# HAREESH V. TIPPUR

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## ACADEMIC PREPARATION

- **Post-Doctoral Fellow** (Aeronautics and Applied Mechanics), Caltech, 1988-90
- **Ph.D.** (Mechanical Engineering), State University of New York, Stony Brook, 1988
- **M.S.** with *Distinction* (Mechanical Engineering), Indian Institute of Science, India, 1982
- **B.S.** with *Distinction* (Mechanical Engineering), Bangalore University, India, 1980

## EXPERTISE & INTERESTS

Experimental and Computational Solid Mechanics; Fracture and Failure Mechanics; Materials Engineering; Optical Metrology; High-Strain Rate Mechanical Characterization of Non-Traditional and Advanced Composite Materials (Cellular Solids and Structural Foams; Functionally Graded Materials; Particulate Composites; Interpenetrating Phase Composites; Hybrid and Hierarchical Micro-/Nano-Composites; Additively Manufactured Materials)

## PROFESSIONAL EXPERIENCE

- **Associate Chair for Graduate Studies** (2009-present), Mechanical Engineering Department, Auburn University, AL
- **Tenured Professor** (2000–present), Mechanical Engineering Department, Auburn University, AL
- **Tenured Associate Professor** (1995-99), Mechanical Engineering Department, Auburn University, AL
- **Tenure-track Assistant Professor** (1990-95), Mechanical Engineering Department, Auburn University, AL
- **Post-Doctoral Research Fellow** (1988-90), Department of Aeronautics and Applied Mechanics, California Institute of Technology, CA
- **Doctoral Research Assistant** (1983-88), Department of Mechanical Engineering, State University of New York at Stony Brook, NY
- **Scientist** (1982-83), Mechanical Integrity and Structural Behavior Division, Gas Turbine Research Establishment, Defense Research and Development Organization, India

## HONORS, AWARDS & RECOGNITIONS

- **M. Hetényi Award,** SEM 2021.
- **Creative Research & Scholarship Award**, Auburn University, 2019
- **Executive Committee Member**, ASME-Materials Division, 2018-present
- **F.G. Tatnall Award**, Society for Experimental Mechanics, 2016
- **Executive Board Member**, Society for Experimental Mechanics, 2015-present
- **Editor-in-Chief**, *Experimental Mechanics*, Springer Publications, 2010-2015
- **Orr Best Paper Award**, ASME-Materials Division, November 2014
- **A.S. Kobayashi Award**, 2014 ICCES, Changwon, Korea, July 2014
- **Keynote Speaker**, Int. Conf. Experimental Mechanics 2013, Bangkok, Thailand, Nov 2013
- **Keynote Speaker,** SEM Annual Conference, June 2013
- **Best Paper Award**, XII Int. Congress on Experimental and Applied Mechanics, 2012
- **W.F. Walker Teaching Award for Excellence**, Auburn University, 2012
- **Fellow - Society for Experimental Mechanics (SEM)**, Elected in 2011
- **Fylde Electronic Prize**, British Society for Strain Measurement, 2010
- **McWane Endowed Chair Professorship**, Auburn University, 2010-present
- **Fellow - American Society of Mechanical Engineers (ASME)**, Elected in 2004
- **Auburn University Alumni Professorship**, 2002-2007

- **Keynote Speaker**, Int. Conference on Mechanical Engineering, Bangalore, India, 2008
- **Newmark Seminar Series Lecturer,** University of Illinois, Urbana-Champaign, IL, 2003
- **Keynote Speaker,** Int. Conf. on Laser Applications and Optical Metrology, New Delhi, 2003
- **Senior Faculty Research Award**, Auburn Alumni Engineering Council, 1998
- **Beer & Johnston Outstanding New Mechanics Educator Award**, ASEE, 1995
- **M. Hetényi Award,** SEM, 1993.
- **Outstanding Contribution in Research Award,** ASEE- SE Section, 1993
- **Research Initiation Award**, National Science Foundation**,** 1991
- **Distinction Student**, Indian Institute of Science, 1980-82
- **Distinction and Rank Student**, Bangalore University, India, 1975-80
- **National Merit Scholar**, Indian Ministry of Education, 1973

## COURSES TAUGHT IN THE PAST FIVE YEARS

- MECH 3130: Mechanics of Materials
- MECH 5300/6300/6306: Advanced Mechanics of Materials
- MECH 7300/7306: Fracture Mechanics
- MECH 7310/7316: Solid Mechanics
- MECH 7330/7336: Experimental Mechanics
- MECH 7410/7416: Optical Methods in Mechanics

## PUBLICATIONS♣

*h-index*: 44 (Google Scholar), 34 (ISI Web-of-Science)

## BOOKS/BOOK CHAPTERS/EDITED VOLUMES

- 'Optical Techniques in Dynamic Fracture Mechanics', in Dynamic Fracture Mechanics (A. Shukla, Editor), World Scientific Publications, 2006.
- Special Issue of *Experimental Mechanics* on 'Failure of Heterogeneous Materials', Guest-Editors: Y.D.S. Rajapakse, A.J. Rosakis, A. Shukla and H.V. Tippur, 2006.
- Developments in Theoretical and Applied Mechanics, Vol. XX, H.V. Tippur and P.K. Raju, (co-Eds.) 2000.
- Proceedings of the ASME Applied Mechanics Division, AMD Vol. 229, 1998, co-Editor.

## PATENTS

- 'Determining geometric characteristics of reflective surfaces and transparent materials,' H.V. Tippur, C. Miao, Patent No. US 11,629,951 B2, April 18, 2023. [pdf]
- 'Determining geometric characteristics of reflective surfaces,' H.V. Tippur, C. Periasamy, Patent No. US 10,718,607 B2, July 21, 2020. [pdf]
- 'Determining geometric characteristics of reflective surfaces,' H.V. Tippur, C. Periasamy, Patent No. US 9,759,553 B2, September 12, 2017. [pdf]

## ARCHIVAL JOURNAL ARTICLES (* Student Mentee, § Corresponding Author)

1. 'Mixed-mode Dynamic Fracture Parameters for Soda-lime Glass,' S. Dondeti*, H.V. Tippur§, *Theoretical and Applied Fracture Mechanics*, vol. 125, paper # 103791, 2023.
2. 'An Image Processing Technique to Identify Crack Tip Position and Automate Fracture Parameter Extraction Using DIC: Application to Dynamic Fracture,' A.T. Owens*, H.V. Tippur, *Experimental Mechanics*, vol. 63, pp 445–466, 2023.
3. 'A Note On Measuring Mechanical Fields in 3-D Solids Using Digital Gradient Sensing and Refractive Index Matching,' S. Dondeti*, H.V. Tippur§, *Experimental Mechanics*, vol. 63, pp. 263-273, 2023.
4. 'Ti-6Al-4V powder reuse in laser powder bed fusion (L-PBF): The effect on porosity, microstructure, and mechanical behavior,' A. Soltani-Tehrani, J.P. Isaac*, H.V. Tippur, D.F. Silva, S. Shao, N. Shamsaei, *International Journal of Fatigue*, vol. 167, paper # 107343, 2023.
5. 'Mixed-mode dynamic fracture behavior of a rubber toughened epoxy adhesive under stress wave loading,' A.T. Owens, H.V. Tippur, Engineering Fracture Mechanics, vol. 276, paper # 108883, 2022. [pdf]

♣ Name appears as T.V. Hareesh in a few early publications.

