, Hamburg, Germany, 20 – May, 2022 (Invited by: Prof. Dr. Martin Wagner)

3. G.D. Seidel, "Piezoresistive Nanocomposites for Strain and Damage Sensing: Experimental and Computational Observations", Invited Talk: Hamburg University of Applied Sciences, Virtual Seminar, 20 – April 2021 (Invited by: Prof. Dragan Kozulovic)
4. "Piezoresistive Nanocomposites for Strain and Damage Sensing: Experimental and Computational Observations", Invited Talk: ASME 2019 SMASIS Conference on Smart Materials, Adaptive Structures and Intelligent Systems in Session 1-8 Multifunctional Materials II, Louisville, Kentucky, USA, 9 - 11 September 2019 (Invited by Symposium I Organizers: Constantin Ciocanel, Bjoern Kiefer, Ji Su)
5. "Multiscale Modelling and Characterization of Macroscale Piezoresistivity in Carbon Nanotube-Polymer Nanocomposites and Their Application in Composites", Seminar at the Air Force Research Laboratory, Wright Patterson Air Force Base, Dayton, OH, 17 – June, 2016 (Invited by Dr. Brent Volk)
6. "Multiscale Modelling and Characterization of Macroscale Piezoresistivity in Carbon Nanotube-Polymer Nanocomposites and Their Application in Composites", Seminar at The Dow Chemical Company, Freeport, TX, 19 – November 2015 (Invited by Dr. Piyush Thakre)
7. "Multiscale Modeling of Macroscale Piezoresistivity in Carbon Nanotube-Polymer Nanocomposites and Fuzzy Fibers", G.D. Seidel, Seminar in the Engineering Science and Mechanics Department at Virginia Tech, Blacksburg, VA, 22 – January, 2014 (Invited by Dr. Romesh Batra)
8. "Multiscale Modeling of Macroscale Piezoresistivity in Carbon Nanotube-Polymer Nanocomposites and Fuzzy Fibers", G.D. Seidel, Seminar at the Centro de Investigación y de Estudios Avanzados (CINVESTAV), Merida, Mexico, 13 – December, 2013 (Invited by Dr. Victor Sosa)
9. "Multiscale Modeling of the Multifunctional Properties of CNT-Polymer Nanocomposites via Analytic and Computational Micromechanics", G.D. Seidel, 2013 Structural Engineering and Materials (SEM) Graduate Seminar in the Charles E. Via, Jr. Department of Civil and Environmental Engineering, Virginia Tech, Blacksburg, Virginia, 3 – April, 2013 (Invited by Dr. Cris Moen)
10. "Multiscale Modeling of the Multifunctional Properties of CNT-Polymer Nanocomposites via Analytic and Computational Micromechanics", G.D. Seidel, Seminar in the Department of Mechanical Engineering, Materials Science and Engineering Program, The Catholic University of America, Washington, D.C., 26 – November, 2012 (Invited by Dr. Jandro Abot)
11. "Multiscale Modeling of the Multifunctional Properties of CNT-Polymer Nanocomposites via Analytic and Computational Micromechanics", G.D. Seidel, High Performance Materials Institute Seminar, 114 MRB, Florida State University, Tallahassee, Florida, 2 – November, 2012 (Invited by Dr. Tao Liu)
12. "Multiscale Modeling of the Multifunctional Properties of CNT-Polymer Nanocomposites via Analytic and Computational Micromechanics", G.D. Seidel, National Institute of Aerospace Research Seminar, NASA Langley Research Center (LaRC), Building 1202 - Room 222, Hampton, Virginia, 18 – June, 2012 (Invited by Dr. Douglas Stanley)
13. "Computational Micromechanics Models for Multifunctional Nanocomposites", G.D. Seidel, SEMINARIO DE LA UNIDAD DE MATERIALES (Materials Department Seminar); CENTRO DE INVESTIGACION CIENTIFICA DE YUCATAN (CICY)

(Yucatan Scientific Investigation Center), Merida, Yucatan, Mexico, 14-16 May, 2012 (Invited by Dr. Francis Aviles)

14. "Multiscale Modeling of Mechanical, Thermal, and Electrical Properties of Carbon Nanotube-Polymer Nanocomposites", G.D. Seidel, COMS 2011: Commercialization of Micro-Nano Systems Conference; Nanocomposite Manufacturing Initiatives and Challenges Panel Session, Greensboro, North Carolina, 28-31 August, 2011 (Invited by Ray Jones).
15. "Multiscale Modeling of Mechanical, Thermal, and Electrical Properties of Carbon Nanotube-Polymer Nanocomposites", G.D. Seidel, SEMINARIO DE LA UNIDAD DE MATERIALES (Materials Department Seminar); CENTRO DE INVESTIGACION CIENTIFICA DE YUCATAN (CICY) (Yucatan Scientific Investigation Center), Merida, Yucatan, Mexico, 20-23 June, 2011 (Invited by Dr. Francis Aviles).