6. 'Role of build orientation on quasi-static and dynamic fracture responses of additively manufactured AlF357 and AlSi10Mg alloys,' J. P. Isaac*, S. Lee, A. Saharan, S. Thompson, N. Shamsaei, H.V. Tippur§, *Additive Manufacturing*, vol. 59 paper # 103080, 2022.
7. 'Dynamic crack initiation and growth in cellulose nanopaper,' C. Miao*, H. Du, X. Zhang, H.V. Tippur§, *Cellulose*, vol. 29, pp 557-569, 2022.
8. Crack initiation and slow growth in soda-lime glass from a self-healed crack,' S. Dondeti*, H.V. Tippur§, *Theoretical and Applied Fracture Mechanics*, vol. 119, paper # 103341, 2022.
9. 'Cascading crack bifurcations in soda-lime glass: Quantification of fracture mechanic-based precursors using Digital Gradient Sensing,' S. Dondeti* and H.V. Tippur§, *International Journal of Solids and Structures*, vol. 234, paper # 111252, 2022.
10. 'Dynamic fracture behavior of additively manufactured Scalmalloy: Effect of build orientation, heat-treatment and loading-rate,' J.P. Isaac*, S. Lee, N. Shamsaei and H.V. Tippur§, *Materials Science and Engineering – A*, vol. 826, paper # 141978, 2021.
11. 'Measurement of mixed-mode fracture characteristics of an epoxy-based adhesive using a hybrid digital image correlation (DIC) and finite elements (FE) approach, A.T. Owens* and H.V. Tippur, *Optics and Lasers in Engineering*, vol. 140, paper #106544, 2021.
12. 'Fracture behavior of additively printed ABS: Effects of print architecture and loading rate,' J. P. Isaac*, S. Dondeti* and H.V. Tippur§, *International Journal of Solids and Structures*, vol. 212, pp 80-94, 2021.
13. 'Dynamic Fracture Mechanics of Soda-lime Glass Plates Studied using Two Higher Sensitivity Digital Gradient Sensing Techniques,' C. Miao* and H.V. Tippur§, *Engineering Fracture Mechanic*s, vol. 232, paper # 101536, 2020.
14. 'Crack initiation and growth in additively printed ABS: Effect of print architecture studied using DIC,' J. P. Isaac*, S. Dondeti* and H.V. Tippur§, *Additive Manufacturing*, vol. 36, paper #101536, 2020.
15. 'Superior Fracture Properties of Cellulose Nanopapers,' C. Miao*, H. Du, M. Parit, Z. Jiang, Z. Liu, W. Junhao, H.V. Tippur§, X. Zhang§, *Cellulose*, vol. 27(6), pp 3181-3195, 2020.
16. 'A simplified reflection-mode Digital Gradient Sensing technique for measuring surface slopes, curvatures and topography,' C. Miao* and H.V. Tippur§, *Optics and Lasers in Engineering*, Vol. 124, #105843, 2020.
17. 'A Comparative Study of Dynamic Fracture of Soda-Lime Glass Using Photoelasticity, Digital Image Correlation and Digital Gradient Sensing Techniques,' S. Dondeti* and H.V. Tippur§, *Experimental Mechanics*, Vol. 60, pp 217-233, 2020, (*Recipient of SEM M. Hetenyi Award*)
18. 'Reflection-mode digital gradient sensing method: Measurement accuracy,' *Optical Engineering*, C. Miao* and H.V. Tippur§, Vol. 108, paper #044101, 2019.
19. 'Fracture behavior of carbon fiber reinforced polymer composites: An optical study of loading rate effects,' C. Miao* and H.V. Tippur§, *Engineering Fracture Mechanics*, Vol. 207, pp 203-221, 2019.
20. 'Measuring sub-micron deformations at sub-microsecond intervals in large plates: An optical investigation of laterally impacted isotropic and orthotropic plates using reflection-mode DGS,' *Journal of Dynamic Behavior of Materials*, C. Miao* and H.V. Tippur§, Vol. 4, pp 336-358, 2018.
21. 'Quasi-static and Dynamic Mechanical Behaviors of Transparent graft-Interpenetrating Polymer Networks (graft-IPNs),' B.M. Sundaram*, R.B. Mendez, M.L. Auad and H.V. Tippur§, *Polymer Testing*, Vol. 70, pp 348-362, 2018.
22. 'Dynamic fracture of soda-lime glass: A quantitative full-field optical investigation of crack initiation, propagation and branching,' B.M. Sundaram* and H.V. Tippur§, *Journal of the Mechanics and Physics of Solids*, Vol. 120, pp 132-153, 2018.
23. 'Higher Sensitivity Digital Gradient Sensing Configurations for Quantitative Visualization of Stress Gradients in Transparent Solids,' C. Miao* and H.V. Tippur§, *Optics and Lasers in Engineering*, Vol. 108, pp 54-67, 2018.
24. 'Full-field measurement of contact-point and crack-tip deformations in soda-lime glass. Part-II: Stress wave loading,' B.M. Sundaram* and H.V. Tippur§, *Int. Journal of Applied Glass Science*, Vol. 9, pp 123-136, 2018.
25. 'Full-field measurement of contact-point and crack-tip deformations in soda-lime glass. Part-I: Quasi-static Loading. B.M. Sundaram* and H.V. Tippur§, *Int. Journal of Applied Glass Science*, Vol. 9, pp 114-122, 2018.
26. 'Dynamic mixed-mode fracture behavior of PMMA and polycarbonate using Digital Gradient Sensing,' B.M. Sundaram* and H.V. Tippur§, *Engineering Fracture Mechanics*, Vol. 176, pp 186-212, 2017.
27. 'Mechanical and optical characterization of a tissue surrogate polymer gel,' R.K.A. Pasumarthy* and H.V. Tippur§, *Polymer Testing*, Vol. 55, pp 219-229, 2016.
28. 'Topography and stress field reconstruction from surface slopes and stress gradients using Digital Gradient Sensor,' C. Miao*, B.M. Sundaram*, L. Huang and H.V. Tippur§, *Measurement Science and Technology*, Vol. 27, paper #095203 (16pp), 2016.

§ Corresponding author

29. 'Dynamics of crack penetration vs. branching at a weak interface: An experimental study,' B.M. Sundaram and H. V. Tippur§,' *Journal of the Mechanics and Physics of Solids*, Vol. 96, pp 312-332, 2016.
30. 'Dynamic Crack Growth Normal to an Interface in a Bi-Layered Material: An Experimental Study using Digital Gradient Sensing Technique,' B. M. Sundaram*, and H. V. Tippur§, *Experimental Mechanics*, Vol. 56, pp 37-57, 2016.
31. 'Extension of reflection-mode Digital Gradient Sensing method for visualizing and quantifying impact induced transient deformations and damage in solids,' A. S. Jain* and H.V. Tippur§, *Optics and Lasers in Engineering*, Vol. 77, pp 162-174, 2016.
32. 'Sequential graft-Interpenetrating polymer networks based on polyurethane and acrylic/ester copolymers,' R. Ballestero, B. M. Sundaram, H. V. Tippur, M. L. Auad§, *Express Polymer Letters*, Vol. 10, pp 204-215, 2016.
33. 'A critical evaluation of the enhancement of mechanical properties of epoxy modified using CNTs,' R.W. Bedsole* C. Park, P.B. Bogert, and H.V. Tippur§, *Materials Research Express*, Vol. 2, paper # 095020, 2015.
34. 'An Experimental Investigation of Interlaminar and Intralaminar Dynamic Fracture of CFRPs: Effects of Matrix Modification Using CNTs,' R.W. Bedsole* and H. V. Tippur§, *Composite Structures*, Vol. 132, pp 1043-1055, 2015.
35. 'Mapping Static and Dynamic Crack-Tip Deformations using Reflection-Mode Digital Gradient Sensing: Applications to Mode-I and Mixed-Mode Fracture,' A. S. Jain* and H. V. Tippur§, *Journal of Dynamic Behavior of Materials*, Volume 1, pp 315-329, 2015.
36. 'Role of Cell Regularity and Relative Density on Elasto-Plastic Compression Response of Random Honeycombs Generated using Voronoi Diagrams,' O. E. Sotomayor* and H. V. Tippur§, *International Journal of Solids and Structures*, Vol. 51, pp 3776-3786, 2014.
37. 'Role of Cell Regularity and Relative Density on Elasto-Plastic Compression Response of 3D Open-Cell Foam Core Sandwich Structures Generated using Voronoi Diagrams,' O. E. Sotomayor* and H. V. Tippur§, *Acta Materialia*, Vol. 78, pp 301-313, 2014.
38. 'Effect of filler shape, Volume fraction and Loading Rate on Dynamic Fracture Behavior of Glass-Filled epoxy,' V. Kushvaha* and H. V. Tippur§, *Composites Part B*, Vol. 64, pp 126-137, 2014.
39. 'Ultrafast microwave approach towards multi-component and multi-dimensional nanomaterials,' Z. Liu, L. Zhang, S. Poyraz, J. Smith, V. Kushvaha*, H. Tippur and X. Zhang§, *RSC Advances*, Vol. 4, pp 9308-9313, 2014.
40. 'Fracture behavior of epoxy nanocomposites modified with polyol diluent and amino-functionalized multi-walled carbon nanotubes: A loading rate study,' K. C. Jajam*, M. M Rahman, M.V. Hosur, H.V. Tippur§, *Composites-A*, Vol. 59, pp 57-69, 2014.
41. 'Tensile, Fracture and Impact Behavior of Transparent Interpenetrating Polymer Networks with Polyurethane-poly(methyl methacrylate),' K. C. Jajam*, S. A. Bird, M. L. Auad, and H. V. Tippur§, *Polymer Testing*, Vol. 32, pp 889-900, 2013.
42. 'Nondestructive Evaluation of Transparent Sheets using a Full-Field Digital Gradient Sensor,' C. Periasamy* and H. V. Tippur§, *NDT & E International*, Vol. 54, pp 103-106, 2013.
43. 'Dynamic Fracture Characterization of Small Specimens: A Study of Loading Rate Effects on Acrylic and Acrylic Bone Cement,' R. Bedsole* and H. V. Tippur§, ASME *Journal of Engineering Materials & Technology*, Vol. 135, #031001-1, 2013. (*Recipient of ASME-MD Orr Award*)
44. 'A Full-Field Reflection-Mode Digital Gradient Sensing Method for Measuring Orthogonal Slopes and Curvatures of Thin Structures,' C. Periasamy* and H. V. Tippur§, *Measurement Science and Technology*, Vol. 24, Paper # 025202, (9 pp), 2013.
45. 'Synthesis and Characterization of High Performance, Transparent Interpenetrating Polymer Networks with Polyurethane and Poly(methyl methacrylate),' S. A. Bird, D. Clary, K. C. Jajam*, H. V. Tippur and M. L. Auad§, *Polymer Engineering and Science*, Vol. 53, pp 716-723, 2013.
46. 'Measurement of Crack-tip and Punch-tip Transient Deformations and Stress Intensity Factors using Digital Gradient Sensing Technique', C. Periasamy* and H. V. Tippur§, *Engineering Fracture Mechanics*, Vol. 98, pp 185-199, 2013.
47. 'Measurement of Orthogonal Stress Gradients Due to Impact Load on a Transparent Sheet using Digital Gradient Sensing Method', C. Periasamy* and H. V. Tippur§, *Experimental Mechanics*, Vol. 53, pp 97-111, 2013.
48. 'Dynamic Fracture of Graphite/Epoxy Composites Stiffened by Buffer Strips: An Experimental Study', D. Lee*, H. V. Tippur§ and P. Bogert, *Composite Structures*, Vol. 94, 3538-3545, 2012.
49. 'Mechanical Characterization of Epoxy Composites Modified with Reactive Polyol Diluent and Randomly-Oriented Amino-Functionalized MWCNTs', M. M. Rahman, M. Hosur§, S. Zinuddin, K. C. Jajam*, H. V. Tippur, S. Jeelani, *Polymer Testing*, Vol. 31, 1083-1093, 2012.
50. 'A Full-Field Digital Gradient Sensing Method for Evaluating Stress Gradients in Transparent Solids,' C. Periasamy* and H. V. Tippur§, *Applied Optics*, Vol. 51, No. 12, pp 2088-2097, 2012.
51. 'Quasi-static and Dynamic Fracture Behavior of Particulate Polymer Composites: A study of nano- vs. micro-size fillers and Loading Rate Effects,' K. C. Jajam* and H. V. Tippur§, *Composites Part-B*, Vol. 43, 3467-3481, 2012.