Student Conferences and Poster Sessions (9)

1. "Multiscale Modeling of Carbon Nanotube Sprayed Carbon Fiber Composites via Micromechanics", G.D. Seidel and D.C. Lagoudas, Nanohour at the Beckman Institute, University of Illinois Urbana-Champaign, October 18th, 2006.
2. "Multiscale Modeling of Carbon Nanotube Sprayed Carbon Fiber Composites via Micromechanics", Student Research Week – Texas A&M University, March 28, 2006, College Station, Texas. (1st Place in Session)
3. "Micromechanical Analysis of Clustering and Load Transfer in Carbon Nanotube Composites" G.D. Seidel. Poster Session at 3rd Annual TiiMS-URETI Review Meeting, August 2-3, 2005, College Station, Texas. (3rd Place Poster in Division)
4. "Modeling the Effects of Clustering and Gradient Interphase Regions on the Effective Elastic Properties of Carbon Nanotube Reinforced Epoxy Composites" Student Research Week – Texas A&M University, March 29, 2005, College Station, Texas. (1st Place in Session)
5. "Modeling of carbon nanotube composites" G. Seidel and D. Lagoudas. Poster Session at NASA URETI Workshop, October 13-15, 2004, College Park, Maryland.
6. "Micromechanical Analysis of the Effective Elastic Properties of Carbon Nanotube Reinforced Composites" G.D. Seidel and S. Vaitkunas. Poster Session at 2nd Annual TiiMS-URETI Review Meeting, July 28-29, 2004, Houston, Texas. (Honorable Mention)
7. "Micromechanics of Carbon Nanotube-Reinforced Composites" G.D. Seidel. Student Research Week – Texas A&M University, March 30, 2004, College Station, Texas. (2nd Place in Session)
8. "Modeling of Carbon Nanotube Composites", G.D. Seidel, E.-S. Oh, A.P. Awasthi, and D.C. Lagoudas, Student Poster Session at 1st Annual TiiMS-URETI Review Meeting, July 14-15, 2003, Houston, Texas. (1st Place Poster)
9. "A Model for the Predicting of the Evolution of Damage in Particle-Reinforced Composites" G.D. Seidel. Student Research Week – Texas A&M University, March 24, 2003, College Station, Texas.

Informal Presentations

1. "Effective Elastic Properties of Carbon Nanotubes and Nanocomposites" While visiting Sandia National Laboratories, August 22, 2004.

2. "Effective Elastic Properties of Caron Nanotubes and Carbon Nanotube Reinforced Composites" D.C. Lagoudas, E-S Oh, G.D. Seidel, A. Awasthi, Y. Bisrat, and C-G Chao. While visiting NASA Langley, July, 2004. (Presented by D.C. Lagoudas)

TEACHING INTERESTS

- Mechanics of Materials & Strength of Materials
- Continuum Mechanics & Atomistic Modeling
- Micromechanics Analysis of Composites & Fracture Mechanics Models
- Introduction to Finite Element Analysis & Nonlinear Finite Elements
- Viscoelasticity and Material/Structural Dynamics
- Multifunctional Active Materials
- Multiscale Modeling of Damage Evolution and Multifunctional Composites
- Meshless and Semi-meshless Methods in Composites

TEACHING EXPERIENCE

Associate Professor Virginia Tech – Undergraduate Courses

- AOE/ESM 4084: Engineering Design Optimization (Spring 2022)
  - Course Data: Enrollment 46; 50min Lecture 3x per week
- AOE 4324: Energy Methods for Structures (Spring 2022)
  - Course Data: Enrollment 16; 50min Lecture 3x per week
- AOE 2104: Introduction to Aerospace Engr & Aircraft Performance (Sumr 2021)
  - Course Data: Enrollment 15; 75min Lecture 5x per week
- AOE 4324: Energy Methods for Structures (Spring 2021)
  - Course Data: Enrollment 14; 50min Lecture 3x per week
- AOE 2104: Introduction to Aerospace Engr & Aircraft Performance (Sumr 2020)
  - Course Data: Enrollment 14; 75min Lecture 5x per week
- AOE 4324: Energy Methods for Structures (Spring 2020)
  - Course Data: Enrollment 19; 50min Lecture 3x per week
- AOE 2104: Introduction to Aerospace Engr & Aircraft Performance (Sumr 2019)
  - Course Data: Enrollment 9; 75min Lecture 5x per week
- AOE 4324: Energy Methods for Structures (Spring 2019)
  - Course Data: Enrollment 14; 50min Lecture 3x per week
- AOE 3024: Thin-Walled Structures (Fall 2017)
  - Course Data: Enrollment 144 (2 Sections 82/62); 75min Lecture 5x per week
- AOE 3024: Thin-Walled Structures (Sumr 2017)
  - Course Data: Enrollment 9 (1 Section on-line); 75min Lecture 5x per week
- AOE 3024: Thin-Walled Structures (Fall 2016)
  - Course Data: Enrollment 114 (2 Sections 33/81); 75min Lecture 2x per week
- AOE 3024: Thin-Walled Structures (Sumr 2016)
  - Course Data: Enrollment 12 (2 Sections 4 (in-class)/8 (on-line)); 75min Lecture 5x per week
- AOE 3024: Thin-Walled Structures (Fall 2015)
  - Course Data: Enrollment 130 (2 Sections 70/60); 75min Lecture 2x per week