52. Experimental Measurements and Numerical Modeling of Dynamic Compression Response of an Interpenetrating Phase Composite Foam,' C. Periasamy* and H.V. Tippur§, *Mechanics Research Communications*, Vol. 43, pp 57-65, 2012.
53. 'Role of Inclusion Stiffness and Interfacial Strength on Dynamic Matrix Crack Growth: An Experimental Study,' K. C. Jajam* and H. V. Tippur§, *International Journal of Solids & Structures*, Vol. 49, pp 1127-1146, 2012.
54. 'Poptube approach for ultrafast carbon nanotube growth,' Z. Liu, J. Wang, V. Kushvaha*, S. Poyraz, H. Tippur, S. Park, M. Kim, Y. Liu, J. Bar, H. Chen and X. Zhang§, *Chemical Comm. – The Royal Soc. Of Chemistry*, Vol. 47, pp 9912-14, 2011.
55. 'An Optical Study of Crack-Inclusion Interactions using DIC and High-speed Digital Photography', K. C. Jajam* and H. V. Tippur§, *Engineering Fracture Mechanics*, Vol. 78, pp 1289–1305, 2011.
56. 'Tensile and Fracture Characterization of PETI-5 and IM7/PETI-5 Graphite/Epoxy Composites under Quasi-static and Dynamic Loading Conditions', D. Lee, H.V. Tippur§, B. J. Jensen and P. Bogert, ASME *Journal of Materials & Technology*, Vol. 133, paper # 021015-1 to 11, 2011.
57. 'Experimental Fracture Mechanics of Functionally Graded Materials: An Overview of Optical Investigations', C. E. Rousseau, V. Chalivendra, A. Shukla and H. V. Tippur§, *Experimental Mechanics*, 50th Anniversary Special Issue, Guest Editor: E. Brown), Vol. 50, pp 845-865, 2010.
58. 'Mechanical characterization and modeling of compression behavior of syntactic foam-filled cellular solids,' R. Jhaver* and H. V. Tippur§, *Journal of Reinforced Plastics and Composites*, Vol. 29, 2010.
59. 'Coherent Gradient Sensing (CGS) method for fracture mechanics: A Review', H. V. Tippur§, *Fatigue and Fracture of Engineering Materials*, Vol. 33, pp 832-858, 2010.
60. 'Quasi-Static and Dynamic Fracture of Graphite/Epoxy Composites: An Optical Study of Loading Rate Effects", D. Lee*, H. V. Tippur§ and P. Bogert, *Composites Part-B*, Vol. 41, pp 462-474, 2010.
61. 'Transient analysis of the DSIFs and dynamic *T*-stress for particulate composite materials – Numerical vs experimental results', V. Guduru, A.-V. Phan§, H.V. Tippur, *Engineering Analysis of Boundary Elements*, Vol. 34, pp 963-970, 2010.
62. 'Quasi-static and dynamic compression response of a lightweight interpenetrating phase composite foam', C. Periasamy*, R. Jhaver* and H. V. Tippur§, *Materials Science and Engineering A*, 527, 2845–2856, 2010.
63. 'SGBEM Modeling of Fatigue Crack Growth in Particulate Composites,' D. Roberts, A-V. Phan§, H. V. Tippur, L. J. Gray and T. Kaplan, *Archive of Applied Mechanics*, Vol. 80, pp 307-322, 2010.
64. 'Processing, compression response and finite element modeling of syntactic foam based interpenetrating phase composite', R. Jhaver* and H. V. Tippur§, *Materials Science and Engineering – A*, Vol. 499, pp 507–517, 2009.
65. 'Tensile stress-strain response of glass-filled epoxy under elevated rates of loading using a split Hopkinson bar apparatus', A. T. Owens* and H. V. Tippur§, *Experimental Mechanics*, Vol. 49, pp 799-811, 2009.
66. 'Experimental study of dynamic crack growth in unidirectional graphite/epoxy composites using digital image correlation method and high-speed photography', D. Lee*, H. Tippur§, M. Kirugulige* and P. Bogert, *Journal of Composite Materials*, Vol. 43, pp 2081-2108, 2009.
67. 'Shape-sensitivity-based evaluation of the stress intensity factors at the nanoscale by means of quantized fracture mechanics', A-V. Phan§ and H. V. Tippur, *Mechanics Research Communications*, Vol. 36, pp 336-342, 2009.
68. 'Symmetric-Galerkin boundary element analysis of QFM stress intensity factors in nanoscale fracture', A-V. Phan and H. V. Tippur§, *Journal of Computational and Theoretical Nanoscience*, Vol. 6, pp 994-1000, 2009.
69. 'Measurement of surface deformations and fracture parameters for a mixed-mode crack driven by stress waves using image correlation technique and high-speed photography, M. S. Kirugulige* and H. V. Tippur§, *Strain*, Vol. 45, pp 108-122, 2009.
70. 'Mixed-mode dynamic crack growth in a functionally graded particulate composite: Experimental Measurements and numerical simulations', M. S. Kirugulige* and H. V. Tippur§, ASME *Journal of Applied Mechanics*, Vol. 75, paper # 051102, 2008.
71. 'Dynamic crack growth past a stiff inclusion: Optical investigation of inclusion eccentricity and inclusion-matrix adhesion strength', R. Kitey* and H. V. Tippur§, *Experimental Mechanics*, Vol. 48, pp 37-54, 2008.
72. 'A numerical study of matrix-inclusion debonding in the presence of a nearby crack', P. C. Savalia*, H. V. Tippur§ and M. S. Kirugulige*, *Engineering Fracture Mechanics*, Vol. 75, pp 926-942, 2008.
73. 'Measurement of transient deformations using digital image correlation method and high-speed photography: Application to dynamic fracture', M. S. Kirugulige*, H. V. Tippur§ and T. S. Denney, *Applied Optics*, Vol. 46, pp 5083-5096, 2007.
74. A Study of Crack-Inclusion Interactions and Matrix-Inclusion Debonding using Moiré Interferometry and Finite Element Method, P. C. Savalia* and H. V. Tippur§, *Experimental Mechanics*, Vol. 47, pp 533-548, 2007.
75. 'SGBEM Analysis of Crack-Particle Interactions due to Elastic Constants Mismatch', R. Williams, A.-V. Phan§, H. V. Tippur, T. Kaplan and L. J. Gray, *Engineering Fracture Mechanics*, Vol. 74, pp 314-331, 2007.

76. 'Modeling Crack Growth through Particle Clusters in Brittle Matrix using Symmetric-Galerkin Boundary Element Method', R. Kitey*, A.-V. Phan§, H. V. Tippur and T. Kaplan, *International Journal of Fracture*, Vol. 141, No. 1, pp 11-25, 2006.
77. 'Dynamic Mixed-Mode Crack Growth in Functionally Graded Glass-Filled Epoxy Beams', M.S. Kirugulige* and H. V. Tippur§, *Experimental Mechanics*, Vol. 46, pp 269-281, 2006.
78. 'Influence of Microstructure on Dynamic Crack Growth in Particulate Bimaterials with Discrete and Diffuse Interfaces, R. Kitey* and H. V. Tippur§, *Engineering Fracture Mechanics*, Vol. 72, pp 2721-2743, 2005.
79. 'Dynamic Fracture Behavior of Sandwich Structures with Functionally Graded Core', M. S. Kirugulige*, R. Kitey* and H. V. Tippur§, *Composites Science and Technology*, Vol. 65, pp 1052-1068, 2005.
80. 'Role of Particle Size and Filler-Matrix Adhesion Strength on Dynamic Fracture Behavior of Particulate Composites: I – Macromeasurements', R. Kitey* and H. V. Tippur§, *Acta Materialia*, Vol. 53, No. 4, pp 1153-1165, 2005.
81. 'Role of Particle Size and Filler-Matrix Adhesion Strength on Dynamic Fracture Behavior of Particulate Composites: II – Linkage Between Macro- and Micro-Measurements', R. Kitey* and H. V. Tippur§, *Acta Materialia*, Vol. 53, pp 1167-1178, 2005.
82. 'A Method for Measuring Mode-I Crack Tip Constraint under Static and Impact Loading Conditions', M. J. Maleski*, M. S. Kirugulige* and H. V. Tippur§, *Experimental Mechanics*, Vol. 44, pp 522-532, 2004.
83. 'Simultaneous and Real-Time Measurement of Slope and Curvature Fringes in Thin Structures using Shearing Interferometry', H. V. Tippur§, *Optical Engineering*, Vol. 43, No. 12, pp. 3014-3020, 2004.
84. 'Dynamic Fracture Parameters and Constraint Effects in Functionally Graded Syntactic Epoxy Foams, M. El-Hadek and H.V. Tippur§, *International Journal of Solids and Structures*, Vol. 40, pp 1885-1906, 2003.
85. 'Dynamic Fracture Behavior of Syntactic Epoxy Foams: Optical Measurements Using Coherent Gradient Sensing', M.A. El-Hadek* and H.V. Tippur§, *Optics and Lasers in Engineering*, Vol. 40, pp 353-369, 2003.
86. 'Measurement and Modeling of Mechanical Properties of Microballoon Dispersed Epoxy and Urethane: Implications for Studying Porosity', M. A. El-Hadek* and H.V. Tippur§, *Journal of Materials Science*, Vol. 37, pp 1649-1660 2002.
87. 'Influence of Variations on Crack Initiation in Functionally Graded Glass-Filled Epoxy', C.-E. Rousseau* and H.V. Tippur§, *Engineering Fracture Mechanics*, Vol. 69, pp 1679-1693, 2002.
88. 'Evaluation of Crack Tip Fields and Stress Intensity Factors in Functionally Graded Elastic Materials: Cracks Parallel to Elastic Gradient, C. -E. Rousseau* and H.V. Tippur§, *International Journal of Fracture*, Vol. 114, pp 87-111, 2002.
89. 'Dynamic Fracture of Compositionally Graded Materials with Cracks along the Elastic Gradient', Experiments and Analysis, C.-E. Rousseau* and H.V. Tippur§, *Mechanics of Materials*, Vol. 33, pp 403-421, 2001.
90. 'Influence of Elastic Gradient Profiles on Dynamically Loaded Functionally Graded Materials: Cracks Along the Gradient', C.-E. Rousseau* and H.V. Tippur§, *International Journal of Solids and Structures*, Vol. 38, No. 44-45, pp 7839-7856, 2001.
91. 'Compositionally Graded Materials with Cracks Normal to the Elastic Gradient: Examination of Fracture Parameters Relative to Bimaterials', C.-E. Rousseau* and H.V. Tippur§, *Acta Materialia*, Vol. 48, pp 4021-4033, 2000.
92. 'Dynamic response of bimaterial and graded interface cracks under impact loading', P.R. Marur* and H.V. Tippur§, *International Journal of Fracture*, Vol. 103, pp 95-109, 2000.
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## ARTICLES IN CONFERENCE PROCEEDINGS

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2. 'Fracture response of additively manufactured aluminum alloys: Effects of loading-rate and build orientation,' J.P. Isaac*, S. Lee, N. Shamsaei, H.V. Tippur, Proceedings of SEM Annual Conference, 2022, paper # 13240.
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## CONFERENCE PRESENTATIONS (Abstract only)

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2. 'High strain-rate fracture behavior of additively manufactured Scalmalloy,' J.P. Isaac*, S. Lee, N. Shamsaei, and H.V. Tippur, Proceedings of SEM Annual Conference (Virtual), June. 2021. (paper #11537)
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5. 'Role of build orientation on high-strain rate fracture behavior of additively manufactured Scalmalloy,' J.P. Isaac, S. Lee, N. Shamsaei, and H.V. Tippur, ASME-IMECE2020 (Virtual), Paper #2020-57926, Nov. 2020.
6. 'A photomechanics study of single and cascading crack branch formations in soda-lime glass,' H.V. Tippur and S. Dondeti, Virtual Symposium on Experimental Solid Mechanics, Indian Institute of Science, Bangalore, India, July 2020.
7. 'Experimental identification of dynamic crack branching precursors in soda-lime silicate glass, H.V. Tippur and S. Dondeti, Workshop on Experimental and Computational Fracture Mechanics, LSU, Baton Rouge, LA, Feb. 2020.
8. 'Crack Branching in Soda-Lime Glass: A Comparative Study Using Photoelasticity, DIC, and Digital Gradient Sensing Methods, #IMECE2019-11664, -11676, S. Dondeti* and H.V. Tippur, ASME-IMECE, Salt Lake City, UT, Nov. 2019. (*Keynote Presentation*)
9. 'Fracture and Failure Behavior of Additively Printed ABS: Effects of Moisture Absorption', J.P. Isaac* and H.V. Tippur, SEM Annual Conference, Reno, NV, 2019. (#6033)
10. 'Role of Build Architecture and Loading Rate on Quasi-Static and Dynamic Fracture Behaviors of Additively Printed ABS Studied Using DIC,' paper # IMECE2018-87028, J.P. Isaac*, H.V. Tippur, ASME-IMECE, Pittsburgh, PA, Nov. 2018.
11. 'Quantitative visualization of dynamic crack initiation, growth and branching in soda-lime glass,' H.V. Tippur and B.M. Sundaram*, 55th Annual Meeting of the Society for Engineering Science, Madrid, Spain, Oct. 2018.
12. 'Dynamic crack branching in brittle bilayers and monoliths: Quantitative visualization in acrylic and glass using Digital Gradient Sensing,' Discussion Meeting on Mechanics/Materials Interface, Indian National Science Academy, Coorg, India, February, 2018
13. 'Quantitative Visualization of Fracture and Failure of Soda-lime Glass,' H.V. Tippur and B.M. Sundaram, The 42nd Int. Conference and Exposition on Advanced Ceramics and Composites, Daytona Beach, FL, Jan 2018.
14. 'Dynamic fracture behavior of unidirectional carbon fiber reinforced composites studied using Digital Gradient Sensing,' C. Miao* and H.V. Tippur, presentation #IMECE2017-70565, ASME-IMECE, Tampa, FL, November 2017.
15. 'Dynamic crack initiation, growth and branching in soda-lime glass: An optical investigation using Digital Gradient Sensing method,' B.M. Sundaram* and H.V. Tippur, presentation #IMECE2017-70559, ASME-IMECE, Tampa, FL, 2017.
16. 'Evaluation of impact induced deformations and damage in composite plates using DGS technique,' C. Miao* and H.V. Tippur, ASME-IMECE, Phoenix, AZ, 2016.
17. 'Loading rate effects on crack penetration vs. branching at a weak interface in brittle bilayers,' B.M. Sundaram* and H.V. Tippur, ASME-IMECE, Phoenix, AZ, 2016.
18. 'Visualization and quantification of dynamic crack penetration vs. branching at a weak interface in a brittle bilayer,' H. V. Tippur, Proceedings of the Symposium on Mechanics of Materials Across Nano to Geological Time and Length Scale, Brown University, Providence, RI, Sept 2016.
19. 'Dynamic Crack Growth in Monolithic and Bi Layered PMMA,' H.V. Tippur and B.M. Sundaram*, Proceedings of the 17th International Conference on Experimental Mechanics (ICEM'17), Rhodes, Greece, 2016.
20. 'Optical and Mechanical Characterization of Ballistic Polymer Gel-Tissue Simulant,' R. A. Pasumarthy* and H. V. Tippur, ASME-IMECE, Houston, TX, 2015.
21. 'Dynamic Fracture of Transparent Milled-Fiber Reinforced Epoxy Composites: An Optical Study of Loading Rate Effects,' A. B. Branch* and H. V. Tippur, ASME-IMECE, Houston, TX, 2015.
22. 'Crack Path Selection During Dynamic Crack Growth Past A Perpendicularly Oriented Interface: An Experimental Study Using Digital Gradient Sensing,' B. M. Sundaram* and H. V. Tippur, ASME-IMECE, Houston, TX, 2015.
23. 'Dynamic Penetration and Bifurcation of a Crack at an Interface in a Transparent Bi-Layer: Visualization and Quantification,' B. M. Sundaram* and H. V. Tippur, 52nd SES Annual Conference, College Station, TX, 2015.
24. 'Digital Gradient Sensing: A Novel Optical Method for Investigating Transient Deformations in Transparent and Reflective Solids,' H. V. Tippur [*A.S. Kobayashi Award Lecture*], International Conference on Computational & Experimental Engineering and Sciences (ICCES'14), Changwon, Korea, June 2014.
25. 'A digital gradient sensor and its applications to study fracture and failure of materials,' Keynote Invited Lecture, Int. Conf. on Experimental Mechanics, Bangkok, Thailand, November, 2013.
26. 'A digital gradient sensor and its applications to study fracture and failure of materials,' H.V. Tippur, ASME-IMECE, San Diego, CA, November, 2013.
27. 'A reflection mode digital gradient sensor and its applications to experimental mechanics,' H.V. Tippur, Symp. on Materials & Structures under Extreme Loading Conditions, Univ. of Rhode Island, October 2013.
28. 'Fracture and Impact Energy Absorption Characteristics of PMMA-PU Transparent Interpenetrating Polymer Networks,' K. C. Jajam, S. A. Bird, M. L. Auad and H. V. Tippur, 50th SES Annual Technical Meeting and ASME-AMD Summer Meeting, Providence, RI, July 2013.