Assistant Professor Virginia Tech – Undergraduate Courses

- AOE 3024: Thin-Walled Structures (Fall 2014)
  - Course Data: Enrollment 127 (2 Sections 71/56); 75min Lecture 2x per week

- AOE 3024: Thin-Walled Structures (Fall 2013)
  - Course Data: Enrollment 184 (2 Sections 107/77); 75min Lecture 2x per week
- AOE 3024: Thin-Walled Structures (Fall 2012)
  - Course Data: Enrollment 162 (2 Sections 84/78); 75min Lecture 2x per week
- AOE 3024: Thin-Walled Structures (Fall 2011)
  - Course Data: Enrollment 142 (2 Sections 63/79); 75min Lecture 2x per week
- AOE 3024: Thin-Walled Structures (Fall 2010)
  - Course Data: Enrollment 147 (2 Sections 70/77); 75min Lecture 2x per week
- AOE 3024: Thin-Walled Structures (Fall 2009)
  - Course Data: Enrollment 143 (2 Sections 66/77); 75min Lecture 2x per week
- AOE 3024: Thin-Walled Structures (Fall 2008)
  - Course Data: Enrollment 120 (2 Sections 40/80); 75min Lecture 2x per week

Associate Professor Virginia Tech – Graduate Courses

- AOE 5614: Multiscale Modeling of Multifunctional Composites (Fall 2021)
- AOE 5034/ESM 5304: Mechanical and Structural Dynamics/Vibrations (Spring 2020)
- AOE 5604: Multiscale Modeling of Damage in Composites (Fall 2019)
- AOE 5984: Meshless and Semi-Meshless Modeling Techniques for Composite Materials (Fall 2018)
- AOE 5614: Multiscale Modeling of Multifunctional Composites (Fall 2018)
- AOE 5034/ESM 5304: Mechanical and Structural Dynamics/Vibrations (Spring 2018)
- AOE 5604: Multiscale Modeling of Damage in Composites (Spring 2017)
- AOE 5034/ESM 5304: Mechanical and Structural Dynamics/Vibrations (Spring 2016)

Assistant Professor Virginia Tech – Graduate Courses

- AOE 5984: Special Topics: Multiscale Modeling of Damage in Composites (Spring 2015)
- AOE 5984: Special Topics: Multiscale Modeling of Multifunctional Composites (Spring 2014)
- AOE 5984: Special Topics: Multiscale Modeling of Damage in Composites (Spring 2013)
- AOE 5984: Special Topics: Multiscale Modeling of Multifunctional Composites (Spring 2012)
- AOE 5984: Special Topics: Multiscale Modeling of Damage in Composites (Spring 2011)
- AOE 5984: Special Topics: Multiscale Modeling of Nanocomposites (Spring 2010)
- MACR 5015: Fundamentals of Macromolecular Science and Engineering I with Laboratory (Team Instructor: Taught 2 weeks of lectures on Constitutive and Mechanical Properties of Polymers) (Fall 2009)

Lecturer Texas A&M – Undergraduate Courses

- AERO 214: Aerospace Engineering Principles of Continuum Mechanics (Fall 2007)
  - Fully responsible for all aspects of course development and instruction.
  - Course Data: Enrollment 37; 75min Lecture 2x per week; 75min Recitation 1 per week

Teaching Assistant Texas A&M – Undergraduate Courses

- ENGR 214: Conservation Principles for Continuous Media (6 Semesters, 1999-2002)

- Assisted five different teachers of record: Drs. Dimitris Lagoudas, David Allen, Walter Haisler, John Whitcomb, and Kayleen Helms.
- Course Data: Average enrollment 77 (Mixture of Engineering Disciplines); 2hr Lecture 2x per week

Teaching Assistant Texas A&M – Graduate Courses

- AERO 603\MEMA 602: Continuum Mechanics (Fall 2003)
  - Assisted Dr. Dimitris Lagoudas on a volunteer basis.
  - Course Data: 32 Students; 1hr 15min Lecture 2x per week.
- MEMA 625: Micromechanics (Spring 2005)
  - Assisted Dr. Dimitris Lagoudas on a volunteer basis.
  - Course Data: 7 Students; 1hr 15min Lecture 2x per week.

JOURNAL EDITORIAL DUTIES

1. Applied Mechanics Reviews – Associate Editor
2. Journal of Intelligent Material Systems and Structures – Associate Editor
3. Journal of Peridynamics and Nonlocal Modeling – Editorial Board
4. Nanomaterials and Nanotechnology – Simulation at the Nanoscale Editorial Board
5. Smart Materials and Structures – Guest Associate Editor: Focus on Recent Advances in Adaptive and Active Materials (SMASIS) – Multifunctional Materials

JOURNAL REVIEWS

1. Acta Materialia
2. Acta Mechanica
3. Advanced Functional Materials
4. Advanced Materials Interfaces
5. AIAA Journal
6. Applied Surface Science
7. ASME Journal of Engineering Materials and Technology
8. Carbon
9. Composite Interfaces
10. Composites Part A
11. Composites Part B
12. Composite Structures
13. Composites Science and Technology
14. Computational Materials Science
15. Computer Methods in Applied Mechanics and Engineering
16. Engineering Fracture Mechanics
17. European Journal of Mechanics A/Solids
18. Express Polymer Letters
19. Finite Elements in Analysis and Design
20. International Journal of Applied Mechanics
21. International Journal of Fracture
22. International Journal of Solids and Structures
23. Journal of Applied Mechanics
24. Journal of Applied Physics
25. Journal of Applied Research Technology

26. Journal of Composite Materials
27. Journal of Intelligent Material Systems and Structures
28. Journal of Materials and Design
29. Journal of Mechanical Engineering Science
30. Journal of Molecular Graphics and Modelling
31. Journal of Nanomechanics and Micromechanics
32. Journal of Peridynamics and Nonlocal Modeling
33. Journal of Vibration and Control
34. Latin American Journal of Solids and Structures
35. Macromolecular Materials and Engineering
36. Materials
37. Materials Letters
38. Mathematics and Mechanics of Solids
39. Meccanica
40. Mechanics of Materials
41. Modelling and Simulation in Materials Science and Engineering
42. Nanoscale
43. Nanotechnology
44. Nano Letters
45. Philosophical Magazine
46. Physica E
47. Polymer Composites
48. Science and Engineering of Composite Materials
49. Sensors and Actuators
50. Smart Materials and Structures
51. Theoretical and Applied Fracture Mechanics

RESEARCH STUDENTS MENTORED

Ph.D. Students

1. Rashmi Chawla – Fall 2021 – Present
2. Joseph Cunningham – Fall 2021 – Present
3. Pranay Anekal – Spring 2021 -- Present
4. Viswajit Talluru – Spring 2020 – Present
5. Neslihan Genckal – Fall 2018 – Present
6. Nishant Shirodkar – Fall 2017 – Spring 2022
7. Stefan Povolny – Fall 2015 – Spring 2021
8. Ryan Seifert – Fall 2014 – Fall 2018 (Co-Advised w/ Dr. Mayuresh Patil)
9. Krishna Talamadupula – Spring 2014 – Summer 2020 (ME)
10. Skylar Stephens – Fall 2013 - Present
11. Naveen Prakash – Fall 2012 – Summer 2017 (ESM)
12. Engin Sengezer - Fall 2011 – Summer 2017
13. Adarsh Chaurasia - Summer 2011 – May 2016 (ESM)
14. Yumeng Li - Fall 2009 – Fall 2014
15. Xiang Ren - Fall 2009 – Spring 2014

M.S. Students

1. Brenton Morris – Fall 2020 – Spring 2021

2. Kavan Shah – Spring 2020 – Present (ME)
3. Sammi Rocker – Fall 2018 – Spring 2019
4. Seth Berry – Spring 2015 – Summer 2016
5. Sebastian Fave – Fall 2012 – Summer 2014
6. Corrado Degl'Incerti Tocci – Fall 2012 – Fall 2013
7. Brandon Hull - NASA Aeronautics Fellowship, Fall 2011 – Summer 2013
8. Skylar Stephens - SMART Fellowship, Summer 2010 – Spring 2013