29. Keynote Presentation: 'Visualization and Quantification Transient Deformations in Transparent Armor Materials Using a Full-field Digital Gradient Sensor', H.V. Tippur, SEM Annual Conference, Lombard, IL, 2013.
30. 'A Full-Field Digital Gradient Sensor for Measuring Orthogonal Stress Gradients in Transparent Sheets at Elevated Rates of Loading', H.V. Tippur and C. Periasamy, ICCES'13, Bellevue, WA, May 2013.
31. 'Dynamic Fracture Behavior of CNT-modified Epoxy', R. Bedsole and H. V. Tippur, ASME-IMECE, Houston, TX, November 2012.
32. 'A Digital Gradient Sensing (DGS) Method for Evaluating Stress Gradients in Transparent Armor Materials at Elevated Rates of Loading,' C. Periasamy and H. V. Tippur, paper #202, SEM XII International Congress & Exposition on Experimental and Applied Mechanics, Costa Mesa, CA, June 2012.
33. A Digital Gradient Sensing Method for Measuring Stress Gradients in Transparent Materials at High Rates of Loading, H. V. Tippur and C. Periasamy, 5th Intl. Conference on Optical Measurement Techniques for Structures & Systems (OPTIMESS2012), Antwerp, Belgium, April, 2012.
34. 'Dynamic Fracture Behavior of PMMA and Bone Cement,' R. Bedsole and H. V. Tippur, ASME-IMECE, Denver, CO, November 2011.
35. 'A novel full-field optical method for measuring stress gradients in phase objects at elevated rates of loading,' H. V. Tippur and C. Periasamy, 48th SES Annual Technical Meeting, Evanston, IL, October 2011.
36. 'An optical study of dynamic crack growth past stiff and compliant inclusions using DIC and high-speed photography', H. V. Tippur and K. C. Jajam, 7th BSSM International Conference on Advances in Experimental Mechanics, Liverpool, UK, September 2010.
37. 'Tensile and fracture characteristics of PETI-5 and IM7/PETI-5 graphite/epoxy composites under static and dynamic loading conditions', NASA Fundamentals of Aeronautics Meeting, Atlanta, GA, 2009.
38. 'Static and dynamic characterization of a lightweight interpenetrating phase composite in compression', R. Jhaver*, C. Periasamy* and H. V. Tippur, ASME-IMECE, Boston, MA, 2008.
39. 'Dynamic crack growth in unidirectional graphite/epoxy composites', H. V. Tippur, NASA Fundamentals in Aeronautics Annual Meeting, Atlanta, GA, October, 2008.
40. 'Dynamic mixed-mode fracture behavior of functionally graded materials: Optical measurements and Finite element simulations, H. V. Tippur, Int. Conf. on Mechanical Engineering, July 2008, Bangalore, India.
41. 'Interaction between a dynamically growing crack and a stiff inclusion: Role of inclusion eccentricity and adhesion strength', H. Tippur and R. Kitey*, ASME-IMECE, November, 2008, Seattle, WA.
42. 'Stress-strain response of particulate composites at elevated rates of loading', A. T. Owens* and H. V. Tippur, TMS Annual Conference, Orlando, FL, February 2007.
43. 'Optical investigation of dynamic mixed mode crack growth in a functionally graded composite', H. V. Tippur and M. S. Kirugulige*, Photomechanics-2006 Conference, Clairmont-Ferrand, France, 2006.
44. 'A study of crack inclusion interaction using moiré interferometry', P. C. Savalia* and H. V. Tippur, SEM Annual conference, St. Louis, MO, 2006.
45. 'Estimation of dynamic SIF using digital image correlation method and high-speed photography', M. S. Kirugulige* and H. V. Tippur, SEM Annual conference, St. Louis, MO, 2006.
46. 'Interaction between a dynamically growing crack and an inclusion', R. Kitey* and H. V. Tippur, ASME-IMECE, Orlando, FL, Nov. 2005.
47. 'On the crack path selection by a dynamically growing mixed-mode crack in a functionally graded material', M. S. Kirugulige* and H. V. Tippur, ASME-IMECE, Orlando, FL, Nov. 2005.
48. 'Fracture Behavior of Microstructurally Dissimilar Bimaterials made of Particulate Composites', R. Kitey* and H. V. Tippur, ASME-IMECE, Anaheim, CA, Nov. 2004.
49. 'Impact Failure of Sandwich Structures with Functionally Graded Foam Core', M. Kirugulige*, R. Kitey* and H. V. Tippur, ASME-IMECE, Washington D. C., Nov. 2003.
50. 'Filler Size and Coating Effects on Failure Response of Glass-Filled Epoxy', R. Kitey* and H. V. Tippur, ASME-IMECE 2003, Washington D. C., Nov. 2003.
51. 'Experimental and Numerical Modeling of Fracture Behavior of Functionally Graded Syntactic Foams using Constraint Effects', H. V. Tippur and M. A. El-Hadek, 16th Army Symposium on Solid Mechanics, Charleston, SC, May, 2003.
52. 'Crack Tip Fracture parameters and Constraint Effects in Dynamically Loaded Functionally Graded Syntactic Foams', M. A. El-Hadek* and H. V. Tippur, ASME-IMECE, New Orleans, 2002.
53. 'Interfacial Crack Tip Deformations in an Elastically Similar Heterogeneous Bimaterial', R. Kitey* and H. V. Tippur, ASME-IMECE, New Orleans, 2002
54. 'Dynamic Crack Growth in Homogeneous and Functionally Graded Syntactic Epoxy Foams', M. A. El-Hadek* and H. V. Tippur, The US Nattional Congress on Theoretical & Applied Mech., Blacksburg, VA, June, 2002.

55. Dynamic Failure Characterization of Microballoon Dispersed Epoxy: Implications for Modeling Porosity', H.V. Tippur and M. A. El-Hadek*, Mechanics & Materials Conference, San Diego, CA, July 2001.
56. 'Mechanical Properties of Porous Polymeric Materials: Experiments and Modeling', M. El-Hadek* and H.V. Tippur, Society of Engineering Science 2000 Meeting, Columbia, SC, October 2000.
57. 'Evaluation of Dynamic Fracture Parameters in Functionally Graded Material', 20th International Congress of Theoretical and Applied Mechanics, H.V. Tippur and C.-E. Rousseau, Chicago, IL, September, 2000.
58. 'Optical Measurement of Dynamic Crack Tip Fields and Fracture Parameters in Functionally Graded Materials' by H.V. Tippur and C. -E. Rousseau*, 1999 ASME – IMECE, Nashville, TN, November.
59. 'The optical techniques of Coherent Gradient Sensing: An Overview', A.J. Rosakis and H.V. Tippur, 1999 ASME Summer Annual Conference, Blacksburg, VA, Book of Abstracts, pp 172.
60. 'Evaluation of crack tip parameters in functionally graded composites: An optical and numerical Investigation', H.V. Tipur and H.V. Tippur, 1999 ASME Summer Annual Conference, Blacksburg, VA, pp 75.
61. 'A Comparative Study of Bimaterial, homogeneous and functionally graded Fracture Behavior', C. -E. Rousseau and H.V. Tippur, ASME-IMECE, Anaheim, CA, Nov., 1998, AMD Vol. 229, pp 127.
62. 'Experimental and Numerical investigation of fracture parameters in a functionally graded material', R.J. Butcher*, C. -E. Rousseau* and H.V. Tippur, USNCTAM13, June 1998, Gainesville, FL.
63. "Crack tip measurements in a particulate functionally graded material: experimental and numerical simulations", R.J. Butcher* and H.V. Tippur, ASME-IMECE, Atlanta, November 1996.
64. "Interferometric investigation of crack tip fields near copper-solder interfaces, H. Krishnamoorthy* and H.V. Tippur, ASME-IMECE, Atlanta, November 1996.
65. "Interfacial crack tip fields mapped using Mach-Zehnder interferometry", J.K. Sinha* and H.V. Tippur, SEM Symposium on Experimental Mechanics, 1995.
66. "Thermally induced stresses near interface cracks: Interferometric mapping of stress fields", P. Ganeshan* and H.V. Tippur, 26th ASTM National Symp. on Fracture Mechanics, Idaho Falls, ID, June 1994.
67. "Measurement of Transient Crack Tip Deformation Fields using Coherent Gradient Sensing'", A.J. Rosakis, H.V. Tippur and S. Krishnaswamy, Proc. of 28th Annual Meeting of the Society of Engineering Science, Nov. 1991, Gainesville, FL.
68. "Measurement of Dynamic Crack Tip Deformation Fields Using the Method of Coherent Gradient Sensing", H.V. Tippur, S. Krishnaswamy and A.J. Rosakis, 11th National Congress of Applied Mechanics, Tucson, AZ, May, 1990.
69. "Transient crack tip field mapping using Coherent Gradient Sensing", H.V. Tippur, S. Krishnaswamy and A.J. Rosakis, ASTM Symposium on Rapid Load Fracture Testing, April, 1990, San Francisco, CA.
70. "Crack Tip Deformation Measurements Using a Coherent Gradient Sensor", H.V. Tippur, S. Krishnaswamy and A.J. Rosakis, 26th Annual Meeting of the Society of Engineering Science, Ann Arbor, MI, September 1989.

## OTHER INVITED TECHNICAL PRESENTATIONS

- Dayton Research Institute - Wright Patterson Air Force Base, Dayton, OH, 1987.
- Dept. of Aerospace Engineering, Univ. of Cincinnati, Cincinnati, OH, 1988.
- Dept. of Aeronautics, California Inst. of Technology, Pasadena, CA, 1988.
- Dept. of Aerospace Eng. & Eng. Mech., Iowa State University, Ames, Iowa, 1989.
- Dept. of Polymer Science and Polymer Eng., University of Akron, Akron OH, 1989.
- Dept. of Mechanical Engineering, Indian Institute of Science, Bangalore, India, 1992.
- Materials Eng. Seminar, Auburn University, 1993, 1997.
- Dept. of Mechanical Engineering, Indian Institute of Science, Bangalore, India, 1996.
- Mechanical Engineering Seminar, Lehigh University, October 1998.
- Mechanical Engineering Seminar, Indian Institute of Science, Bangalore, India, July 2000, 2002.
- Newmark Structural Engineering Seminar, University of Illinois, Urbana-Champaign, 2003.
- Graduate Seminar Speaker, University of S. Alabama, Mobile, AL, 2006.
- Graduate Seminar Speaker, Polymer & Fiber Engineering Dept, Auburn University, AL 2008.
- Invited Speaker, Tsinghua University, Beijing, China, 2011.
- Graduate Seminar, Peking University, Beijing, China, 2011.
- Invited Speaker, Beijing Institute of Technology, Beijing, China, 2011.
- Graduate Seminar, Nanyang Technological University, Singapore, 2011.
- ARL-WMRD Presentation, Aberdeen Proving Grounds, MD, September 2014.
- KLA-Tencor R&D Presentation, Milpitas, CA, October 2014.

- Mechanical Engineering Seminar, Clemson University, SC, January 2018.
- Invited Speaker, Indian National Science Academy (Mechanics and Materials), Coorg, India, 2018.

## INVENTION DISCLOSURES

- US Provisional Application No. 63/415,319: 'Tomo-DGS: A Vision-Based Technique For Measuring Transient Stress Gradients In 3-D Phase Objects,' H. V. Tippur, October 2022.
- US Provisional Application No. 62/513,486, 'Full-field Optical Surface Profile and Stress Evaluation Sensor,' H. V. Tippur, B. M. Sundaram and C. Miao, June 2017.
- U.S. Provisional Patent Application No. 62/029,100 entitled "Graft Interpenetrated Polymer Networks," M. L. Auad, H.V. Tippur, R. A.B. Mendez & B. M. Sundaram, July 2014.
- U.S. Provisional Patent Application No. 61/667,187 entitled "A Full-Field Digital Gradient Sensing Method for Optically Measuring Slopes and Curvatures of Thin Reflective Structures,' H. V. Tippur and C. Periasamy, July 2012.
- U.S. Provisional Patent Application No. 61/544,781 entitled "A Digital Gradient Sensor (DGS) For Measuring Stress Gradients in Transparent Sheets, Testing of Optical Lenses and NDE of Glass Sheets" H. V. Tippur and C. Periasamy, 2011.
- U.S. Provisional Patent Application No. 61/507,302 'Transparent Interpenetrating Polymer Networks with Polyurethane and Poly(methyl methacrylate', M. L. Auad, H. V. Tippur, D. Clary, S. A. Bird, K.C. Jajam, Auburn University Technology Disclosure, 2010.
- U.S. Provisional Patent Application No. 61/190,238 'Lightweight Interpenetrating Phase Composite Foam for High Energy Absorption Applications', R. Jhaver and H. Tippur, Auburn University Technology Disclosure #08-067, 2008. (Finalist, "*Alabama Launch Pad" Commercialization Competition*, 2010)
- 'Technique to Replicate Microfabricated Optical Elements and Patterns from a Silicon Wafer to a Planar Substrate', P. Savalia and H. V. Tippur, Auburn University Technology Disclosure #07-096, 2007.
- 'Infrared Interferometric Sensor for Failure Characterization and Flaw Detection', H.V. Tippur and J.K. Sinha, Invention Disclosure to Technology Transfer and Licensing, AU Tech Disclosure Department, 1999.

## CURRENT/COMPLETED EXTRAMURAL RESEARCH (PI/PD: Principal Investor/Project Director)

- **Army Research Office**, 'Mechanics of Dynamic Fracture and Damage Evolution in Glasses and Ceramics' PI/PD, $319K, 2022-2025.
- **National Science Foundation**, 'Material Processing and Mechanical Behavior of High-performance Cellulose Nanopaper made from Cellulose Nanofibrils,' PI, ($489K), (co-PI: X. Zhang), 2021-2024.
- **Federal Aviation Administration**, The Effect of Machine and Machine-to-Machine Variability on Mechanical Properties of Additively Manufactured Ti-6Al-4V,' co-PI, $1.8M, (PI/PD: N. Shamsaei, 6 co-PIs), 2020-2021.
- **Army Research Office,** 'Illumination and Recording Accessories for High-speed Photography to Study Dynamic Fracture of Brittle Solids,' PI/PD, $75K, 2017-2019.
- **Army Research Office,** Dynamic Failure Mechanics of Layered Architectures using Novel Full-Field Optical Methods,' PI/PD, $301K, 2016-2019.
- **Army Research Office (DURIP), '**Non-Contact Optical Metrology Instrumentation for Failure Characterization of Transparent Armor Materials,' PI/PD, $163K, 2015-2017.
- **Army Research Office,** 'Incoherent LED Pulse Laser for High-Speed Imaging and Optical Metrology,' PI/PD, $57K, 2015-2016.
- **DoD SBIR-Phase II** to GERT, AZ, 'Residual Property Prediction for Damaged Composite Structures,' sub-contractor/co-PI, ($800K, Auburn U: $200K), 2014-2016.
- **National Science Foundation**, 'Development of a Full-Field Digital Stress Gradient Sensor for Failure Characterization of Transparent Structural Materials,' PI/PD, ($248K), 2012-2016.
- **Army Research Office**: 'Molecular Interpenetrated Polymer Composites (MIPC) for High-Strain Rate Applications: Development and Characterization of Novel Lightweight Transparent Materials,' PI/PD, (co-PI: M. L. Auad, Polymer & Fiber Engineering, Auburn U), ($360K), 2012-2016.
- **National Science Foundation**, 'Novel Lightweight Syntactic Foams made of Nanoengineered Microballoons: Synthesis, Processing and Characterization', PI/PD, (co-PI: X. Zhang, Polymer & Fiber Engineering, Auburn U), ($300K), 2011-2015.
- **NASA-NSTRF**, 'Characterization and Modeling of High-Strain Rate Failure Response of Nanocomposites,' PI/PD, Student: R. Bedsole, ($270K), 2011-2015.
- **NASA-EPSCoR,** 'Development of pre-preg and out-of-autoclave process for z-aligned carbon nanofiber toughened lightweight composites, co-PI, (PI/PD: K- T. Hsiao, University of Alabama + 4 investigators), ($1,100K; Auburn U: $200K) 2010-2013.

- **Army Research Office**, 'High speed digital camera for characterizing failure behavior of lightweight IPC foams under stress wave loading', PI/PD, ($118K), 2010-2011.
- **Defense Threat Reduction Agency (DOD)**, 'Processing and dynamic failure characterization of novel impact absorbing transparent interpenetrating polymer network', PI/PD, (M. L. Auad – Co-PI, Polymer & Fiber Engineering, Auburn U), ($450K), 2009-2012.
- **Army Research Office**, 'Processing, failure characterization and modeling of lightweight interpenetrating phase composite foams', PI/PD, ($240K), 2008-2011.
- **National Science Foundation, '**Collaborative Research: Interactions between a Propagating Matrix Crack and Inclusions in Particulate Composites: Experiments and Modeling', PI/PD (co-PI: A. V. Phan, University of S. Alabama), ($265K), 2007-2010.
- **NASA**, 'Investigation of Strain-rate Effects on Crack Growth in Graphite-Epoxy Composites with Stiffeners', PI/PD, ($520K), 2006-2009.
- **Army Research Office (DURIP),** 'Synchronous Dual Actuator Mechanical Tester for Dynamic Failure Characterization', PI/PD, ($119K), 2006-2008.
- **National Science Foundation**, 'Fracture of Polymeric Heterogeneous Materials: Multiscale Measurements and Modeling', PI/PD, ($40K), 2005-2006.
- **DOD-EPSCoR,** 'High-Strain Rate Fracture of Heterogeneous Materials with Micro- and Nano-Fillers: Effect of Particle Size, Shape and Filler-Matrix Adhesion', PI/PD, (co-PI: A-V. Phan, University of Alabama), ($700K), 2004-2007.
- **NASA-LaRC**, 'Static and Dynamic Failure Characterization of Composites to Study Loading Rate Effects', PI/PD, ($57K), 2004-2006.
- **Army Research Office (DURIP)**, 'High Speed Imaging Equipment for Studying Dynamic Fracture Behavior of Functionally Graded Materials', PI/PD, ($284K), 2002-2004.
- **DOD-EPSCoR**, 'Influence of Compositional Gradients on the Dynamic Failure of Functionally Graded Materials', PI/PD, ($317K), 2001-2004. [100%]
- **Army Research Office (DURIP)**, 'Instrumented Impact Tester for Studying the Failure Behavior of Functionally Graded Heterogeneous Materials', PI/PD, ($85K), 2001-2002.
- **National Science Foundation**, 'Investigation of Elasto-Plastic Interfacial Crack Tip Fields Using Infrared Interferometry', PI/PD, ($182K), 2001- 2004.
- **Office of Naval Research,** 'Development of Composite Materials for High Passive Damping Properties', co-Investigator, co-PI, (PI/PD: Malcolm Crocker, 3 investigators), ($329K), 2001-2004.
- **Army Research Office (DURIP)**, 'An infrared CGS for failure characterization of functionally graded materials', PI/PD, ($113K), 1998-2000.
- **Army Research Office**, 'Crack tip field mapping and failure characterization of functionally graded compositions', PI/PD, ($172K), 1997-2000.
- **National Science Foundation**, 'Functionally graded materials characterization using optical techniques', PI/PD, ($156K), 1996-2000.
- **Air Force Office of Scientific Research**, 'Joining and interfacial study of refractory alloy single crystals for high temperature applications' co-PI, (PI/PD: R. Zee, co-PI: W. Gale), ($330K), 1997-2000.
- **National Science Foundation**, 'Interfacial crack initiation under thermal-mechanical loading', PI/PD, ($195K), 1994-1997.
- **National Science Foundation** - University Research Instrumentation Program Grant, co-Investigator, ($600K) (PI/PD: R. C. Jaeger, Electrical & Computer Engineering, Auburn U), 1995-1997.
- **National Science Foundation** - Research Initiation Award, 'Experimental simulation of crack initiation at bimaterial interfaces', PI/PD, ($80K), 1991-1993.

## CURRENT/COMPLETED AU SPONSORED RESEARCH (PI/PD: Principal Investor/Project Director)

- Auburn Univ. PAIR Tier III Grant, Additive Manufacturing of Durable, Next-Generation Implants and Orthotics,' co-PI, (PI: N. Shamsaei and 12 investigators), 8% effort ($1,275K), 2018-2021.
- College of Engineering Research Initiative Grant, Auburn Univ., 'Dynamic Failure of Composites with Compositional Gradients', PI-PD, 2000-2002, 100% effort, ($20,000).
- College of Engineering Research Initiative Grant, Auburn Univ., 'In-Process, Non-Destructive Analytical Equipment for Electronics Manufacturing Research', co-PI, (5% effort) (PI-PD: Dr. W. Johnson), 2000-2002.
- Auburn University, Advanced Materials Research, 'Transportation and Commercial Vehicle Development Pinnacle', $24,000, co-PI (with Dr. S. Adanur, co-PI), 50% effort, 1999-2000.
- College of Engineering Research Initiative Grant, Auburn University, 'Functionally graded (ordered materials:

Synthesis and Failure Characterization', PI (95% effort, two investigators, co-PI: Dr. Jay Khodadadi), 1996-1998, ($20,000)

- Graduate Student support from Alabama Microelectronics Science & Technology Center, 'Investigation of copper-solder interfacial failure using moiré interferometry', PI, 1995-1996, ($5000),
- Research Grant-in-Aid Program, Auburn University, PI, (single investigator), 1991, ($10,000).