B.S. Students

1. Tony Spinetta – Spring 2021 -- Present
2. Nicole Tepley – Spring 2020 – Present
3. Lennon Headlee – Spring 2020
4. Joseph Cunningham – Summer 2019 – Summer 2020
5. Elleora Farris – Fall 2018 – Fall 2019
6. Travis Roell – Summer 2018 – Spring 2019
7. Christopher Rodulfo – Summer 2018
8. Tanner McCoy – Fall 2017 – Spring 2018
9. Sammi Rocker – Spring 2017 – Spring 2018
10. Wade Pearrell – Spring 2017
11. Peter Freshwater – Summer 2016
12. Nicholas Stinson – Spring 2015
13. Cayla Schnebele – Spring 2015
14. Mickenzi Schank – Spring 2015 – Spring 2016
15. Kyle Pyne – Spring 2015
16. Jeremy O'Donnell – Spring 2015 – Fall 2016
17. Phillip Head – Spring 2015 – Spring 2016
18. Kris Tan – Summer 2014 – Spring 2015
19. Mark Sweet - Undergraduate Research Spring 2014
20. Stefan Povolny - Undergraduate Research Spring 2014 – Spring 2015
21. Billy Greer - Undergraduate Research Spring 2014
22. Patrick Clark - Undergraduate Research Spring 2014
23. Nick Janssens - Undergraduate Research Fall 2013 – Spring 2015
24. Seth Berry - Undergraduate Research Fall 2013 – Spring 2014
25. Jimmy Congleton - Undergraduate Research Summer 2013 – Fall 2013
26. Garret Hehn - Undergraduate Research Spring 2013 – Fall 2013
27. Stephanie Butron - Undergraduate Research Fall 2012 – Spring 2013
28. Britannia Vondrasek - Undergraduate Research Summer 2012 – Spring 2013; 2012 Virginia Space Grant Consortium Scholarship
29. Alex Rummel - Undergraduate Research Summer 2012
30. Matt Miller - Undergraduate Research Summer 2012 – Spring 2014
31. Robert Saunders - Undergraduate Research Summer 2012 – Spring 2013
32. David Gayman - Undergraduate Research Summer 2011 – Spring 2012
33. Corrado Degl'Incerti Tocci - Undergraduate Research Summer 2011
34. Brandon Hull - Undergraduate Research Spring 2011
35. Thomas Hays - Undergraduate Research Fall 2010 – Spring 2012
36. Sebastian Fave - Undergraduate Research Fall 2010 – Spring 2012
37. Samuel Taylor - Undergraduate Research Fall 2010 – Spring 2011

38. Josh Burton - Undergraduate Research Summer 2010 – Spring 2012
39. John Kiefer - Undergraduate Research Spring 2010 - Spring 2011; 2010 Virginia Space Grant Consortium Scholarship;
40. Sophie Puydupin - Undergraduate Research Spring 2009 - Spring 2010
41. Skylar Stephens - Undergraduate Research Spring 2009 - Spring 2010; 2009 Virginia Space Grant Consortium Scholarship
42. Rachel Van Buren - Undergraduate Research Fall 2008

Non-Thesis Masters Students

43. Dhriti Vij – Spring 2021
44. Christina McLane/Arendt - Fall 2008 - Spring 2010

FUNDED RESEARCH PROJECTS

1. SBIR Phase I with M4 Engineering, Inc. October 2018 – July 2019, Amount: $31,644.
2. AFOSR: “Understanding Enhancement of Strength in CNT/GNP-Based Structural Composites”, PI Gary D. Seidel, Co-PI Shengfeng Cheng, Performance Period: June 2018 – June 2021, Amount: $618,229
3. SBIR Phase I with Lynntech, Inc. September 2017 – February 2018, Amount: $15,000.
4. AFOSR: “Exploration of structural health monitoring of hot spot initiation in CNT – nanocomposite bonded energetic materials”, PI Gary D. Seidel, Performance Period: May 2016 – April 2019, Amount: $438,429
5. ICTAS Junior Faculty Grant: "Composite Delamination Prevention and Detection via Sustainable, Tough and Smart Nanocellulose/Carbon Nanotube Fibers - SmartPinZ", PI Gary D. Seidel, Co-PI Barry Goodell, Performance Period: July 2014 – July 2016, Amount: $120,000.
6. AFOSR: “Exploration of Structural Health Monitoring Capabilities of Carbon Nanotube-Epoxy Nanocomposite Matrix in Epoxy-Based Energetic Materials”, PI: Gary D. Seidel, Performance Period: April 2014 – April 2016, Amount: $106,588. Note: Addendum to “Multiscale Modeling and Characterization of the Effects of Damage Evolution on the Multifunctional Properties of Polymer Nanocomposites”.
7. AFOSR: “Multiscale Modeling and Characterization of the Effects of Damage Evolution on the Multifunctional Properties of Polymer Nanocomposites”, PI: Gary D. Seidel, Performance Period: April 2012 – April 2015, Amount: $359,508.
8. ICTAS Junior Faculty Grant: "Damping and Piezoresistive Response of Nanocomposite Structural Health Monitoring Sensors: Multiscale Modeling and Characterization", PI Gary D. Seidel, Co-PI D. Inman, Performance Period: July 2011 – July 2013, Amount: $120,000.
9. ICTAS Seed Grant: "Design Optimization and Fabrication of Nanocomposite MAV Wings", PI Mayuresh Patil, Co-PI: Gary D. Seidel and B. Canfield, Performance Period: July 2011 – July 2012, Amount: $75,000
10. NSF OISE International Research and Education: Planning Visits and Workshops: "Electric and electro-mechanical properties of CNT-polymer nanocomposites: An experimental and multiscale modeling approach", PI: Gary D. Seidel, Performance Period: August 2010 – July 2012, Amount: $20,000. Note: Travel funds for PI and students to establish collaboration with Dr. Francis Aviles Cetina at the Centro de Investigación Científica de Yucatán, Merida, Mexico.

11. Oak Ridge Associated Universities (ORAU) Ralph E. Powe Junior Faculty Enhancement Award: "Polymer Nanocomposites for Structural Health Monitoring Applications: Multiscale Modeling and Characterization", PI: Gary D. Seidel, Performance Period: June 2010 – May 2011, Amount: $10,000.
12. Naval Engineering Education Consortium (NEEC): Seed Money Startup Subproject "Development of Nanocomposite-based Structural Health Monitoring Sensors for Naval Vessel Applications", PI: Gary D. Seidel, Performance Period: May 2010 – September 2010, Amount: $72,065. Note: Sub-project proposed as part of 5 year $6,077,723 effort at Virginia Tech as a member institution of the NEEC.
13. ARL MCOE: Existing Center Titled "Multilayered Technologies For Armored Structures And Composites (MultiTASC): Teaming The Army Research Laboratories (ARL) With Virginia Tech (VT)", PI Tim Long, Co-PIs: Romesh Batra, James Heflin, S. Richard Turner, John R. Morris, Nakhiah Goulbourne, Jack Lesko, Mike Hyer, Garth L. Wilkes, and Ronald D. Moffitt, Additional Co-PIs: Scott Case, Robert Moore, Gary D. Seidel, Performance Period: September 2006 – September 2015, Amount: $3,871,718. Sub-project MT5-3 "Characterization of Graded Interphase Regions in Fiber Reinforced Composites", Co-PI: Gary D. Seidel, Performance Period: March 2010 – May 2012, Amount: $92,086.
14. SCHEV: “A 3D Printer & Scanner For Educational and Research Applications”, PI: Leigh McCue, Co-PI: William Devenport, Alan Brown, Wayne Neu, Mayuresh Patil, Michael Philen, Gary D. Seidel, Craig, Woolsey, Performance Period: January 2010 – December 2010, Amount: $42,198.
15. AFOSR - FY09 MURI Research Topic #18: "Synthesis, Characterization and Prognostic Modeling of Functionally Graded Hybrid Composites for Extreme Environments", PI: Dimitris C. Lagoudas, Co-PIs: Paul Cizmas, Xin-Lin Gao, Ibrahim Karaman, Ozden Ochoa, Zoubeida Ounaies, Miladin Radovic, J.N. Reddy, John Whitcomb, Phillippe H. Guebelle, Nancy Sottos, Scott White, Fu-Kuo Chang, Khalid Lafdi, Daniel J. Inman, Nakhiah Goulbourne, Gary D. Seidel, Performance Period: June 2009 - September 2015, Amount: $7,736,920, Sub-Task Amount: $380,119.

HONORS AND AWARDS

Professional Awards

- 2020 ASME Fellow
- 2013 AIAA Associate Fellow
- 2021 AFRL Summer Faculty Fellow – Eglin AFB (HERD)
- 2018 AFRL Summer Faculty Fellow – Eglin AFB (HERD)
- 2017 AFRL Summer Faculty Fellow – Eglin AFB (HERD)
- Oak Ridge Associated Universities Ralph E. Powe Junior Faculty Enhancement Award, 2010
- 2016 ASME/Boeing Best Paper Award for their 2016 AIAA SciTech paper titled “A Coupled Electromechanical Peridynamics Framework For Modeling Carbon Nanotube Reinforced Polymer Composites”
- 2016 Dean’s Award for Excellence in Service
- 2013-2014 Virginia Tech College of Engineering Undergraduate Research Advisor Award presented by the Student Engineers’ Council

Graduate Awards

- Sandia National Laboratories/Texas A&M University Doctoral Fellowship in Engineering (2002-2006)
- Texas A&M Association of Former Students Distinguished Graduate Student Award for Excellence in Doctoral Research, 2007-2008
- Texas A&M University Regents Fellowship (1999-2000)
- Elected to Membership in: Phi Kappa Phi
- 1st Place, Student Research Week, Texas A&M University, 2006
- 1st Place, Student Research Week, Texas A&M University, 2005
- 2nd Place, Student Research Week, Texas A&M University, 2004
- 3rd Place, Student Poster Session, 3rd Annual TiiMS-URETI Review Meeting, 2005
- Honorable Mention, Student Poster Session, 2nd Annual TiiMS-URETI Review Meeting, 2004
- 1st Place, Student Poster Session, 1st Annual TiiMS-URETI Review Meeting, 2003
- Selected for Engineering Sciences Summer Institute, Sandia National Laboratories, 2000

Undergraduate Awards

- Graduated Magna Cum Laude
- Selected for Science and Technology Outreach Program, Sandia National Laboratories, 1999
- Harrison Study Abroad Scholarship, 1998
- France ’98 Study Abroad Scholarship, 1998
- TEES Summer Research Fellowship, 1997
- Aggie Spirit Scholarship, 1999
- Weingarten Reality Scholarship, 1999
- Greater Heights Chamber of Commerce Scholarship, 1994
- Elected to Membership in: Tau Beta Pi, Sigma Gamma Tau, Golden Key National Honor Society
- 1st Place, Bovay Ethics Essay Award, 1998