## MAJOR PROFESSOR FOR POST-DOCS/GRADUATE STUDENTS (PAST/CURRENT)**

- Dr. Dongeyon Lee, Post-doc Fellow, (2005-2011, Toray Composites Corp., Seattle, WA).
- Dr. Ying Xu, Post-doc Fellow, Visiting Scholar. (2000-2001) (Sr. Engineer, Dana Corp., AR)

- Azeez Adebayo, Ph.D. (current)
- John P. Isaac, Ph.D. (current)
- A. Taylor Owens Ph.D. (2022) (Redstone Arsenel, AL)
- Siva Dondeti, Ph.D. (2022) (Packaging R&D Engineer , Intel, Chandler, AZ)
- Chengyun Miao, Ph.D. (2019) (Post-doctoral Fellow, Johns Hopkins University, Baltimore, MD)
- Balamurugan M. Sundaram, Ph.D. (2017) (Senior R&D Engineer, Corning Corp, Corning, NY)
- Vinod Kushvaha, Ph.D. (2016)
- Robert Bedsole, Ph.D. (2015), (Advanced Materials Engineer, Local Motors, Knoxville, TN)
- Kailash Jajam, Ph.D. (2013) (Assistant Professor, Univ. of Arkansas, Little Rock)
- Chandru Periasamy, Ph.D. (2012) (R&D Engineer - Metrology, Intel Corp, Hillsboro, OR)
- Madhusudhana Kirugulige Ph.D. (2007) (Goodyear Tire & Rubber Co., Akron, OH)
- Rajesh Kitey, Ph.D. (2006), (Associate Professor, Indian Institute of Technology, Kanpur)
- Medhat El-Hadek, Ph.D. (2003), (Assistant Professor, Port Said University, Egypt)
- Carl-E. Rousseau, Ph.D. (2000), (Professor, Univ. of Rhode Island, Kingston, RI)
- Prabhakar Marur, Ph.D. (1999), (General Motors, Bangalore, India)
- Jaydeep Sinha, Ph.D. (1997), (Principal Scientist, KLA-Tencor/ADE Corp., MA)
- Liming Xu, Ph.D. (1996). (GE Power Systems, Greenville, SC)

- Jackson Cho, M.S. (current)
- Alex Edwards, M.S. (current)
- Austin Branch, M.S. (2020) (Lockheed Martin, TX)
- Raj Krishna A. Pasumarthy, M.S. (2016) (General Motors, Detroit, MI)
- Amit Jain, M.S. (2015)
- Oscar Sotomayor, M.S. (2013) (Assistant Professor, Escuela Polytecnica Nacional, Ecuador)
- Allen Craven, M.S. (2011), (Robins Air Force Base, GA)
- Chandru Periasamy, M.S. (2010), (Intel Corp, Hillsboro, OR)
- Rahul Jahver, M.S. (2009) (Applied Research Associates, Vicksburg, MS)
- A. Taylor Owens, M.S. (2007) (US Army RDECOM, Redstone Arsenal, AL)
- Piyush Savalia, M.S. (2006), (Jaw Bone Corp, San Jose, CA)
- Michael Maleski, M.S. (2003) (Harris Corporation, Melbourne, FL)
- Hakan Orak, M.S. (2001) (co-Advisor with Dr. Adanur)
- Hariram Krishnamoorthy, M.S. (1996), (Process Engineer, Quester Tech, Inc., Fremont, CA)
- Ganeshan Pattabhiraman, M.S. (1994), (Production Engineer, Woodbridge Group, GA)
- Sreeganesh Ramaswamy, M.S. (1992), (General Electric Corp. USA)

- Bret Olson, MS-NT 2019, Fuquiang Ren, MS-NT 2018, Manjunath Guntur, MS-NT 2017; Xiaoya Hou, MS-NT, 2017; Zhijing Wu, MS-NT, 2017; Satyanarayana Potti, MS-NT, 2017, Naresh Chinimilli, MS-NT, 2017; Jimit Patel, MS-NT, 2017;

** List does not include student committee service

Srinivas Pepalla, MS-NT, 2017; Sherwin Sherry, M.M.E., 2016; Kathik Ranagamuthusamy, M.M.E., 2016; Balamurugan Sundaram, M.M.E., 2016; Aditya Agarwal M.M.E., 2015; Simon Brackett M.M.E, 2015; Robert DeBarnard, M.M.E., 2014; Vinod Kushvaha, M.M.E, 2014; James Tucker, M.M.E, 2013; Bikramjit Singh, M.M.E, 2012; Albert Cho, M.M.E, 2011; Harshil Panchal, M.M.E, 2010; Ted Towry, M.M.E, 2009; Randall Butcher, David Copeland, M.M.E. 1998; Bryan Lynchard, M.M.E. 1994; George Butler, M.M.E, 1993; Carl Nagel, M.M.E, 1992

## STUDENT THESES AND DISSERTATION TITLES/*RECOGNITIONS*

- Ph.D. Dissertation: 'Quasi-Static and Dynamic Crack Initiation and Growth in Soda-lime Glass: Full-field Optical Investigations,' S. Dondeti, Fall 2022.
- Ph.D. Dissertation: Fracture of Brittle Materials and Bimaterial Interfaces in the Presence of Compressive Stresses,' A.T. Owens, Fall 2022.
- M.S. Thesis: Processing and Opto-Mechanical Characterization of Transparent Glass-Filled Epoxy Particulate Composites,' A. Branch, Spring 2020.
- Ph.D. Dissertation: 'Advances in Digital Gradient Sensing (DGS) Technique to Experimental Mechanics,' C. Miao, Fall 2019.
- Ph.D. Dissertation: 'Why Do Growing Cracks Branch? An Optical Investigation of Brittle Monolithic and Bilayer Transparencies under Stress Wave Loading,' B.M. Sundaram, Spring 2017.
- M.S. Thesis: 'Mechanical and Optical Characterization of a Tissue Surrogate Polymer Gel,' R.K.A. Pasumarthy, summer 2016.
- Ph.D. Dissertation: 'Synthesis, Processing and Dynamic Fracture Behavior of Particulate Epoxy Composites with Conventional and Hierarchical Micro-/Nano-fillers,' V. Kushvaha, Fall 2016.
- Ph.D. Dissertation: 'High Strain Rate Elastic and Fracture Characterization of Isotropic and Orthotropic Materials with and without Nano Fillers,' R. W. Bedsole, Summer 2015.
- M.S. Thesis: 'Extension of Reflection-Mode DGS to Plate Impact, Damage Detection, Dynamic Fracture Studies,' A. S. Jain, Spring 2015.
- Ph.D. Dissertation: 'Fracture Behavior of Particulate Polymer Composites and Interpenetrating Polymer Networks: Study of Filler Size, Filler Stiffness and Loading Rate Effects,' K. C. Jajam, Summer 2013. *Recipient of Outstanding PhD Dissertation Award – Mathematics/Physical Sciences/Engineering Category (2012-2014)*
- M.S. Thesis: 'Numerical Modeling of Random 2D and 3D Structural Foams Using Voronoi Diagrams: A Study of Cell Regularity and Compression Response,' O. E. Sotomayor, Summer 2013. *Recipient of Outstanding MS Thesis Award – Mathematics/Physical Sciences/Engineering Category (2012-2014)*
- Ph.D. Dissertation: 'Digital Gradient Sensing: A Full-Field Optical Technique to Measure Angular Deflections of Light Rays and its Applications to Failure Mechanics,' C. Periasamy, Summer 2012.
- M.S. Thesis: 'Experimental Investigation of Syntactic Foam Core Sandwiches: Effect of Graded Face Sheet and Interpenetrating Phase Composite Foam Core,' A. Craven, Spring 2011.
- M.S. Thesis: 'A split Hopkinson pressure bar apparatus for high-strain rate testing of interpenetrating phase composites (IPC): Measurements and modeling', C. Periasamy, Spring 2010.
- M. S. Thesis: 'Compression response and modeling of interpenetrating phase composites and foam-filled honeycombs', R. Jhaver, Summer 2009.
- Ph.D. Dissertation: 'A study of mixed-mode dynamic fracture of advanced particulate composites by optical interferometry, digital image correlation and finite element methods', M. S. Kirugulige, Summer 2007. (*Received 2008 Sigma-Xi Honor Society's Carolyn-Carr Award for Best Doctoral Dissertation*)
- M.S. Thesis: 'Development of a split Hopkinson tension bar for testing stress-strain response of particulate composites under high rates of loading', A. T. Owens, Summer 2007.
- M.S. Thesis: 'A study of crack-inclusion interaction using moiré interferometry and finite element analysis,' P. C. Savalia, Fall 2006.
- Ph.D. Dissertation: 'Microstructural effects on fracture behavior of particulate composites: Investigation of toughening mechanisms using optical and boundary element methods', R. Kitey, Summer 2006. (*Recipient of 2007 Sigma-Xi Honor Society's Carolyn-Carr Award for Best Doctoral Dissertation*).
- Ph.D. Dissertation: 'Dynamic fracture behavior of homogeneous and functionally graded micro-/nano-structured syntactic foams', M. A. El-Hadek, Spring, 2003.
- M.S. Thesis: 'Role of crack tip biaxiality parameter on the fracture toughness of materials: Development of a new Technique', M. J. Maleski, Summer 2003.

- M.S. Thesis: 'Characteristics of braided composites for truck chassis frame', Hakan Orak, Spring 2001.
- Ph.D. Dissertation: 'Evaluation of Crack Tip Fields and Fracture Parameters in Functionally Graded Materials', C.-E. Rousseau, Fall 2000.
- Ph.D. Dissertation: 'Fracture Behavior of Functionally Graded Materials', P. R. Marur, Auburn University, Spring 1999.
- Ph.D. Dissertation: 'Study of interfacial crack tip 3-D effects using visible and infrared interferometric sensors', J.K. Sinha, Auburn University, Summer 1997. (*Recipient of 1998 Sigma-Xi Honor Society's Carolyn-Carr Award for Best Doctoral Dissertation.*)
- M.S. Thesis: 'Estimation of fracture parameters in solder-copper joints using moiré interferometry', H. Krishnamoorthy, Auburn University, Winter 1997.
- Ph.D. Dissertation: 'Investigation of interfacial crack tip fields and fracture toughness under quasi-static and dynamic loading conditions', L. Xu, Auburn University, Spring, 1996.
- M.S. Thesis: 'An interferometric study of interface fracture in bimaterials subjected to thermo-mechanical loading', P. Ganeshan, Auburn University, Fall 1994.
- M.S. Thesis: 'An investigation of mixed-mode fracture in homogeneous and bimaterial solids', S. Ramaswamy, Auburn University, Fall 1992.