UNIVERSITY AND DEPARTMENTAL SERVICE - VIRGINIA TECH

- Assistant Department Head for Academic Affairs (Fall 2021 – Present)
- Served as Interim Assistant Department Head for Academic Affairs (Fall 2017 – Spring 2018)
- Served as College of Engineering Representative to the Commission on Graduate Studies and Policies; Assigned to subcommittee on Graduate Student Appeals. (Fall 2013 – Summer 2015); Served as Vice Chair (Fall 2015 – Spring 2016)
- Served as Chair of the Graduate School’s Graduate Curriculum Committee (Fall 2015 – Spring 2016)
- Serving as AOE Assessment/ABET Coordinator (Fall 2018 – Summer 2021) – Lead Departmental ABET 6 Year Review Fall 2019
- Served as AOE Departmental Representative to the Engineering Faculty Organization Executive Committee (Fall 2012 – Spring 2015; Alternate Fall 2015 – Spring 2016) (Served as Secretary for the Executive Committee)
- Serving as Faculty Advisor to Sigma Gamma Tau (Fall 2011 - Present)
- Served as Interim Faculty Advisor to the Microgravity Team (Fall 2013/Spring 2014)

- Serving on departmental Committee for Graduate Studies (Fall 2015 – Summer 2021)
- Serving as departmental Structures Curriculum Lead (Fall 2015 – Present)
- Served on departmental New Horizons Committee (Fall 2018 – Spring 2019)
- Serving on departmental Committee for Strategic Planning (Fall 2013 – Present)
- Served on departmental Committee for Mentoring (Fall 2012 – Fall 2016)
- Served on departmental committee for maintaining and updating the AOE Department Display Case in Hancock Atrium. (Spring 2010 – Spring 2015)
- Serving as structures group coordinator for MTS testing equipment in Hancock 107 laboratory. (Spring 2010 - Present)

PROFESSIONAL SERVICE

- Chair, AIAA Materials Technical Committee (Spring 2013 – Spring 2015)
- Vice Chair, AIAA Materials Technical Committee (Spring 2011 – Spring 2013)
- Secretary, AIAA Materials Technical Committee (Spring 2010 - Spring 2011)
- Chair, Adaptive Structures and Material Systems Branch in the Aerospace Division of ASME (Fall 2019 – Fall 2020)
- Vice Chair, Adaptive Structures and Material Systems Branch in the Aerospace Division of ASME (Fall 2018 – Fall 2019)
- Treasurer, Adaptive Structures and Material Systems Branch in the Aerospace Division of ASME (Fall 2017 – Fall 2018)
- Secretary, Adaptive Structures and Material Systems Branch in the Aerospace Division of ASME (Fall 2016 – Fall 2017)
- Chair, ASME Active and Multifunctional Materials TC (Spring 2018 – Spring 2019)
- Co-Chair, ASME Active and Multifunctional Materials TC (Spring 2016 – Spring 2018)
- Member, Adaptive Structures and Material Systems Branch in the Aerospace Division of ASME (Fall 2015 – Present)
- Member, AIAA Materials Technical Committee (Spring 2010 - Present)
- Member, ASME Materials Division Composites and Heterogeneous Materials Technical Committee (Fall 2008 – Fall 2012)
- Member, ASME Applied Mechanics Division Materials Technical Committee (Fall 2008 - Present)
- Member, ASME Active and Multifunctional Materials TC (Fall 2013 – Present)
- Member, AIAA Materials Technical Committee, Materials Handbook Sub-committee (Spring 2009 - Spring 2011)
- Served as Materials TC representative to the Crichlow Award selection committee (Spring 2014)
- NSF Panel Review Member (Spring 2009, Spring 2010, Summer 2012, Spring 2015, Spring 2017)
- Mentor, NASA Motivating Undergraduates in Science and Technology (MUST) Project 2008/2009, 2010/2011, 2011/2012 Academic Years.
- AIAA Materials Technical Committee Representative to the 54th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference 2013.
- AIAA Materials Technical Committee Representative to the 53rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference 2012.

- AIAA Materials Technical Committee Representative to the 52nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference 2011.
- 2015 Society of Engineering Science 52nd Annual Technical Meeting, Symposium on Micromechanics & Multifunctional Nano Composites (Symposium Organizer)
- 2018 Conference on Smart Materials, Adaptive Structures & Intelligent Systems (SMASIS) Symposium 1: Multifunctional Materials (Symposium Chair)
- 2017 Conference on Smart Materials, Adaptive Structures & Intelligent Systems (SMASIS) Symposium 1: Multifunctional Materials (Symposium Chair)
- 2016 Conference on Smart Materials, Adaptive Structures & Intelligent Systems (SMASIS) Symposium 1: Multifunctional Materials (Symposium Co-Chair)
- 2015 Conference on Smart Materials, Adaptive Structures & Intelligent Systems (SMASIS) Symposium 1: Development and Characterization of Multifunctional Materials (Symposium Co-Chair)
- 2014 Conference on Smart Materials, Adaptive Structures & Intelligent Systems (SMASIS) Session SYMP 1-4 Shape Memory Polymers (Technical Session Chair)
- Topic Organizer, 3-35 Multiscale Modeling of Damage in Composites, 2012 ASME IMECE
- SubTopic Co-Organizer, 1-11 Advances in Aerospace Materials and Structures, Subtopic: Materials for High Temperature Applications, 2012 ASME IMECE
- Topic Co-Organizer, 12-17 Mechanics of Multifunctional and Nanostructured Materials - Modeling and Characterization, 2010 ASME IMECE
- Topic Co-Organizer, 12-35 Mechanics of Multifunctional and Nanostructured Materials - Modeling and Characterization, 2009 ASME IMECE

OUTREACH ACTIVITIES - VIRGINIA TECH

- Lecturer: 7th International (online) Summer School on Advanced Material Systems (AMS) Processing - Characterization – Modeling, July 12 – July 16, 2021. Lecture Title: Micromechanics of Multifunctional Composites. Organized by Aristotle University of Thessaloniki and Texas A&M University with Virginia Tech, University of Houston, École Nationale Supérieure D'arts Et Métiers, University of Patras, and Beta Simulation Solutions.
- Lecturer: 6th International (online) Summer School on Advanced Material Systems (AMS) Processing - Characterization – Modeling, July 20 – July 24, 2020. Lecture Title: Micromechanics of Multifunctional Composites. Organized by Aristotle University of Thessaloniki and Texas A&M University with Virginia Tech, University of Houston, École Nationale Supérieure D'arts Et Métiers, University of Patras, and Beta Simulation Solutions.
- Provided facilitated discussion seminars on ethics as part of the Graduate School's GTA Workshop (Fall 2015).
- Delivered a seminar "Multiscale Modeling and Characterization of Multifunctional Nanocomposites" to Galileo/Hypatia Learning Community (Fall 2017).
- Delivered a seminar "Multiscale Modeling and Characterization of Multifunctional Nanocomposites" to incoming freshman as part of the Center for the Enhancement of Engineering Diversity (CEED)'s STEP program (Summer 2015).

- Organized a session with Prof. Michael Philen on "How Smart Materials can lead to Intelligent Structures" for the Center for the Enhancement of Engineering Diversity (CEED)'s CTech2 program (Camp for High School girls) (Summer 2016)
- Organized a session with Prof. Michael Philen on "How Smart Materials can lead to Intelligent Structures" for the Center for the Enhancement of Engineering Diversity (CEED)'s CTech2 program (Camp for High School girls) (Summer 2019)
- Organized a session with Prof. Michael Philen on "How Smart Materials can lead to Intelligent Structures" for the Center for the Enhancement of Engineering Diversity (CEED)'s CTech2 program (Camp for High School girls) (Summer 2018)
- Organized a session with Prof. Michael Philen on "How Smart Materials can lead to Intelligent Structures" for the Center for the Enhancement of Engineering Diversity (CEED)'s CTech2 program (Camp for High School girls) (Summer 2014)
- Organized a session with Prof. Michael Philen on "How Smart Materials can lead to Intelligent Structures" for the Center for the Enhancement of Engineering Diversity (CEED)'s Imagination program (Camp for 6th - 7th grade students) (Summer 2013)
- Organized a session with Prof. Michael Philen on "How Smart Materials can lead to Intelligent Structures" for the Center for the Enhancement of Engineering Diversity (CEED)'s CTech2 program (Camp for High School girls) (Summer 2013)
- Organized a session with Prof. Michael Philen on "Why Airplanes Fly" for the Center for the Enhancement of Engineering Diversity (CEED)'s Imagination program (Camp for 6th - 7th grade students) (Summer 2012)
- Organized a session with Prof. Michael Philen on "Why Airplanes Fly" for the Center for the Enhancement of Engineering Diversity (CEED)'s Imagination program (Camp for 6th - 7th grade students) (Summer 2011)
- Participated in Freshmen Engineering Research Seminar (Fall 2011, Fall 2012, Fall 2013, Fall 2014, Fall 2016, Fall 2017, Fall 2018).
- Organized and delivered departmental presentation with students on Design Build Compete opportunities in the AOE Department as part of the College of Engineering Open House (Spring 2009, Spring 2010, Spring 2014, Spring 2015, Spring 2016).
- Initiated, organized and delivered departmental presentation with students on Undergraduate Research opportunities in the AOE Department as part of the College of Engineering Open House (Spring 2010, Spring 2014).

PROFESSIONAL SOCIETIES

- Associate Fellow, American Institute of Aeronautics and Astronautics (AIAA)
- Fellow, American Society of Mechanical Engineers (ASME)
- Member, Society of Engineering Science (SES)
- Member, American Society for Engineering Education (ASEE)
- Member, Society for Natural Philosophy (SNP)