## SELECT STUDENT MENTEE ACHIEVEMENTS

- *Faculty at a University*: Dr. C.-E. Rousseau (Professor/Chair, University of Rhode Island), Dr. R. Kitey (Associate Professor, Indian Institute of Technology – Kanpur, India), Dr. M. El-Hadek, (Asst. Professor, Port Said University, Egypt), O. E. Sotomayor (Assistant Professor, Escuela Polytecnica Nacional (EPN), Ecuador), Dr. K.C. Jajam, (Assistant Professor, University of Arkansas, Little Rock).
- Sigma-Xi Honor Society's *Carolyn-Carr Award for Best Doctoral Dissertati*on at Auburn University for Dr. J. K. Sinha (1998), Dr. R. Kitey (2006), Dr. M. S. Kirugulige (2008).
- *Merriwether Fellowship* for Dr. M. A. El-Hadek, (2004 graduate), Mr. K. C. Jajam (2012) from the Graduate School for outstanding research accomplishment.
- *Outstanding Graduate Student* (PhD) *Award* for Dr. M.S. Kirugulige (2008) from the Graduate School.
- *Outstanding Graduate Student* (M.S.) *Award* for C. Periasamy (2011 graduate) from the Graduate School.
- *SREB Fellowship* for Dr. C.-E. Rousseau (2000 graduate) for graduate study at Auburn University.
- 2006 NDIA-SMDWG (National Defense Industrial Association - Space and Missile Defense Working Group) Award for A. T. Owens.
- *Outstanding PhD Dissertation Award* – Mathematics/Physical Sciences/Engineering Category (2012-2014) for Dr. K. C. Jajam, Auburn University, 2014.
- *Outstanding MS Thesis Award* – Mathematics/Physical Sciences/Engineering Category (2012-2014) for Oscar E. Sotomayor, Auburn University, 2014.
- *Orr Best Paper Award* – Dr. R. Bedsole, ASME Materials Division, IMECE, 2014.

## PROFESSONAL ACTIVITIES

- Chair – Materials Division, 2022-2023.
- Technical Program Chair – ASME-IMECE2021 Materials Division, 2021.
- Executive Committee Member, Materials Division, American Society of Mechanical Engineers, 2018-2023.
- Fellows Selection Committee, Society for Experimental Mechanics, 2012-2014, 2016-2018.
- Executive Committee Member, Society for Experimental Mechanics, 2015-2017.
- Chair, International Advisory Board, *Experimental Mechanics,* Springer Publication, 2016-present.
- Editor-in-Chief, *Experimental Mechanics,* Springer Publication, 2010-2015.
- Associate Editor, *Journal of Applied Mechanics*, ASME Publications, 2020-present.
- Associate Editor, *Journal of Engineering Materials and Technology*, ASME Publications, 2013-2020.
- Editorial Committee Member, *Journal of Dynamic Behavior Of Materials*, Springer, 2015-present
- Associate Editor, *Optics and Lasers in Engineering*, Elsevier Publication, 2006-2013.
- Member, Editorial Board, *Strain* – British Soc. for Strain Measurement, 2011-2014.
- Associate Editor, *Experimental Mechanics,* Sage/Springer Publication, 2001-2009.
- Member, Editorial Board, *Optics and Lasers in Engineering*, Elsevier Publication, 2003-2006.
- Panelist/Proposal Reviewer, National Science Foundation.

- Proposal Reviewer, Army Research Office.
- Panelist/Proposal Reviewer, State of Nevada – DoD EPSCoR committee.
- Proposal Reviewer/Panelist, National Research Council.
- ASME-AMD Technical Committee on Fracture Mechanics – *Chair,* 2001-2003.
- SEM Technical Division on Fracture and Fatigue – *Chair* – 2000 to 2002.
- ASME-AMD Technical Committee on Fracture Mechanics – *vice-Chair,* 1999-2001.
- ASME-AMD Technical Committee on Fracture Mechanics – *Secretary,* 1997-1999.
- SEM Technical Division on Fracture and Fatigue – *Secretary*, 1998-2000.
- SECTAM - XXI (2002), Editorial Board – *Member*.
- SECTAM - XX (2000) *Organizer, Host and Editorial Committee Chair*.
- SEM Fracture and Fatigue Paper Review Committee - *Past Chair*.
- SECTAM - XIX (1998) Editorial Board – *Member*.
- Society for Experimental Mechanics – *Member*.
- American Society of Mechanical Engineers – *Member.*
- American Academy of Mechanics – *Member*.
- Co-Organizer, Symp. 'Experimental Mechanics, Optical Metrology, and NDE,' in honor of Prof. Cesar Sciammarella's Lifetime Achievement Award, ICCES, Changwon, S. Korea, 2014.
- Co-Organizer, 'Fracture and Failure Non-Traditional Materials', SEM Annual Conf., 2011, Uncasville, CT.
- Member, International Advisory Committee, ICEM-2009, November 2009, Singapore.
- Member, Scientific Committee, ICEM14, 2010, Poitiers, France.
- Co-Organizer, Symp. 'Fracture & Failure Non-Traditional Materials', SEM Annual Conference, 2009, Albuquerque, NM.
- Co-Organizer, Symp. 'Failure of Heterogeneous Materials', SEM Annual Conference, 2005, Portland, OR.
- Organizer, Session 'Fracture of multi-functional materials', SEM Annual Conf., Milwaukee, WI, 2002.
- Organizer, 'Southeastern Graduate Student Symposium on Experimental Mechanics', 2001.
- Organizer, Symp. Fracture of Functionally Graded Materials, ASME-IMECE, 2000, Orlando, FL.
- Organizer, Symp. Failure Behavior of Interfaces & Graded Materials, ASME-IMECE, 1998, Anaheim, CA.
- Session Chair, Symp. Functionally Graded Materials, USNCAM13, Gainesville, FL, 1998
- Session Chair, SECTAM-XIX, May 1998, Boca Raton, FL.
- Session Chair, Symp. Experimental Mechanics of Electronics Packages, ASME-IMECE, 1997, Dallas, TX.
- Organizer and Chairman, Session on Interfacial Fracture Mechanics, 1997 SEM Conference, Seattle, WA.
- Co-Chair, Symp. Health Monitoring of Aging Structures, 1997 SEM Conf, Seattle, WA.
- Co-Organizer & Chair, Failure Mech. of Functionally Graded Materials, 1996 ASME IMECHE, Atlanta, GA.
- Session Chair, Experimental Mechanics of Electronic Packaging, 1995 ASME-IMECE, San Francisco, CA.
- Session Chair, Mechanics & Materials Conf., ASME Summer Meeting, Johns Hopkins University, 1996.
- Co-Organizer and Chair, Southeastern Symposium on Experimental Mechanics, Auburn University, 1995.
- Co-Chair, Session on Optical Methods, 1994 SEM Spring Conference, Baltimore, MD.
- Co-Organizer, Student symposium on Experimental Mechanics, Auburn University, 1991.

## REVIEWER/PANELIST SERVICE

**Organizations**

- National Science Foundation (NSF)
- DoD - Army Research Office
- National Research Council

- American Academy for Advancement of Sciences (AAAS)
- Canada Foundation for Innovation
- Israel Science Foundation (ISF)
- University of Nevada System
- Nanyang Technical University, Singapore
- University of Rhode Island Transportation Center
- Tenure/Promotion Reviewer – University of Connecticut, University of Missouri, University of Central Florida, University of Alabama, University of S. Alabama, Nanyang Technical University – Singapore, Indian Institute of Technology – Kanpur, India, Peking University, China, Mississippi State University, MS; University of California – San Diego; Drexel University; Worcester Polytechnic University, U of Wisconsin-Milwaukee
- External Graduate Program Reviewer, Univ. of South Carolina, October 2020.

**Archival Journals**

Nature Communications; J of Applied Mechanics; J of Materials and Technology; J of the Mechanics and Physics of Solids; Composites-A & B; Experimental Mechanics; International J of Fracture; Engineering Fracture Mechanics; International J of Solids and Structures; Optical Engineering; Applied Optics; Optics and Lasers in Engineering; Materials Science and Engineering-A; ASTM-STP; ASTM-J of Testing & Evaluation; Applied Mechanics Reviews; Extreme Mechanics Letters; Composites Science & Technology; J of Composite Materials; MethodsX; Polymer Composites; Mechanics of Materials; Measurement Science & Technology; J of Dynamic Behavior of Materials

## SELECT UNIVERSITY SERVICE - AUBURN UNIVERSITY

- Chair, Graduate Program Committee, Dept. of Mechanical Engineering, 2009-present.
- Faculty Search Committee, Dept. of Mechanical Engineering 2015-present.
- Member, Creative Research & Scholarship Award Selection Committee, 2019-present.
- Member, College of Engineering Graduate Recruitment Committee, 2009-present.
- Member, College of Engineering Graduate and Curriculum Committee, 2017-present.
- Member, Alumni Professor Selection Committee, 2009-2012.
- Member, Faculty Senate Salaries Committee, 2005-2008.
- Member, Faculty Senate Committee on Lectures/Seminars (2016-2019)
- Member, Graduate Council, Credentials Committee, 2001-2004.
- Faculty Representative, College of Engineering Faculty Council, 2000-2007.
- Member, University Faculty Grievance Committee, 1998-2001.
- Senator from Mechanical Engineering, Faculty Senate, 1996 -1999.
- Member, Undergraduate Curriculum Committee, 1997-2002.
- Member, Personnel Committee, Dept. of Mechanical Engineering, Spring-Fall, 1996.
- Member, Undergraduate Equipment Committee, Dept. of Mechanical Engineering, 1994-1995.
- Southeastern Conference on Theoretical and Applied Mechanics Representative, 1992-1995.
- Organizer, Mechanics Seminars, Dept. of Mechanical Engineering, 1990-1994.
- Member, Graduate Admissions Committee, Dept. of Mechanical Engineering, 1991-1994.